

### 6.4.1 MOMENT ARMS

The most important lever arms aft of the Datum Plane:

Item		Lever Arm	
		[m]	[in]
Occupants on front seats		2.30	90.6
Occupants on rear seats, row I		3.25	128.0
Occupants on rear seats, row II (if OÄM 62-019 is installed)		4.15	163.4
Fuel	in main tanks	2.63	103.5
	in auxiliary tanks	3.20	126.0
De-icing fluid	tank in LH nose baggage compartment	0.90	35.4
Baggage in compartments	LH Nose baggage compartment	0.47	18.5
	RH Nose baggage compartment	0.05	2.0
	Rear baggage compartment (Section A, if OÄM 62-019 is NOT installed)	4.06	159.8
	Rear baggage compartment (Sections B, C, D, if OÄM 62-019 is NOT installed)	4.18	164.4
	Rear baggage compartment (Section E, if OÄM 62-019 is installed)	4.41	173.6
	Rear baggage compartment (Section F, if OÄM 62-019 is installed)	4.18	164.4

CALCULATION OF LOADING CONDITION	DA 62 (Example)		Your DA 62	
	Mass [kg] [lb]	Moment [kgm] [in.lb]	Mass [kg] [lb]	Moment [kgm] [in.lb]
1. Empty mass (from Mass and Balance Report)	1600 3528	3885.0 337,203		
2. Front seats Lever arm: 2.30 m (90.6 in)	160 353	368.0 31,941		
3. Passenger seats row I Lever arm: 3.25 m (128.0 in)	140 308	455.0 39,492		
4. Passenger seats row II Lever arm: 4.15 m (163.4 in)	60 132	249.0 21,612		
5. LH Nose baggage compt. Lever arm: 0.47 m (18.5 in)	30 66	14.1 1,224		
6. RH Nose baggage compt. Lever arm: 0.05 m (2.0 in)	30 66	1.5 130		
7. Rear baggage compt. (Section A) Lever arm: 4.06 m (159.8 in)	0 0	0.0 0		
8. Rear baggage compt. (Sections B, C, D, F) Lever arm: 4.18 m (164.5 in)	0 0	0.0 0		
9. Rear baggage compt. (Section E) Lever arm: 4.41 m (173.6 in)	5 11	22.05 1,914		
10. De-icing fluid (1.1 kg/L (9.02 lb/US gal)) Lever arm: 0.90 m (35.4 in)	10 22	9.0 781		
11. Total mass & total moment with empty fuel tanks (Total of 1.-10.)	2035 4486	5003.65 434,297		
12. Usable fuel, main tanks (0.84 kg/liter) (7.01 lb/US gal) Lever arm: 2.63 m (103.5 in)	90 198	236.7 20,545		



CALCULATION OF LOADING CONDITION	DA 62 (Example)		Your DA 62	
	Mass [kg] [lb]	Moment [kgm] [in.lb]	Mass [kg] [lb]	Moment [kgm] [in.lb]
13. Usable fuel, auxiliary tanks (if installed), (0.84 kg/liter) (7.01 lb/US gal) Lever arm: 3.2 m (126 in)	116 256	371.2 32,219		
14. Total mass & total moment with fuel (Total of 11. - 13.)	2241 4940	5611.55 487,061		

The CG's shown in the following diagrams are those from the example in Section 6.4.3 - CALCULATION OF LOADING CONDITION, rows 11 and 14.

