



# EMB145

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## AIRPORT PLANNING MANUAL

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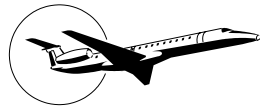
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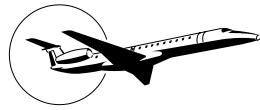


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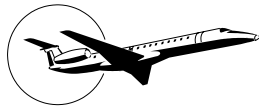
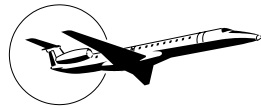


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## 1. INTRODUCTION

### 1.1 Purpose

This document provides airplane characteristics for general airport planning. Since the operational practices vary among the airlines, specific data should be coordinated with the using airlines before the facility design is made.

EMBRAER should be contacted for any additional information required.

### 1.2 Scope

This document complies with NAS3601, revision 6.

It provides characteristics of the EMB-145EP, EMB-145ER, EMB-145EU, EMB-145MP, EMB-145MK, EMB-145LR, EMB-145LU, and EMB-145XR aircraft models for airport operators, airlines, and engineering consultant organizations. Since the airplane changes and available options may alter the information, the data presented herein must be regarded as subject to change.

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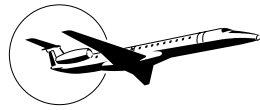
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## 2. AIRPLANE DESCRIPTION

### 2.1 General Airplane Characteristics

The airplane is an all-metal semimonocoque-type structure, low-winged, T-tailed, pressurized airplane featuring a retractable twin-wheeled, tricycle-type landing gear system and two high bypass ratio rear-mounted Rolls Royce AE 3007 turbofan engines. The airplane has convenient accommodations for a pilot, a copilot, and a flight observer. The typical passenger configuration consists of three seats abreast, with front galley and rear toilet. Accommodation for a second flight attendant is available as an option.

#### 2.1.1 Definitions

Maximum Design Taxi Weight (MTW): Maximum weight for ground maneuver as limited by the aircraft strength and airworthiness requirements. (It includes weight of taxi and run-up fuel).

Maximum Design Landing Weight (MLW): Maximum weight for landing as limited by the aircraft strength and airworthiness requirements.

Maximum Design Takeoff Weight (MTOW): Maximum weight for takeoff as limited by the aircraft strength and airworthiness requirements. (This is the maximum weight at the start of the takeoff run).

Operating Empty Weight (OEW): Weight of the structure, power plant, furnishings, systems, unusable fuel, and other unusable propulsion agents, as well as other items of equipment that are considered an integral part of a particular airplane configuration. Also included are certain standard units, crew and crew baggage, catering, navigation kit, and suppliers necessary for full operations, excluding usable fuel and payload.

Maximum Design Zero Fuel Weight (MZFW): Maximum weight allowed before usable fuel and other specified usable agents are loaded in defined sections of the aircraft as limited by the strength and airworthiness requirements.

Maximum Payload: Maximum design zero fuel weight minus operational empty weight.

Maximum Seating Capacity: The maximum number of passengers specifically certified or anticipated for certification.

Maximum Cargo Volume: The maximum space available for cargo.

Usable Fuel: Fuel available for the aircraft propulsion.

Table 2.1.1.1 - EMB-145 Airplane General Characteristics

| DESIGN WEIGHTS                                     |                 | MODELS |       |       |       |       |       |       |       |
|----------------------------------------------------|-----------------|--------|-------|-------|-------|-------|-------|-------|-------|
|                                                    |                 | ER     | EU    | EP    | LR    | LU    | MP    | MK    | XR    |
| Maximum Design Taxi Weight                         | lb              | 45636  | 44291 | 46495 | 48722 | 48700 | 46495 | 44291 | 53352 |
|                                                    | kg              | 20700  | 20090 | 21090 | 22100 | 22090 | 21090 | 20090 | 24200 |
| Maximum Design Landing Weight <sup>[3]</sup>       | lb              | 41226  | 41226 | 41226 | 42549 | 42549 | 42549 | 42549 | 44092 |
|                                                    | kg              | 18700  | 18700 | 18700 | 19300 | 19300 | 19300 | 19300 | 20000 |
| Maximum Design Takeoff Weight <sup>[3]</sup>       | lb              | 45415  | 44070 | 46275 | 48502 | 48480 | 46275 | 44070 | 53131 |
|                                                    | kg              | 20600  | 19990 | 20990 | 22000 | 21990 | 20990 | 19990 | 24100 |
| Operating Empty Weight <sup>[1]</sup>              | lb              | 26339  | 26339 | 26339 | 26707 | 26707 | 26539 | 26539 | 27758 |
|                                                    | kg              | 11947  | 11947 | 11947 | 12114 | 12114 | 12038 | 12038 | 12591 |
| Maximum Design Zero Fuel Weight <sup>[2] [3]</sup> | lb              | 37699  | 37699 | 37699 | 39463 | 39463 | 39463 | 39463 | 40786 |
|                                                    | kg              | 17100  | 17100 | 17100 | 17900 | 17900 | 17900 | 17900 | 18500 |
| Maximum Payload <sup>[1]</sup>                     | lb              | 11359  | 11359 | 11359 | 12755 | 12755 | 12923 | 12923 | 13027 |
|                                                    | kg              | 5153   | 5153  | 5153  | 5786  | 5786  | 5862  | 5862  | 5909  |
| Maximum Seating Capacity                           | PAS-SEN-GERS    | 50     | 50    | 50    | 50    | 50    | 50    | 50    | 50    |
| Maximum Cargo Volume                               | ft <sup>3</sup> | 325    | 325   | 325   | 325   | 325   | 325   | 325   | 325   |
|                                                    | m <sup>3</sup>  | 9.2    | 9.2   | 9.2   | 9.2   | 9.2   | 9.2   | 9.2   | 9.2   |
| Usable Fuel <sup>[4]</sup>                         | lb              | 9202   | 9202  | 9202  | 11435 | 11435 | 9202  | 9202  | 13199 |
|                                                    | kg              | 4173   | 4173  | 4173  | 5187  | 5187  | 4173  | 4173  | 6032  |
|                                                    | US GAL.         | 1360   | 1360  | 1360  | 1690  | 1690  | 1360  | 1360  | 1950  |
|                                                    | LITERS          | 5146   | 5146  | 5146  | 6396  | 6396  | 5146  | 5146  | 7438  |

[1] Standard configuration (weights may vary according to optional equipment installed or interior layouts).

[2] For aircraft POST-MOD. S.B. 145-53-0064, consider MZFW = 17350 kg (38250 lb).

[3] For aircraft POST-MOD. S.B. 145-53-0068, consider MZFW = 18400 kg (40564 lb), MTOW= 22600 kg (49823 lb), and MLW= 19800 kg (43651 lb).

[4] Adopted fuel density of 0.811 kg/l (6.77 lb/US gal.).

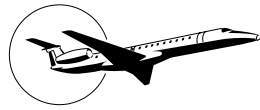
## 2.2 Airplane Dimensions

### 2.2.1 External Dimensions

Overall span (EMB-145EP/ER/EU/MP/MK/LR/LU) ..... 20.04 m (65 ft 9 in)  
 Overall span (EMB-145XR) ..... 21.00 m (69 ft 11 in)  
 Height (maximum) ..... 6.75 m (22 ft 2 in)  
 Overall length ..... 29.87 m (98 ft 0 in)

### 2.2.2 Wing

Reference area ..... 51.18 m<sup>2</sup> (551 ft<sup>2</sup>)  
 Reference aspect ratio ..... 7.8



### **2.2.3 Fuselage**

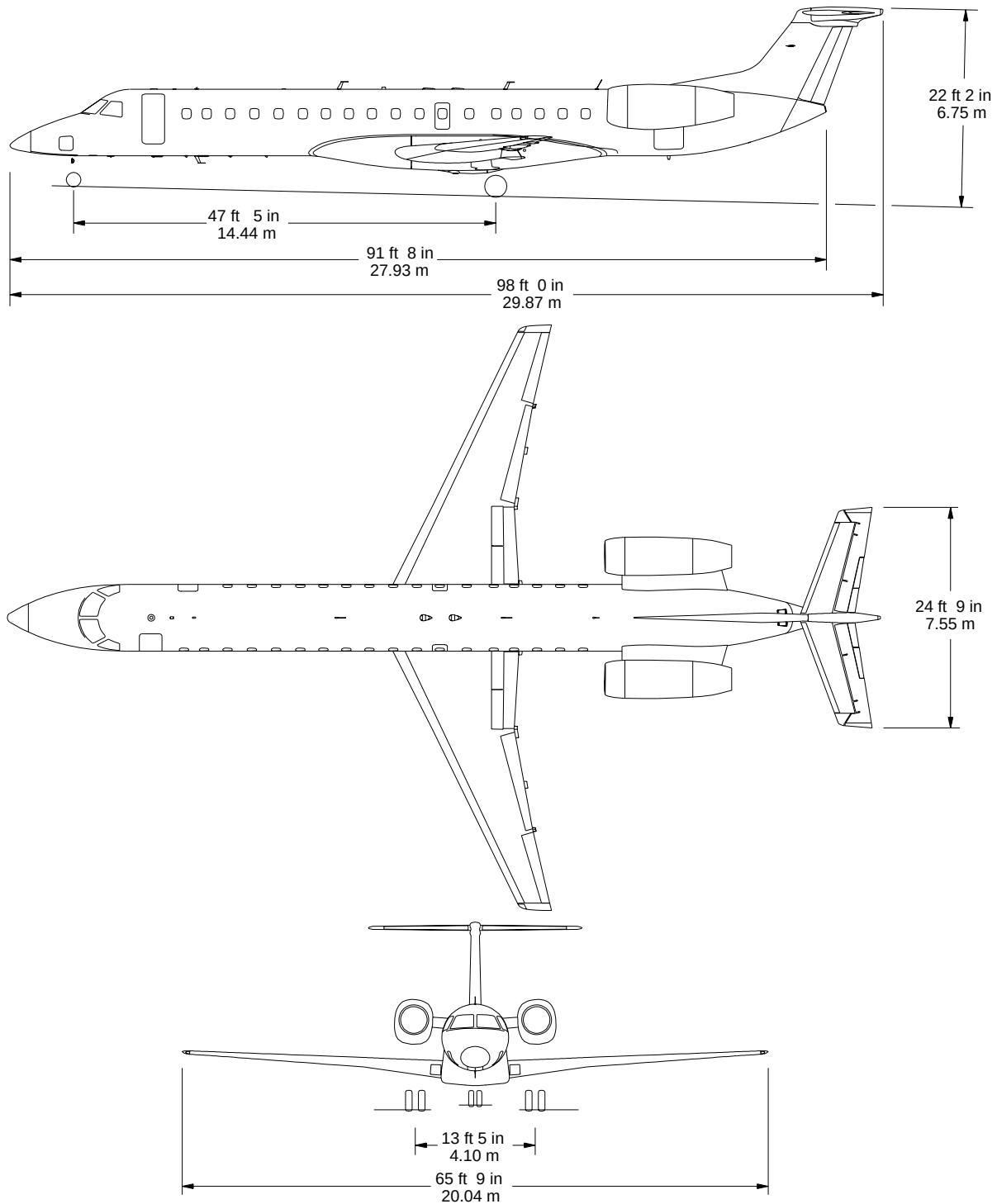
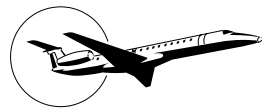
|                                     |                      |
|-------------------------------------|----------------------|
| Total Length .....                  | 27.93 m (91 ft 8 in) |
| Length of pressurized section ..... | 23.22 m (76 ft 2 in) |
| Outside diameter .....              | 2.28 m (7 ft 6 in)   |

### **2.2.4 Horizontal Tail**

|            |                                               |
|------------|-----------------------------------------------|
| Span ..... | 7.55 m (24 ft 9 in)                           |
| Area ..... | 11.20 m <sup>2</sup> (120.6 ft <sup>2</sup> ) |

### **2.2.5 Vertical Tail**

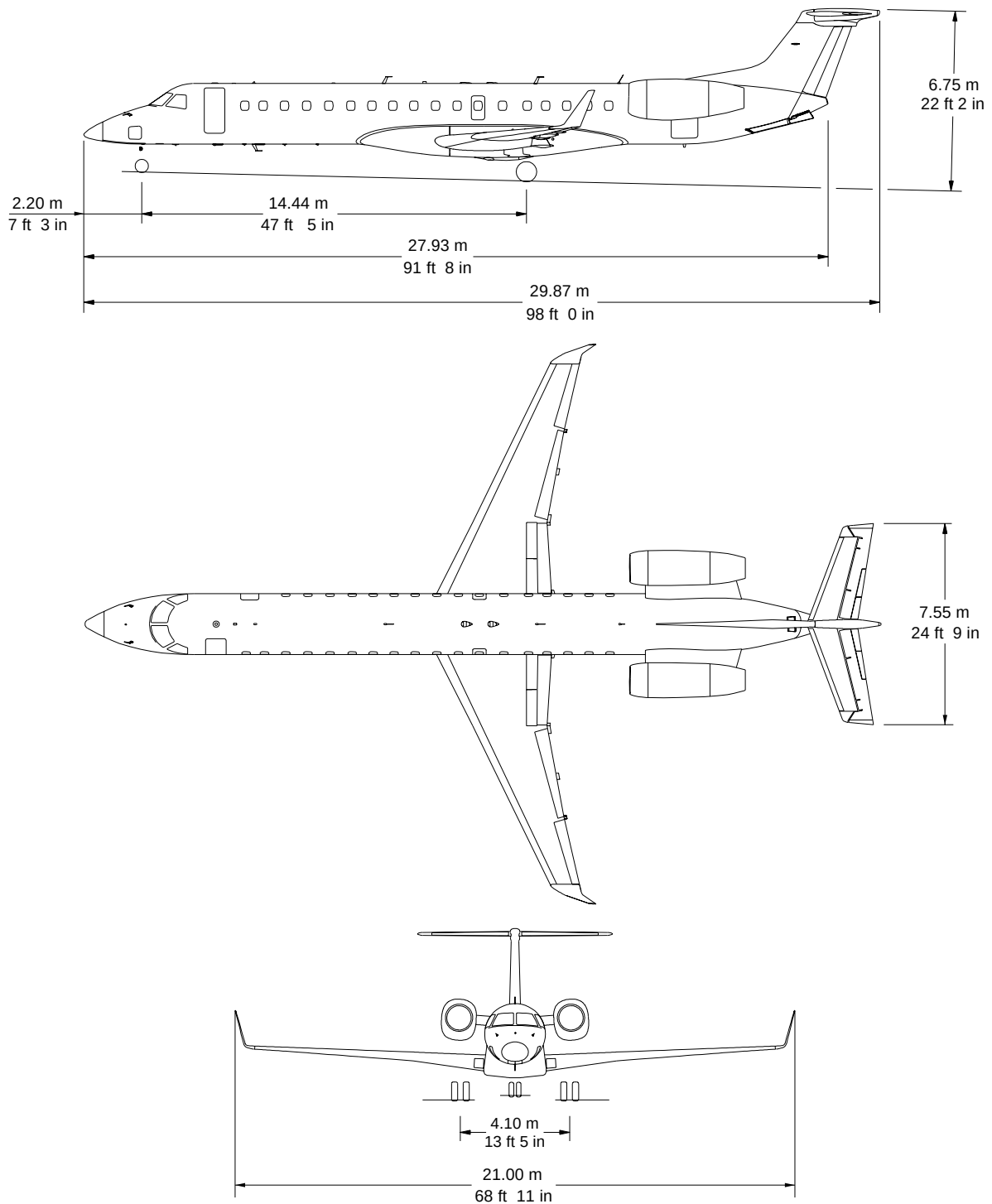
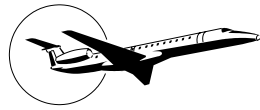
|                      |                                             |
|----------------------|---------------------------------------------|
| Reference area ..... | 7.20 m <sup>2</sup> (77.5 ft <sup>2</sup> ) |
|----------------------|---------------------------------------------|



EMB-145 EP/ER/EU/MP/MK/LR/LU

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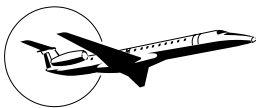
*Figure 2.2.1 - EMB-145 Airplane General Dimensions*



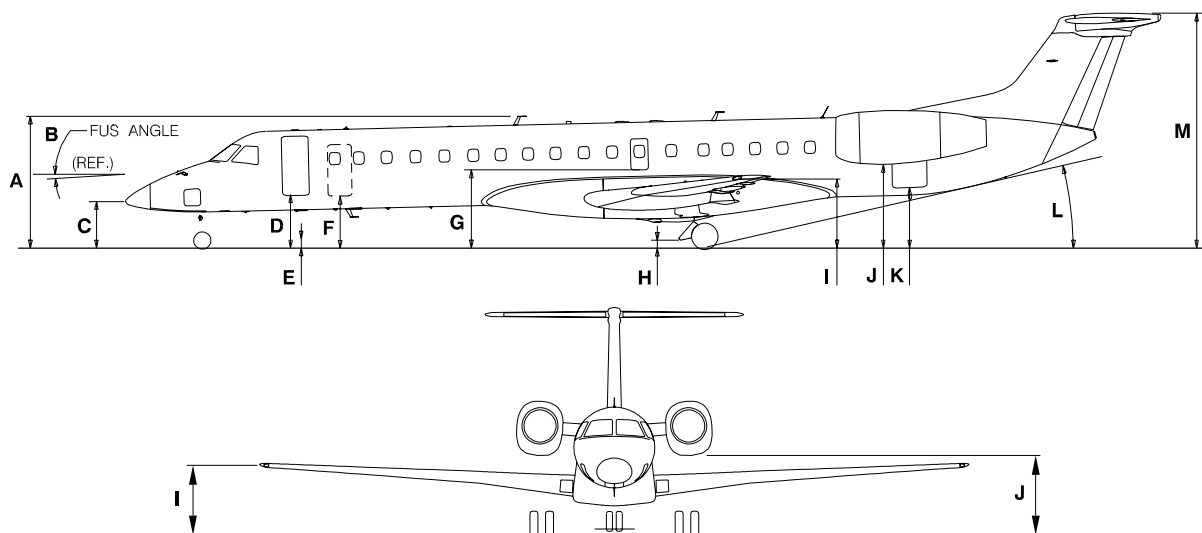
**EMB-145XR**

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*Figure 2.2.2 - EMB-145 Airplane General Dimensions*



## 2.3 Ground Clearances

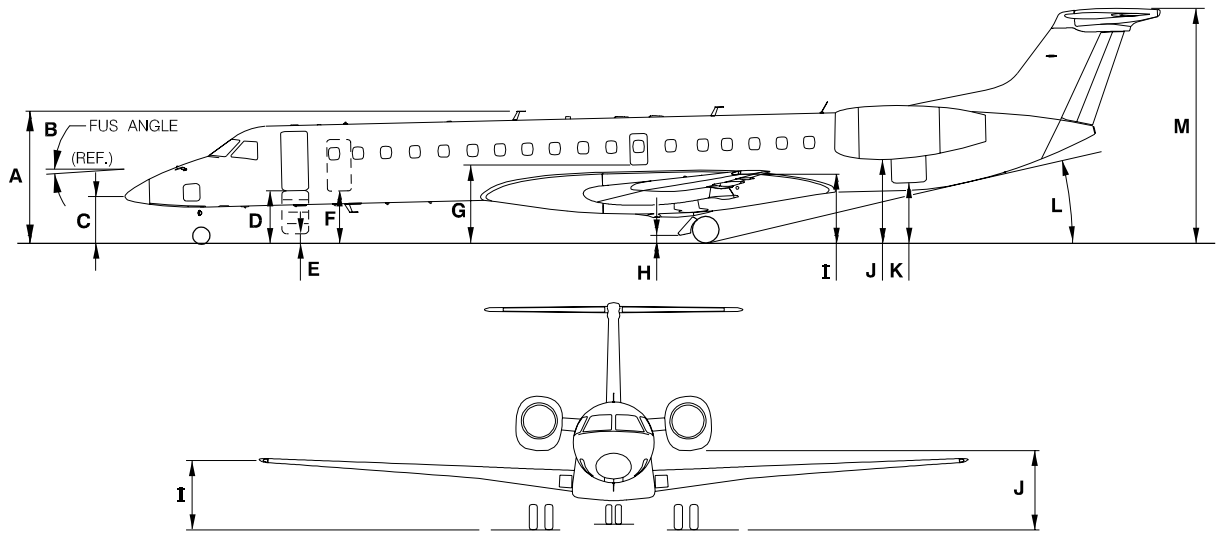
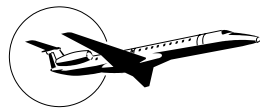


EMB-145ER/EP/EU - GROUND CLEARANCE

| WEIGHT             | CG<br>(%MAC) | ANTENNA<br>A         | FUS ANGLE<br>(DEG)<br>B | NOSE<br>C           | MAIN DOOR<br>(A/C FLOOR)<br>D | MAIN DOOR<br>(OPEN, 1ST STEP)<br>E | EMERGENCY/<br>SERVICE DOOR<br>F | EMERGENCY<br>EXIT<br>G | MAIN LDG<br>DOOR<br>H | WING TIP<br>I       | NACELLE<br>J         | BAGGAGE<br>DOOR<br>K | TAILSKID<br>ANGULAR<br>CLEARANCE<br>(DEG)<br>L | TAIL BOOM<br>M        |
|--------------------|--------------|----------------------|-------------------------|---------------------|-------------------------------|------------------------------------|---------------------------------|------------------------|-----------------------|---------------------|----------------------|----------------------|------------------------------------------------|-----------------------|
| 21090kg<br>46495lb | 17.4         | 3.748m<br>12ft 3.6in | -1.27                   | 1.313m<br>4ft 3.7in | 1.480m<br>4ft 10.3in          | 0.287m<br>0ft 11.3in               | 1.479m<br>4ft 10.2in            | 2.202m<br>7ft 2.7in    | 0.337m<br>1ft 1.3in   | 1.930m<br>6ft 4.0in | 2.345m<br>7ft 8.3in  | 1.696m<br>5ft 6.8in  | 12.1                                           | 6.678m<br>21ft 10.9in |
| 21090kg<br>46495lb | 43.0         | 3.765m<br>12ft 4.2in | -1.00                   | 1.383m<br>4ft 6.4in | 1.527m<br>5ft 0.1in           | 0.334m<br>1ft 1.1in                | 1.520m<br>4ft 11.8in            | 2.202m<br>7ft 2.7in    | 0.331m<br>1ft 1.0in   | 1.916m<br>6ft 3.4in | 2.312m<br>7ft 7.0in  | 1.660m<br>5ft 5.4in  | 11.8                                           | 6.616m<br>21ft 8.5in  |
| 20990kg<br>46275lb | 17.4         | 3.748m<br>12ft 3.6in | -1.27                   | 1.313m<br>4ft 3.7in | 1.480m<br>4ft 10.3in          | 0.288m<br>0ft 11.3in               | 1.480m<br>4ft 10.3in            | 2.203m<br>7ft 2.7in    | 0.338m<br>1ft 1.3in   | 1.931m<br>6ft 4.0in | 2.346m<br>7ft 8.4in  | 1.697m<br>5ft 6.8in  | 12.1                                           | 6.679m<br>21ft 11.0in |
| 20990kg<br>46275lb | 43.0         | 3.766m<br>12ft 4.3in | -1.00                   | 1.383m<br>4ft 6.4in | 1.527m<br>5ft 0.1in           | 0.335m<br>1ft 1.2in                | 1.521m<br>4ft 11.9in            | 2.203m<br>7ft 2.7in    | 0.332m<br>1ft 1.1in   | 1.917m<br>6ft 3.5in | 2.313m<br>7ft 7.1in  | 1.661m<br>5ft 5.4in  | 11.8                                           | 6.616m<br>21ft 8.5in  |
| 20700kg<br>45635lb | 17.4         | 3.750m<br>12ft 3.6in | -1.27                   | 1.313m<br>4ft 3.7in | 1.481m<br>4ft 10.3in          | 0.289m<br>0ft 11.4in               | 1.481m<br>4ft 10.3in            | 2.205m<br>7ft 2.8in    | 0.340m<br>1ft 1.4in   | 1.933m<br>6ft 4.1in | 2.349m<br>7ft 8.5in  | 1.700m<br>5ft 6.9in  | 12.1                                           | 6.683m<br>21ft 11.1in |
| 20700kg<br>45635lb | 43.0         | 3.768m<br>12ft 4.3in | -1.00                   | 1.385m<br>4ft 6.5in | 1.529m<br>5ft 0.2in           | 0.336m<br>1ft 1.2in                | 1.522m<br>4ft 11.9in            | 2.205m<br>7ft 2.8in    | 0.334m<br>1ft 1.1in   | 1.919m<br>6ft 3.6in | 2.315m<br>7ft 7.1in  | 1.663m<br>5ft 5.5in  | 11.8                                           | 6.619m<br>21ft 8.5in  |
| 20600kg<br>45415lb | 17.4         | 3.750m<br>12ft 3.6in | -1.27                   | 1.314m<br>4ft 3.7in | 1.481m<br>4ft 10.3in          | 0.289m<br>0ft 11.4in               | 1.481m<br>4ft 10.3in            | 2.205m<br>7ft 2.8in    | 0.341m<br>1ft 1.4in   | 1.934m<br>6ft 4.1in | 2.350m<br>7ft 8.5in  | 1.701m<br>5ft 7.0in  | 12.1                                           | 6.684m<br>21ft 11.1in |
| 20600kg<br>45415lb | 43.0         | 3.768m<br>12ft 4.3in | -1.00                   | 1.385m<br>4ft 6.5in | 1.529m<br>5ft 0.2in           | 0.337m<br>1ft 1.3in                | 1.523m<br>4ft 12.0in            | 2.205m<br>7ft 2.8in    | 0.335m<br>1ft 1.2in   | 1.920m<br>6ft 3.6in | 2.316m<br>7ft 7.2in  | 1.664m<br>5ft 5.5in  | 11.8                                           | 6.620m<br>21ft 8.6in  |
| 20090kg<br>44291lb | 16.4         | 3.753m<br>12ft 3.8in | -1.29                   | 1.314m<br>4ft 3.7in | 1.483m<br>4ft 10.4in          | 0.291m<br>0ft 11.5in               | 1.483m<br>4ft 10.4in            | 2.209m<br>7ft 3.0in    | 0.345m<br>1ft 1.6in   | 1.938m<br>6ft 4.3in | 2.355m<br>7ft 8.7in  | 1.706m<br>5ft 7.2in  | 12.2                                           | 6.691m<br>21ft 11.4in |
| 20090kg<br>44291lb | 43.0         | 3.772m<br>12ft 4.5in | -1.00                   | 1.388m<br>4ft 6.6in | 1.533m<br>5ft 0.4in           | 0.340m<br>1ft 1.4in                | 1.526m<br>5ft 0.1in             | 2.209m<br>7ft 3.0in    | 0.339m<br>1ft 1.3in   | 1.923m<br>6ft 3.7in | 2.320m<br>7ft 7.3in  | 1.668m<br>5ft 5.7in  | 11.8                                           | 6.624m<br>21ft 8.8in  |
| 19990kg<br>44070lb | 16.4         | 3.754m<br>12ft 3.8in | -1.29                   | 1.315m<br>4ft 3.8in | 1.484m<br>4ft 10.4in          | 0.291m<br>0ft 11.5in               | 1.483m<br>4ft 10.4in            | 2.210m<br>7ft 3.0in    | 0.345m<br>1ft 1.6in   | 1.939m<br>6ft 4.3in | 2.356m<br>7ft 8.8in  | 1.707m<br>5ft 7.2in  | 12.2                                           | 6.692m<br>21ft 11.5in |
| 19990kg<br>44070lb | 43.0         | 3.772m<br>12ft 4.5in | -1.00                   | 1.389m<br>4ft 6.7in | 1.533m<br>5ft 0.4in           | 0.341m<br>1ft 1.4in                | 1.527m<br>5ft 0.1in             | 2.210m<br>7ft 3.0in    | 0.339m<br>1ft 1.3in   | 1.924m<br>6ft 3.7in | 2.321m<br>7ft 7.4in  | 1.669m<br>5ft 5.7in  | 11.8                                           | 6.625m<br>21ft 8.8in  |
| 18700kg<br>41226lb | 15.1         | 3.762m<br>12ft 4.1in | -1.32                   | 1.317m<br>4ft 3.9in | 1.488m<br>4ft 10.6in          | 0.296m<br>0ft 11.7in               | 1.489m<br>4ft 10.6in            | 2.220m<br>7ft 3.4in    | 0.356m<br>1ft 2.0in   | 1.951m<br>6ft 4.8in | 2.370m<br>7ft 9.3in  | 1.731m<br>5ft 8.1in  | 12.3                                           | 6.709m<br>22ft 0.1in  |
| 18700kg<br>41226lb | 43.0         | 3.782m<br>12ft 4.9in | -1.01                   | 1.397m<br>4ft 7.0in | 1.542m<br>5ft 0.7in           | 0.349m<br>1ft 1.7in                | 1.536m<br>5ft 0.5in             | 2.220m<br>7ft 3.4in    | 0.350m<br>1ft 1.8in   | 1.935m<br>6ft 4.2in | 2.332m<br>7ft 7.8in  | 1.680m<br>5ft 6.1in  | 11.9                                           | 6.637m<br>21ft 9.3in  |
| 15500kg<br>34172lb | 12.0         | 3.787m<br>12ft 5.1in | -1.41                   | 1.324m<br>4ft 4.1in | 1.504m<br>4ft 11.2in          | 0.311m<br>1ft 0.2in                | 1.506m<br>4ft 11.3in            | 2.251m<br>7ft 4.6in    | 0.389m<br>1ft 3.3in   | 1.986m<br>6ft 6.2in | 2.411m<br>7ft 10.9in | 1.764m<br>5ft 9.4in  | 12.6                                           | 6.761m<br>22ft 2.2in  |
| 13000kg<br>28660lb | 12.0         | 3.815m<br>12ft 6.2in | -1.48                   | 1.338m<br>4ft 4.7in | 1.523m<br>4ft 12.0in          | 0.331m<br>1ft 1.0in                | 1.527m<br>5ft 0.1in             | 2.283m<br>7ft 5.9in    | 0.423m<br>1ft 4.7in   | 2.022m<br>6ft 7.6in | 2.452m<br>7ft 0.5in  | 1.807m<br>5ft 11.1in | 12.9                                           | 6.810m<br>22ft 4.1in  |
| 13000kg<br>28660lb | 43.0         | 3.842m<br>12ft 7.3in | -1.05                   | 1.349m<br>4ft 9.0in | 1.598m<br>5ft 2.9in           | 0.405m<br>1ft 3.9in                | 1.592m<br>5ft 2.7in             | 2.283m<br>7ft 5.9in    | 0.413m<br>1ft 4.3in   | 2.000m<br>6ft 6.7in | 2.400m<br>7ft 10.5in | 1.748m<br>5ft 8.8in  | 12.4                                           | 6.709m<br>22ft 0.1in  |
| 12000kg<br>26455lb | 40.0         | 3.852m<br>12ft 7.7in | -1.14                   | 1.442m<br>4ft 8.8in | 1.598m<br>5ft 2.9in           | 0.406m<br>1ft 4.0in                | 1.595m<br>5ft 2.8in             | 2.298m<br>7ft 6.5in    | 0.430m<br>1ft 4.9in   | 2.019m<br>6ft 7.5in | 2.425m<br>7ft 11.5in | 1.775m<br>5ft 9.9in  | 12.6                                           | 6.744m<br>22ft 1.5in  |

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Figure 2.3.1 - Ground Clearances  
Sheet 1

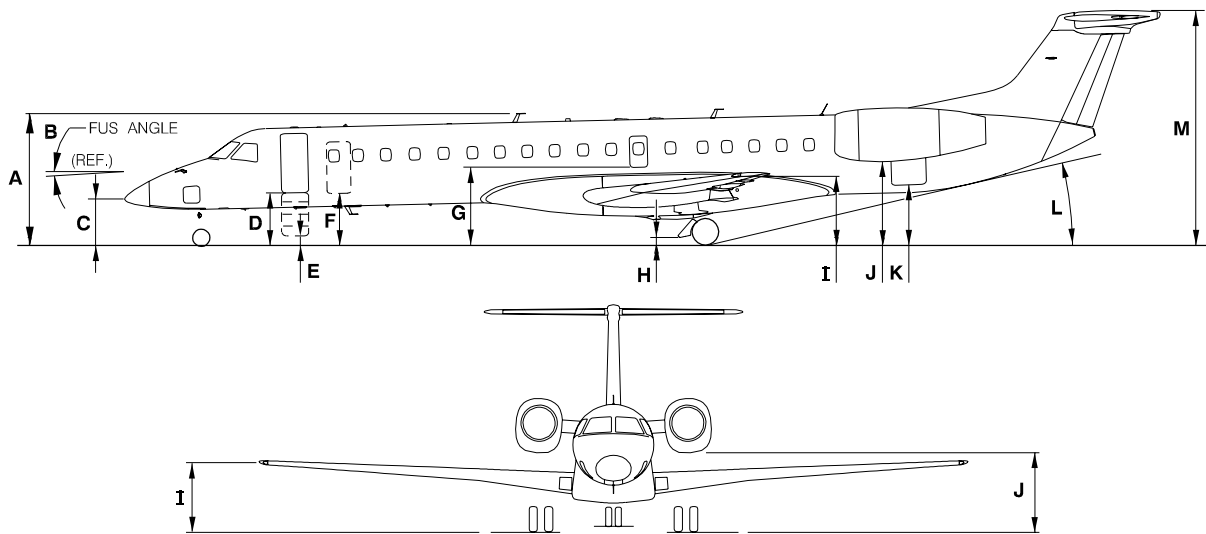
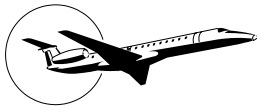


EMB-145LR/LU - GROUND CLEARANCE

| WEIGHT             | CG<br>(%MAC) | ANTENNA<br>A         | FUS. ANGLE<br>(DEG)<br>B | NOSE<br>C           | MAIN DOOR<br>(A/C FLOOR)<br>D | MAIN DOOR<br>(OPEN, 1ST STEP)<br>E | EMERGENCY/<br>SERVICE DOOR<br>F | EMERGENCY<br>EXIT<br>G | MAIN LDG<br>DOOR<br>H | WING TIP<br>I       | NACELLE<br>J         | BAGGAGE<br>DOOR<br>K | TAILSKID<br>ANGULAR<br>CLEARANCE<br>(DEG)<br>L | TAIL BOOM<br>M        |
|--------------------|--------------|----------------------|--------------------------|---------------------|-------------------------------|------------------------------------|---------------------------------|------------------------|-----------------------|---------------------|----------------------|----------------------|------------------------------------------------|-----------------------|
| 22100kg<br>48722lb | 18.4         | 3.745m<br>12ft 3.4in | -1.26                    | 1.311m<br>4ft 3.6in | 1.477m<br>4ft 10.1in          | 0.285m<br>0ft 11.2in               | 1.477m<br>4ft 10.1in            | 2.194m<br>7ft 2.4in    | 0.334m<br>1ft 1.1in   | 1.923m<br>6ft 3.7in | 2.342m<br>7ft 8.2in  | 1.693m<br>5ft 6.7in  | 12.1                                           | 6.675m<br>21ft 10.8in |
| 22100kg<br>48722lb | 39.5         | 3.757m<br>12ft 3.9in | -1.06                    | 1.363m<br>4ft 5.7in | 1.512m<br>4ft 11.5in          | 0.320m<br>1ft 0.6in                | 1.507m<br>4ft 11.3in            | 2.194m<br>7ft 2.4in    | 0.329m<br>1ft 1.0in   | 1.913m<br>6ft 3.3in | 2.317m<br>7ft 7.2in  | 1.665m<br>5ft 5.6in  | 11.8                                           | 6.627m<br>21ft 8.9in  |
| 22090kg<br>48700lb | 18.4         | 3.745m<br>12ft 3.4in | -1.26                    | 1.311m<br>4ft 3.6in | 1.477m<br>4ft 10.1in          | 0.285m<br>0ft 11.2in               | 1.477m<br>4ft 10.1in            | 2.194m<br>7ft 2.4in    | 0.334m<br>1ft 1.1in   | 1.923m<br>6ft 3.7in | 2.342m<br>7ft 8.2in  | 1.693m<br>5ft 6.7in  | 12.1                                           | 6.675m<br>21ft 10.8in |
| 22090kg<br>48700lb | 39.5         | 3.757m<br>12ft 3.9in | -1.06                    | 1.363m<br>4ft 5.7in | 1.512m<br>4ft 11.5in          | 0.320m<br>1ft 0.6in                | 1.507m<br>4ft 11.3in            | 2.194m<br>7ft 2.4in    | 0.329m<br>1ft 1.0in   | 1.913m<br>6ft 3.3in | 2.317m<br>7ft 7.2in  | 1.665m<br>5ft 5.6in  | 11.8                                           | 6.627m<br>21ft 8.9in  |
| 22000kg<br>48502lb | 18.4         | 3.745m<br>12ft 3.4in | -1.26                    | 1.311m<br>4ft 3.6in | 1.478m<br>4ft 10.2in          | 0.285m<br>0ft 11.2in               | 1.477m<br>4ft 10.1in            | 2.195m<br>7ft 2.4in    | 0.335m<br>1ft 1.2in   | 1.924m<br>6ft 3.7in | 2.342m<br>7ft 8.2in  | 1.694m<br>5ft 6.7in  | 12.1                                           | 6.676m<br>21ft 10.8in |
| 22000kg<br>48502lb | 39.5         | 3.758m<br>12ft 4.0in | -1.06                    | 1.363m<br>4ft 5.7in | 1.513m<br>4ft 11.6in          | 0.320m<br>1ft 0.6in                | 1.507m<br>4ft 11.3in            | 2.195m<br>7ft 2.4in    | 0.330m<br>1ft 1.0in   | 1.913m<br>6ft 3.3in | 2.318m<br>7ft 7.3in  | 1.666m<br>5ft 5.6in  | 11.8                                           | 6.628m<br>21ft 8.9in  |
| 21990kg<br>48480lb | 18.4         | 3.745m<br>12ft 3.4in | -1.26                    | 1.311m<br>4ft 3.6in | 1.478m<br>4ft 10.2in          | 0.285m<br>0ft 11.2in               | 1.477m<br>4ft 10.1in            | 2.195m<br>7ft 2.4in    | 0.335m<br>1ft 1.2in   | 1.924m<br>6ft 3.7in | 2.343m<br>7ft 8.2in  | 1.694m<br>5ft 6.7in  | 12.1                                           | 6.676m<br>21ft 10.8in |
| 21990kg<br>48480lb | 39.5         | 3.758m<br>12ft 4.0in | -1.06                    | 1.363m<br>4ft 5.7in | 1.513m<br>4ft 11.6in          | 0.320m<br>1ft 0.6in                | 1.508m<br>4ft 11.4in            | 2.195m<br>7ft 2.4in    | 0.330m<br>1ft 1.0in   | 1.913m<br>6ft 3.3in | 2.318m<br>7ft 7.3in  | 1.666m<br>5ft 5.6in  | 11.8                                           | 6.628m<br>21ft 8.9in  |
| 19300kg<br>42549lb | 15.6         | 3.761m<br>12ft 4.1in | -1.32                    | 1.315m<br>4ft 3.8in | 1.487m<br>4ft 10.5in          | 0.294m<br>0ft 11.6in               | 1.487m<br>4ft 10.5in            | 2.214m<br>7ft 3.2in    | 0.355m<br>1ft 2.0in   | 1.946m<br>6ft 4.6in | 2.368m<br>7ft 9.2in  | 1.720m<br>5ft 7.7in  | 12.3                                           | 6.708m<br>22ft 0.1in  |
| 19300kg<br>42549lb | 39.5         | 3.775m<br>12ft 4.6in | -1.08                    | 1.376m<br>4ft 6.2in | 1.527m<br>5ft 0.1in           | 0.335m<br>1ft 1.2in                | 1.523m<br>4ft 12.0in            | 2.214m<br>7ft 3.2in    | 0.349m<br>1ft 1.7in   | 1.933m<br>6ft 4.1in | 2.339m<br>7ft 8.1in  | 1.720m<br>5ft 6.5in  | 12.0                                           | 6.652m<br>21ft 9.9in  |
| 17100kg<br>37699lb | 43.0         | 3.797m<br>12ft 5.5in | -1.04                    | 1.407m<br>4ft 7.4in | 1.554m<br>5ft 1.2in           | 0.362m<br>1ft 2.3in                | 1.549m<br>5ft 1.0in             | 2.233m<br>7ft 3.9in    | 0.367m<br>1ft 2.4in   | 1.950m<br>6ft 4.8in | 2.353m<br>7ft 8.6in  | 1.701m<br>5ft 7.0in  | 12.1                                           | 6.661m<br>21ft 10.2in |
| 15500kg<br>34172lb | 12.0         | 3.789m<br>12ft 5.2in | -1.42                    | 1.324m<br>4ft 4.1in | 1.504m<br>4ft 11.2in          | 0.312m<br>1ft 0.3in                | 1.507m<br>4ft 11.3in            | 2.249m<br>7ft 4.5in    | 0.392m<br>1ft 3.4in   | 1.987m<br>6ft 6.2in | 2.416m<br>7ft 11.1in | 1.769m<br>5ft 9.6in  | 12.7                                           | 6.767m<br>22ft 2.4in  |
| 13400kg<br>29542lb | 12.0         | 3.818m<br>12ft 6.3in | -1.48                    | 1.335m<br>4ft 4.6in | 1.520m<br>4ft 11.8in          | 0.328m<br>1ft 0.9in                | 1.524m<br>4ft 12.0in            | 2.276m<br>7ft 5.6in    | 0.420m<br>1ft 4.5in   | 2.016m<br>6ft 7.4in | 2.450m<br>8ft 0.5in  | 1.804m<br>5ft 11.0in | 12.9                                           | 6.807m<br>22ft 4.0in  |
| 13400kg<br>29542lb | 43.0         | 3.839m<br>12ft 7.1in | -1.06                    | 1.443m<br>4ft 8.8in | 1.593m<br>5ft 2.7in           | 0.400m<br>1ft 3.7in                | 1.588m<br>5ft 2.5in             | 2.275m<br>7ft 5.6in    | 0.411m<br>1ft 4.2in   | 1.994m<br>6ft 6.5in | 2.398m<br>7ft 10.4in | 1.747m<br>5ft 8.8in  | 12.4                                           | 6.709m<br>22ft 0.1in  |
| 12400kg<br>27337lb | 30.0         | 3.835m<br>12ft 7.0in | -1.32                    | 1.389m<br>4ft 6.7in | 1.561m<br>5ft 1.5in           | 0.368m<br>1ft 2.5in                | 1.561m<br>5ft 1.5in             | 2.288m<br>7ft 6.1in    | 0.429m<br>1ft 4.9in   | 2.021m<br>6ft 7.6in | 2.443m<br>8ft 0.2in  | 1.795m<br>5ft 10.7in | 12.8                                           | 6.783m<br>22ft 3.0in  |

APM020252.MCE A

Figure 2.3.1 - Ground Clearances  
Sheet 2

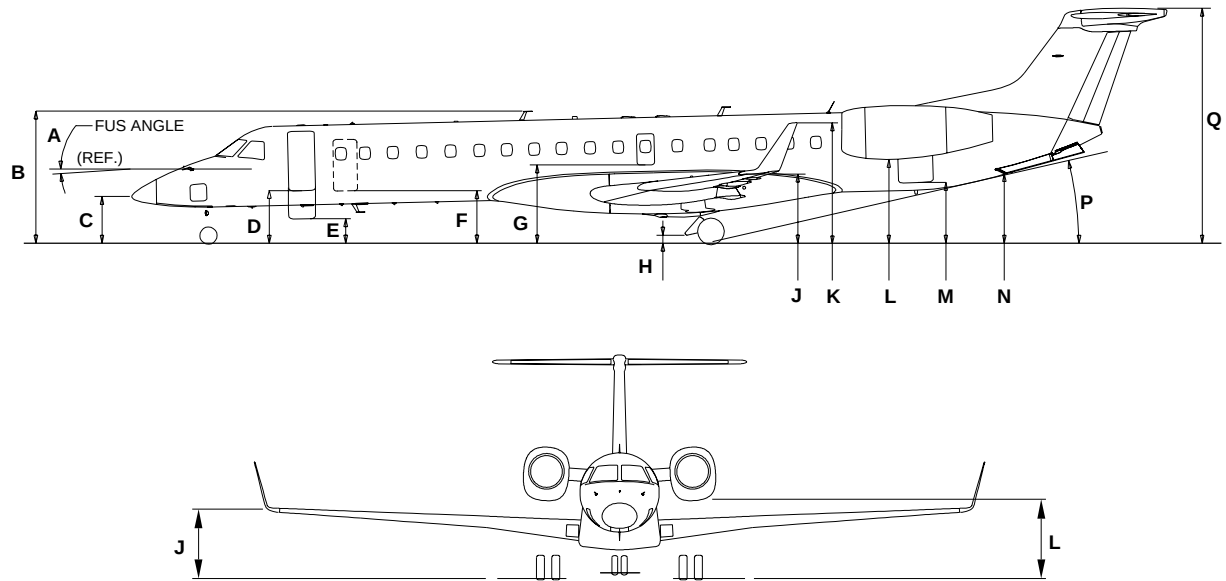


**EMB-145MP/MK - GROUND CLEARANCE**

| WEIGHT             | CG<br>(%MAC) | ANTENNA<br><b>A</b>  | FUS ANGLE<br>(DEG)<br><b>B</b> | NOSE<br><b>C</b>    | MAIN DOOR<br>(A/C FLOOR)<br><b>D</b> | MAIN DOOR<br>(OPEN, 1ST STEP)<br><b>E</b> | EMERGENCY/<br>SERVICE DOOR<br><b>F</b> | EMERGENCY<br>EXIT<br><b>G</b> | MAIN LDG<br>DOOR<br><b>H</b> | WING TIP<br><b>I</b> | NACELLE<br><b>J</b>  | BAGGAGE<br>DOOR<br><b>K</b> | TAILSKID<br>ANGULAR<br>CLEARANCE<br>(DEG)<br><b>L</b> | TAIL BOOM<br><b>M</b> |
|--------------------|--------------|----------------------|--------------------------------|---------------------|--------------------------------------|-------------------------------------------|----------------------------------------|-------------------------------|------------------------------|----------------------|----------------------|-----------------------------|-------------------------------------------------------|-----------------------|
| 21090kg<br>46495lb | 17.4         | 3.748m<br>12ft 3.6in | -1.27                          | 1.313m<br>4ft 3.7in | 1.480m<br>4ft 10.3in                 | 0.287m<br>0ft 11.3in                      | 1.479m<br>4ft 10.2in                   | 2.202m<br>7ft 2.7in           | 0.337m<br>1ft 1.3in          | 1.930m<br>6ft 4.0in  | 2.345m<br>7ft 8.3in  | 1.696m<br>5ft 6.8in         | 12.1                                                  | 6.678m<br>21ft 10.9in |
| 21090kg<br>46495lb | 43.0         | 3.765m<br>12ft 4.2in | -1.00                          | 1.383m<br>4ft 6.4in | 1.527m<br>5ft 0.1in                  | 0.334m<br>1ft 1.1in                       | 1.520m<br>4ft 11.8in                   | 2.202m<br>7ft 2.7in           | 0.331m<br>1ft 1.0in          | 1.916m<br>6ft 3.4in  | 2.312m<br>7ft 7.0in  | 1.660m<br>5ft 5.4in         | 11.8                                                  | 6.616m<br>21ft 8.5in  |
| 20990kg<br>46275lb | 17.4         | 3.748m<br>12ft 3.6in | -1.27                          | 1.313m<br>4ft 3.7in | 1.480m<br>4ft 10.3in                 | 0.288m<br>0ft 11.3in                      | 1.480m<br>4ft 10.3in                   | 2.203m<br>7ft 2.7in           | 0.338m<br>1ft 1.3in          | 1.931m<br>6ft 4.0in  | 2.346m<br>7ft 8.4in  | 1.697m<br>5ft 6.8in         | 12.1                                                  | 6.679m<br>21ft 11.0in |
| 20990kg<br>46275lb | 43.0         | 3.766m<br>12ft 4.3in | -1.00                          | 1.383m<br>4ft 6.4in | 1.527m<br>5ft 0.1in                  | 0.335m<br>1ft 1.2in                       | 1.521m<br>4ft 11.9in                   | 2.203m<br>7ft 2.7in           | 0.332m<br>1ft 1.1in          | 1.917m<br>6ft 3.5in  | 2.313m<br>7ft 7.1in  | 1.661m<br>5ft 5.4in         | 11.8                                                  | 6.616m<br>21ft 8.5in  |
| 20090kg<br>44291lb | 16.4         | 3.753m<br>12ft 3.8in | -1.29                          | 1.314m<br>4ft 3.7in | 1.483m<br>4ft 10.4in                 | 0.291m<br>0ft 11.5in                      | 1.483m<br>4ft 10.4in                   | 2.209m<br>7ft 3.0in           | 0.345m<br>1ft 1.6in          | 1.938m<br>6ft 4.3in  | 2.355m<br>7ft 8.7in  | 1.706m<br>5ft 7.2in         | 12.2                                                  | 6.691m<br>21ft 11.4in |
| 20090kg<br>44291lb | 43.0         | 3.772m<br>12ft 4.5in | -1.00                          | 1.388m<br>4ft 6.6in | 1.533m<br>5ft 0.4in                  | 0.340m<br>1ft 1.4in                       | 1.526m<br>5ft 0.1in                    | 2.209m<br>7ft 3.0in           | 0.339m<br>1ft 1.3in          | 1.923m<br>6ft 3.7in  | 2.320m<br>7ft 7.3in  | 1.668m<br>5ft 5.7in         | 11.8                                                  | 6.624m<br>21ft 8.8in  |
| 19990kg<br>44070lb | 16.4         | 3.754m<br>12ft 3.8in | -1.29                          | 1.315m<br>4ft 3.8in | 1.484m<br>4ft 10.4in                 | 0.291m<br>0ft 11.5in                      | 1.483m<br>4ft 10.4in                   | 2.210m<br>7ft 3.0in           | 0.345m<br>1ft 1.6in          | 1.939m<br>6ft 4.3in  | 2.356m<br>7ft 8.8in  | 1.707m<br>5ft 7.2in         | 12.2                                                  | 6.692m<br>21ft 11.5in |
| 19990kg<br>44070lb | 43.0         | 3.772m<br>12ft 4.5in | -1.00                          | 1.389m<br>4ft 6.7in | 1.533m<br>5ft 0.4in                  | 0.341m<br>1ft 1.4in                       | 1.527m<br>5ft 0.1in                    | 2.210m<br>7ft 3.0in           | 0.339m<br>1ft 1.3in          | 1.924m<br>6ft 3.7in  | 2.321m<br>7ft 7.4in  | 1.669m<br>5ft 5.7in         | 11.8                                                  | 6.625m<br>21ft 8.8in  |
| 19300kg<br>42549lb | 15.6         | 3.758m<br>12ft 4.0in | -1.31                          | 1.316m<br>4ft 3.8in | 1.486m<br>4ft 10.5in                 | 0.293m<br>0ft 11.5in                      | 1.486m<br>4ft 10.5in                   | 2.216m<br>7ft 3.2in           | 0.351m<br>1ft 1.8in          | 1.945m<br>6ft 4.6in  | 2.363m<br>7ft 9.0in  | 1.715m<br>5ft 7.5in         | 12.3                                                  | 6.701m<br>21ft 11.8in |
| 19300kg<br>42549lb | 39.5         | 3.773m<br>12ft 4.5in | -1.07                          | 1.377m<br>4ft 6.2in | 1.527m<br>5ft 0.1in                  | 0.334m<br>1ft 1.1in                       | 1.522m<br>4ft 10.6in                   | 2.214m<br>7ft 3.4in           | 0.345m<br>1ft 2.0in          | 1.932m<br>6ft 4.1in  | 2.333m<br>7ft 7.9in  | 1.682m<br>5ft 6.2in         | 12.0                                                  | 6.645m<br>21ft 9.6in  |
| 18700kg<br>41226lb | 15.1         | 3.762m<br>12ft 4.1in | -1.32                          | 1.317m<br>4ft 3.9in | 1.488m<br>4ft 10.6in                 | 0.296m<br>0ft 11.7in                      | 1.489m<br>4ft 10.6in                   | 2.220m<br>7ft 3.4in           | 0.356m<br>1ft 2.0in          | 1.951m<br>6ft 4.8in  | 2.370m<br>7ft 9.3in  | 1.731m<br>5ft 8.1in         | 12.3                                                  | 6.709m<br>21ft 0.1in  |
| 18700kg<br>41226lb | 43.0         | 3.782m<br>12ft 4.9in | -1.01                          | 1.397m<br>4ft 7.0in | 1.542m<br>5ft 0.7in                  | 0.349m<br>1ft 1.7in                       | 1.536m<br>5ft 0.5in                    | 2.220m<br>7ft 3.4in           | 0.350m<br>1ft 1.8in          | 1.935m<br>6ft 4.2in  | 2.332m<br>7ft 7.8in  | 1.680m<br>5ft 6.1in         | 11.9                                                  | 6.637m<br>21ft 9.3in  |
| 17100kg<br>37699lb | 43.0         | 3.795m<br>12ft 5.4in | -1.02                          | 1.407m<br>4ft 7.4in | 1.554m<br>5ft 1.2in                  | 0.361m<br>1ft 2.2in                       | 1.548m<br>5ft 0.9in                    | 2.234m<br>7ft 4.0in           | 0.364m<br>1ft 2.3in          | 1.949m<br>6ft 4.7in  | 2.348m<br>7ft 8.4in  | 1.696m<br>5ft 6.8in         | 12.0                                                  | 6.654m<br>21ft 10.0in |
| 15500kg<br>34172lb | 12.0         | 3.787m<br>12ft 5.1in | -1.41                          | 1.324m<br>4ft 4.1in | 1.504m<br>4ft 11.2in                 | 0.311m<br>1ft 0.2in                       | 1.506m<br>4ft 11.3in                   | 2.251m<br>7ft 4.6in           | 0.389m<br>1ft 3.3in          | 1.986m<br>6ft 6.2in  | 2.411m<br>7ft 10.9in | 1.764m<br>5ft 9.4in         | 12.6                                                  | 6.761m<br>22ft 2.2in  |
| 13000kg<br>28660lb | 12.0         | 3.815m<br>12ft 6.2in | -1.48                          | 1.338m<br>4ft 4.7in | 1.523m<br>4ft 12.0in                 | 0.331m<br>1ft 1.0in                       | 1.527m<br>5ft 0.1in                    | 2.283m<br>7ft 5.9in           | 0.423m<br>1ft 4.7in          | 2.022m<br>6ft 7.6in  | 2.452m<br>7ft 0.5in  | 1.807m<br>5ft 11.1in        | 12.9                                                  | 6.810m<br>22ft 4.1in  |
| 13000kg<br>28660lb | 43.0         | 3.842m<br>12ft 7.3in | -1.05                          | 1.349m<br>4ft 9.0in | 1.598m<br>5ft 2.9in                  | 0.405m<br>1ft 3.9in                       | 1.592m<br>5ft 2.7in                    | 2.283m<br>7ft 5.9in           | 0.413m<br>1ft 4.3in          | 2.000m<br>6ft 6.7in  | 2.400m<br>7ft 10.5in | 1.748m<br>5ft 8.8in         | 12.4                                                  | 6.709m<br>22ft 0.1in  |
| 12000kg<br>26455lb | 40.0         | 3.852m<br>12ft 7.7in | -1.14                          | 1.442m<br>4ft 8.8in | 1.598m<br>5ft 2.9in                  | 0.406m<br>1ft 4.0in                       | 1.595m<br>5ft 2.8in                    | 2.298m<br>7ft 6.5in           | 0.430m<br>1ft 4.9in          | 2.019m<br>6ft 7.5in  | 2.425m<br>7ft 11.5in | 1.775m<br>5ft 9.9in         | 12.6                                                  | 6.744m<br>22ft 1.5in  |

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**Figure 2.3.1 - Ground Clearances  
Sheet 3**



EMB-145XR - GROUND CLEARANCE

| WEIGHT             | CG<br>(%MAC) | FUS<br>ANGLE<br>(DEG.) | ANTENNA<br>A          | NOSE<br>B            | MAIN<br>DOOR<br>C     | MAIN<br>DOOR<br>(OPEN,<br>1ST STEP)<br>D | EMERG.<br>SERVICE<br>DOOR<br>E | EMERG.<br>EXIT<br>F  | MAIN LDG<br>DOOR<br>G | WING TIP<br>H         | WINGLET<br>TIP<br>J   | NACELLE<br>K          | BAGGAGE<br>DOOR<br>L  | TAIL BUMPER<br>M     | TAILSKID<br>ANGLE<br>N | TAIL BOOM<br>P         | TAIL BOOM<br>Q |
|--------------------|--------------|------------------------|-----------------------|----------------------|-----------------------|------------------------------------------|--------------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|------------------------|------------------------|----------------|
| 24200kg<br>53352lb | 20.4%        | -1.30                  | 3.7372m<br>12ft 3.1in | 1.2890m<br>4ft 2.8in | 1.4591m<br>4ft 9.4in  | 0.2666m<br>10.5in                        | 1.4593m<br>4ft 9.5in           | 2.1832m<br>7ft 2in   | 0.3235m<br>1ft .74in  | 2.0098m<br>6ft 7.1in  | 3.3968m<br>11ft 1.7in | 2.3333m<br>7ft 7.9in  | 1.6870m<br>5ft 6.4in  | 1.6360m<br>5ft 4.4in | 12.10                  | 6.6729m<br>21ft 10.7in |                |
| 24200kg<br>53352lb | 38.0%        | -1.14                  | 3.7467m<br>12ft 3.5in | 1.3318m<br>4ft 4.4in | 1.4877m<br>4ft 10.6in | 0.2952m<br>11.6in                        | 1.4842m<br>4ft 10.4in          | 2.1832m<br>7ft 2in   | 0.3199m<br>1ft .60in  | 1.9988m<br>6ft 6.7in  | 3.3844m<br>11ft 1.2in | 2.3135m<br>7ft 7.0in  | 1.6647m<br>5ft 5.5in  | 1.6090m<br>5ft 3.4in | 11.90                  | 6.6343m<br>21ft 9.2in  |                |
| 24100kg<br>53131lb | 20.4%        | -1.30                  | 3.7377m<br>12ft 3.2in | 1.2893m<br>4ft 2.8in | 1.4595m<br>4ft 9.5in  | 0.2670m<br>10.5in                        | 1.4597m<br>4ft 9.5in           | 2.1837m<br>7ft 2in   | 0.3241m<br>1ft .76in  | 2.0104m<br>6ft 7.1in  | 3.3975m<br>11ft 1.8in | 2.3340m<br>7ft 7.9in  | 1.6877m<br>5ft 6.4in  | 1.6370m<br>5ft 4.5in | 12.11                  | 6.737m<br>21ft 10.7in  |                |
| 24100kg<br>53131lb | 38.0%        | -1.14                  | 3.7472m<br>12ft 3.5in | 1.3322m<br>4ft 4.5in | 1.4882m<br>4ft 10.6in | 0.2956m<br>11.6in                        | 1.4847m<br>4ft 10.5in          | 2.1837m<br>7ft 2in   | 0.3205m<br>1ft .62in  | 1.9994m<br>6ft 6.7in  | 3.3849m<br>11ft 1.3in | 2.3141m<br>7ft 7.1in  | 1.6654m<br>5ft 5.6in  | 1.6100m<br>5ft 3.4in | 11.90                  | 6.6350m<br>21ft 9.2in  |                |
| 20000kg<br>44092lb | 16.4%        | -1.38                  | 3.7592m<br>12ft 4.0in | 1.2950m<br>4ft 3.0in | 1.4719m<br>4ft 10.0in | 0.2795m<br>11.0in                        | 1.4739m<br>4ft 10in            | 2.2097m<br>7ft 3in   | 0.3517m<br>1ft 1.9in  | 2.0415m<br>6ft 8.4in  | 3.4293m<br>11ft 3.0in | 2.3693m<br>7ft 9.3in  | 1.7242m<br>5ft 7.9in  | 1.6760m<br>5ft 6in   | 12.39                  | 6.7178m<br>22ft 0.5in  |                |
| 20000kg<br>44092lb | 39.3%        | -1.15                  | 3.7724m<br>12ft 4.5in | 1.3550m<br>4ft 5.4in | 1.5120m<br>4ft 11.5in | 0.3195m<br>1ft 0.6in                     | 1.5088m<br>4ft 11.4in          | 2.2096m<br>7ft 3in   | 0.3466m<br>1ft 1.7in  | 2.0260m<br>6ft 7.8in  | 3.4116m<br>11ft 2.3in | 2.3413m<br>7ft 8.2in  | 1.6927m<br>5ft 6.6in  | 1.6370m<br>5ft 4.5in | 12.10                  | 6.6635m<br>21ft 10.3in |                |
| 19300kg<br>42549lb | 39.5%        | -1.15                  | 3.7775m<br>12ft 4.7in | 1.3597m<br>4ft 5.5in | 1.5169m<br>4ft 11.7in | 0.3243m<br>1ft 0.8in                     | 1.5137m<br>4ft 11.6in          | 2.2148m<br>7ft 3.2in | 0.3518m<br>1ft 1.9in  | 2.0314m<br>6ft 8.0in  | 3.4170m<br>11ft 2.5in | 2.3468m<br>7ft 8.4in  | 1.6983m<br>5ft 6.9in  | 1.6430m<br>5ft 4.7in | 12.14                  | 6.6692m<br>21ft 10.6in |                |
| 17100kg<br>37699lb | 43.0%        | -1.10                  | 3.7998m<br>12ft 5.6in | 1.3922m<br>4ft 6.8in | 1.5450m<br>5ft 8in    | 0.3525m<br>1ft 1.9in                     | 1.5407m<br>5ft 0.7in           | 2.2342m<br>7ft 4in   | 0.3702m<br>1ft 2.6in  | 2.0475m<br>6ft 8.6in  | 3.4327m<br>11ft 3.2in | 2.3602m<br>7ft 8.9in  | 1.7109m<br>5ft 7.4in  | 1.6540m<br>5ft 5.1in | 12.22                  | 6.6769m<br>21ft 10.9in |                |
| 15500kg<br>34172lb | 12.0%        | -1.50                  | 3.7929m<br>12ft 5.3in | 1.3057m<br>4ft 3.7in | 1.4925m<br>4ft 10.8in | 0.3001m<br>11.8in                        | 1.4970m<br>4ft 10.9in          | 2.2501m<br>7ft 4.6in | 0.3946m<br>1ft 3.5in  | 2.0895m<br>6ft 10.3in | 3.4784m<br>11ft 4.9in | 2.4235m<br>7ft 11.4in | 1.7801m<br>5ft 10in   | 1.7350m<br>5ft 8.3in | 12.81                  | 6.7850m<br>22ft 3.1in  |                |
| 13800kg<br>30424lb | 12.0%        | -1.54                  | 3.8111m<br>12ft 6.0in | 1.3148m<br>4ft 3.8in | 1.5054m<br>4ft 11.3in | 0.3130m<br>1ft 3in                       | 1.5109m<br>4ft 11.5in          | 2.2709m<br>7ft 5.4in | 0.4164m<br>1ft 4.4in  | 2.1133m<br>6ft 11.2in | 3.5026m<br>11ft 5.9in | 2.4498m<br>8ft 0.5in  | 1.8071m<br>5ft 11in   | 1.7640m<br>5ft 9.4in | 13.01                  | 6.8165m<br>24ft 4.4in  |                |
| 13800kg<br>30424lb | 43.0%        | -1.11                  | 3.8361m<br>12ft 7.0in | 1.4257m<br>4ft 8.1in | 1.5798m<br>5ft 2.2in  | 0.3872m<br>1ft 3.2in                     | 1.5758m<br>5ft 2.0in           | 2.2713m<br>7ft 5.4in | 0.4076m<br>1ft 4.0in  | 2.0855m<br>6ft 10.1in | 3.4708m<br>11ft 4.7in | 2.3989m<br>7ft 10.4in | 1.7498m<br>5ft 8.9in  | 1.6930m<br>5ft 6.7in | 12.49                  | 6.7171m<br>22ft 0.5in  |                |
| 12800kg<br>28219lb | 30.5%        | -1.37                  | 3.8337m<br>12ft 6.9in | 1.3718m<br>4ft 6.0in | 1.5478m<br>5ft 0.9in  | 0.3553m<br>1ft 2.0in                     | 1.5495m<br>5ft 1.0in           | 2.2836m<br>7ft 5.9in | 0.4255m<br>1ft 4.8in  | 2.1148m<br>6ft 11.3in | 3.5025m<br>11ft 5.9in | 2.4420m<br>8ft 0.14in | 1.7967m<br>5ft 10.7in | 1.7480m<br>5ft 8.8in | 12.89                  | 6.7893m<br>22ft 3.3in  |                |

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Figure 2.3.1 - Ground Clearances  
Sheet 4

## 2.4 Interior Arrangements

### 2.4.1 Standard Interior Arrangement

The standard interior arrangement provides accommodation for two pilots, one flight observer, one flight attendant, and 50 passengers. One additional flight attendant seat is available as an option.

### 2.4.2 Cockpit

The "quiet and dark" cockpit is designed to accommodate the pilots with comfort during all flight phases, with minimum workload and maximum safety. The cockpit is provided with two pilot seats, a foldable flight observer seat, control columns and pedals, control pedestal, left, right, and aft consoles, as well as main, overhead, circuit breaker, and glareshield panel. A sun shade is provided for each pilot and the compartment is separated from the passenger cabin by a partition with a lockable door.

### 2.4.3 Panels

The main instrument panel displays the main navigation, engine, and systems indications, through the PFD, MFD, and EICAS displays, ELT reset, the audio selection, and the landing gear and pedal electric adjustment controls. It also accommodates the standby instruments and displays reversionary functions. One of the different possible configurations of the main instrument panel includes radio management units.

A glareshield panel is located over the main panel, including the master caution and master warning lights, flight control, display control, and lighting intensity controls. One of the different possible configurations of the glareshield panel includes dual radar control panels.

An overhead panel provides the hydraulic, electrical, powerplant, APU, fire protection, environmental, and external and internal lighting controls. The circuit breakers, in ordered and grouped positions, are placed in a panel aft of the overhead panel.

### 2.4.4 Left and Right Consoles

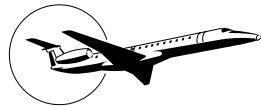
The left and right consoles accommodate the nose wheel steering handle, ashtrays, holders for cups, headset, and microphone, oxygen masks and oxygen control, a waste container, rechargeable flashlight, and recesses for crew publications.

### 2.4.5 Control Pedestal

The control pedestal, located between the two pilots, presents the engine control levers, the engine thrust rating panel, the speed brake lever, the emergency/parking brake lever, flight control switches (including flap selection), the pressurization control, the EICAS reversionary panel, radar control panel, HF control (optional), aileron/elevator disconnect handles, Autopilot control, SPS, T/O configuration switch, and an FMS control display unit. One of different possible configurations of the control pedestal includes radio management units.

### 2.4.6 Pilot Seat

The pilot seat is provided with longitudinal, vertical (electrically actuated), seat back, and lumbar adjustments. The seat is attached to tracks which permit the horizontal adjustments.



An extended longitudinal travel permits pilot rest during long cruise flights (pilot foot rests are provided at the bottom of the main instrument panel).

#### **2.4.7 Passenger Cabin**

A 0.43 m (17 in) wide aisle, with a recessed floor leaving a 1.82 m (6 ft) height, allows for stand-up walking and the use of standard catering trolleys. The passenger cabin is 2.10 m (6 ft 11 in) wide and the standard configuration accommodates 50 passengers in 16 double seats on the right side, and 18 single seats on the left side, with a 31 in pitch. Different cabin layouts with increased capacity for galley and wardrobe are available as optional models.

#### **2.4.8 Passenger Seat**

The ergonomic reclining seats were designed for a 0.79 m (31 in) pitch, with comfortable leg room. Double seats incorporate fold-up center arm rests. All seats are offered with snack tables, magazine pouches, underseat life-vest stowage, seat belts, and an adequate underseat room for carry-on articles.

#### **2.4.9 Passenger Service Unit**

The passenger service unit contains gasper air outlets, reading lights, loudspeakers, attendant calling buttons, warnings, and oxygen dispensing unit for each seat.

#### **2.4.10 Overhead Bin**

The overhead bin is divided into eleven sections and is installed on the right side of the cabin. The bins have a total volume of 1.90 m<sup>3</sup> (67.1 ft<sup>3</sup>) and is designed for a 290 kg (639 lb) loading.

#### **2.4.11 Wardrobe**

A wardrobe with a 0.93 m<sup>3</sup> (32.9 ft<sup>3</sup>) and 70 kg (154 lb) capacity is offered for carry-on articles on the forward right side of the passenger cabin between the galley and cockpit partition.

#### **2.4.12 Stowage Compartment**

A stowage compartment with a 0.45 m<sup>3</sup> (16 ft<sup>3</sup>) and 40 kg (88 lb) capacity is also offered on the forward right side of the passenger cabin, close to the service door. Such compartment is modular so that it can be replaced by one or two half trolleys, as in the optional models.

#### **2.4.13 Flight Attendant Station**

The standard flight attendant station is positioned at the cockpit partition, close to the main door. The seat is of the fold-away type, to avoid interference with the door passageway. A seat for a second flight attendant is available, as an option, at the aft end of the aisle, standing in front of the lavatory door. When not in use, adequate mechanisms allow its sliding against the lavatory wall, behind the last double-seat row.

The attendant seats are made up of machined parts combined with flat sandwich panels of graphite and Nomex honeycomb core.

## 2.4.14 Lavatory

The lavatory is installed at the aft cabin and contains a washbasin, waste container, ashtray, mirror, paper dispenser, automatic fire extinguisher, smoke detection system, and a recirculating toilet unit. A toilet shroud and a ventilation system, at the cabinet and waste tank, assure an odorless environment.

## 2.4.15 Galley

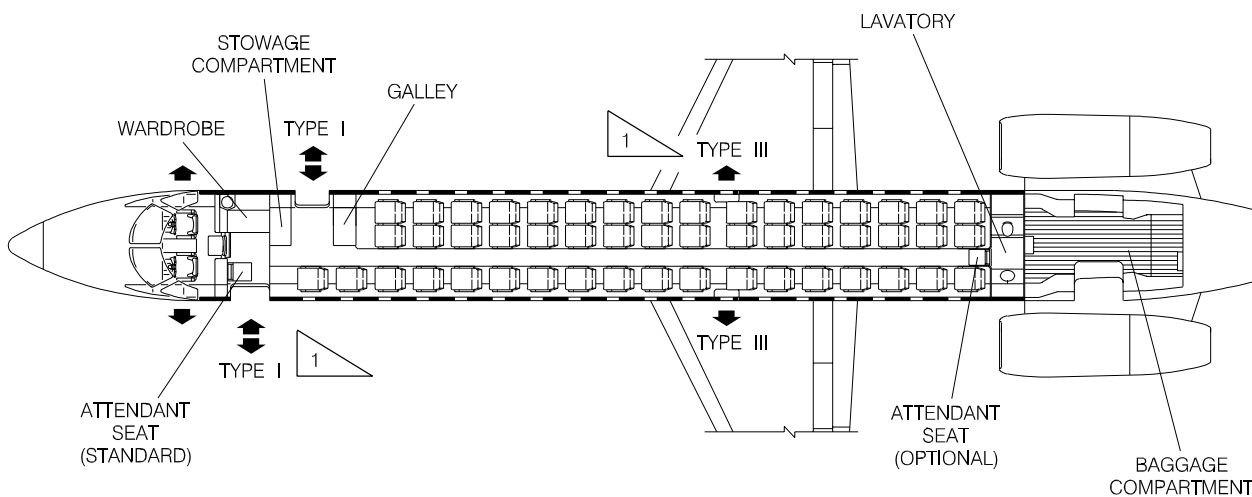
The galley is installed in the forward passenger cabin.

