GA8

FLIGHT MANUAL SUPPLEMENT

GA8 2-BLADE VORTEX GENERATOR TAKE-OFF AND LANDING PERFORMANCE CHARTS

This Supplement is applicable to aircraft that have been modified in accordance with GippsAero Service Bulletin SB-GA8-2019-157, which calls for the incorporation of Micro Aerodynamics vortex generator's (FAA STC SA02304SE). This Flight Manual Supplement permits reduced take-off and landing distances within a reduced weight and balance envelope for that configuration.

This Supplement must be inserted in the Supplement Section (Section 9) of the GA8 Pilot's Operating Handbook & Approved Flight Manual. Information in this Supplement adds to, supersedes, or deletes information in the basic GA8 Pilot's Operating Handbook & Approved Flight Manual. For information not contained within this Supplement, see the basic GA8 Pilot's Operating Handbook & Approved Flight Manual.

Approved: [signature] Date: 18 SEPTEMBER 2019

For the Civil Aviation Safety Authority Australia

AUSTRALIAN GOVERNMENT CIVIL AVIATION SAFETY AUTHORITY

AMENDMENT RECORD SHEET

Amendment Date	Description	Pages Affected	Incorporated by
17 Sept 2019	Initial Issue	All	GippsAero

SECTION 1 - GENERAL

This supplement provides the pilot with the limitations, performance and revised weight & balance envelope for GA8 aircraft with GippsAero Service Bulletin SB-GA8-2019-157 incorporated. The Service Bulletin details the limitations and modifications required to maximise the performance benefits of the vortex generator installation.

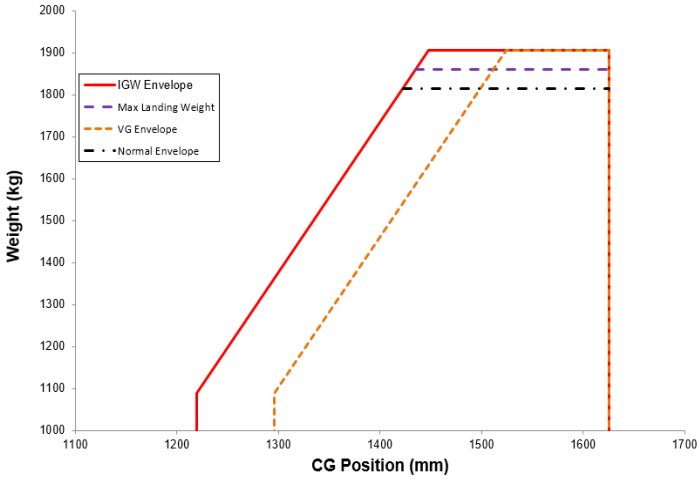

Figure 1-1 GA8 Weight and Balance Envelope (Metric Units)

SECTION 2 – LIMITATIONS

2.7 CENTRE OF GRAVITY LIMITS

To utilise the take-off and landing performance charts contained in this supplement the following alternative forward centre of gravity limitation applies;

Forward Limit: 1295 mm (51 in) aft of datum at 1089 kg (2400 lb) and below; 1524 mm (60 in) aft of datum at 1905 kg (4200 lb), linear variation between these points.

For centre of gravity configurations forward of this limitation the standard aircraft take-off and landing charts are applicable.

2.14 OTHER LIMITATIONS

All instructions for continuing airworthiness contained in Document #MA0666 and on the VG Operating Placard #MA8001 must be complied with in order to utilise this supplement.

SECTION 4 – NORMAL PROCEDURES

4.2 SPEEDS FOR NORMAL OPERATION

To achieve the take-off and landing performance specified in section 5 of this Flight Manual Supplement, the weight specific take-off safety speeds (T.O.S.S.) and landing approach speeds (V_{REF}) stated on the take-off and landing charts must be used.

4.3 NORMAL PROCEDURES CHECKLIST

4.3.1 Pre-Flight Inspection

Complete the Pre-flight isnpection from the Basic POH & AFM and Instructions for Continuing Airworthiness Document #MA0666.

2. Left Wing / Left Centre Fuselage

Vortex Generators ..... QUANTITY, CONDITION, & SECURITY

4. Right Wing / Right Centre Fuselage

Vortex Generators ..... QUANTITY, CONDITION, & SECURITY

5. Rear Fuselage / Empennage

Vortex Generators ..... QUANTITY, CONDITION, & SECURITY

SECTION 5 – PERFORMANCE

5.2 TAKE-OFF

Prior to flight, the pilot must verify/compute an accurate weight and balance condition using the loading sheets contained in this flight manual supplement prior to utilising the take-off performance charts contained within this section. If the weight and balance condition falls outside the alternative forward limit of the load sheet then the take-off charts contained in this supplement cannot be used and the appropriate take-off performance charts contained in the aircraft flight manual or supplements for the aircraft configuration must be used.

The take-off distance charts presented on the following pages contains data enabling the take-off distance to be determined for a variety of operating conditions at take-off power. The charts allow for the take-off distance to be determined in feet or metres depending on the pilot's preference.

The charts are based on take-off distances from rest to a height of 50 ft with the engine operating at take-off power. The surface corrections on the chart are based on standard factors related to strips with a firm surface. Soft ground and unusually long and/or wet grass will increase the take-off distance over that scheduled and the pilot should therefore ensure that adequate strip length is available to cover these conditions.

Prior to commencing the take-off roll, the pilot must establish an accurate weight condition and determine the scheduled rotation and take-off safety speed from the performance graphs presented in this Section. The flaps must be set to the take-off position.

The technique used in establishing the chart take-off distance involves holding the aircraft against brakes and applying the necessary take-off power. Brakes are only released once take-off power is achieved and all engine parameters have stabilised. During the take-off roll the aircraft is accelerated on the ground with the elevators held in neutral. At the scheduled rotation speed, the aircraft is *positively* rotated for lift-off. Once airborne, the correct pitch attitude must be smoothly achieved and maintained to climb at the scheduled take-off safety speed, which must be attained by 50 ft AGL and continue to a safe height where normal climb can then be established.

Extrapolations outside the boundaries of the Take-Off Distance Charts are not permitted. When the outside air temperature and/or pressure height is below the lowest range scheduled on the charts, the aircraft performance shall be assumed to be no better than that appropriate to this lowest range. The performance information is not valid when the outside air temperature and/or pressure height exceeds the maximum values for which this information is scheduled.

NOTE:

The Take-off Performance charts extend up to 1905 kg (4200 lb) however permission to operate beyond 1814 kg (4000 lb) must be obtained seperately from the modification detailed in this supplement by incorporating SB-GA8-2011-66 Part A.