## 6.5 EQUIPMENT LIST AND EQUIPMENT INVENTORY

The following is added to the existing table:

Airplane Serial No.: <i>62.0066</i>		Registration: <i>N4565A</i>		Date: <i>NOV 10 2023</i>		Mass		Lever Arm	
Description	Type	Part No.	Manufacturer	S/N	Installed	lb	kg	in	m
<b>SAFETY EQUIPMENT</b>									
Fire extinguisher, portable		337TS	Amerex			3.17	1.44	108.7	2.760



Airplane Serial No.:		Registration:		Date:		Mass		Lever Arm	
Description	Type	Part No.	Manufacturer	S/N	installed	lb	kg	in	m
<b>CABIN COOLING SYSTEM</b>									
Cabin cooling central unit		D44-2153-00-00	Diamond Aircraft		X	47.8	21.7	194.9	4.95
<b>EQUIPMENT</b>									
Safety belt, pilot	5-01-() Series	5-01-2Y07()	Schroth		X	2.110	0.960	92.520	2.350
Safety belt, co-pilot	5-01-() Series	5-01-2Y57()	Schroth		X	2.110	0.960	92.520	2.350
Safety belt, LH pax row I	5-02-() Series	5-02-BJ57()	Schroth		X	2.250	1.020	126.800	3.220
Safety belt, RH pax row I	5-02-() Series	5-02-BK57()	Schroth		X	2.250	1.020	126.800	3.220
Safety belt, Center pax row I	5-02-() Series	5-02-BL57()	Schroth		X	2.250	1.020	126.800	3.220
Safety belt, LH pax row II	5-02-() Series	5-02-BP57()	Schroth		X	2.250	1.020	126.800	3.220
Safety belt, RH pax row II	5-02-() Series	5-02-BP07()	Schroth		X	2.250	1.020	126.800	3.220
ELT unit	406 AF-Compact	S1840501-01	Kannad		X	1.874	0.874	179.700	4.565
ELT remote switch	RC 200	S1820513-11	Kannad		X				
ELT antenna	ANT300	0124220	Kannad			0.330	0.150	152.800	3.880
ELT antenna	AV-300	0146151	Kannad		X				
<b>SAFETY EQUIPMENT</b>									
Fire extinguisher		HAL 1	AIR TOTAL						
Fire extinguisher		HAL 1,2	AIR TOTAL		X				
First aid kit					X				
Egress Hammer		D67-2560-80-50	Diamond		X				
Belt Cutter		D67-9025-60-01	Woodway / Dhelen		X				
<b>FLIGHT CONTROLS</b>									
Lift detector		C-99701-1	Safe Flight Instr.						

## 6.5 EQUIPMENT LIST AND EQUIPMENT INVENTORY

The following is added to the existing table:

Airplane Serial No.: <i>62.C066</i>		Registration: <i>N456SA</i>		Date: <i>NOV-10-2023</i>		Mass		Lever Arm	
Description	Type	Part No.	Manufacturer	S/N	Installed	lb	kg	in	m
<b>COMMUNICATION/NAVIGATION</b>									
Audio panel/Maker/ICS	GMA 1360	011-03568-00	Garmin	/	X	1.860	0.840		
Integrated avionics #1	GIA 64W	011-03711-00	Garmin	/	X	5.400	2.450		
Integrated avionics #2	GIA 64W	011-03711-00	Garmin	/	X	5.400	2.450		
Transponder	GTX 345R		Garmin	/	X				
GPS #1 antenna	GA 37	013-00245-00	Garmin	/	X				
Data link processor	GDL 69A SXM	011-03177-10	Garmin	/	X				



## 6.5 EQUIPMENT LIST AND EQUIPMENT INVENTORY

The following is added to the existing table:

Airplane Serial No.: <i>62-0066</i>		Registration: <i>N4565A</i>		Date: <i>NOV 10 2023</i>		Mass		Lever Arm	
Description	Type	Part No.	Manufacturer	S/N	Installed	lb	kg	in	m
<i>COMMUNICATION/NAVIGATION</i>									
Transponder antenna	CI 105-16		Comant			0.200	0.091		
DME antenna	CI 105-16		Comant			0.200	0.091		

Airplane Serial No.: <i>102.C066</i>		Registration: <i>N4565A</i>		Date: <i>NOV-10-2023</i>		Mass		Lever Arm	
Description	Type	Part No.	Manufacturer	S/N	Installed	lb	kg	in	m
<i>ENGINE</i>									
<i>ENGINE INDICATING</i>									
Engine/Airframe unit	GEA 71B	011-03682-00	Garmin	/	X	1.800	0.820		





