LOAD DATA SHEET - PAGE 1 OF 3 - AEROPLANE WEIGHT

Aeroplane Type:..... PIPER PA28-161

Registration Marking:..... **VH-PZG** Serial No: 28-7916193

ISSUE:.... FIVE	DATE:..... 21.10.05	EXPIRY:..... INDEFINITE

AEROPLANE WEIGHT AND CENTRE OF GRAVITY DATA:

ITEM	WEIGHT (Kg)	ARM (mm aft of datum)	MOMENT (Kg.mm)	CABIN CONFIGURATION
BASIC	**669.4**	**2218**	**1484922**	FOUR SEATS TOTAL

STANDARD CABIN CONFIGURATION
****** GROSS WEIGHT INCREASE PER STC SA0039NY *****

THE FOLLOWING IMPERIAL UNITS ARE
FOR USE WITH THE PILOTS HANDBOOK SECTION SIX

	(lb)	(in)	(in.lb)	
BASIC	**1475.7**	**87.3**	**128886**	FOUR SEATS TOTAL

NOTE: The above empty weights include:-

BASIC - unusable fuel and full oil

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6.7 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

(a) Add the weight of all items to be loaded to the basic empty weight.
(b) Use the Loading Graph (Figure 6-13) to determine the moment of all items to be carried in the airplane.
(c) Add the moment of all items to be loaded to the basic empty weight moment.
(d) Divide the total moment by the total weight to determine the C.G. location.
(e) By using the figures of item (a) and item (d) (above), locate a point on the C.G. range and weight graph (Figure 6-15). If the point falls within the C.G. envelope, the loading meets the weight and balance requirements.

	Weight (Lbs)	Arm Aft Datum (Inches)	Moment (In-Lbs)
Basic Empty Weight	1500	85.9	128850
Pilot and Front Passenger	340.0	80.5	27370
Passengers (Rear Seats)*	340.0	118.1	40154
Fuel (48 Gallon Maximum)	267	95.0	25365
Baggage* (200 Lbs. Maximum)		142.8	
Ramp Weight (2447 Lbs. Normal, 2027 Lbs. Utility Maximum)	2447	90.6	221739
Fuel Allowance For Engine Start, Taxi and Run Up	-7	95.0	-665
Takeoff Weight (2440 Lbs. Normal, 2020 Lbs. Utility Maximum)	2440	90.6	221074

The center of gravity (C.G.) of this sample loading problem is at 90.6 inches aft of the datum line. Locate this point (90.6) on the C.G. range and weight graph. Since this point falls within the weight - C.G. envelope, this loading meets the weight and balance requirements.

IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY.

*Utility Category Operation - No baggage or aft passengers allowed.

