

Section 6: Weight and Balance

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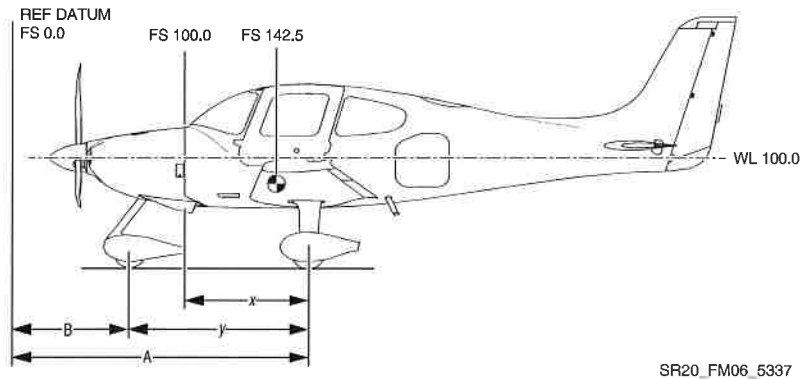
Introduction

This section describes the procedure for calculating the weight and moment for various operations. A comprehensive list of all equipment available for this airplane is included at the back of this section.

It should be noted that specific information regarding the weight, arm, moment, and installed equipment for this airplane as delivered from the factory can be found at the back of this section.

It is the responsibility of the pilot to ensure that the airplane is loaded properly and that all changes to the basic empty weight and center of gravity are recorded.

Figure 6-1: Airplane Weighing



Basic empty weight, moment, and center of gravity are provided in inches aft of datum, where 0 inches datum is 100.0 inches forward of the cabin fire-wall.

• NOTE •

Refer to AMM Chapter 8: Leveling & Weighing for instructions.

Function information on displays do not supersede information in AFM. In the event of conflict, the AFM takes precedence.

Weight and Balance Record

Weight and Balance Data

Refer to “As-Delivered” Weight and Balance Data.

Loading Instructions

It is the responsibility of the pilot to ensure that the airplane is properly loaded and operated within the prescribed weight and center of gravity limits. The following information enables the pilot to calculate the total weight and moment for the loading. The calculated moment is then compared to the Moment Limits chart or table (Figure 6-4) for a determination of proper loading.

Airplane loading determinations are calculated using the Weight & Balance Loading Form (Figure 6-2), the Loading Data chart and table (Figure 6-3), and the Moment Limits chart and table (Figure 6-4).

1. Basic Empty Weight – Enter the current Basic Empty Weight and Moment from the Weight & Balance Record (Figure 6-5).
2. Front Seat Occupants – Enter the total weight and moment/1000 for the front seat occupants from the Loading Data (Figure 6-3).
3. Rear Seat Occupants – Enter the total weight and moment/1000 for the rear seat occupants from the Loading Data (Figure 6-3).
4. Baggage – Enter weight and moment for the baggage from the Loading Data (Figure 6-3).

• NOTE •

If desired, subtotal the weights and moment/1000 from steps 1 through 4. This is the Zero Fuel Condition. It includes all useful load items excluding fuel.

5. Fuel Loading – Enter the weight and moment of usable fuel loaded on the airplane from the Loading Data (Figure 6-3).

• NOTE •

Subtotal the weight and moment/1000. This is the Ramp Condition or the weight and moment of the aircraft before taxi.

6. Fuel for start, taxi, and run-up – This value is pre-entered on the form. Normally, fuel used for start, taxi, and run-up is approximately 9 pounds at an average moment/1000 of 1.394.
7. Takeoff Condition – Subtract the weight and moment/1000 for step 6 (start, taxi, and run-up) from the Ramp Condition values (step 5) to determine the Takeoff Condition weight and moment/1000.

• NOTE •

The total weight at takeoff must not exceed the maximum weight limit of 3150 pounds. The total moment/1000 must not be above the maximum or below the minimum moment/1000 for the Takeoff Condition Weight as determined from the Moment Limits chart or table (Figure 6-4).

Weight and Balance Loading Form

• NOTE •

The Takeoff Condition Weight must not exceed 3150 lb.