# WEIGHING REPORT

Model: DA 62      Serial Number: 62.C066      Registration N456SA

Data with reference to the Type Certificate Data Sheet and the Airplane Flight Manual.  
Reference Plane: Vertical plane 2196mm (86.46in) in front of the leading edge of wing at the root rib.  
Horizontal reference line: Front baggage compartment floor, right side.  
Equipment Inventory dated: November 10, 2023      Cause for Weighing: ORIGINAL

Weight and Balance Calculations (Weighing at the wheels)  
Weight Condition: Include brake fluid, hydraulic fluid, coolant, engine oil and unusable fuel  
(7.57 liters / 2 US gal.)

Support	Gross		Tare		Net	
MAIN G1LH	676.31	kg	0	kg	676.31	kg
MAIN G1RH	681.30	kg	0	kg	681.30	kg
NOSE G2	347.00	kg	0	kg	347.00	kg
<b>Empty Weight</b>					<b>1704.61</b>	<b>kg</b>

Lever Arm	
X1LH =	2812 mm
X1RH =	2820 mm
X2 =	861 mm

Calculate the Empty Weight: $G = \text{MAIN G1LH} + \text{MAIN G1RH} + \text{NOSE G2}$ Weight including required equipment for operation must be between: 1492 kg and 1583 kg if OAM 62-018 is installed or MAM 62-001 is not installed. 1492 kg and 1730 kg if MAM 62-001 is installed.	<b>G = 1704.61 kg</b>
Calculate the Empty Weight Moment: $M = (G_{1LH} \times X_{1LH}) + (G_{1RH} \times X_{1RH}) + (G_2 \times X_2)$	<b>M = 4121.792506 kg-m</b>
Calculate the Empty Weight Center-of-Gravity position: $X_{CG} = M/G$	<b>XCG = 2.42 m</b>
Maximum Take Off Weight	MAM 62-001 not installed or OAM 62-018 installed 1999 kg
MTOW	MAM 62-001 installed 2300 kg
<b>Maximum useful load = MTOW - G</b>	<b>595.39 kg</b>

Support	Gross		Tare		Net	
MAIN G1LH	1491.00	lbs	0	lbs	1491.00	lbs
MAIN G1RH	1502.00	lbs	0	lbs	1502.00	lbs
NOSE G2	765.00	lbs	0	lbs	765.00	lbs
<b>Empty Weight</b>					<b>3758.00</b>	<b>lbs</b>

Lever Arm	
X1LH =	110.71 in
X1RH =	111.02 in
X2 =	33.90 in

Calculate the Empty Weight: $G = \text{MAIN G1LH} + \text{MAIN G1RH} + \text{NOSE G2}$ Weight including required equipment for operation must be between: 1492 kg and 1583 kg if OAM 62-018 is installed or MAM 62-001 is not installed. 1492 kg and 1730 kg if MAM 62-001 is installed.	<b>G = 3758.00 lbs</b>
Calculate the Empty Weight Moment: $M = (G_{1LH} \times X_{1LH}) + (G_{1RH} \times X_{1RH}) + (G_2 \times X_2)$	<b>M = 357755.79 in-lbs</b>
Calculate the Empty Weight Center-of-Gravity position: $X_{CG} = M/G$	<b>XCG = 95.20 in</b>
Maximum Take Off Weight	MAM 62-001 not installed or OAM 62-018 installed 4407 lbs
MTOW	MAM 62-001 installed 5071 lbs
<b>Maximum useful load = MTOW - G</b>	<b>1313.00 lbs</b>

Record the Empty Weight (G) and the Empty-Weight Moment (M) in the Airplane Flight Manual.

Place / Date	DAIC - CYXU November 10, 2023	Authorizing Stamp	DA Q 81	Authorizing Signature	
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