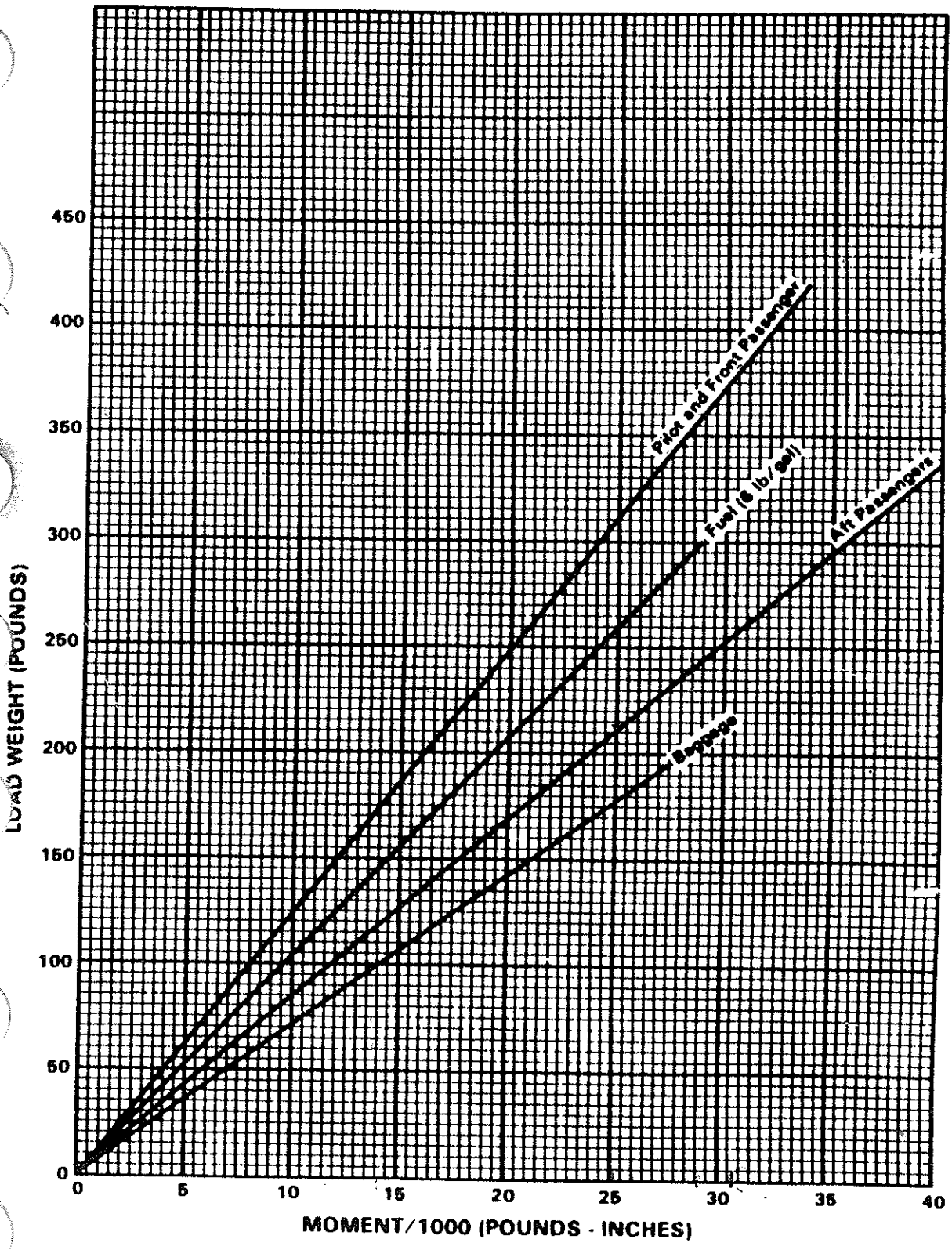
SAMPLE LOADING PROBLEM (NORMAL CATEGORY)
Figure 6-9

	Weight (Lbs)	Arm Aft Datum (Inches)	Moment (In-Lbs)
Basic Empty Weight			
Pilot and Front Passenger		80.5	
Passengers (Rear Seats)*		118.1	
Fuel (48 Gallon Maximum)		95.0	
Baggage* (200 Lbs. Maximum)		142.8	
Ramp Weight (2447 Lbs. Normal, 2027 Lbs. Utility Maximum)			
Fuel Allowance For Engine Start, Taxi and Run Up	-7	95.0	-665
Total Loaded Airplane (2440 Lbs. Normal, 2020 Lbs. Utility Maximum)			