## 2.4.16 Baggage Compartment

The baggage compartment complies with the FAR-25 "class D" requirements (standard) or FAR-25 "class C" (optional), presenting an available volume of 9.21 m<sup>3</sup> (325 ft<sup>3</sup>) and maximum loading of 1200 kg (2645 lb). The floor is designed for 390 kg/m<sup>2</sup> (80 lb/ft<sup>2</sup>) uniform distributed loading, and is provided with anchor plates for high-density load tie-down.



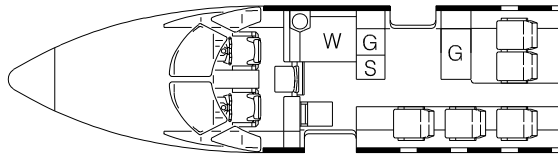
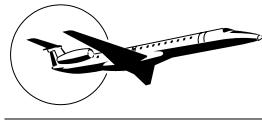
| CARGO/BAGGAGE VOLUME-ft <sup>3</sup> (m <sup>3</sup> ) |             |
|--------------------------------------------------------|-------------|
| WARDROBE                                               | 32.9 (0.93) |
| STOWAGE COMPARTMENT                                    | 16 (0.45)   |
| GALLEY                                                 | 34.8 (0.99) |
| BAGGAGE COMPARTMENT                                    | 325 (9.2)   |
| OVERHEAD BIN                                           | 67.1 (1.9)  |
| UNDERSEAT VOLUME                                       | 79.8 (2.3)  |



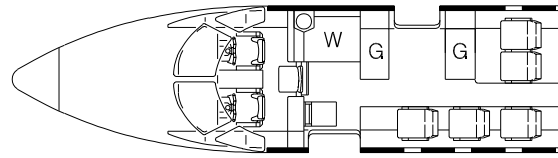
TYPE I AND TYPE III ACCORDING TO FAR 25-PAR. 25-807

APM020010.MCE A

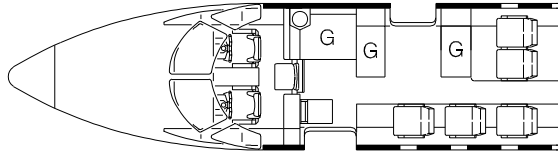
**Figure 2.4.1 - EMB-145 Interior Arrangements-Basic Configuration**



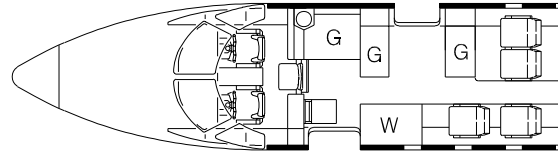
**OPTION 1**



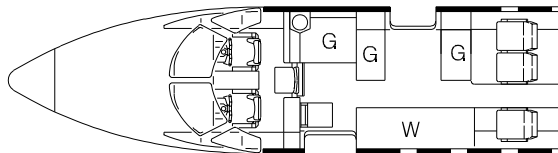
**OPTION 2**



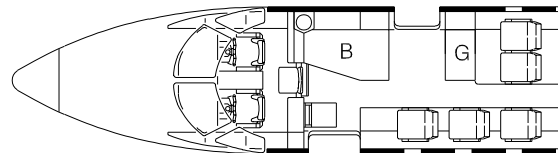
**OPTION 3**



**OPTION 4**



**OPTION 5**

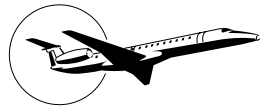


**OPTION 6**

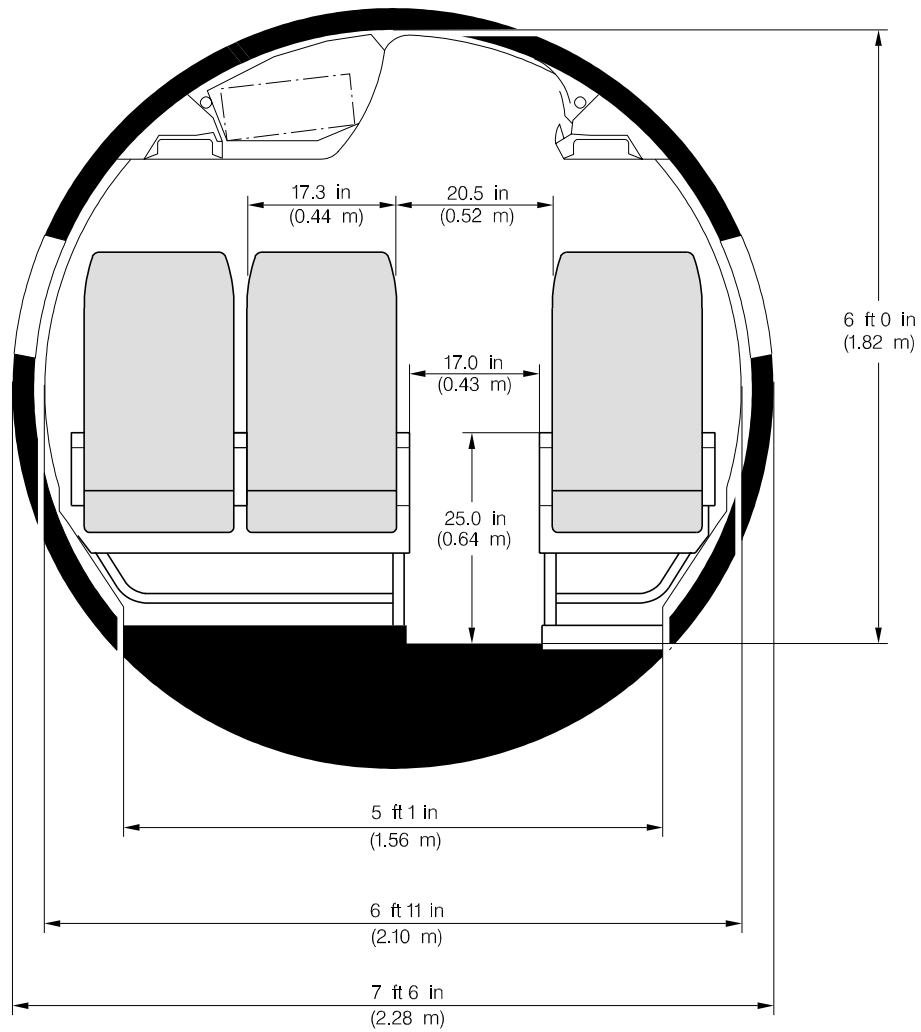
| ITEMS                                                            | OPTION 1    | OPTION 2    | OPTION 3    | OPTION 4    | OPTION 5    | OPTION 6A   |
|------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| PASSENGERS                                                       | 50          | 50          | 50          | 49          | 48          | 50          |
| HALF TROLLEY                                                     | 3           | 4           | 6           | 6           | 6           | –           |
| 2/3 HALF TROLLEY                                                 | –           | –           | –           | –           | –           | 6           |
| GALLEY VOLUME (G)<br>m <sup>3</sup> (cu.ft)                      | 1.27 (44.7) | 1.49 (52.7) | 2.42 (85.4) | 2.42 (85.4) | 2.42 (85.4) | 2.42 (85.4) |
| STOWAGE<br>VOLUME (S)<br>m <sup>3</sup> (cu.ft)                  | 0.17 (6.0)  | –           | –           | –           | –           | 0.69 (24.6) |
| CATERING<br>lb (kg)                                              | 217 (477)   | 257 (565)   | 320 (705)   | 320 (705)   | 320 (705)   | 153 (235)   |
| WARDROBE<br>VOLUME (W)<br>m <sup>3</sup> (cu.ft)                 | 0.93 (32.9) | 0.93 (32.9) | –           | 0.57 (20.2) | 1.07 (37.6) | 1.12 (39.6) |
| EMERGENCY<br>EQUIPMENT<br>STOWAGE UNIT<br>m <sup>3</sup> (cu.ft) | 0.11 (3.9)  | 0.11 (3.9)  | 0.11 (3.9)  | –           | –           | 0.11 (3.9)  |

APM020011.MCE B

*Figure 2.4.2 - EMB-145 Interior Arrangements-Optional Configuration*



## 2.5 Passenger Cabin Cross-Section

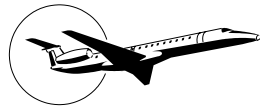


APM020012.MCE A

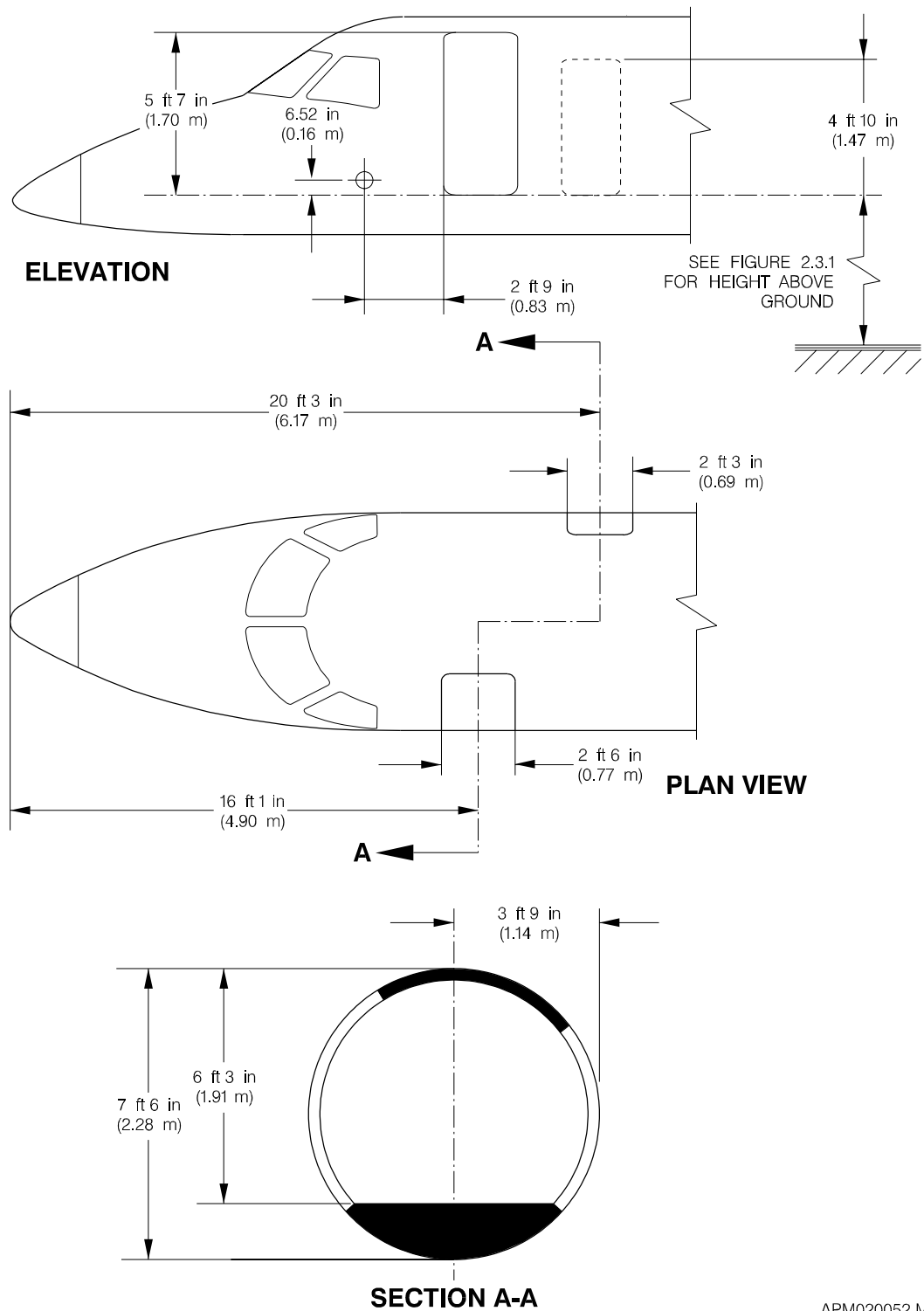
Figure 2.5.1 - EMB-145 Passenger Cabin Cross-Section

## **2.6 Lower Compartment Containers**

The EMB-145 aircraft does not have lower compartment containers.

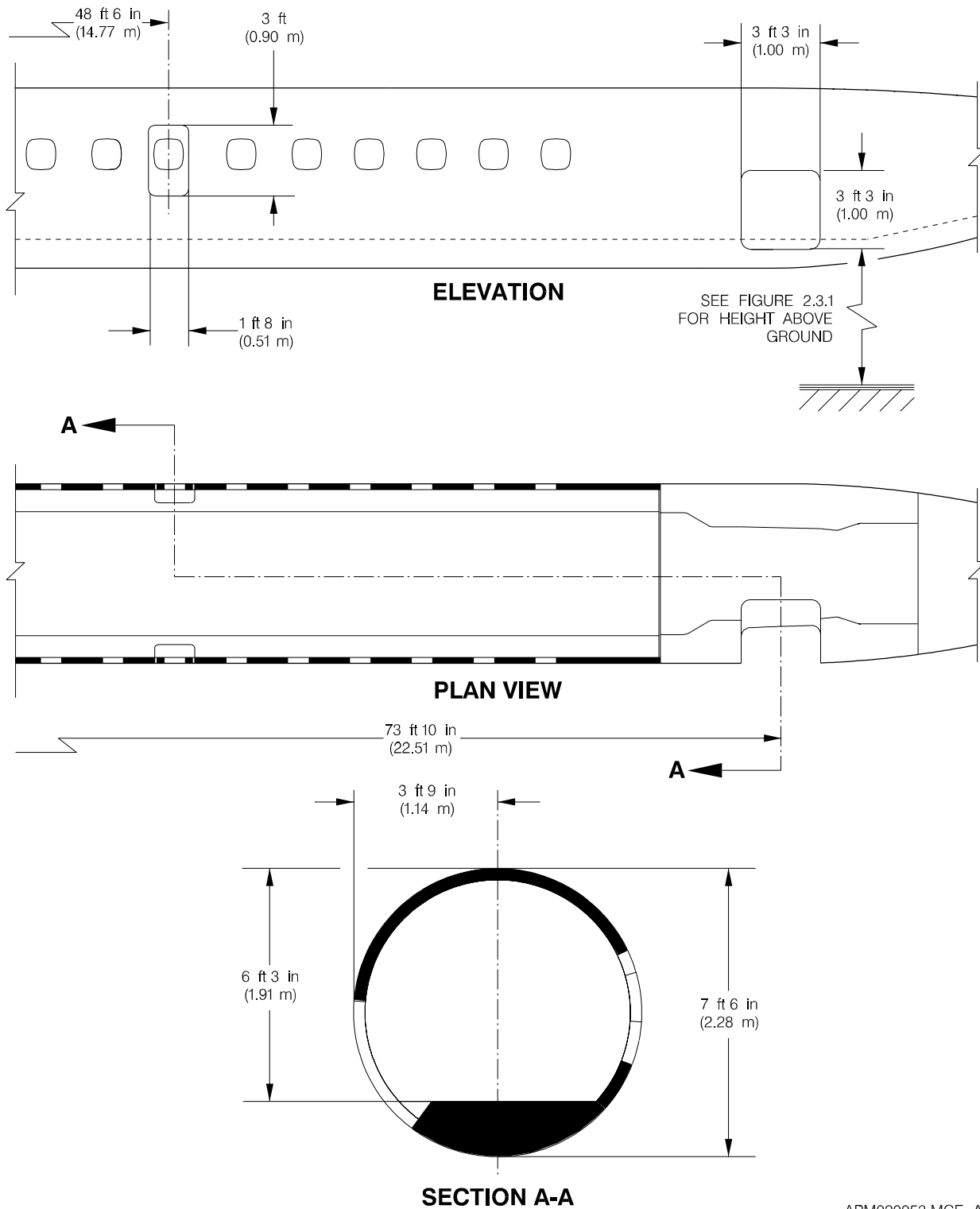
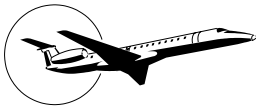


## 2.7 Door Clearances



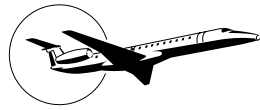
APM020052.MCE B

*Figure 2.7.1 - EMB-145 Door Clearances  
Sheet 1*



APM020053.MCE A

*Figure 2.7.1 - EMB-145 Door Clearances  
Sheet 2*



### 3. AIRPLANE PERFORMANCE

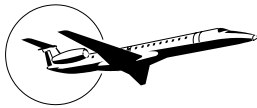
#### 3.1 General Information

Section 3.2 presents payload x range information for a specific long range, cruise altitude, and the fuel reserve condition shown.

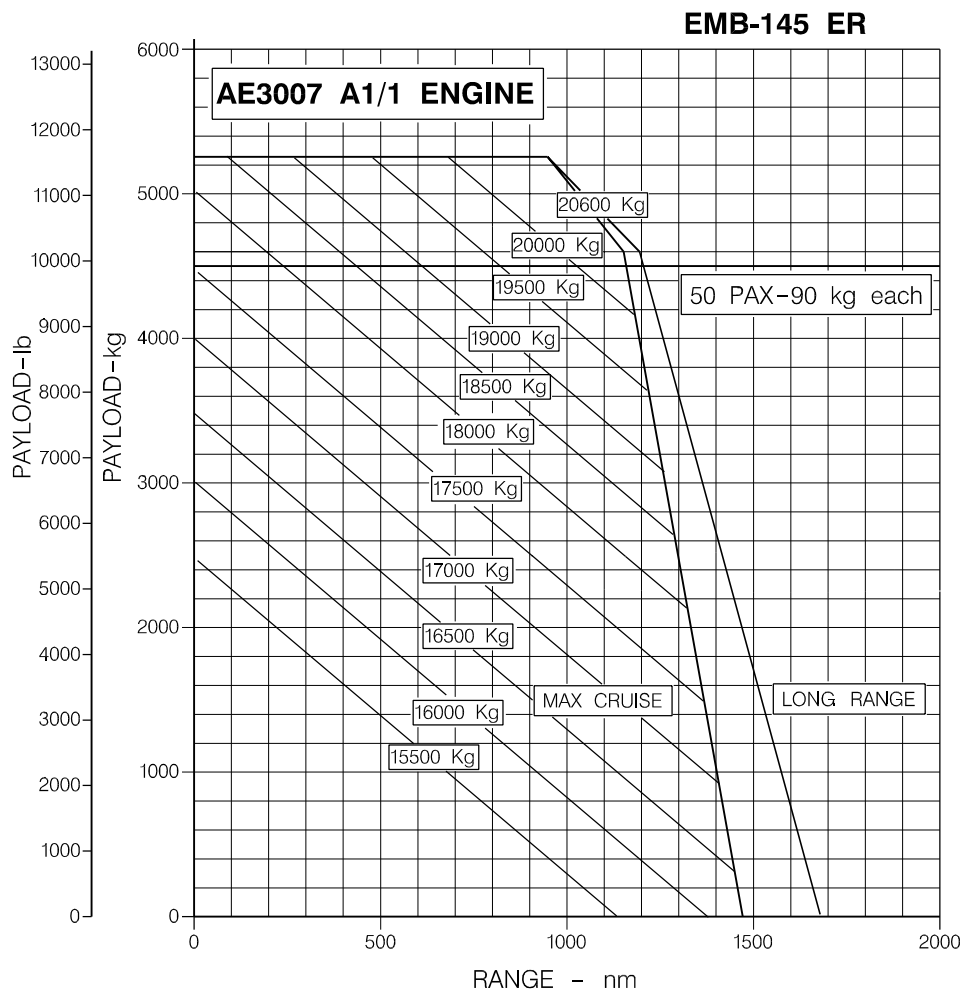
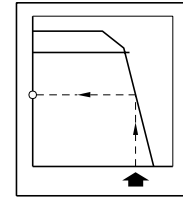
Sections 3.3 and 3.4 represent FAR takeoff and landing runway length requirements for FAA certification. Standard day temperatures for the altitudes shown are tabulated below:

Table 3.1.1 - Standard Day Temperatures x Elevation

| ELEVATION |      | STANDARD DAY TEMP |      |
|-----------|------|-------------------|------|
| ft        | m    | °F                | °C   |
| 0         | 0    | 59                | 15   |
| 2000      | 610  | 51.9              | 11.6 |
| 4000      | 1220 | 44.7              | 7.1  |
| 6000      | 1830 | 37.6              | 3.1  |
| 8000      | 2440 | 30.5              | -0.8 |



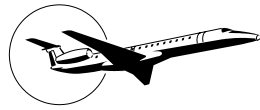
### 3.2 Payload x Range



**NOTES:** FLIGHT LEVEL.....370  
RESERVE.....100nm ALTERNATE + 45min HOLDING  
MAX TAKEOFF WEIGHT.....20600 kg  
MAX ZERO FUEL WEIGHT.....17100 kg  
BASIC OPERATING WEIGHT.....11843 kg  
MAX USABLE FUEL.....4173 kg

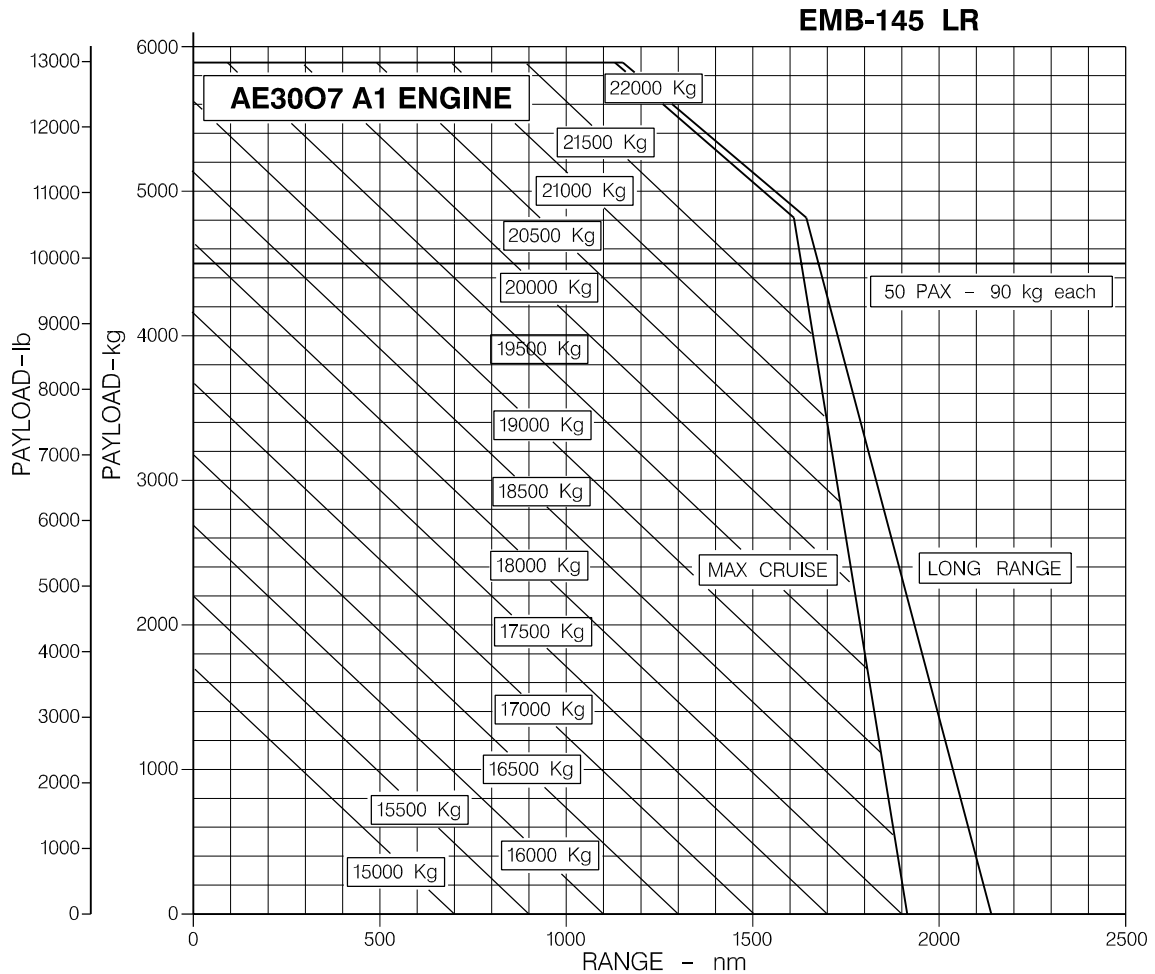
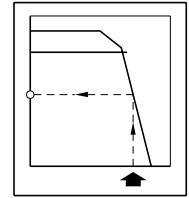
APM030118.MCE B

*Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser*  
**Sheet 1**



PAYLOAD X RANGE

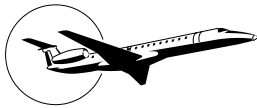
ISA



**NOTES:** FLIGHT LEVEL.....370  
RESERVE.....100 nm ALTERNATE + 45 min HOLDING  
MAX TAKEOFF WEIGHT.....21990 kg (48480 lb)  
MAX ZERO FUEL WEIGHT.....17900 kg (39463 lb)  
BASIC OPERATING WEIGHT.....12010 kg (26477 lb)  
MAX USABLE FUEL.....5187 kg (11435 lb)

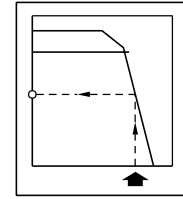
APM030117.MCE B

Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser  
Sheet 2

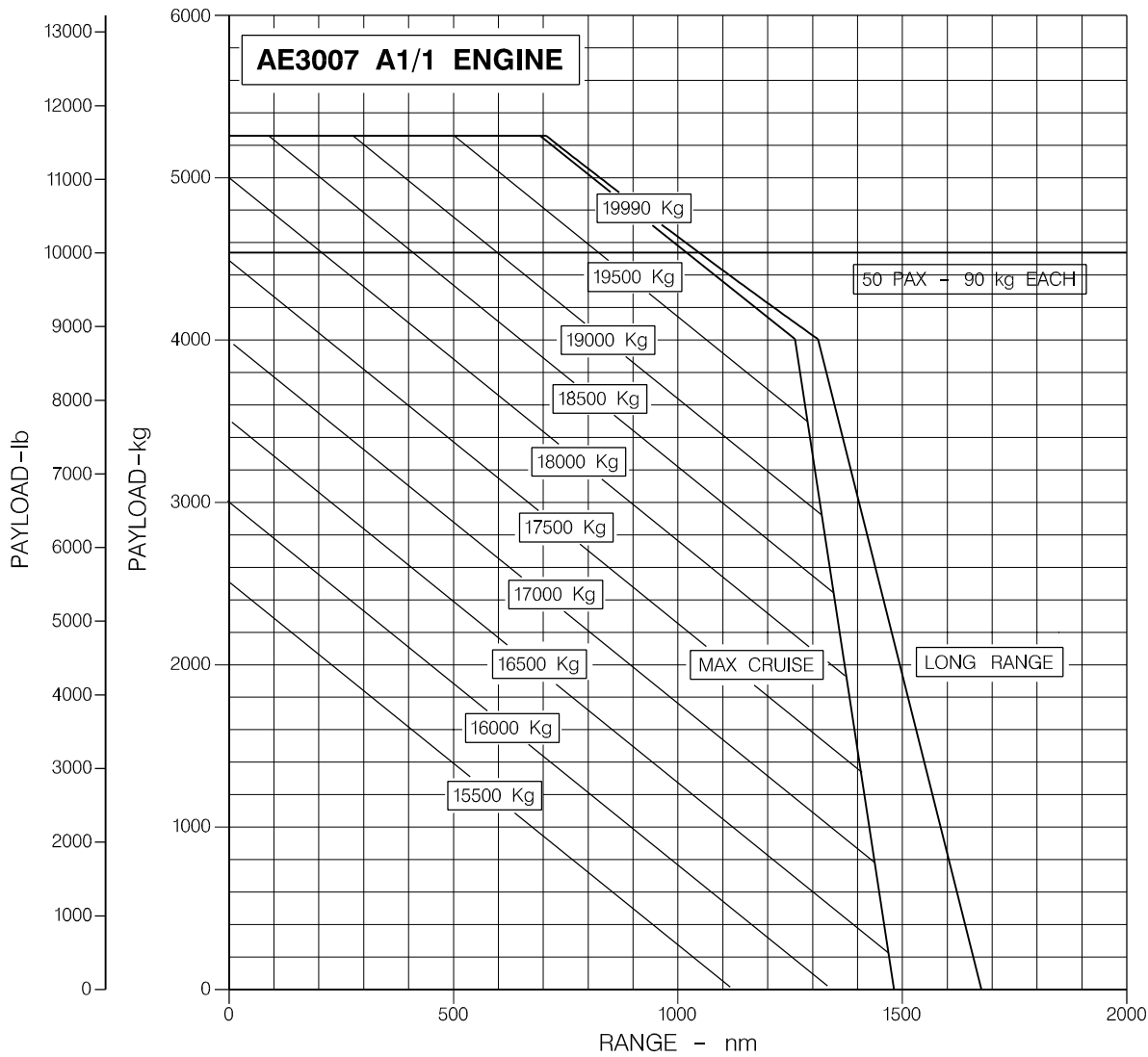


**PAYLOAD X RANGE**

ISA



**EMB-145 EU**



**NOTES:** FLIGHT LEVEL.....370  
RESERVE.....100 nm ALTERNATE + 45 min HOLDING  
MAX TAKEOFF WEIGHT.....19990 kg (44070 lb)  
MAX ZERO FUEL WEIGHT.....17100 kg (37699 lb)  
BASIC OPERATING WEIGHT.....11843 kg (26109 lb)  
MAX USABLE FUEL.....4173 kg (9200 lb)

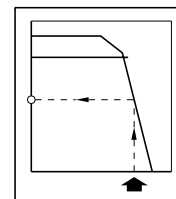
APM030119.MCE B

*Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser*  
**Sheet 3**

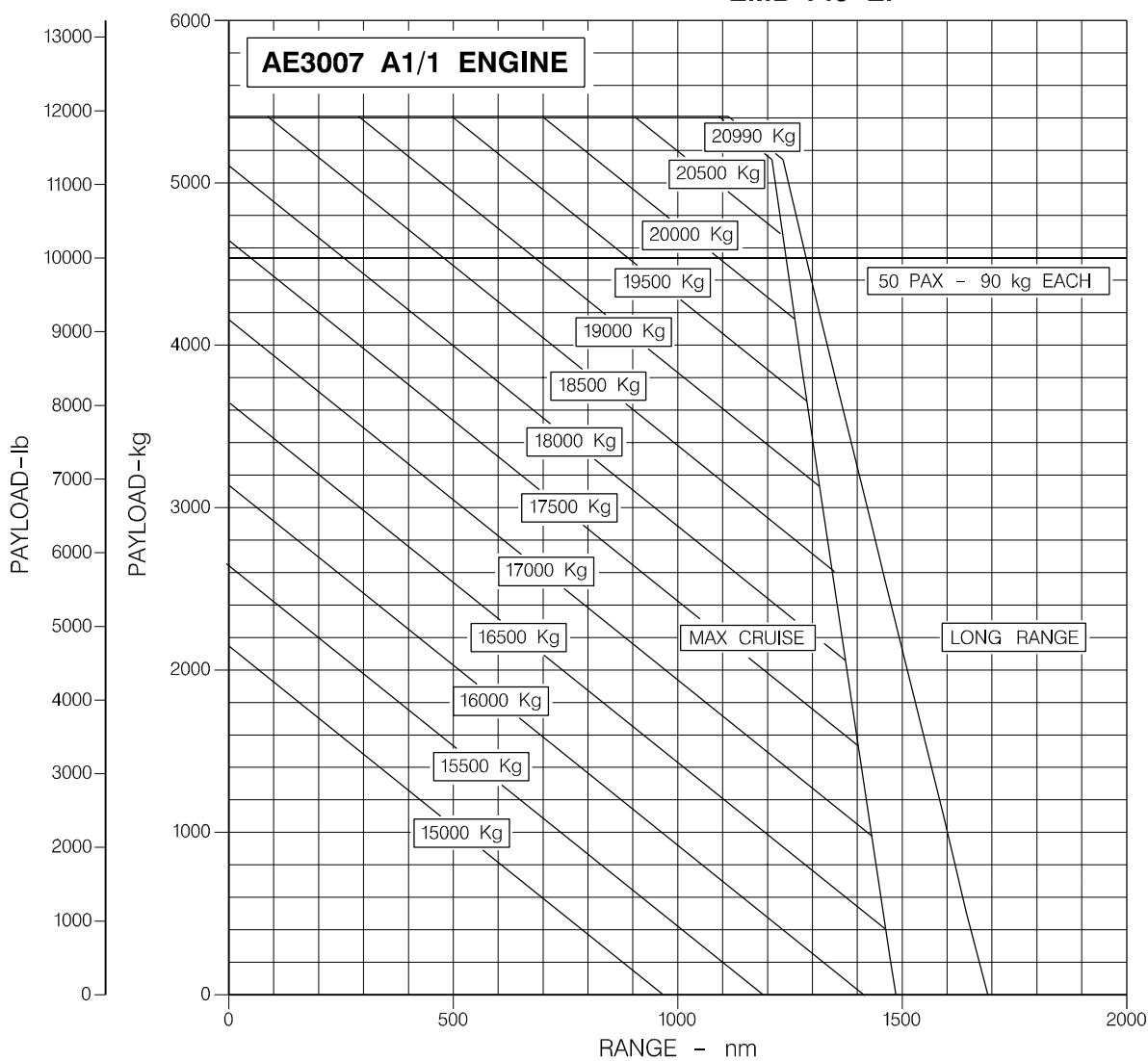


PAYLOAD VS RANGE

ISA



EMB-145 EP



**NOTES:** FLIGHT LEVEL.....370  
RESERVE.....100 nm ALTERNATE + 45 min HOLDING  
MAX TAKEOFF WEIGHT.....20990 kg (46275 lb)  
MAX ZERO FUEL WEIGHT.....17100 kg (37699 lb)  
BASIC OPERATING WEIGHT.....11690 kg (25772 lb)  
MAX USABLE FUEL.....4173 kg (9199 lb)

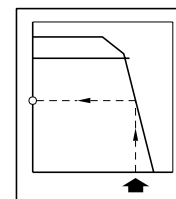
APM030120.MCE B

Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser  
Sheet 4

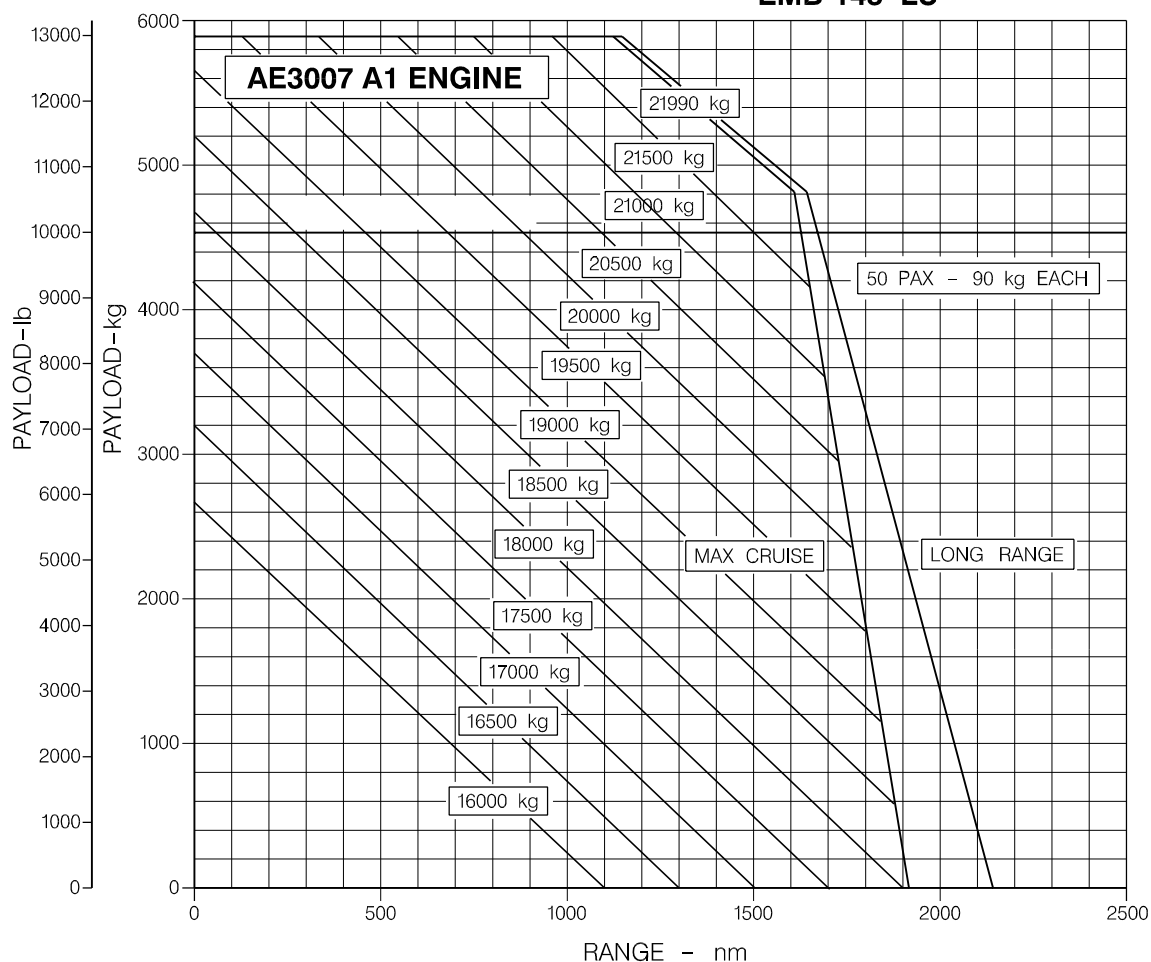


**PAYLOAD X RANGE**

ISA



**EMB-145 LU**



**NOTES:** FLIGHT LEVEL.....370  
 RESERVE.....100 nm ALTERNATE + 45 min HOLDING  
 MAX TAKEOFF WEIGHT.....21990 kg (48480 lb)  
 MAX ZERO FUEL WEIGHT.....17900 kg (39463 lb)  
 BASIC OPERATING WEIGHT.....12010 kg (26478 lb)  
 MAX USABLE FUEL.....5187 kg (11435 lb)

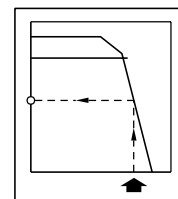
APM030352.MCE A

*Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser*  
**Sheet 5**

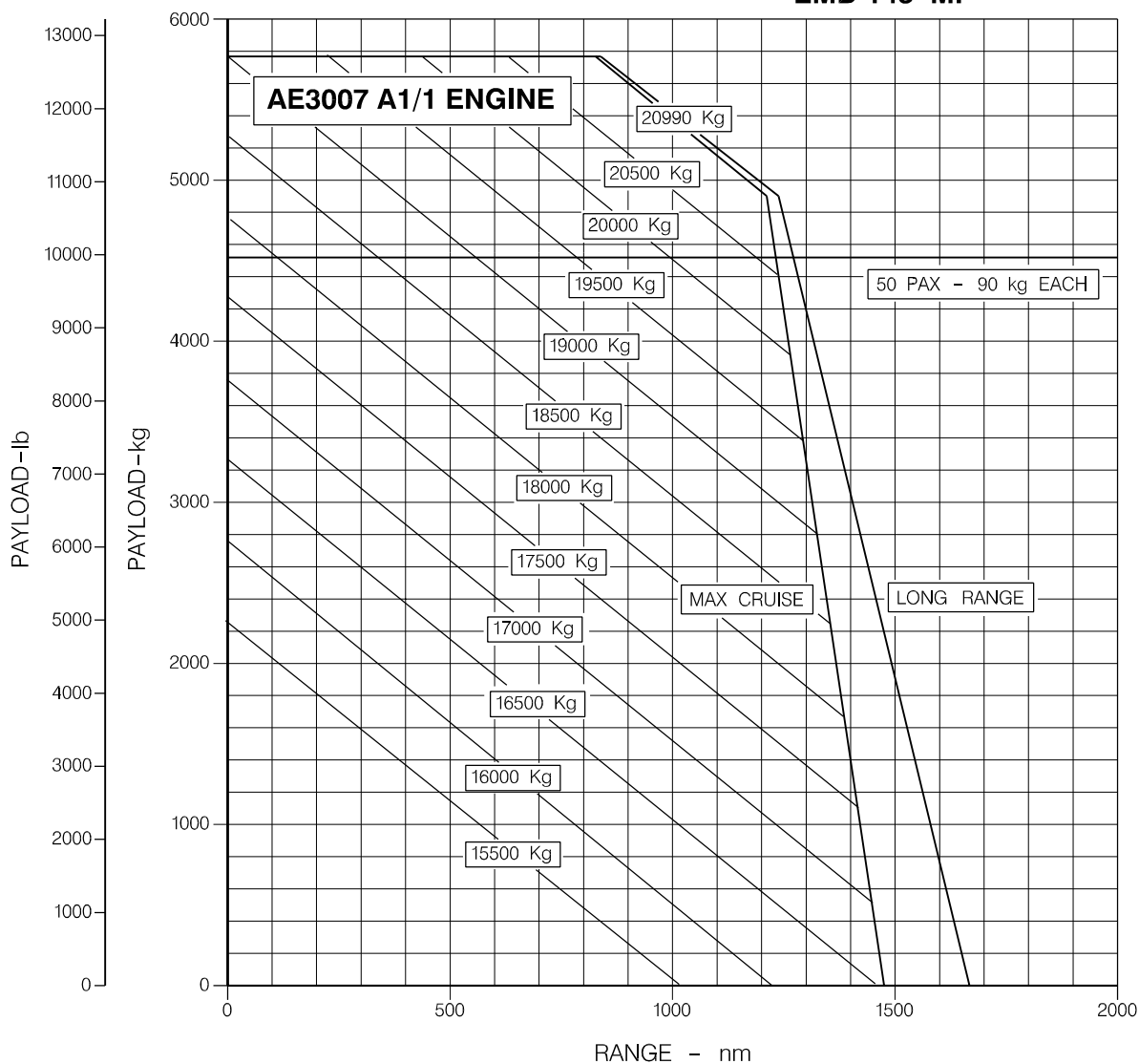


PAYLOAD X RANGE

ISA



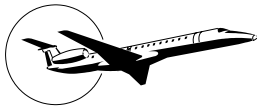
EMB-145 MP



**NOTES:** FLIGHT LEVEL.....370  
RESERVE.....100 nm ALTERNATE + 45 min HOLDING  
MAX TAKEOFF WEIGHT.....20990kg (46275 lb)  
MAX ZERO FUEL WEIGHT.....17900 kg (39022 lb)  
BASIC OPERATING WEIGHT.....11934 kg (26310 lb)  
MAX USABLE FUEL.....4173 kg (9200 lb)

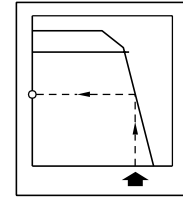
APM030351.MCE A

Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser  
Sheet 6

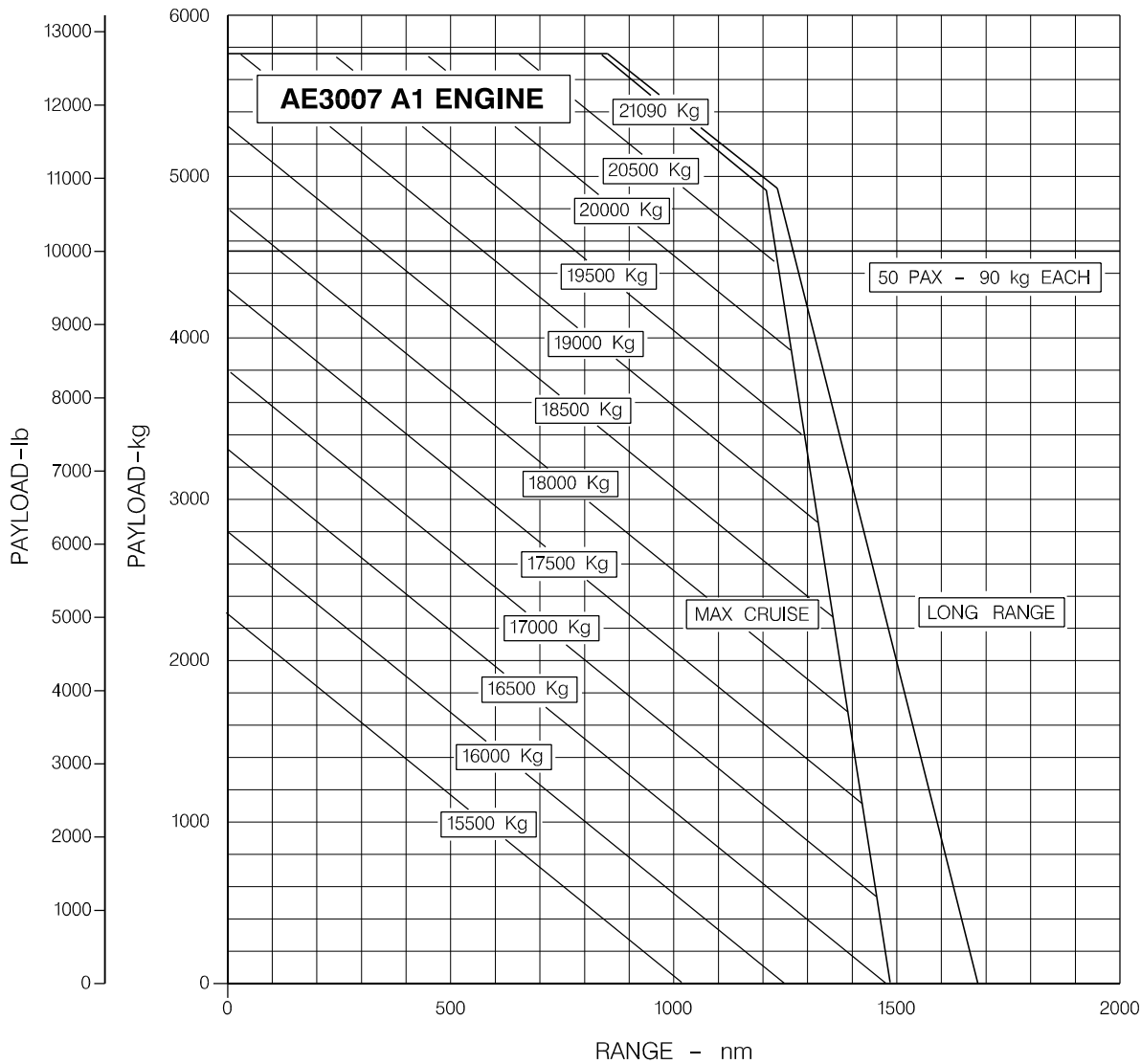


**PAYLOAD X RANGE**

ISA



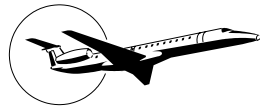
**EMB-145 MP**



NOTES : MAX TAKEOFF WEIGHT.....20990kg (46275 lb)  
 MAX ZERO FUEL WEIGHT.....17900 kg (39022 lb)  
 BASIC OPERATING WEIGHT.....11934 kg (26310 lb)  
 MAX USABLE FUEL.....4173 kg (9200 lb)

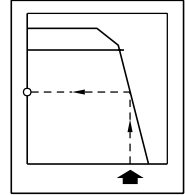
APM030354.MCE

*Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser*  
**Sheet 7**

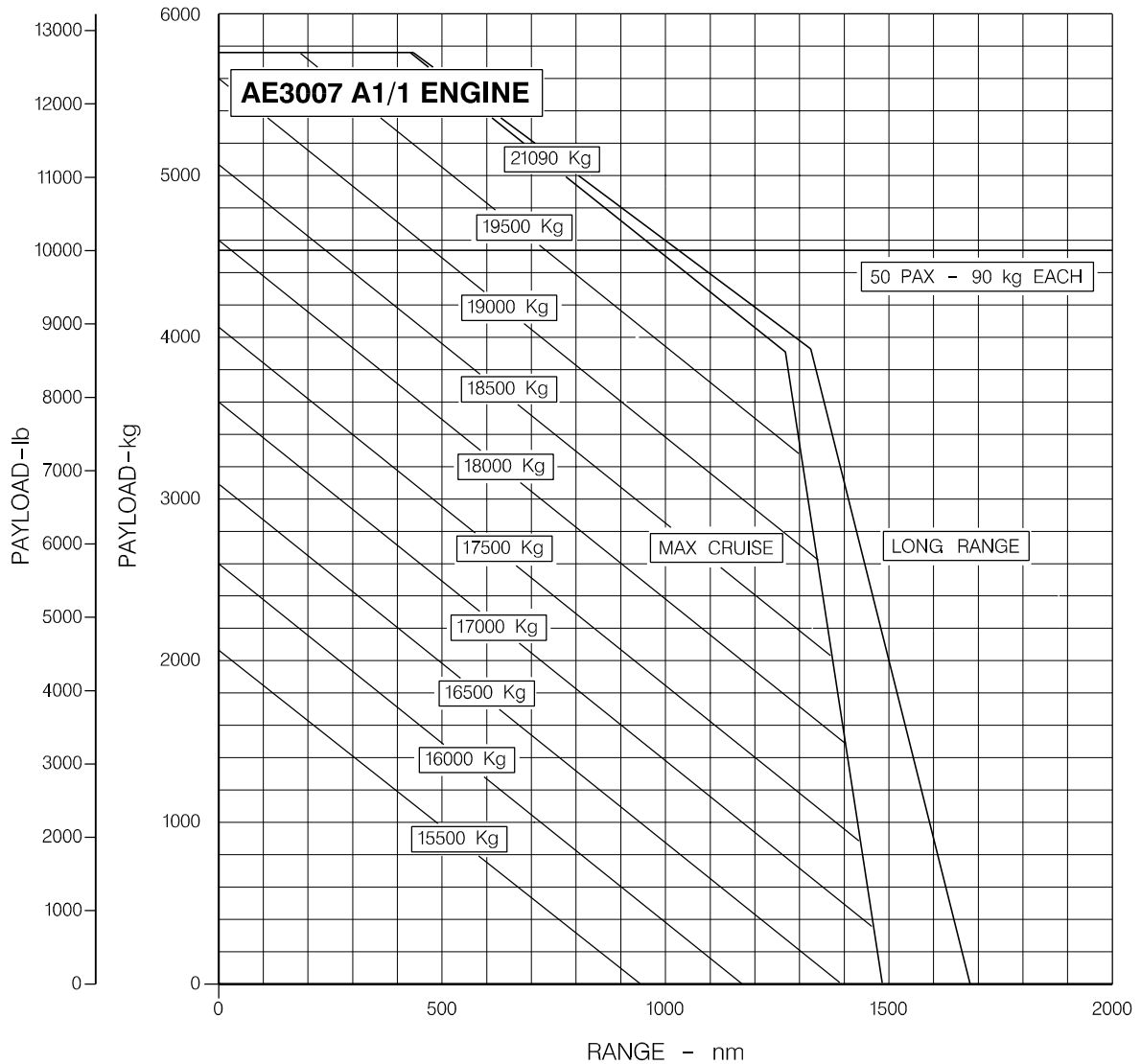


**PAYLOAD X RANGE**

ISA



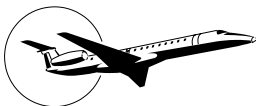
**EMB-145 MK**



NOTES : MAX TAKEOFF WEIGHT.....19990kg (46275 lb)  
 MAX ZERO FUEL WEIGHT.....17700 kg (39022 lb)  
 BASIC OPERATING WEIGHT.....11934 kg (26310 lb-std.config)  
 MAX USABLE FUEL.....4173 kg (9200 lb)

APM030355.MCE

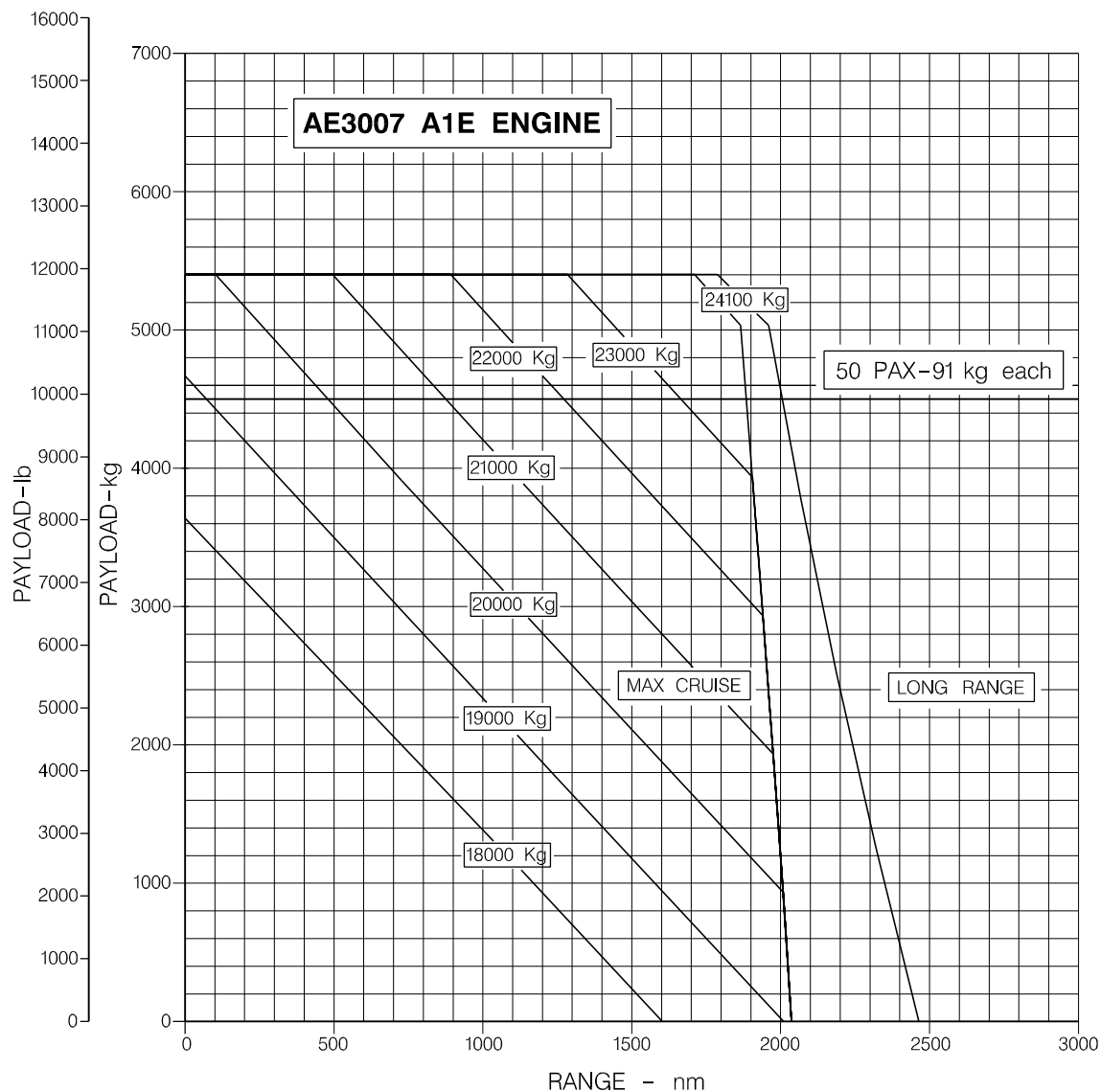
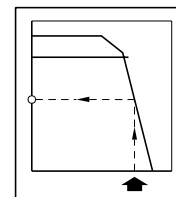
**Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser**  
**Sheet 8**



**PAYLOAD X RANGE**

ISA

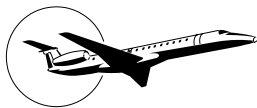
**EMB-145 XR**



**NOTES:** FLIGHT LEVEL.....370  
RESERVE.....100nm ALTERNATE + 45min HOLDING  
MAX TAKEOFF WEIGHT.....24100 kg (53132 lb)  
MAX ZERO FUEL WEIGHT.....18500 kg (40786 lb)  
BASIC OPERATING WEIGHT.....13100 kg (28881 lb)  
MAX USABLE FUEL.....5987 kg (13199 lb)

145APM030373.MCE

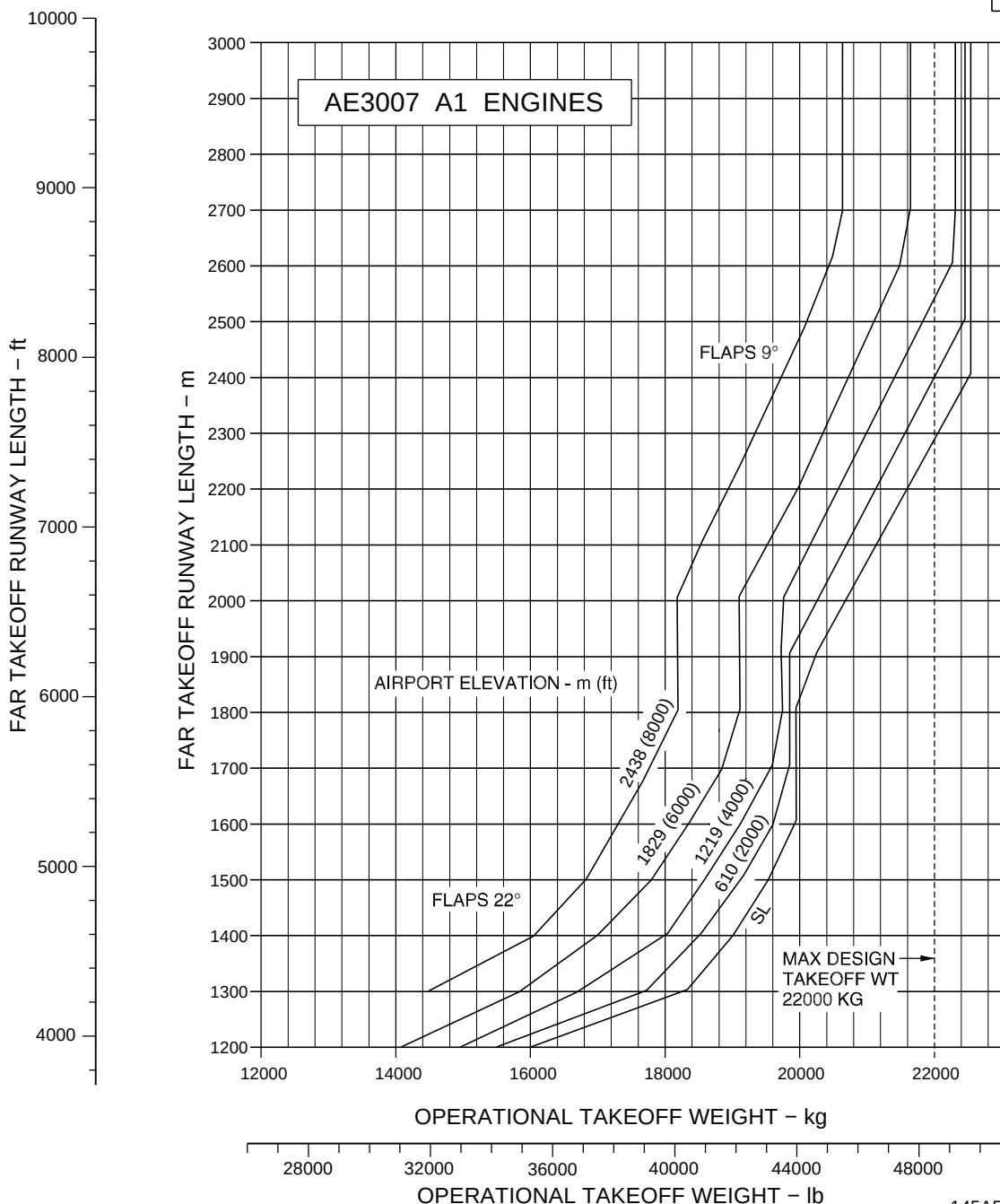
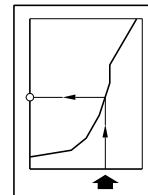
*Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser*  
**Sheet 9**



### 3.3 FAR Takeoff Runway Length Requirements

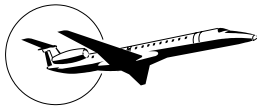
#### TAKEOFF RUNWAY LENGTH REQUIREMENTS

FLAPS 9/22 T/O-1 MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA



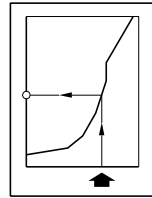
145APM030124.MCE E

Figure 3.3.1 - FAR Takeoff Runway Length Requirements - ISA Conditions  
Sheet 1



TAKEOFF RUNWAY LENGTH REQUIREMENTS

FLAPS 9/22 T/O-1 MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA



AE3007 A1/1 ENGINES

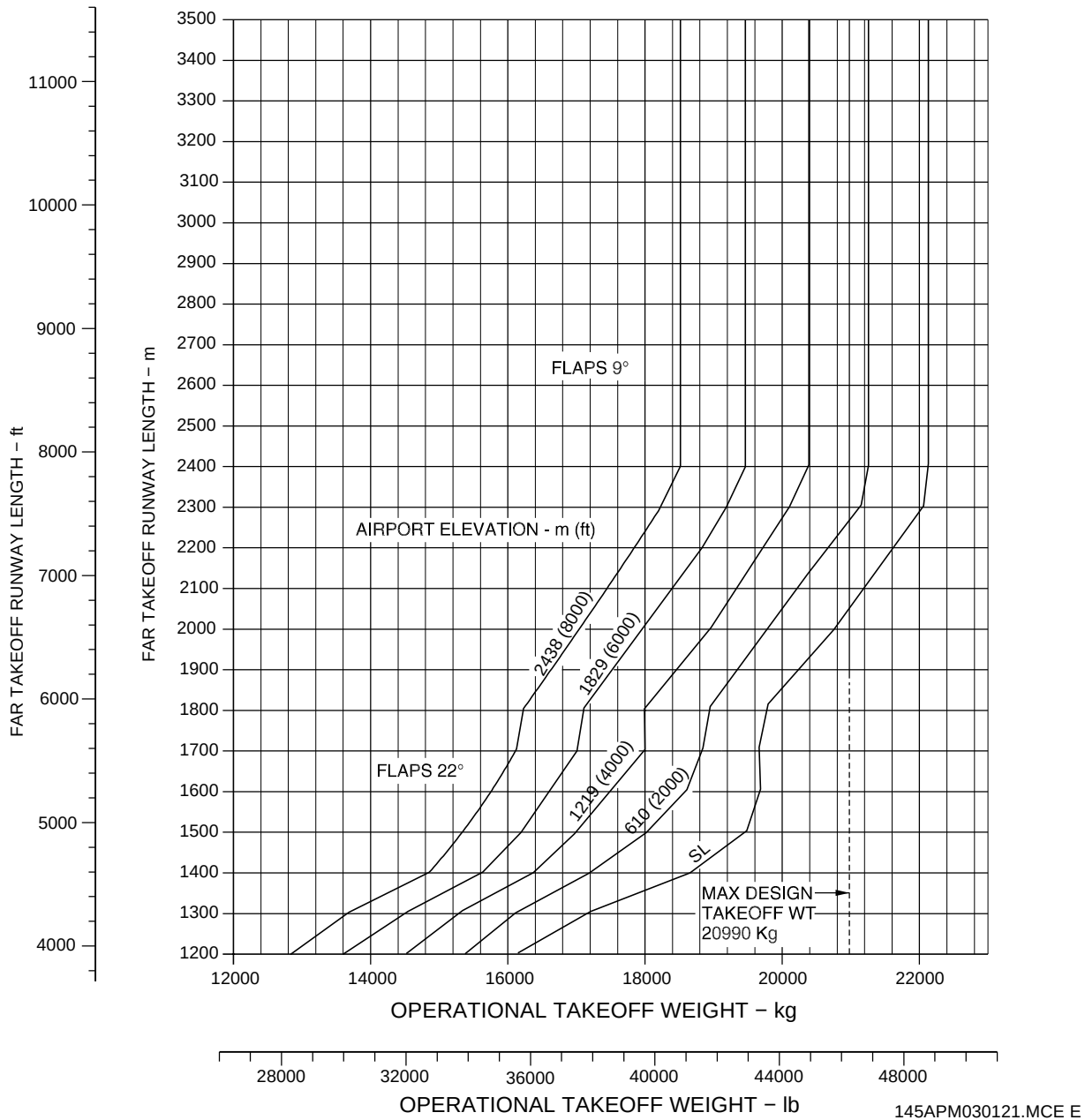


Figure 3.3.1 - FAR Takeoff Runway Length Requirements - ISA Conditions  
Sheet 2



TAKEOFF RUNWAY LENGTH REQUIREMENTS  
FLAPS 9/22 ET/O THRUST MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA

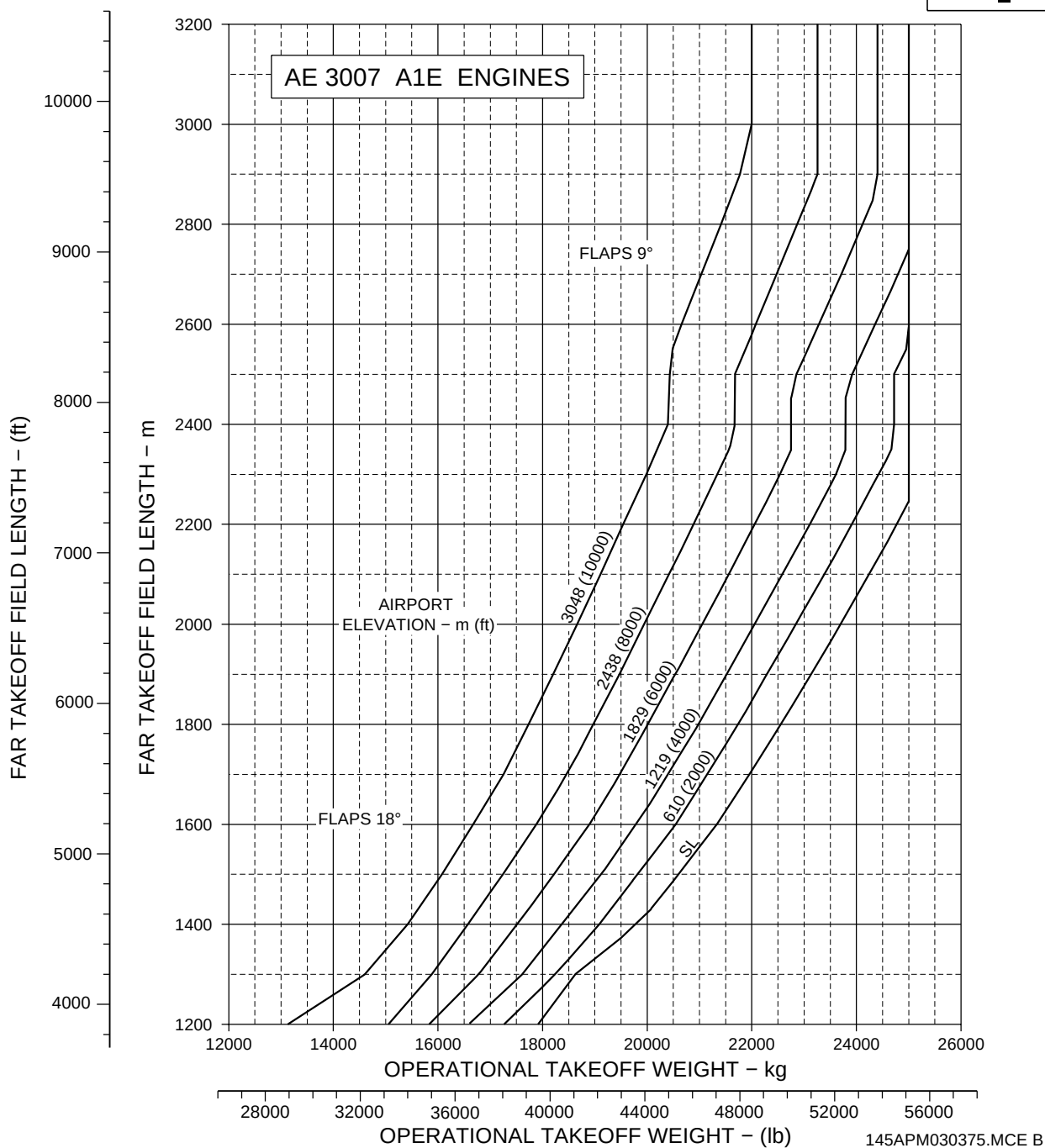
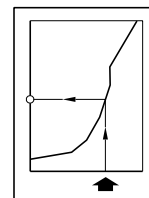
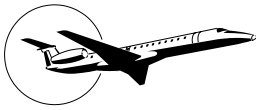


Figure 3.3.1 - FAR Takeoff Runway Length Requirements - ISA Conditions  
Sheet 3



TAKEOFF RUNWAY LENGTH REQUIREMENTS

FLAPS 9/18/22 T/O MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA

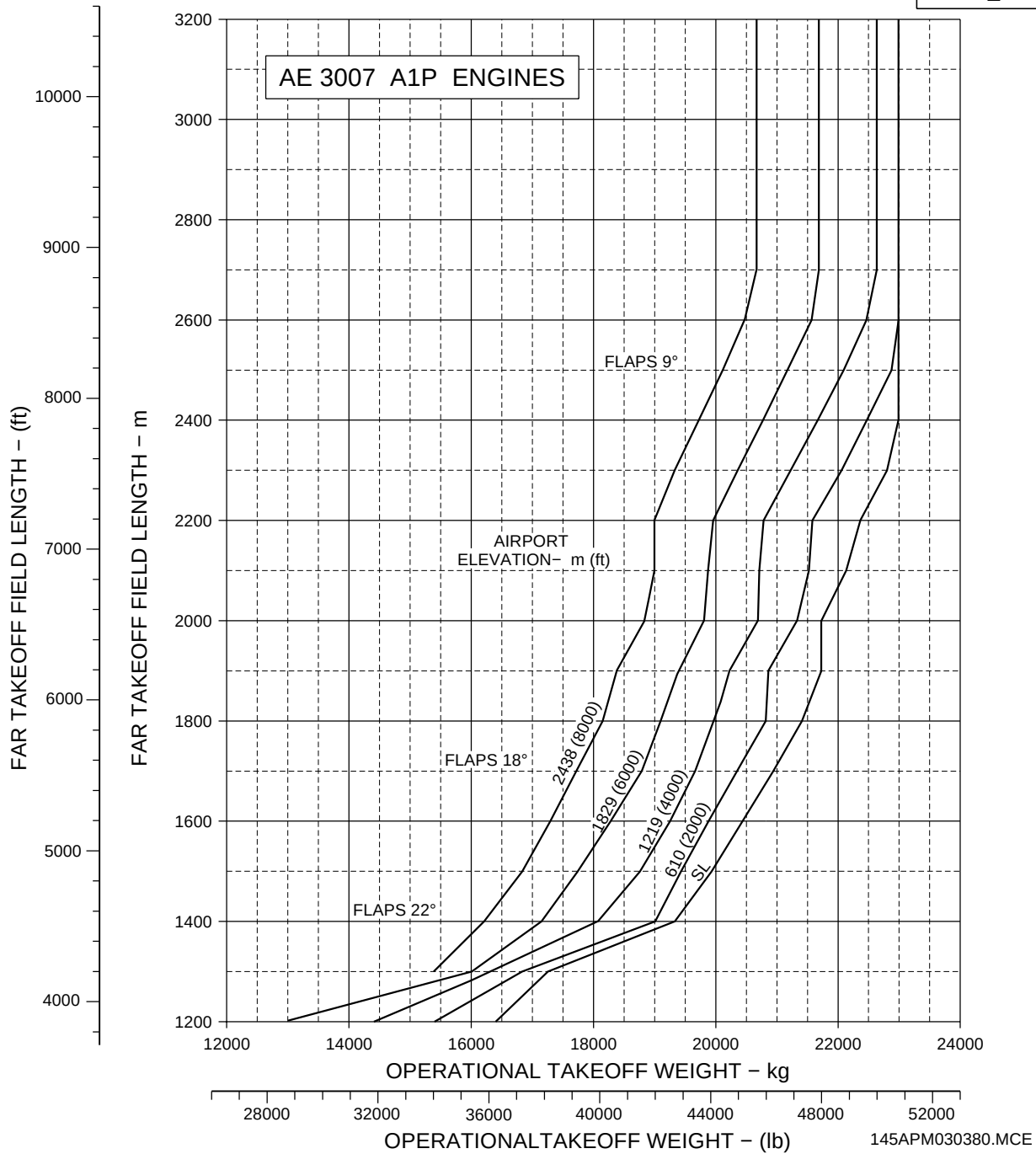
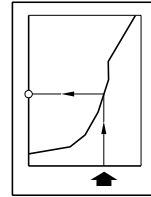
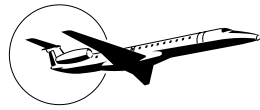