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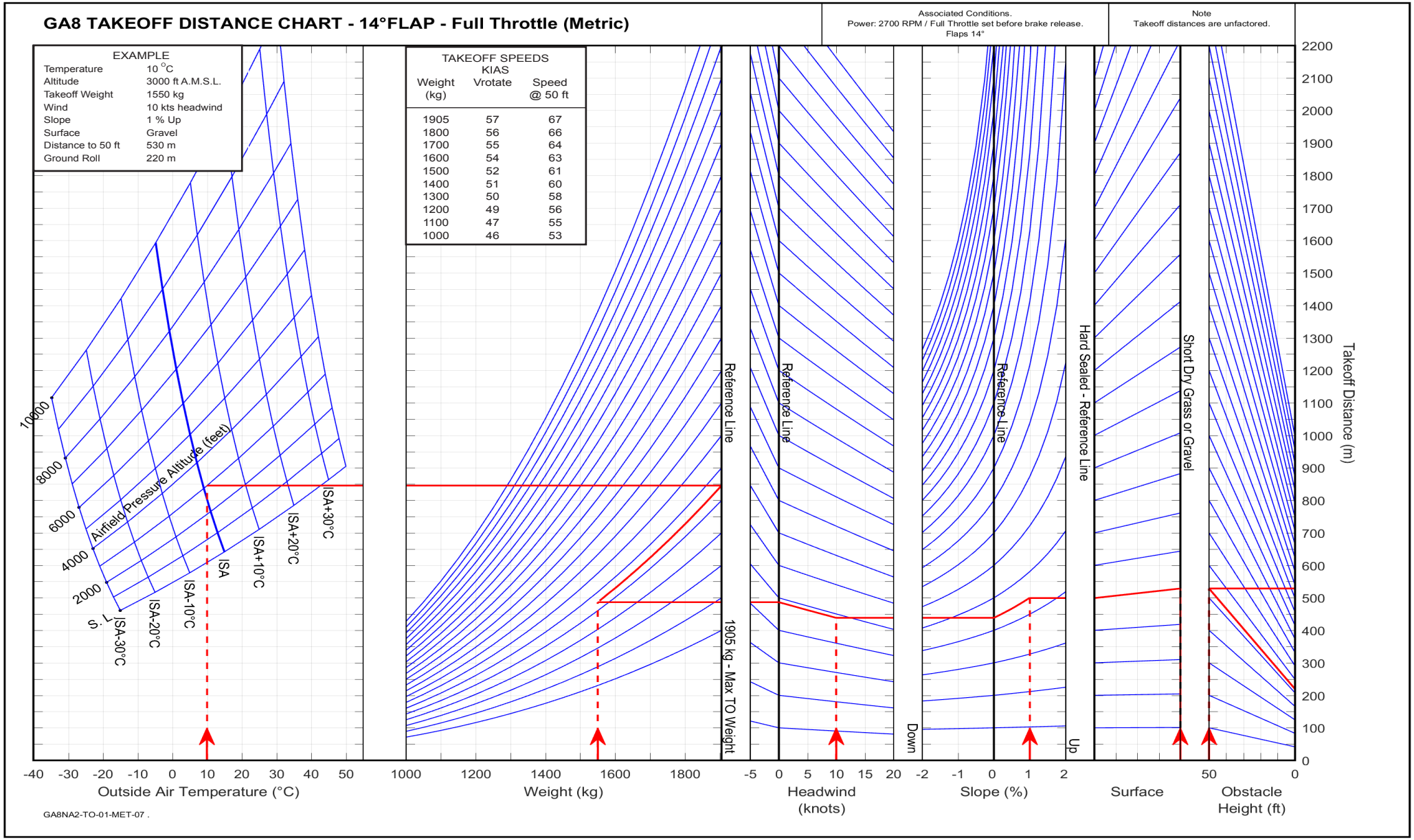

GA8 TAKEOFF DISTANCE CHART - 14°FLAP - Full Throttle (Metric)
Associated Conditions.
Power: 2700 RPM / Full Throttle set before brake release.
Flaps 14°
Note
Takeoff distances are unfactored.
EXAMPLE
Temperature 10 °C
Altitude 3000 ft A.M.S.L.
Takeoff Weight 1550 kg
Wind 10 kts headwind
Slope 1 % Up
Surface Gravel
Distance to 50 ft 530 m
Ground Roll 220 m
TAKEOFF SPEEDS
KIAS
Weight (kg) Vrotate Speed @ 50 ft
1905 57 67
1800 56 66
1700 55 64
1600 54 63
1500 52 61
1400 51 60
1300 50 58
1200 49 56
1100 47 55
1000 46 53
Airfield Pressure Altitude (feet)
10000
8000
6000
4000
2000
S. L
ISA-30°C
ISA-20°C
ISA-10°C
ISA
ISA+10°C
ISA+20°C
ISA+30°C
Reference Line
1905 kg - Max TO Weight
Reference Line
Down
Reference Line
Up
Hard Sealed - Reference Line
Short Dry Grass or Gravel
Takeoff Distance (m)
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
-40 -30 -20 -10 0 10 20 30 40 50
Outside Air Temperature (°C)
1000 1200 1400 1600 1800
Weight (kg)
-5 0 5 10 15 20
Headwind (knots)
-2 -1 0 1 2
Slope (%)
Surface
50 0
Obstacle Height (ft)
GA8NA2-TO-01-MET-07 .

GA8 TAKEOFF DISTANCE CHART - 14°FLAP - Full Throttle (Imperial)

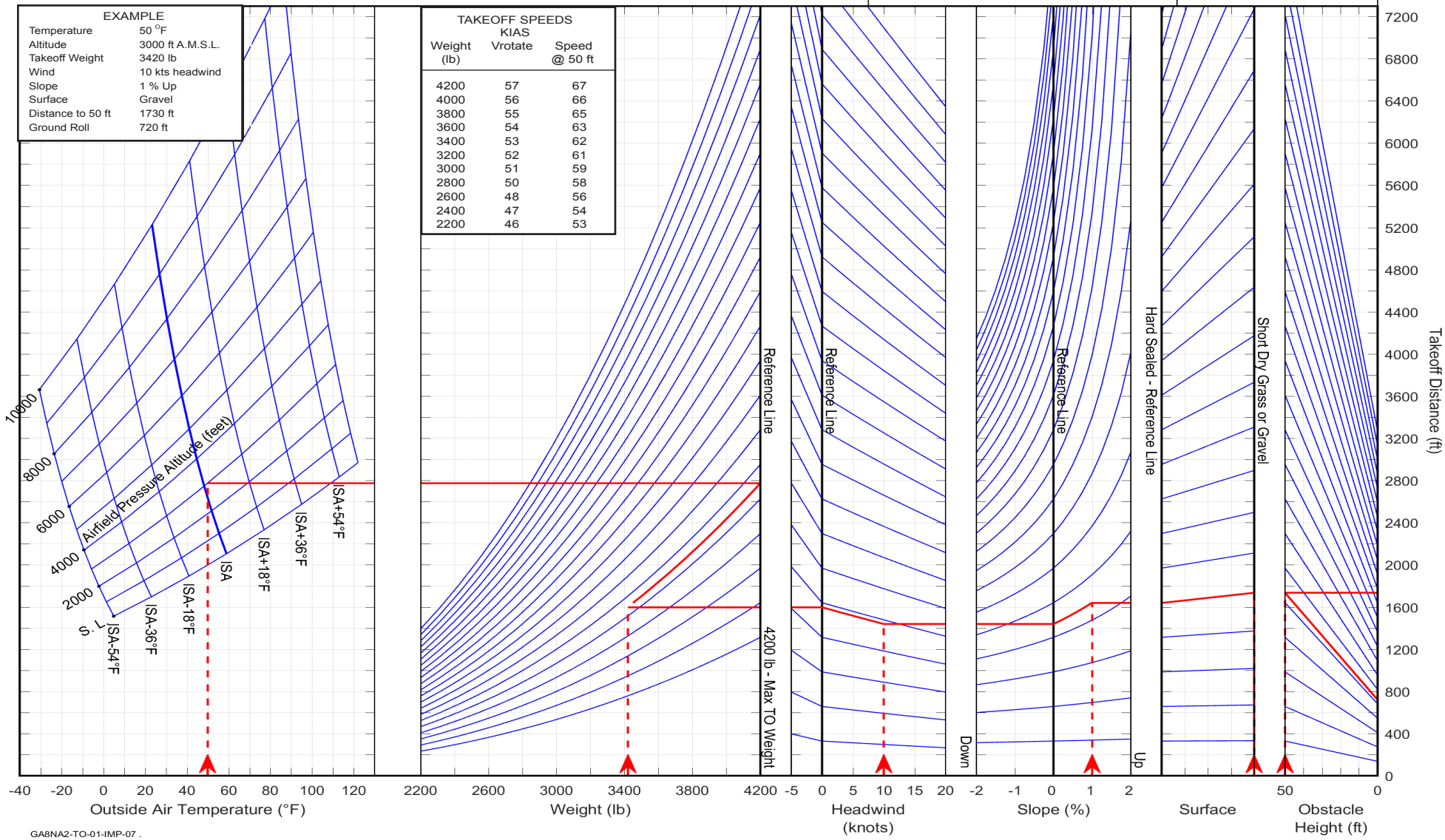
Associated Conditions.
Power: 2700 RPM / Full Throttle set before brake release.
Flaps 14°

Note
Takeoff distances are unfactored.