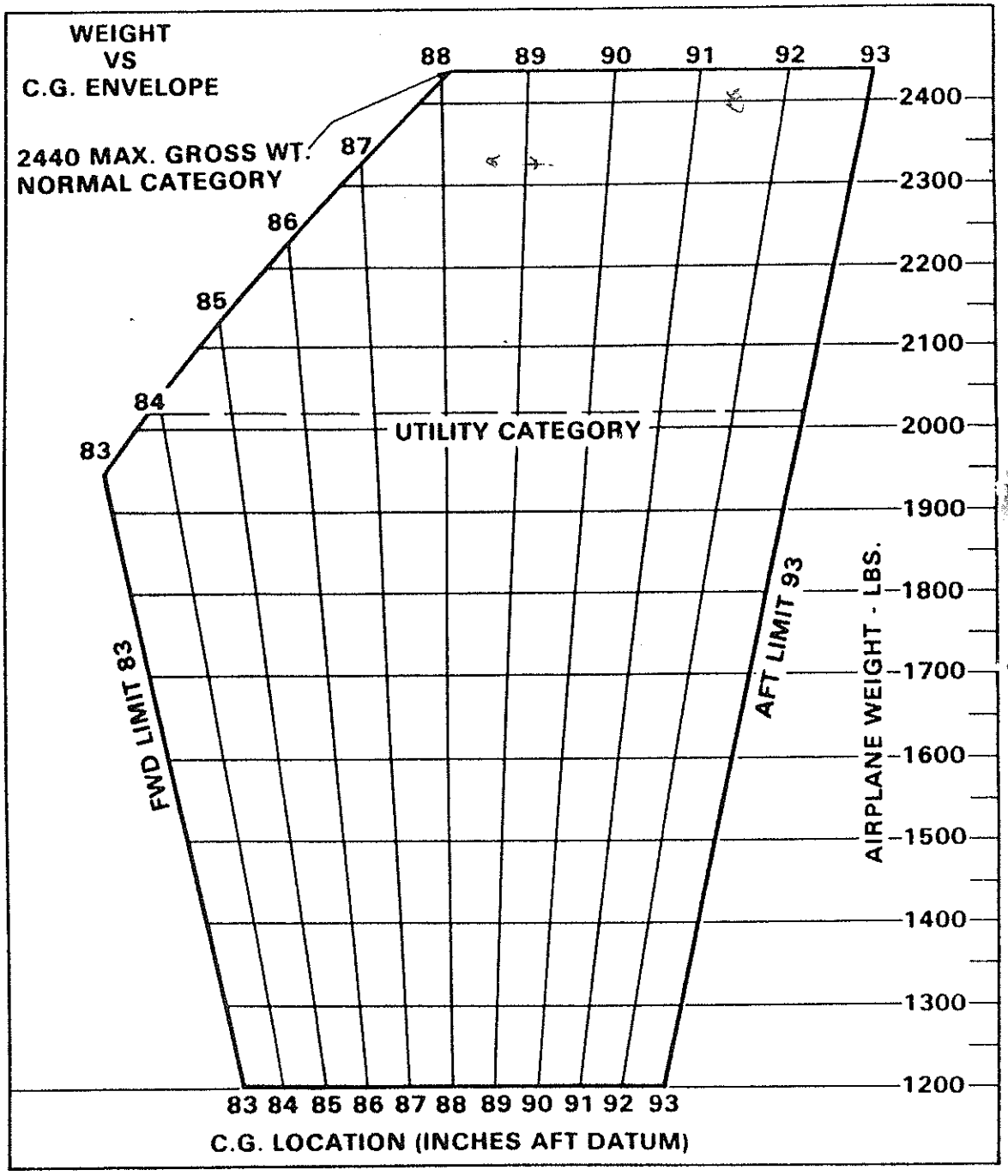
Totals must be within approved weight and C.G. limits. It is the responsibility of the airplane owner and the pilot to insure that the airplane is loaded properly. The Basic Empty Weight C.G. is noted on the Weight and Balance Data Form (Figure 6-5). If the airplane has been altered, refer to the Weight and Balance Record for this information.

*Utility Category Operation - No baggage or aft passengers allowed.