Figure 3.3.1 - FAR Takeoff Runway Length Requirements - ISA Conditions  
Sheet 4



TAKEOFF RUNWAY LENGTH REQUIREMENTS  
FLAPS 9/22 T/O-1 MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA+15°C

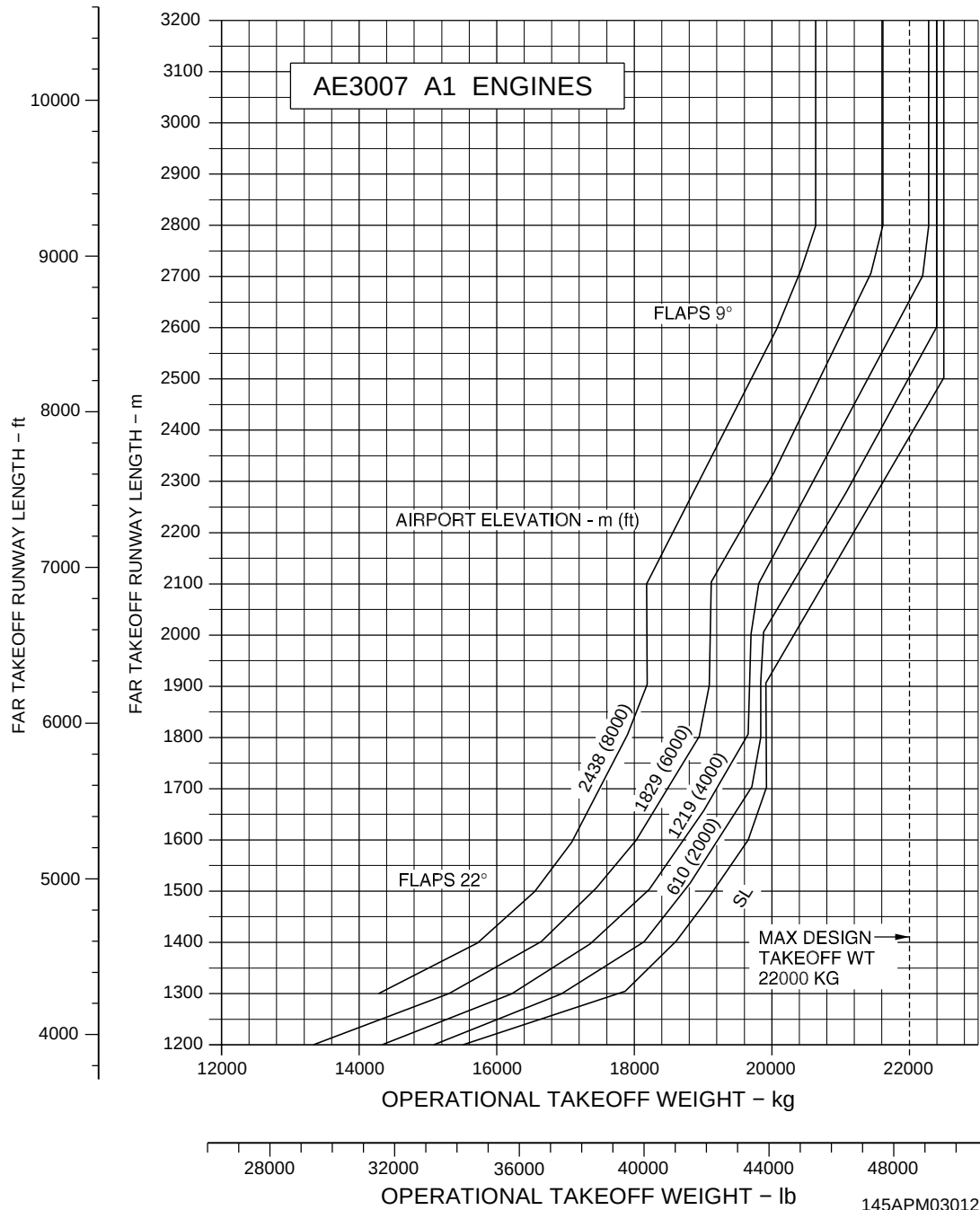
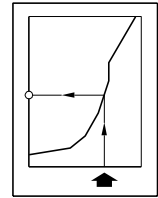
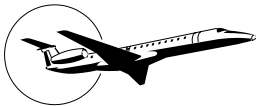


Figure 3.3.2 - FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions  
Sheet 1



TAKEOFF RUNWAY LENGTH REQUIREMENTS

FLAPS 9/22 T/O-1 MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA+15°C

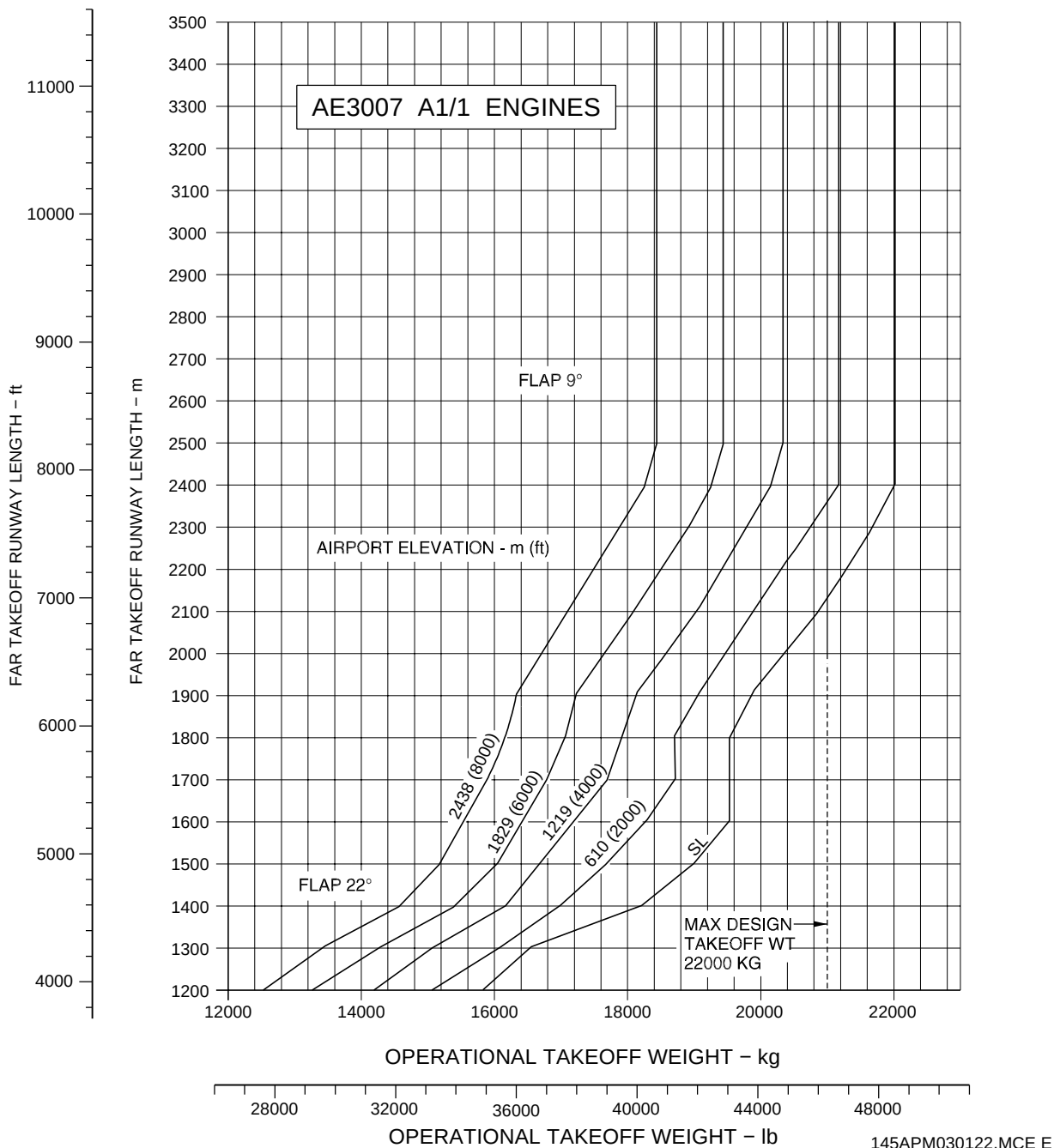
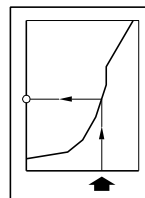
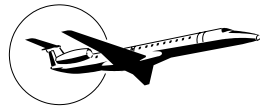


Figure 3.3.2 - FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions  
Sheet 2



TAKEOFF RUNWAY LENGTH REQUIREMENTS  
FLAPS 9/22 ET/O THRUST MODE, NO ENGINE BLEED FOR  
AIR CONDITIONING  
DRY AND LEVELED RUNWAY, ZERO WIND  
ISA+15°C

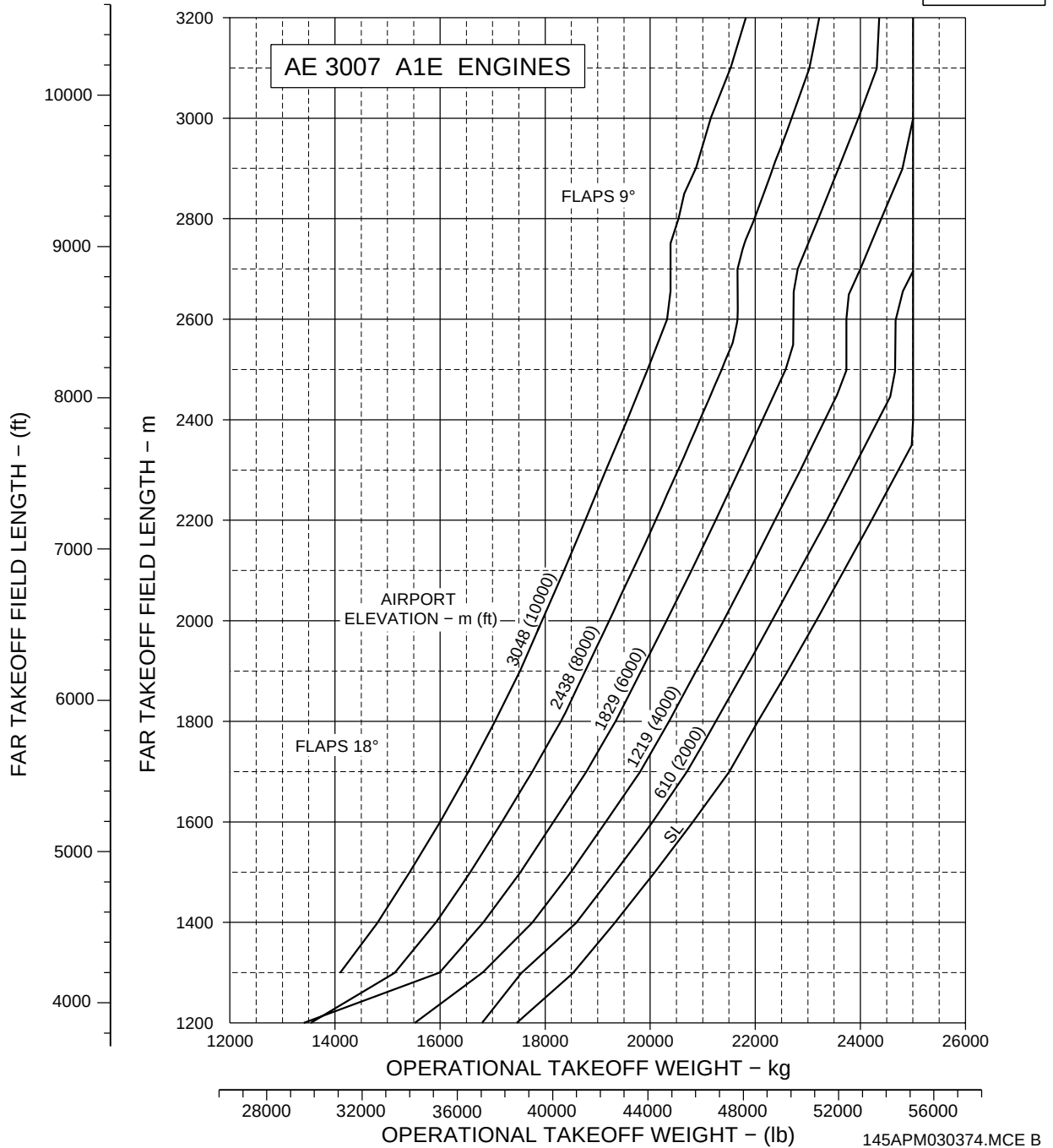
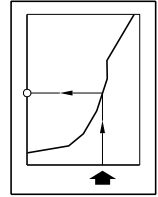


Figure 3.3.2 - FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions  
Sheet 3

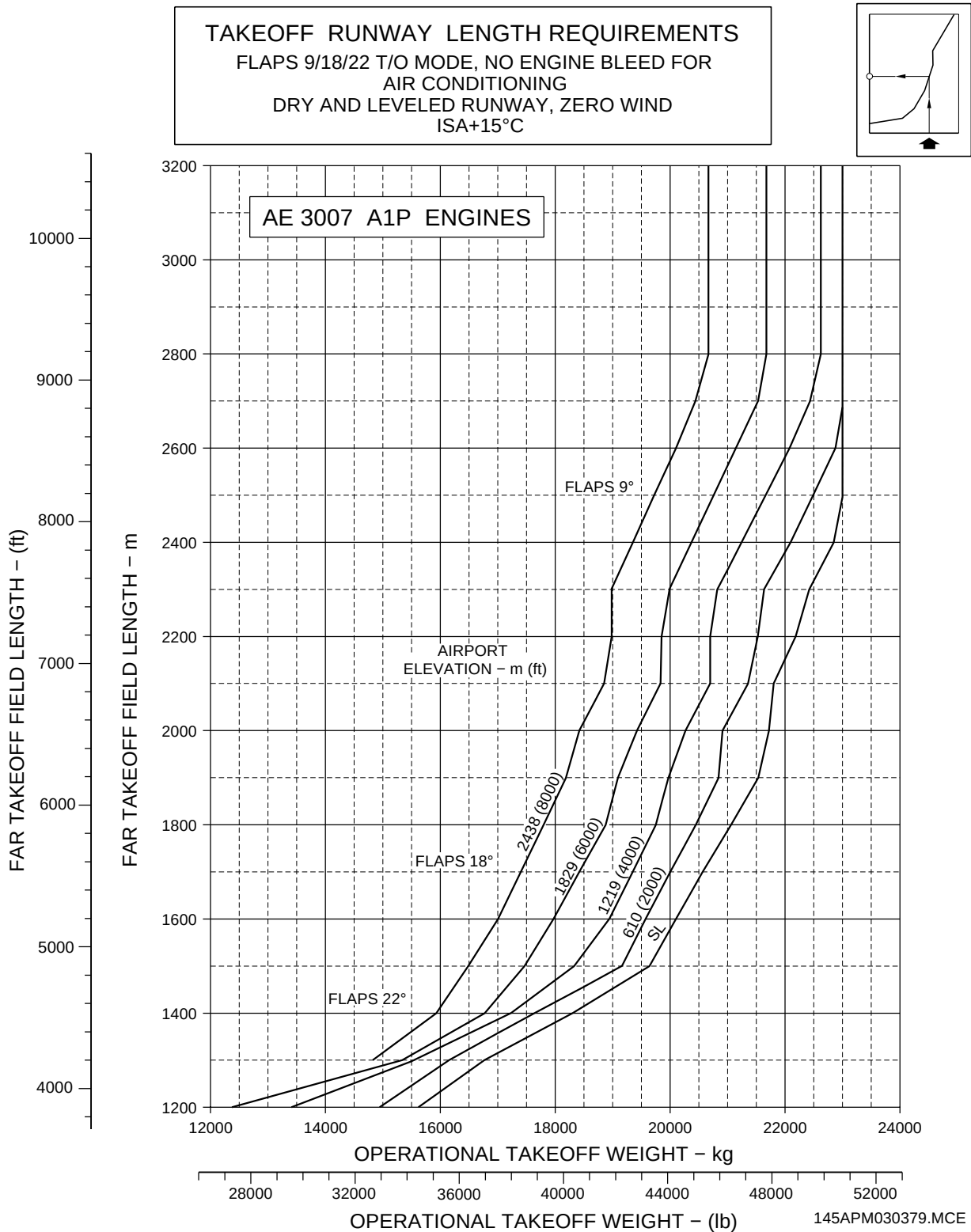
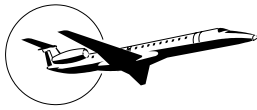
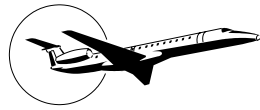


Figure 3.3.2 - FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions  
Sheet 4



### 3.4 FAR Landing Runway Length Requirements

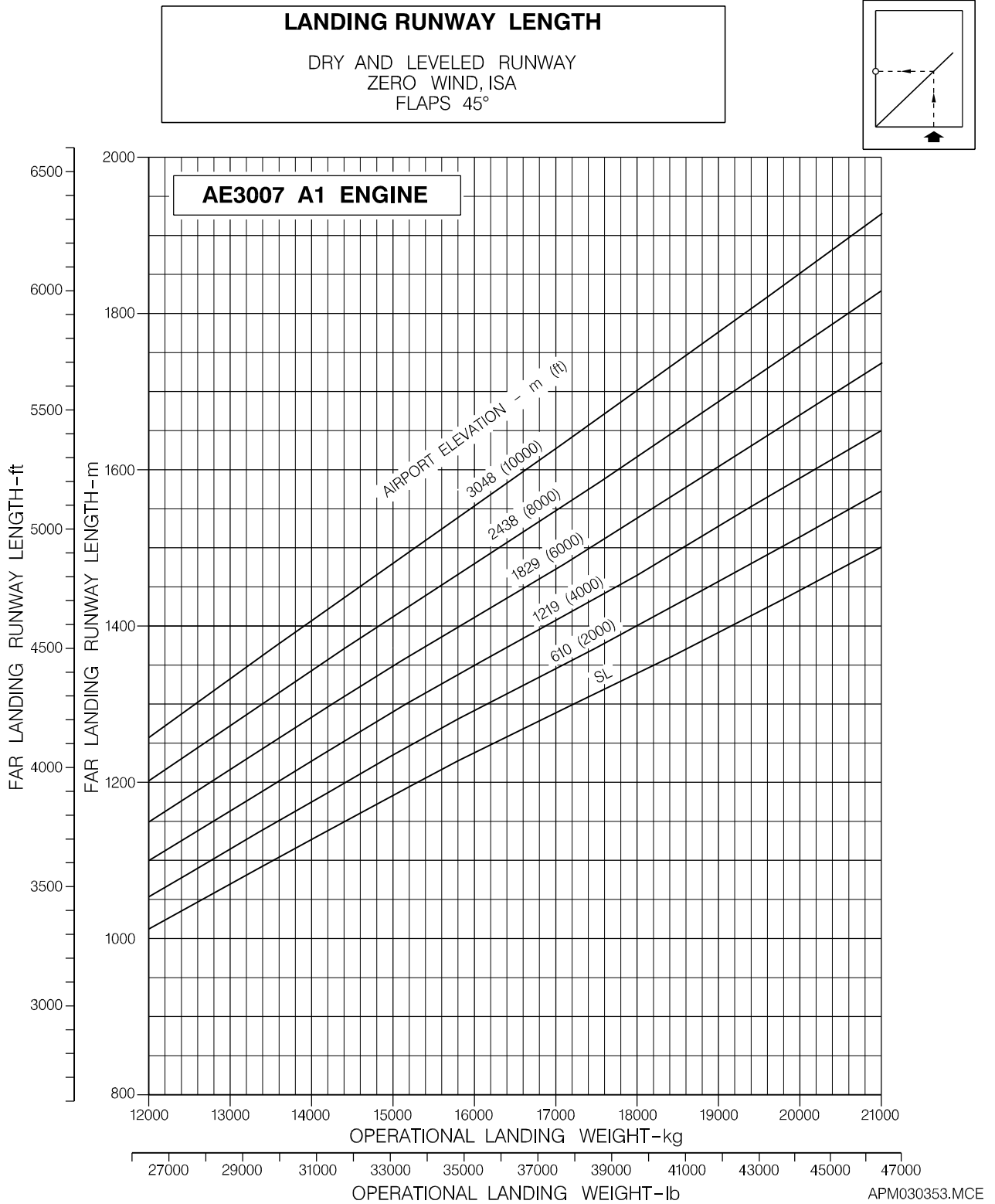
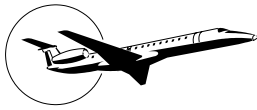


Figure 3.4.1 - FAR Landing Runway Length Requirements - Flaps 45°

Sheet 1



### LANDING RUNWAY LENGTH

DRY AND LEVELED RUNWAY  
ZERO WIND, ISA  
FLAPS 45°

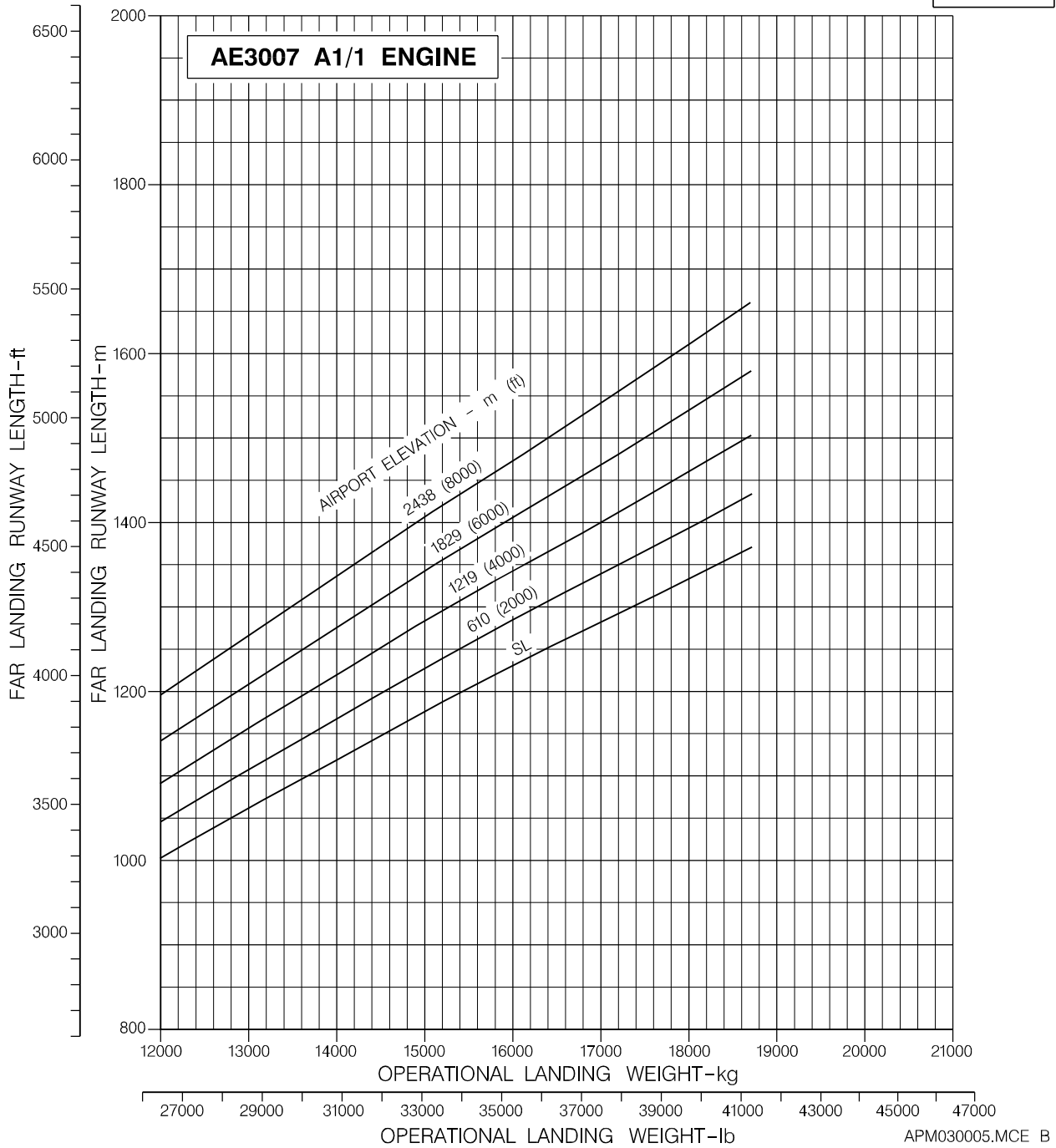
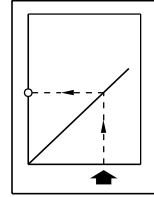
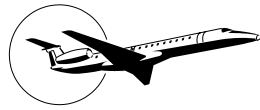


Figure 3.4.1 - FAR Landing Runway Length Requirements - Flaps 45°  
Sheet 2



LANDING RUNWAY LENGTH

DRY AND LEVELED RUNWAY  
ZERO WIND, ISA  
FLAPS 45°

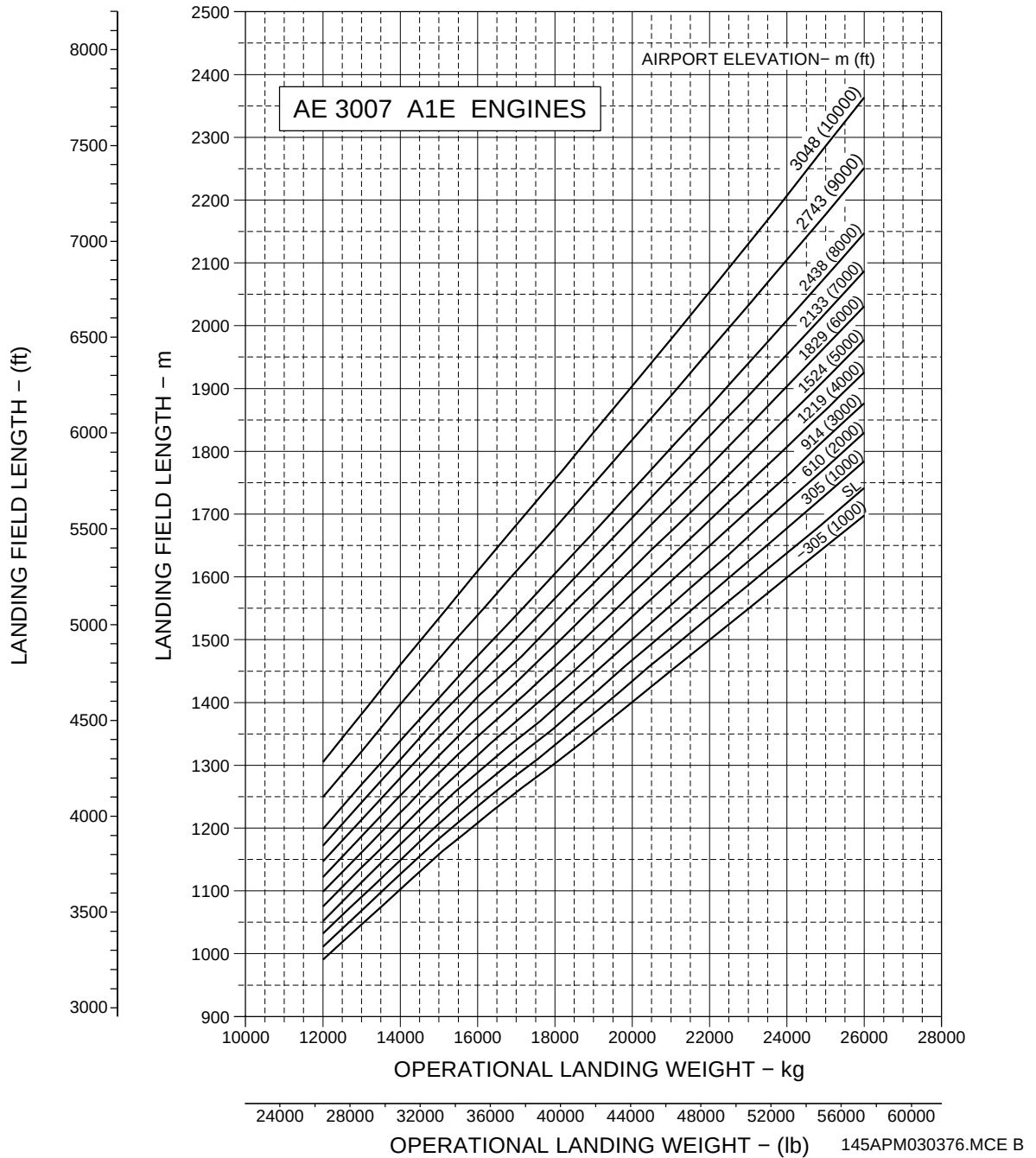
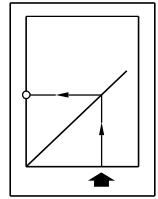


Figure 3.4.1 - FAR Landing Runway Length Requirements - Flaps 45°  
Sheet 3

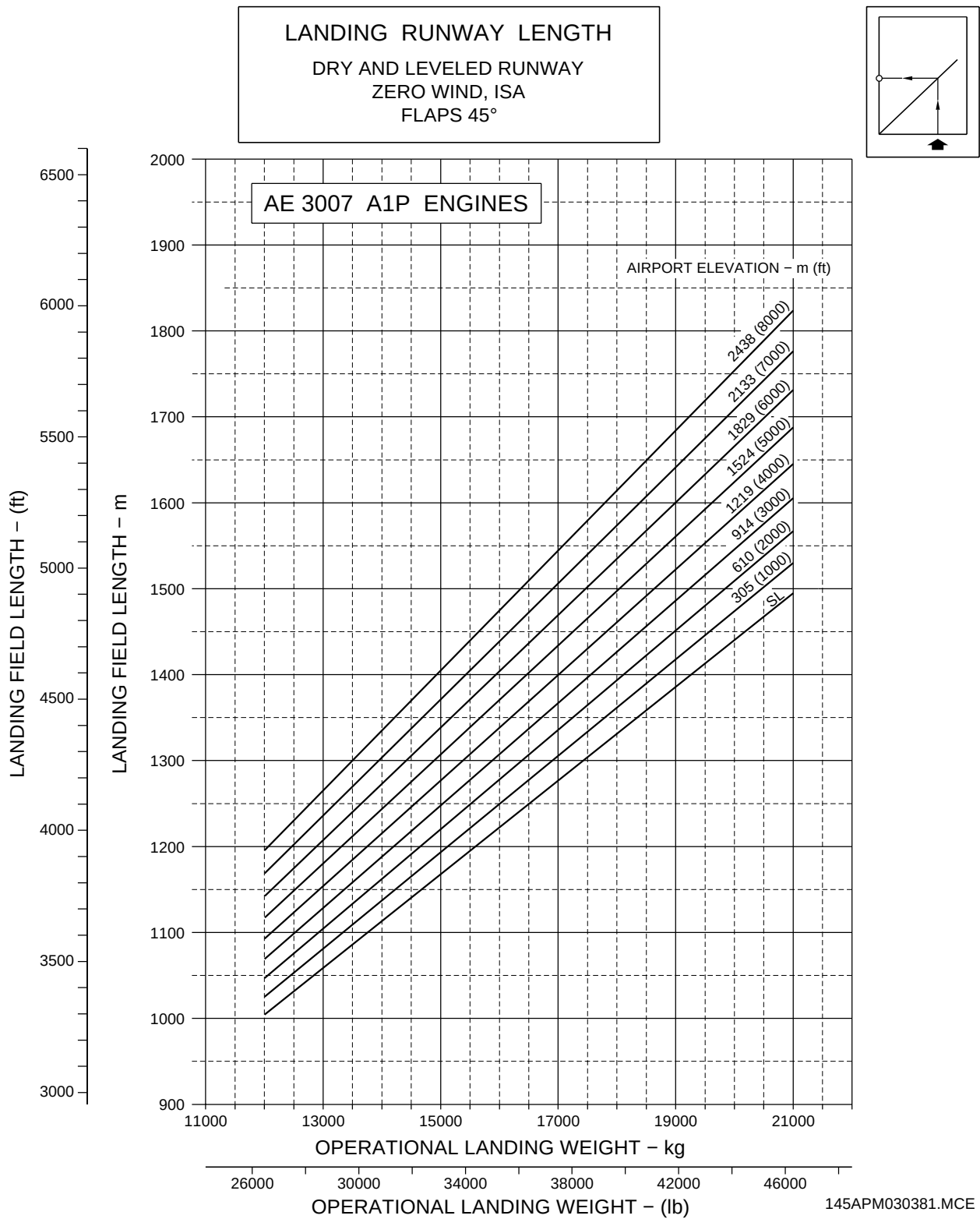
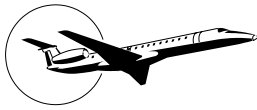
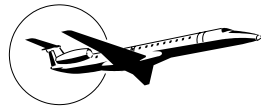


Figure 3.4.1 - FAR Landing Runway Length Requirements - Flaps 45°  
Sheet 4



## 4. GROUND MANEUVERING

### 4.1 General Information

This section provides the airplane turning capability and maneuvering characteristics. For ease of presentation, these data have been determined from theoretical limits imposed by the geometry of the aircraft.

As such, they reflect the turning capability of the aircraft in favorable operating circumstances. These data should be used only as guidelines for the method of determination of such parameters and for the maneuvering characteristics of the EMB-145.

In the ground operating mode, varying airline practices may demand that more conservative turning procedures be adopted to avoid excessive tire wear and reduce possible maintenance problems. Airline operating techniques will vary, as far as the performance is concerned, over a wide range of operating circumstances throughout the world.

Variations from standard aircraft operating patterns may be necessary to satisfy physical constants within the maneuvering area, such as adverse grades, limited area, or high risk of jet blast damage. For these reasons, the ground maneuvering requirements should be coordinated with the using airline prior to the layout planning.

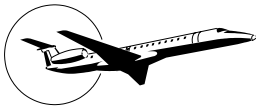
Section 4.2 presents the turning radii for various nose gear steering angles.

Section 4.3 presents data on the minimum width of the pavement for 180° turn.

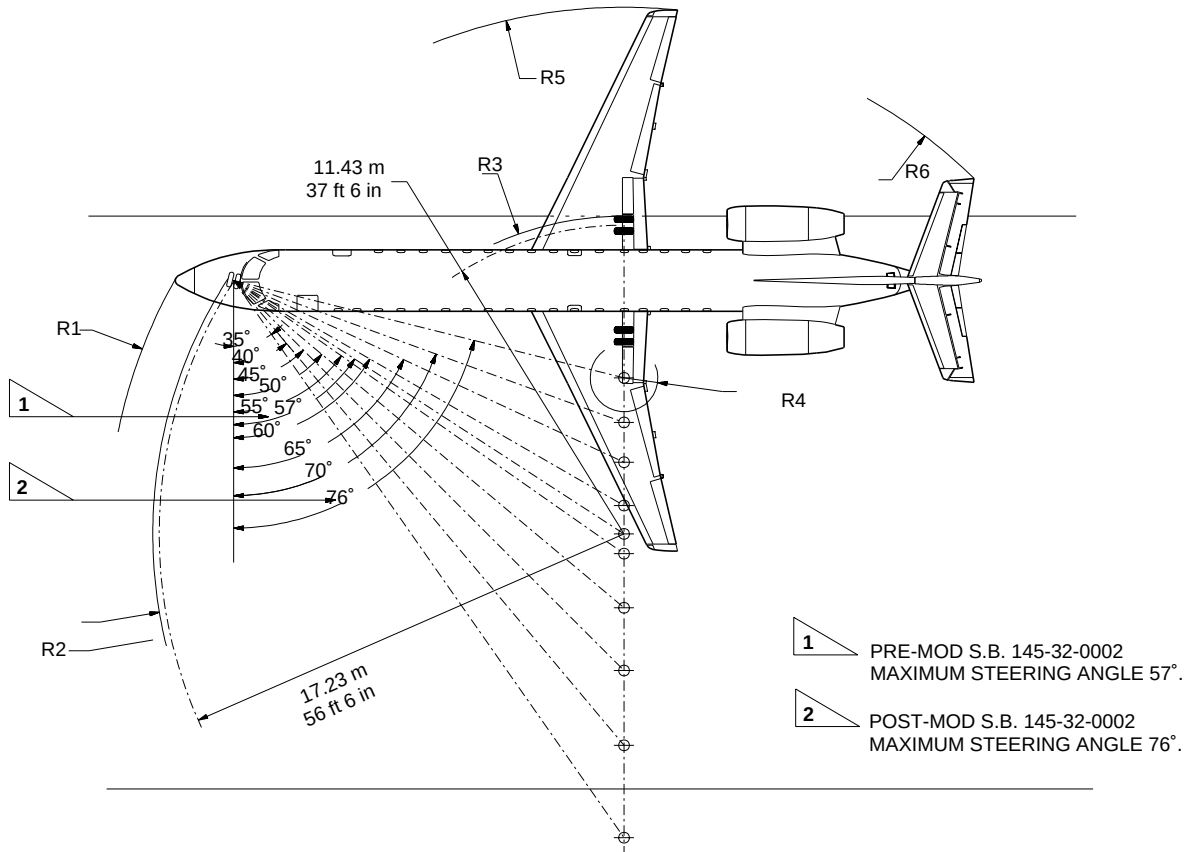
Section 4.4 presents the pilot's visibility from the cockpit and the limits of ambinoocular vision through the windows. Ambinoocular vision is defined as the total field of vision seen by both eyes at the same time.

Section 4.5 presents the performance of the EMB-145 on runway-to-taxiway and taxiway-to-taxiway turn paths.

Section 4.6 presents the runway holding bay configuration.



## 4.2 Turning Radii - No Slip Angle



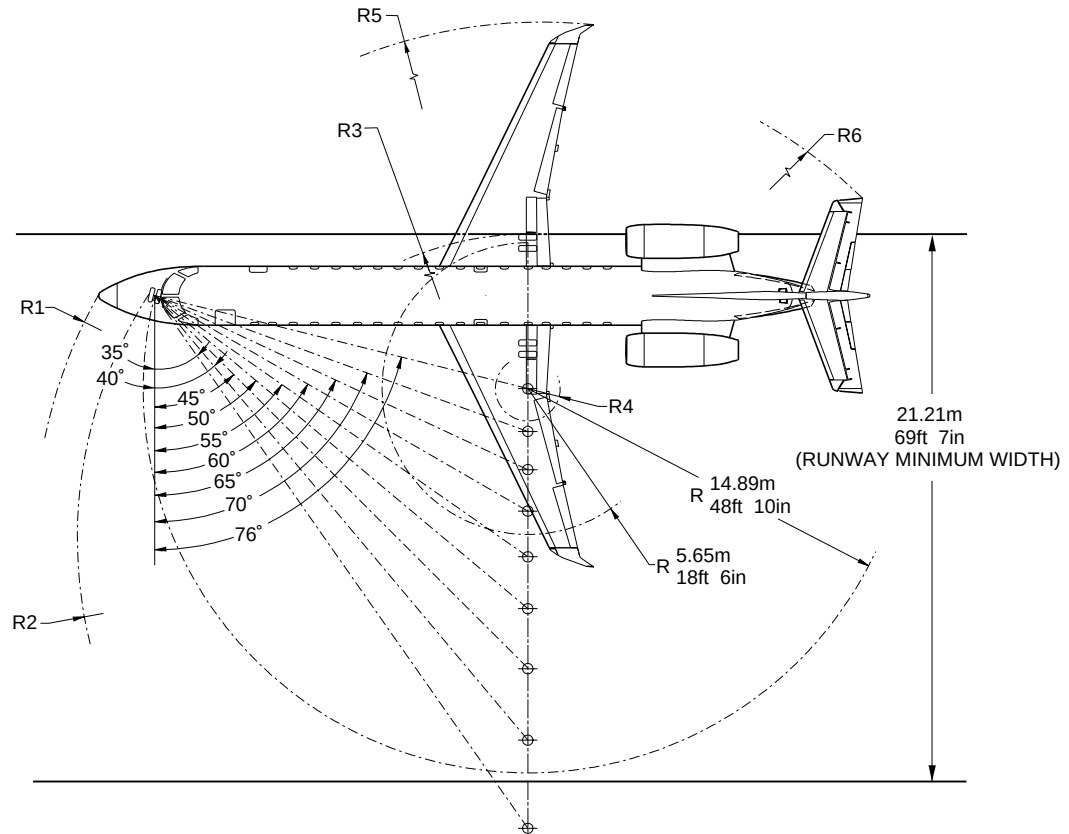
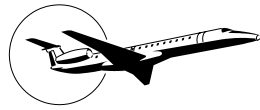
TURNING CENTERS

| STEERING<br>ANGLE | NOSE<br>R1 |             | NOSE<br>GEAR<br>R2 |            | OUTBOARD<br>GEAR<br>R3 |             | INBOARD<br>GEAR<br>R4 |             | RIGHT<br>WINGTIP<br>R5 |             | RIGHT<br>TAILTIP<br>R6 |             |
|-------------------|------------|-------------|--------------------|------------|------------------------|-------------|-----------------------|-------------|------------------------|-------------|------------------------|-------------|
| 35°               | 26.56 m    | 87 ft 2 in  | 25.41 m            | 83 ft 4 in | 23.02 m                | 75 ft 6 in  | 18.25 m               | 59 ft 10 in | 30.72 m                | 100 ft 9 in | 27.64 m                | 90 ft 8 in  |
| 40°               | 23.99 m    | 78 ft 8 in  | 22.70 m            | 74 ft 6 in | 19.60 m                | 64 ft 4 in  | 14.84 m               | 48 ft 8 in  | 27.31 m                | 89 ft 7 in  | 24.68 m                | 80 ft 11 in |
| 45°               | 22.07 m    | 72 ft 5 in  | 20.66 m            | 67 ft 9 in | 16.83 m                | 55 ft 3 in  | 12.07 m               | 39 ft 7 in  | 24.55 m                | 80 ft 6 in  | 22.37 m                | 73 ft 4 in  |
| 50°               | 20.61 m    | 67 ft 7 in  | 19.08 m            | 62 ft 7 in | 14.51 m                | 47 ft 7 in  | 9.74 m                | 31 ft 11 in | 22.23 m                | 72 ft 11 in | 20.52 m                | 67 ft 4 in  |
| 55°               | 19.48 m    | 63 ft 11 in | 17.86 m            | 58 ft 7 in | 12.50 m                | 41 ft 0 in  | 7.74 m                | 25 ft 5 in  | 20.24 m                | 66 ft 5 in  | 19.00 m                | 62 ft 4 in  |
| 57°               | 19.11 m    | 62 ft 8 in  | 17.45 m            | 57 ft 3 in | 11.77 m                | 38 ft 7 in  | 7.00 m                | 23 ft 0 in  | 19.51 m                | 64 ft 0 in  | 18.47 m                | 60 ft 7 in  |
| 60°               | 18.62 m    | 61 ft 1 in  | 16.90 m            | 55 ft 5 in | 10.73 m                | 35 ft 2 in  | 5.96 m                | 19 ft 6 in  | 18.47 m                | 60 ft 7 in  | 17.75 m                | 58 ft 3 in  |
| 65°               | 17.95 m    | 58 ft 11 in | 16.16 m            | 53 ft 0 in | 9.12 m                 | 29 ft 11 in | 4.35 m                | 14 ft 3 in  | 16.88 m                | 55 ft 4 in  | 16.69 m                | 54 ft 9 in  |
| 70°               | 17.44 m    | 57 ft 2 in  | 15.6 m             | 51 ft 2 in | 7.64 m                 | 25 ft 1 in  | 2.87 m                | 9 ft 5 in   | 15.4 m                 | 50 ft 7 in  | 15.8 m                 | 51 ft 10 in |
| 76°               | 17.01 m    | 55 ft 9 in  | 15.11 m            | 49 ft 7 in | 5.99 m                 | 19 ft 8 in  | 1.25 m                | 4 ft 1 in   | 13.77 m                | 45 ft 2 in  | 14.92 m                | 48 ft 11 in |

EMB-145 EP/ER/EU/MP/MK/LR/LU

145APM000039.MCE A

*Figure 4.2.1 - Turning Radii - No Slip Angle  
Sheet 1*

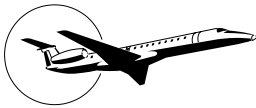


| STEERING<br>ANGLE | NOSE    |           | NOSE GEAR |          | OUTBOARD GEAR |          | INBOARD GEAR |           | RIGHT WINGTIP |           | RIGHT TAILTIP |           |
|-------------------|---------|-----------|-----------|----------|---------------|----------|--------------|-----------|---------------|-----------|---------------|-----------|
|                   | R1      | R2        | R3        | R4       | R5            | R6       |              |           |               |           |               |           |
| 35°               | 26.56 m | 87ft 2in  | 25.41 m   | 83ft 4in | 23.02 m       | 75ft 6in | 18.25 m      | 59ft 10in | 31.24 m       | 102ft 6in | 27.64 m       | 90ft 8in  |
| 40°               | 23.99 m | 78ft 8in  | 22.70 m   | 74ft 6in | 19.60 m       | 64ft 4in | 14.84 m      | 48ft 8in  | 27.84 m       | 91ft 4in  | 24.68 m       | 80ft 11in |
| 45°               | 22.07 m | 72ft 5in  | 20.66 m   | 67ft 9in | 16.83 m       | 55ft 3in | 12.07 m      | 39ft 7in  | 25.08 m       | 82ft 3in  | 22.37 m       | 73ft 4in  |
| 50°               | 20.61 m | 67ft 7in  | 19.08 m   | 62ft 7in | 14.51 m       | 47ft 7in | 9.74 m       | 31ft 11in | 22.77 m       | 74ft 8in  | 20.52 m       | 67ft 4in  |
| 55°               | 19.48 m | 63ft 11in | 17.86 m   | 58ft 7in | 12.50 m       | 41ft 0in | 7.74 m       | 25ft 5in  | 20.78 m       | 68ft 2in  | 19.00 m       | 62ft 4in  |
| 60°               | 18.62 m | 61ft 1in  | 16.90 m   | 55ft 5in | 10.73 m       | 35ft 2in | 5.96 m       | 19ft 6in  | 19.02 m       | 62ft 5in  | 17.75 m       | 58ft 3in  |
| 65°               | 17.95 m | 58ft 11in | 16.16 m   | 53ft 0in | 9.12 m        | 29ft 1in | 4.35 m       | 14ft 3in  | 17.43 m       | 57ft 2in  | 16.69 m       | 54ft 9in  |
| 70°               | 17.44 m | 57ft 2in  | 15.6 m    | 51ft 2in | 7.64 m        | 25ft 1in | 2.87 m       | 9ft 5in   | 15.97 m       | 52ft 5in  | 15.8 m        | 51ft 10in |
| 76°               | 17.01 m | 55ft 9in  | 15.11 m   | 49ft 7in | 5.99 m        | 19ft 8in | 1.25 m       | 4ft 1in   | 14.33 m       | 47ft 0in  | 14.92 m       | 48ft 11in |

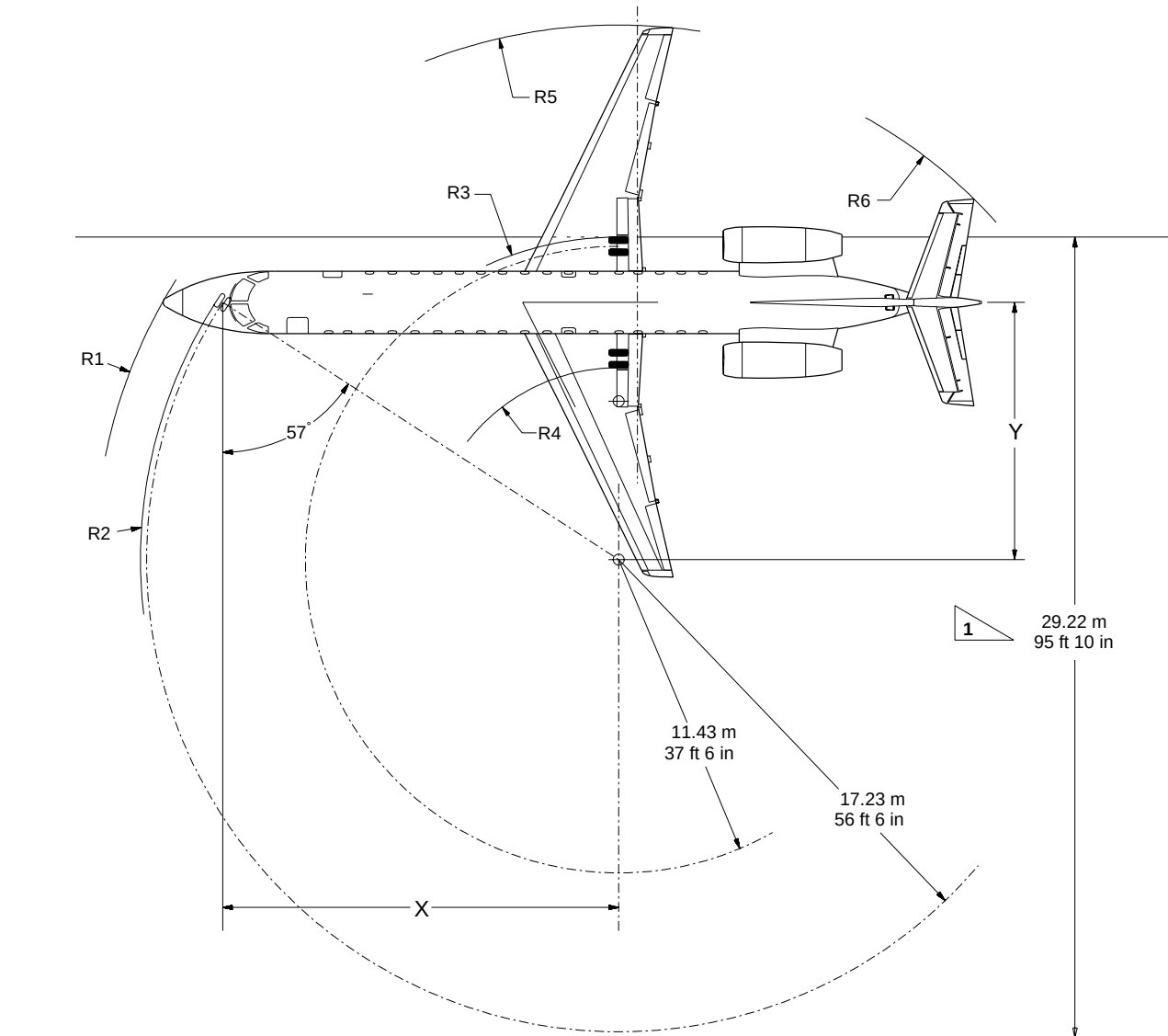
## EMB-145XR

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Figure 4.2.1 - Turning Radii - No Slip Angle  
Sheet 2



### 4.3 Minimum Turning Radii



| STEERING<br>ANGLE | NOSE<br>R1 |            | NOSE<br>GEAR<br>R2 |            | OUTBOARD<br>GEAR<br>R3 |            | INBOARD<br>GEAR<br>R4 |            | RIGHT<br>WINGTIP<br>R5 |            | RIGHT<br>TAILTIP<br>R6 |            |
|-------------------|------------|------------|--------------------|------------|------------------------|------------|-----------------------|------------|------------------------|------------|------------------------|------------|
| 57°               | 19.11 m    | 62 ft 8 in | 17.45 m            | 57 ft 3 in | 11.77 m                | 38 ft 7 in | 7.00 m                | 23 ft 0 in | 19.51 m                | 64 ft 0 in | 18.47 m                | 60 ft 7 in |

| X       |            | Y      |            |
|---------|------------|--------|------------|
| 14.45 m | 47 ft 5 in | 9.38 m | 30 ft 9 in |

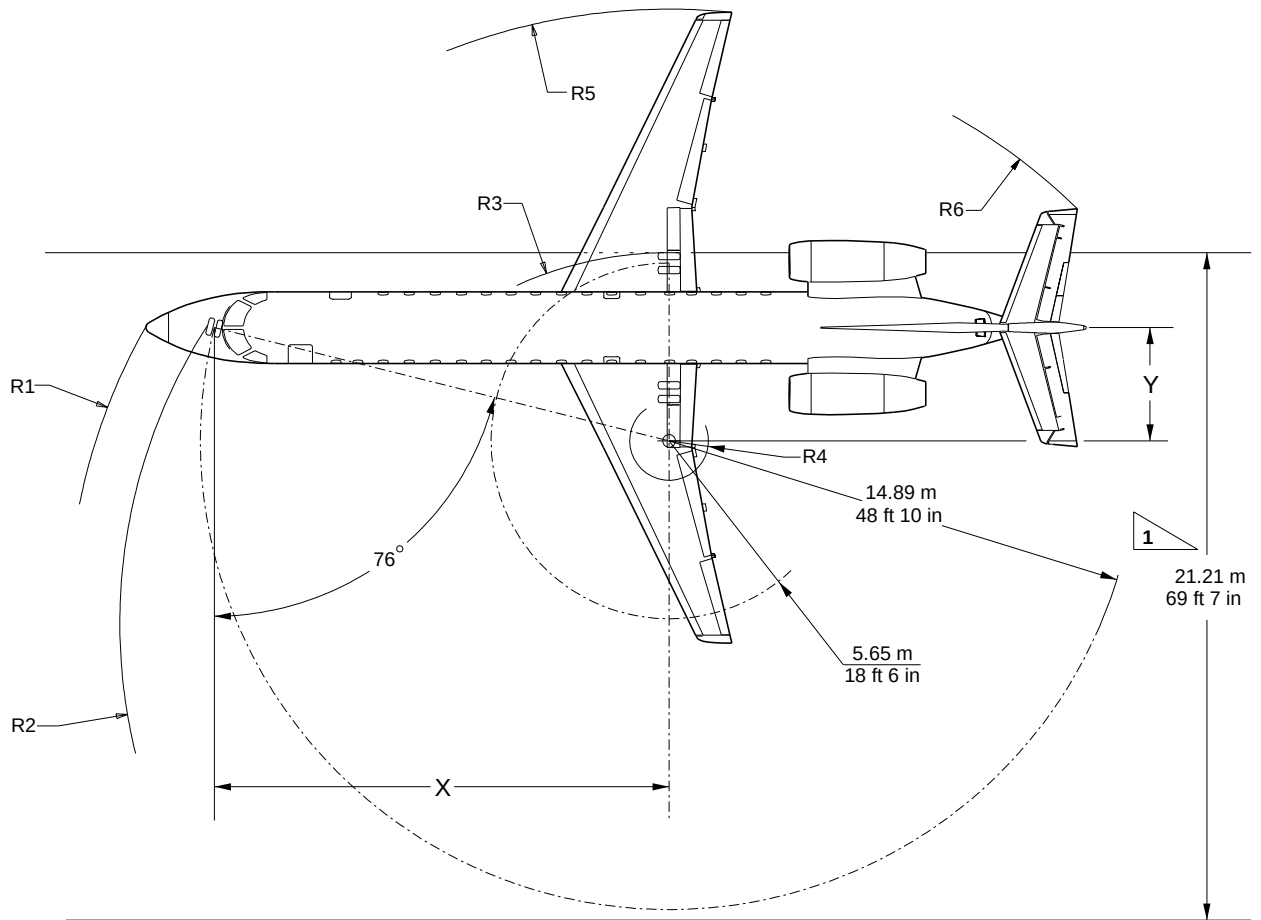
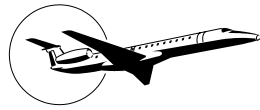
NOTE: THE CORRECT OPERATING DATA WILL BE HIGHER THAN THE VALUES SHOWN BECAUSE TIRE SLIPPAGE IS NOT INCLUDED IN THIS CALCULATION.

1 PAVEMENT WIDTH FOR 180° TURN

EMB-145 EP/ER/EU/MP/MK/LR/LU

145APM000040.MCE A

Figure 4.3.1 - Minimum Turning Radii - PRE-MOD. S.B. 145-32-0002



| STEERING<br>ANGLE | NOSE<br>R1 |            | NOSE<br>GEAR<br>R2 |            | OUTBOARD<br>GEAR<br>R3 |            | INBOARD<br>GEAR<br>R4 |           | RIGHT<br>WINGTIP<br>R5 |            | RIGHT<br>TAILTIP<br>R6 |             |
|-------------------|------------|------------|--------------------|------------|------------------------|------------|-----------------------|-----------|------------------------|------------|------------------------|-------------|
| 76°               | 17.01 m    | 55 ft 9 in | 15.11 m            | 49 ft 7 in | 5.99 m                 | 19 ft 8 in | 1.25 m                | 4 ft 1 in | 13.77 m                | 45 ft 2 in | 14.92 m                | 48 ft 11 in |

| X       |            | Y     |             |
|---------|------------|-------|-------------|
| 14.45 m | 47 ft 5 in | 3.6 m | 11 ft 10 in |

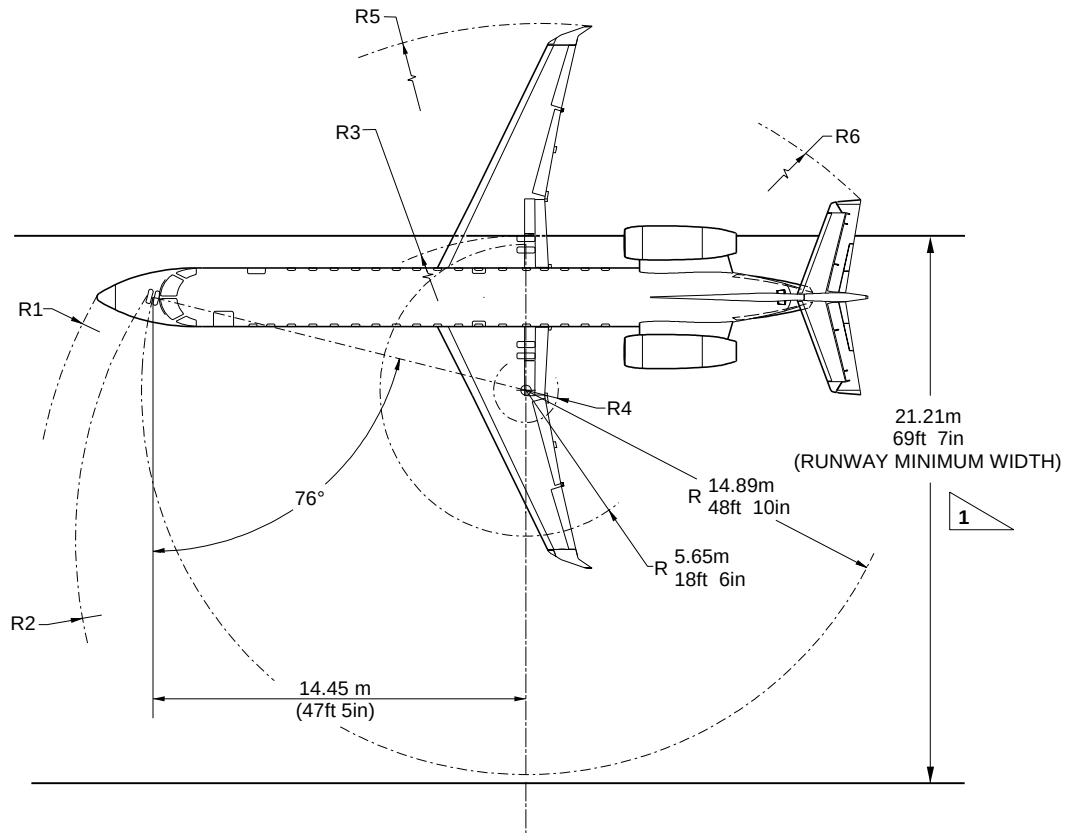
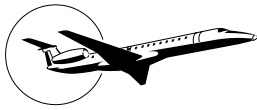
NOTE: THE CORRECT OPERATING DATA WILL BE HIGHER THAN THE VALUES SHOWN BECAUSE TIRE SLIPPAGE IS NOT INCLUDED IN THIS CALCULATION.

1 PAVEMENT WIDTH FOR 180° TURN

EMB-145 EP/ER/EU/MP/MK/LR/LU

145APM000042.MCE B

Figure 4.3.2 - Minimum Turning Radii - POST-MOD. S.B. 145-32-0002



| STEERING<br>ANGLE | NOSE    |          | NOSE GEAR |          | OUTBOARD GEAR |          | INBOARD GEAR |         | RIGHT WINGTIP |          | RIGHT TAILTIP |           |
|-------------------|---------|----------|-----------|----------|---------------|----------|--------------|---------|---------------|----------|---------------|-----------|
|                   | R1      |          | R2        |          | R3            |          | R4           |         | R5            |          | R6            |           |
| 76°               | 17.01 m | 55ft 9in | 15.11 m   | 49ft 7in | 5.99 m        | 19ft 8in | 1.25 m       | 4ft 1in | 14.33 m       | 47ft 0in | 14.92 m       | 48ft 11in |

NOTE: ACTUAL OPERATING DATA WILL BE GREATER THAN VALUES SHOWN SINCE TIRE SLIPPAGE IS NOT CONSIDERED IN THIS CALCULATION.