EXAMPLE	
Temperature	50 °F
Altitude	3000 ft A.M.S.L.
Takeoff Weight	3420 lb
Wind	10 kts headwind
Slope	1 % Up
Surface	Gravel
Distance to 50 ft	1730 ft
Ground Roll	720 ft

TAKEOFF SPEEDS KIAS

Weight (lb)	Vrotate	Speed @ 50 ft
4200	57	67
4000	56	66
3800	55	65
3600	54	63
3400	53	62
3200	52	61
3000	51	59
2800	50	58
2600	48	56
2400	47	54
2200	46	53



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5.4 LANDING

Prior to flight, the pilot must verify/compute an accurate weight and balance load sheet prior to utilising the landing performance charts contained within section 5 of the Flight Manual Supplement. If the weight and balance condition falls outside the alternative forward limit of the load sheet then the landing charts contained in this supplement cannot be used and the appropriate landing performance charts contained in the aircraft flight manual or supplements for the aircraft configuration must be used.

The landing distance charts presented on the following pages provide information to achieve the minimum landing distance for a variety of operating conditions. Charts are provided to enable landing distance to be determined using either a 3° power assisted approach or a power off glide approach. The charts also allow landing distance to be determined in feet or metres depending on the pilot's preference.

Each chart is based on landing distances from a height of 50 ft to stop. The surface corrections on the chart are based on standard factors related to strips with a firm dry surface. Wet and/or slippery surfaces will increase the landing distance over that scheduled and the pilot should therefore ensure that adequate strip length is available to cover these conditions.

The technique used in establishing the 3° Approach Landing Chart distance is such that the aircraft approaches with sufficient power to maintain a 3° approach gradient at the given airspeed appropriate to weight. Before touchdown the power is reduced to idle. After touch down maximum wheel braking is used to bring the aircraft to a stop. Use this chart to determine maximum landing performance when using an instrument assisted landing approach.

The technique used in establishing the Power Off Approach Landing Chart distance is such that the aircraft approaches with idle power at the given airspeed appropriate to weight. After touch down maximum wheel braking is used to bring the aircraft to a stop. Use this chart to determine maximum landing performance when using a visual landing approach.

Extrapolation outside the boundaries of each landing distance chart is not permitted. When the outside air temperature and/or pressure height is below the lowest range scheduled on the charts, the aircraft performance shall be assumed to be no better than that appropriate to this lowest range. The performance information is not valid when the outside air temperature and/or pressure height exceeds the maximum values for which this information is scheduled.

NOTE:

The Landing performance charts extend up to 1860 kg (4100 lb) however permission to operate beyond 1814 kg (4000 lb) must be obtained seperately from the modification detailed in this supplement by incorporating SB-GA8-2011-66 Part B.