The Takeoff Condition Moment must be within the Minimum Moment to Maximum Moment range at the Takeoff Condition Weight. (Refer to Moment Limits).

RELATED TABLE/FIGURE:

For Center of Gravity Envelope, refer to Section 2: Limitations.

Serial Num:

Date:

Reg. Num:

Initials:

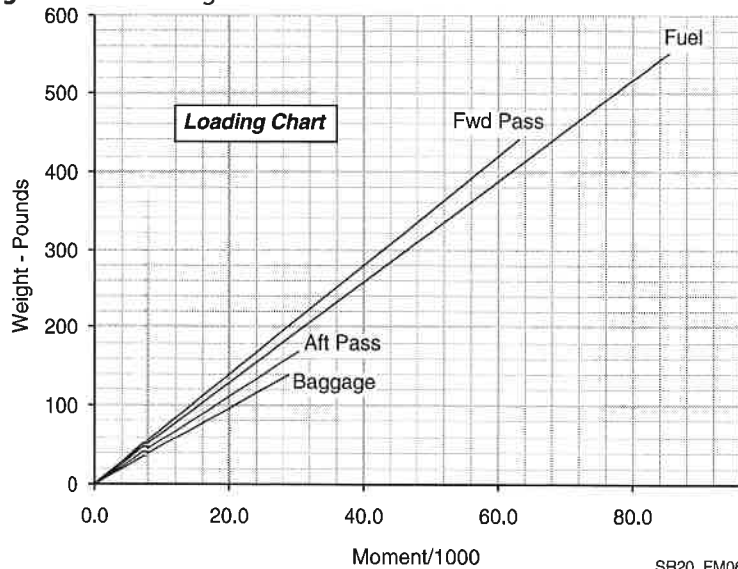
Figure 6-2: Weight & Balance Loading Form

Item	Description	Weight LB	Moment/1000
1.	Basic Empty Weight Includes unusable fuel & full oil		
2.	Front Seat Occupants Pilot & Passenger (total)		
3.	Rear Seat Occupants		
4.	Baggage Area 130 lb maximum		
5.	Zero Fuel Condition Weight Sub total item 1 thru 4		
6.	Fuel Loading 56 Gallon @ 6.0 lb/gal. Maximum		
7.	Ramp Condition Weight Sub total items 5 and 6		
8.	Fuel for start, taxi, and run-up Normally 9 lb at average moment of 1394		
9.	Takeoff Condition Weight Subtract item 8 from item 7		

Loading Data

Use the following chart or table to determine the moment/1000 for fuel and payload items to complete the Loading Form.

Figure 6-3: Loading Chart



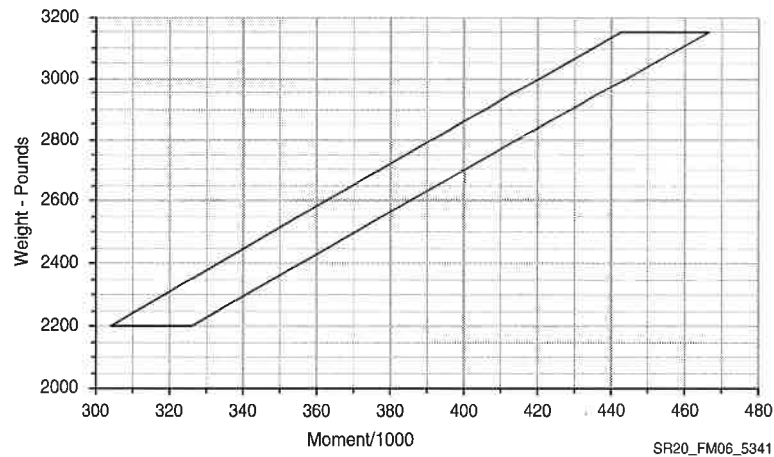
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Weight LB	Fwd Pass FS 143.5	Aft Pass FS 180.0	Baggage FS 208.0	Fuel FS 154.9	Weight LB	Fwd Pass FS 143.5	Aft Pass FS 180.0	Fuel FS 154.9
20	2.87	3.60	4.16	3.10	220	31.57	39.60	34.08
40	5.74	7.20	8.32	6.20	240	34.44	43.20	37.18
60	8.61	10.80	12.48	9.29	260	37.31	46.80	40.27
80	11.48	14.40	16.64	12.39	280	40.18	50.40	43.37
100	14.35	18.00	20.80	15.49	300	43.05	54.00	46.47
120	17.22	21.60	24.96	18.59	320	45.92	57.60	49.57
140	20.09	25.20	27.04*	21.69	336**	48.79	61.20	52.05
160	22.96	28.80		24.78	360	51.66	64.80	
180	25.83	32.40		27.88	380	54.53	68.40	
200	28.70	36.00		30.98	400	57.40	72.00	
*130 lb Maximum					**56 U. S. Gallons Usable			