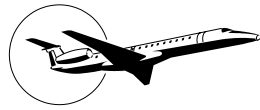


PAVEMENT WIDTH  
FOR 180° TURN

### EMB-145XR

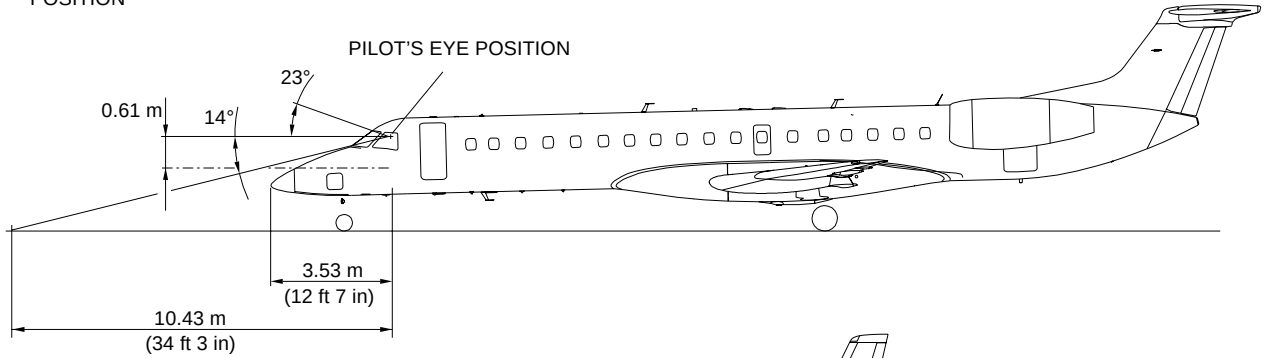
145APM040463.MCE A

*Figure 4.3.3 - Minimum Turning Radii*

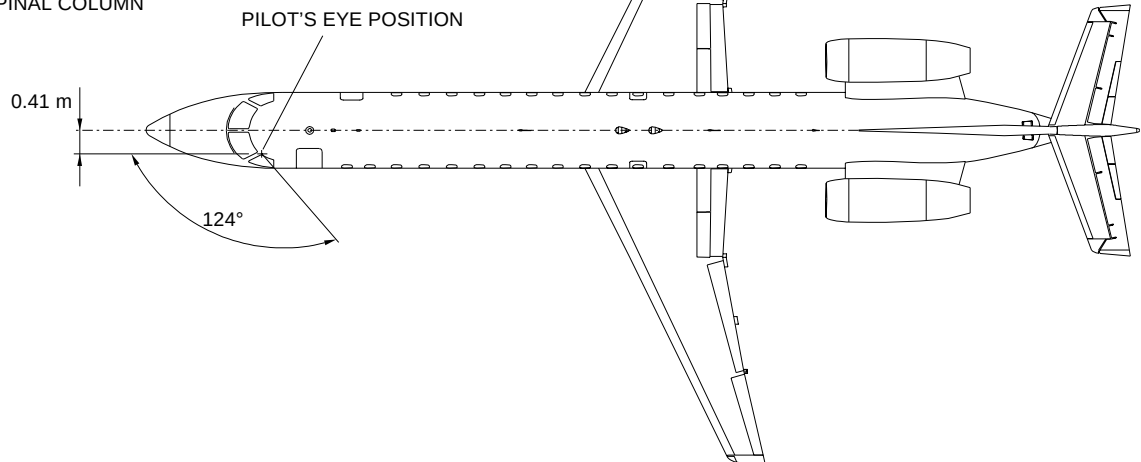


#### 4.4 Visibility from Cockpit in Static Position

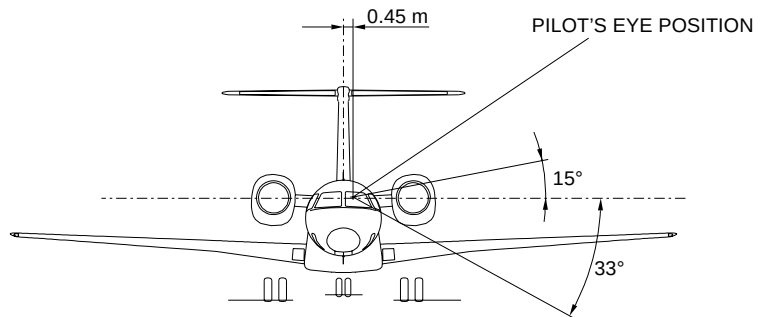
VISUAL ANGLES IN PLANE  
PARALLEL TO LONGITUDINAL  
AXIS THROUGH PILOT'S EYE  
POSITION



MAXIMUM AFT VISION  
WITH HEAD ROTATED  
ABOUT SPINAL COLUMN

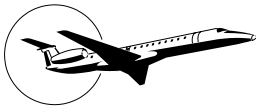


VISUAL ANGLE IN PLANE  
PERPENDICULAR TO LONGITUDINAL  
AXIS THROUGH PILOT'S EYE POSITION



145APM000015.MCE A

Figure 4.4.1 - Visibility from Cockpit in Static Position



## 4.5 Runway and Taxiway Turn Paths

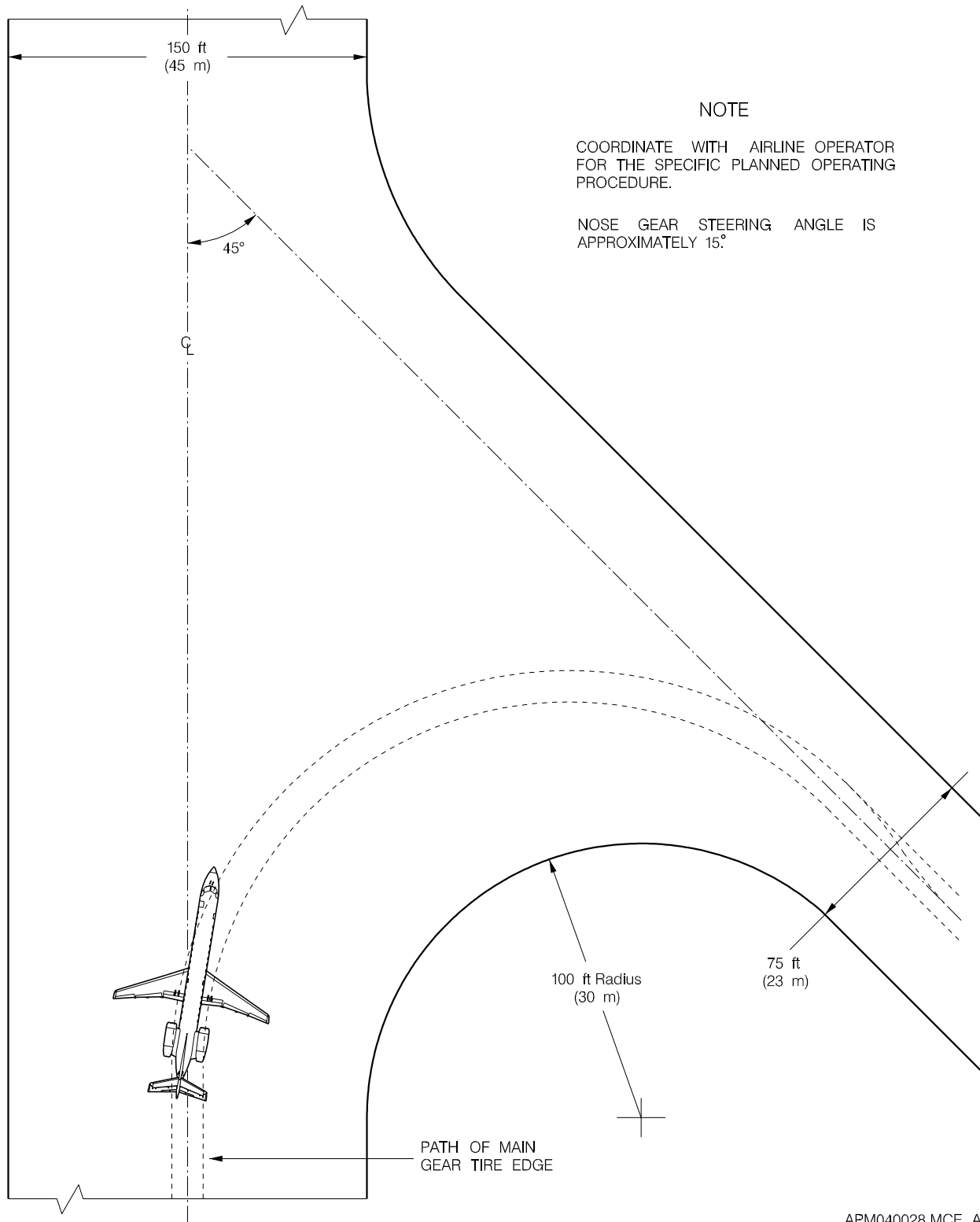
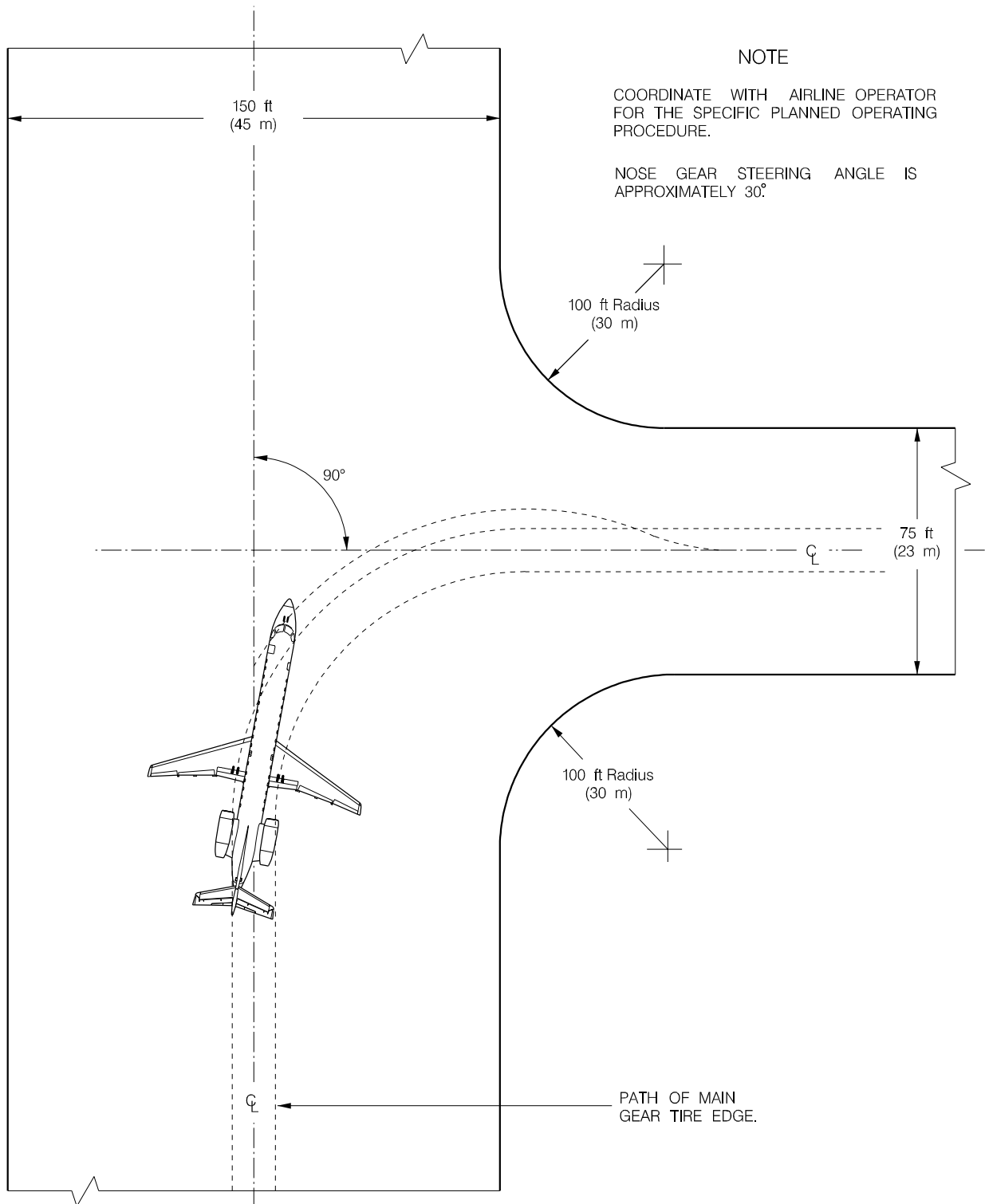
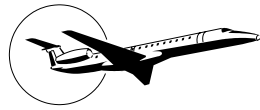
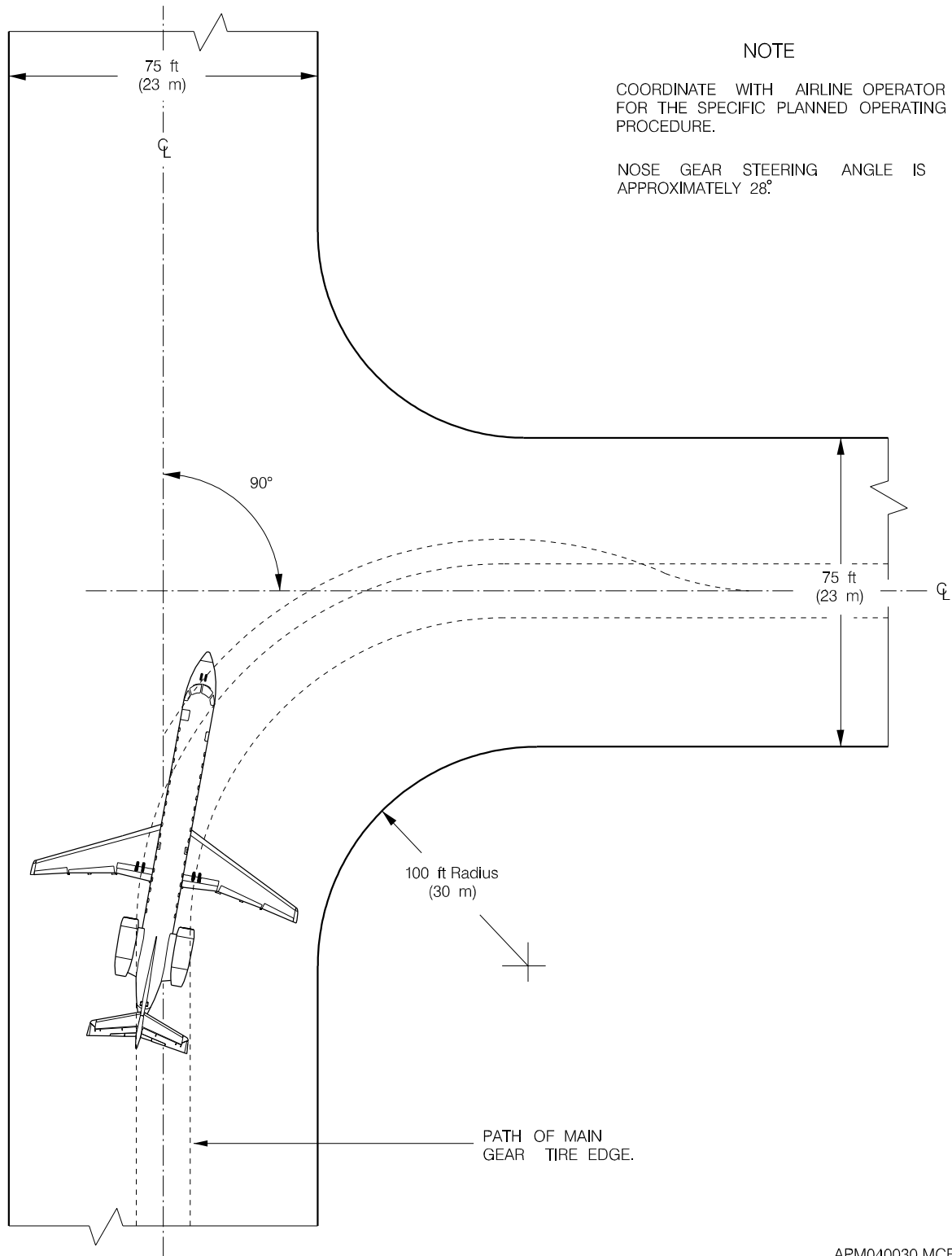
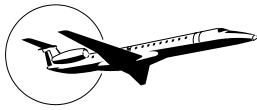


Figure 4.5.1 - More than 90° Turn - Runway to Taxiway



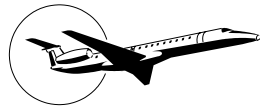
APM040029.MCE A

Figure 4.5.2 - 90° Turn - Runway to Taxiway

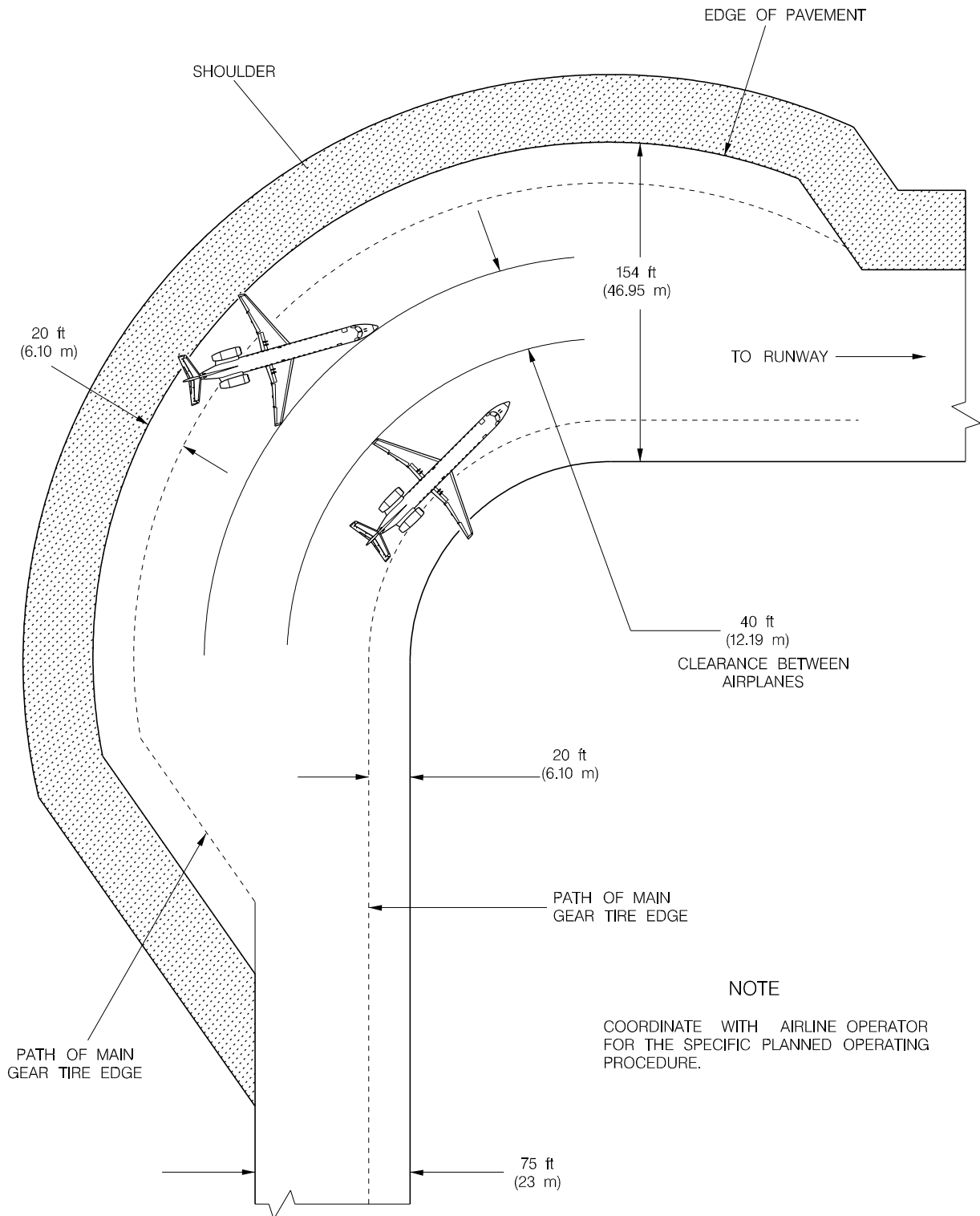


APM040030.MCE A

*Figure 4.5.3 - 90° Turn - Taxiway to Taxiway*



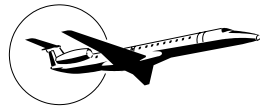
#### 4.6 Runway Holding Bay



APM040041.MCE A

Figure 4.6.1 - Runway Holding Bay

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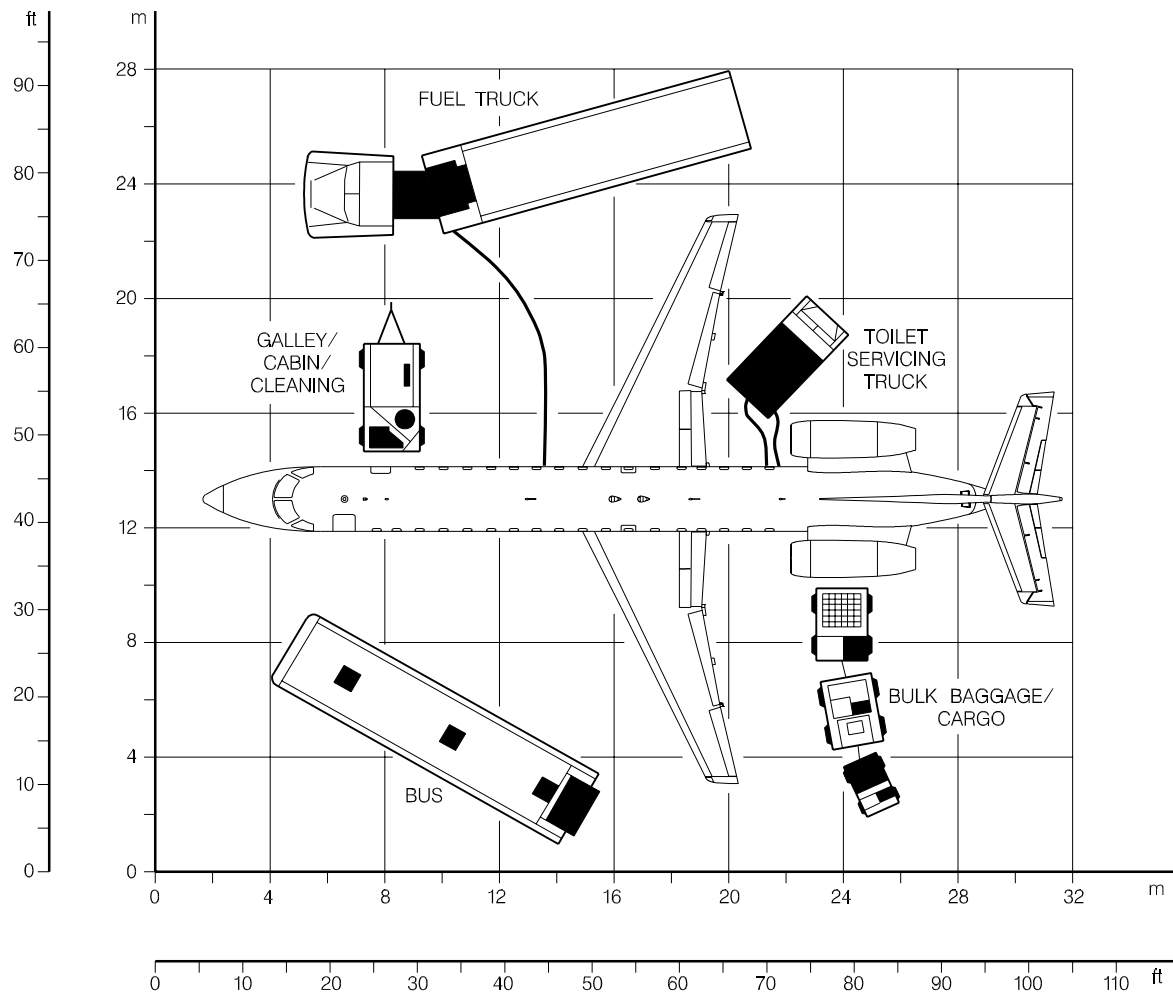
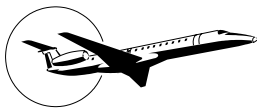
## **5. TERMINAL SERVICING**

### **5.1 General Information**

During turnaround at the air terminal, certain services must be performed on aircraft, usually within a given time to meet flight schedules. This section shows service vehicle arrangements, schedules, locations of servicing points, and typical servicing requirements. The data presented herein reflect ideal conditions for a single airplane. Servicing requirements may vary according to the airplane condition and airline procedure.

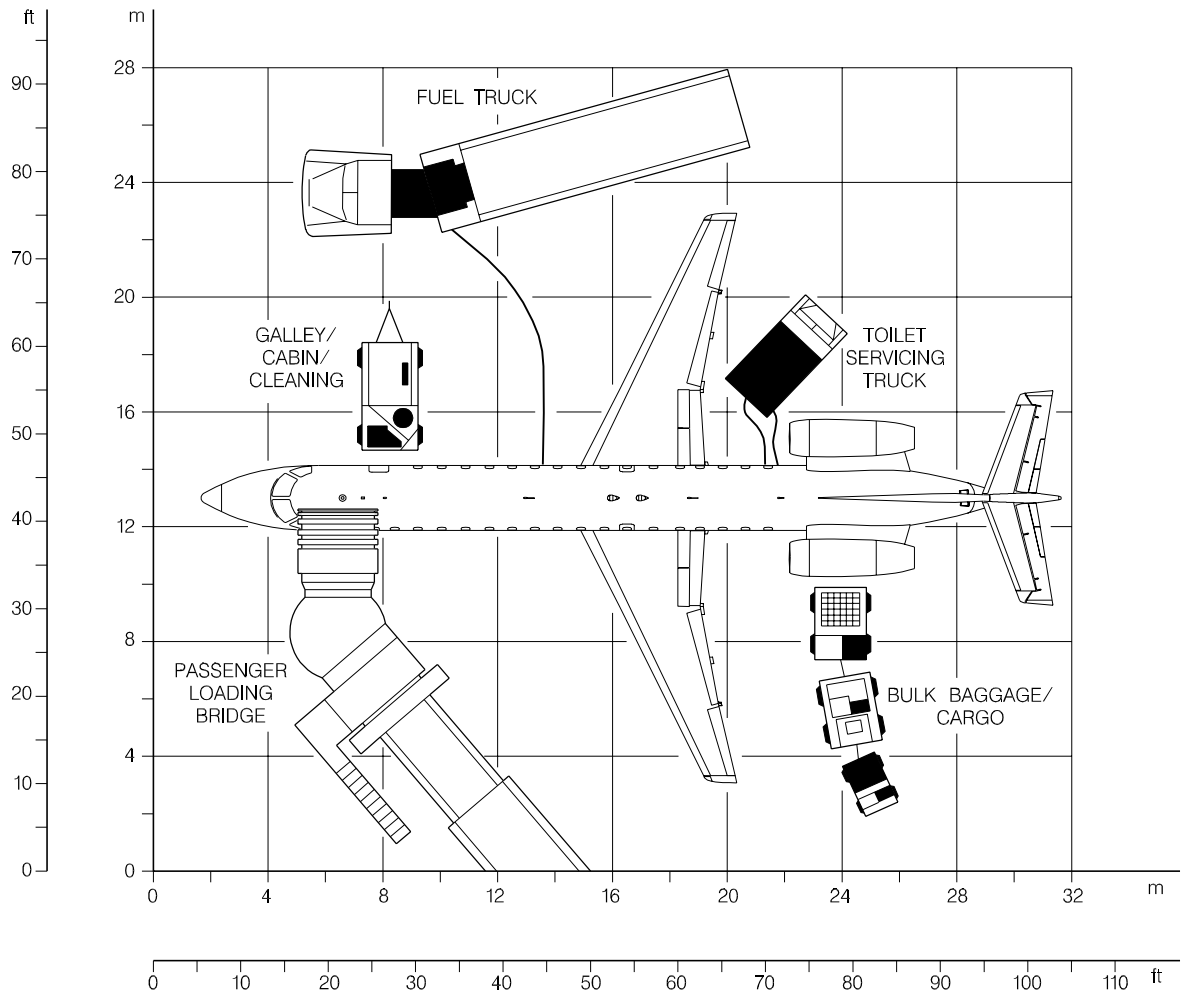
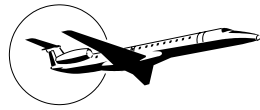
This section provides the following information:

- Typical arrangements of ground support equipment during turnaround.
- Typical turnaround and enroute servicing times at an air terminal. These charts give typical schedules for performing servicing on the airplane within a given time. Servicing times could be rearranged to suit availability of personnel, airplane configuration, and degree of servicing required.
- The locations of ground servicing connections in graphic and tabular forms. Typical capacities and servicing requirements are shown in the figures. Services with requirements that vary with conditions are described in subsequent figures.
- Air conditioning requirements for heating and cooling the airplane, using low-pressure conditioned air. This conditioned air is supplied through an 8-inch GAC directly to the air distribution system, bypassing the air-cycle machines. Normally, a 36000 BTU/h source would be sufficient to meet the air conditioning requirements.
- Ground towing requirements for various towing conditions. Drawbar pull and total traction wheel load may be determined by considering airplane weight, pavement slope, coefficient of friction, and engine idle thrust.



145AP016.MCE

*Figure 5.1.1 - EMB-145 Airplane Servicing Arrangement  
Sheet 1*



145AP060.MCE

*Figure 5.1.1 - EMB-145 Airplane Servicing Arrangement  
Sheet 2*

## 5.2 Air Terminal Operation - Turnaround Station

| TIME (MINUTES) ↓          |                              |     | 5 | 10 | 15 | 20 |
|---------------------------|------------------------------|-----|---|----|----|----|
| OPERATIONS                |                              | MIN |   |    |    |    |
| COCKPIT<br>CREW<br>DUTIES | SHUTDOWN ENGINES             | 1   |   |    |    |    |
|                           | CLEAR AIRPLANE FOR DEPARTURE | 2   |   |    |    |    |
| PASSENGER<br>SERVICE      | DEPLANE PASSENGERS           | 4   |   |    |    |    |
|                           | SERVICE AIRPLANE INTERIOR    | 6   |   |    |    |    |
|                           | SERVICE GALLEY               | 7   |   |    |    |    |
|                           | SERVICE POTABLE WATER        | 5   |   |    |    |    |
|                           | ENPLANE PASSENGERS           | 5   |   |    |    |    |
| BAGGAGE<br>AND<br>CARGO   | UNLOAD BAGGAGE/CARGO         | 6   |   |    |    |    |
|                           | LOAD BAGGAGE/CARGO           | 8   |   |    |    |    |
| OTHER<br>SERVICE          | FUEL AIRPLANE [ 1 ]          | 10  |   |    |    |    |
|                           | FUEL AIRPLANE [ 2 ]          | 12  |   |    |    |    |
|                           | FUEL AIRPLANE [ 3 ]          | 14  |   |    |    |    |
|                           | SERVICE TOILET               | 7   |   |    |    |    |

[ 1 ] APPLICABLE TO EMB-145 ER/EU/EP/MR/MP

[ 2 ] APPLICABLE TO EMB-145 LR/LU

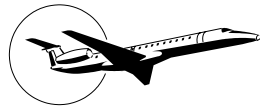
[ 3 ] APPLICABLE TO EMB-145 XR

### NOTE:

- TIME OF 18 MINUTES INCLUDES EQUIPMENT POSITIONING AND REMOVAL
- 85% FUEL TANK CAPACITY REFUELING PRESSURE 50 psi (344 kPa) at 125 gpm (473 lpm)

145APM000001.MCE C

Figure 5.2.1 - Air Terminal Operation - Turnaround Station



### 5.3 Air Terminal Operation - Enroute Station

| TIME (MINUTES) ↓          |                              |     | 5 | 10 | 15 | 20 | 25 |
|---------------------------|------------------------------|-----|---|----|----|----|----|
| OPERATIONS                |                              | MIN |   |    |    |    |    |
| COCKPIT<br>CREW<br>DUTIES | SHUTDOWN ENGINES             | 1   |   |    |    |    |    |
|                           | CLEAR AIRPLANE FOR DEPARTURE | 2   |   |    |    |    |    |
| PASSENGER<br>SERVICE      | DEPLANE PASSENGERS           | 3   |   |    |    |    |    |
|                           | SERVICE AIRPLANE INTERIOR    | 3   |   |    |    |    |    |
|                           | SERVICE GALLEY               | 4.5 |   |    |    |    |    |
|                           | SERVICE POTABLE WATER        | 5   |   |    |    |    |    |
|                           | ENPLANE PASSENGERS           | 3   |   |    |    |    |    |
| BAGGAGE<br>AND<br>CARGO   | UNLOAD BAGGAGE/CARGO         | 4   |   |    |    |    |    |
|                           | LOAD BAGGAGE/CARGO           | 5.5 |   |    |    |    |    |
| OTHER<br>SERVICE          | SERVICE TOILET               | 6   |   |    |    |    |    |

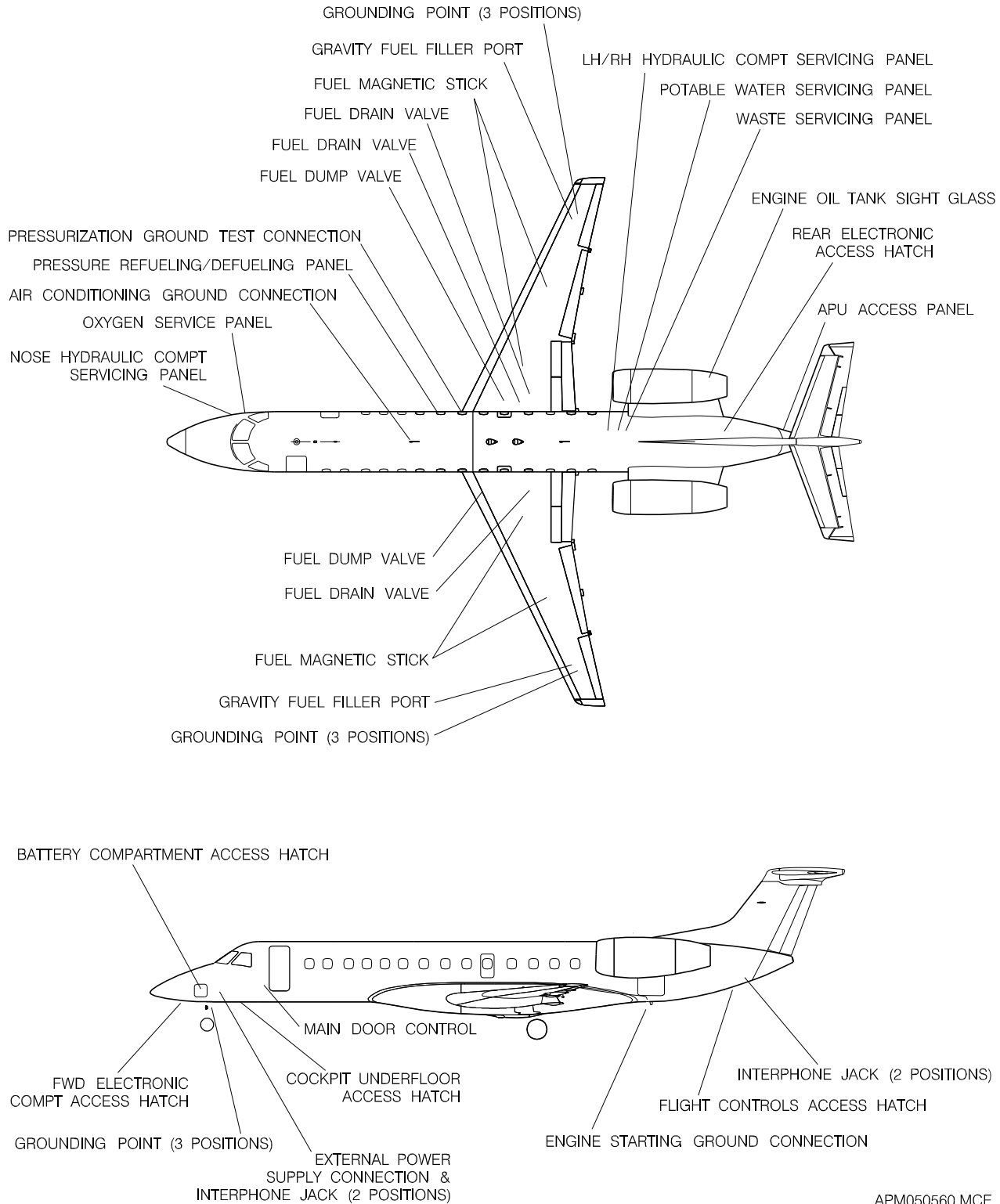
NOTE:

– TIME OF 12 MINUTES INCLUDES EQUIPMENT POSITIONING AND REMOVAL

145APM000002.MCE A

Figure 5.3.1 - Air Terminal Operation - Enroute Station

## 5.4 Ground Servicing Connections EMB-145



APM050560.MCE

**Figure 5.4.1 - Ground Servicing Connections EMB-145 ER / MP**

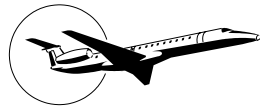
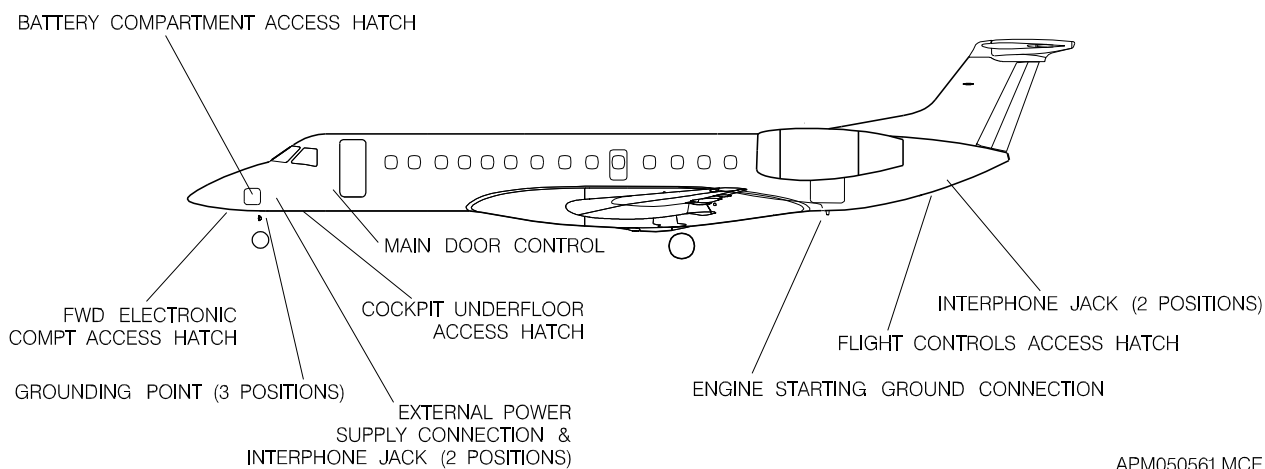
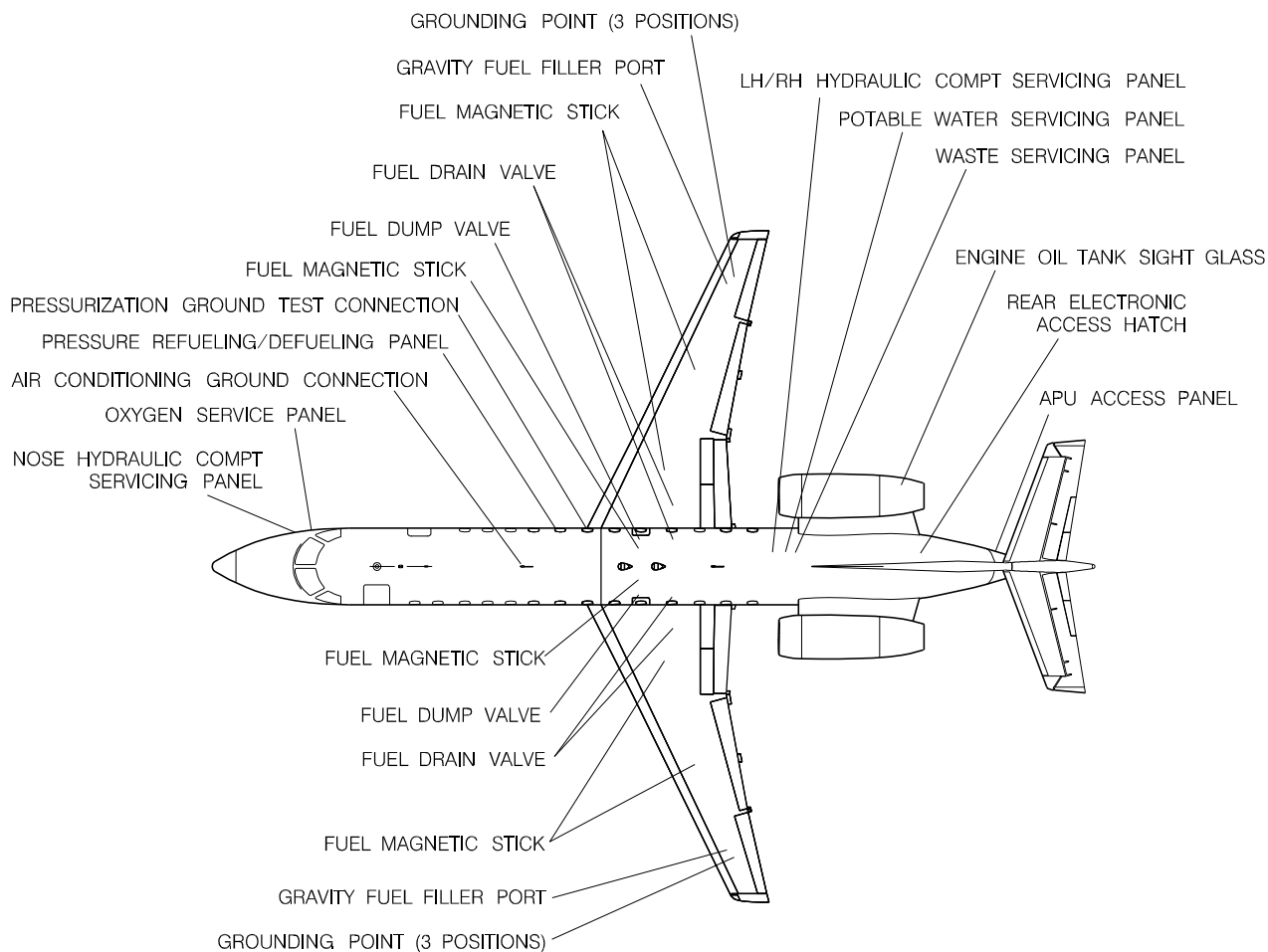
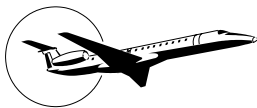


Table 5.4.1 - Ground Servicing Connections EMB-145 ER / MP

| SYSTEM                                                                                       | DISTANCE AFT<br>OF NOSE |       | DISTANCE FROM AIRPLANE<br>CENTERLINE |      |           |      | HEIGHT<br>ABOVE<br>GROUND |      |
|----------------------------------------------------------------------------------------------|-------------------------|-------|--------------------------------------|------|-----------|------|---------------------------|------|
|                                                                                              |                         |       | RIGHT SIDE                           |      | LEFT SIDE |      | MAXIMUM                   |      |
|                                                                                              | ft-in                   | m     | ft-in                                | m    | ft-in     | m    | ft-in                     | m    |
| 1. Hydraulic Power System<br>Three Servicing Connections:                                    |                         |       |                                      |      |           |      |                           |      |
| A. Nose Servicing Panel .....                                                                | 6-3                     | 1.90  | 2-8                                  | 0.81 | -         | -    | 5-7                       | 1.69 |
| B. LH and RH Servicing Panels .....                                                          | 63-3                    | 19.27 | 1-9                                  | 0.53 | 1-9       | 0.53 | 5-4                       | 1.63 |
| 2. Electrical Power System<br>One External Power Supply Connection 28 V DC -<br>1600 A ..... | 7-5                     | 2.26  | -                                    | -    | 3-1       | 0.94 | 5-7                       | 1.71 |
| 3. Oxygen System<br>One Servicing Panel .....                                                | 12-11                   | 3-93  | 2-8                                  | 0.81 | -         | -    | 5-1                       | 1.54 |
| 4. Fuel System                                                                               |                         |       |                                      |      |           |      |                           |      |
| A. Gravity Fuel Filler Port .....                                                            | 52-6                    | 16.00 | 17-10                                | 5.43 | 17-10     | 5.43 | 6-1                       | 1.84 |
| B. Fuel Magnetic Stick .....                                                                 | 49-8                    | 15.15 | 8-11                                 | 2.73 | 8-11      | 2.73 | 4-3                       | 1.31 |
| C. Fuel Magnetic Stick .....                                                                 | 52-5                    | 15.99 | 16-4                                 | 4.98 | 16-4      | 4.98 | 5-6                       | 1.57 |
| D. Fuel Drain Valve .....                                                                    | 48-11                   | 14.91 | 3-6                                  | 1.06 | 3-6       | 1.06 | 4-6                       | 1.37 |
| E. Fuel Dump Valve .....                                                                     | 48-1                    | 14.66 | 5-1                                  | 1.55 | 5-1       | 1.55 | 3-8                       | 1.12 |
| F. Pressure Refueling/Defueling Panel .....                                                  | 38-1                    | 11.62 | 2-10                                 | 0.86 | -         | -    | 4-11                      | 1.51 |
| 5. Air Conditioning System                                                                   |                         |       |                                      |      |           |      |                           |      |
| One Pressurization Ground Test Connection .....                                              | 40-3                    | 12.26 | 2-5                                  | 0.73 | -         | -    | 5-2                       | 1.57 |
| One Air Conditioning Ground Connection .....                                                 | 35-8                    | 10.88 | 1-6                                  | 0.46 |           |      | 5-3                       | 1.60 |
| 6. Potable Water System<br>One Servicing Panel .....                                         | 66-0                    | 20.12 | 0-2                                  | 0.10 | -         | -    | 5-12                      | 1.82 |
| 7. Lavatory System<br>Waste Servicing Panel .....                                            | 68-0                    | 20.74 | 1-6                                  | 0.45 | -         | -    | 5-3                       | 1.61 |
| 8. Powerplant<br>Two Engine Oil Supply/Level Check Panels:                                   |                         |       |                                      |      |           |      |                           |      |
| A. LH Panel .....                                                                            | 74-7                    | 22.73 | -                                    | -    | 6-1       | 1.84 | 10-1                      | 3.06 |
| B. RH Panel .....                                                                            | 74-7                    | 22.73 | 7-8                                  | 2.35 | -         | -    | 10-1                      | 3.06 |
| Ground Connection for Engine Air Starting .....                                              | 76-11                   | 23.46 | 0-11                                 | 0.27 | -         | -    | 5-2                       | 1.57 |



APM050561.MCE

*Figure 5.4.2 - Ground Servicing Connections EMB-145 LR*

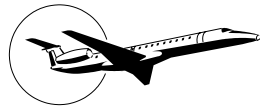
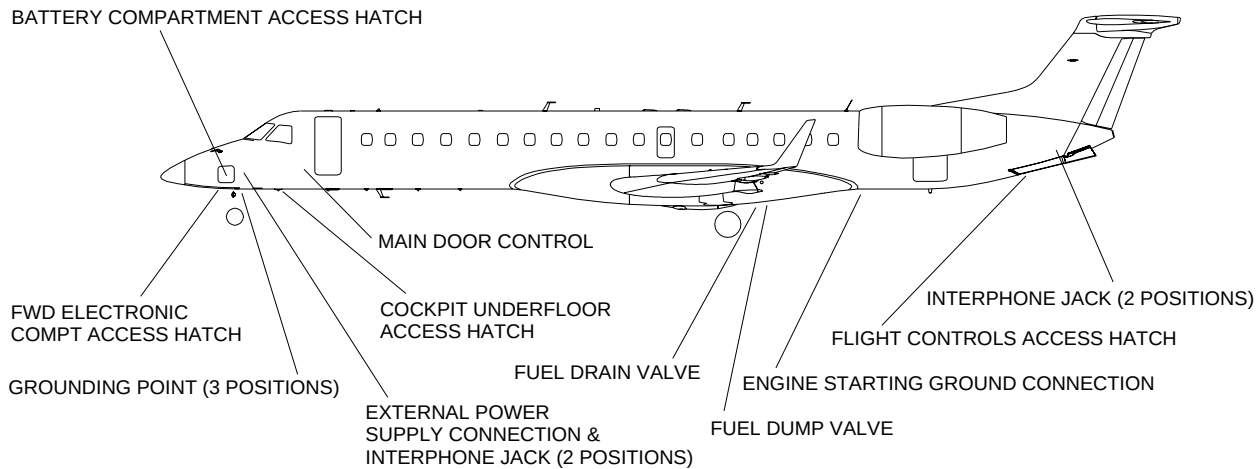
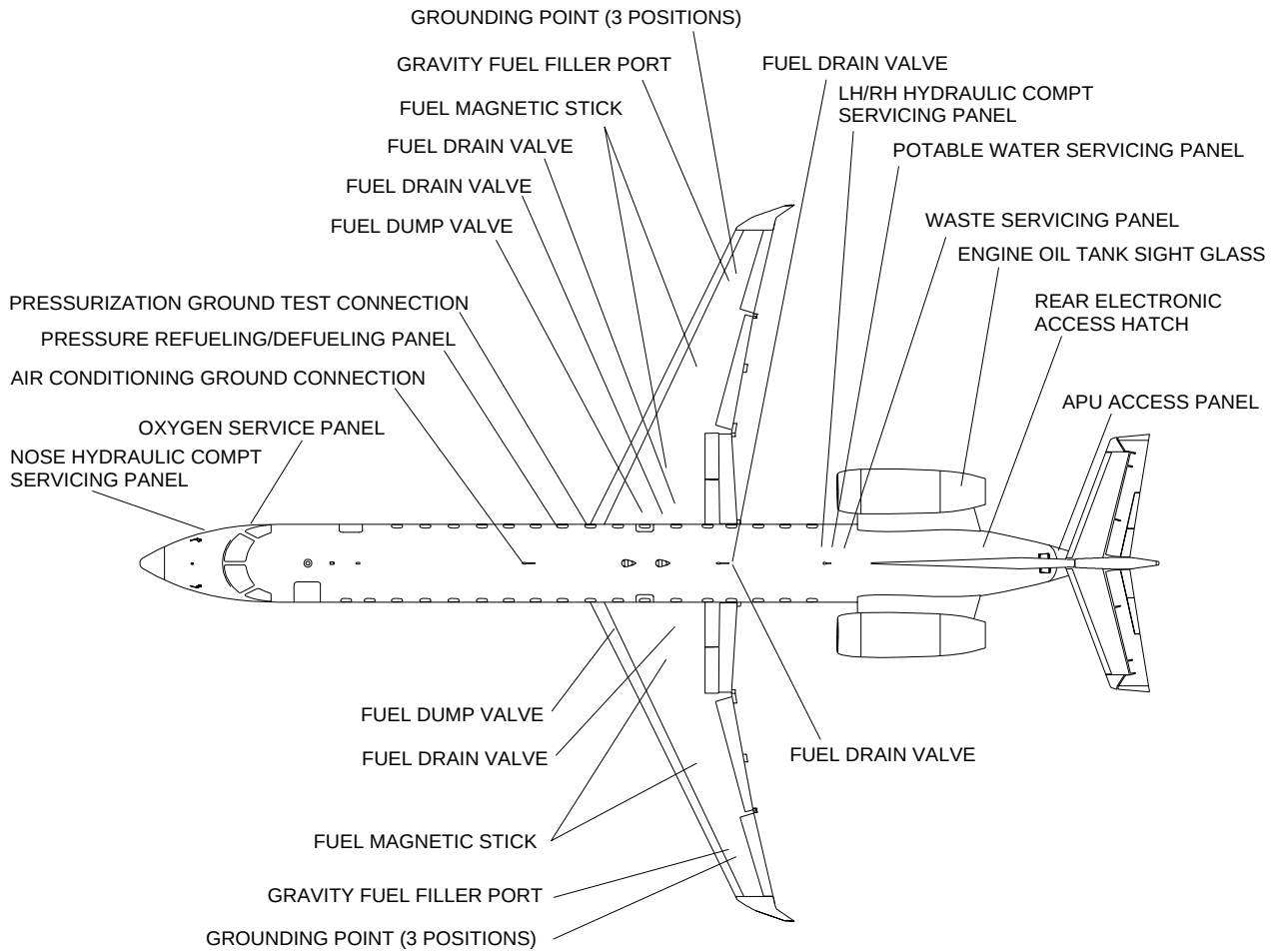


Table 5.4.2 - Ground Servicing Connections EMB-145 LR

| SYSTEM                                                                                       | DISTANCE AFT<br>OF NOSE |       | DISTANCE FROM AIRPLANE<br>CENTERLINE |      |           |      | HEIGHT<br>ABOVE<br>GROUND |      |
|----------------------------------------------------------------------------------------------|-------------------------|-------|--------------------------------------|------|-----------|------|---------------------------|------|
|                                                                                              |                         |       | RIGHT SIDE                           |      | LEFT SIDE |      | MAXIMUM                   |      |
|                                                                                              | ft-in                   | m     | ft-in                                | m    | ft-in     | m    | ft-in                     | m    |
| 1. Hydraulic Power System<br>Three Servicing Connections:                                    |                         |       |                                      |      |           |      |                           |      |
| A. Nose Servicing Panel .....                                                                | 6-3                     | 1.90  | 2-8                                  | 0.81 | -         | -    | 5-7                       | 1.69 |
| B. LH and RH Servicing Panels .....                                                          | 63-3                    | 19.27 | 1-9                                  | 0.53 | 1-9       | 0.53 | 5-4                       | 1.63 |
| 2. Electrical Power System<br>One External Power Supply Connection 28 V DC -<br>1600 A ..... | 7-5                     | 2.26  | -                                    | -    | 3-1       | 0.94 | 5-7                       | 1.71 |
| 3. Oxygen System<br>One Servicing Panel .....                                                | 12-11                   | 3-93  | 2-8                                  | 0.81 | -         | -    | 5-1                       | 1.54 |
| 4. Fuel System                                                                               |                         |       |                                      |      |           |      |                           |      |
| A. Gravity Fuel Filler Port .....                                                            | 52-6                    | 16.00 | 17-10                                | 5.43 | 17-10     | 5.43 | 6-1                       | 1.84 |
| B. Fuel Magnetic Stick .....                                                                 | 49-8                    | 15.15 | 8-11                                 | 2.73 | 8-11      | 2.73 | 4-3                       | 1.31 |
| C. Fuel Magnetic Stick .....                                                                 | 52-5                    | 15.99 | 16-4                                 | 4.98 | 16-4      | 4.98 | 5-6                       | 1.57 |
| D. Fuel Magnetic Stick .....                                                                 | 47-4                    | 14.44 | 1-1                                  | 0.35 | 1-1       | 0.35 | 3-6                       | 1.06 |
| E. Fuel Drain Valve .....                                                                    | 48-11                   | 14.91 | 3-6                                  | 1.06 | 3-6       | 1.06 | 4-6                       | 1.37 |
| F. Fuel Drain Valve .....                                                                    | 49-2                    | 14.98 | 1-4                                  | 0.41 | 1-4       | 0.41 | 3-6                       | 1.06 |
| G. Fuel Dump Valve .....                                                                     | 47-4                    | 14.44 | 2-2                                  | 0.68 | 2-2       | 0.68 | 3-6                       | 1.06 |
| H. Pressure Refueling/Defueling Panel .....                                                  | 38-1                    | 11.62 | 2-10                                 | 0.86 | -         | -    | 4-11                      | 1.51 |
| 5. Air Conditioning System                                                                   |                         |       |                                      |      |           |      |                           |      |
| One Pressurization Ground Test Connection .....                                              | 40-3                    | 12.26 | 2-5                                  | 0.73 | -         | -    | 5-2                       | 1.57 |
| One Air Conditioning Ground Connection .....                                                 | 35-8                    | 10.88 | 1-6                                  | 0.46 |           |      | 5-3                       | 1.60 |
| 6. Potable Water System<br>One Servicing Panel .....                                         | 66-0                    | 20.12 | 0-2                                  | 0.10 | -         | -    | 5-12                      | 1.82 |
| 7. Lavatory System<br>Waste Servicing Panel .....                                            | 68-0                    | 20.74 | 1-6                                  | 0.45 | -         | -    | 5-3                       | 1.61 |
| 8. Powerplant<br>Two Engine Oil Supply/Level Check Panels:                                   |                         |       |                                      |      |           |      |                           |      |
| A. LH Panel .....                                                                            | 74-7                    | 22.73 | -                                    | -    | 6-1       | 1.84 | 10-1                      | 3.06 |
| B. RH Panel .....                                                                            | 74-7                    | 22.73 | 7-8                                  | 2.35 | -         | -    | 10-1                      | 3.06 |
| Ground Connection for Engine Air Starting .....                                              | 76-11                   | 23.46 | 0-11                                 | 0.27 | -         | -    | 5-2                       | 1.57 |



145APM050564.MCE

Figure 5.4.3 - Ground Servicing Connections EMB-145 XR

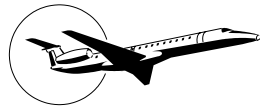
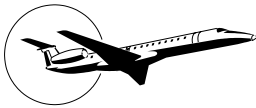


Table 5.4.3 - Ground Servicing Connections EMB-145 XR

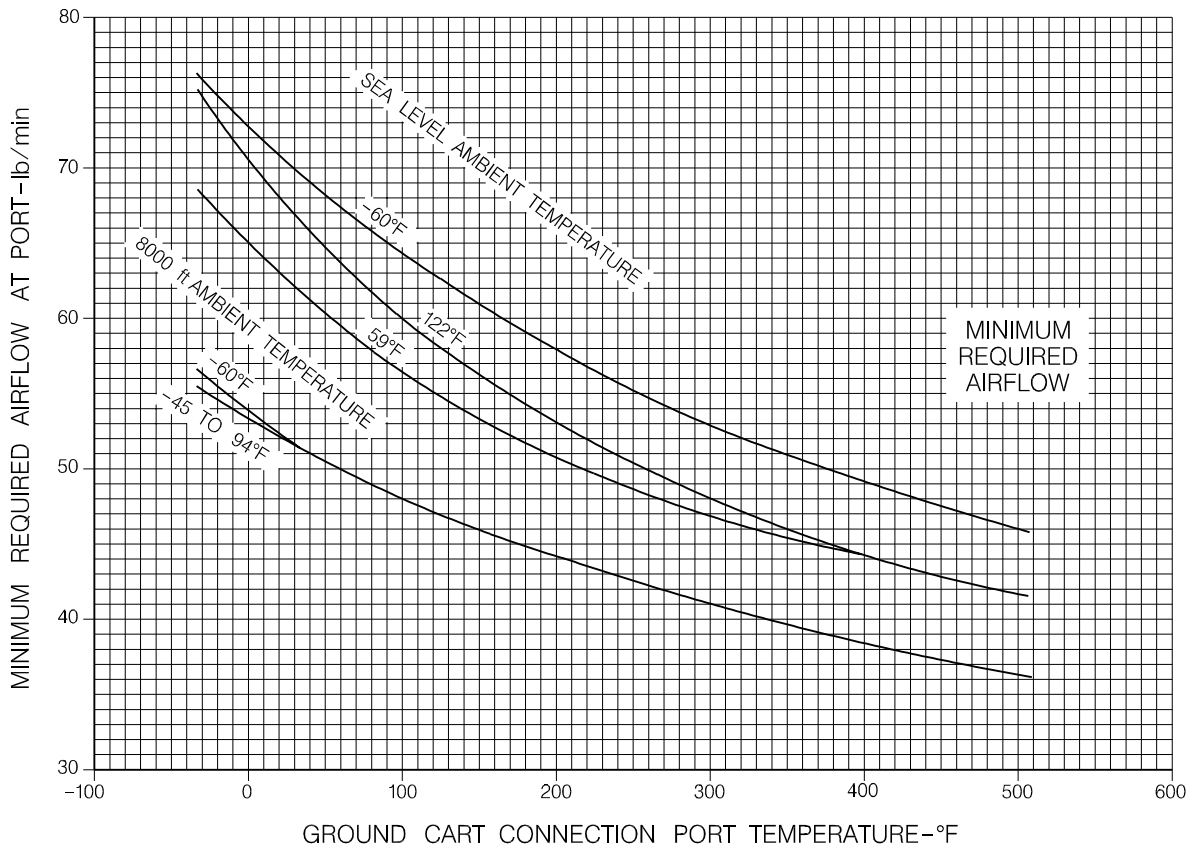
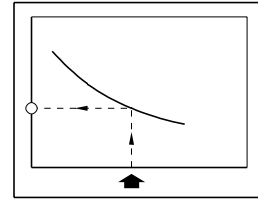
| SYSTEM                                                                                       | DISTANCE AFT<br>OF NOSE |       | DISTANCE FROM AIRPLANE<br>CENTERLINE |      |           |      | HEIGHT<br>ABOVE<br>GROUND |      |
|----------------------------------------------------------------------------------------------|-------------------------|-------|--------------------------------------|------|-----------|------|---------------------------|------|
|                                                                                              |                         |       | RIGHT SIDE                           |      | LEFT SIDE |      | MAXIMUM                   |      |
|                                                                                              | ft-in                   | m     | ft-in                                | m    | ft-in     | m    | ft-in                     | m    |
| 1. Hydraulic Power System<br>Three Servicing Connections:                                    |                         |       |                                      |      |           |      |                           |      |
| A. Nose Servicing Panel .....                                                                | 6-3                     | 1.90  | 2-8                                  | 0.81 | -         | -    | 5-7                       | 1.69 |
| B. LH and RH Servicing Panels .....                                                          | 63-3                    | 19.27 | 1-9                                  | 0.53 | 1-9       | 0.53 | 5-4                       | 1.63 |
| 2. Electrical Power System<br>One External Power Supply Connection 28 V DC -<br>1600 A ..... | 7-5                     | 2.26  | -                                    | -    | 3-1       | 0.94 | 5-7                       | 1.71 |
| 3. Oxygen System<br>One Servicing Panel .....                                                | 12-11                   | 3-93  | 2-8                                  | 0.81 | -         | -    | 5-1                       | 1.54 |
| 4. Fuel System                                                                               |                         |       |                                      |      |           |      |                           |      |
| A. Gravity Fuel Filler Port .....                                                            | 52-6                    | 16.00 | 17-10                                | 5.43 | 17-10     | 5.43 | 6-2                       | 1.88 |
| B. Fuel Magnetic Stick .....                                                                 | 49-10                   | 15.20 | 8-9                                  | 2.67 | 8-9       | 2.67 | 5-9                       | 1.77 |
| C. Fuel Magnetic Stick .....                                                                 | 52-6                    | 16.00 | 16-4                                 | 4.98 | 16-4      | 4.98 | 5-6                       | 1.88 |
| D. Fuel Drain Valve .....                                                                    | 49-2                    | 15.00 | 3-6                                  | 1.07 | 3-6       | 1.07 | 4-6                       | 1.13 |
| E. Fuel Drain Valve .....                                                                    | 56-10                   | 17.33 | 0-2                                  | 0.06 | 0-2       | 0.06 | 3-5                       | 1.05 |
| F. Fuel Dump Valve .....                                                                     | 48-2                    | 14.70 | 5-1                                  | 1.55 | 5-1       | 1.55 | 3-11                      | 1.21 |
| G. Fuel Dump Valve .....                                                                     | 57-8                    | 17.58 | -                                    | -    | -         | -    | 3-6                       | 1.07 |
| H. Pressure Refueling/Defueling Panel .....                                                  | 38-0                    | 11.59 | 3-4                                  | 1.02 | -         | -    | 4-7                       | 1.42 |
| 5. Air Conditioning System                                                                   |                         |       |                                      |      |           |      |                           |      |
| One Pressurization Ground Test Connection .....                                              | 40-3                    | 12.26 | 2-5                                  | 0.73 | -         | -    | 5-2                       | 1.57 |
| One Air Conditioning Ground Connection .....                                                 | 35-8                    | 10.88 | 1-6                                  | 0.46 |           |      | 5-3                       | 1.60 |
| 6. Potable Water System<br>One Servicing Panel .....                                         | 66-0                    | 20.12 | 0-2                                  | 0.05 | -         | -    | 5-12                      | 1.82 |
| 7. Lavatory System<br>Waste Servicing Panel .....                                            | 68-0                    | 20.74 | 1-6                                  | 0.45 | -         | -    | 5-3                       | 1.61 |
| 8. Powerplant<br>Two Engine Oil Supply/Level Check Panels:                                   |                         |       |                                      |      |           |      |                           |      |
| A. LH Panel .....                                                                            | 74-1                    | 22.59 | -                                    | -    | 5-10      | 1.79 | 9-1                       | 2.76 |
| B. RH Panel .....                                                                            | 74-1                    | 22.59 | 8-2                                  | 2.49 | -         | -    | 9-5                       | 2.82 |
| Ground Connection for Engine Air Starting .....                                              | 76-11                   | 23.46 | 0-11                                 | 0.27 | -         | -    | 5-7                       | 1.70 |



## 5.5 Engine Starting Pneumatic Requirements

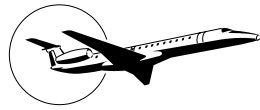
### EMB-145/EMB-135 PNEUMATIC STARTING SYSTEM GROUND CART MINIMUM REQUIREMENTS

#### AE3007A SERIES ENGINES



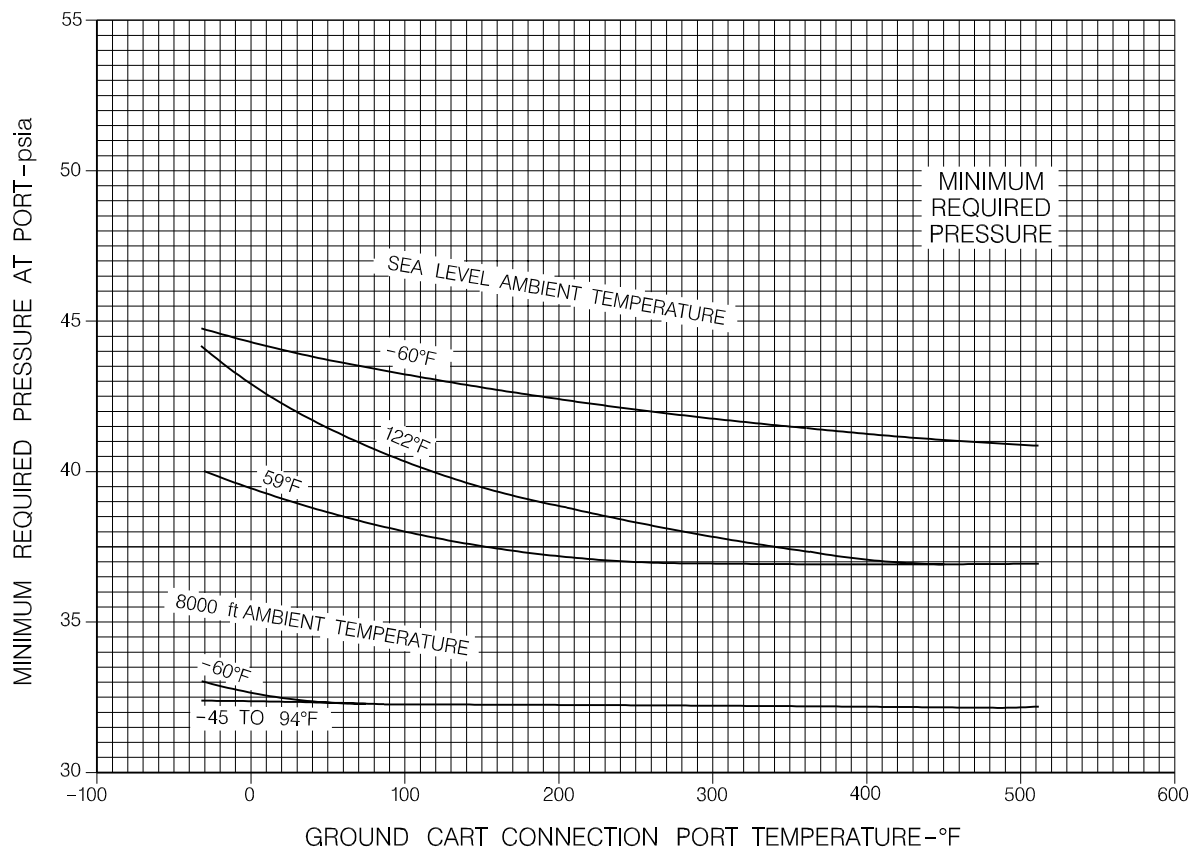
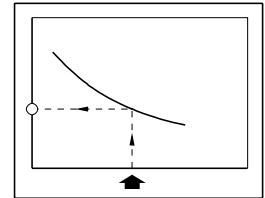
APM050024.MCE C

Figure 5.5.1 - Engine Starting Pneumatic Requirements - Airflow x Temperature



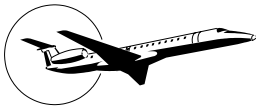
**EMB-145/EMB-135 PNEUMATIC STARTING SYSTEM**  
GROUND CART MINIMUM REQUIREMENTS

**AE3007A SERIES ENGINES**

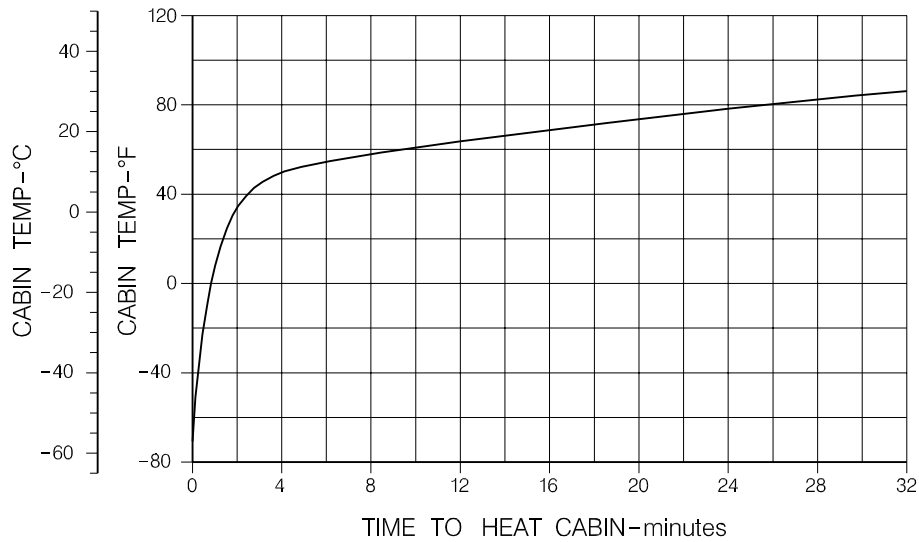


APM050025.MCE C

*Figure 5.5.2 - Engine Starting Pneumatic Requirements - Pressure x Temperature*



## 5.6 Ground Pneumatic Power Requirements

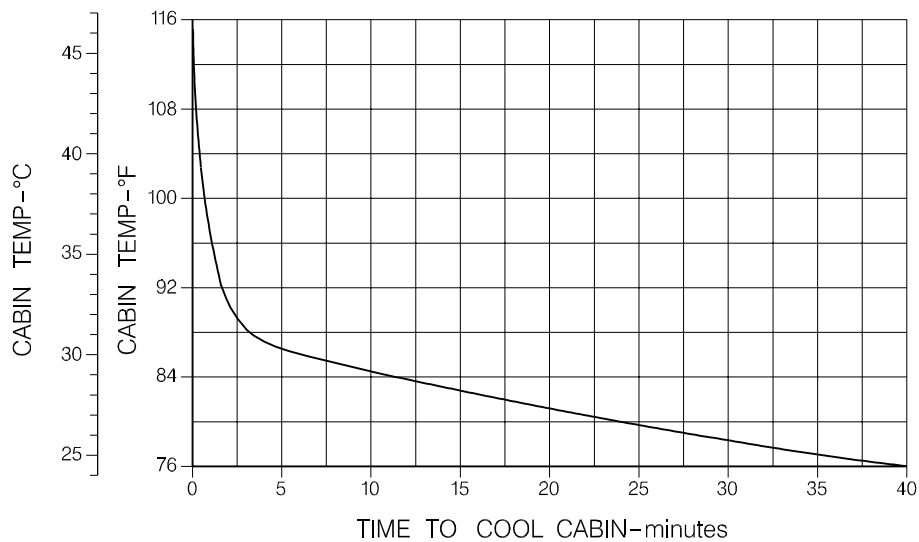


### HEATING

Initial cabin temp: -65°F (-54°C)  
Outside air temp: -65°F (-54°C)  
Relative Humidity: 0%  
No crew or passengers  
No other heat load

Bleed air from APU:  
34.5 kg/min, (76 lb/min)  
420 kPa (61 psia)  
2 operating packs (ECS)

Cabin airflow:  
~ 43 kg/min (95 lb/min)  
temp ~ 160°F (71°C)



### COOLING

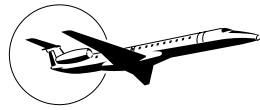
Initial cabin temp: 116°F (47°C)  
Outside air temp: 104°F (40°C)  
Relative Humidity: 40%  
No crew or passengers  
No other heat load

Bleed air from APU:  
25 kg/min, (55 lb/min)  
338 kPa (49 psia)  
2 operating packs (ECS)

Cabin airflow:  
~ 25 kg/min (55 lb/min)  
temp ~ 32°F (0°C)

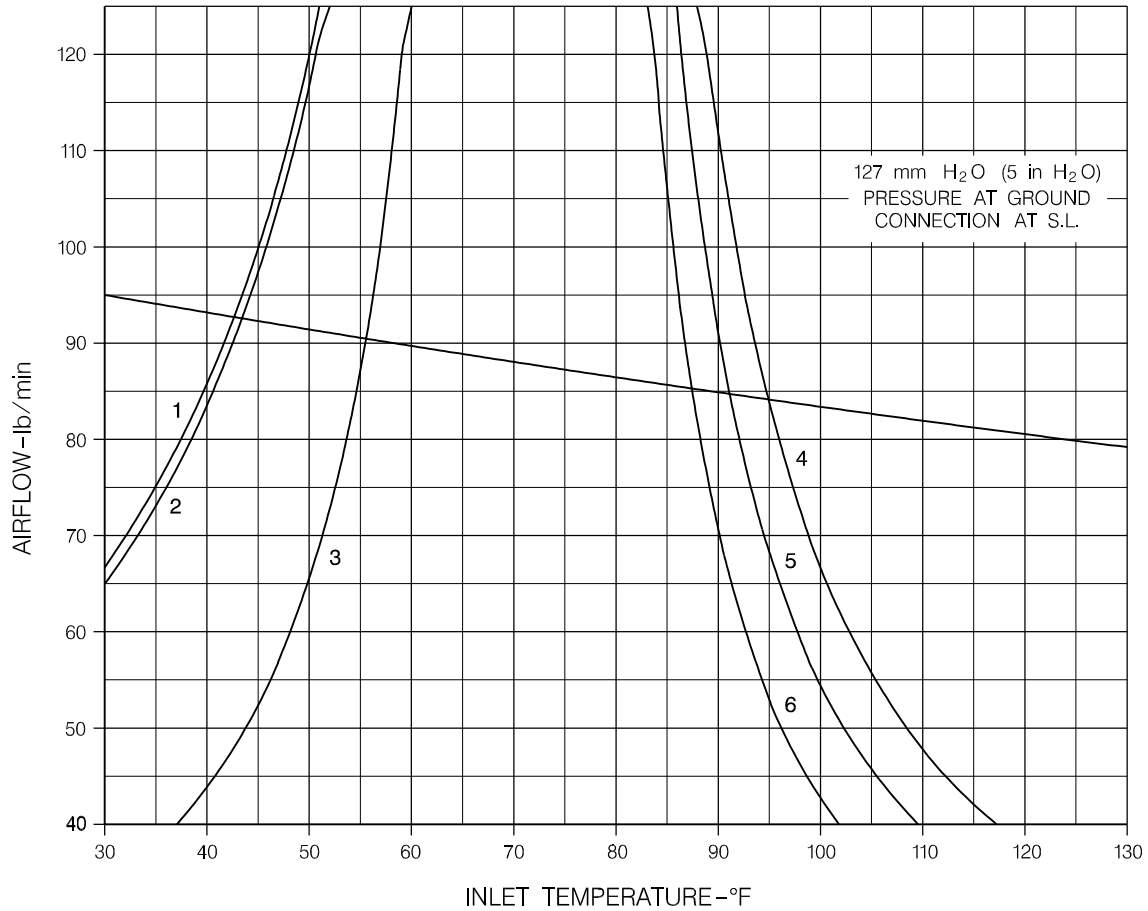
145AP026.MCE A

Figure 5.6.1 - Ground Pneumatic Power Requirements (APU Mode)



## 5.7 Conditioned Air Requirements

### PRE-CONDITIONED AIRFLOW REQUIREMENTS



| CONDITIONS | AMBIENT TEMP |      | SOLAR LOAD<br>(BTU/h) | ELECTRICAL<br>LOAD<br>(BTU/h) | OCCUPANTS | CABIN TEMP |      |
|------------|--------------|------|-----------------------|-------------------------------|-----------|------------|------|
|            | (°C)         | (°F) |                       |                               |           | (°C)       | (°F) |
| 1          | 39           | 103  | 14400                 | 10600                         | 54        | 24         | 75   |
| 2          | 39           | 103  | 14400                 | 10600                         | 54        | 27         | 80   |
| 3          | 39           | 103  | 0                     | 10600                         | 4         | 21         | 70   |
| 4          | -40          | -40  | 0                     | 0                             | 4         | 24         | 75   |
| 5          | -29          | -20  | 0                     | 0                             | 4         | 24         | 75   |
| 6          | -18          | 0    | 0                     | 0                             | 4         | 24         | 75   |

APM050551.MCE

Figure 5.7.1 - Pre-conditioned Airflow Requirements



## 5.8 Ground Towing Requirements

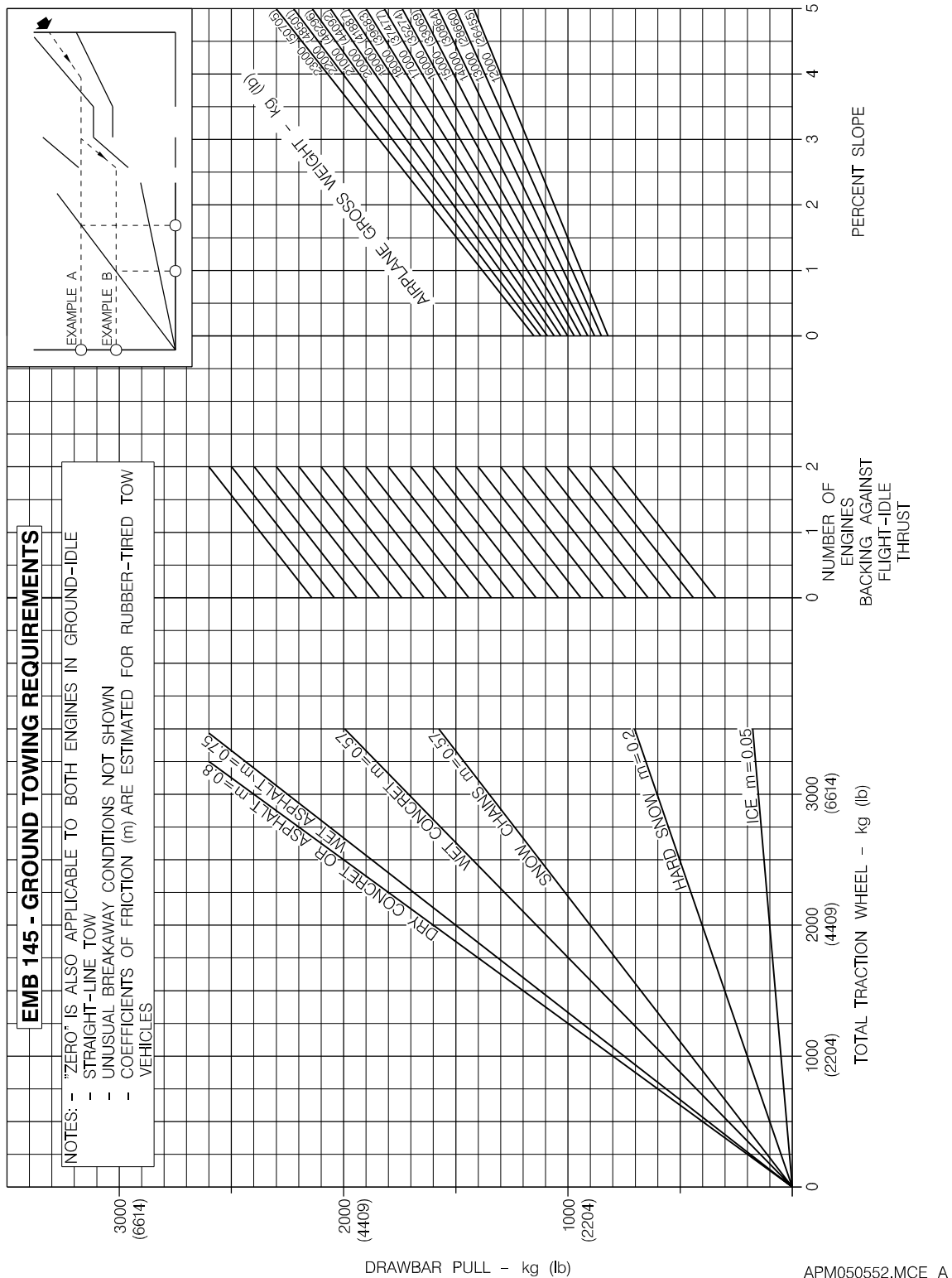
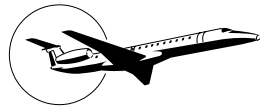


Figure 5.8.1 - Ground Towing Requirements

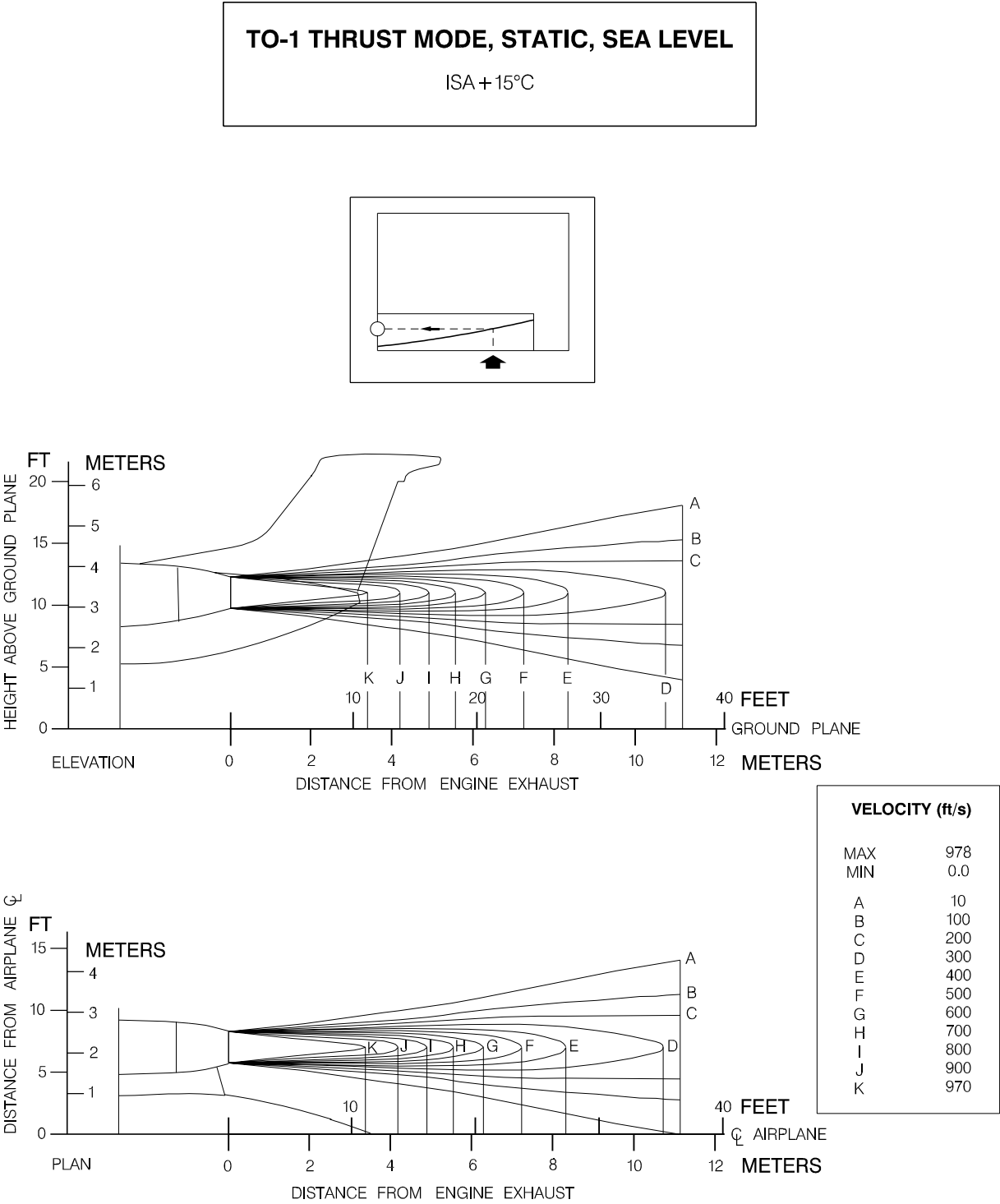


## 6. OPERATING CONDITIONS

This section presents graphics concerning:

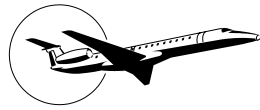
- The EMB-145 aircraft Jet Engine Exhaust velocities and temperatures,
- The Airport and Community Noise levels and Hazard Areas.