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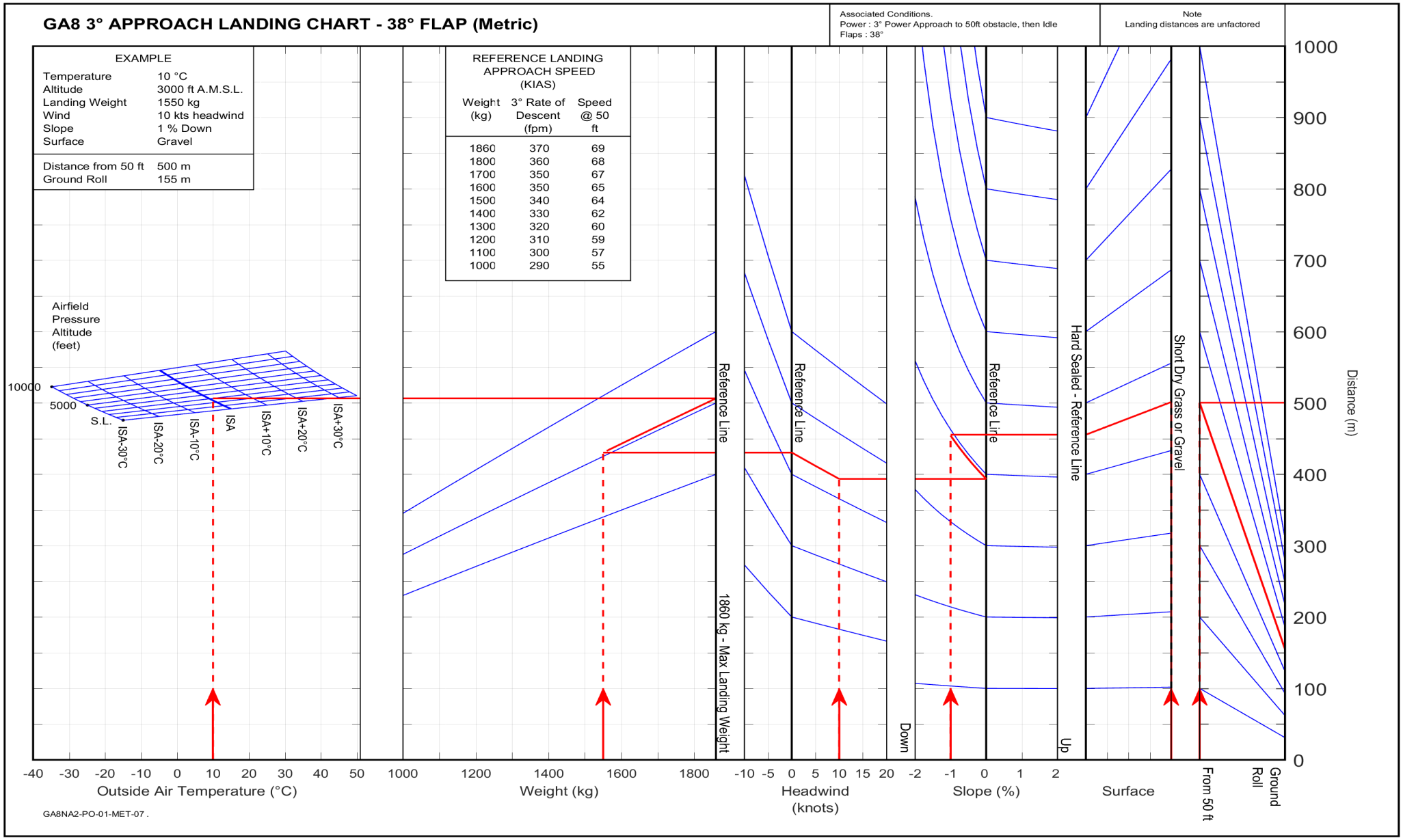
GA8 3° APPROACH LANDING CHART - 38° FLAP (Metric)
Associated Conditions.
Power : 3° Power Approach to 50ft obstacle, then Idle
Flaps : 38°
Note
Landing distances are unfactored
EXAMPLE
Temperature 10 °C
Altitude 3000 ft A.M.S.L.
Landing Weight 1550 kg
Wind 10 kts headwind
Slope 1 % Down
Surface Gravel
Distance from 50 ft 500 m
Ground Roll 155 m
REFERENCE LANDING APPROACH SPEED (KIAS)
Weight (kg) | 3° Rate of Descent (fpm) | Speed @ 50 ft
1860 370 69
1800 360 68
1700 350 67
1600 350 65
1500 340 64
1400 330 62
1300 320 60
1200 310 59
1100 300 57
1000 290 55
Airfield Pressure Altitude (feet)
10000
5000
S.L.
ISA-30°C
ISA-20°C
ISA-10°C
ISA
ISA+10°C
ISA+20°C
ISA+30°C
Outside Air Temperature (°C)
Weight (kg)
Reference Line
1860 kg - Max Landing Weight
Headwind (knots)
Down
Slope (%)
Up
Hard Sealed - Reference Line
Short Dry Grass or Gravel
Surface
From 50 ft
Ground Roll
Distance (m)
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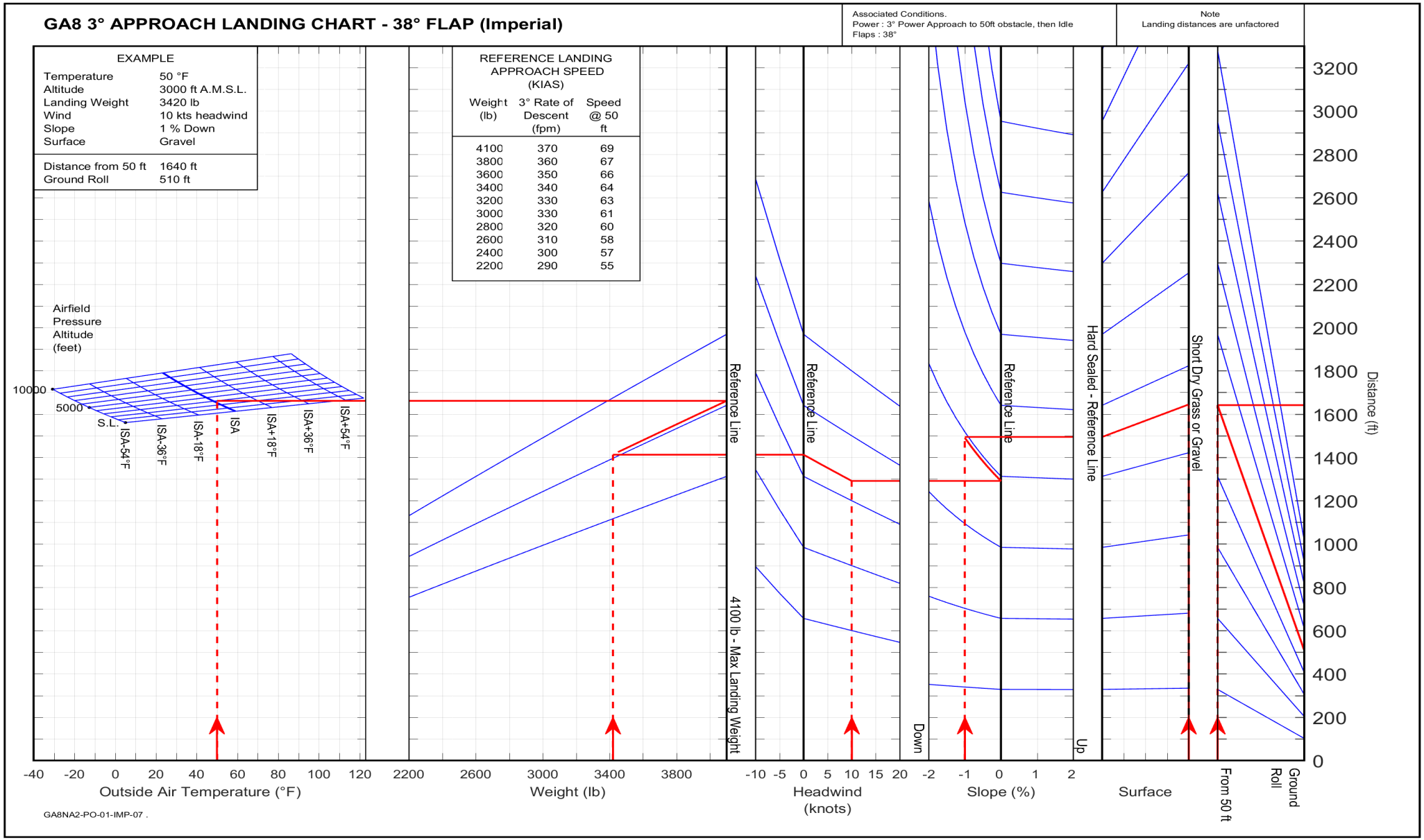
GA8 3° APPROACH LANDING CHART - 38° FLAP (Imperial)
Associated Conditions.
Power : 3° Power Approach to 50ft obstacle, then Idle
Flaps : 38°
Note
Landing distances are unfactored
EXAMPLE
Temperature 50 °F
Altitude 3000 ft A.M.S.L.
Landing Weight 3420 lb
Wind 10 kts headwind
Slope 1 % Down
Surface Gravel
Distance from 50 ft 1640 ft
Ground Roll 510 ft
REFERENCE LANDING APPROACH SPEED (KIAS)
Weight (lb) | 3° Rate of Descent (fpm) | Speed @ 50 ft
4100 370 69
3800 360 67
3600 350 66
3400 340 64
3200 330 63
3000 330 61
2800 320 60
2600 310 58
2400 300 57
2200 290 55
Airfield Pressure Altitude (feet)
10000
5000
S.L.
ISA-54°F
ISA-36°F
ISA-18°F
ISA
ISA+18°F
ISA+36°F
ISA+54°F
Outside Air Temperature (°F)
Reference Line
4100 lb - Max Landing Weight
Weight (lb)
Reference Line
Down
Headwind (knots)
Reference Line
Slope (%)
Hard Sealed - Reference Line
Up
Short Dry Grass or Gravel
Surface
From 50 ft
Ground Roll
Distance (ft)
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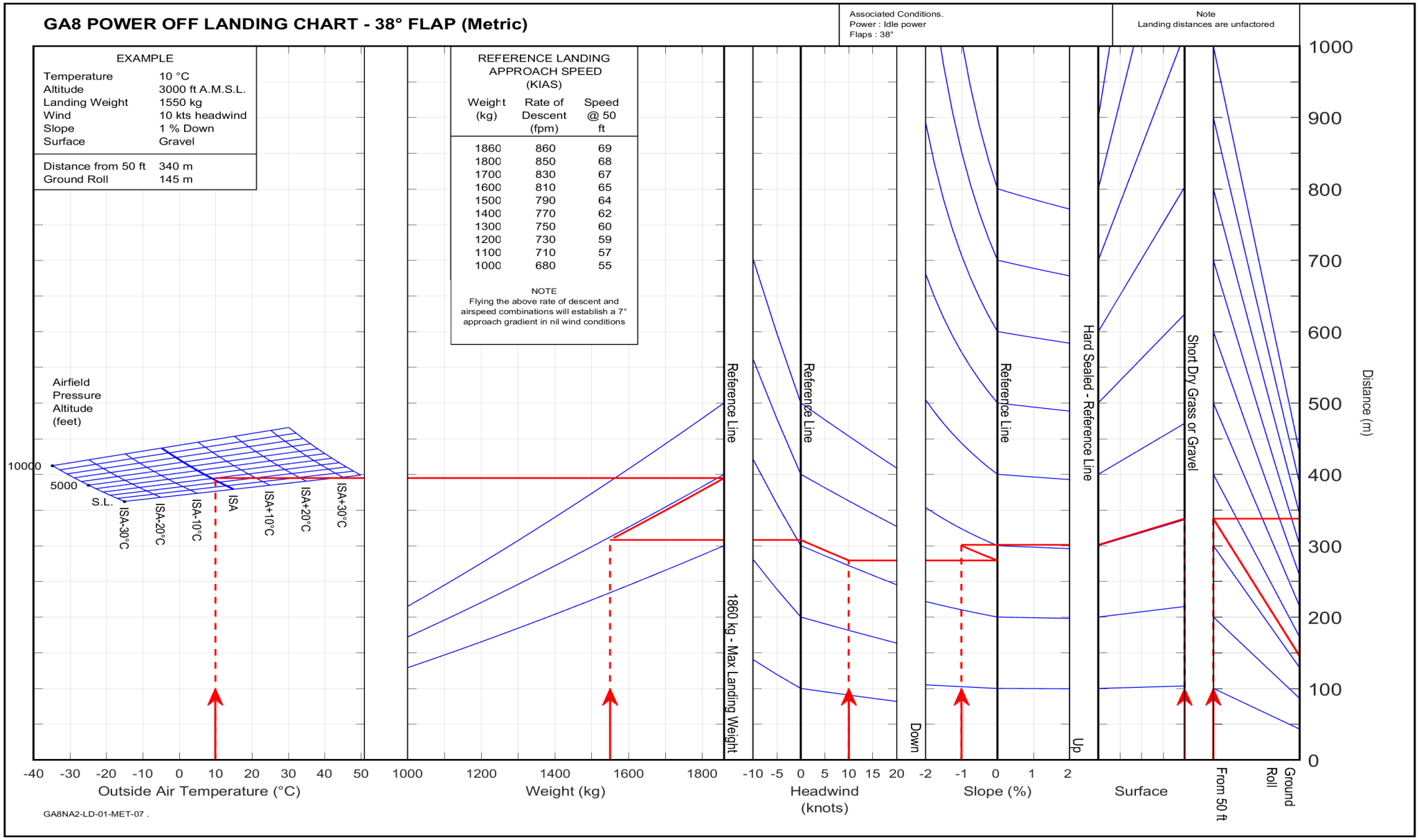
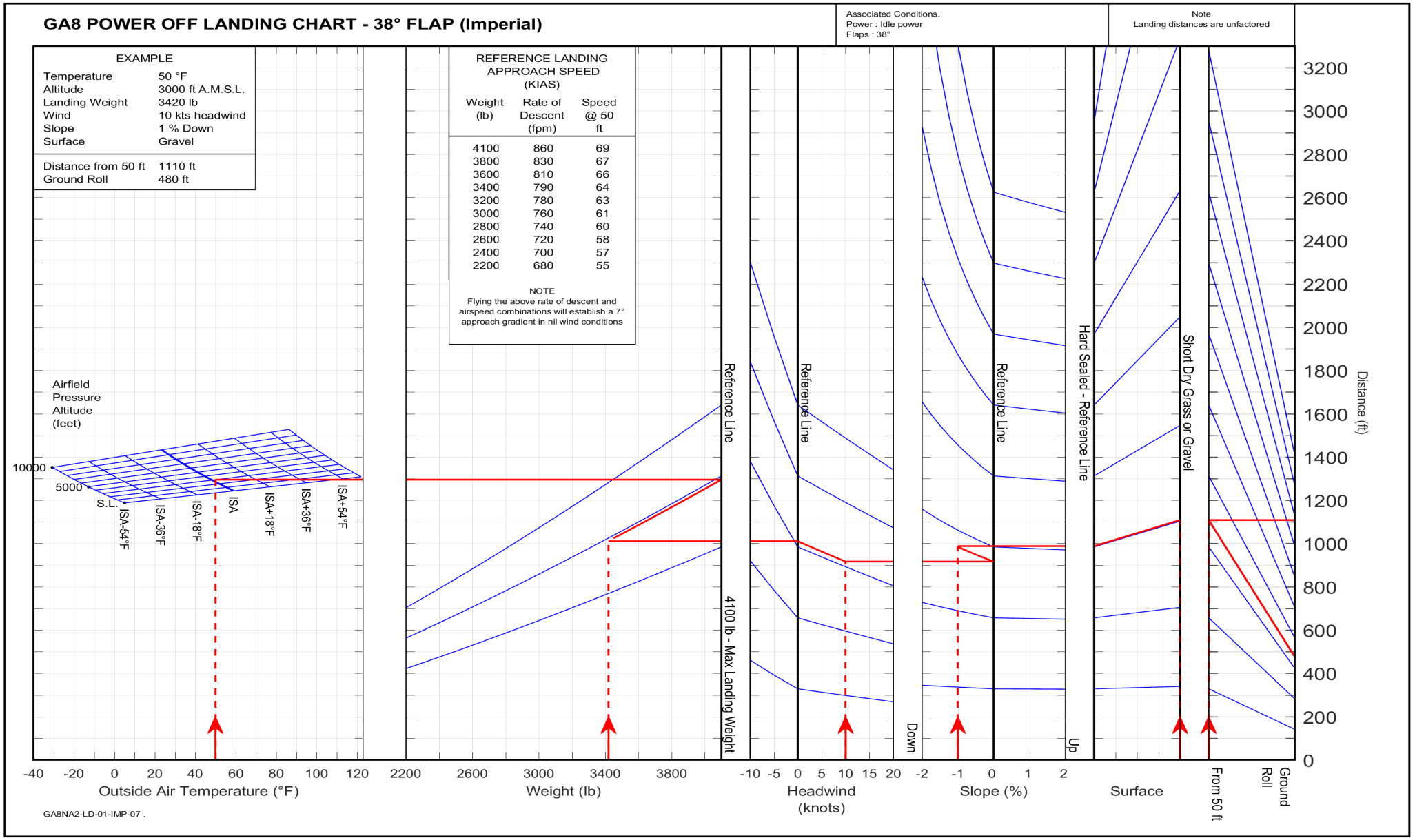