Moment Values

Use the following chart or table to determine if the weight and moment from the completed Weight and Balance Loading Form (Figure 6-2) are within limits.

Figure 6-4: Moment Limits Chart



Weight LB	Moment/1000		Weight LB	Moment/1000	
	Minimum	Maximum		Minimum	Maximum
2200	304	326	2700	375	398
2250	311	333	2750	383	406
2300	318	341	2800	390	414
2350	326	348	2850	398	421
2400	333	354	2900	406	429
2450	340	362	2950	414	437
2500	347	369	3000	421	444
2550	354	375	3050	429	452
2600	362	383	3100	438	459
2650	369	390	3150	445	467

Use this form to maintain a continuous history of changes and modifications to airplane structure or equipment affecting weight and balance:

[illegible]

This list will be determined after the final equipment has been installed in the aircraft.

Delivered Weight Data & Equipment List

Model SR20

Serial Number:	9885
Registration Number:	N54FA
Basic Empty Weight:	2200
Total Moment/1000:	312226.520
Center of Gravity:	141.92

The following pages list required, standard, and optional equipment, as well as gives the weight and arm of each listed item. This listing represents the airplane and all options available at the time of delivery and does not include any equipment installed after delivery.

Note:

Not all optional equipment in this listing was installed in the above serial number airplane. Equipment listed as optional but not installed in the airplane is indicated by a hyphen (-) in the quantity column for that piece of equipment.

ATA - Item:

Each item in the listing is provided a unique number. The first two digits of the number represent the ATA or GAMA Chapter reference number. These numbers are used industry wide and in the Cirrus Design SR22 Maintenance Documentation to locate items in the Maintenance Manuals and or Parts Catalogs. The two digits following the hyphen are sequence numbers for each item in that chapter.

Description:

This is the component, assembly, or installation name.

Sym:

Items in this listing are coded by a symbol indicating the status of the item. These codes are:

C Required item for FAA Certification.

S Standard equipment. Most standard equipment is applicable to all airplanes. Some equipment may be replaced by optional equipment.

O Optional equipment. Optional equipment may be installed in addition to or to replace standard equipment.

Qty:

The quantity of the listed item in the airplane. A hyphen (-) in this column indicates that the equipment was not installed.

Part Number

This is the Cirrus Design Part Number for the component, assembly, or installation.

Unit Wt

The weight, in pounds, of one each of the listed item.