6.1 Engine Exhaust Velocities and Temperatures



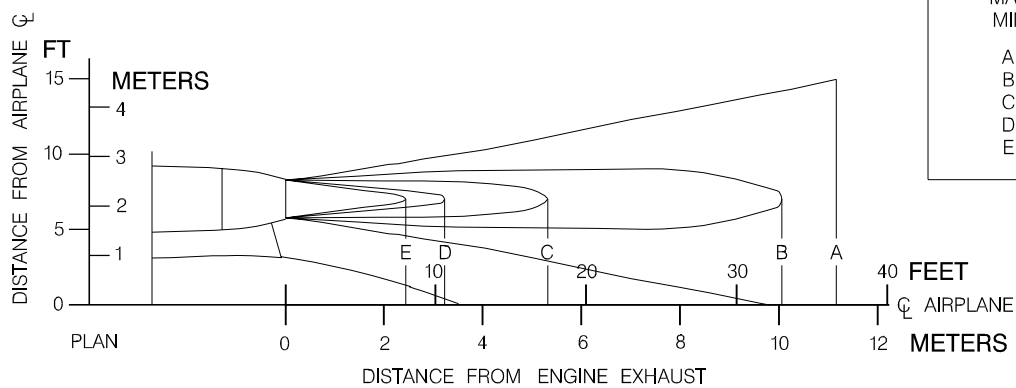
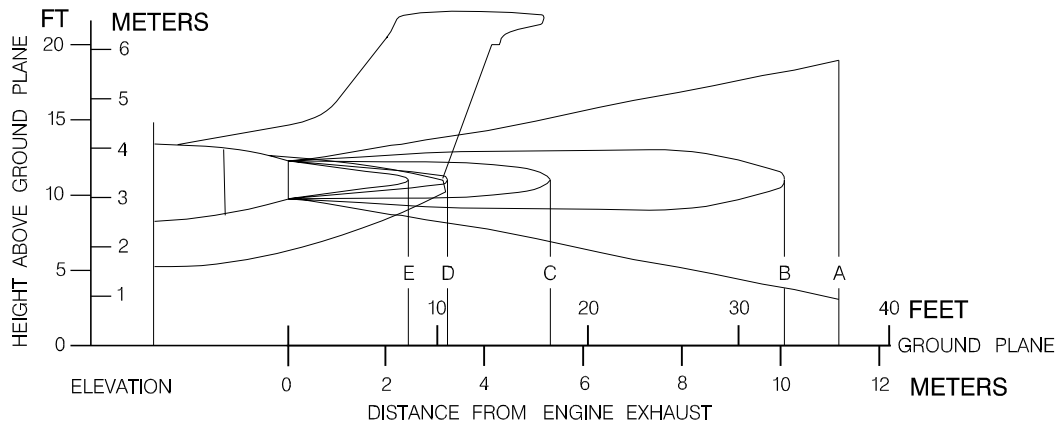
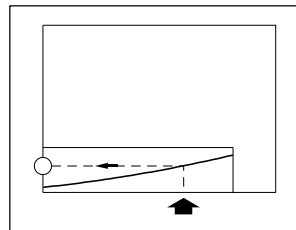
APM060018.MCE B

Figure 6.1.1 - Jet Wake Velocity Profile (T/O-1 Thrust Mode)



**TO-1 THRUST MODE, STATIC, SEA LEVEL**

ISA + 15°C



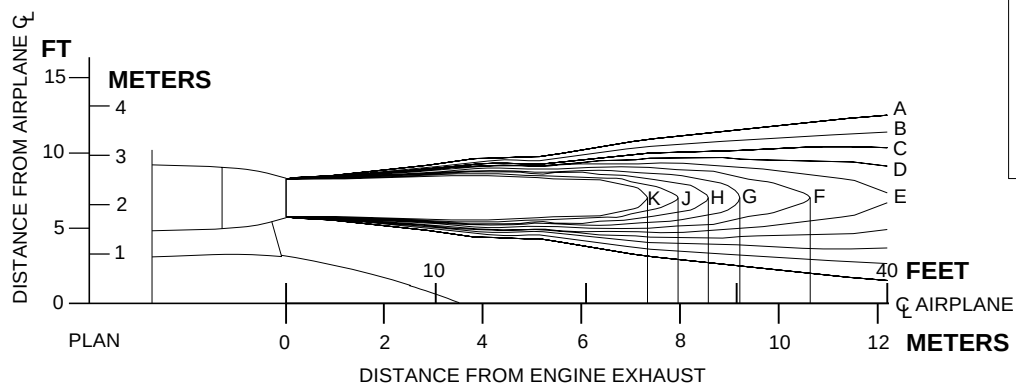
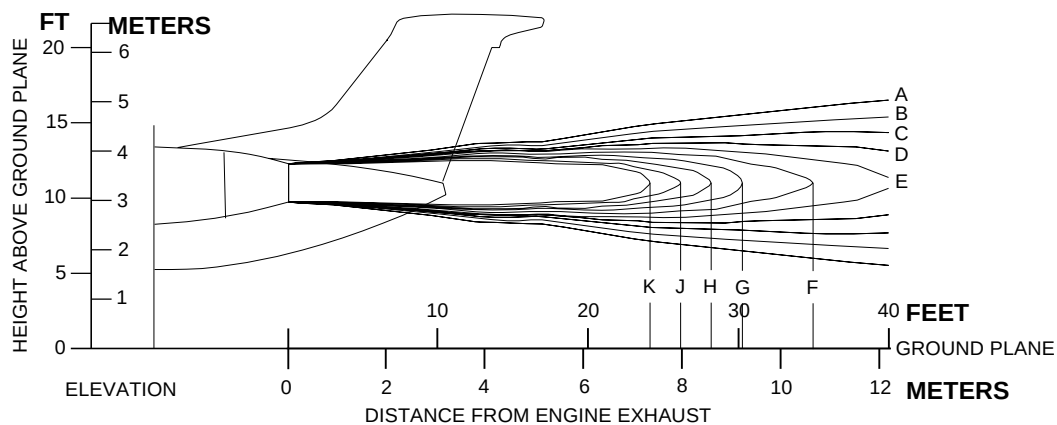
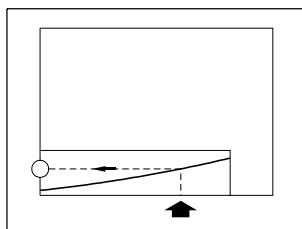
| TEMPERATURE (°F) (°C) |     |     |
|-----------------------|-----|-----|
| MAX                   | 252 | 122 |
| MIN                   | 86  | 30  |
| A                     | 90  | 32  |
| B                     | 140 | 60  |
| C                     | 190 | 88  |
| D                     | 240 | 116 |
| E                     | 250 | 121 |

APM060019.MCE B

*Figure 6.1.2 - Jet Wake Temperature Profile (T/O-1 Thrust Mode)*

### BREAKAWAY, STATIC, SEA LEVEL

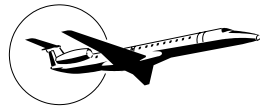
ISA+15°C



| LEVEL | VELOCITY<br>(ft/s) |
|-------|--------------------|
| A     | 50                 |
| B     | 75                 |
| C     | 100                |
| D     | 125                |
| E     | 150                |
| F     | 175                |
| G     | 200                |
| H     | 225                |
| J     | 250                |
| K     | 274                |

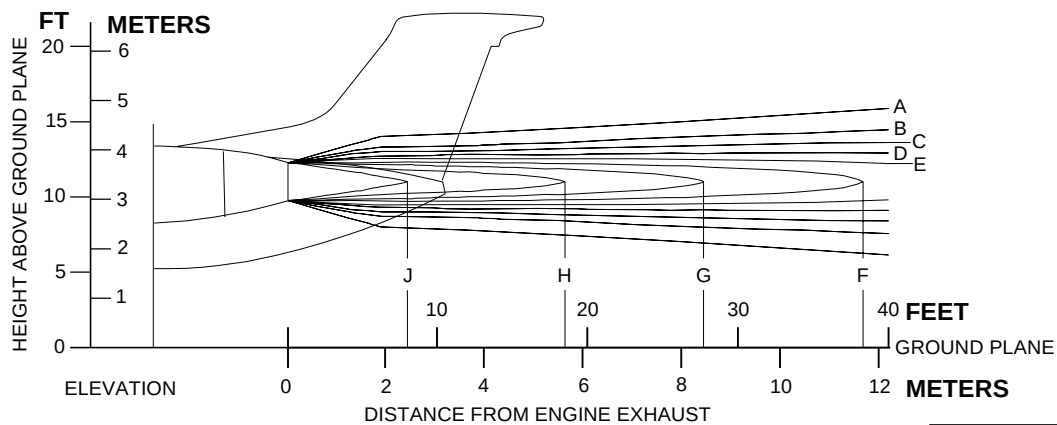
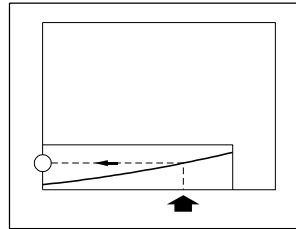
EM145APM060001B.DGN

Figure 6.1.3 - Jet Wake Velocity Profile (Breakaway)

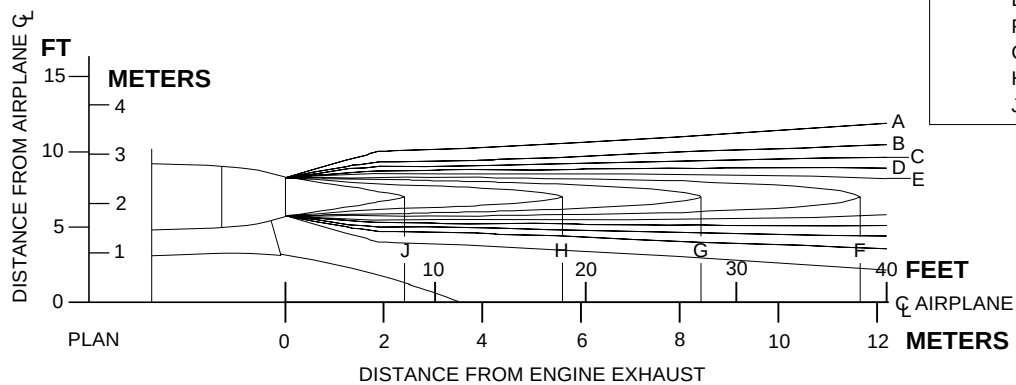


**BREAKAWAY, STATIC, SEA LEVEL**

ISA+15°C



| TEMPERATURE | (°C) | (°F) |
|-------------|------|------|
| A           | 16   | 60   |
| B           | 21   | 70   |
| C           | 27   | 80   |
| D           | 32   | 90   |
| E           | 38   | 100  |
| F           | 43   | 110  |
| G           | 49   | 120  |
| H           | 54   | 130  |
| J           | 60   | 140  |

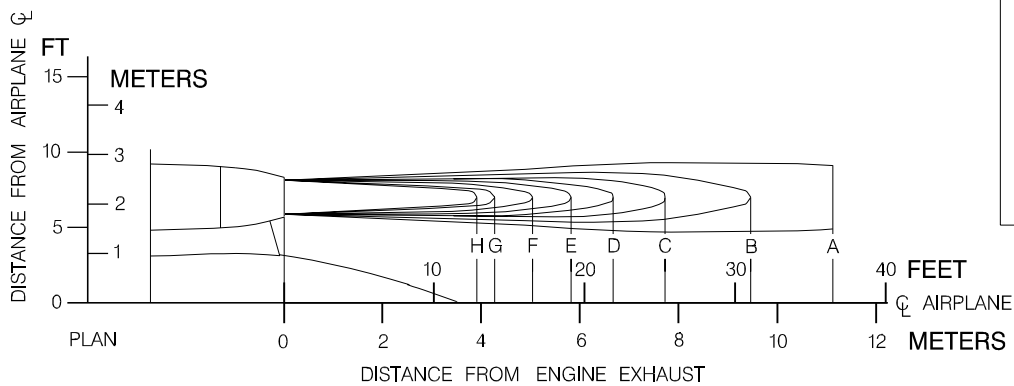
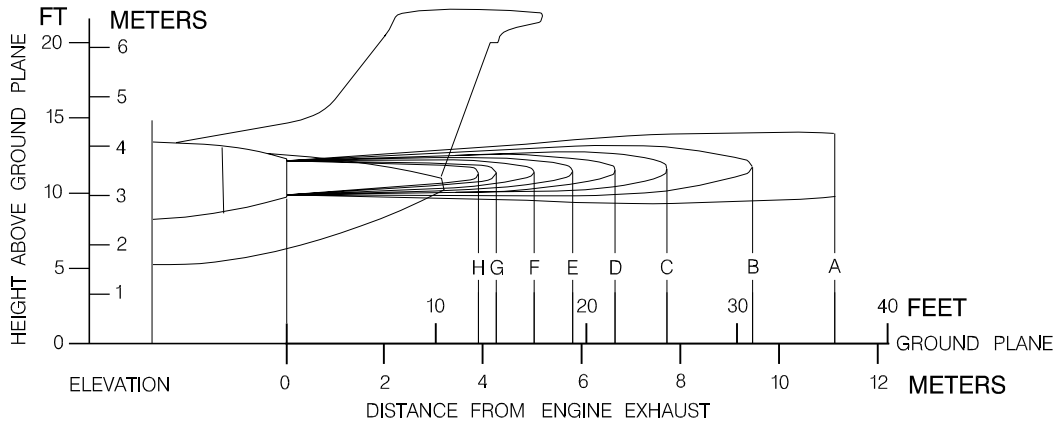
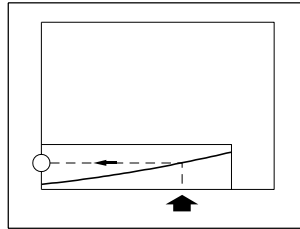


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Figure 6.1.4 - Jet Wake Temperature Profile (Breakaway)

### **IDLE THRUST MODE, STATIC, SEA LEVEL**

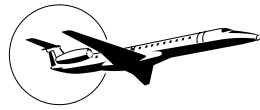
ISA + 15°C

**VELOCITY (ft/sec)**

|     |     |
|-----|-----|
| MAX | 220 |
| MIN | 0.0 |
| A   | 50  |
| B   | 75  |
| C   | 100 |
| D   | 125 |
| E   | 150 |
| F   | 175 |
| G   | 200 |
| H   | 210 |

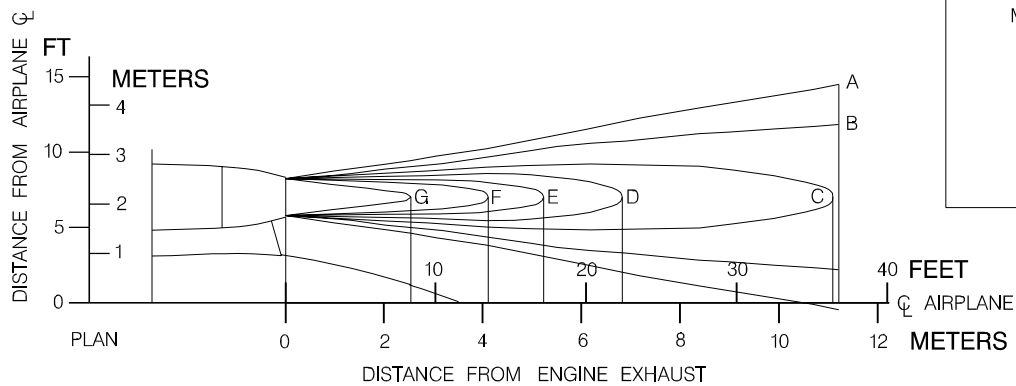
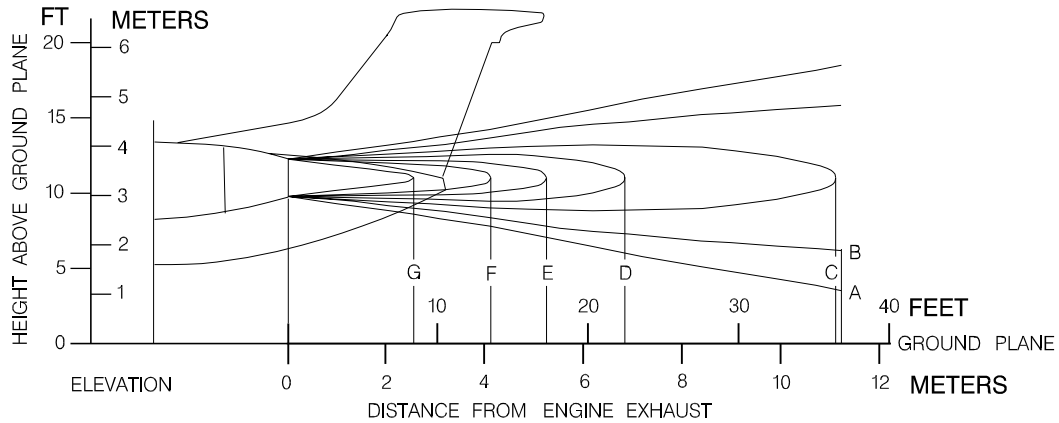
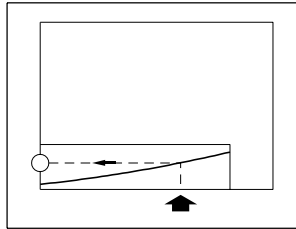
APM060020.MCE B

Figure 6.1.5 - Jet Wake Velocity Profile (Idle Thrust Mode)



**IDLE THRUST MODE, STATIC, SEA LEVEL**

ISA +15°C



| TEMPERATURE | (°F) | (°C) |
|-------------|------|------|
| MAX         | 201  | 94   |
| MIN         | 86   | 30   |
| A           | 90   | 32   |
| B           | 100  | 38   |
| C           | 120  | 49   |
| D           | 140  | 60   |
| E           | 160  | 71   |
| F           | 180  | 82   |
| G           | 200  | 93.5 |

APM060021.MCE B

*Figure 6.1.6 - Jet Wake Temperature Profile (Idle Thrust Mode)*

## 6.2 Airport and Community Noise

Aircraft noise is a major concern for the airport and community planner. The airport is a basic element in the community's transportation system and, as such, is vital to its growth. However, the airport must also be a good neighbor, and this can be accomplished only with proper planning. Since aircraft noise extends beyond the boundaries of the airport, it is vital to consider the noise impact on the surrounding communities.

Many means have been devised to provide the planner with a tool to estimate the impact of airport operations. Too often they oversimplify noise to the point where the results become erroneous. Noise is not a simple matter; therefore, there are no simple answers.

The cumulative noise contour is an effective tool. However, care must be exercised to ensure that the contours, used correctly, estimate the noise resulting from aircraft operations conducted at an airport.

The size and shape of the single-event contours, which are inputs into the cumulative noise contours, are dependent upon numerous factors. They include:

### 6.2.1 Operational Factors

#### 6.2.1.1 Aircraft Weight

Aircraft weight is dependent on the distance to be traveled, en-route winds, payload, and anticipated aircraft delay upon reaching the destination.

#### 6.2.1.2 Engine Power Setting

The rates of ascent and descent and the noise levels emitted at the source are influenced by the power setting used.

#### 6.2.1.3 Airport Altitude

Higher airport altitude will affect the engine performance and thus can influence noise.

### 6.2.2 Atmospheric Conditions - Sound Propagation

#### 6.2.2.1 Wind

With stronger headwinds, the aircraft can take off and climb more rapidly relative to the ground. Also, winds can influence the distribution of noise in the surrounding communities.

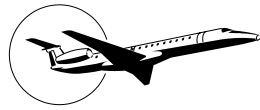
#### 6.2.2.2 Temperature and Relative Humidity

The absorption of noise in the atmosphere along the transmission path between the aircraft and the ground observer varies with both temperature and relative humidity.

### 6.2.3 Surface Condition - Shielding, Extra Ground Attenuation (EGA)

**Terrain** - If the ground slopes down after takeoff or up before landing, noise will be reduced since the aircraft will be at a higher altitude above the ground. Additionally, hills, shrubs, trees, and large buildings can act as sound buffers.

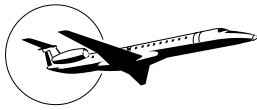
All of these factors can alter the shape and size of the contours appreciably. To demonstrate the effect of some of these factors, estimated noise level contours for two different operating conditions are shown



on figure 6.2.1. These contours reflect a given noise level upon a ground level plane at runway elevation. As indicated from these data, the contour size varies substantially with operating and atmospheric conditions. Most aircraft operations are, of course, conducted at less than the maximum gross weights because the average flight distances are much shorter than the maximum aircraft range capability and the average load factors are less than 100%. Therefore, in developing cumulative contours for planning purposes, it is recommended that the airlines serving a particular city be contacted to provide operational information.

In addition, there are no universally accepted methods for developing aircraft noise contours for relating the acceptability of specific noise zones to specific land uses. It is therefore expected that the noise contour data for a particular aircraft and the impact assessment methodology change. To ensure that currently available information of this type is used in any planning study, it is recommended that it be obtained directly from the Office of Environmental Quality in the Federal Aviation Administration in Washington, D.C.

It should be noted that the contours shown herein are only for illustrating the impact of the operating and atmospheric conditions and do not represent the single-event contour of the family of aircraft described in this document. It is expected that the cumulative contours be developed as required by the planners using the data and methodology applicable to their specific study.



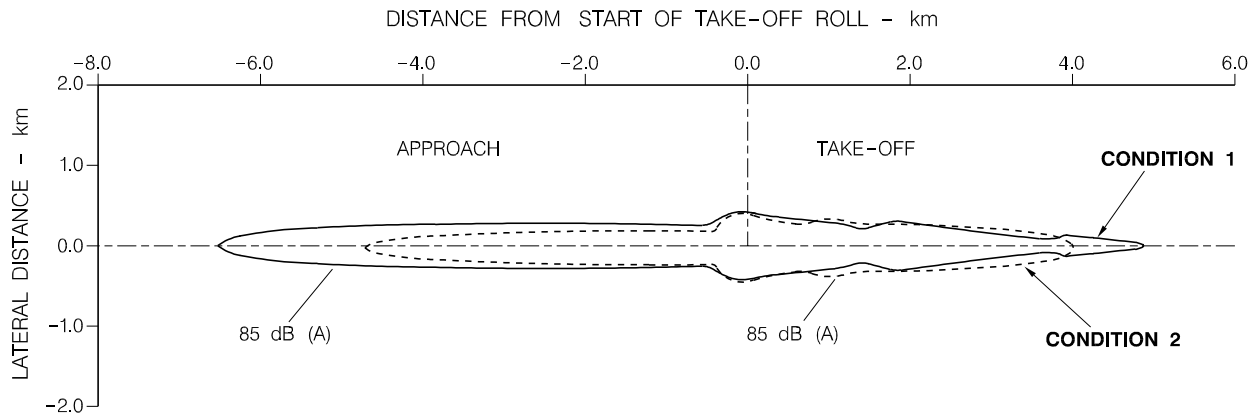
**CONDITION 1**

**LANDING:**

MAXIMUM DESIGN LANDING WEIGHT  
10 knot HEADWIND  
3° APPROACH  
84°F  
HUMIDITY 15%

**TAKEOFF:**

MAXIMUM DESIGN TAKEOFF WEIGHT  
ZERO WIND  
84°F  
HUMIDITY 15%



**CONDITION 2**

**LANDING:**

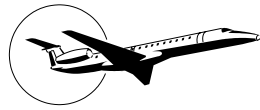
85% OF MAXIMUM DESIGN LANDING WEIGHT  
10 knot HEADWIND  
3° APPROACH  
59°F  
HUMIDITY 70%

**TAKEOFF:**

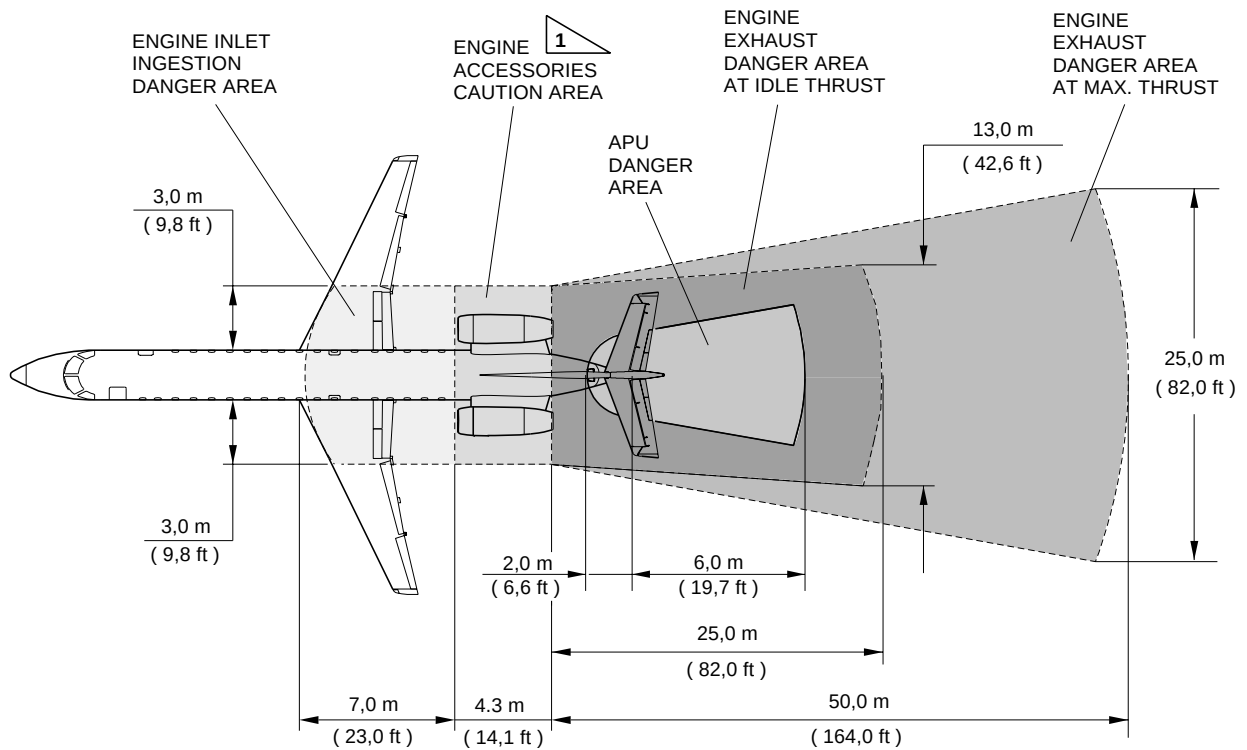
80% OF MAXIMUM DESIGN TAKEOFF WEIGHT  
ZEROWIND  
59°F  
HUMIDITY 70%

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*Figure 6.2.1 - Airport and Community Noise Levels*



### 6.3 Hazard Areas



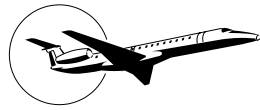
AIRCRAFT STATIC – SEA LEVEL I.S.A – NO WIND

**1** WITH THE ENGINE RUNNING, THE ACCESS TO THIS AREA IS PERMITTED JUST WITH THE ENGINE IN IDLE SPEED OR LESS.

145APM060022C.MCE

Figure 6.3.1 - Hazard Areas

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## **7. PAVEMENT DATA**

### **7.1 General Information**

Pavement or Pavement Structure is defined as a structure consisting of one or more layers of processed materials.

The primary function of a pavement is to distribute concentrated loads so that the supporting capacity of the subgrade soil is not exceeded. The subgrade soil is defined as the material on which the pavement rests, whether embankment or excavation.

Several methods for design of airport pavements have been developed that differ considerably in their approach.

Generally speaking, the design methods are derived from observation of pavements in service or experimental pavements. Thus, the reliability of any method is proportional to the amount of experimental verification behind the method, and all methods require a considerable amount of common sense and judgment on the part of the engineer who applies them.

A brief description of the following pavement charts will be helpful in their use for airport planning. Each airplane configuration is depicted with a minimum range of five loads imposed on the main landing gear to aid in the interpolation between the discrete values shown. The tire pressure used for the 145 model charts will produce the recommended tire deflection with the airplane loaded to its maximum ramp weight and with center of gravity position. The tire pressure where specifically designated in tables and on charts are values obtained under loaded conditions as certificated for commercial use.

Subsection 7.2 presents basic data on the landing gear footprint configuration, maximum design taxi loads, and tire sizes and pressures.

Maximum pavement loads for certain critical conditions at the tire-ground interfaces are shown in Subsection 7.3.

Pavement requirements for commercial airplanes are customarily derived from the static analysis of loads imposed on the main landing gear struts. The chart in Subsection 7.4 is provided in order to determine these loads throughout the stability limits of the airplane at rest on the pavement. These main landing gear loads are used to enter the pavement design charts which follow, interpolating load values where necessary.

The flexible pavement design curves (Subsection 7.5) are based on procedures set forth in Instruction Report No. S-77-1, "Procedures for Development of CBR Design Curves", dated June 1977, and as modified according to the methods described in FAA Advisory Circular 150/5320-6D, "Airport Pavement Design and Evaluation", dated July 7, 1995. Instruction Report No. S-77-1 was prepared by the US Army Corps of Engineers Waterways Experiment Station, Soils and Pavements Laboratory, Vicksburg, Mississippi. The line showing 10,000 coverages is used to calculate Aircraft Classification Number (ACN).

The LCN Method curves for flexible pavements (Subsection 7.6) have been built using procedures and curves in the International Civil Aviation Organization (ICAO) Aerodrome Design Manual, Part 3 - Pavements, Document 9157-AN/901, 1983.

The same chart includes the data of equivalent single-wheel load versus pavement thickness.

Rigid pavement design curves (Subsection 7.7) have been prepared with the use of the Westergaard Equation in general accordance with the procedures outlined in the 1955 edition of "Design of Concrete Airport Pavement" published by the Portland Cement Association, 33 W. Grand Ave., Chicago 10, Illinois, but modified to the new format described in the 1968 Portland Cement Association publication,

"Computer Program for Concrete Airport Pavement Design" (Program PDILB) by Robert G. Packard. The following procedure is used to develop rigid pavement design curves such as that shown in Subsection 7.7.

1. Once the scale for the pavement thickness to the left and the scale for allowable working stress to the right have been established, an arbitrary load line is drawn representing the main landing gear maximum weight to be shown.
2. All values of the subgrade modulus (k-values) are then plotted.
3. Additional load lines for the incremental values of weight on the main landing gear are then established on the basis of the curve for  $k = 300$ , already established.

The LCN conversion curves for rigid pavements (Subsection 7.8) have been built using procedures and curves in (ICAO) Aerodrome Design Manual, Part 3 - Pavements, Document 9157-AN/901, 1983.

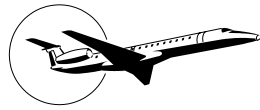
The same chart includes the data of equivalent single-wheel load versus radius of relative stiffness. Radius of relative stiffness values is obtained from Subsections 7.8.1 and 7.8.2.

The ACN/PCN system as referenced in Amendment 35 to ICAO Annex 14, "Aerodromes", 7th Edition, June 1976, provides a standardized international airplane/pavement rating system replacing the various S, T, TT, LCN, AUW, ISWL, etc., rating systems used throughout the world. ACN is the Aircraft Classification Number and PCN is the corresponding Pavement Classification Number. An aircraft having an ACN equal to or less than the PCN can operate without restriction on the pavement.

Numerically, the ACN is two times the derived single wheel load expressed in thousands of kilograms where the derived single-wheel load is defined as the load on a single tire inflated to 1.25 Mpa (181 psi) that would have the same pavement requirements as the aircraft. Computationally, the ACN/PCN system uses PCA program PDILB for rigid pavements and S-77-1 for flexible pavements to calculate ACN values. The method of pavement evaluation is left up to the airport with the results of their evaluation presented as follows:

Table 7.1.1 - Pavement Evaluation

| PAVEMENT TYPE                                                                                                                                                                                                                                                        | SUBGRADE CATEGORY | TIRE PRESSURE CATEGORY    | METHOD         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------|----------------|
| R - Rigid                                                                                                                                                                                                                                                            | A - High          | W - No Limit              | T - Technical  |
| S - Flexible                                                                                                                                                                                                                                                         | B - Medium        | X - to 1.75 Mpa (254 psi) | U - Using acft |
|                                                                                                                                                                                                                                                                      | C - Low           | Y - to 1.25 Mpa (181 psi) |                |
|                                                                                                                                                                                                                                                                      | D - Ultra Low     | Z - to 0.5 Mpa (73 psi)   |                |
| <p>Report example: PCN 80/R/B/X/T, where:</p> <p>80 = Pavement Classification Number</p> <p>R = Pavement Type: Rigid</p> <p>B = Subgrade Category: Medium</p> <p>X = Tire Pressure Category: Medium (limited to 1.5 Mpa)</p> <p>T = Evaluation Method: Technical</p> |                   |                           |                |

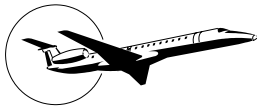


Subsection 7.9.1 shows the aircraft ACN values for flexible pavements. The four subgrade categories are:

- A. High Strength - CBR 15
- B. Medium Strength - CBR 10
- C. Low Strength - CBR 6
- D. Ultra Low Strength - CBR 3

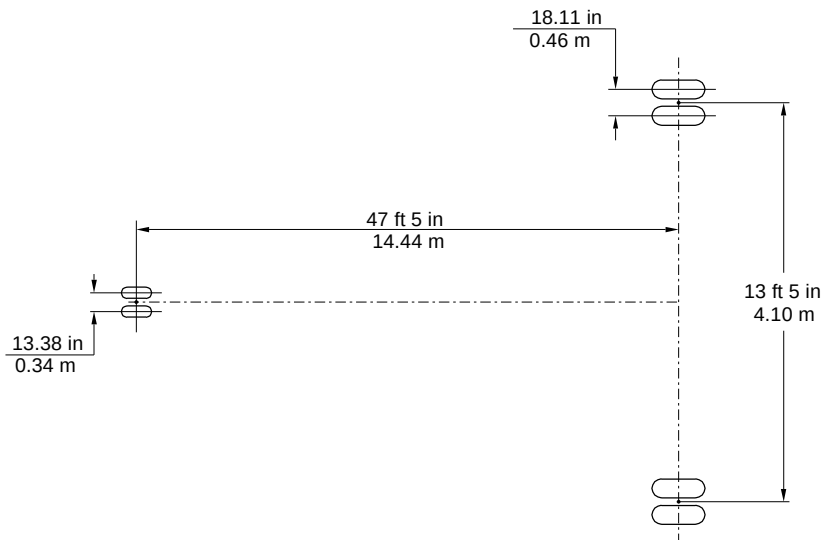
Subsection 7.9.2 shows the aircraft ACN values for rigid pavements. The four subgrade categories are:

- A. High Strength - Subgrade  $k = 150 \text{ MN/m}^3$  (550 lb/in<sup>3</sup>)
- B. Medium Strength -  $k = 80 \text{ MN/m}^3$  (300 lb/in<sup>3</sup>)
- C. Low Strength -  $k = 40 \text{ MN/m}^3$  (150 lb/in<sup>3</sup>)
- D. Ultra Low Strength -  $k = 20 \text{ MN/m}^3$  (75 lb/in<sup>3</sup>)



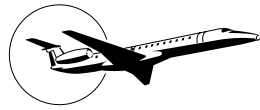
## 7.2 Footprint

|                                |                           | EMB-145 MODELS            |                           |                           |                         |                         |                         |
|--------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------|-------------------------|-------------------------|
|                                |                           | ER                        | EU                        | EP                        | MP / MK                 | LR / LU                 | XR                      |
| MAXIMUM DESIGN TAXI WEIGHT     | lb<br>kg                  | 45635<br>20700            | 44290<br>20090            | 46495<br>21090            | 46495<br>21090          | 48722<br>22100          | 53352<br>24200          |
| PERCENT OF WEIGHT ON MAIN GEAR |                           | SEE SUBSECTION 7.4        |                           |                           |                         |                         |                         |
| NOSE TIRE SIZE                 |                           | 19.5 x 6.75-8             |                           |                           |                         |                         |                         |
| NOSE TIRE PRESSURE             | psi<br>kg/cm <sup>2</sup> | 82-0/+4<br>5.77-0/+0.28   |                           |                           |                         | 84-2/+2<br>5.90-0/+0.28 |                         |
| MAIN GEAR TIRE SIZE            |                           | 30 x 9.5-14               |                           |                           |                         | H30 x 9.5-16            |                         |
| MAIN GEAR TIRE PRESSURE        | psi<br>kg/cm <sup>2</sup> | 145-0/+5<br>10.19-0/+0.35 | 145-0/+5<br>10.19-0/+0.35 | 148-0/+5<br>10.40-0/+0.35 | 150 ± 3<br>10.55 ± 0.21 | 160 ± 4<br>11.25 ± 0.28 | 175 ± 4<br>12.30 ± 0.28 |



145APM070044.MCE E

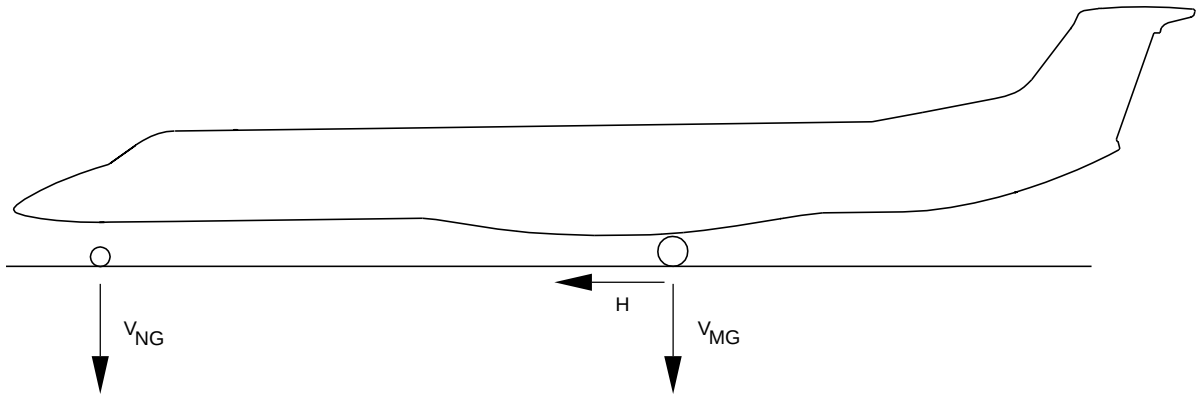
Figure 7.2.1 - Footprint



### 7.3 Maximum Pavement Loads

LEGEND:  $V_{NG}$  = MAXIMUM VERTICAL NOSE GEAR GROUND LOAD AT MOST FORWARD C.G.  
 $V_{MG}$  = MAXIMUM VERTICAL MAIN GEAR GROUND LOAD AT MOST FORWARD C.G.  
 $H$  = MAXIMUM HORIZONTAL GROUND LOAD FROM BRAKING

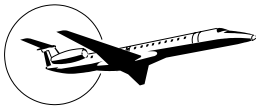
NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM DESIGN TAXI WEIGHT



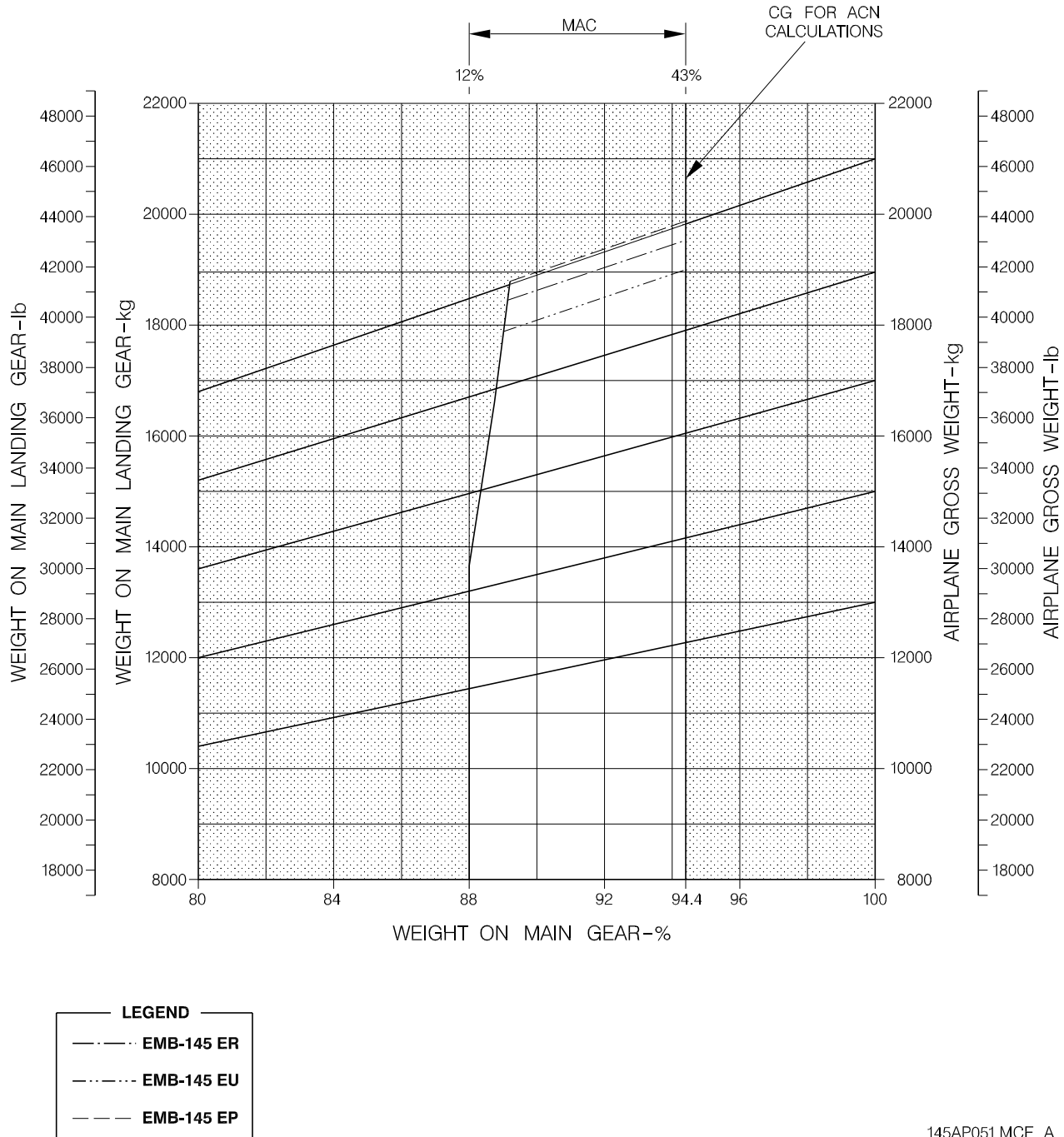
| MODEL             | MAXIMUM DESIGN TAXI WEIGHT |       | $V_{NG}$                    |      |                                                                                     |      | $V_{MG}$ (PER STRUT)                      |       | $H$ (PER STRUT)                                                                        |      |                                                   |      |
|-------------------|----------------------------|-------|-----------------------------|------|-------------------------------------------------------------------------------------|------|-------------------------------------------|-------|----------------------------------------------------------------------------------------|------|---------------------------------------------------|------|
|                   |                            |       | STATIC AT MOST FORWARD C.G. |      | STATIC+BRAKING<br>10 ft/sec <sup>2</sup><br>DECELERATION<br>3,048m/sec <sup>2</sup> |      | MAXIMUM LOAD OCCURRING AT STATIC AFT C.G. |       | AT STEADY BRAKING<br>10 ft/sec <sup>2</sup><br>DECELERATION<br>3,048m/sec <sup>2</sup> |      | AT INSTANTANEOUS BRAKING (COEFF. OF FRICTION 0.8) |      |
|                   | lb                         | kg    | lb                          | kg   | lb                                                                                  | kg   | lb                                        | kg    | lb                                                                                     | kg   | lb                                                | kg   |
| <b>EMB-145 ER</b> | 45640                      | 20700 | 4972                        | 2255 | 6738                                                                                | 3056 | 21532                                     | 9766  | 6381                                                                                   | 2894 | 18262                                             | 8283 |
| <b>EMB-145 EU</b> | 44295                      | 20090 | 4879                        | 2213 | 6595                                                                                | 2991 | 20897                                     | 9478  | 6193                                                                                   | 2809 | 17722                                             | 8038 |
| <b>EMB-145 EP</b> | 46499                      | 21090 | 5027                        | 2280 | 6824                                                                                | 3095 | 21938                                     | 9950  | 6502                                                                                   | 2949 | 18606                                             | 8439 |
| <b>EMB-145 LR</b> | 48725                      | 22100 | 5170                        | 2345 | 7055                                                                                | 3200 | 24255                                     | 11000 | 6835                                                                                   | 3100 | 19500                                             | 8845 |
| <b>EMB-145 MR</b> | 48725                      | 22100 | 5170                        | 2345 | 7055                                                                                | 3200 | 24255                                     | 11000 | 6835                                                                                   | 3100 | 19500                                             | 8845 |
| <b>EMB-145 LU</b> | 48725                      | 22100 | 5170                        | 2345 | 7055                                                                                | 3200 | 24255                                     | 11000 | 6835                                                                                   | 3100 | 19500                                             | 8845 |
| <b>EMB-145 MP</b> | 46499                      | 21090 | 5027                        | 2280 | 6824                                                                                | 3095 | 21938                                     | 9950  | 6502                                                                                   | 2949 | 18606                                             | 8439 |
| <b>EMB-145 MK</b> | 44295                      | 20090 | 4879                        | 2213 | 6595                                                                                | 2991 | 20897                                     | 9478  | 6193                                                                                   | 2809 | 17722                                             | 8038 |
| <b>EMB-145 XR</b> | 53352                      | 24200 | 5453                        | 2473 | 7464                                                                                | 3385 | 26217                                     | 11890 | 7801                                                                                   | 3538 | 18956                                             | 8597 |

145APM070045.MCE D

Figure 7.3.1 - Maximum Pavement Loads

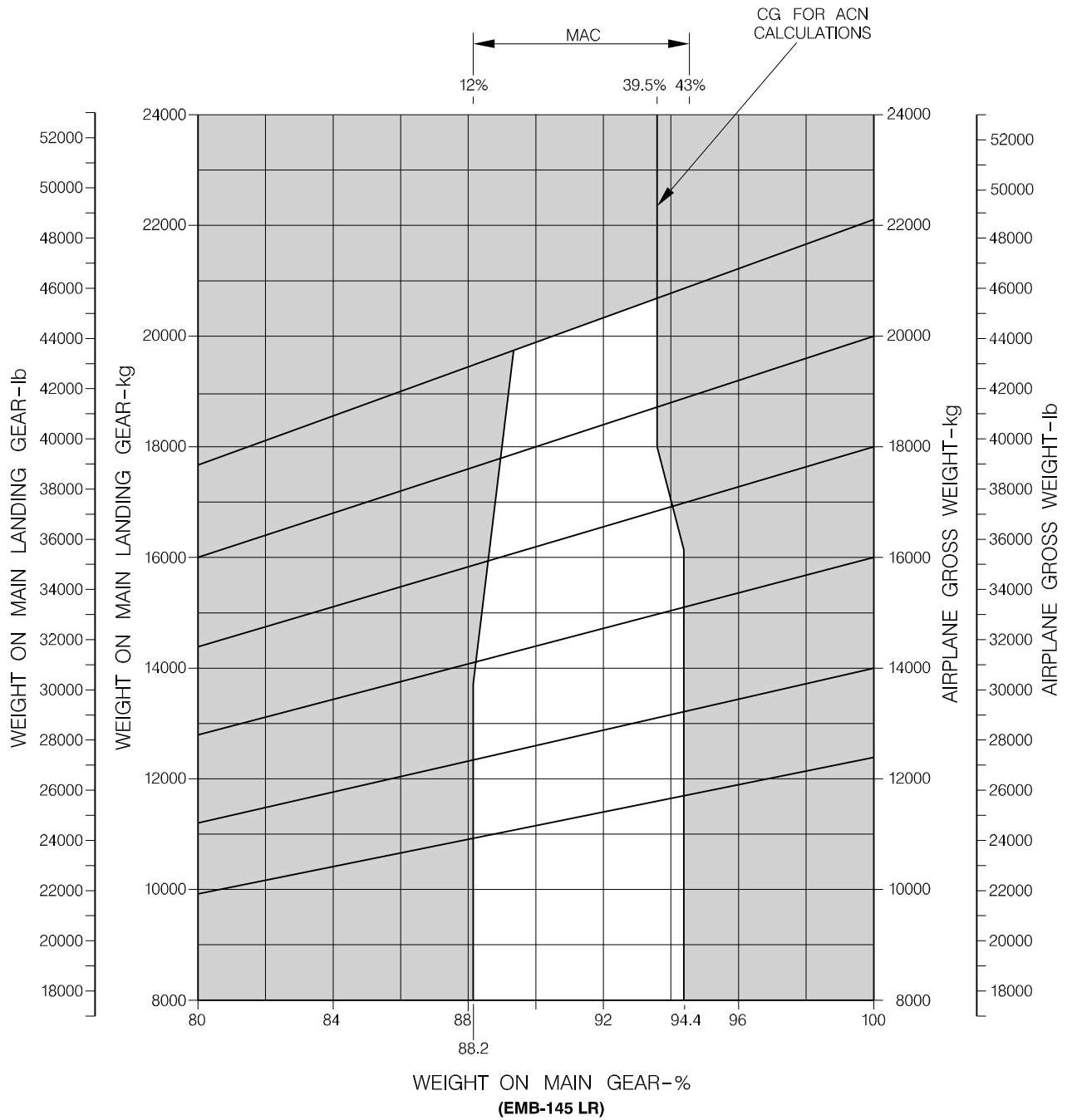
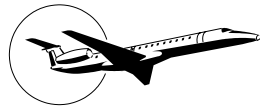


## 7.4 Landing Gear Loading on Pavement



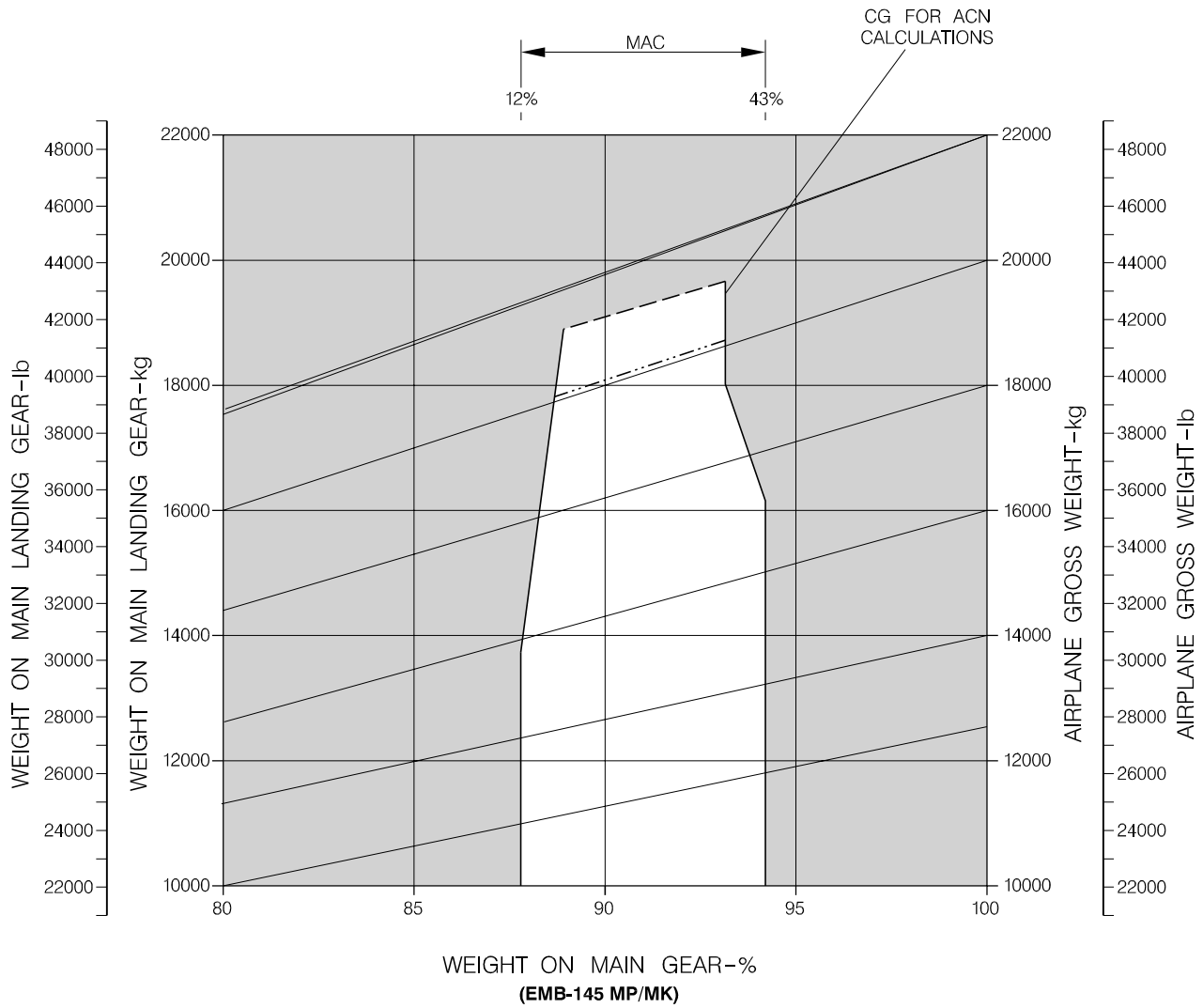
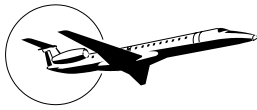
145AP051.MCE A

*Figure 7.4.1 - Landing Gear Loading on Pavement  
Sheet 1*



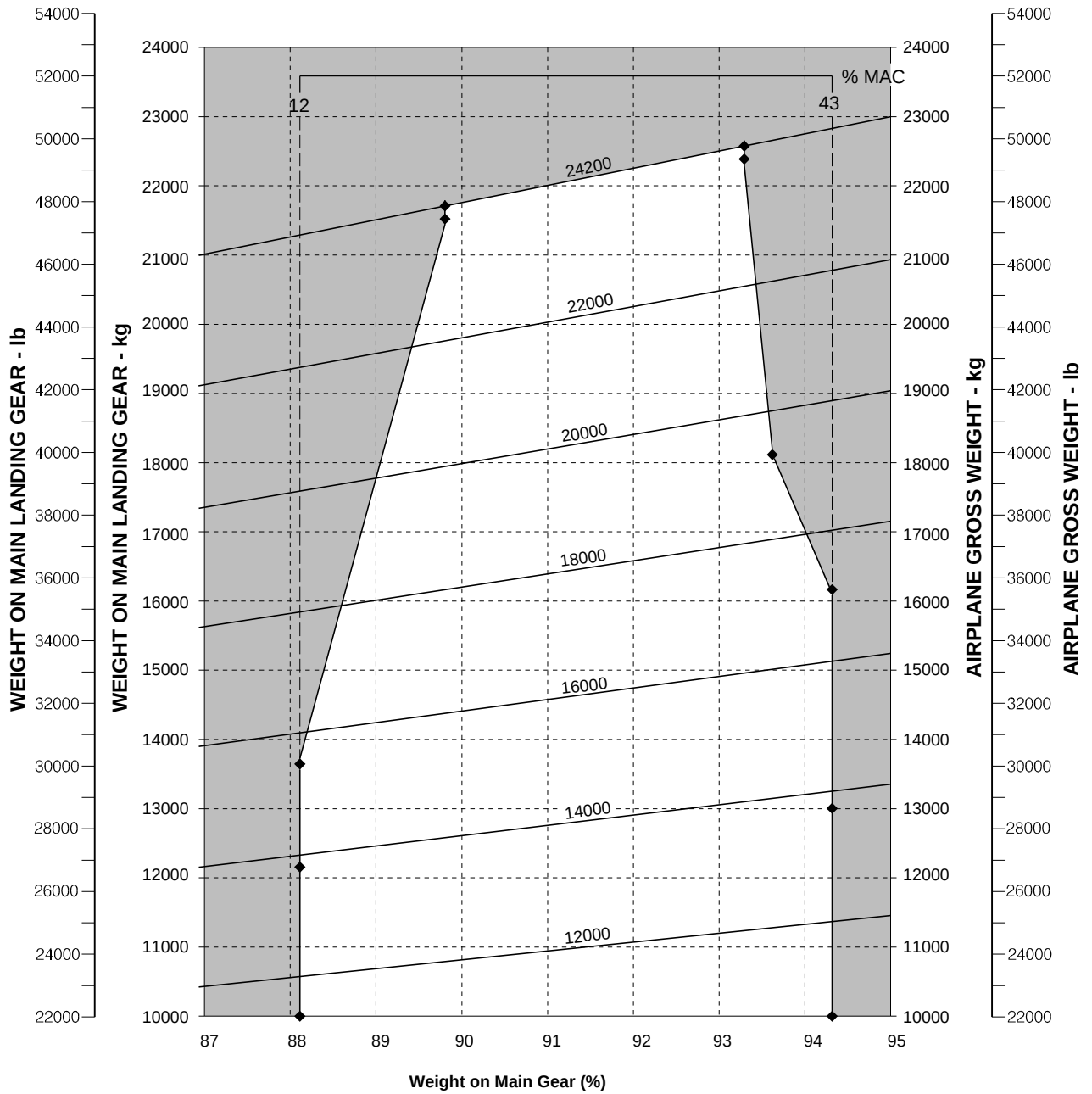
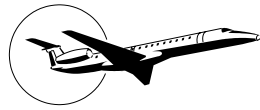
APM070055.MCE A

Figure 7.4.1 - Landing Gear Loading on Pavement  
Sheet 2



APM070776.MCE

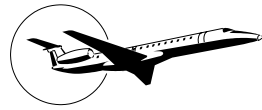
Figure 7.4.1 - Landing Gear Loading on Pavement  
Sheet 3



EMB-145XR

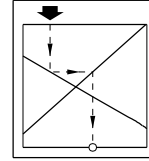
145APM070814.MCE

Figure 7.4.1 - Landing Gear Loading on Pavement  
Sheet 4



## 7.5 Flexible Pavement Requirements - US Army Corps of Engineers Design Method

NOTES: TIRES 30x9.5x14 16PR - TIRES PRESSURE AT 10.19kg/cm<sup>2</sup> (145psi)



SUBGRADE STRENGTH - CBR

**EMB-145 EU/ER**

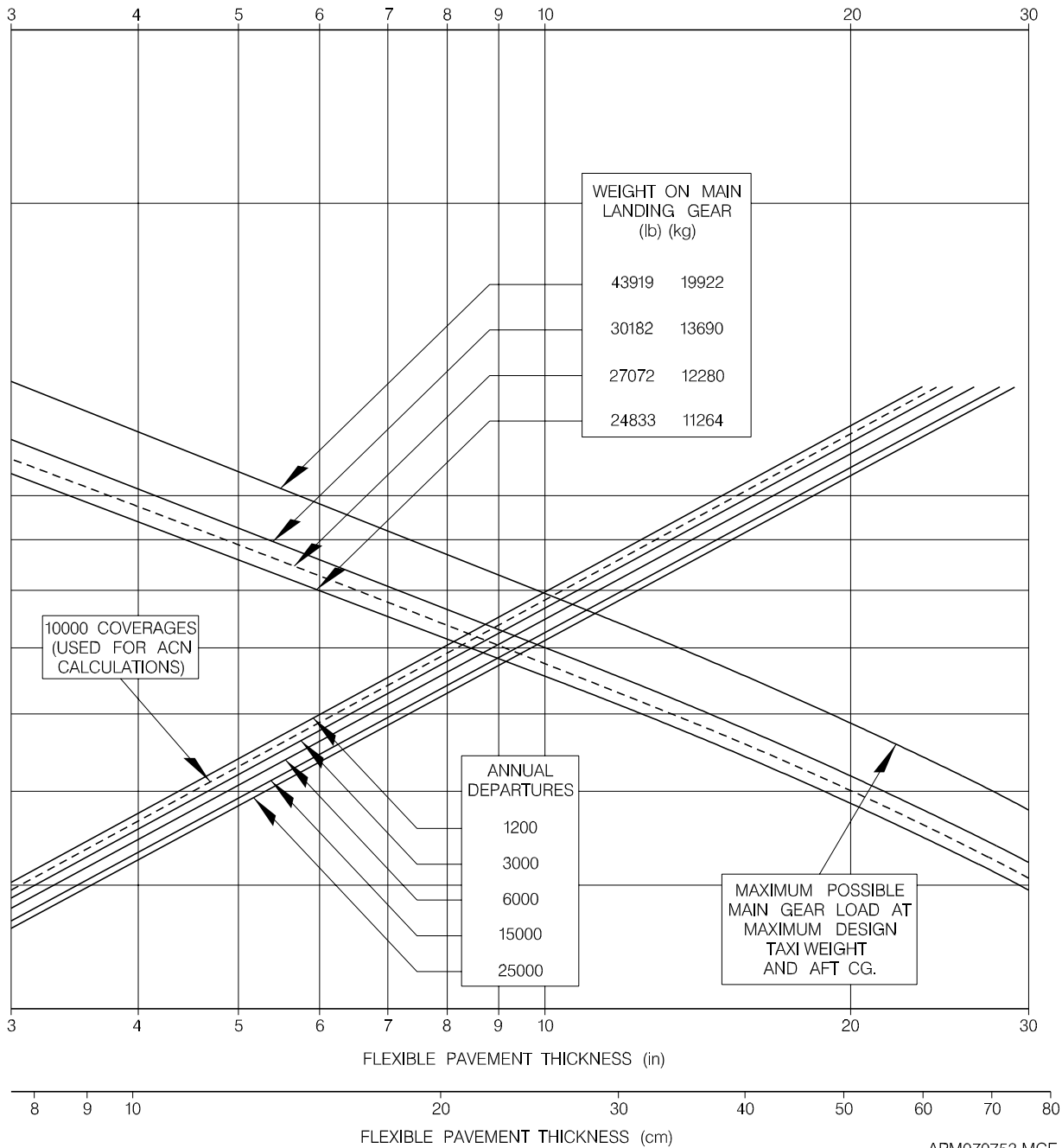
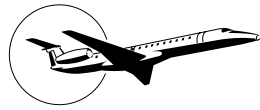
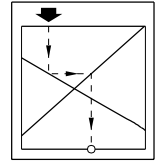


**Figure 7.5.1 - Flexible Pavement Requirements - US Army Corps of Engineers Design Method**  
**Sheet 1**

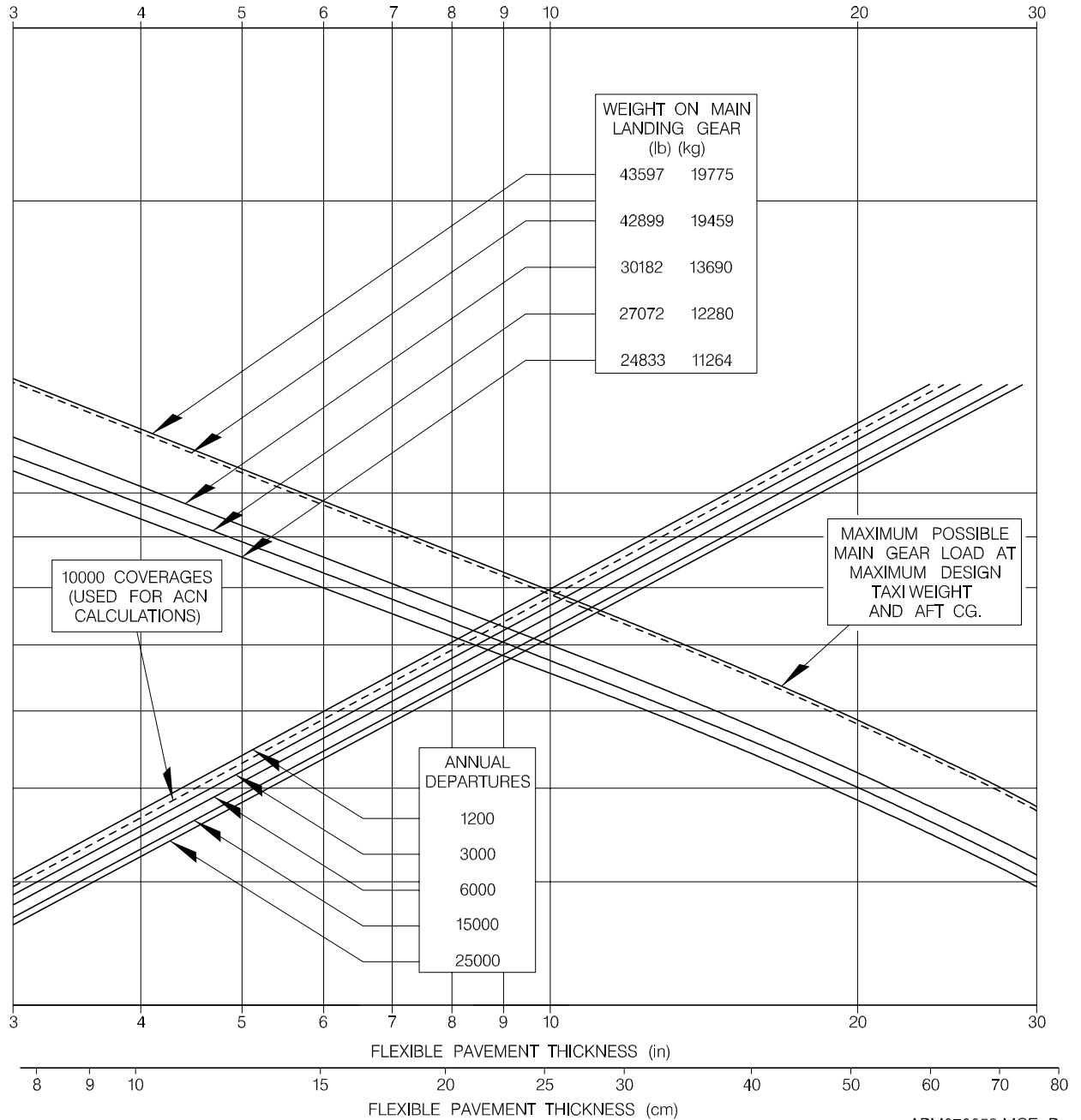


NOTES: TIRES 30x9.5x14 16PR - TIRE PRESSURE AT 10.41kg/cm<sup>2</sup> (148psi)

SUBGRADE STRENGTH - CBR

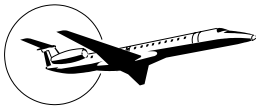


EMB-145 EP

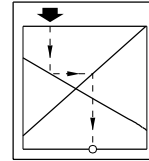


APM070059.MCE B

Figure 7.5.1 - Flexible Pavement Requirements - US Army Corps of Engineers Design Method  
Sheet 2



NOTES: TIRES 30x9.5x14, 16PR - TIRES PRESSURE AT 10.55 kgf/cm<sup>2</sup> (150 psi)