GA8 POWER OFF LANDING CHART - 38° FLAP (Metric)
Associated Conditions.
Power : Idle power
Flaps : 38°
Note
Landing distances are unfactored
EXAMPLE
Temperature 10 °C
Altitude 3000 ft A.M.S.L.
Landing Weight 1550 kg
Wind 10 kts headwind
Slope 1 % Down
Surface Gravel
Distance from 50 ft 340 m
Ground Roll 145 m
REFERENCE LANDING APPROACH SPEED (KIAS)
Weight (kg) | Rate of Descent (fpm) | Speed @ 50 ft
1860 860 69
1800 850 68
1700 830 67
1600 810 65
1500 790 64
1400 770 62
1300 750 60
1200 730 59
1100 710 57
1000 680 55
NOTE
Flying the above rate of descent and airspeed combinations will establish a 7° approach gradient in nil wind conditions
Airfield Pressure Altitude (feet)
10000
5000
S.L.
ISA-30°C
ISA-20°C
ISA-10°C
ISA
ISA+10°C
ISA+20°C
ISA+30°C
Reference Line
1860 kg - Max Landing Weight
Reference Line
Down
Reference Line
Hard Sealed - Reference Line
Up
Short Dry Grass or Gravel
From 50 ft
Ground Roll
Distance (m)
1000
900
800
700
600
500
400
300
200
100
0
-40 -30 -20 -10 0 10 20 30 40 50
Outside Air Temperature (°C)
1000 1200 1400 1600 1800
Weight (kg)
-10 -5 0 5 10 15 20
Headwind (knots)
-2 -1 0 1 2
Slope (%)
Surface
GA8NA2-LD-01-MET-07 .