Arm

The arm, in inches, of the listed item.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
21	Air Conditioning					
21-01	Blower Fan Only	O	-	20970-xxx	7.3	133.0
21-02	Compressor Assembly	O	1	21119-xxx	15.0	93.1
21-03	Condenser Assembly	O	1	21209-xxx	17.0	199.5
21-04	Evaporator Assembly	O	1	21114-xxx	17.5	132.8
22	AutoFlight					
22-01	Garmin Autopilot Controller, GMC 707	S	1	30128-xxx	0.6	124.4
23	Communication					
23-01	GMA 36B Remote Audio Panel	O	1	30060-xxx	1.9	111.8
24	Electrical					
24-01	Convenience System Controller	O	1	36517-xxx	0.7	179.2
25	Equipment & Furnishings					
25-01	Fwd Seat & Restraint Inst. (Leather: add 0.4 lb each)	C	2	31981-xxx	27.0	149.3
25-02	Rear Seat Installation (Leather: add 0.4 lb each)	C	-	29492-xxx	21.8	180.0
25-03	Rear Seat Restraint	C	-	12491-xxx	2.3	180.0
25-04	Rear bench seat Installation (Leather: add 0.8 lb)	C	1	31986, 31985, 31983	26.9	183.0
25-05	Rear Seat Restraint 3 point - 2 seat belt	C	-	29405-xxx	3.3	200.0
25-06	Rear Seat Restraint 3 point - 3 seat belt	C	1	29405-xxx	5.1	200.0
26	Fire Protection					
26-01	Portable Fire Extinguisher	C	1	12533-xxx	2.4	117.7
31	Indicating and Recording					
31-01	Gateway Module	O	1	42064-xxx	3.0	233.3
31-02	Cellular Antenna	O	2	42304-xxx	0.2	263.3
34	Navigation & Pitot Static					
34-01	Garmin 12" Display	O	-	44387-xxx	5.5	116.5
34-02	Garmin 12" Display	C	-	44387-xxx	5.5	117.0
34-03	Garmin 14" Display	O	1	44387-xxx	6.5	116.5
34-04	Garmin 14" Display	C	1	44387-xxx	6.5	117.0
34-05	GTC 585 Touchscreen Controller	S	1	30127-xxx	4.5	122.6
34-06	GTC 585 Touchscreen Controller	S	1	30127-xxx	4.5	122.6
34-07	Magnetic Compass	O	-	12451-xxx	0.3	132.7
34-08	Marker Beacon Antenna	S	1	12743-xxx	0.6	200.0
34-09	Transponder Antenna	S	1	12739-xxx	0.1	105.0
34-10	GPS/NAV/COM#1 GIA 64W	S	1	24662-xxx	6.3	110.5
34-11	GPS/NAV/COM#2 GIA 64W	S	1	24662-xxx	6.3	111.0
34-12	ADAHS GSJ 75	O	2	36741-xxx	1.4	112.4
34-13	CO Detector	O	1	24660-xxx	0.2	104.0
34-14	DME (KNA67)	O	-	24658-xxx	2.8	122.0
34-15	DME Antenna (KA61)	O	-	24658-xxx	0.2	114.5
34-16	GPS 1 Antenna	C	1	12744-xxx	0.4	135.2
34-17	GPS 2 Antenna/Iridium Combo Antenna	S	1	29301-xxx	0.4	200.0
34-18	COM 1 Antenna	S	1	12740-xxx	0.5	178.5
34-19	COM 2 Antenna	O	1	12741-xxx	0.5	204.6
34-20	MD302 (Standby Altitude Module)	C	1	30499-xxx	1.3	113.0
	Traffic Option					
34-21	Garmin Traffic: GTS 800	O	1	26659-xxx	9.9	139.0
34-22	Antenna, Monopole	O	1	26656-xxx	0.2	180.0

34-23	Antenna, Directional, GA 58	O	1	26659-xxx	0.8	157.2
	Weather Option					
34-24	Stormscope Processor	O	-	12745-xxx	1.7	199.0
34-25	Stormscope Antenna	O	-	12745-xxx	0.9	191.0
34-26	GSR 56 Iridium Satellite Receiver	O	-	29307-xxx	4.2	231.1
	Transponder Option					
34-27	GTX 345 Mode S UAT Transponder	O	1	36745-xxx	3.1	230.0
34-28	GTX 335 Mode S w/ES Transponder	O	-	36745-xxx	2.8	230.0
	XM Satellite Options					
34-29	XM WX/Radio Receiver	O	1	24657-xxx	2.7	230.3
61	Propeller					
61-01	Propeller Governor	C	1	15524-xxx	2.9	61.7
61-02	3-Blade Propeller, Metal	C	1	35191-xxx	80.7	51.6
61-03	3-Blade Propeller, Composite	O	-	35191-xxx	51.2	51.6
72	Engine					
72-01	Tanis Engine Pre-heater	O	1	25026-xxx	2.1	61.0
77	Engine Indicating					
77-01	Rack/Unit Installation, GEA 71	S	1	24666-xxx	2.2	111.5
93	Surveillance					
93-01	Enhanced Vision System	O	-	24737-xxx	1.2	161.0