SUBGRADE STRENGTH - CBR

**EMB-145 MP**

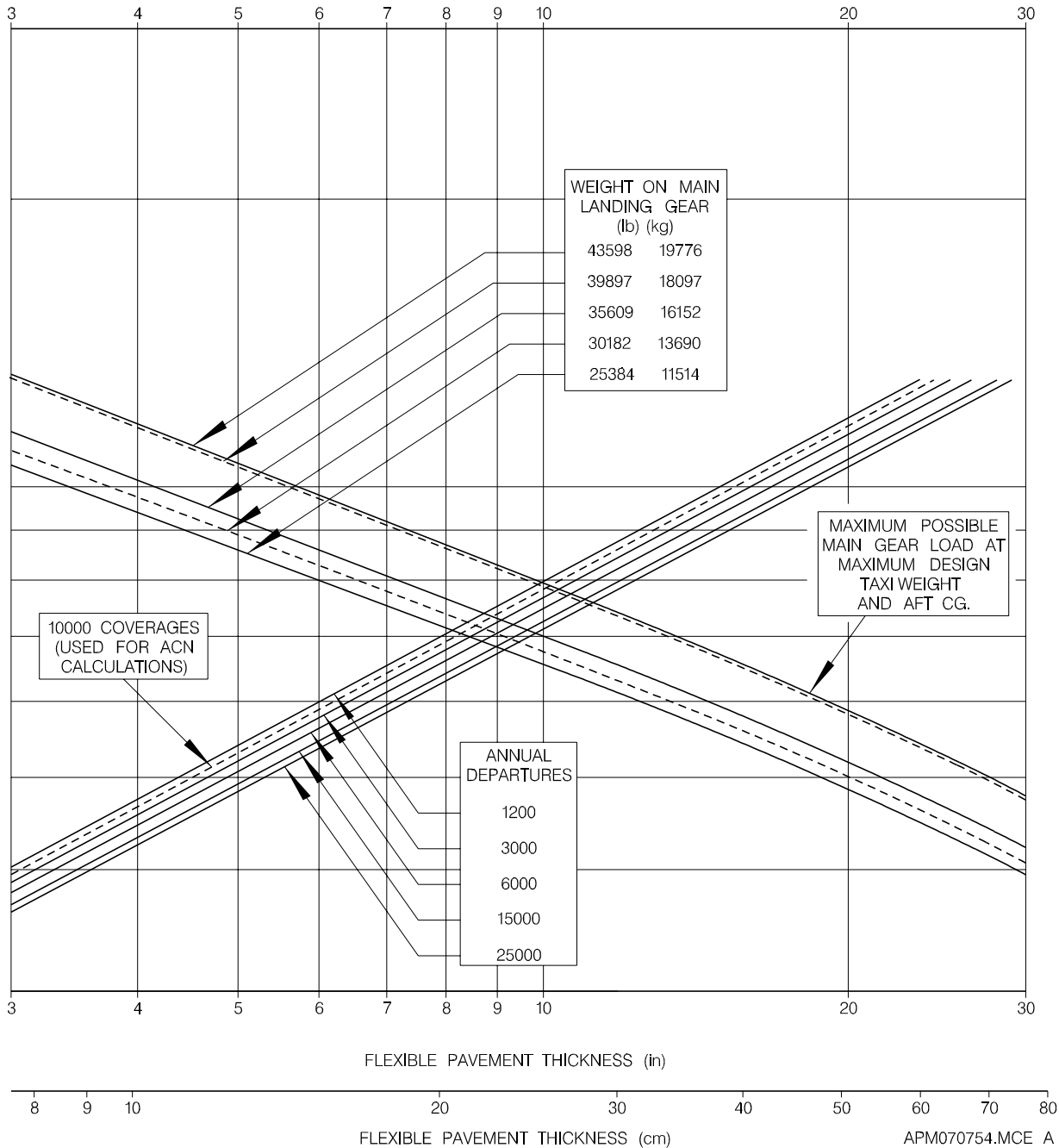
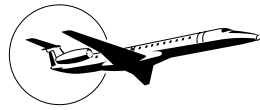
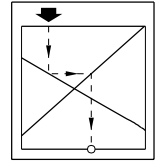


**Figure 7.5.1 - Flexible Pavement Requirements - US Army Corps of Engineers Design Method**  
**Sheet 3**



NOTES: TIRES H30x9.5x16, 16PR - TIRE PRESSURE AT 11.25kgf/cm<sup>2</sup> (160psi)



SUBGRADE STRENGTH - CBR

EMB-145 LR/LU

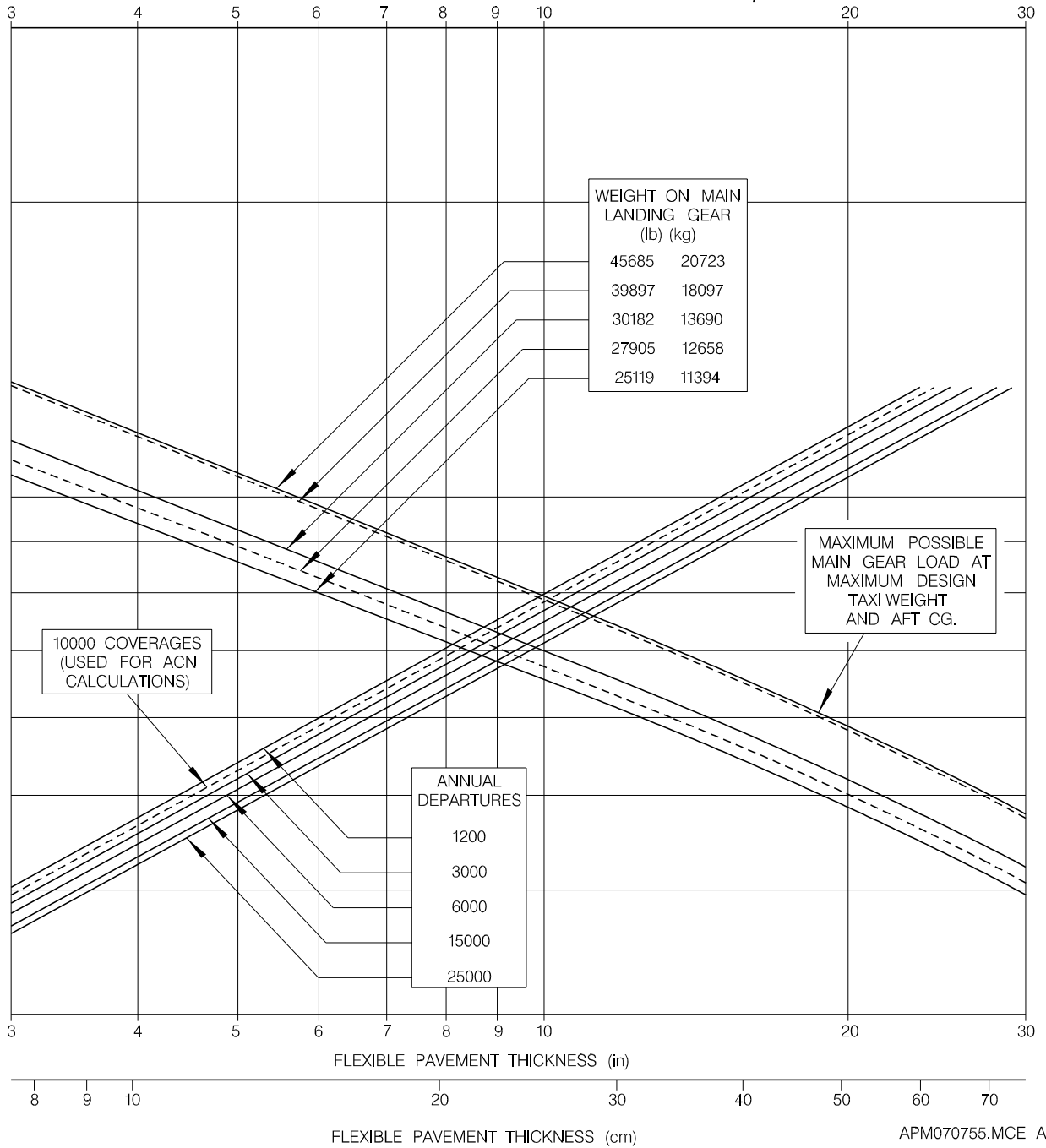
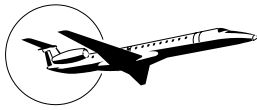
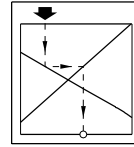


Figure 7.5.1 - Flexible Pavement Requirements - US Army Corps of Engineers Design Method  
Sheet 4



NOTES: TIRES 30x9.5x14 16PR - TIRES PRESSURE AT 10.55 kg/cm<sup>2</sup> (150 psi)

SUBGRADE STRENGTH - CBR



EMB-145 MK

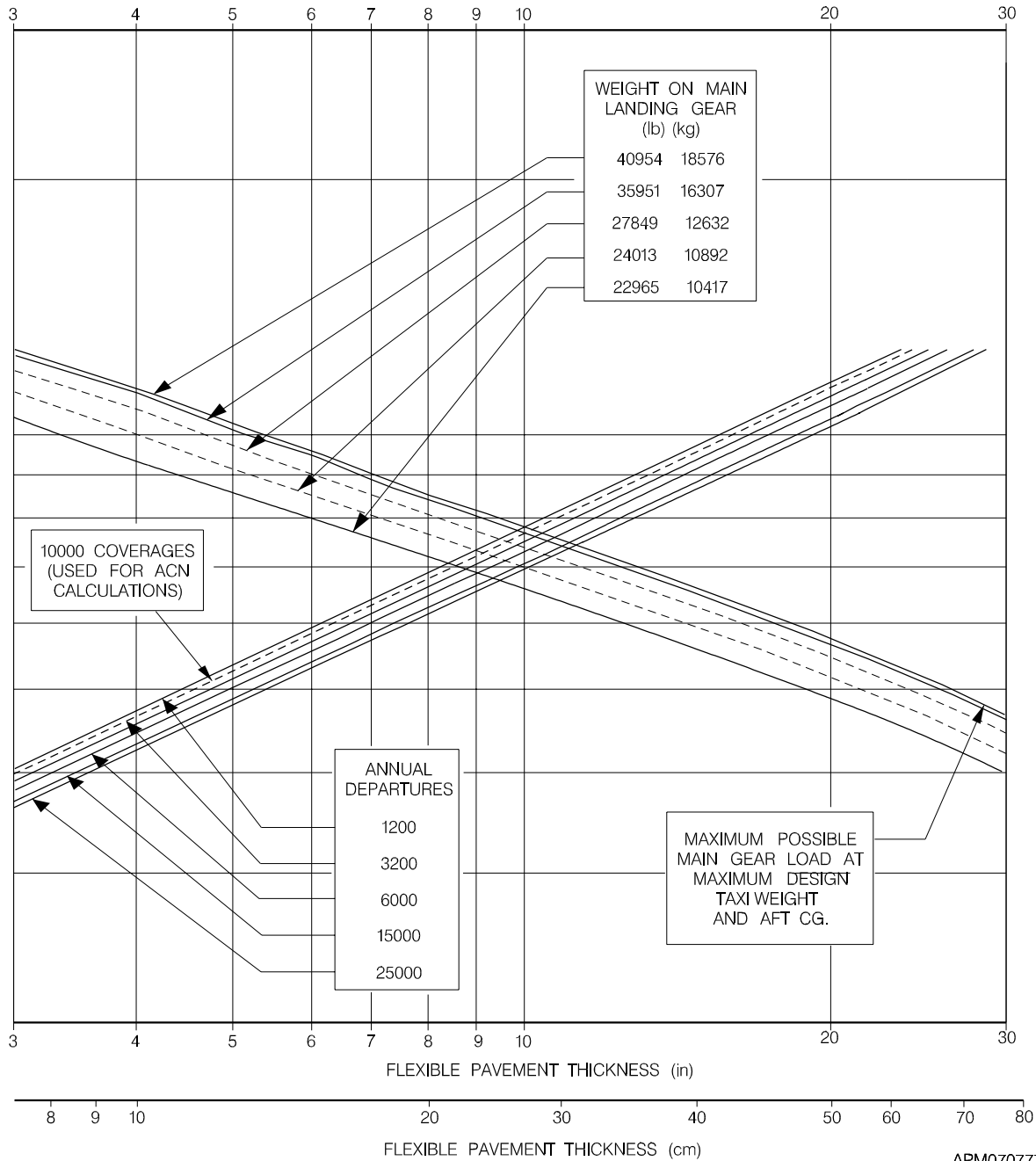
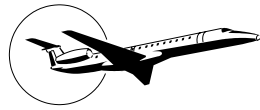
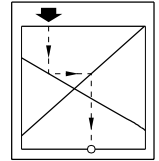


Figure 7.5.1 - Flexible Pavement Requirements - US Army Corps of Engineers Design Method  
Sheet 5



NOTES: TIRES H30x9.5x16 16PR - TIRES PRESSURE AT 12.30kg/cm<sup>2</sup>(175psi)



SUBGRADE STRENGTH - CBR

EMB-145 XR

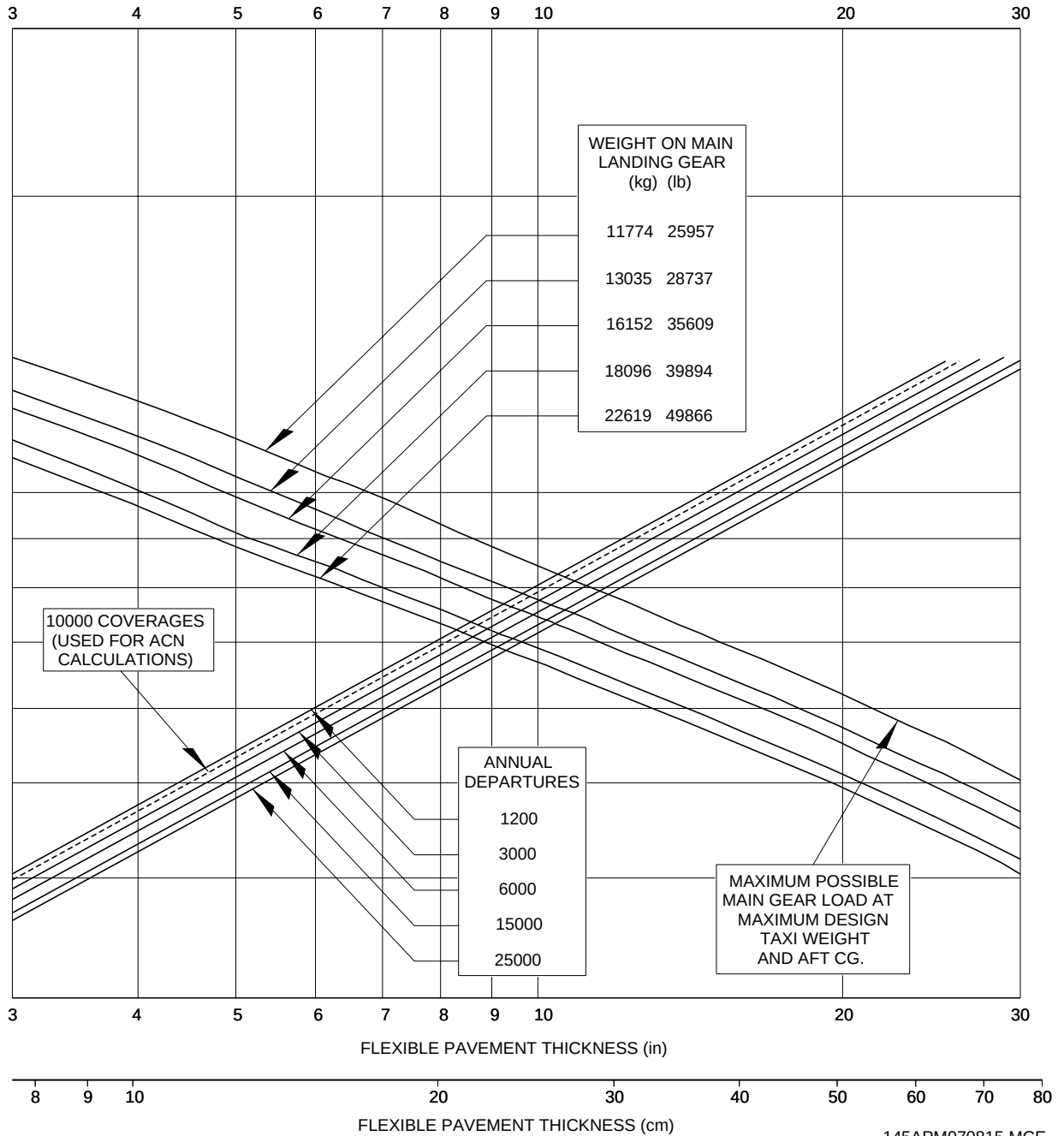
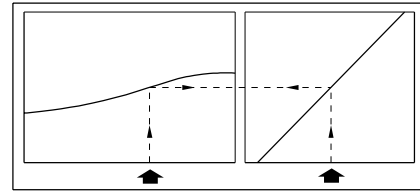
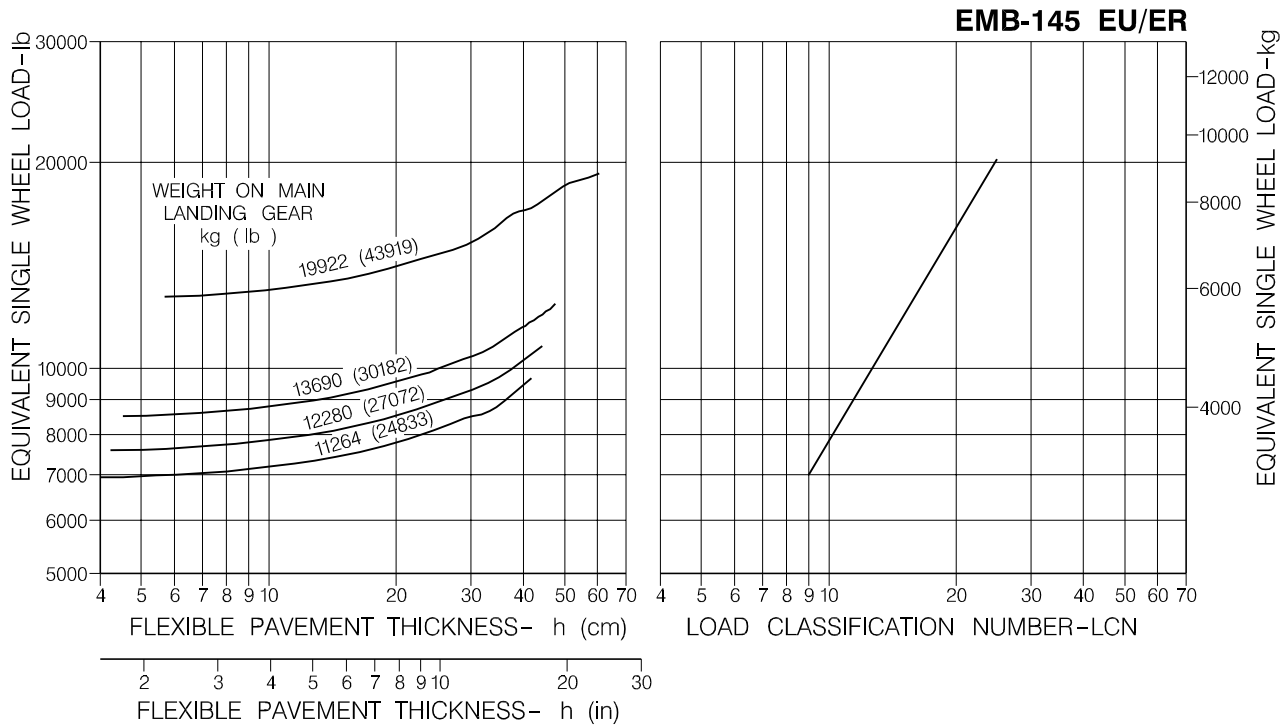


Figure 7.5.1 - Flexible Pavement Requirements - US Army Corps of Engineers Design Method  
Sheet 6

## 7.6 Flexible Pavement Requirements - LCN Method



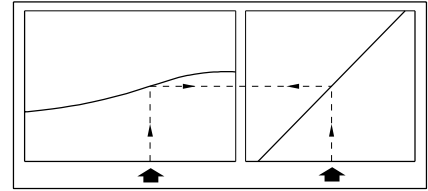
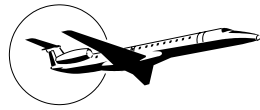
TIRES 30x9.5-14 16PR AT 10.19 kgf/cm<sup>2</sup> (145psi)



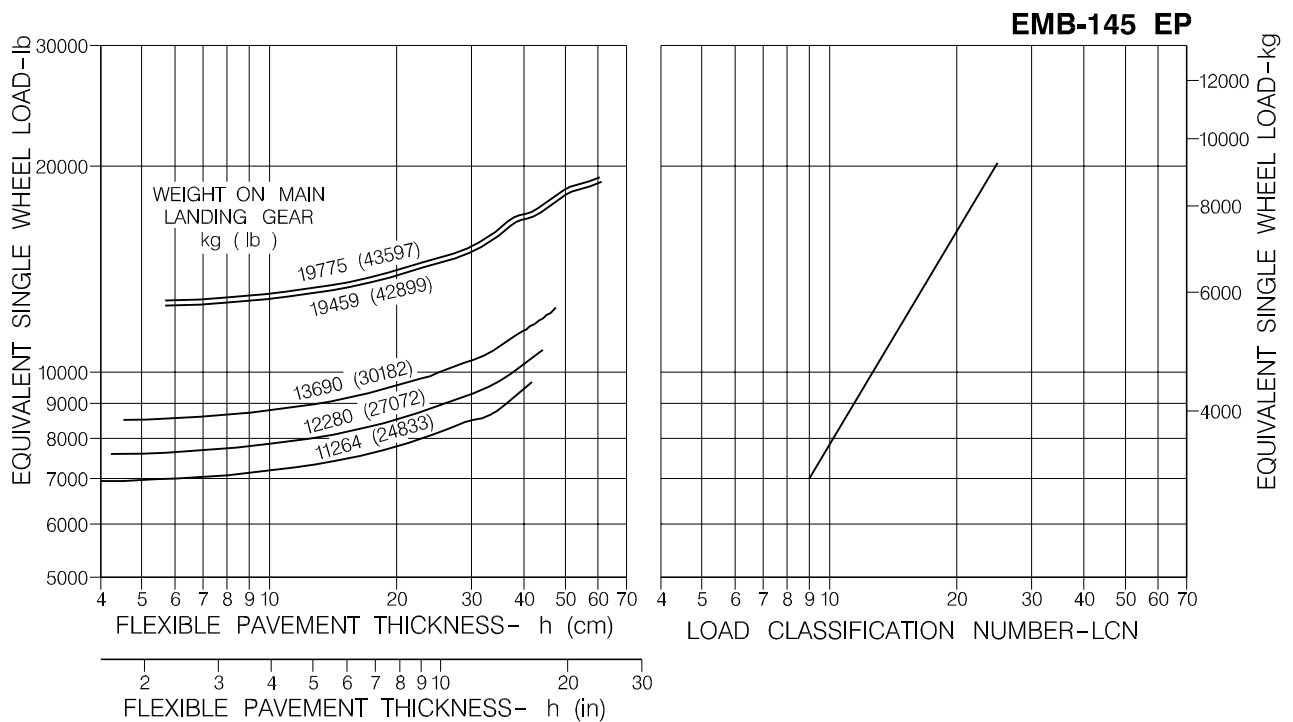
**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN ICAO AERODROME MANUAL.  
PART 2, PAR. 4.1.3

APM070760.MCE A

*Figure 7.6.1 - Flexible Pavement Requirements, LCN Method  
Sheet 1*



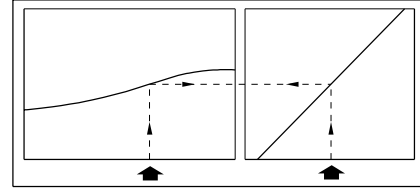
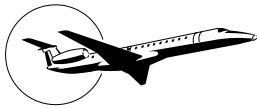
TIRES 30x9.5-14 16PR AT 10.41 kgf/cm<sup>2</sup> (148 psi)



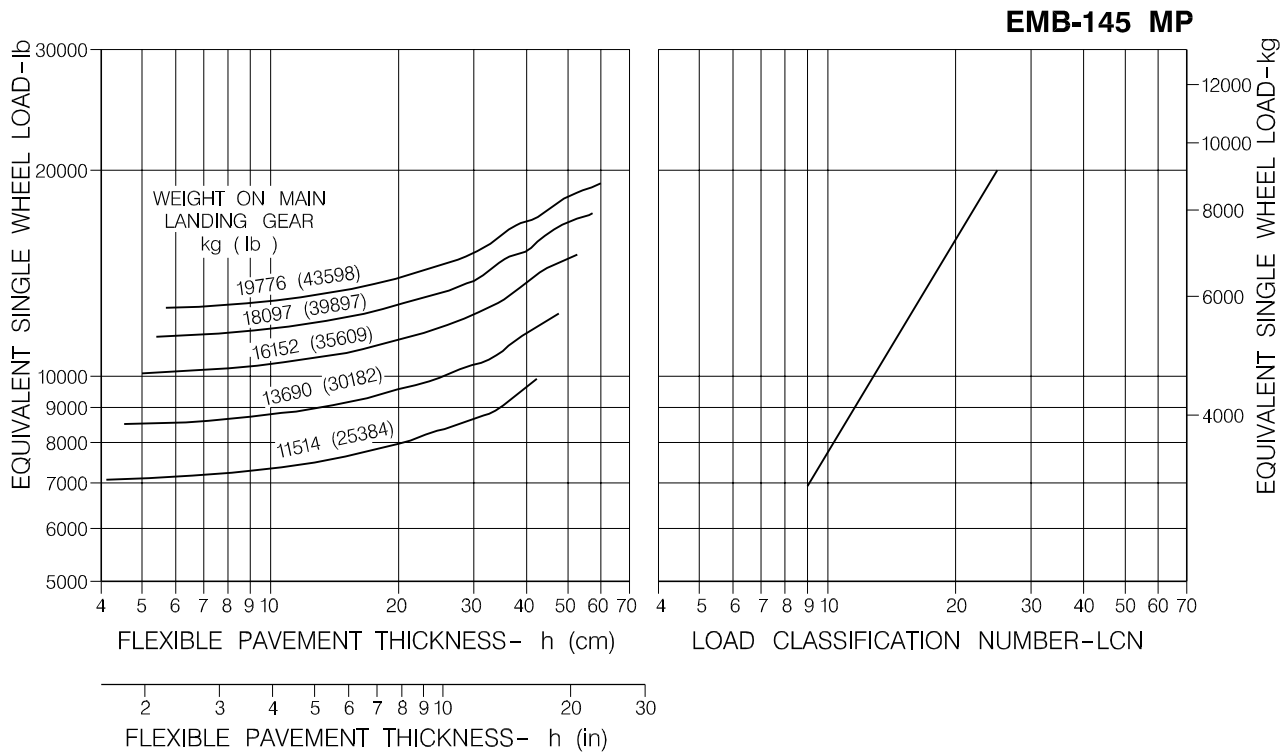
**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN I C A O AERODROME MANUAL.  
PART 2, PAR. 4.1.3

APM070759.MCE A

*Figure 7.6.1 - Flexible Pavement Requirements, LCN Method  
Sheet 2*



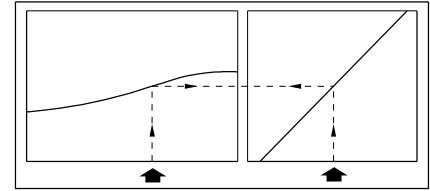
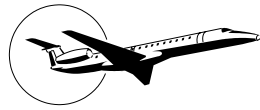
TIRES 30x9.5-14 16PR AT 10.55 kgf/cm<sup>2</sup> (150psi)



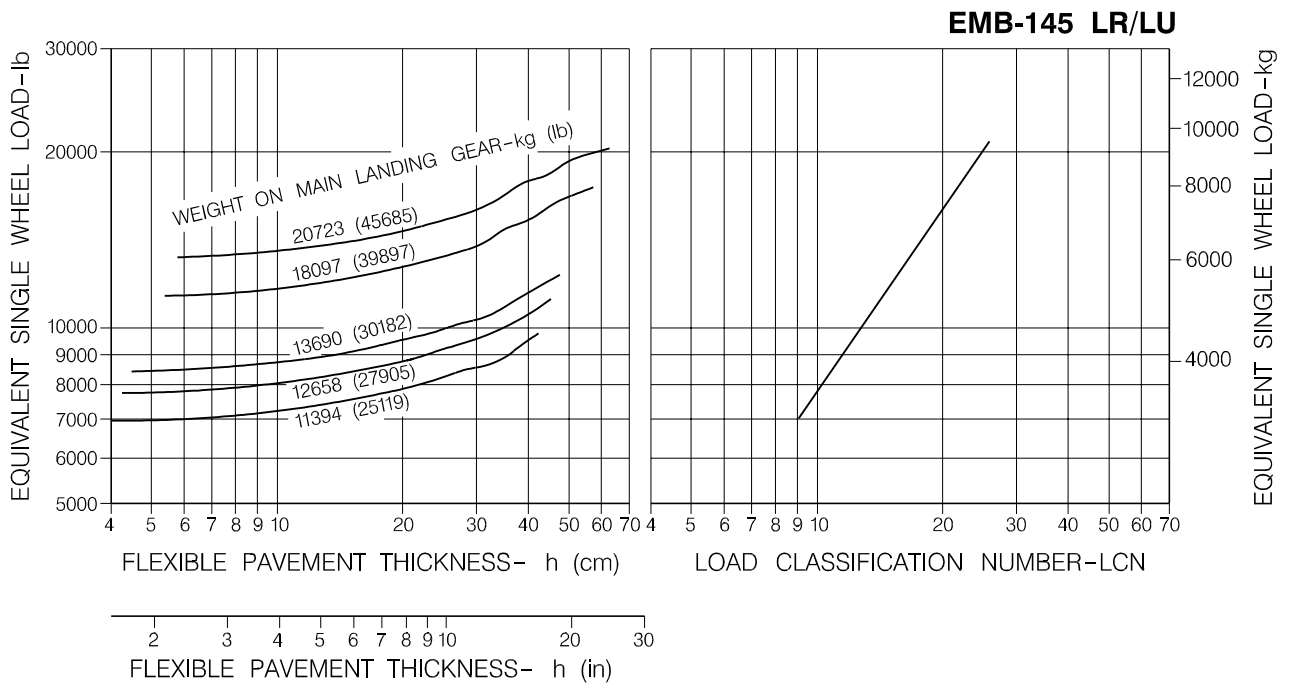
**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN I C A O AERODROME MANUAL,  
PART 2, PAR. 4.1.3

APM070758.MCE A

*Figure 7.6.1 - Flexible Pavement Requirements, LCN Method  
Sheet 3*



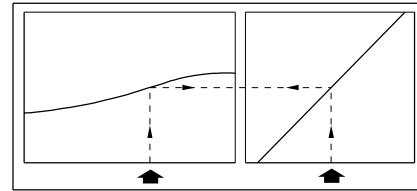
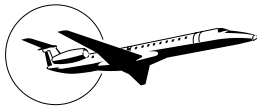
(30 x 9.5-14) TIRES - TIRE PRESSURE CONSTANT AT 11.25 kg/cm<sup>2</sup> (160 psi)



**NOTE:** EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN I C A O AERODROME MANUAL, PART 2, PAR. 4.1.3

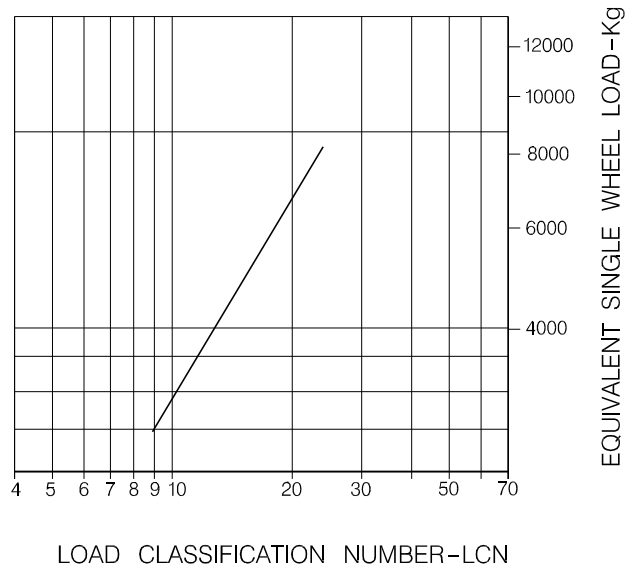
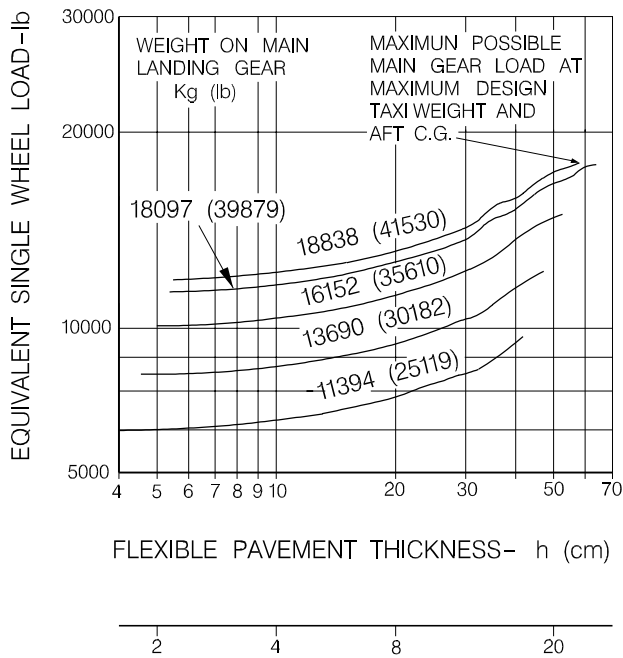
APM070057.MCE A

*Figure 7.6.1 - Flexible Pavement Requirements, LCN Method  
Sheet 4*



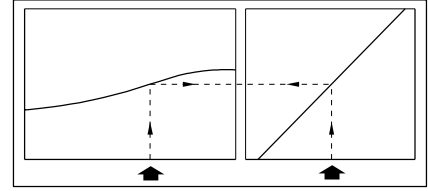
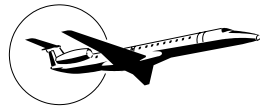
TIRES 30 x 9.5 -14 16PR AT 10,55 Kgf/cm (150 psi)

### EMB-145 MK

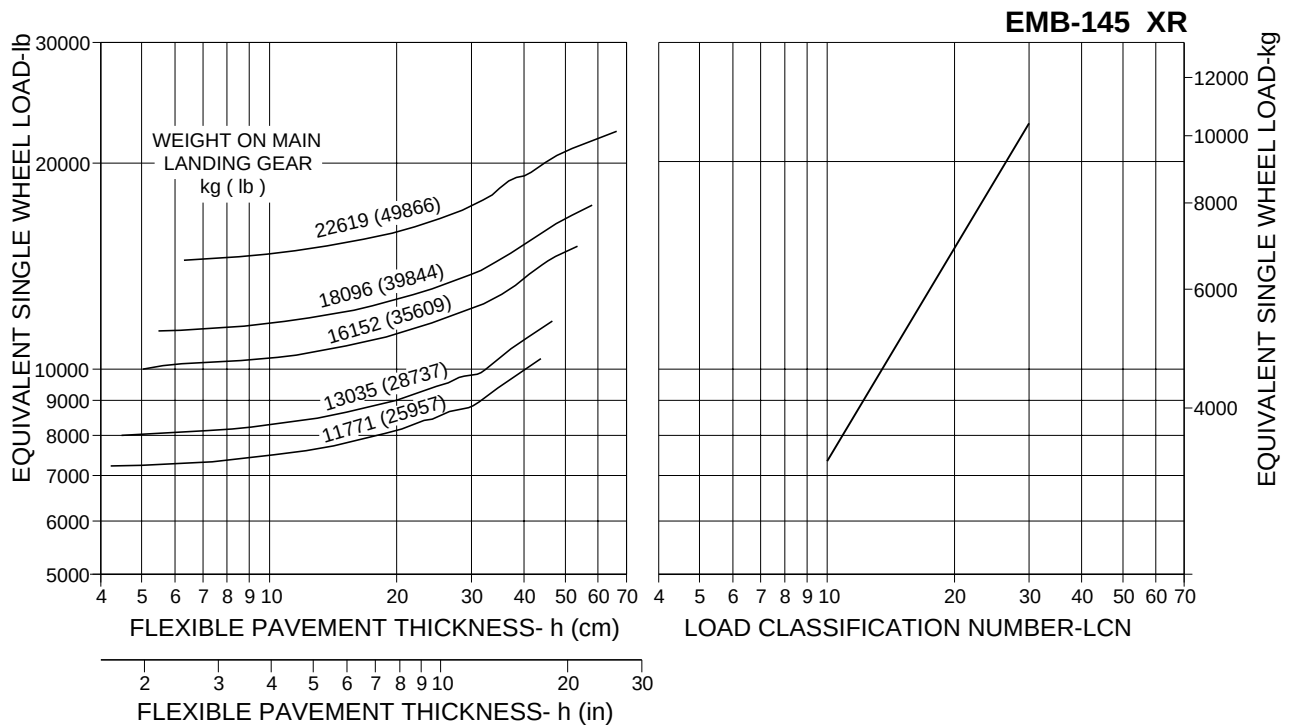


APM070778.MCE

Figure 7.6.1 - Flexible Pavement Requirements, LCN Method  
Sheet 5



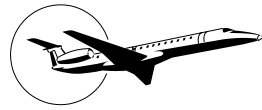
TIRES H30x9.5-16 16PR AT 12.30 kgf/cm<sup>2</sup> (175psi)



**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN I C A O AERODROME MANUAL.  
PART 2, PAR. 4.1.3

145APM070816.MCE

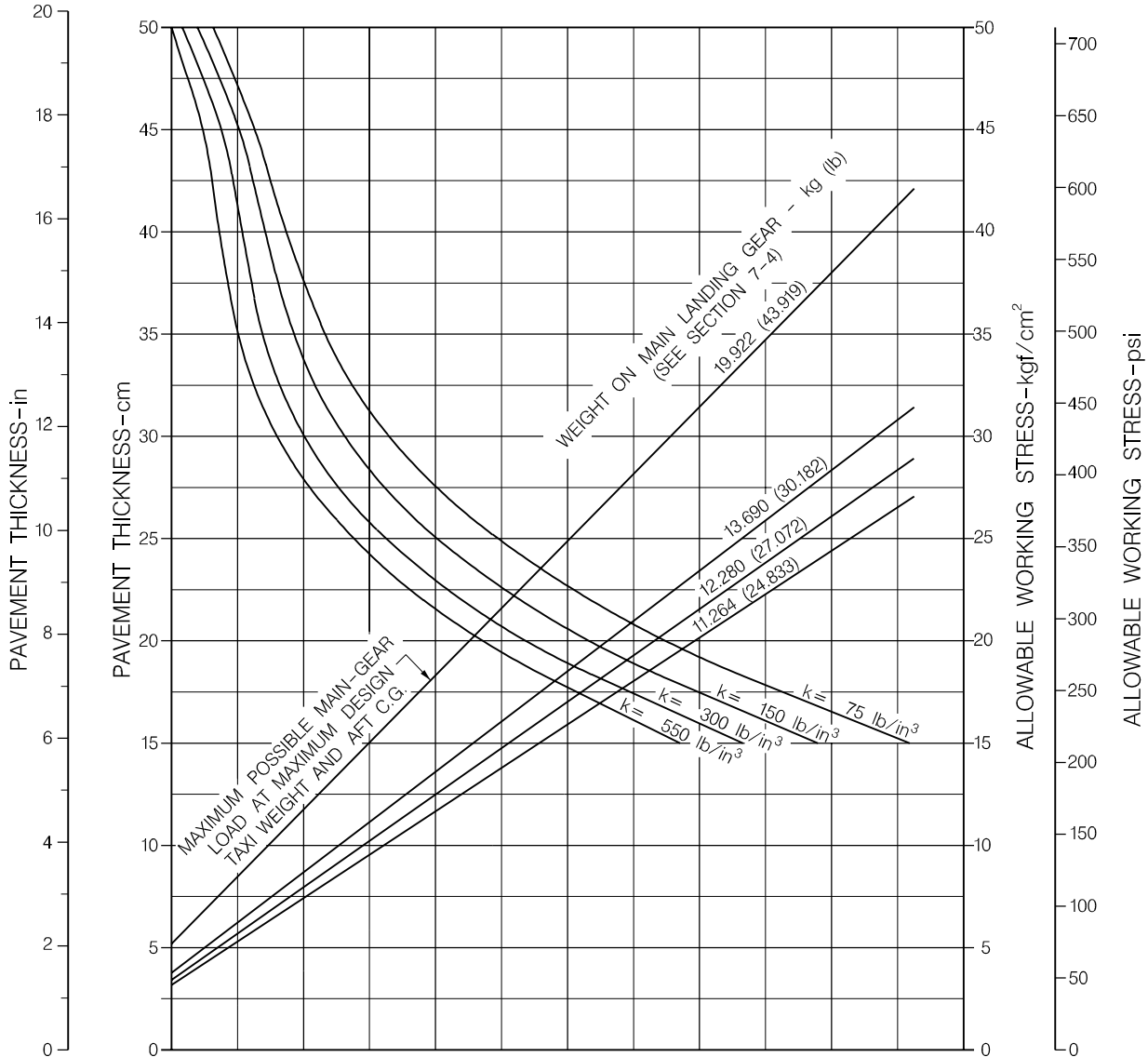
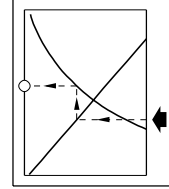
*Figure 7.6.1 - Flexible Pavement Requirements, LCN Method*  
*Sheet 6*



## 7.7 Rigid Pavement Requirements - Portland Cement Association Design Method

### RIGID PAVEMENT REQUIREMENTS - MODEL EMB-145 EU/ER

- NOTES:**
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 10.19 kgf/cm<sup>2</sup> (145 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 94.46%

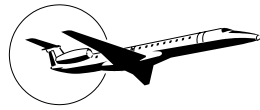


**NOTE:** THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

REFERENCE: PORTLAND CEMENT ASSOCIATION METHOD.

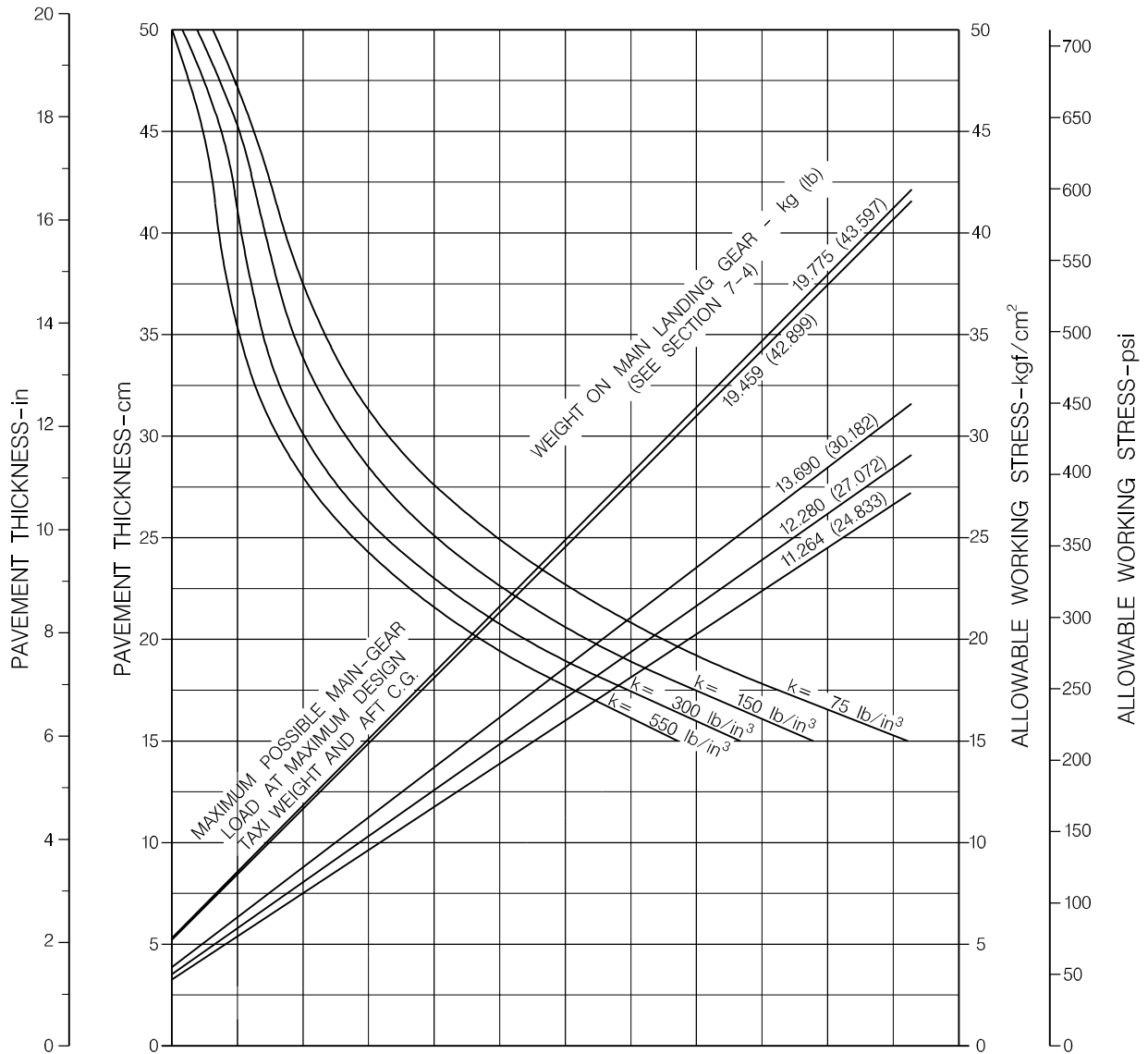
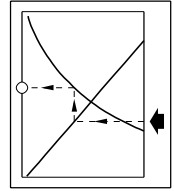
APM070056.MCE B

Figure 7.7.1 - Rigid Pavement Requirements - Portland Cement Association Design Method  
Sheet 1



RIGID PAVEMENT REQUIREMENTS - MODEL EMB-145 EP

- NOTES:**
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 10.41 kgf/cm<sup>2</sup> (148 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

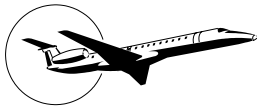


**NOTE:** THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR  $K=300$  BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

REFERENCE: PORTLAND CEMENT ASSOCIATION METHOD.

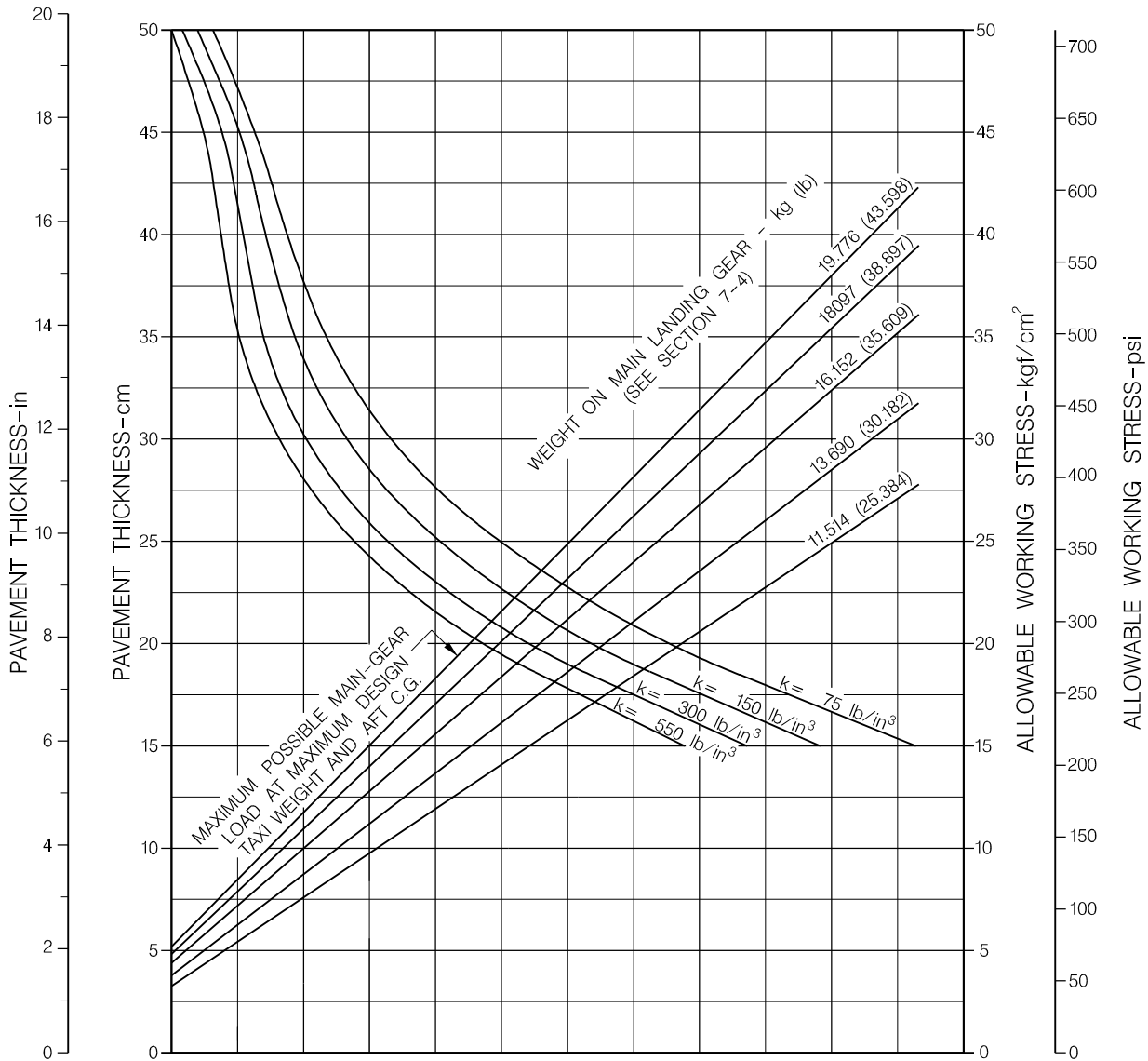
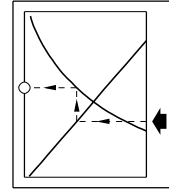
APM070764.MCE A

Figure 7.7.1 - Rigid Pavement Requirements - Portland Cement Association Design Method  
Sheet 2



RIGID PAVEMENT REQUIREMENTS - MODEL EMB-145 MP

- NOTES:**
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 10.55 kgf/cm<sup>2</sup> (150 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

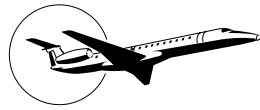


**NOTE:** THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

REFERENCE: PORTLAND CEMENT ASSOCIATION METHOD.

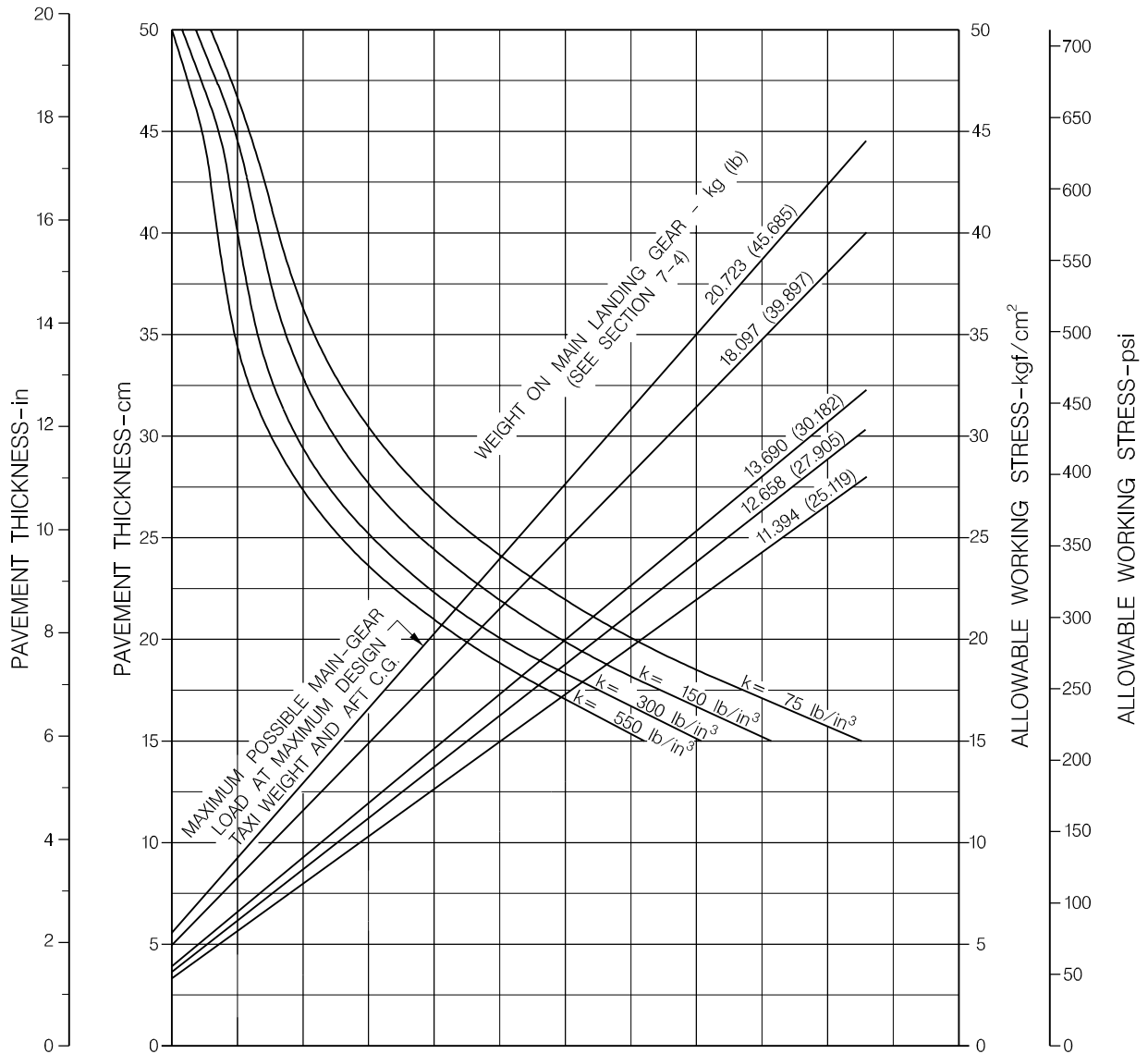
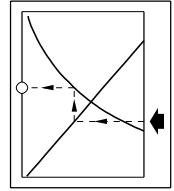
APM070761.MCE A

Figure 7.7.1 - Rigid Pavement Requirements - Portland Cement Association Design Method  
Sheet 3



RIGID PAVEMENT REQUIREMENTS - MODEL EMB-145 LR/LU

- NOTES:**
- H30 x 9.5-16 16PR TIRES
  - TIRE PRESSURE 11.25 kgf/cm<sup>2</sup> (160 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

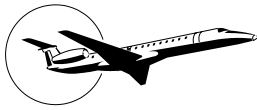


**NOTE:** THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

REFERENCE: PORTLAND CEMENT ASSOCIATION METHOD.

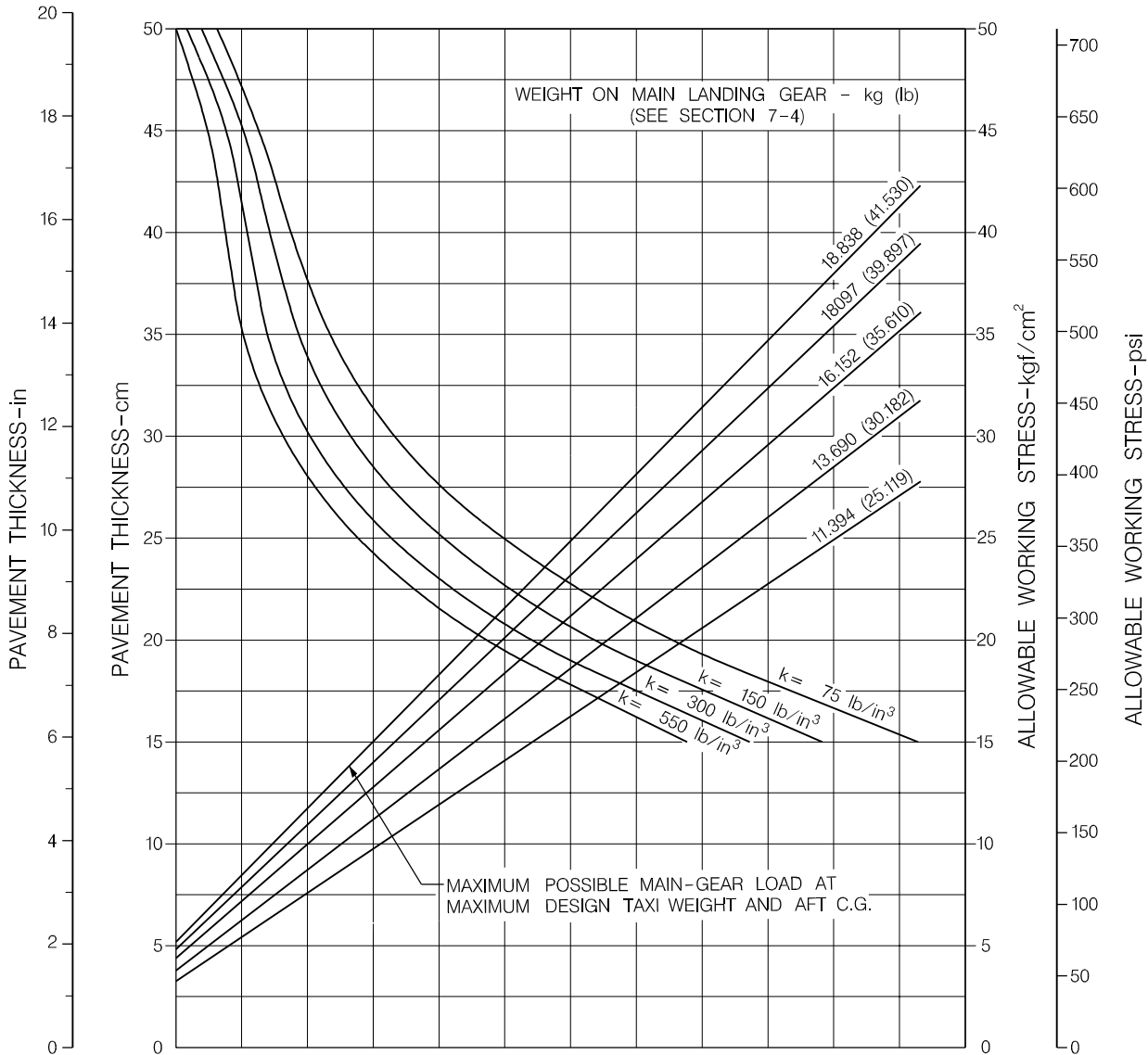
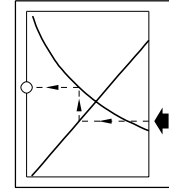
APM070763.MCE A

Figure 7.7.1 - Rigid Pavement Requirements - Portland Cement Association Design Method  
Sheet 4



RIGID PAVEMENT REQUIREMENTS - MODEL EMB-145 MK

- NOTES:**
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 10.55 kgf/cm<sup>2</sup> (150 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8 %

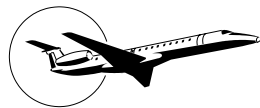


**NOTE:** THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

REFERENCE: POTLAND CEMENT ASSOCIATION METHOD

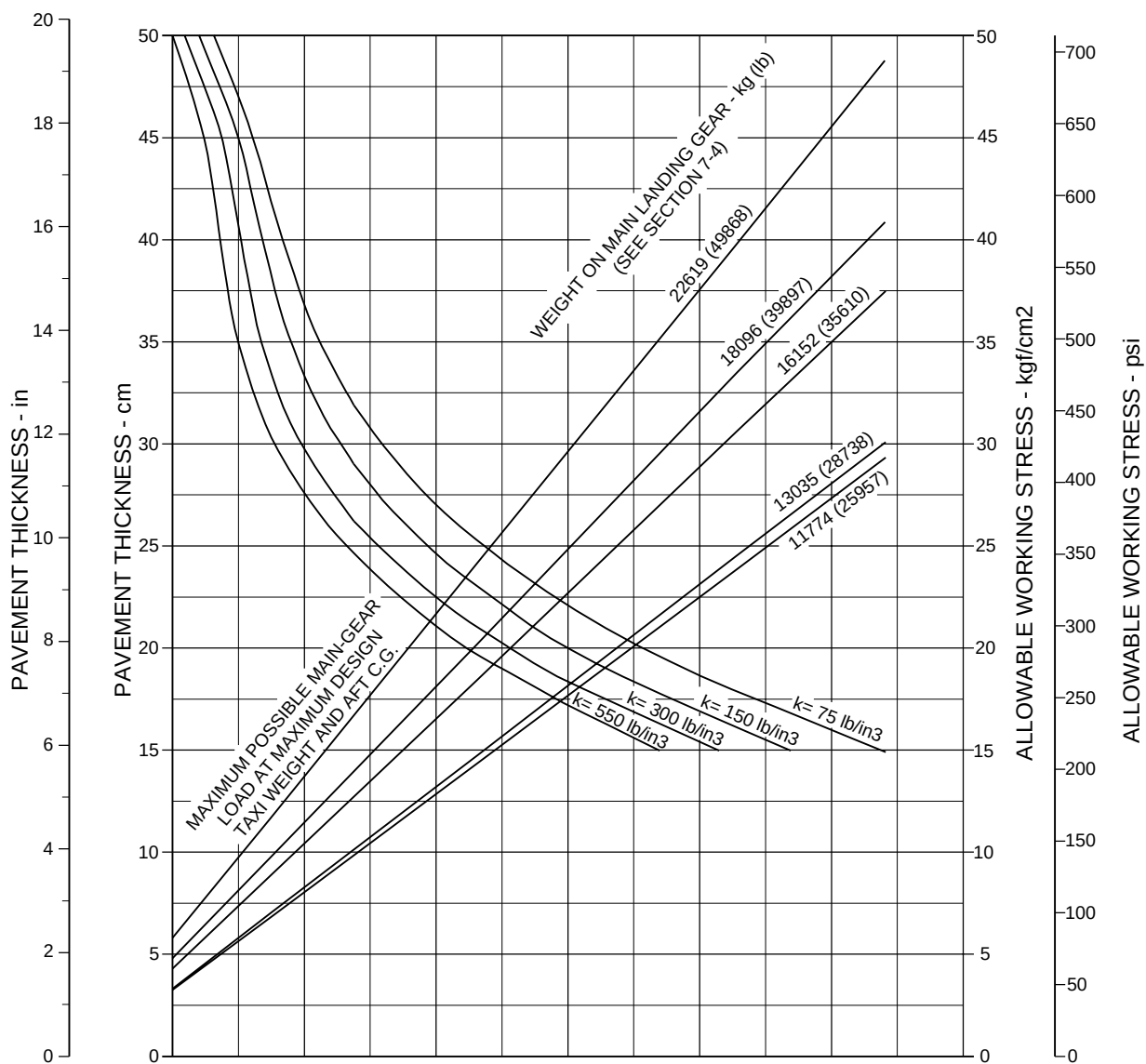
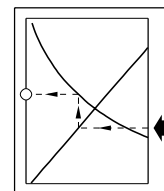
APM070780.MCE

Figure 7.7.1 - Rigid Pavement Requirements - Portland Cement Association Design Method  
Sheet 5



RIGID PAVEMENT REQUIREMENTS - MODEL EMB-145 XR

- NOTES:**
- 30 x 9.5-16 16PR TIRES
  - TIRE PRESSURE 12.30 kgf/cm<sup>2</sup> (175 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.47%



**NOTE:** THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

REFERENCE: PORTLAND CEMENT ASSOCIATION METHOD.

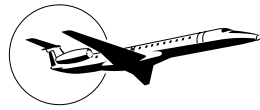
145APM070817.MCE

Figure 7.7.1 - Rigid Pavement Requirements - Portland Cement Association Design Method  
Sheet 6

## **7.8 Rigid Pavement Requirements - LCN Method**

To determine the airplane weight that can be accommodated on a particular rigid airport pavement, both the LCN of the pavement and the radius of relative stiffness must be known.

### **7.8.1 Radius of Relative Stiffness**



RADIUS OF RELATIVE STIFFNESS ( L )  
VALUES IN INCHES

$$L = \sqrt[4]{\frac{Ed^3}{12(1-\mu^2)k}} = 24.1652 \sqrt[4]{\frac{d^3}{k}}$$

WHERE: E = YOUNG'S MODULUS =  $4 \times 10^6$  psi  
k = SUBGRADE MODULUS, lb/in.<sup>3</sup>  
d = RIGID-PAVEMENT THICKNESS, in.  
 $\mu$  = POISSON'S RATIO = 0.15

| d(in) | k=75  | k=100 | k=150 | k=200 | k=250 | k=300 | k=350 | k=400 | k=500 | k=550 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6.0   | 31.48 | 29.30 | 26.47 | 24.63 | 23.30 | 22.26 | 21.42 | 20.72 | 19.59 | 19.13 |
| 6.5   | 33.43 | 31.11 | 28.11 | 26.16 | 24.74 | 23.64 | 22.74 | 22.00 | 20.80 | 20.31 |
| 7.0   | 35.34 | 32.89 | 29.72 | 27.65 | 26.15 | 24.99 | 24.04 | 23.25 | 21.99 | 21.47 |
| 7.5   | 37.22 | 34.63 | 31.29 | 29.12 | 27.54 | 26.32 | 25.32 | 24.49 | 23.16 | 22.61 |
| 8.0   | 39.06 | 36.35 | 32.85 | 30.57 | 28.91 | 27.62 | 26.58 | 25.70 | 24.31 | 23.74 |
| 8.5   | 40.88 | 38.04 | 34.37 | 31.99 | 30.25 | 28.91 | 27.81 | 26.90 | 25.44 | 24.84 |
| 9.0   | 42.67 | 39.71 | 35.88 | 33.39 | 31.58 | 30.17 | 29.03 | 28.08 | 26.55 | 25.93 |
| 9.5   | 44.43 | 41.35 | 37.36 | 34.77 | 32.89 | 31.42 | 30.23 | 29.24 | 27.65 | 27.00 |
| 10.0  | 46.18 | 42.97 | 38.83 | 36.14 | 34.17 | 32.65 | 31.42 | 30.39 | 28.74 | 28.06 |
| 10.5  | 47.90 | 44.57 | 40.28 | 37.48 | 35.45 | 33.87 | 32.59 | 31.52 | 29.81 | 29.11 |
| 11.0  | 49.60 | 46.16 | 41.71 | 38.81 | 36.71 | 35.07 | 33.75 | 32.64 | 30.87 | 30.14 |
| 11.5  | 51.28 | 47.72 | 43.12 | 40.13 | 37.95 | 36.26 | 34.89 | 33.74 | 31.91 | 31.16 |
| 12.0  | 52.94 | 49.27 | 44.52 | 41.43 | 39.18 | 37.44 | 36.02 | 34.84 | 32.95 | 32.17 |
| 12.5  | 54.59 | 50.80 | 45.90 | 42.72 | 40.40 | 38.60 | 37.14 | 35.92 | 33.97 | 33.17 |
| 13.0  | 56.22 | 52.32 | 47.27 | 43.99 | 41.61 | 39.75 | 38.25 | 36.99 | 34.99 | 34.16 |
| 13.5  | 57.83 | 53.82 | 48.63 | 45.26 | 42.80 | 40.89 | 39.35 | 38.06 | 35.99 | 35.14 |
| 14.0  | 59.43 | 55.31 | 49.98 | 46.51 | 43.98 | 42.02 | 40.44 | 39.11 | 36.99 | 36.12 |
| 14.5  | 61.02 | 56.78 | 51.31 | 47.75 | 45.16 | 43.15 | 41.51 | 40.15 | 37.97 | 37.08 |
| 15.0  | 62.59 | 58.25 | 52.63 | 48.98 | 46.32 | 44.26 | 42.58 | 41.19 | 38.95 | 38.03 |
| 15.5  | 64.15 | 59.70 | 53.94 | 50.20 | 47.47 | 45.36 | 43.64 | 42.21 | 39.92 | 38.98 |
| 16.0  | 65.69 | 61.13 | 55.24 | 51.41 | 48.62 | 46.45 | 44.70 | 43.23 | 40.88 | 39.92 |
| 16.5  | 67.23 | 62.56 | 56.53 | 52.61 | 49.75 | 47.54 | 45.74 | 44.24 | 41.84 | 40.85 |
| 17.0  | 68.75 | 63.98 | 57.81 | 53.80 | 50.88 | 48.61 | 46.77 | 45.24 | 42.78 | 41.78 |
| 17.5  | 70.26 | 65.38 | 59.08 | 54.98 | 52.00 | 49.68 | 47.80 | 46.23 | 43.72 | 42.70 |
| 18.0  | 71.76 | 66.78 | 60.34 | 56.15 | 53.11 | 50.74 | 48.82 | 47.22 | 44.66 | 43.61 |
| 18.5  | 73.25 | 68.17 | 61.60 | 57.32 | 54.21 | 51.80 | 49.84 | 48.20 | 45.59 | 44.51 |
| 19.0  | 74.73 | 69.54 | 62.84 | 58.48 | 55.31 | 52.84 | 50.84 | 49.17 | 46.51 | 45.41 |
| 19.5  | 76.20 | 70.91 | 64.08 | 59.63 | 56.39 | 53.88 | 51.84 | 50.14 | 47.42 | 46.30 |
| 20.0  | 77.66 | 72.27 | 65.30 | 60.77 | 57.47 | 54.91 | 52.84 | 51.10 | 48.33 | 47.19 |
| 20.5  | 79.11 | 73.62 | 66.52 | 61.91 | 58.55 | 55.94 | 53.83 | 52.06 | 49.23 | 48.07 |
| 21.0  | 80.55 | 74.96 | 67.74 | 63.04 | 59.62 | 56.96 | 54.81 | 53.01 | 50.13 | 48.95 |
| 21.5  | 81.99 | 76.30 | 68.94 | 64.16 | 60.68 | 57.97 | 55.78 | 53.95 | 51.02 | 49.82 |
| 22.0  | 83.41 | 77.63 | 70.14 | 65.28 | 61.73 | 58.98 | 56.75 | 54.89 | 51.91 | 50.69 |
| 22.5  | 84.83 | 78.95 | 71.34 | 66.38 | 62.78 | 59.99 | 57.72 | 55.82 | 52.79 | 51.55 |
| 23.0  | 86.24 | 80.26 | 72.52 | 67.49 | 63.83 | 60.98 | 58.68 | 56.75 | 53.67 | 52.41 |
| 23.5  | 87.64 | 81.56 | 73.70 | 68.59 | 64.86 | 61.97 | 59.63 | 57.67 | 54.54 | 53.26 |
| 24.0  | 89.04 | 82.86 | 74.87 | 69.68 | 65.90 | 62.96 | 60.58 | 58.59 | 55.41 | 54.11 |
| 24.5  | 90.43 | 84.15 | 76.04 | 70.76 | 66.92 | 63.94 | 61.52 | 59.50 | 56.28 | 54.95 |
| 25.0  | 91.81 | 85.44 | 77.20 | 71.84 | 67.95 | 64.92 | 62.46 | 60.41 | 57.14 | 55.79 |

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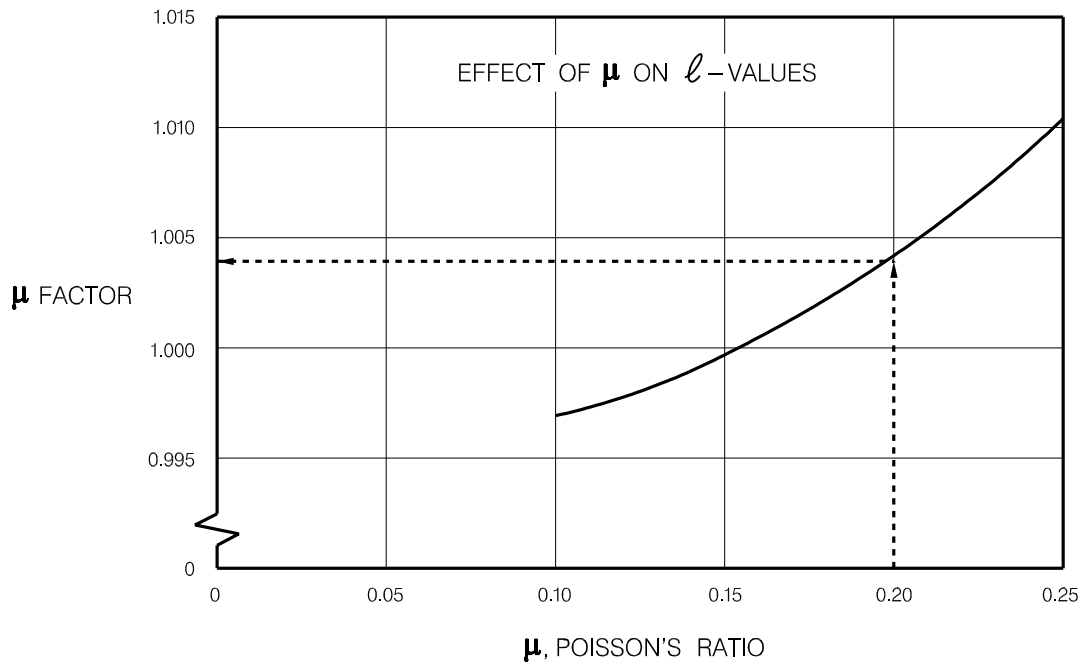
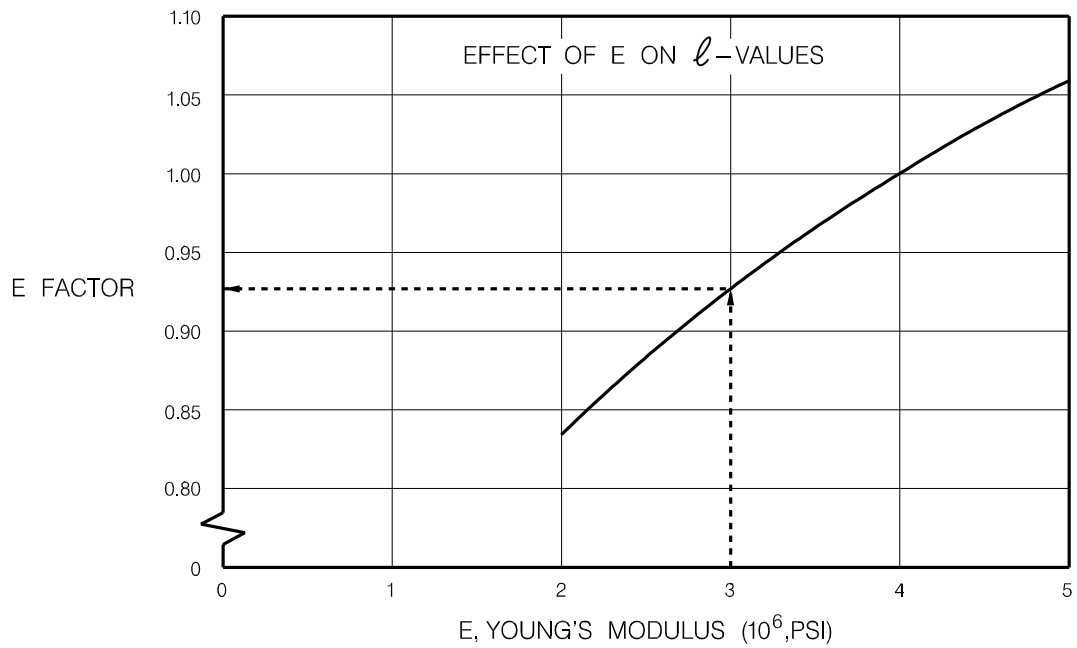
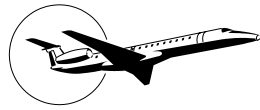
Figure 7.8.1 - Radius of Relative Stiffness

### **7.8.2 Radius of Relative Stiffness (other values)**

The table of section 7.8.1 presents the (RRS) Radius of Relative Stiffness values based on Young's modulus (E) of 4,000,000 psi and Poisson's ratio ( $\mu$ ) of 0.15.