GA8 POWER OFF LANDING CHART - 38° FLAP (Imperial)
Associated Conditions.
Power : Idle power
Flaps : 38°
Note
Landing distances are unfactored
EXAMPLE
Temperature 50 °F
Altitude 3000 ft A.M.S.L.
Landing Weight 3420 lb
Wind 10 kts headwind
Slope 1 % Down
Surface Gravel
Distance from 50 ft 1110 ft
Ground Roll 480 ft
REFERENCE LANDING APPROACH SPEED (KIAS)
Weight (lb) | Rate of Descent (fpm) | Speed @ 50 ft
4100 860 69
3800 830 67
3600 810 66
3400 790 64
3200 780 63
3000 760 61
2800 740 60
2600 720 58
2400 700 57
2200 680 55
NOTE
Flying the above rate of descent and airspeed combinations will establish a 7° approach gradient in nil wind conditions
Airfield Pressure Altitude (feet)
10000
5000
S.L.
ISA-54°F
ISA-36°F
ISA-18°F
ISA
ISA+18°F
ISA+36°F
ISA+54°F
-40 -20 0 20 40 60 80 100 120
Outside Air Temperature (°F)
2200 2600 3000 3400 3800
Weight (lb)
Reference Line
4100 lb - Max Landing Weight
-10 -5 0 5 10 15 20
Headwind (knots)
Reference Line
Down
-2 -1 0 1 2
Slope (%)
Reference Line
Up
Hard Sealed - Reference Line
Short Dry Grass or Gravel
Surface
From 50 ft
Ground Roll
Distance (ft)
3200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0
GA8NA2-LD-01-IMP-07 .

5.6 STALL SPEEDS

Associated conditions:

Power: Idle
Centre Of Gravity: Alternate Forward Limit - 1524 mm (60 in)
Weight: 1905 kg (4200 lb)

	Angle of Bank							
	0 °		30°		45°		60°	
Flaps	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS
Up	59	61	63	65	70	69	83	81
14°	56	57	60	62	67	67	79	77
38°	55	56	59	61	65	66	78	76

NOTE:

KIAS values are approximate and are based on level flight airspeed calibration data.

NOTE:

Stalling speeds will reduce as weight is reduced and as the centre of gravity is moved aft.

NOTE:

Height loss during a straight and level stall may be up to 300 ft in some aircraft configurations.

6.3 LOADING SYSTEM

The Loading Trim Sheets on the following pages will assist the pilot in ensuring that the GA8 is operated within the prescribed weight and centre of gravity limitations and whether the aircraft is within the alternative forward limit that allows use of the Take-off and Landing charts contained within these supplements.

Two types of trim sheet are provided; combined passenger/freight and freighter configurations. It is at the pilot's discretion as to which is the more appropriate trim sheet to use for any particular flight.

The cabin is divided into 6 sections for weight and balance purposes (the cargo pod, if fitted, has an additional 2 sections – refer to Supplement C01-04-34 for further information). The aft luggage bin net (P/N GA8-255011-9) must be in place whenever any articles are carried in the aft luggage bin. The aft luggage bin is intended for small/light articles only and is limited to a maximum of 22 kg (50 lb).

Rows of the Loading Trim Sheet for the carriage of crew and passengers are divided into

two scales. The first scale is 77 kg per division (170 lb per division for imperial trim sheet) corresponding to the standard person weight. The second scale is 50 kg per division (100 lb per division for imperial trim sheet), which can also be used when a passenger and freight occupy the same row. See example loading on the Pax/Freighter Loading Trim Sheet. The cargo pod scale is 50 kg per division (100 lb per division for imperial trim sheet). A scale of 50 litres or 72 kg per division (20 US gallons or 100 lb per division for imperial trim sheet) is provided for fuel calculations.

Procedure

1. Write weights of aircraft, pilot, passengers, cargo and fuel in each of the appropriate boxes down the right hand side of the sheet.
2. Add the aircraft empty weight, pilot, passengers and cargo to obtain a Zero Fuel Weight subtotal. *The current aircraft empty weight and basic index units can be found on the Aircraft Load Data Sheet contained in this manual.*
3. Add the fuel weight to this subtotal to obtain the Aircraft Take-Off Weight. Ensure the Take-Off Weight does not exceed the Aircraft Maximum Take-Off Weight.
4. Subtract the fuel weight to destination to obtain the Aircraft Landing Weight. Ensure the Landing Weight does not exceed the Aircraft Maximum Landing Weight.
5. On the Centre of Gravity Moment Chart draw two horizontal lines equating to the Take-Off Weight and Zero Fuel Weight.
6. Mark the Aircraft Empty Index Unit at the top of the sheet and drop a line down to the Row 1 scales.
7. Count across, to the right, the number of divisions equivalent to the weight listed for Row 1. From this point, drop a line down to the next row scale and count across, to the right, the number of divisions equivalent to the weight listed for that row.
8. Repeat **Step 7** for all appropriate rows remembering that either or both divisions can be used for any one row.
9. From the final item drop a line down on to the Centre of Gravity Moment Chart to meet the Zero Fuel Weight.
10. In the fuel section, count across to the right the number of divisions equivalent to the quantity or weight of fuel and drop a line down on to the Centre of Gravity Moment Chart to meet the Take-Off Weight.
11. If both of these two intersections are within the unhatched area of the graph, the aircraft will remain inside the Weight and Centre of Gravity envelope for all fuel states and the performance data from this supplements can be used. If an intersection is within the cross -hatched section then the appropriate charts for the aircraft configuration contained in the aircraft flight manual or supplements must be used. If an intersection is within the diagonal hatched section then the aircraft is outside of the Weight and Centre of Gravity Envelope for the aircraft.