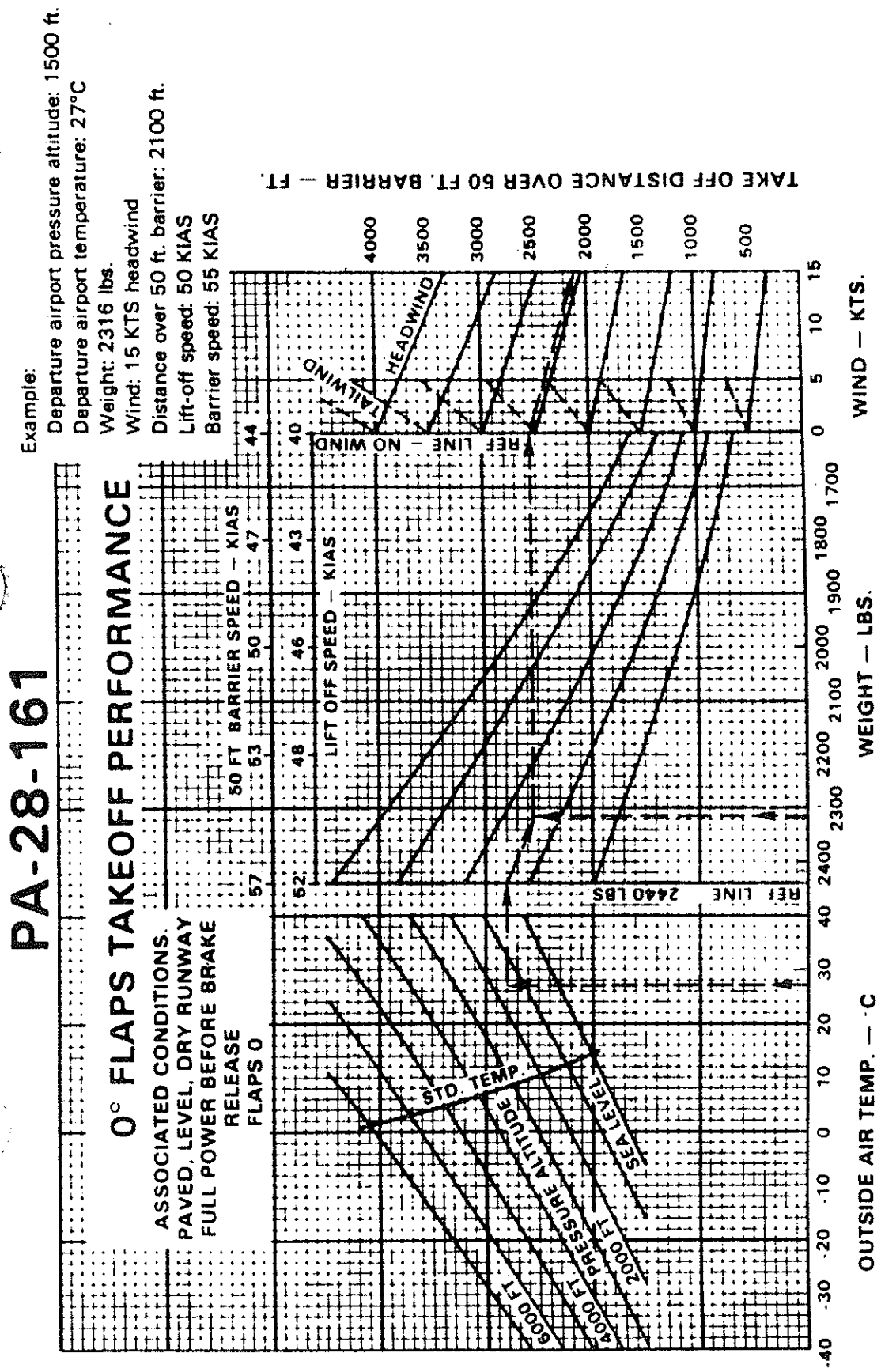
WEIGHT AND BALANCE LOADING FORM
Figure 6-11