For convenience in finding this Radius based on other values of E and  $\mu$ , the curves of section 7.8.2 are included.

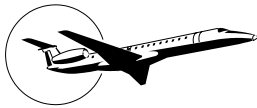
For example, to find an RRS value based on an E of 3,000,000 psi, the "E" factor of 0.931 is multiplied by the RRS value found in figure 7.8.1. The effect of the variations of  $\mu$  on the RRS value is treated in a similar manner.



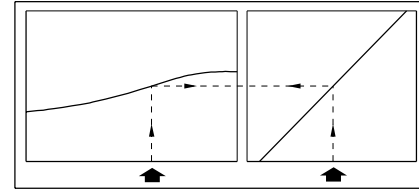
NOTE: BOTH CURVES ON THIS PAGE ARE USED TO ADJUST THE  $\ell$ -VALUES.

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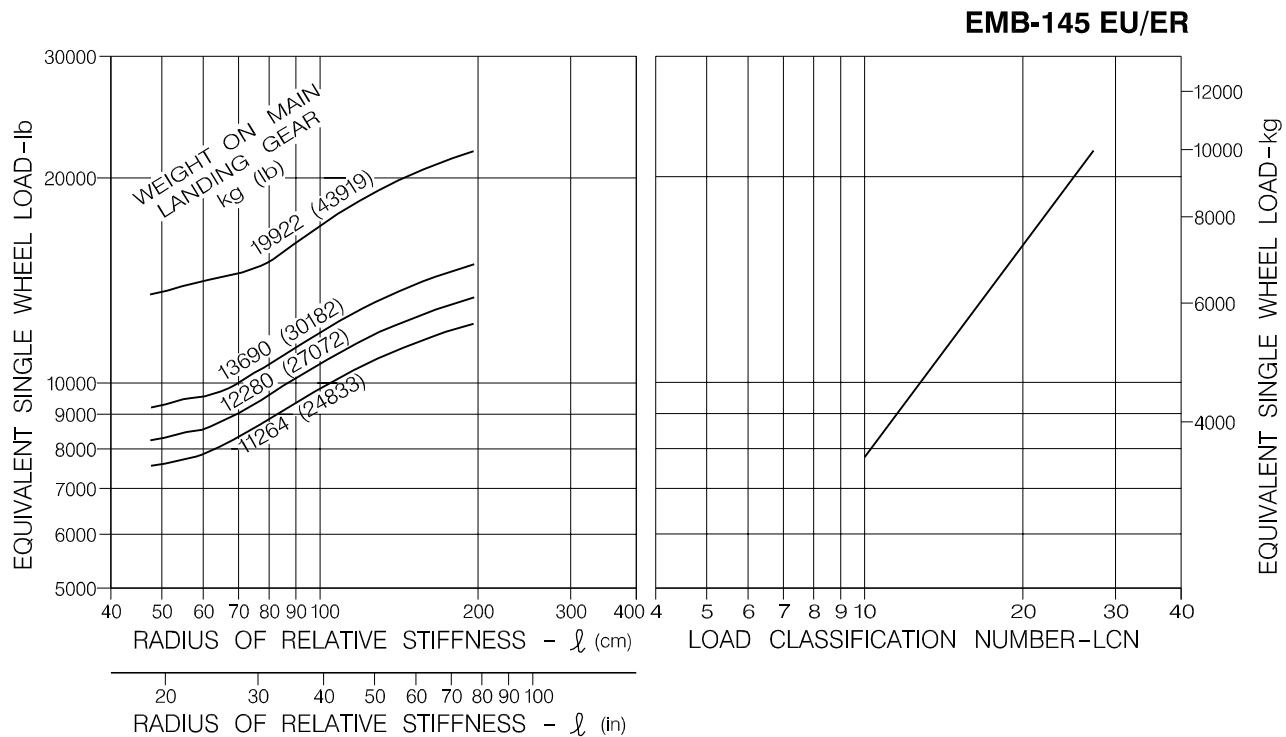
Figure 7.8.2 - Radius of Relative Stiffness (other values)



### 7.8.3 Rigid Pavement Requirements - LCN Method



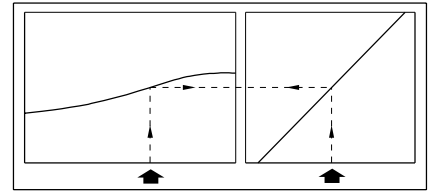
TIRES 30x9.5-14 16PR AT 10.19 kgf/cm<sup>2</sup> (145psi)



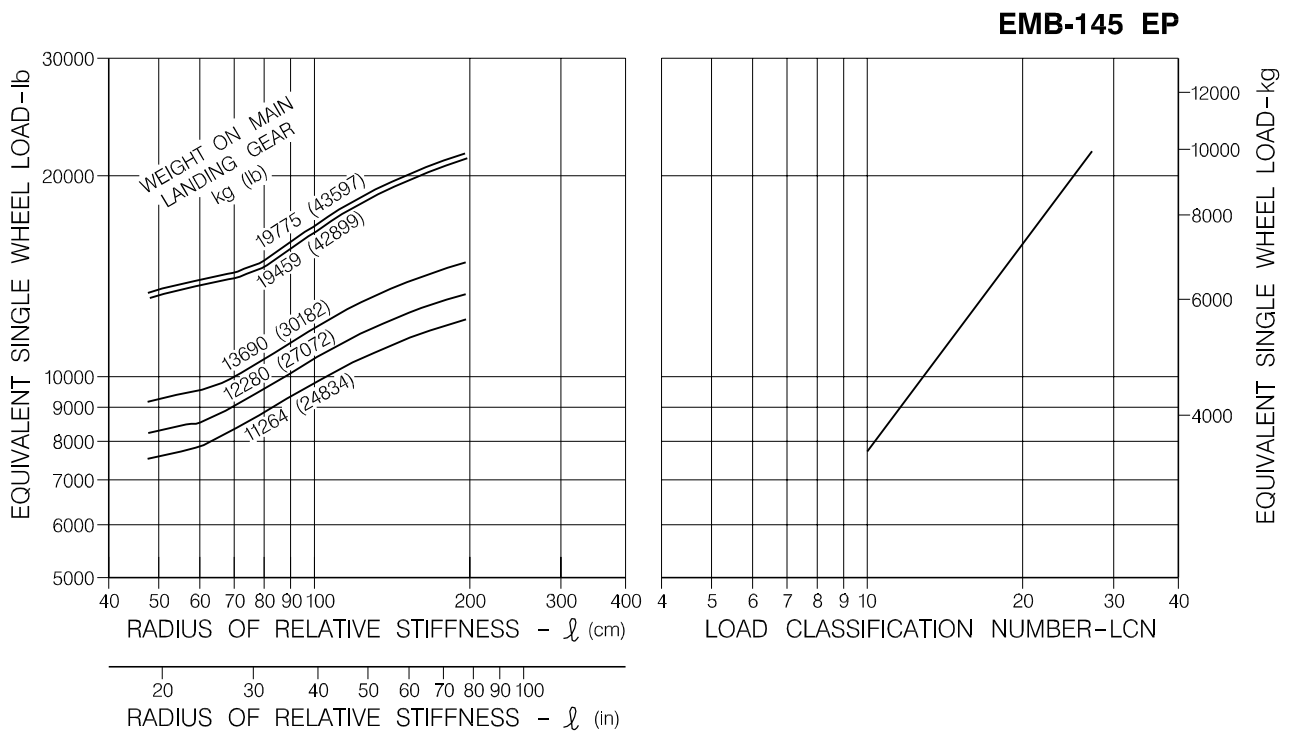
**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN ICAO AERODROME MANUAL,  
PART 2, PAR. 4.1.3

APM070769.MCE A

*Figure 7.8.3 - Rigid Pavement Requirements - LCN Method  
Sheet 1*



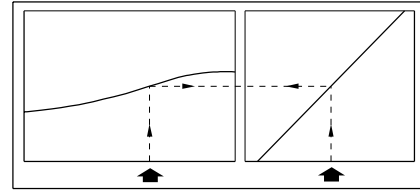
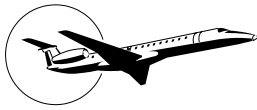
TIRES 30x9.5-14 16PR AT 10.41 kgf/cm<sup>2</sup> (148psi)



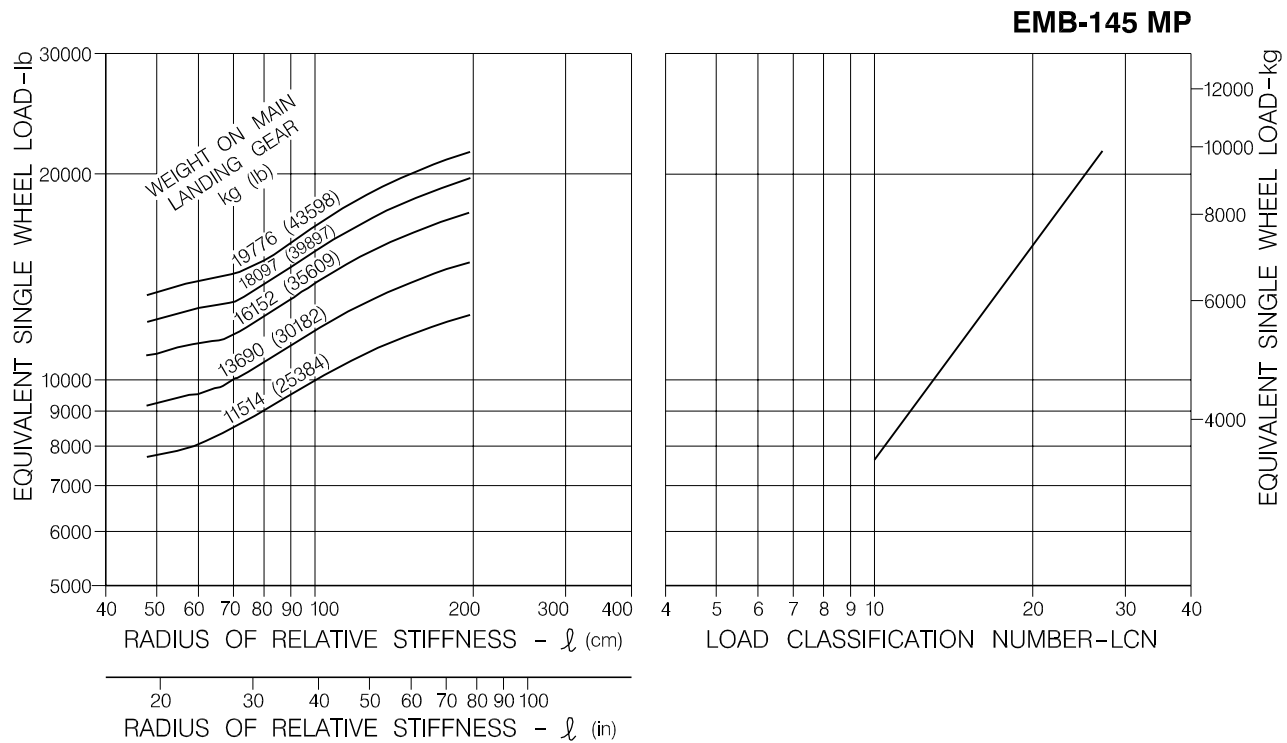
**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN ICAO AERODROME MANUAL.  
PART 2, PAR. 4.1.3

APM070058.MCE B

*Figure 7.8.3 - Rigid Pavement Requirements - LCN Method  
Sheet 2*



TIRES 30x9.5-14 16PR AT 10.55 kgf/cm<sup>2</sup> (150psi)

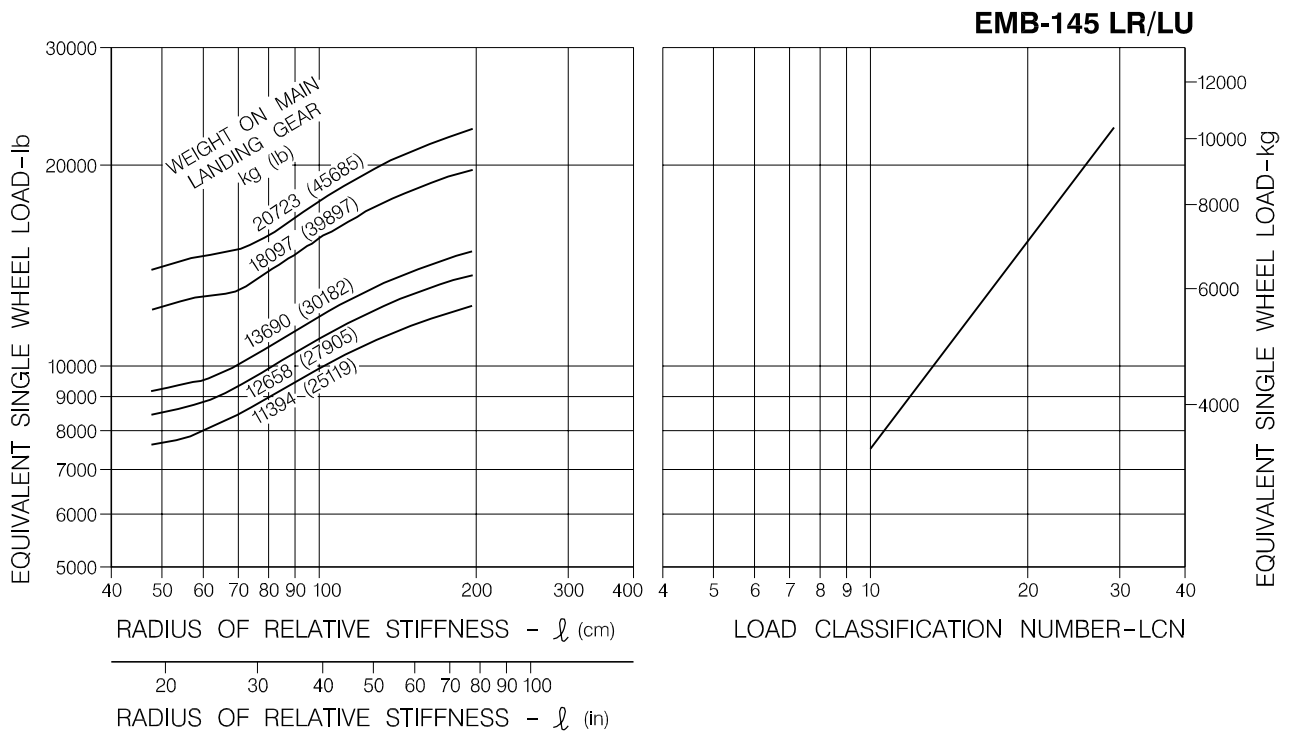
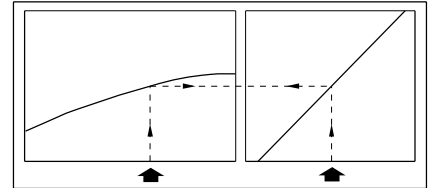


**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN ICAO AERODROME MANUAL.  
PART 2, PAR. 4.1.3

APM070770.MCE A

**Figure 7.8.3 - Rigid Pavement Requirements - LCN Method  
Sheet 3**

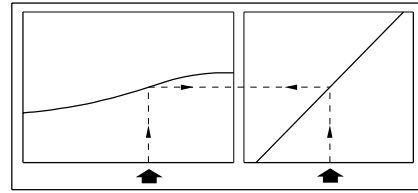
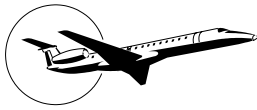
TIRES H30X9.5-14 16PR AT 11.25 kgf/cm<sup>2</sup> (160psi)



**NOTE:** EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL, PART 2, PAR. 4.1.3

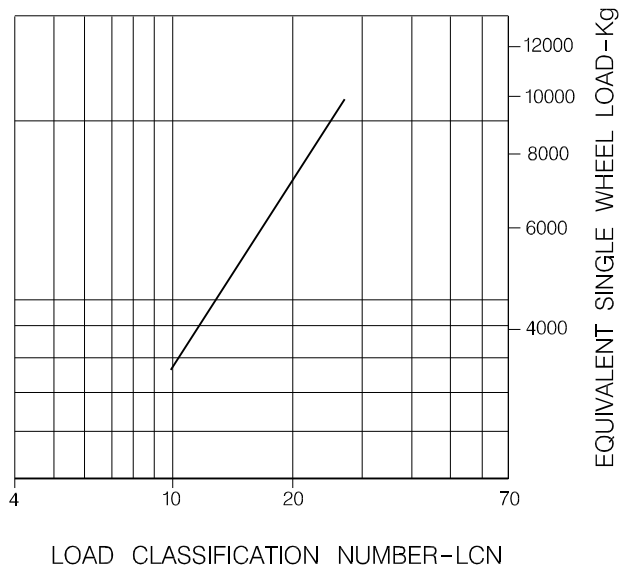
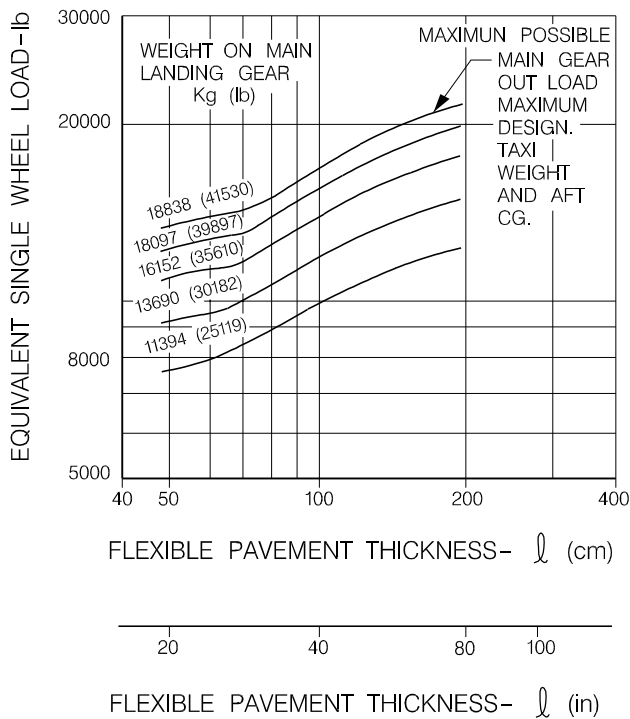
APM070768.MCE A

*Figure 7.8.3 - Rigid Pavement Requirements - LCN Method  
Sheet 4*



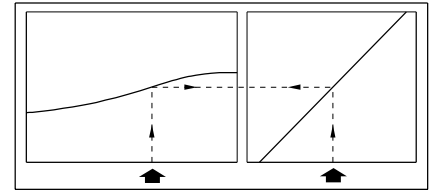
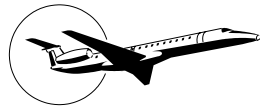
TIRES 30 x 9.5 -14 16PR AT 10,55 Kgf/cm (150 psi)

**EMB-145 MK**

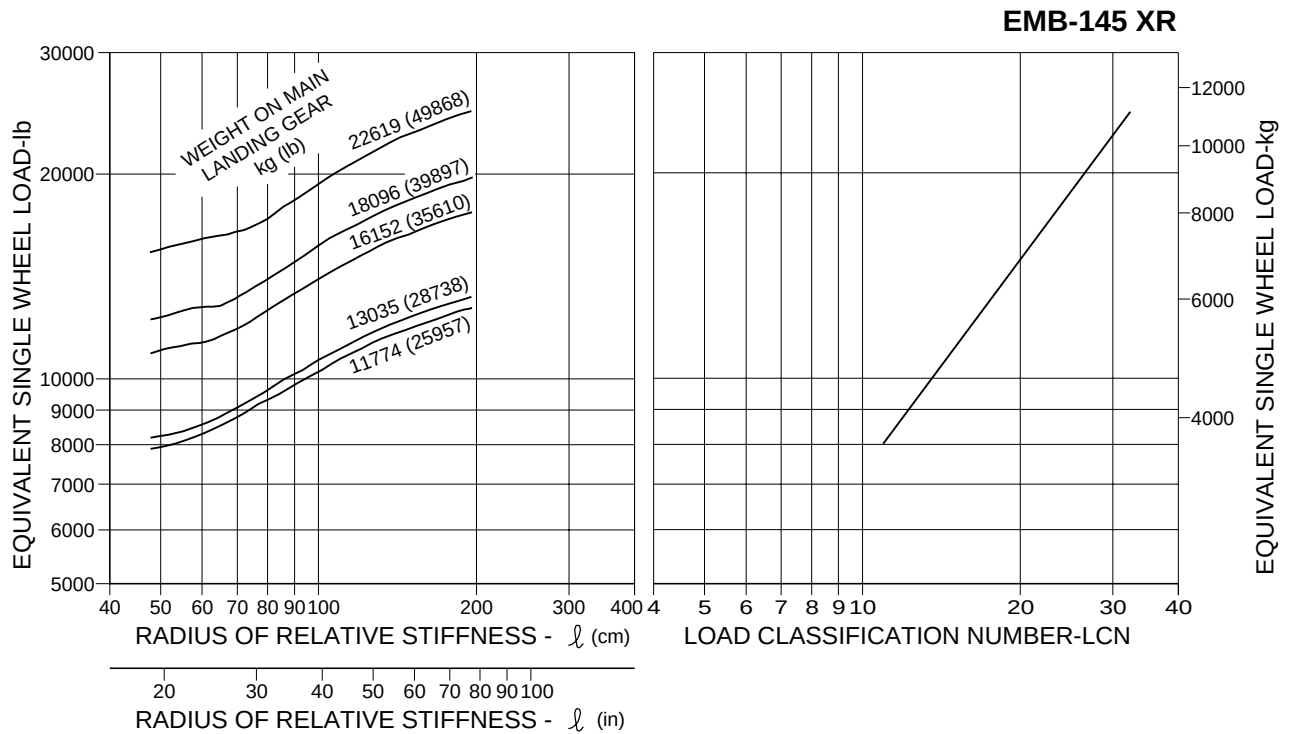


APM070779.MCE

**Figure 7.8.3 - Rigid Pavement Requirements - LCN Method**  
**Sheet 5**



TIRES H 30x9.5-16 16PR AT 12.30 kgf/cm<sup>2</sup> (175psi)



**NOTE:** EQUIVALENT SINGLE WHEEL LOADS  
ARE DERIVED BY METHODS SHOWN  
IN ICAO AERODROME MANUAL.  
PART 2, PAR. 4.1.3

145APM070818.MCE

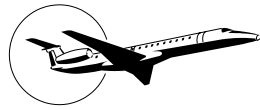
*Figure 7.8.3 - Rigid Pavement Requirements - LCN Method*  
*Sheet 6*

## 7.9 ACN/PCN Reporting System - Flexible and Rigid Pavements

To determine the ACN of an aircraft on flexible or rigid pavement, both the aircraft gross weight and the subgrade strength must be known. As an example, for an aircraft gross weight of 45,635 lb (EMB-145 ER) and High subgrade strength, the ACN for rigid pavement is 12.2. For the same gross weight and Low subgrade strength, the ACN for rigid pavement is 13.6.

**NOTE:** An aircraft with an ACN equal to or less than the reported PCN can operate on the pavement subject to any limitations on the tire pressure.

### 7.9.1 Aircraft Classification Number Flexible Pavement



FLEXIBLE PAVEMENT SUBGRADES - MODEL EMB-145 EU

- NOTES:
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 9,77 Kg/cm<sup>2</sup> (139 psi)
  - % WEIGHT ON MAIN GEARS 94.4

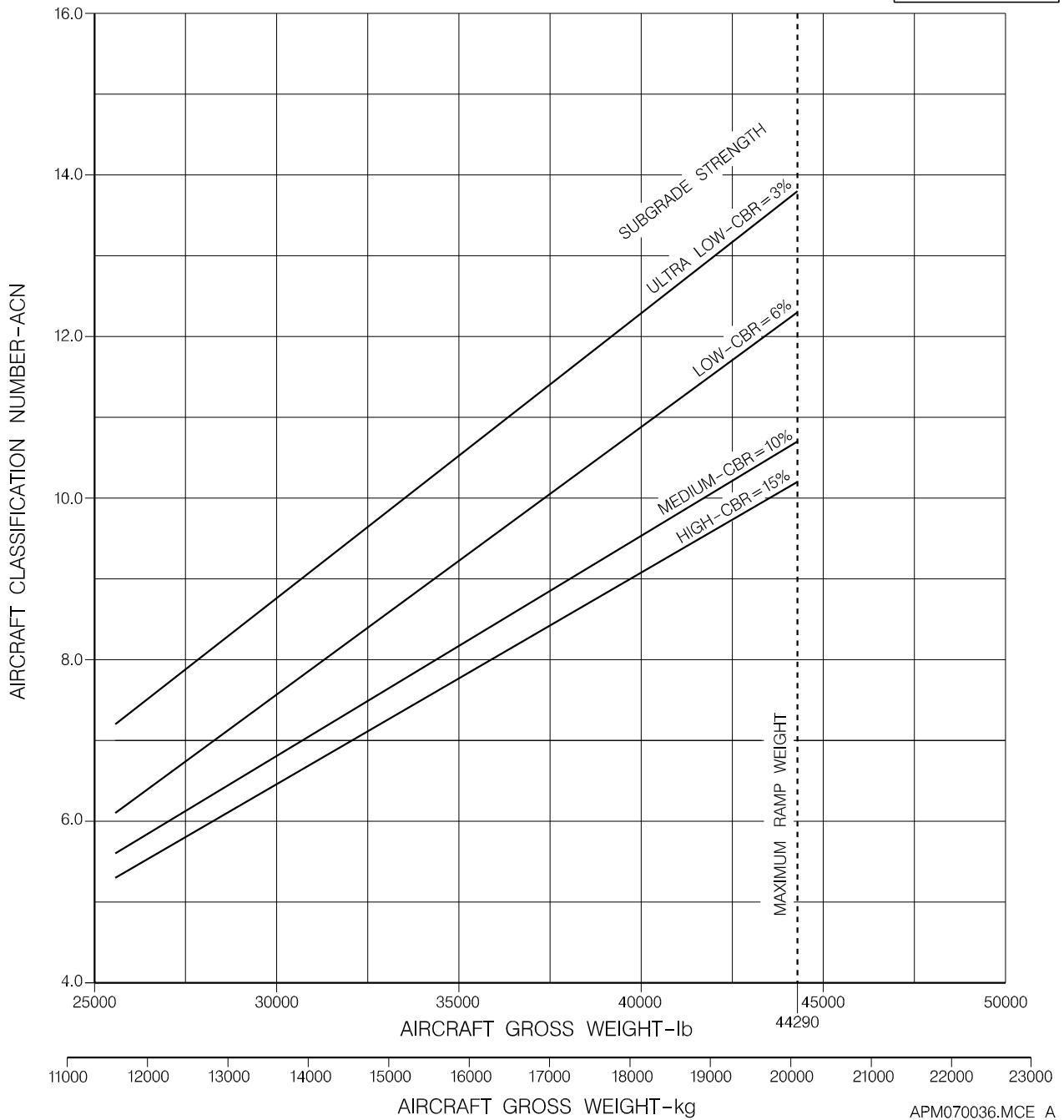
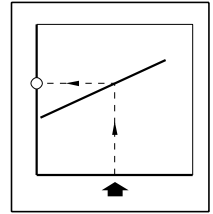
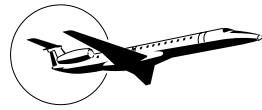


Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 1



**FLEXIBLE PAVEMENT SUBGRADES - MODEL EMB-145 ER**

- NOTES:**
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 9,77Kgf/cm<sup>2</sup> (139 psi)
  - % WEIGHT ON MAIN GEARS 94.4

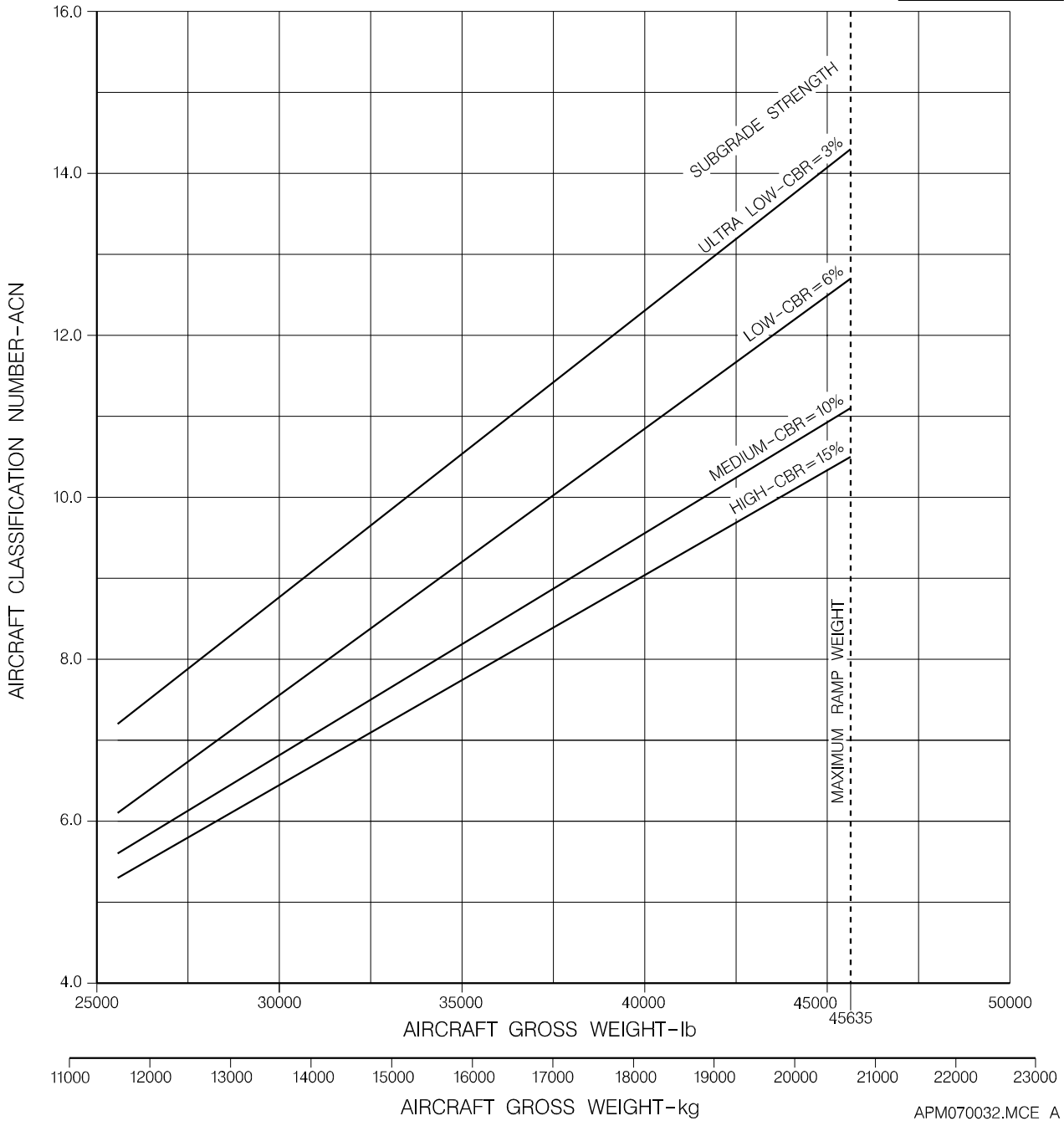
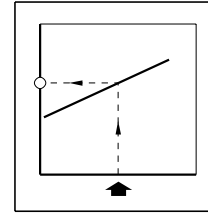
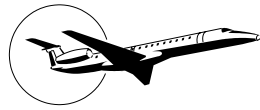


**Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 2**



**FLEXIBLE PAVEMENT SUBGRADES - MODEL EMB-145 LR**

- NOTES:**
- 30 x 9.5-14 16 TIRES
  - TIRE PRESSURE 10,55 Kgf/cm<sup>2</sup> (150 psi)
  - % WEIGHT ON MAIN GEARS 93.8%

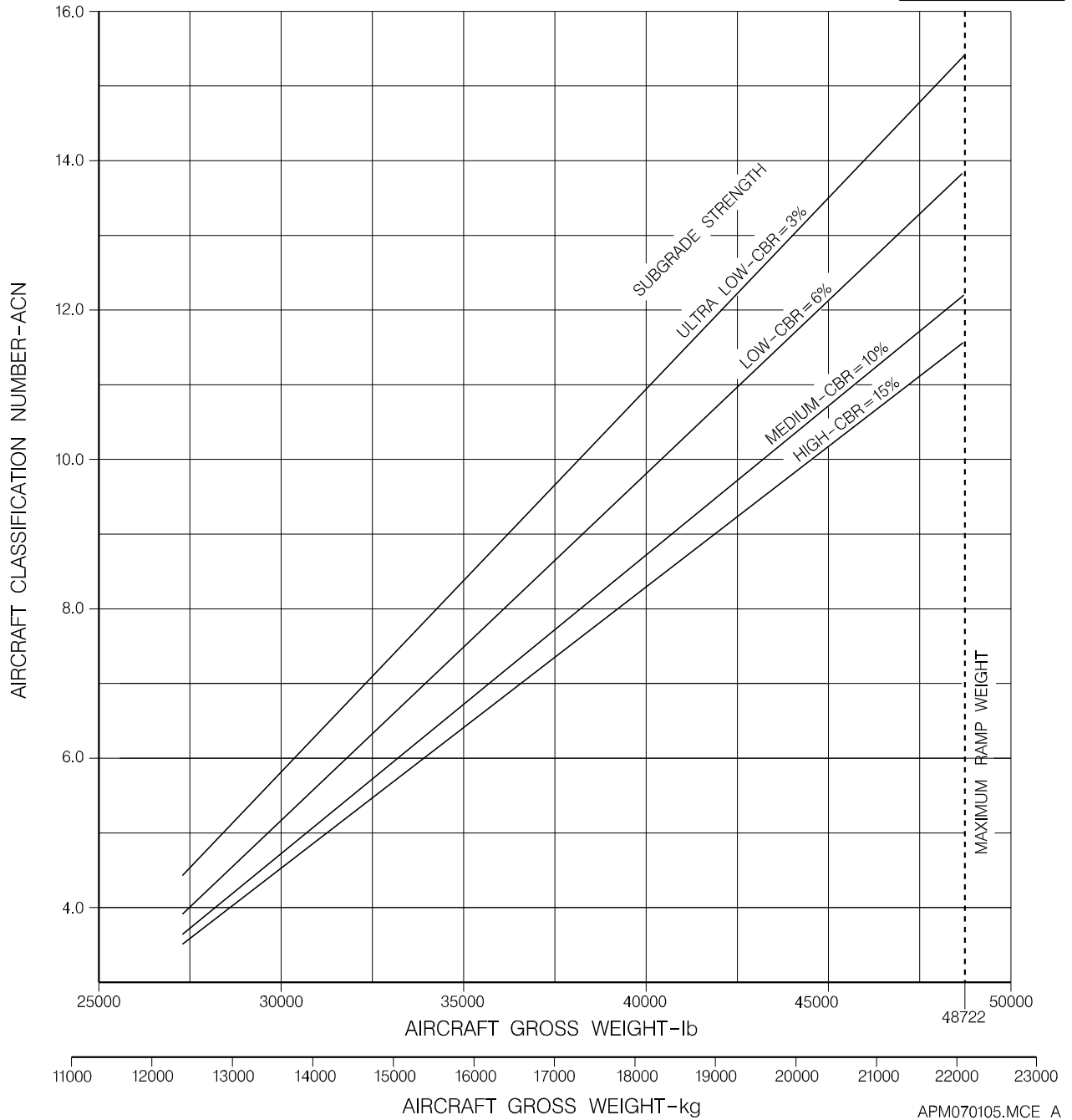
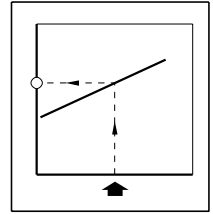
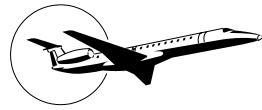


**Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 3**



FLEXIBLE PAVEMENT SUBGRADES - MODEL EMB-145 MP

- NOTES:
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 10,36 kgf/cm<sup>2</sup> (147psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

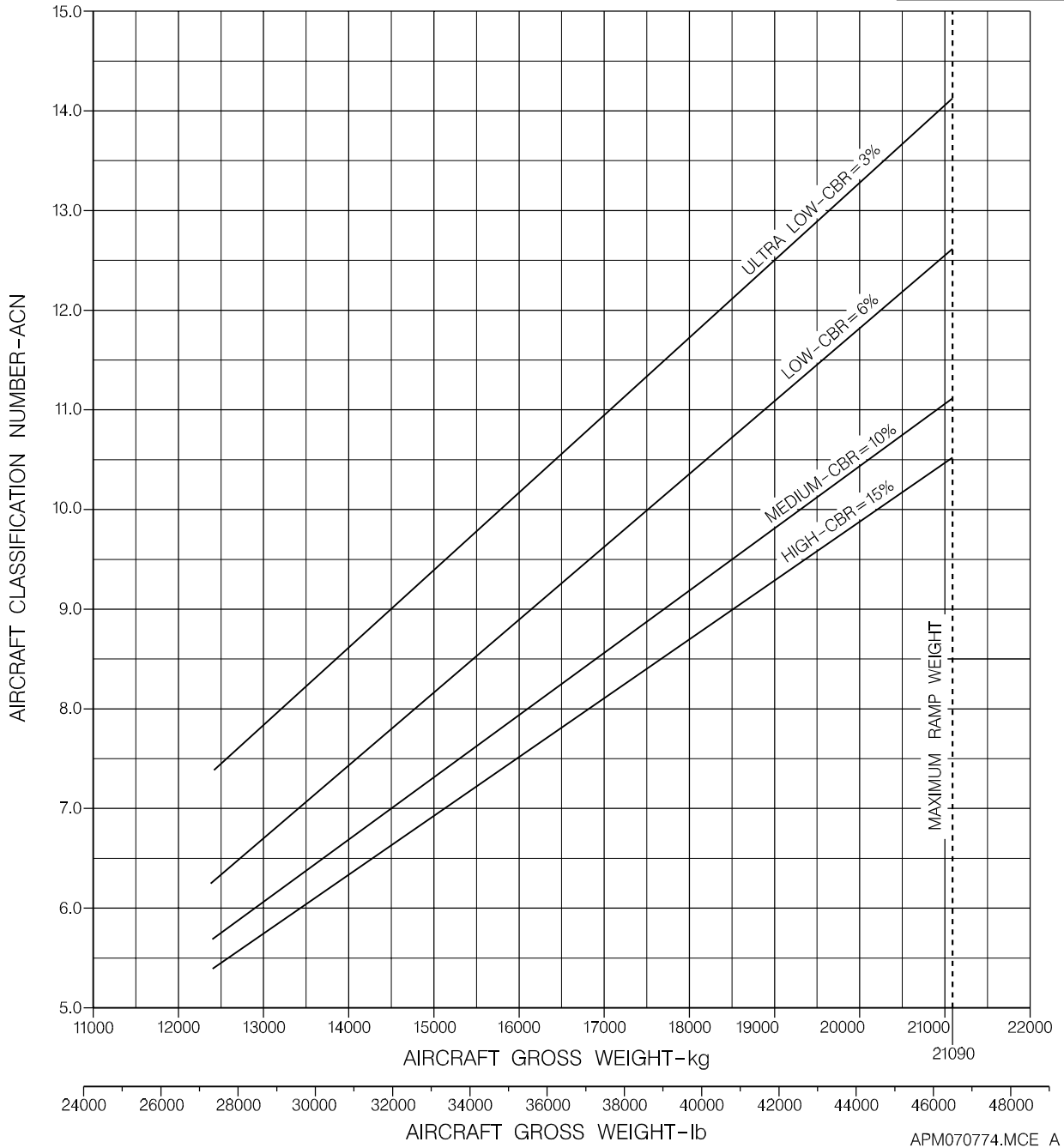
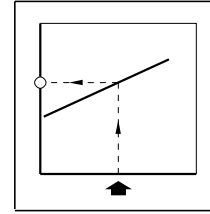
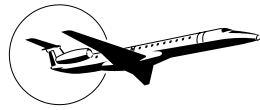


Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 4



FLEXIBLE PAVEMENT SUBGRADES - MODEL EMB-145 EP

- NOTES:
- 30 x 9.5-14-16PR TIRES
  - TIRE PRESSURE 9.98kgf/cm (142 psi)
  - % WEIGHT ON MAIN GEARS 94.4%

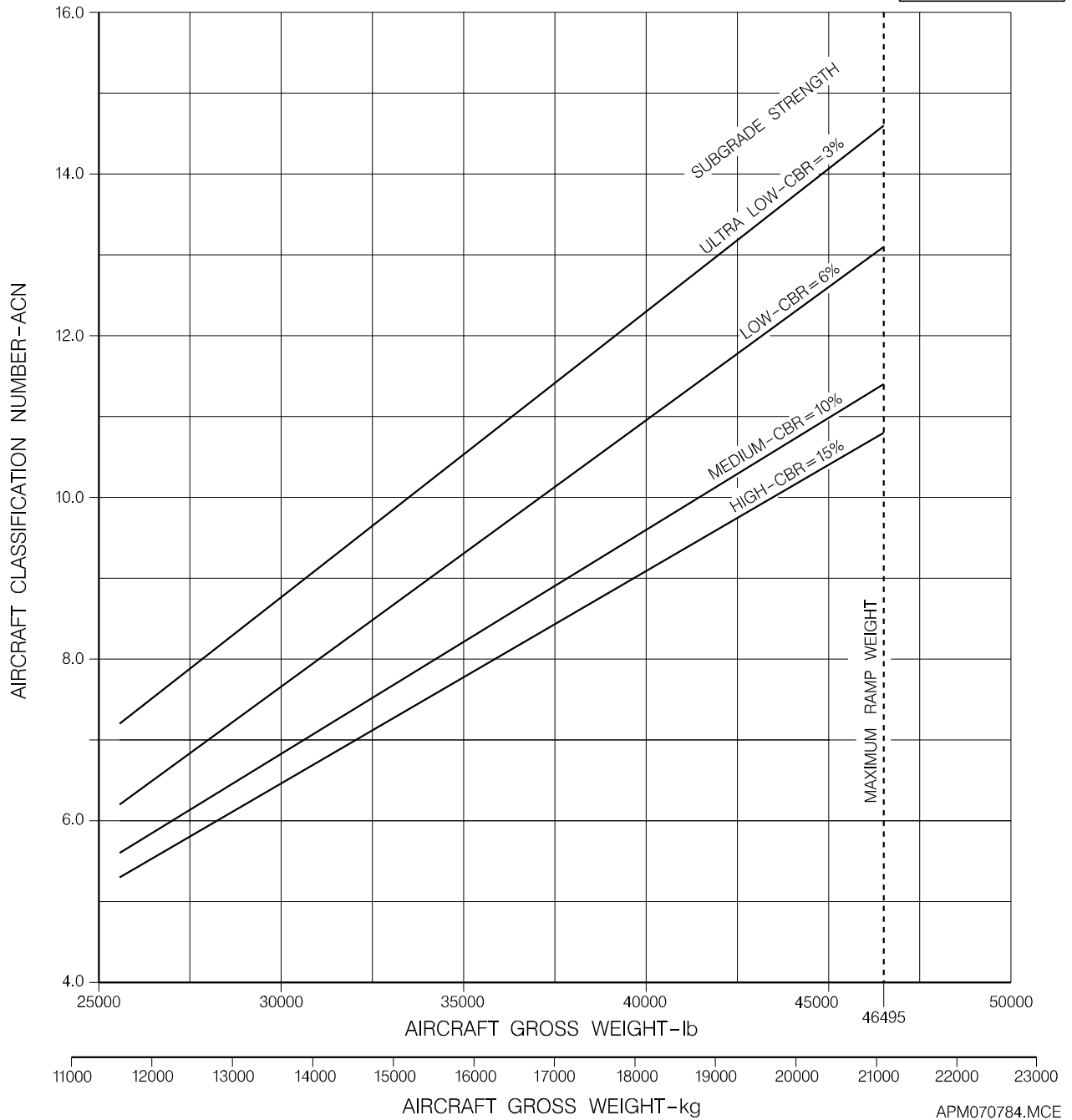
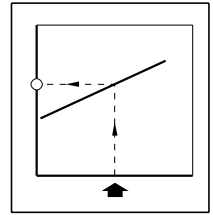
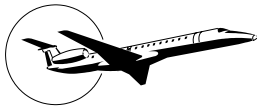


Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 5



FLEXIBLE PAVEMENT SUBGRADES - MODEL EMB-145 MK

- NOTES:**
- 30 x 9.5-14-16PR TIRES
  - TIRE PRESSURE 10.34kgf/cm (150 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

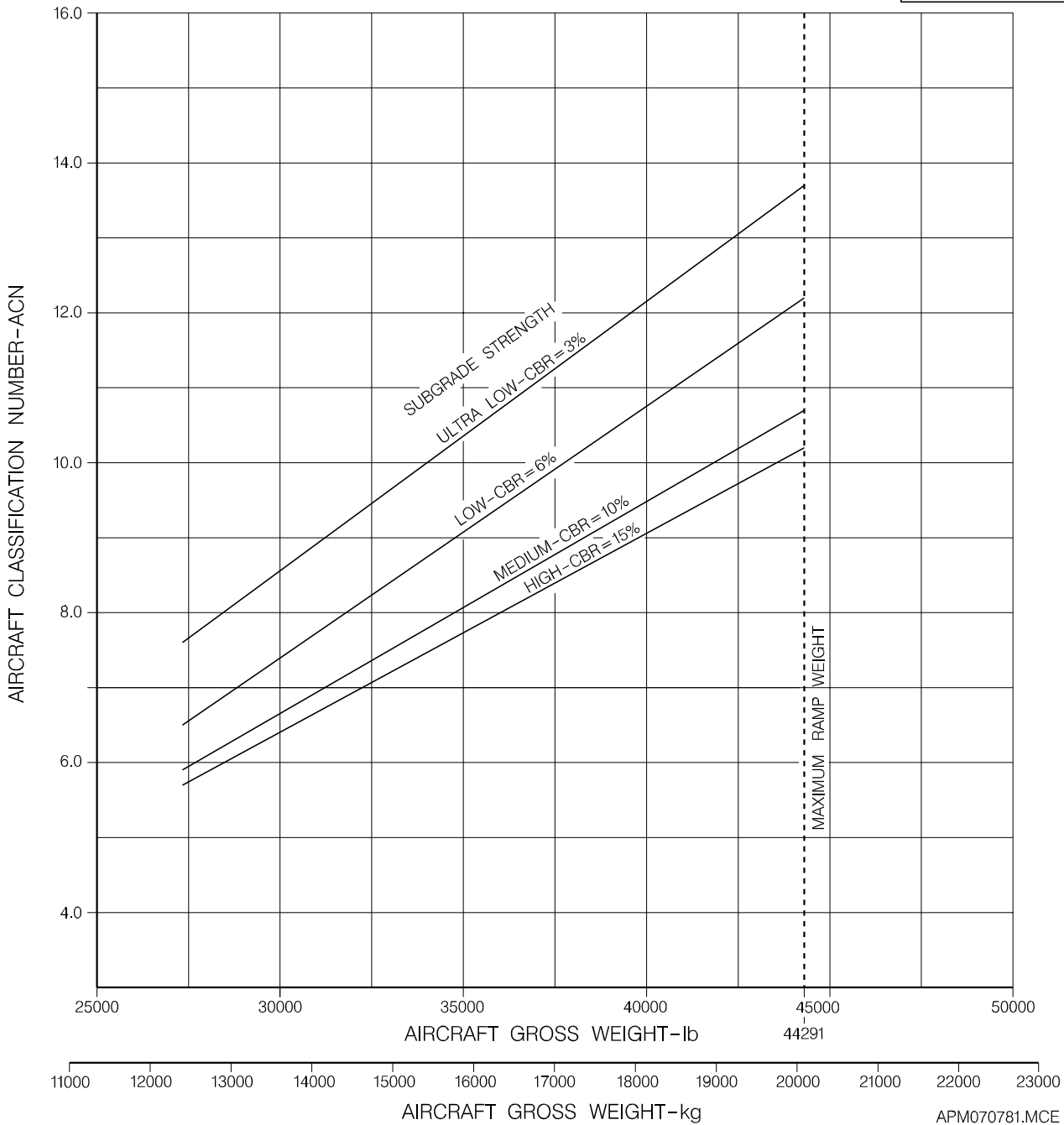
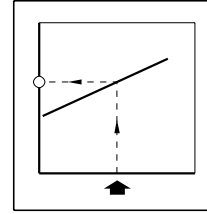
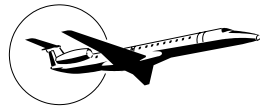


Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 6



FLEXIBLE PAVEMENT SUBGRADE STRENGTH EMB-145 XR

- NOTES:
- H30 x 9.5-16 16PR TIRES
  - TIRE PRESSURE 12.30 Kgf/cm<sup>2</sup> (175 psi)
  - % WEIGHT ON MAIN GEARS 93.47

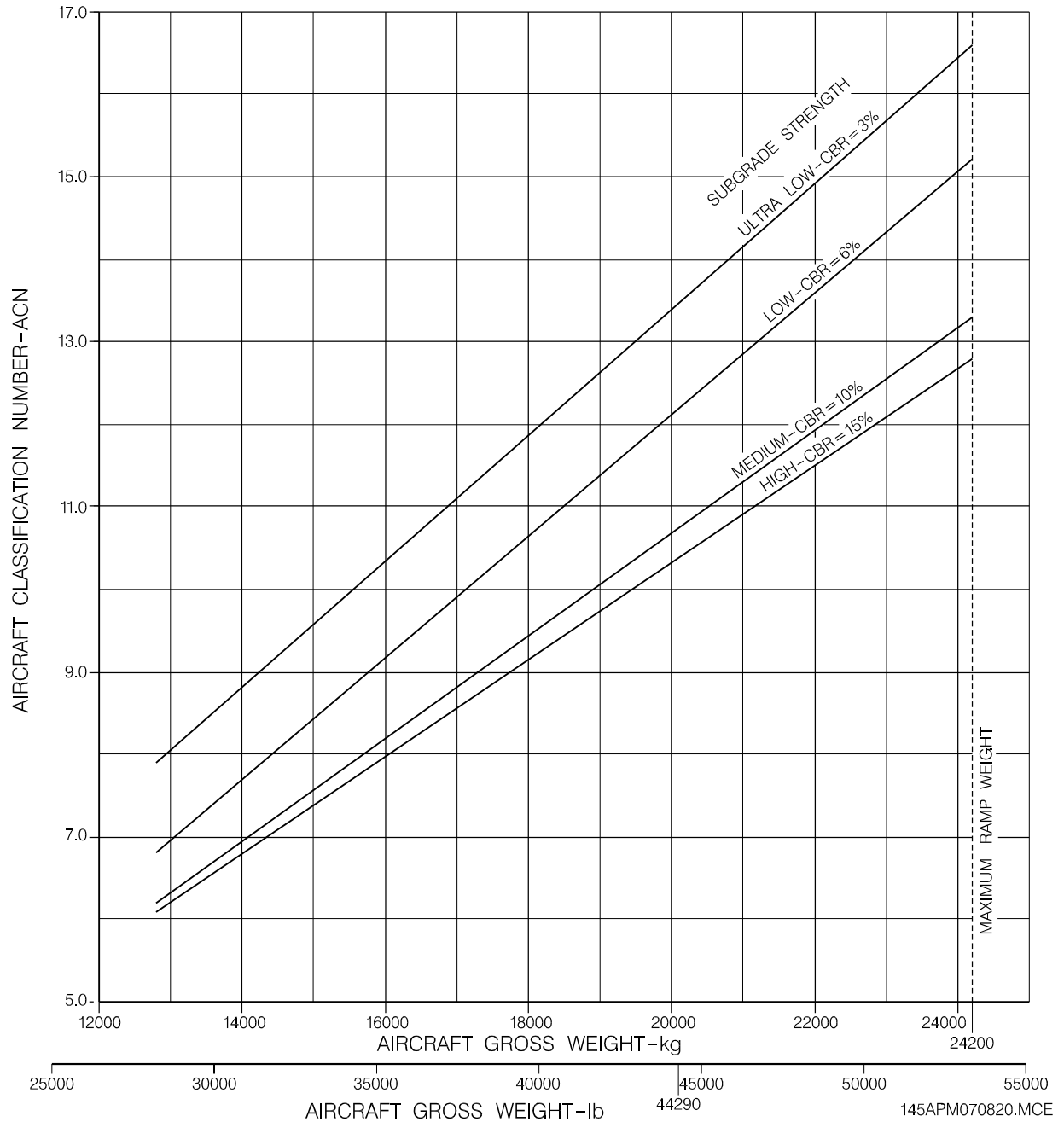
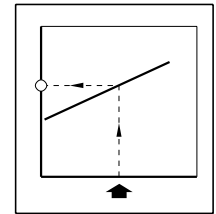
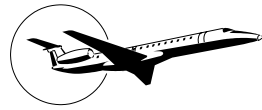


Figure 7.9.1 - Aircraft Classification Number Flexible Pavement  
Sheet 7



## 7.9.2 Aircraft Classification Number Rigid Pavement

### RIGID PAVEMENT SUBGRADES - MODEL EMB -145 EU

- NOTES:**
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 9.77Kg/cm<sup>2</sup> (139 psi)
  - % WEIGHT ON MAIN GEARS 94.4

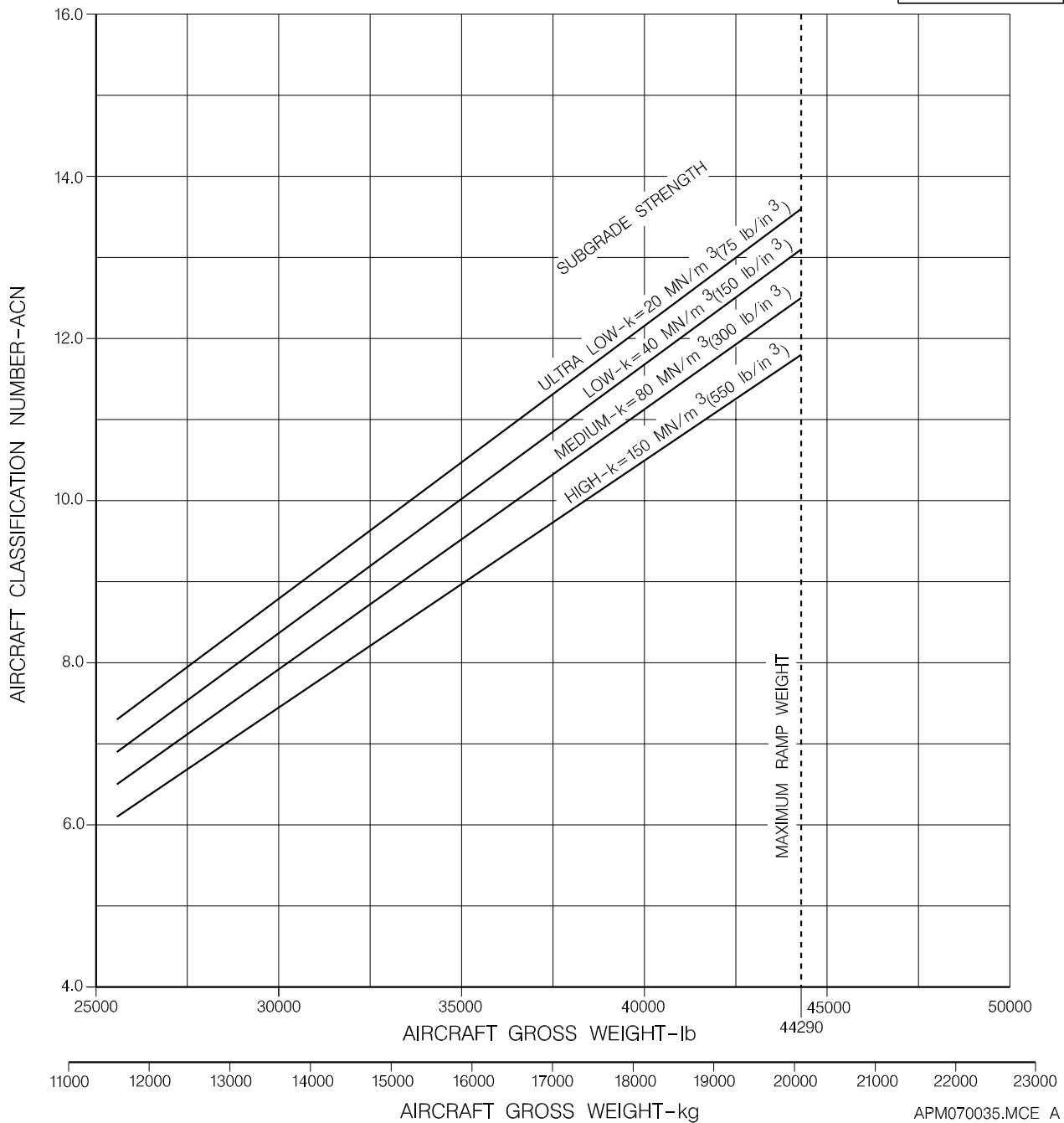
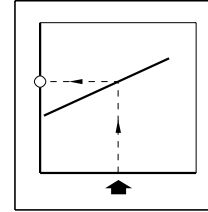
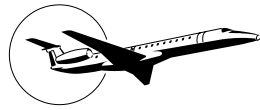


**Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 1**



RIGID PAVEMENT SUBGRADES - MODEL EMB-145 ER

- NOTES:
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 9,77Kgf/cm<sup>2</sup> (139 psi)
  - % WEIGHT ON MAIN GEARS 94.4

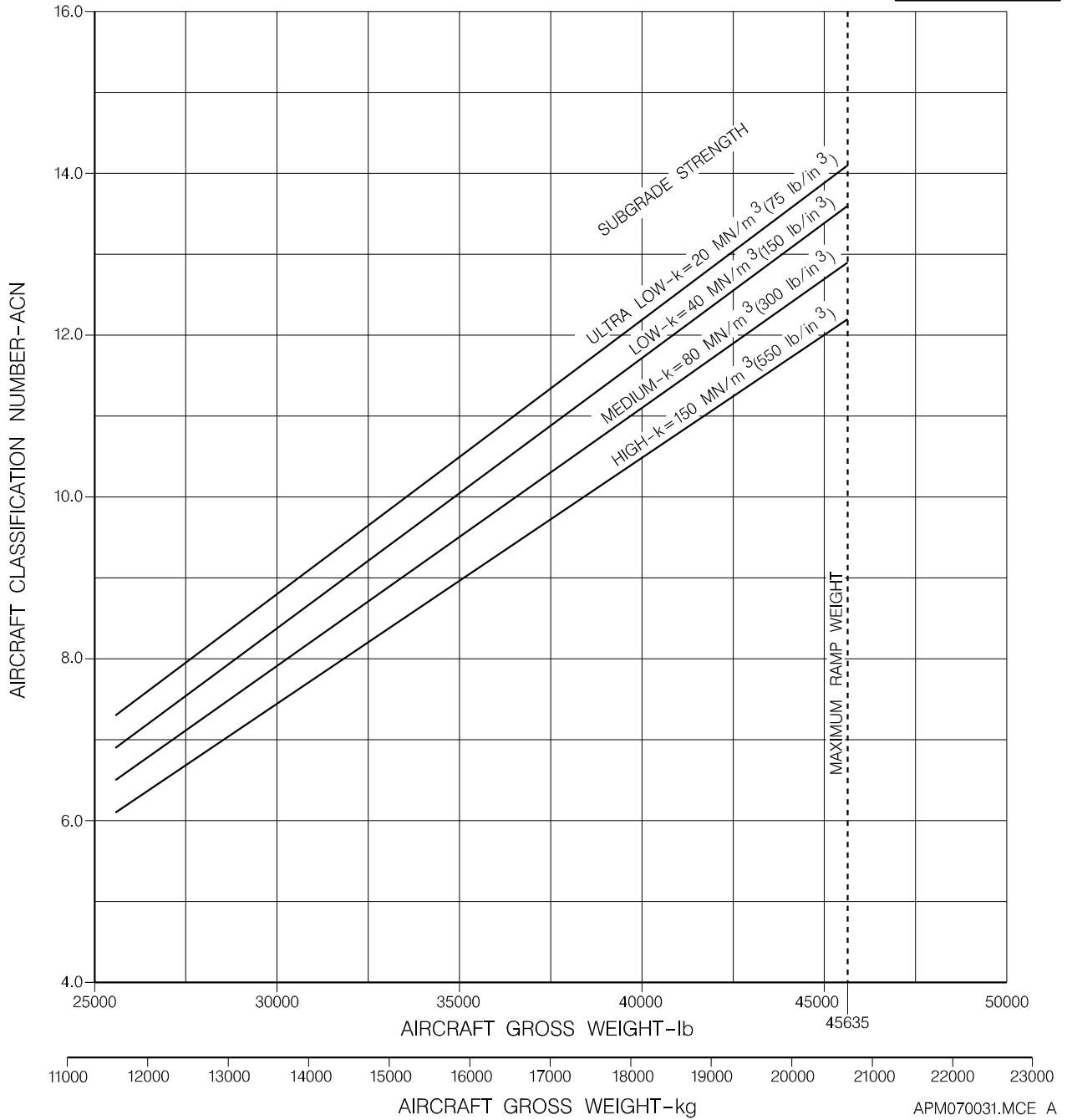
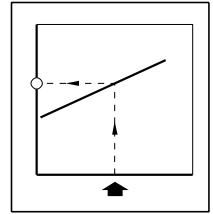
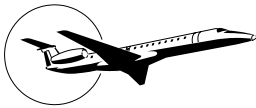


Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 2



**RIGID PAVEMENT SUBGRADES - MODEL EMB-145 LR**

- NOTES:**
- 30 x 9.5-14 16 TIRES
  - TIRE PRESSURE 10,55Kgf/cm<sup>2</sup> (150 psi)
  - % WEIGHT ON MAIN GEARS 93.8%

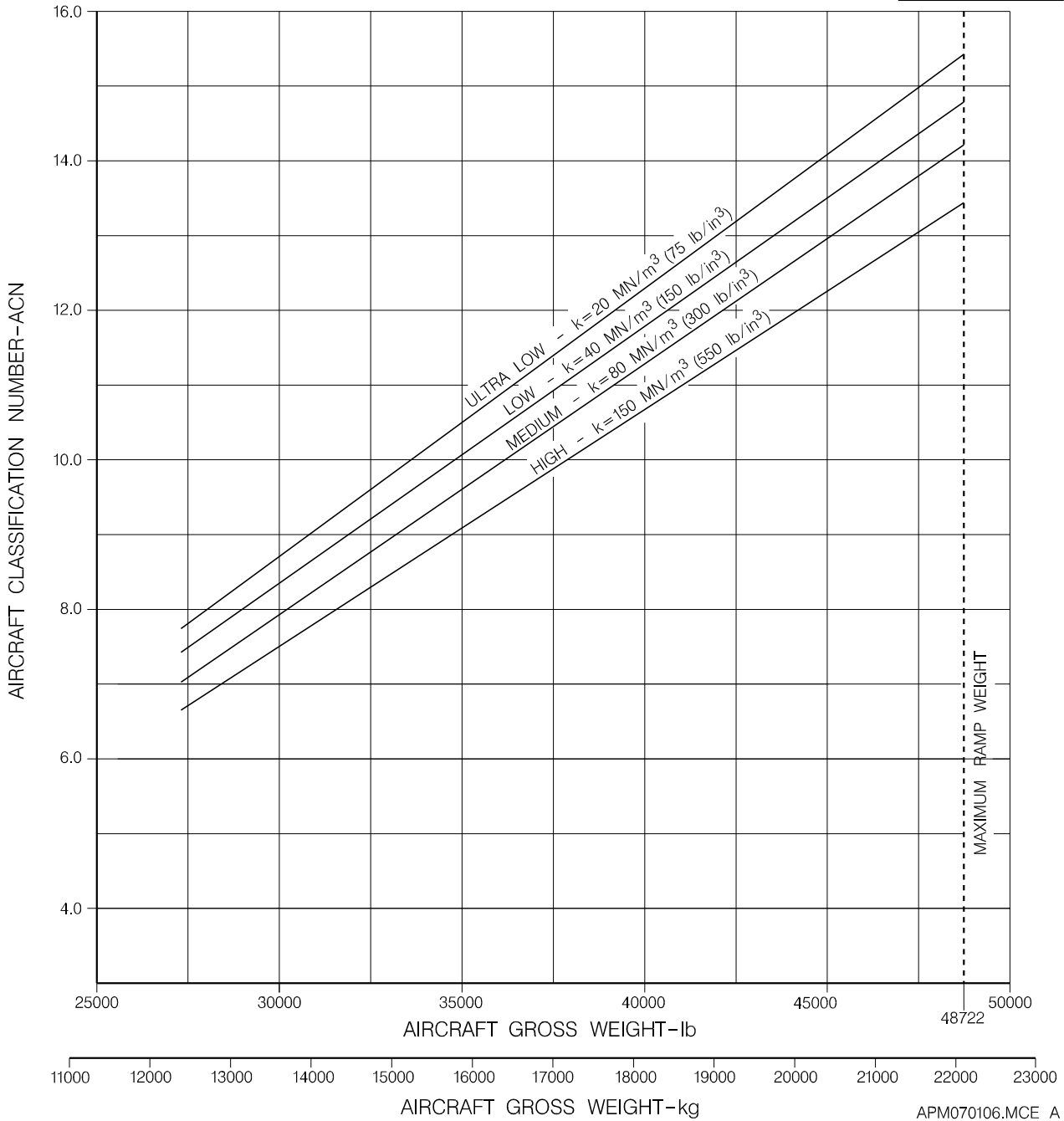
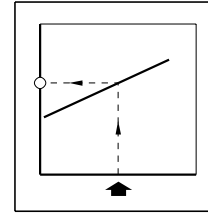
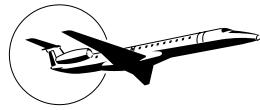


*Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 3*



RIGID PAVEMENT SUBGRADES - MODEL EMB-145 MP

- NOTES:
- 30 x 9.5-14 16PR TIRES
  - TIRE PRESSURE 10.36 kgf/cm<sup>2</sup> (147psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

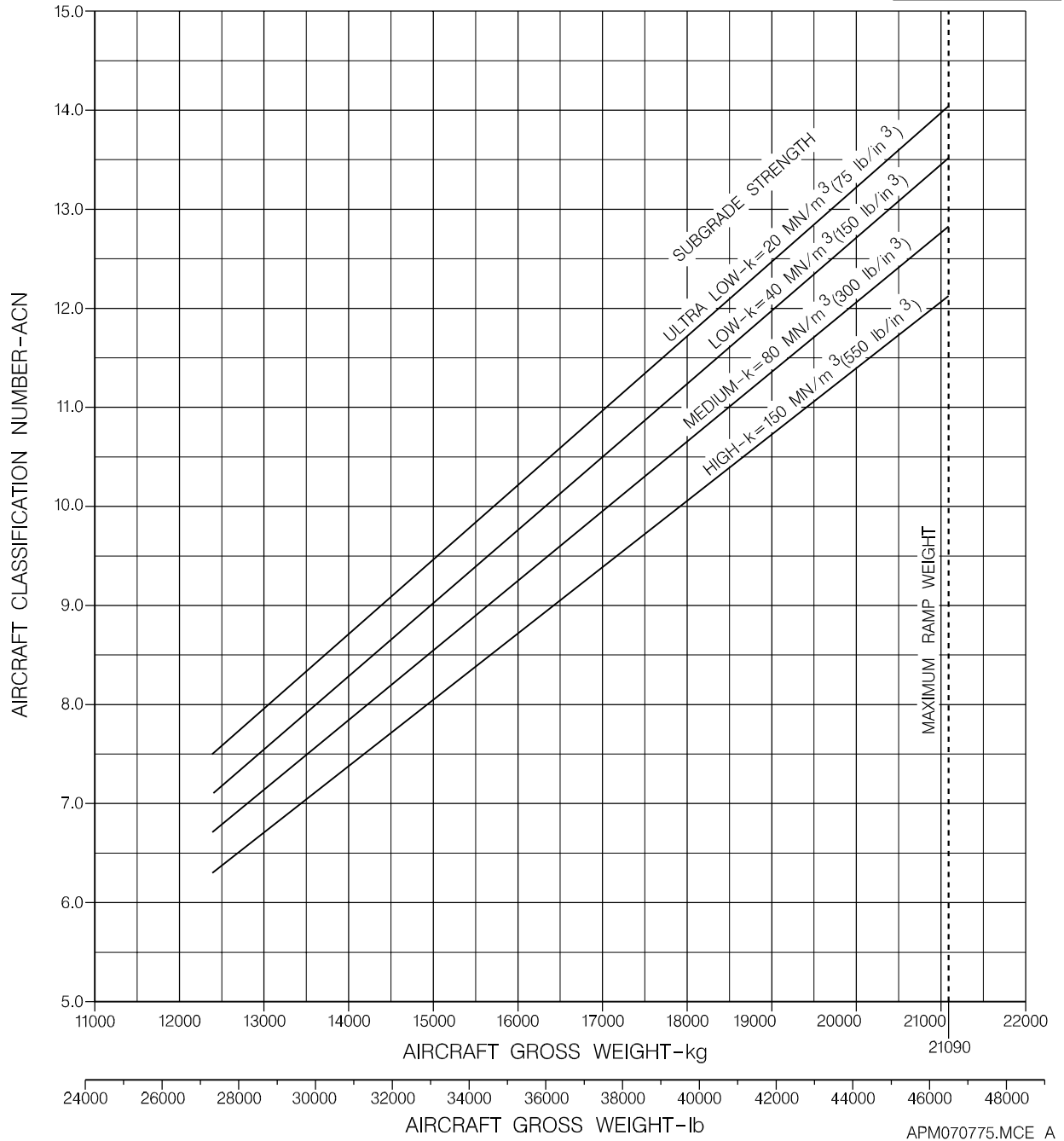
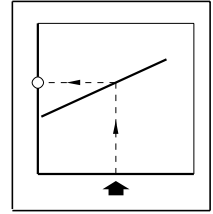
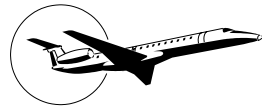


Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 4



**RIGID PAVEMENT SUBGRADES - MODEL EMB-145 MK**

- NOTES:**
- 30 x 9.5-14-16PR TIRES
  - TIRE PRESSURE 10.34kgf/cm (150 psi) (LOADED)
  - % WEIGHT ON MAIN GEARS 93.8%

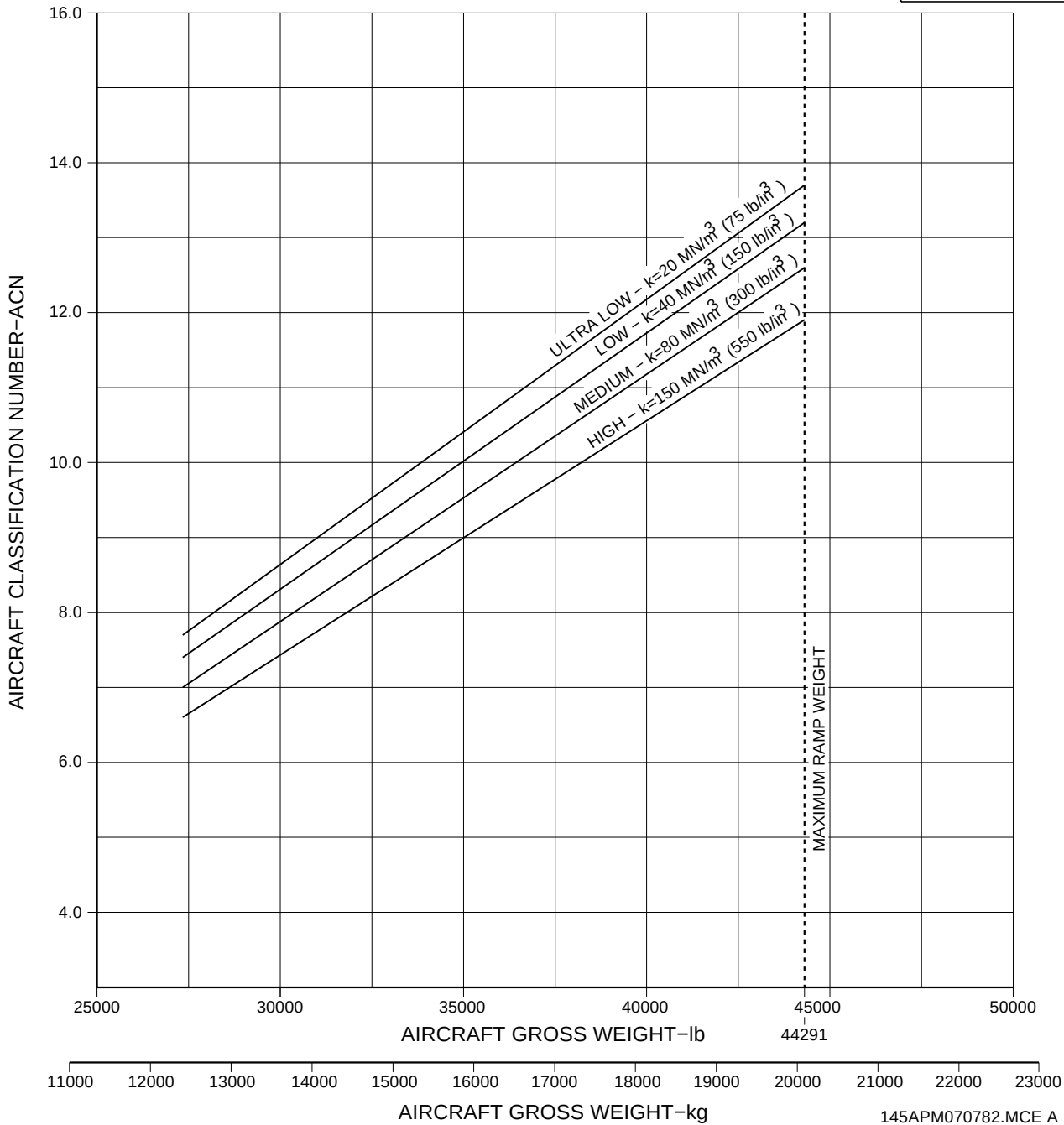
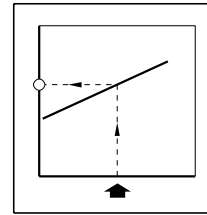
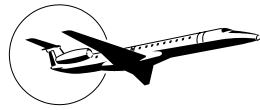


*Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 5*



RIGID PAVEMENT SUBGRADES - MODEL EMB -145 EP

- NOTES:
- 30 x 9.5-14-16PR TIRES
  - TIRE PRESSURE 9.98kgf/cm (142 psi)
  - % WEIGHT ON MAIN GEARS 94.4%

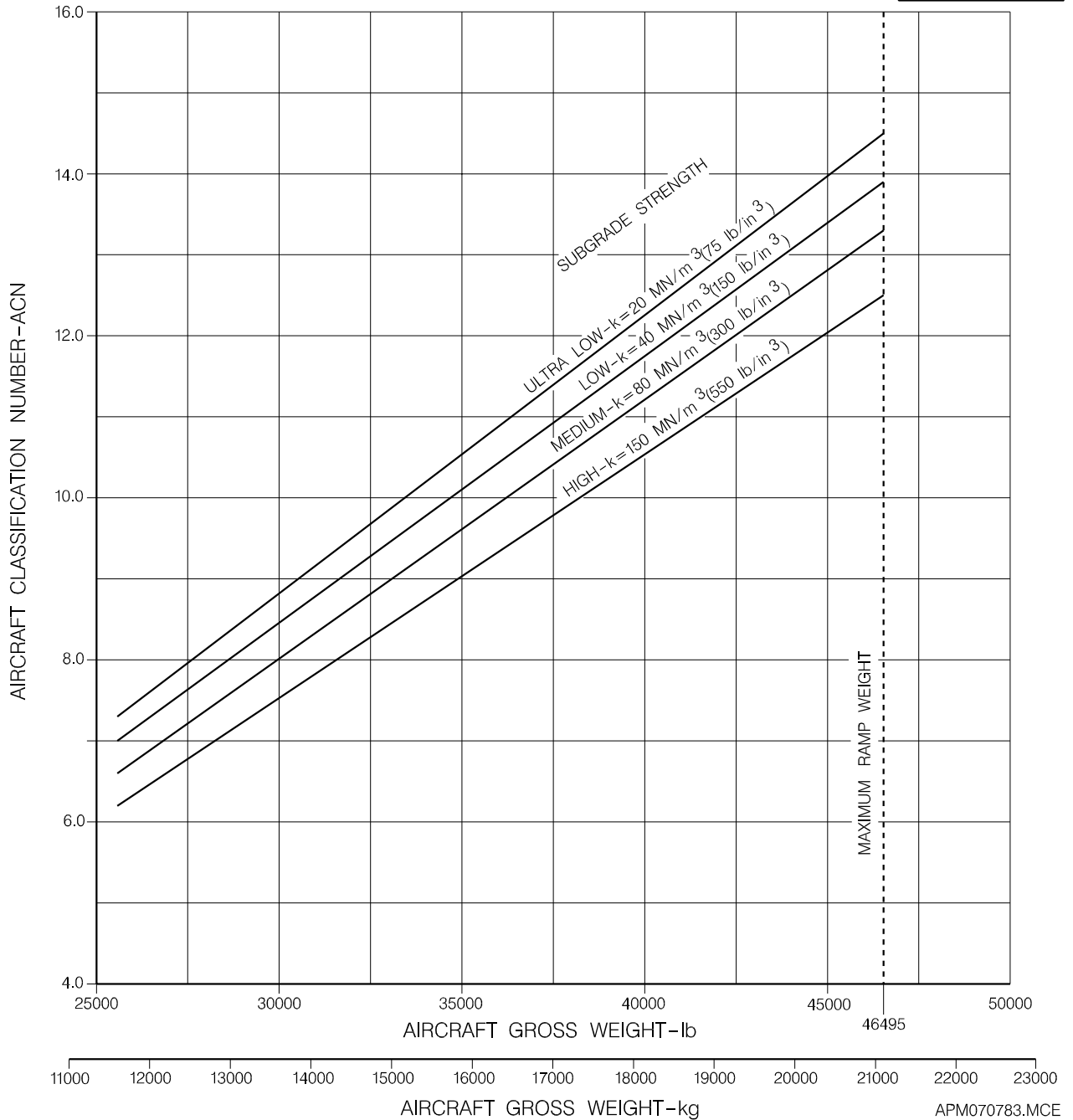
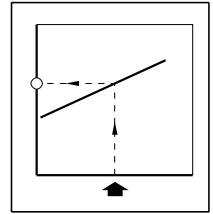
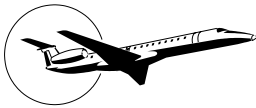


Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 6



**FLEXIBLE PAVEMENT SUBGRADE STRENGTH MODEL EMB-145 XR**

- NOTES:**
- H30 x 9.5-16 16PR TIRES
  - TIRE PRESSURE 12,30 Kgf/cm<sup>2</sup> (175 psi)
  - % WEIGHT ON MAIN GEARS 93.47

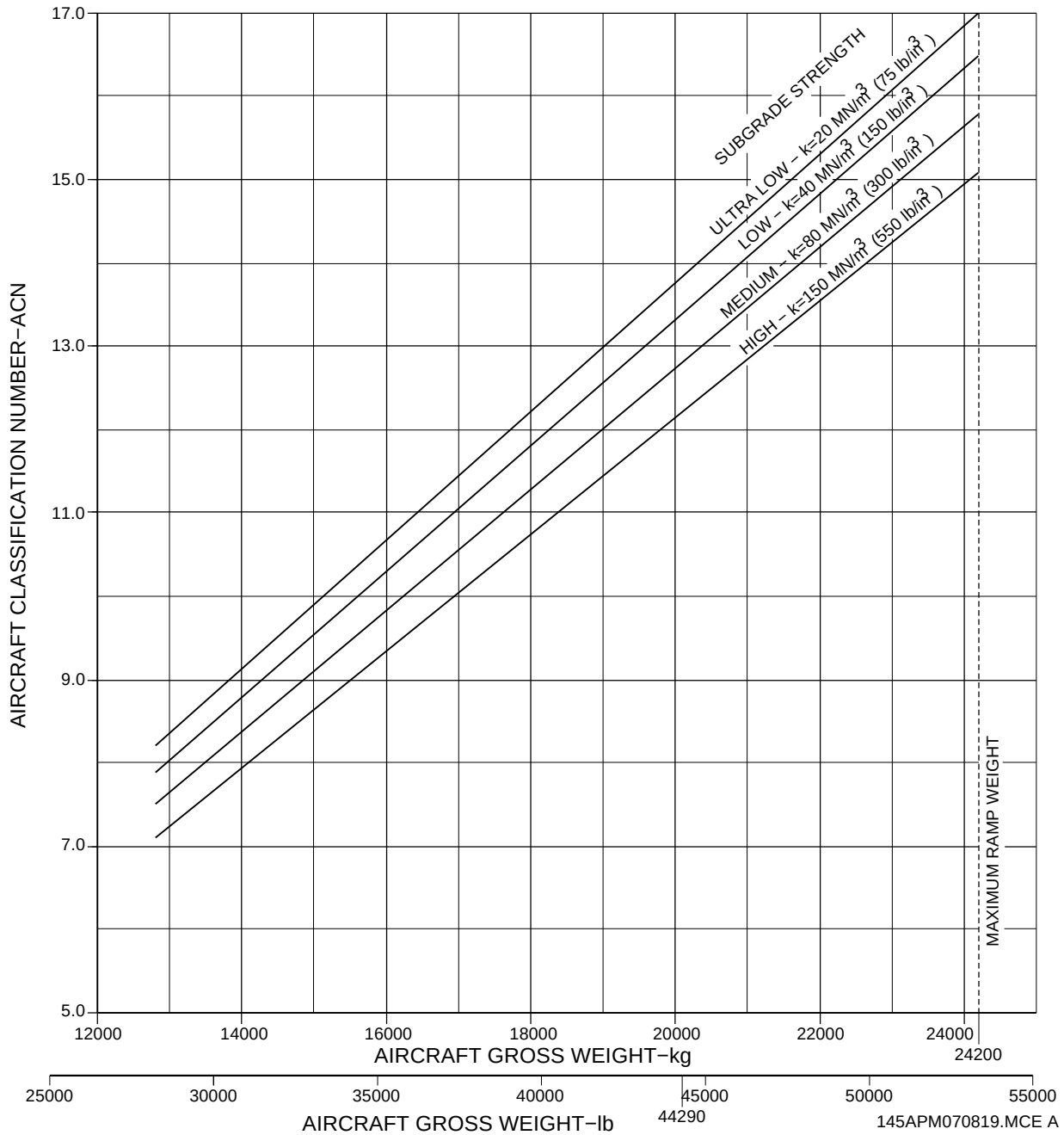
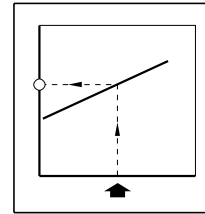
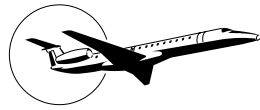


*Figure 7.9.2 - Aircraft Classification Number Rigid Pavement  
Sheet 7*



## 7.10 ACR - PCR METHOD

The ACR/PCR system as referenced in ICAO Annex 14, "Aerodromes", Volume I, "Aerodrome Design and Operations", 9th Edition, July 2022, provides a standardized international aircraft/pavement rating system. The ACR/PCR method is based on the concept of accumulated damage, expressed by the variable CDF (Cumulative Damage Factor). By definition, CDF is the portion of the estimated useful life of the pavement that was consumed through the fatigue process resulting from the repeated stresses imposed on the structure. The PCR is an index rating of the mass which an evaluation shows the pavement can withstand when applied by a standard single wheel. The ACR is established for the particular pavement type and subgrade category of the rated pavement as well as for the particular aircraft mass and characteristics. An aircraft must have an ACR equal to or less than the PCR to operate without restriction on the pavement. The calculation was done by means of the program ICAO-ACR v. 1.3.2, which calculates ICAO aircraft classification rating (ACR) numbers for aircraft operating on flexible and rigid airport pavements. The method follows Amendment 15 to ICAO Annex 14 replacing the legacy ACN-PCN system with ACR-PCR. The ACR system is similar in concept to ACN, with the following major differences:

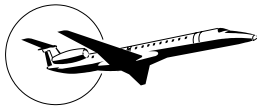
- All structures are layered elastic (rigid and flexible). Alpha factors are not used.
- Retains 4 standard subgrade categories but defined by modulus E (not CBR or k).
- Flexible ACR considers all wheels in the main landing gear.
- Standard tire pressure increased to 1.5 MPa.
- Standard coverage increased to 36,500 for flexible ACR.
- Derived single wheel load (DSWL) is expressed in 100's (not 1000's) of kg. Note that ACR numerical values are approximately one order of magnitude higher than the equivalent ACN. This is intentional, to prevent confusion between the two systems.

The method of pavement evaluation is left to the airport with the results of their evaluation presented as follows:

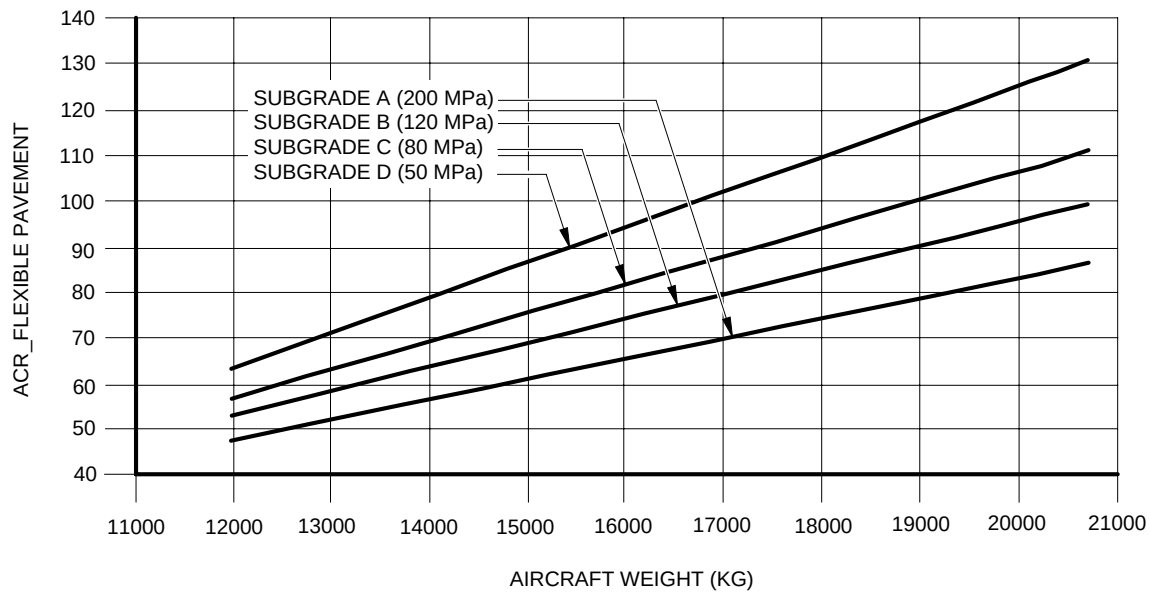
### 7.10.1 ACR Calculation for EMB-145 ER

Table 7.10.1.1 - RESULTS OF ACR CALCULATION FOR EMB-145 ER

| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |     | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|---------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|-----|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
|                                                               |                                                            |        |                                          |                                                  |     | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                               |                                                            |        |                                          |                                                  |     | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 ER<br>30 x 9.5 -14<br>4.10 m<br>0.46 m                | LB                                                         | KG     | %                                        | PSI                                              | kPa | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                               | 45,636                                                     | 20,700 | 47.2                                     | 139                                              | 958 | 115.38                    | 123.97                           | 129.87               | 135.77                         | 86.25                       | 99.04                            | 111.02               | 130.52                         |
|                                                               | 26,455                                                     | 12,000 | 46.8                                     |                                                  |     | 57.83                     | 62.73                            | 66.38                | 70.31                          | 47.99                       | 53.01                            | 57.07                | 63.35                          |

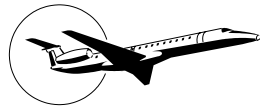


### FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 ER



EM145APM074013A.IDR

Figure 7.10.1 - Flexible Pavement



### RIGID PAVEMENT ACR NUMBER - EMB-145 ER

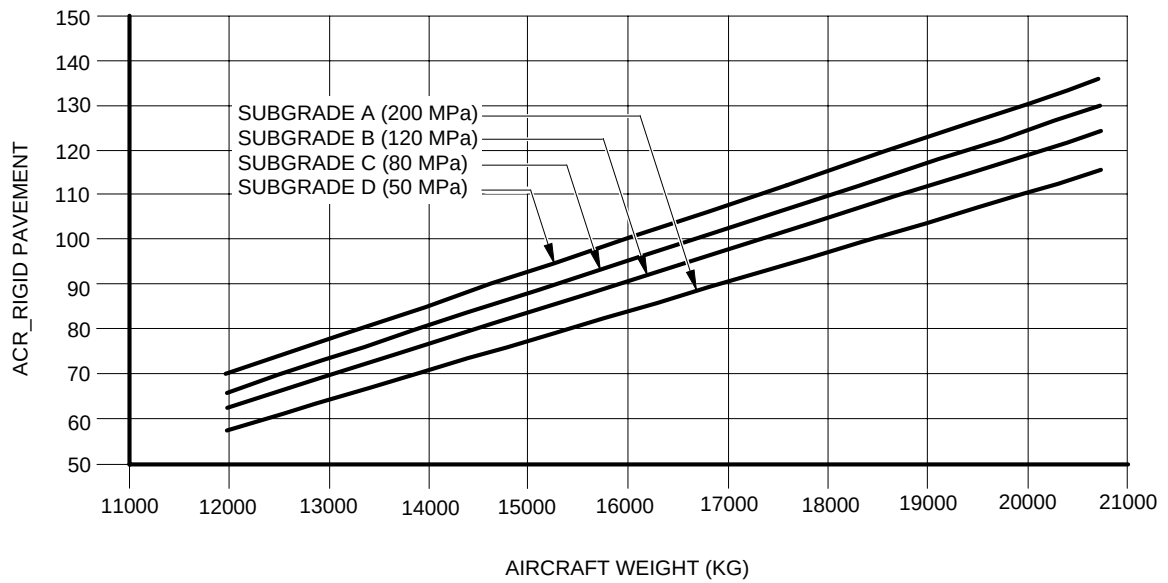


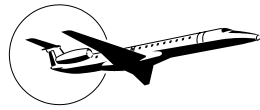
Figure 7.10.2 - Rigid Pavement

EM145APM074014A.IDR

## 7.11 ACR Calculation for EMB-145 EU

Table 7.11.2 - RESULTS OF ACR CALCULATION FOR EMB-145 EU

|                                                               |                                                            |        |                                          |                                                  |     | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|---------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|-----|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |     | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                               |                                                            |        |                                          |                                                  |     | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 EU<br>30 x 9.5 -14<br>4.10 m<br>0.46 m                | LB                                                         | KG     | %                                        | PSI                                              | kPa | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                               | 44,291                                                     | 20,090 | 47.2                                     | 139                                              | 958 | 111.13                    | 119.51                           | 125.28               | 131.15                         | 83.49                       | 95.52                            | 106.96               | 125.17                         |
|                                                               | 26,455                                                     | 12,000 | 46.8                                     |                                                  |     | 57.83                     | 62.73                            | 66.38                | 70.31                          | 47.99                       | 53.01                            | 57.07                | 63.35                          |



### FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 EU

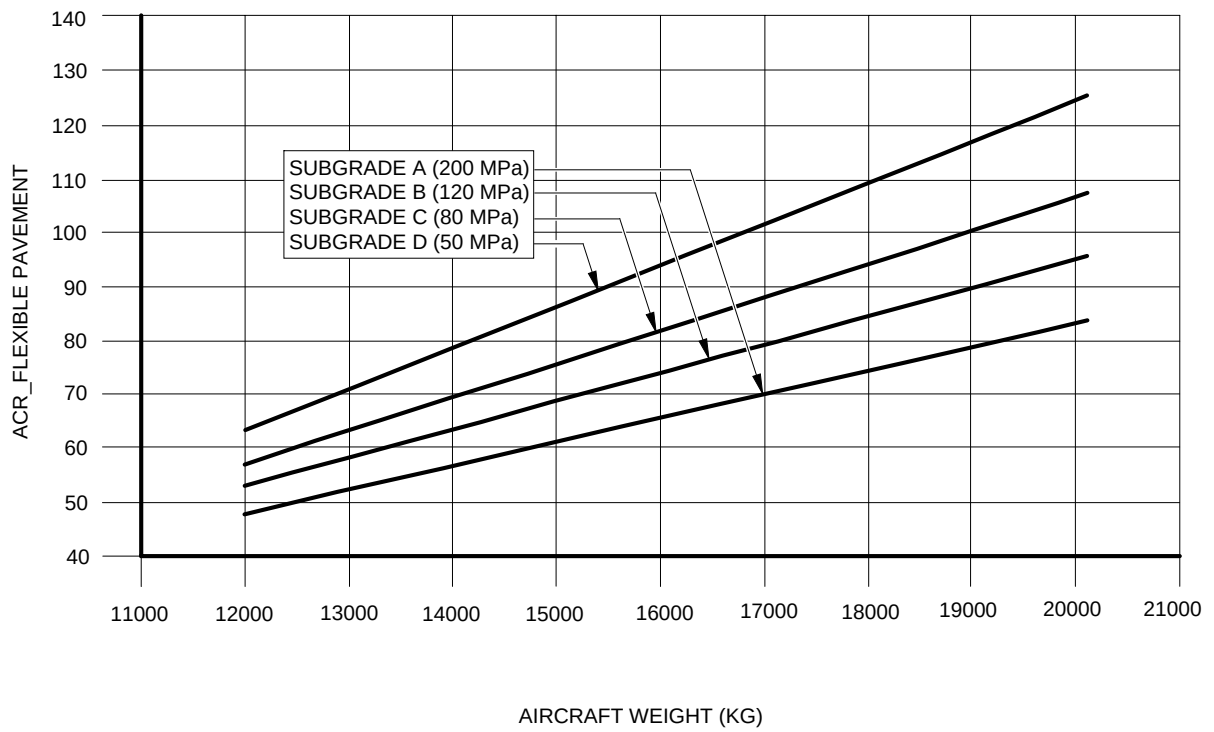
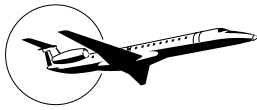
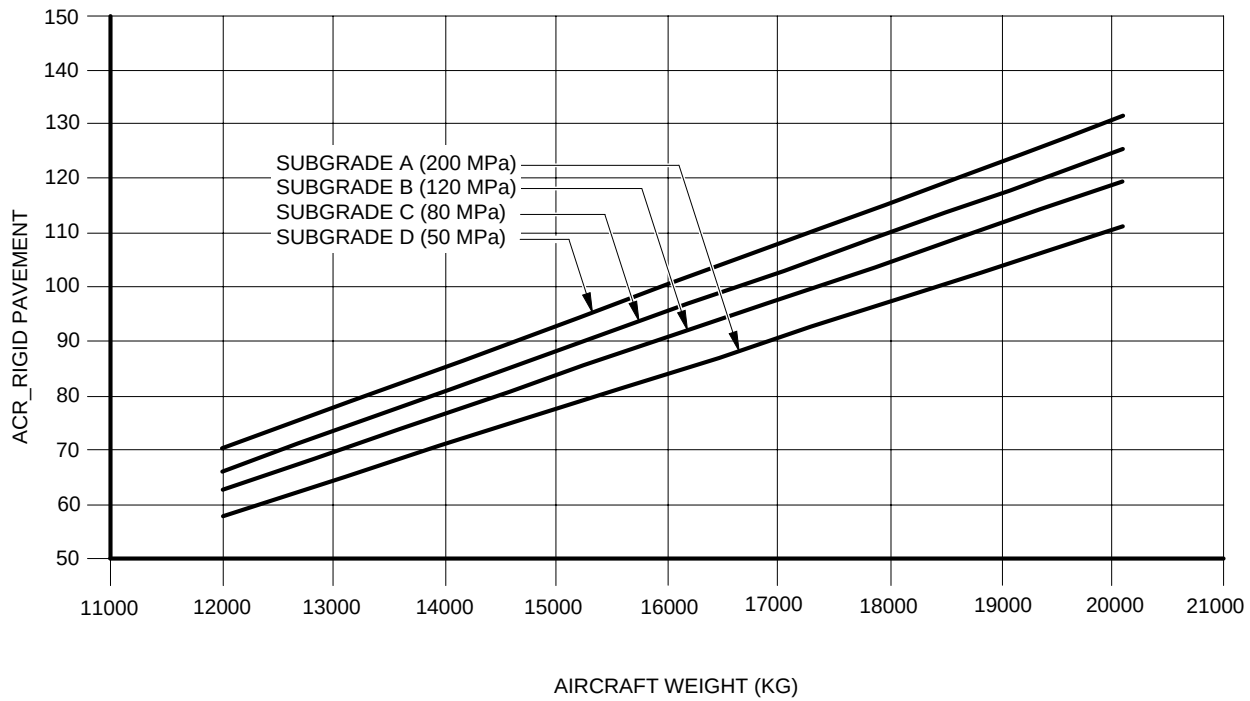


Figure 7.11.1 - Flexible Pavement

EM145APM074015B.IDR

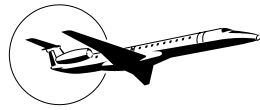


### RIGID PAVEMENT ACR NUMBER - EMB-145 EU



EM145APM074016A.IDR

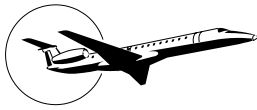
Figure 7.11.2 - Rigid Pavement



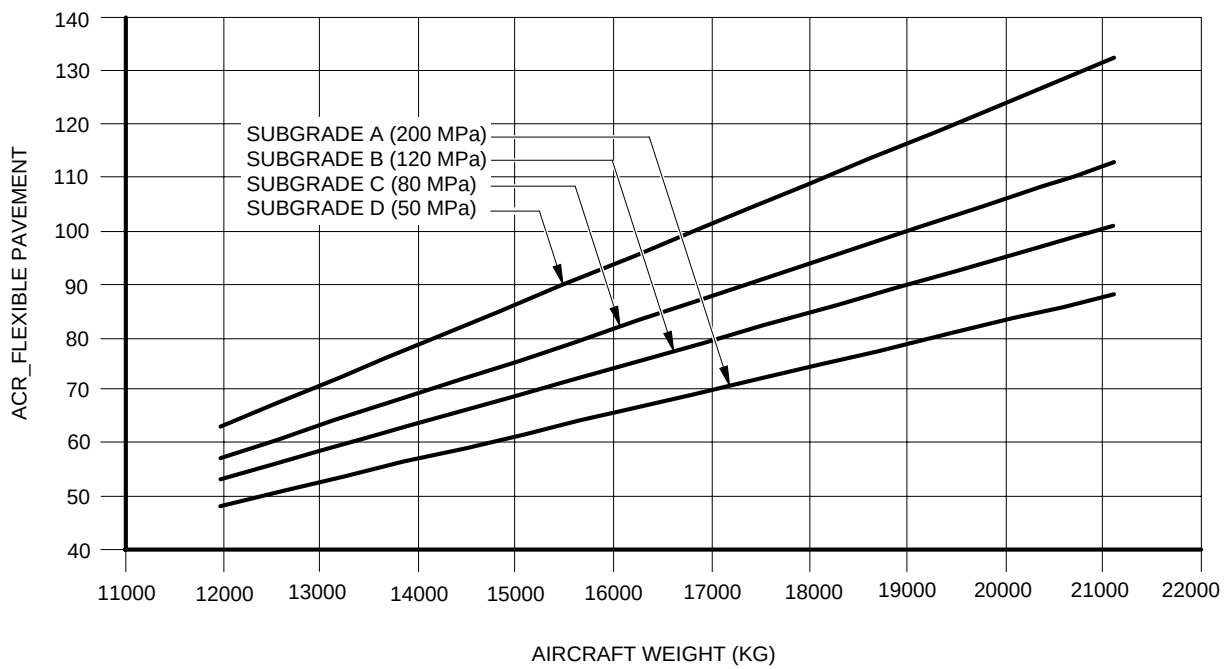
**7.12 ACR Calculation for EMB-145 EP**

Table 7.12.3 - RESULTS OF ACR CALCULATION FOR EMB-145 EP

| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |     | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|---------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|-----|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
|                                                               |                                                            |        |                                          |                                                  |     | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                               |                                                            |        |                                          |                                                  |     | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 EP<br>30 x 9.5 -14<br>4.10 m<br>0.46 m                | LB                                                         | KG     | %                                        | PSI                                              | kPa | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                               | 46,495                                                     | 21,090 | 46.8                                     | 142                                              | 979 | 117.74                    | 126.24                           | 132.09               | 138.01                         | 88.03                       | 100.72                           | 112.72               | 132.51                         |
|                                                               | 26,455                                                     | 12,000 | 46.8                                     |                                                  |     | 58.37                     | 63.19                            | 66.77                | 70.64                          | 48.46                       | 53.27                            | 57.24                | 63.45                          |

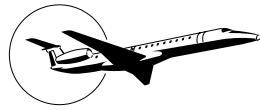


### FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 EP



EM145APM074017A.IDR

Figure 7.12.1 - Flexible Pavement



### RIGID PAVEMENT ACR NUMBER - EMB-145 EP

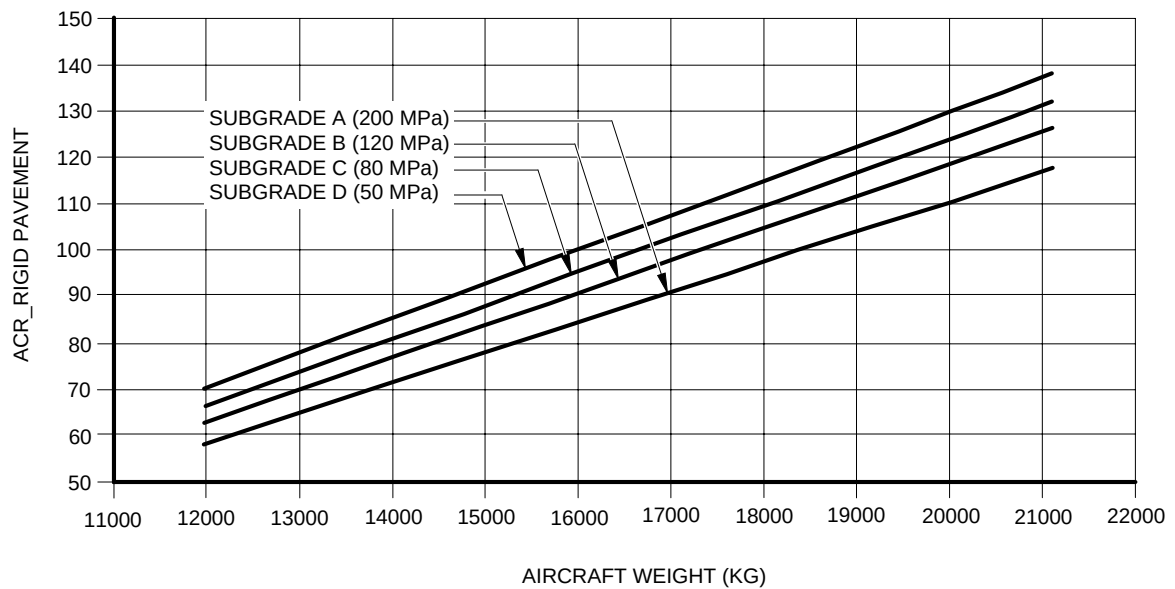


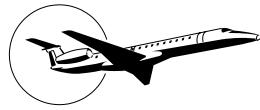
Figure 7.12.2 - Rigid Pavement

EM145APM074018A.IDR

## 7.13 ACR Calculation for EMB-145 MP/MK

Table 7.13.4 - RESULTS OF ACR CALCULATION FOR EMB-145 MP/MK

|                                                               |                                                            |        |                                          |                                                  |     | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|---------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|-----|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |     | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                               |                                                            |        |                                          |                                                  |     | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 MP/MK<br>H30 x 9.5 -14<br>4.10 m<br>0.46 m            | LB                                                         | KG     | %                                        | PSI                                              | kPa | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                               | 46,495                                                     | 21,090 | 46.8                                     | 144                                              | 993 | 118.31                    | 126.72                           | 132.50               | 138.29                         | 88.56                       | 101.01                           | 112.91               | 132.60                         |
|                                                               | 27,337                                                     | 12,400 | 45.9                                     |                                                  |     | 59.70                     | 64.54                            | 68.13                | 72.00                          | 49.44                       | 54.22                            | 58.22                | 64.55                          |



### FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 MP / MK

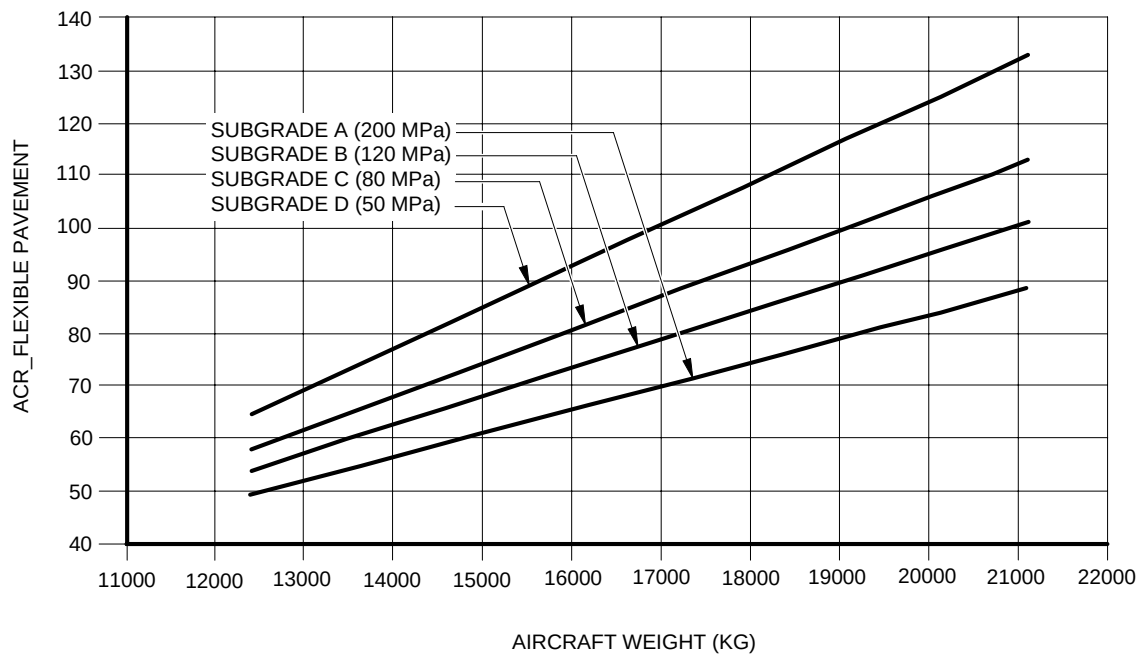
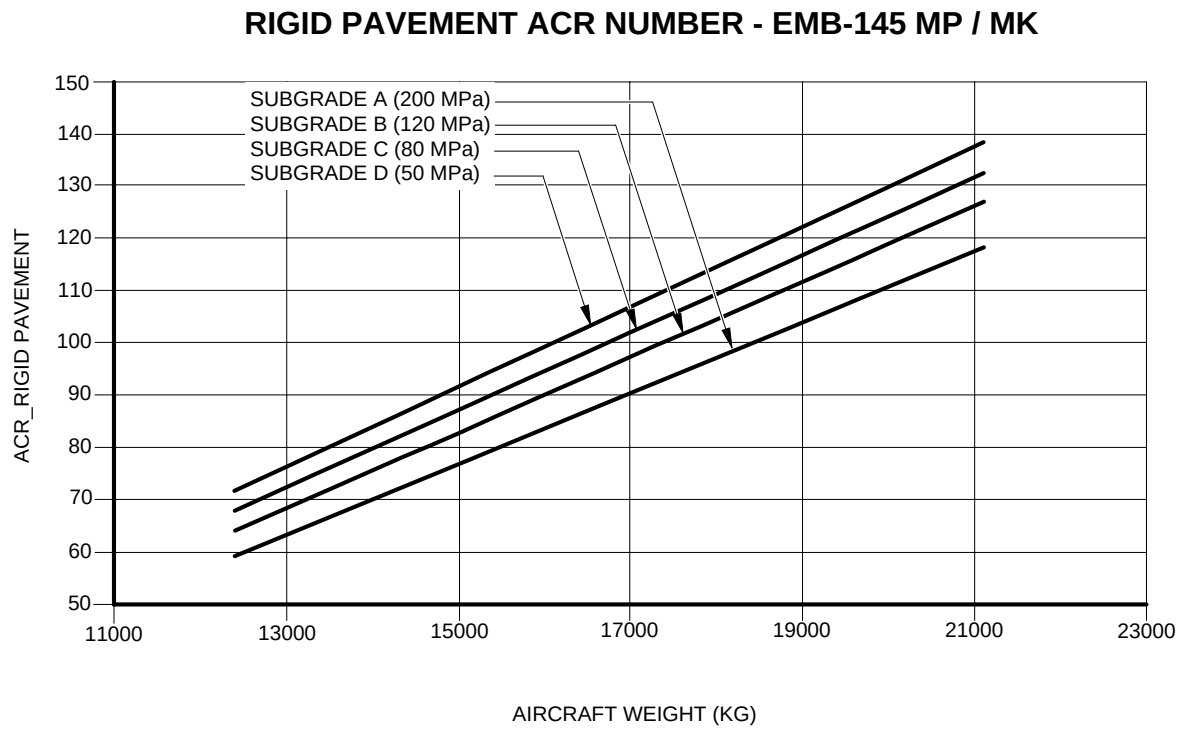
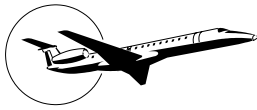


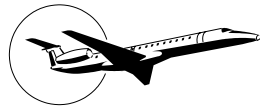
Figure 7.13.1 - Flexible Pavement

EM145APM074019A.IDR



EM145APM074020A.IDR

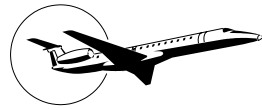
*Figure 7.13.2 - Rigid Pavement*



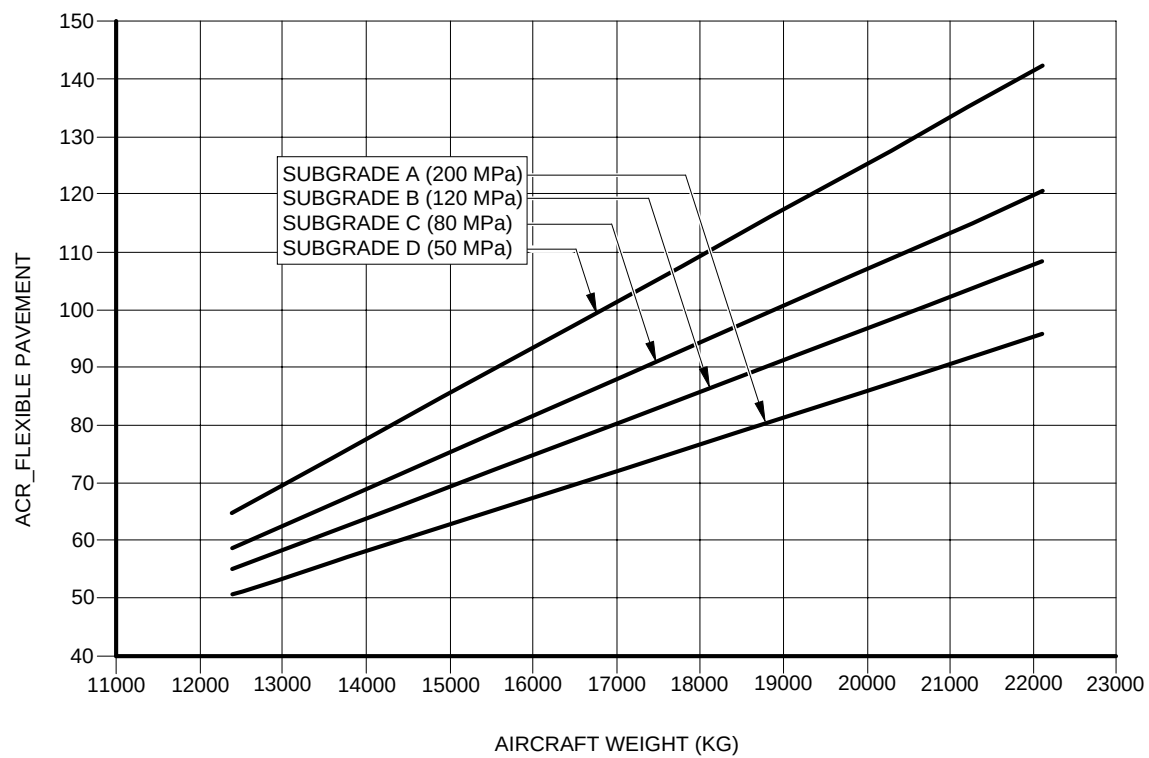
**7.14 ACR Calculation for EMB-145 LR/LU**

Table 7.14.5 - RESULTS OF ACR CALCULATION FOR EMB-145 LR/LU

| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |      | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|---------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|------|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
|                                                               |                                                            |        |                                          |                                                  |      | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                               |                                                            |        |                                          |                                                  |      | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 LR/LU<br>H30 x 9.5 -14<br>4.10 m<br>0.46 m            | LB                                                         | KG     | %                                        | PSI                                              | kPa  | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                               | 48,722                                                     | 22,100 | 46.8                                     | 154                                              | 1062 | 128.23                    | 136.46                           | 142.12               | 147.89                         | 95.77                       | 108.34                           | 120.61               | 142.24                         |
|                                                               | 27,337                                                     | 12,400 | 45.9                                     |                                                  |      | 61.38                     | 65.91                            | 69.34                | 73.03                          | 50.83                       | 55.01                            | 58.74                | 64.85                          |

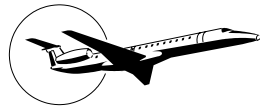


### FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 LR / LU



EM145APM074021B.IDR

Figure 7.14.1 - Flexible Pavement



### RIGID PAVEMENT ACR NUMBER - EMB-145 LR / LU

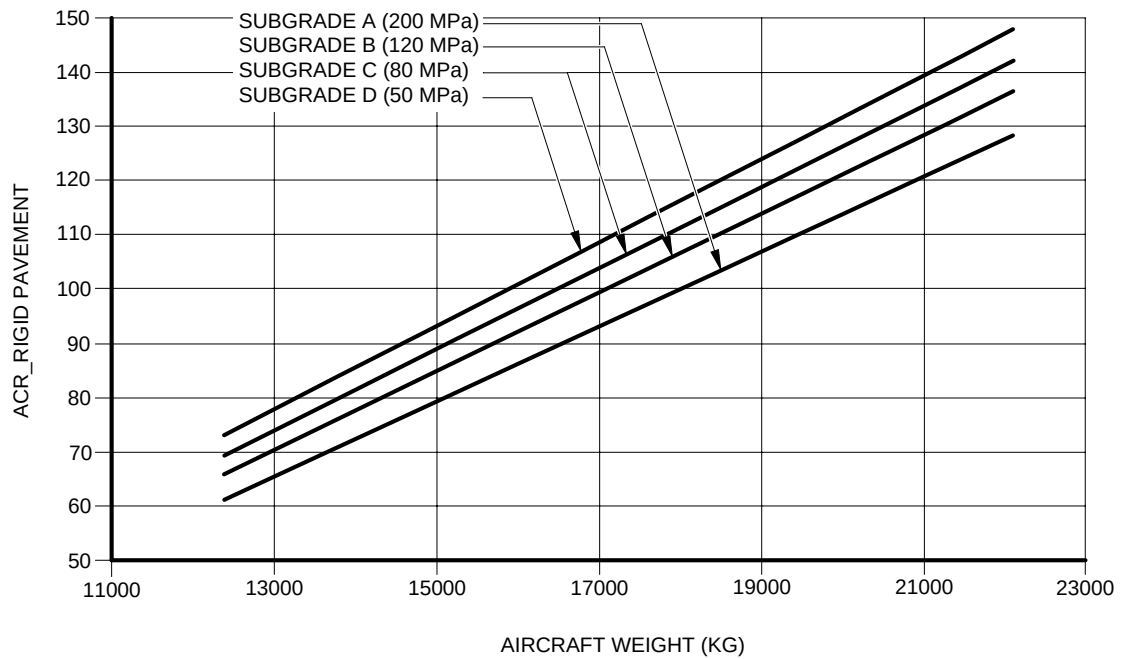


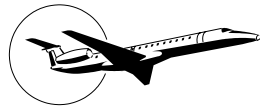
Figure 7.14.2 - Rigid Pavement

EM145APM074022A.IDR

## 7.15 ACR Calculation for EMB-145 LR (INCREASED MTOW - FAA)

Table 7.15.6 - RESULTS OF ACR CALCULATION FOR EMB-145 (INCREASED MTOW - FAA)

|                                                                       |                                                            |        |                                          |                                                  |      | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|-----------------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|------|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL         | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |      | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                                       |                                                            |        |                                          |                                                  |      | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 LR (In-<br>creased MTOW)<br>H30 x 9.5 -14<br>4.10 m<br>0.46 m | LB                                                         | KG     | %                                        | PSI                                              | kPa  | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                                       | 50,045                                                     | 22,700 | 46.2                                     | 159                                              | 1096 | 131.77                    | 139.85                           | 145.42               | 151.09                         | 98.42                       | 110.83                           | 123.14               | 145.26                         |
|                                                                       | 27,337                                                     | 12,400 | 45.8                                     |                                                  |      | 61.99                     | 66.38                            | 69.71                | 73.32                          | 51.46                       | 55.37                            | 58.97                | 64.99                          |



**FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 LR  
(INCREASED MTOW - FAA)**

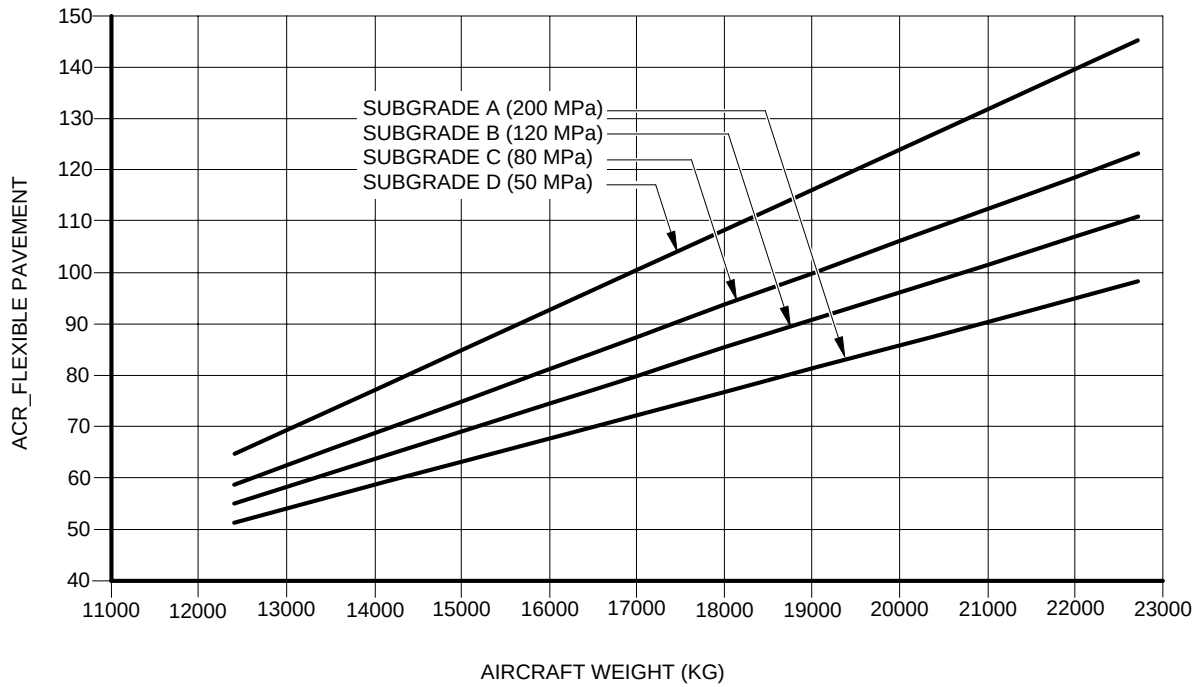
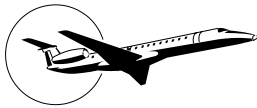
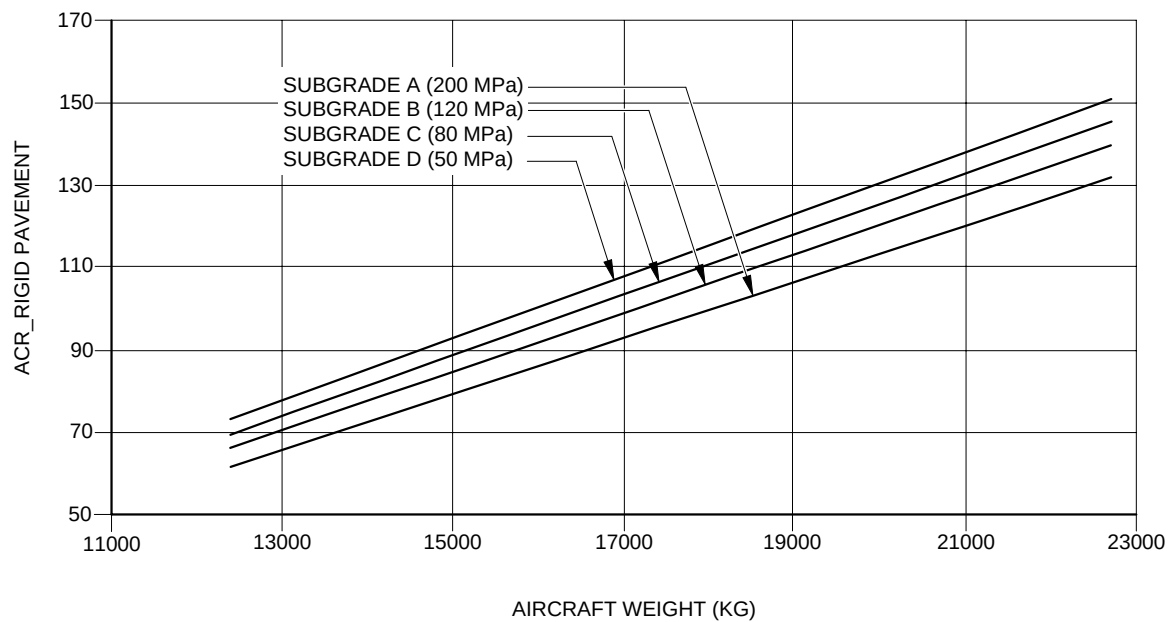


*Figure 7.15.1 - Flexible Pavement*

EM145APM074023A.IDR

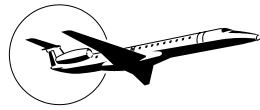


**RIGID PAVEMENT ACR NUMBER - EMB-145 LR  
(INCREASED MTOW - FAA)**



EM145APM074024A.IDR

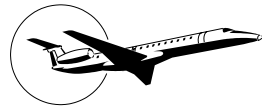
*Figure 7.15.2 - Rigid Pavement*



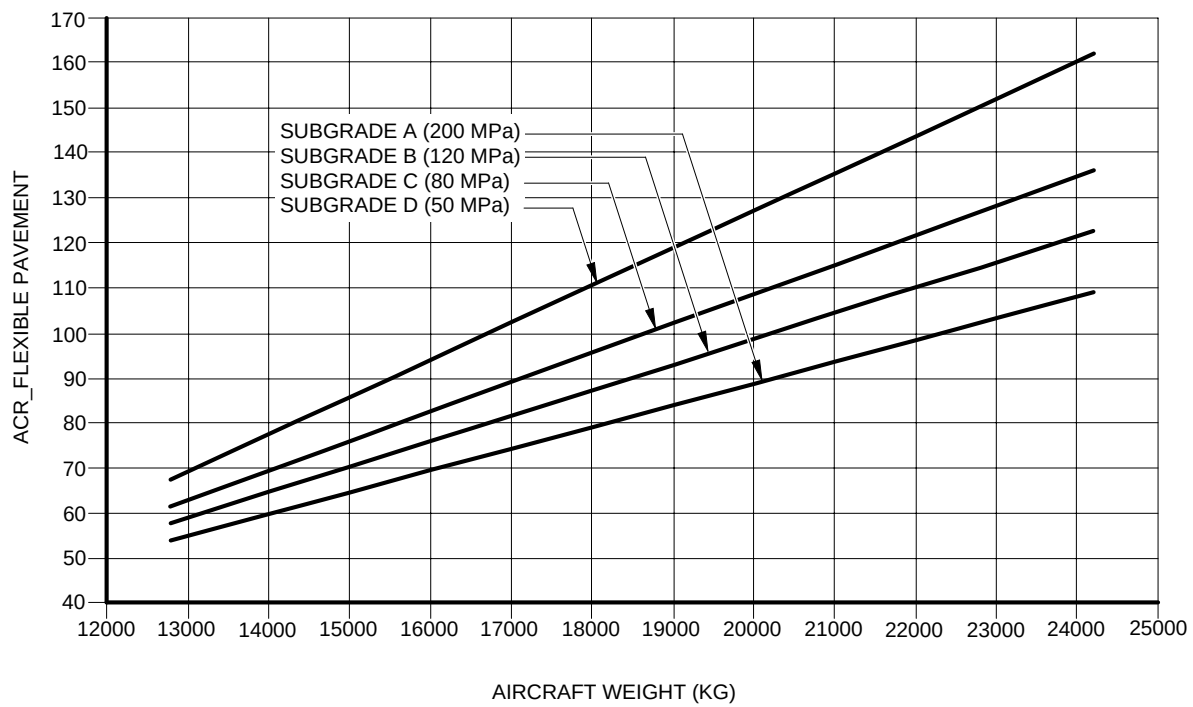
**7.16 ACR Calculation for EMB-145 XR**

Table 7.16.7 - RESULTS OF ACR CALCULATION FOR EMB-145 XR

| Aircraft Type<br>Tire Size<br>MLG CL to CL<br>Wheels CL to CL | Maximum<br>Ramp Weight<br>/ Minimum<br>Operating<br>Weight |        | Load<br>on<br>one<br>main<br>gear<br>leg | Standard air-<br>craft unloaded<br>tire pressure |      | ACR relative to           |                                  |                      |                                |                             |                                  |                      |                                |
|---------------------------------------------------------------|------------------------------------------------------------|--------|------------------------------------------|--------------------------------------------------|------|---------------------------|----------------------------------|----------------------|--------------------------------|-----------------------------|----------------------------------|----------------------|--------------------------------|
|                                                               |                                                            |        |                                          |                                                  |      | Rigid pavement subgrades  |                                  |                      |                                | Flexible pavement subgrades |                                  |                      |                                |
|                                                               |                                                            |        |                                          |                                                  |      | High<br>E =<br>200<br>MPa | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa | High<br>E =<br>200<br>MPa   | Me-<br>dium<br>E =<br>120<br>MPa | Low E<br>= 80<br>MPa | Ultra-<br>low E<br>= 50<br>MPa |
| EMB-145 XR<br>30 x 9.5 -14<br>4.10 m<br>0.46 m                | LB                                                         | KG     | %                                        | PSI                                              | kPa  | A                         | B                                | C                    | D                              | A                           | B                                | C                    | D                              |
|                                                               | 53,352                                                     | 24,200 | 46.7                                     | 168                                              | 1158 | 146.87                    | 154.96                           | 160.53               | 166.31                         | 108.99                      | 122.62                           | 136.01               | 161.76                         |
|                                                               | 28,219                                                     | 12,800 | 45.9                                     |                                                  |      | 65.96                     | 70.30                            | 73.60                | 77.16                          | 54.24                       | 57.92                            | 61.53                | 67.78                          |

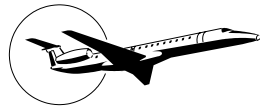


### FLEXIBLE PAVEMENT ACR NUMBER - EMB-145 XR



EM145APM074025A.IDR

Figure 7.16.1 - Flexible Pavement



### RIGID PAVEMENT ACR NUMBER - EMB-145 XR

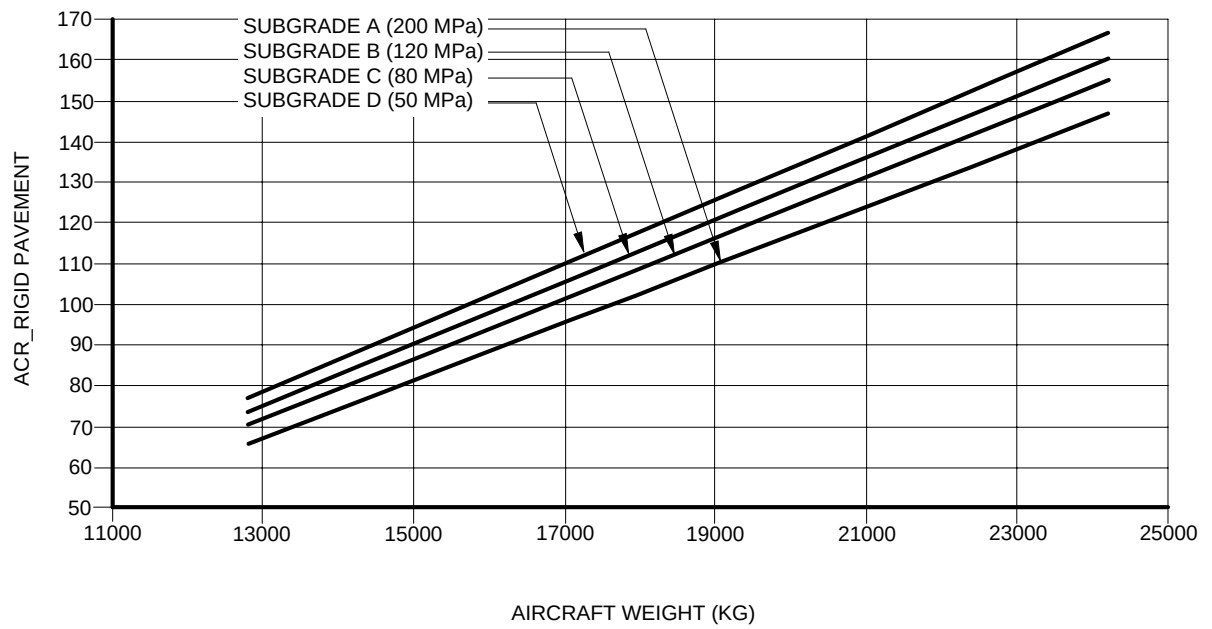
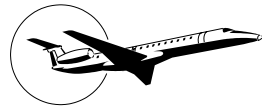
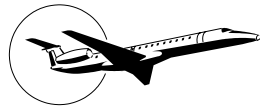


Figure 7.16.2 - Rigid Pavement

EM145APM074026A.IDR



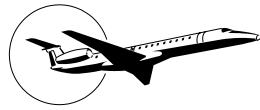
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## **8. POSSIBLE EMB-145 DERIVATIVE AIRPLANES**

No derivative versions of the EMB-145 are current planned.

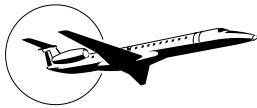
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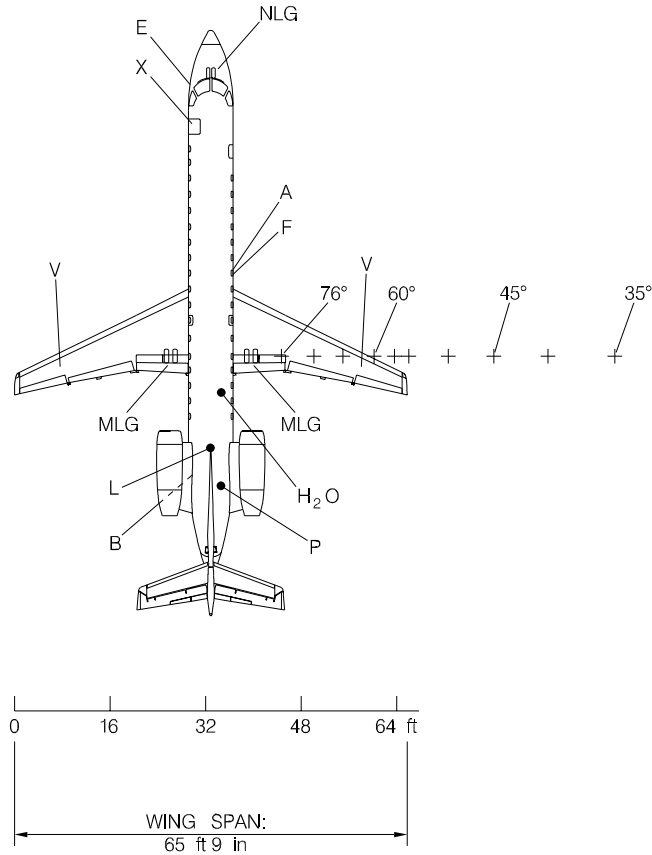
## **9. EMB-145 SCALE DRAWINGS**

This section provides EMB-145 plan views to the following scales:

- English
  - 1 inch = 32 feet
  - 1 inch = 50 feet
  - 1 inch = 100 feet
- Metric
  - 1:500
  - 1:1000



## 9.1 EMB-145 Scale: 1 Inch Equals 32 Feet

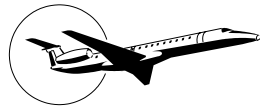


### LEGEND:

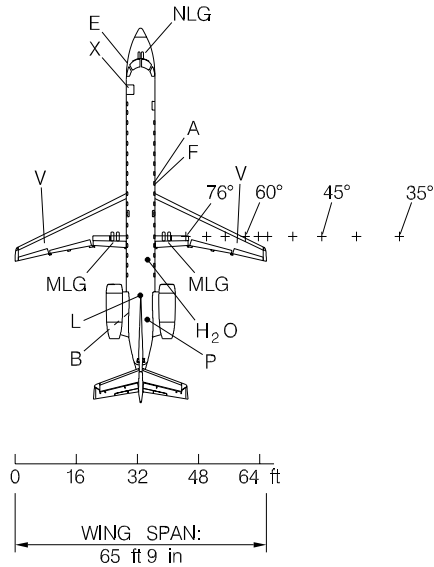
|                  |                                                                            |
|------------------|----------------------------------------------------------------------------|
| A                | AIR CONDITIONING                                                           |
| B                | BAGGAGE DOOR                                                               |
| E                | ELECTRICAL                                                                 |
| F                | FUEL                                                                       |
| H <sub>2</sub> O | POTABLE WATER                                                              |
| L                | LAVATORY                                                                   |
| MLG              | MAIN LANDING GEAR                                                          |
| NLG              | NOSE LANDING GEAR                                                          |
| P                | PNEUMATIC                                                                  |
| V                | FUEL VENT                                                                  |
| X                | PASSENGER DOOR                                                             |
| +                | TURNING RADIUS POINTS:<br>76°, 70°, 65°, 60°, 57°, 55°, 50°, 45°, 40°, 35° |

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Figure 9.1.1 - EMB-145 Scale: 1 Inch Equals 32 Feet



9.2 EMB-145 Scale: 1 Inch Equals 50 Feet



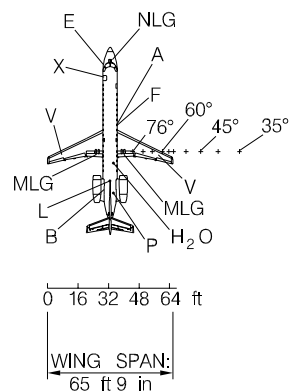
LEGEND:

|                  |                                                                            |
|------------------|----------------------------------------------------------------------------|
| A                | AIR CONDITIONING                                                           |
| B                | BAGGAGE DOOR                                                               |
| E                | ELECTRICAL                                                                 |
| F                | FUEL                                                                       |
| H <sub>2</sub> O | POTABLE WATER                                                              |
| L                | LAVATORY                                                                   |
| MLG              | MAIN LANDING GEAR                                                          |
| NLG              | NOSE LANDING GEAR                                                          |
| P                | PNEUMATIC                                                                  |
| V                | FUEL VENT                                                                  |
| X                | PASSENGER DOOR                                                             |
| +                | TURNING RADIUS POINTS:<br>76°, 70°, 65°, 60°, 57°, 55°, 50°, 45°, 40°, 35° |

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Figure 9.2.1 - EMB-145 Scale: 1 Inch Equals 50 Feet

9.3 EMB-145 Scale: 1 Inch Equals 100 Feet

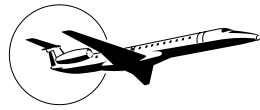


LEGEND:

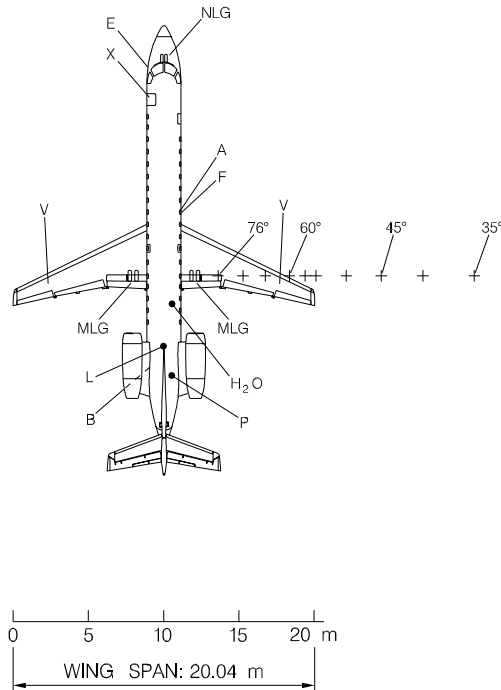
- A     AIR CONDITIONING
- B     BAGGAGE DOOR
- E     ELECTRICAL
- F     FUEL
- H<sub>2</sub>O   POTABLE WATER
- L     LAVATORY
- MLG   MAIN LANDING GEAR
- NLG   NOSE LANDING GEAR
- P     PNEUMATIC
- V     FUEL VENT
- X     PASSENGER DOOR
- +     TURNING RADIUS POINTS:  
76°, 70°, 65°, 60°, 57°, 55°, 50°, 45°, 40°, 35°

145AP048.MCE

Figure 9.3.1 - EMB-145 Scale: 1 Inch Equals 100 Feet



9.4 EMB-145 Scale: 1 to 500



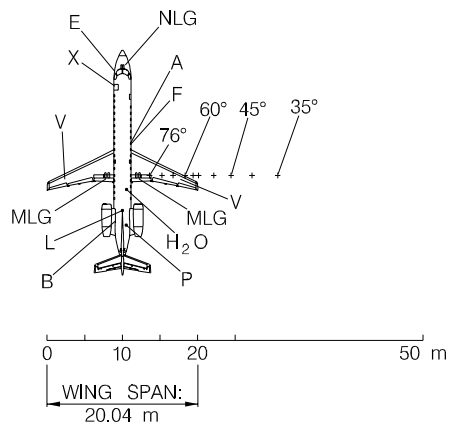
LEGEND:

|                  |                                                                            |
|------------------|----------------------------------------------------------------------------|
| A                | AIR CONDITIONING                                                           |
| B                | BAGGAGE DOOR                                                               |
| E                | ELECTRICAL                                                                 |
| F                | FUEL                                                                       |
| H <sub>2</sub> O | POTABLE WATER                                                              |
| L                | LAVATORY                                                                   |
| MLG              | MAIN LANDING GEAR                                                          |
| NLG              | NOSE LANDING GEAR                                                          |
| P                | PNEUMATIC                                                                  |
| V                | FUEL VENT                                                                  |
| X                | PASSENGER DOOR                                                             |
| +                | TURNING RADIUS POINTS:<br>76°, 70°, 65°, 60°, 57°, 55°, 50°, 45°, 40°, 35° |

145AP049.MCE

Figure 9.4.1 - EMB-145 Scale: 1 to 500

9.5
 EMB-145 Scale: 1 to 1000



LEGEND:

- A     AIR CONDITIONING
- B     BAGGAGE DOOR
- E     ELECTRICAL
- F     FUEL
- H<sub>2</sub>O   POTABLE WATER
- L     LAVATORY
- MLG   MAIN LANDING GEAR
- NLG   NOSE LANDING GEAR
- P     PNEUMATIC
- V     FUEL VENT
- X     PASSENGER DOOR
- +     TURNING RADIUS POINTS:  
76°, 70°, 65°, 60°, 57°, 55°, 50°, 45°, 40°, 35°

145AP050.MCE

Figure 9.5.1 - EMB-145 Scale: 1 to 1000