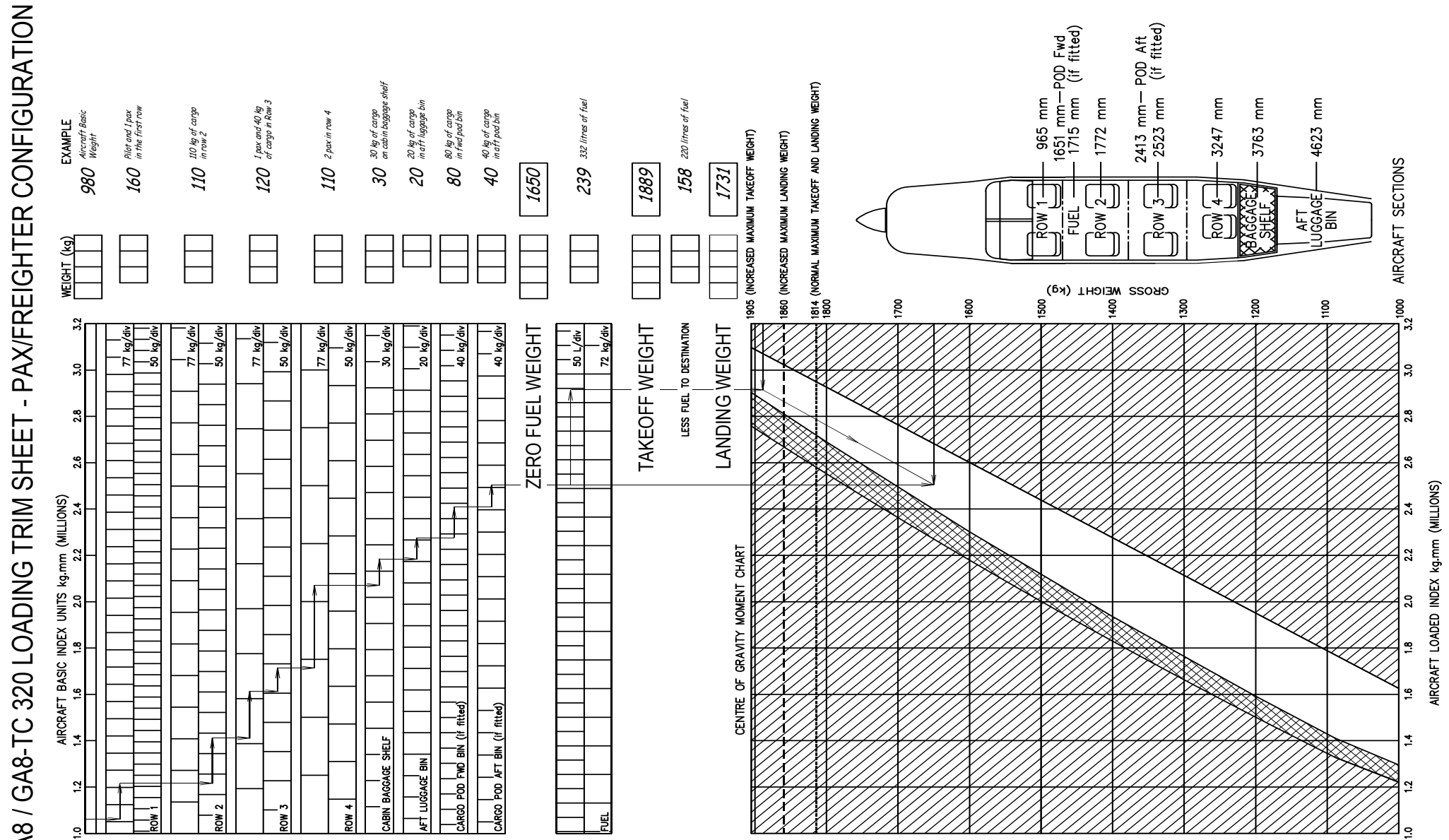


Figure 6-3a GA8 Loading Trim Sheet (Metric Units)

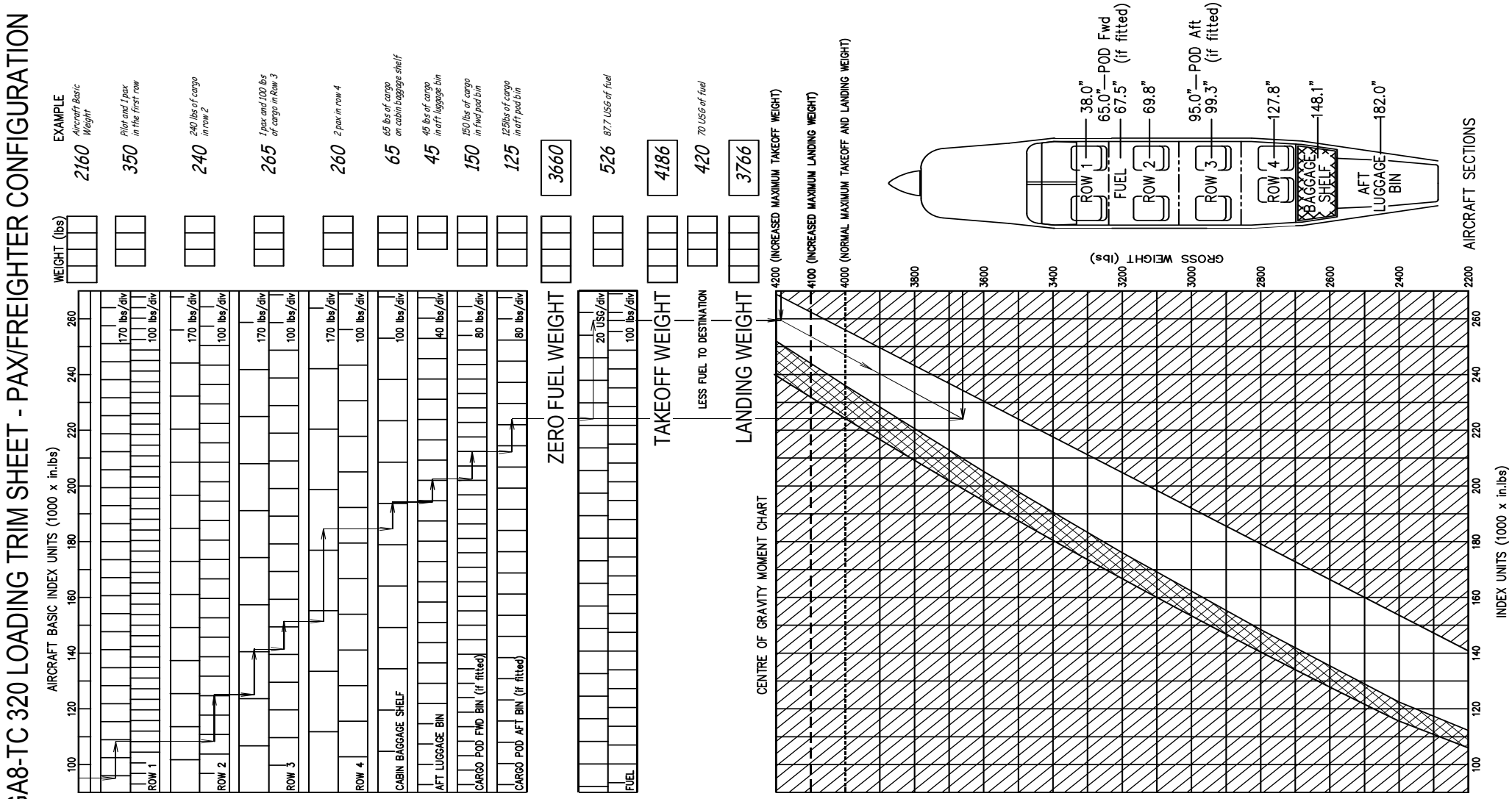


Figure 6-3b GA8 Loading Trim Sheet (Imperial/US Units)