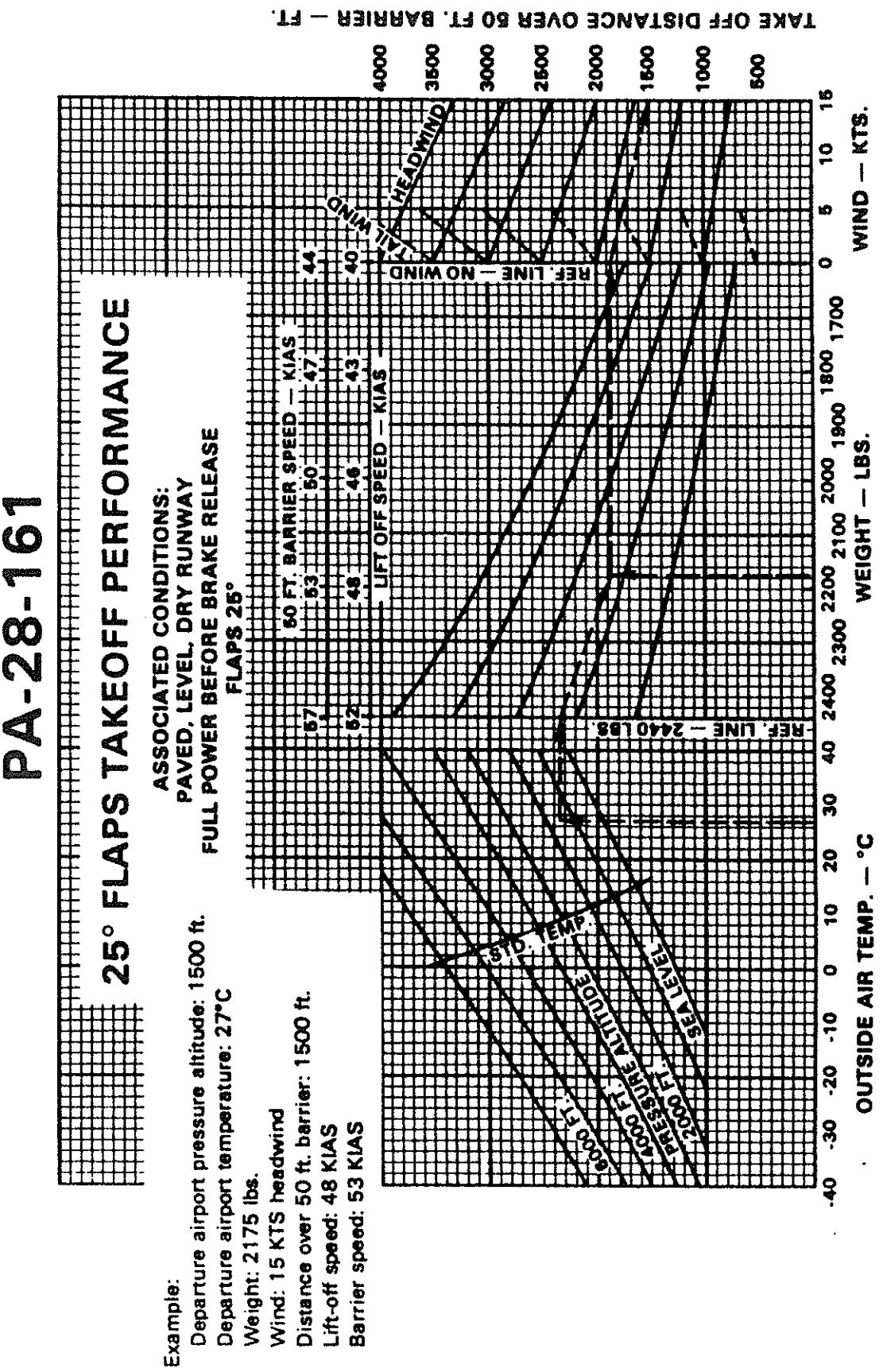
LOADING GRAPH
Figure 6-13



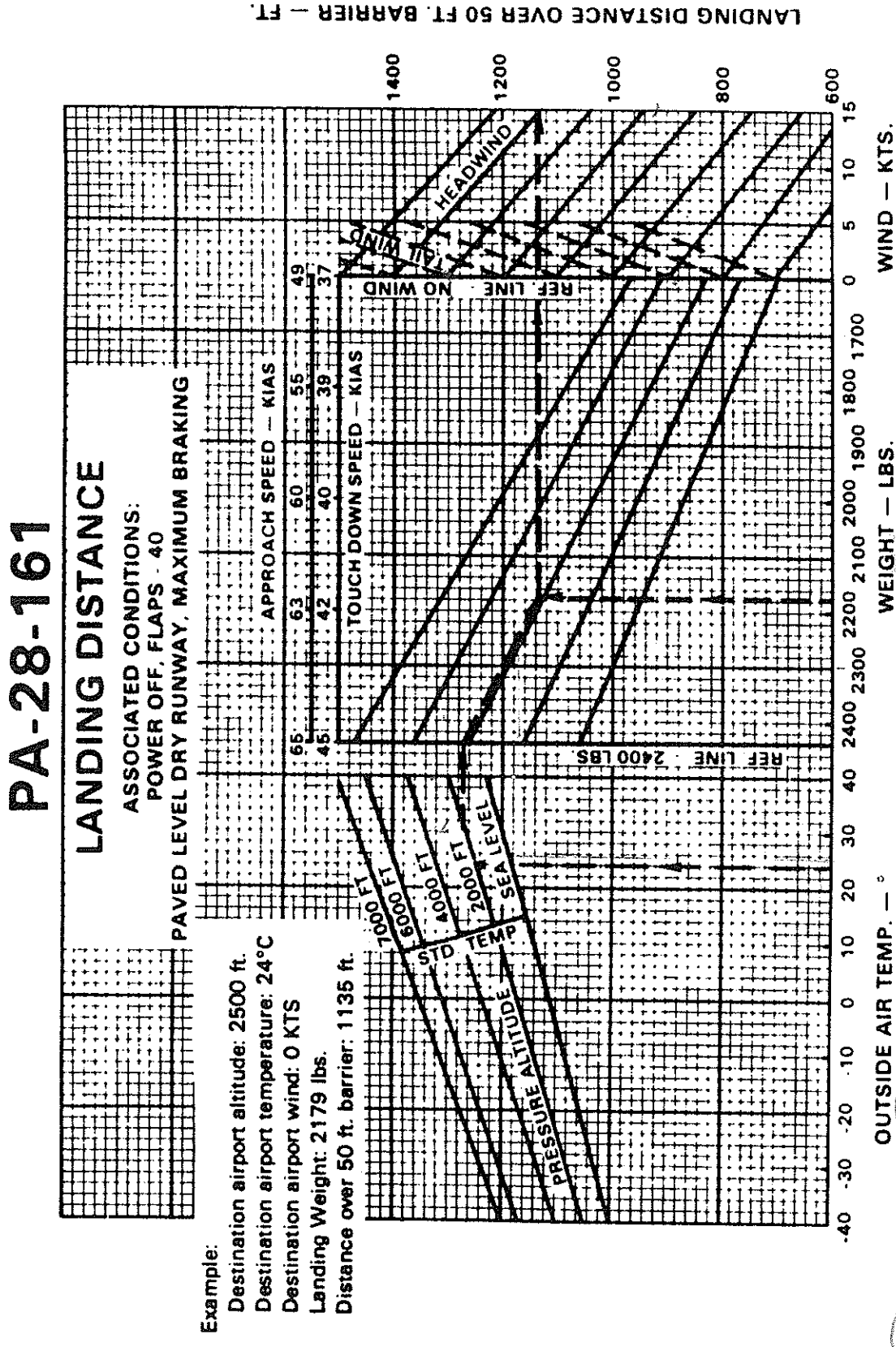
C.G. RANGE AND WEIGHT
Figure 6-15



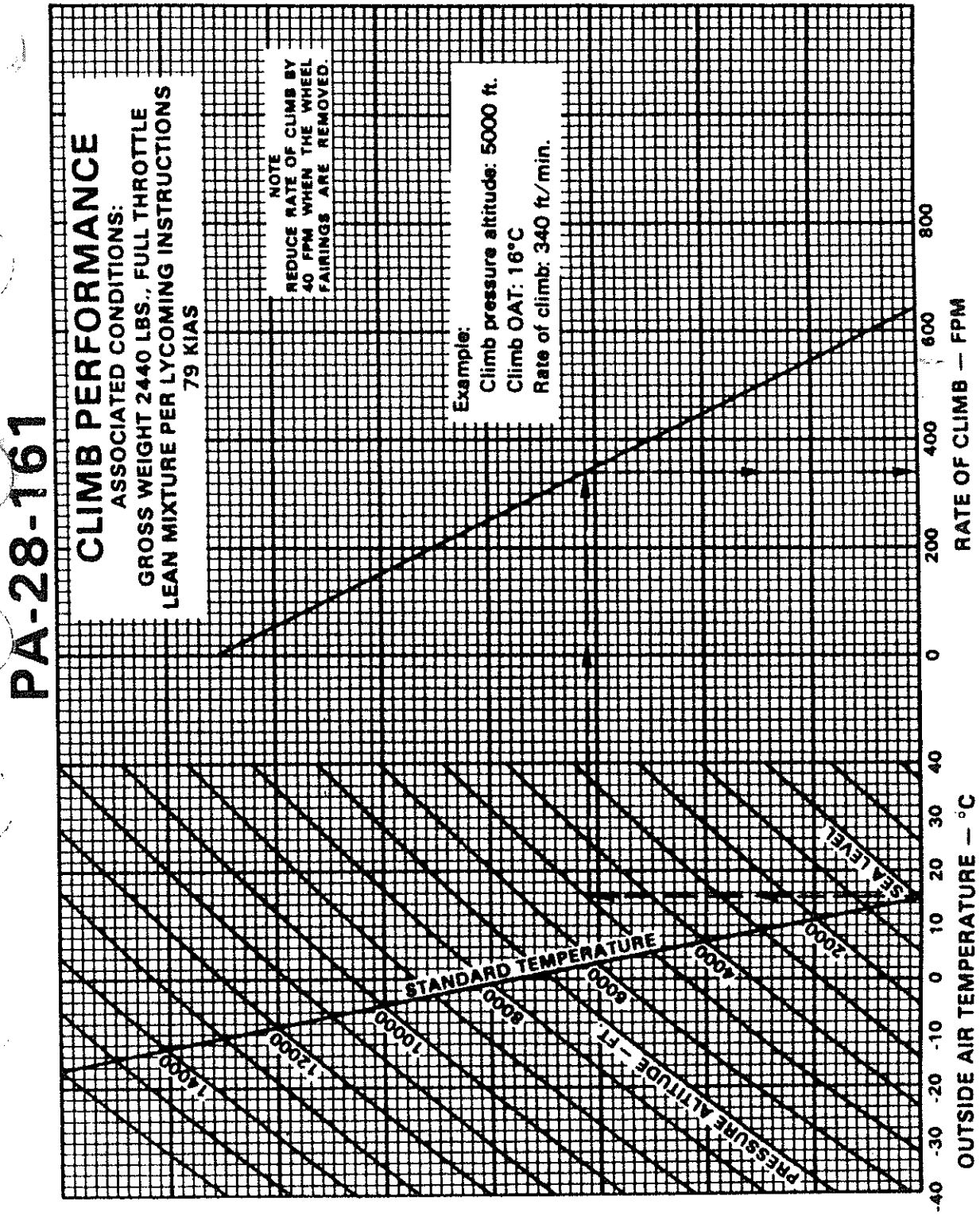
0° FLAPS TAKEOFF PERFORMANCE
Figure 5-9



25° FLAPS TAKEOFF PERFORMANCE
Figure 5-13



LANDING DISTANCE
Figure 5-35



CLIMB PERFORMANCE
Figure 5-17

Climb Gradients

1 Take off climb performance (20.7.4 / 7.1)

In the take-off configuration with landing gear extended, an aeroplane must have the ability to achieve a climb gradient of 6% at takeoff safety speed (TOSS), without ground effect, and with all engines operating at take-off power.

2 En-route climb performance (20.7.4 / 8.3)

Single-engined aeroplanes must have the ability to climb at a gradient of 4.5% at an airspeed not less than 1.2Vs at all heights up to 5000ft in standard atmospheric conditions with the engine operating at maximum continuous power, undercarriage (if retractable)and flaps retracted.

3 Landing Climb performance (20.7.4 / 9.1)

In the landing configuration with all engines operating at take-off power an aeroplane must have the ability to climb at a gradient of 3.2% in standard atmospheric conditions at a speed not exceeding 1.3Vs

Formula

RoC = ((GS x 6080) / 60) x (CG / 100)

Or

$$CG = \frac{ROC}{(G.S \times 6080) / 60}$$