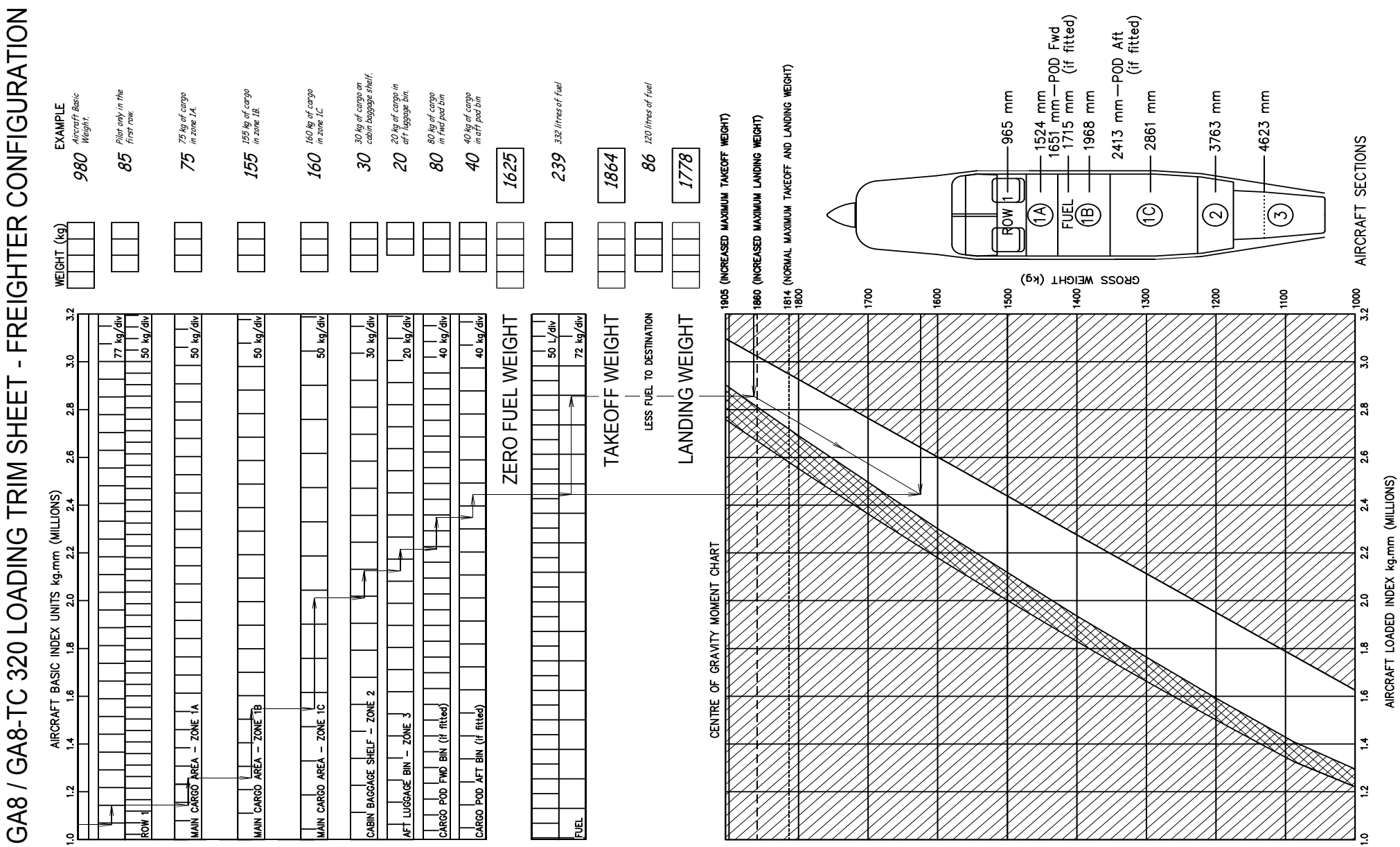


Figure 6-3c GA8 Loading Trim Sheet (Metric Units)

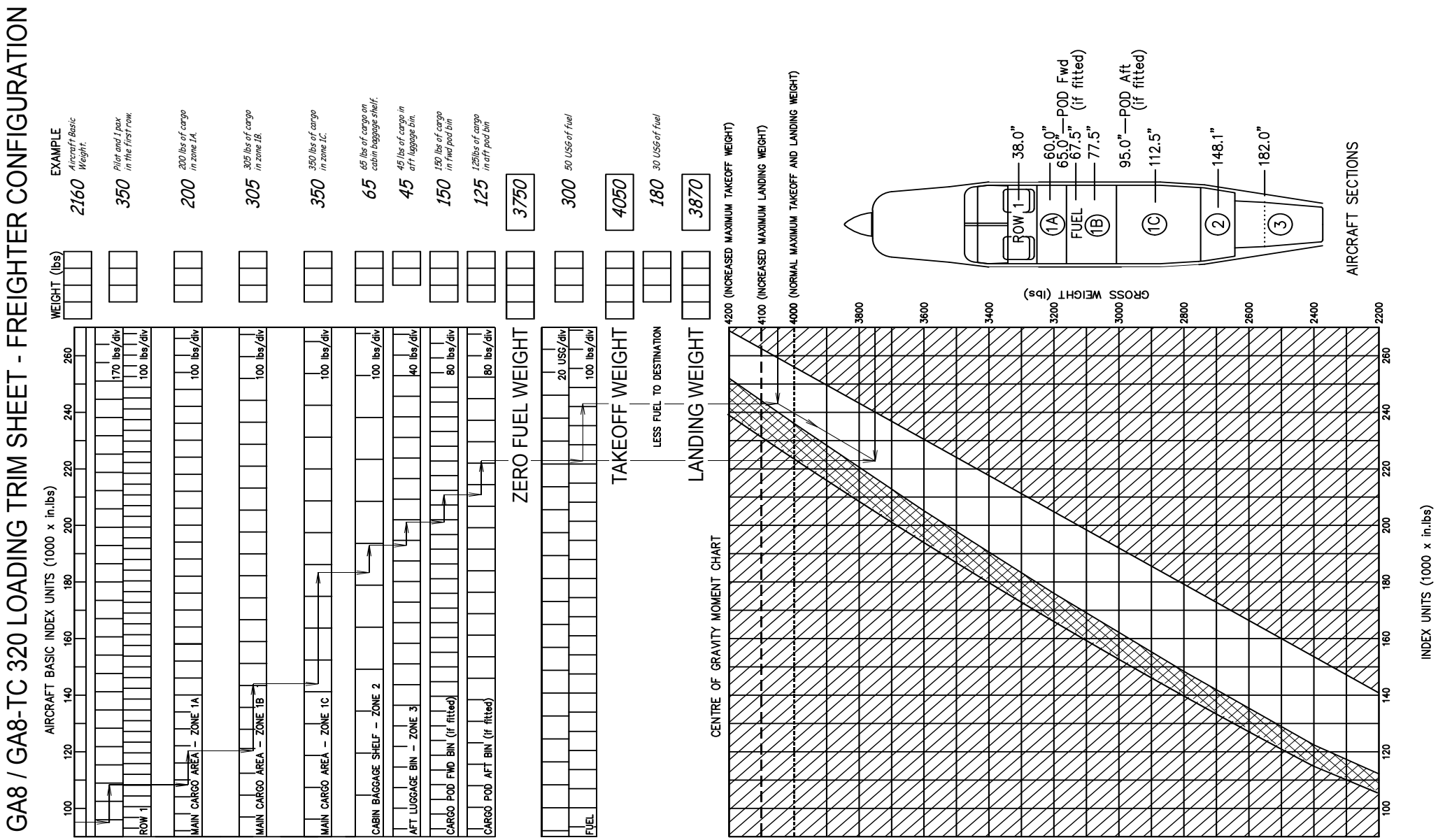


Figure 6-3d GA8 Loading Trim Sheet (Imperial/US Units)

SECTION 7 – SYSTEM DESCRIPTION

No change – refer to the basic POH.

SECTION 8 – AIRCRAFT HANDLING, SERVICING AND MAINTENANCE

No change – refer to the basic POH.

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