

LOAD DATA SHEET - PAGE 1 OF 3 - AEROPLANE WEIGHT

Aeroplane Type:..... DIAMOND DA 42 NG

Registration Marking:..... **VH-VMX**

Serial No: 42.N139

ISSUE:.... TWO

DATE:..... 3-Apr-20

EXPIRY:..... INDEFINITE

AEROPLANE WEIGHT AND CENTRE OF GRAVITY DATA:

ITEM	WEIGHT (Kg)	ARM (mm aft of datum)	MOMENT (Kg.mm)	CABIN CONFIGURATION
EMPTY	1411.3	2392.5	3376567	FOUR SEATS TOTAL
STANDARD CABIN CONFIGURATION AUSTRO ENGINES & MT PROPELLERS				
THE FOLLOWING IMPERIAL UNITS ARE FOR USE WITH THE PILOTS HANDBOOK SECTION SIX				
	(lb)	(in)	(in.lb)	
EMPTY	3111.5	94.19	293073	FOUR SEATS TOTAL

NOTE: The above empty weights include:-

EMPTY - unusable fuel and full oil

AeroWeigh Pty. Ltd.

BRUCE CUSSELL
AUTHORITY MEMBER AN-9

MOBILE: 0412 58 5551

CALCULATION OF LOADING CONDITION	DA 42 NG (Example)		Your DA 42 NG	
	Mass [kg] [lb]	Moment [kgm] [in.lb]	Mass [kg] [lb]	Moment [kgm] [in.lb]
1. Empty mass (from Mass and Balance Report)	1450 3197	3488.0 302,747		
2. Front seats Lever arm: 2.30 m (90.6 in)	160 353	368.0 31,982		
3. Rear seats Lever arm: 3.25 m (128.0 in)	0 0	0.0 0,0		
4. Nose baggage compt. Lever arm: 0.60 m (23.6 in)	0 0	0.0 0,0		
5. Cabin baggage compt. Lever arm: 3.89 m (153.1 in)	10 22	38.9 3,368		
6. Baggage extension Lever arm: 4.54 m (178.7 in)	8 18	36.3 3,217		
7. Standard baggage compartment Lever arm: 3.65 m (143.7 in)	0 0	0.0 0,0		
8. Short baggage extension (if OÄM 42-207 is carried out) Lever arm: 3.97 m (156.3 in)	0 0	0.0 0,0		
9. De-Icing fluid (if only OÄM 42-160 is installed; see NOTE on previous page) (1.1 kg/liter) (9.2 lb/US gal) Lever arm: 1.00 m (39.4 in)	27.5 61	27.5 2,403		

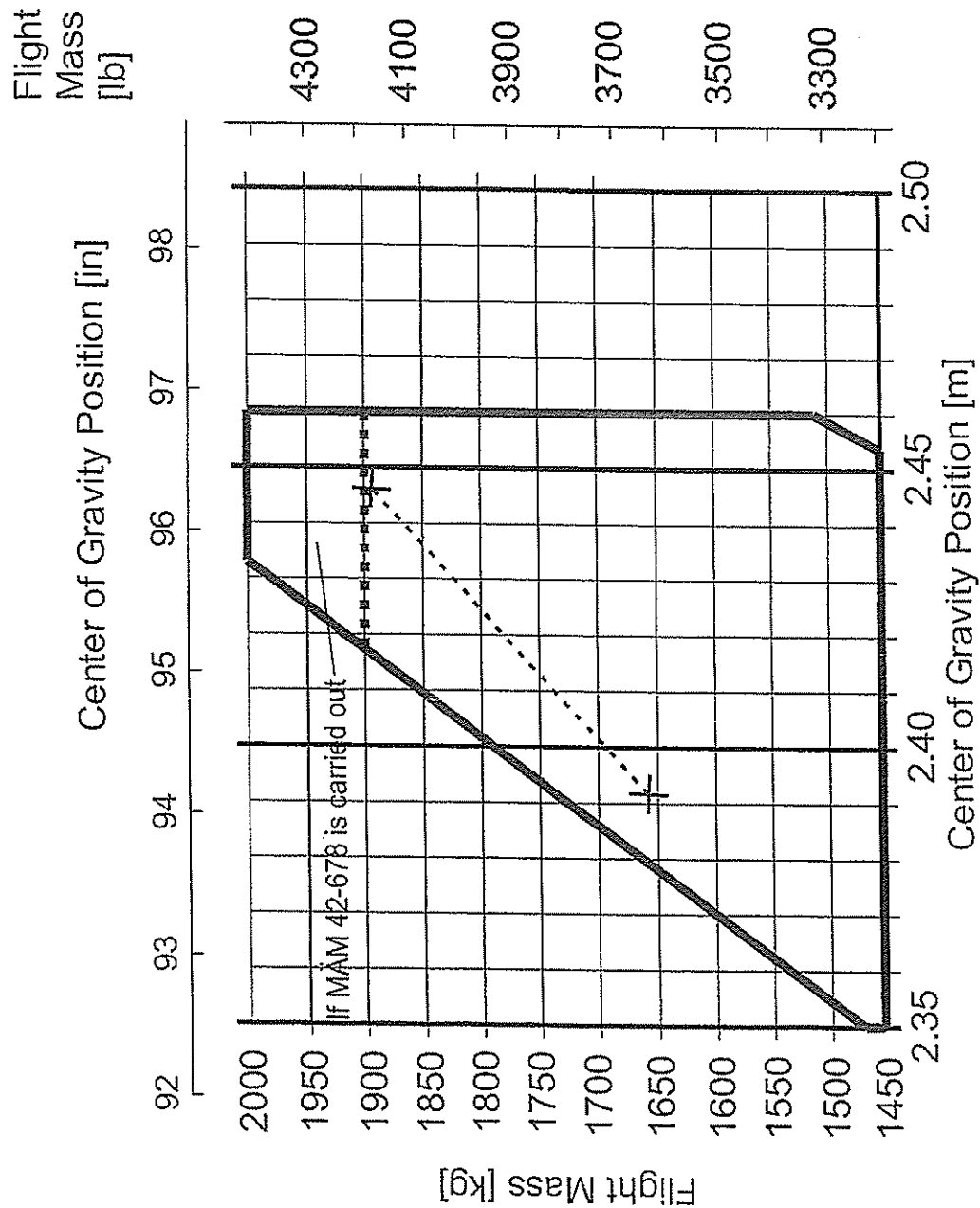
CALCULATION OF LOADING CONDITION	DA 42 NG (Example)		Your DA 42 NG	
	Mass [kg] [lb]	Moment [kgm] [in.lb]	Mass [kg] [lb]	Moment [kgm] [in.lb]
10. De-icing fluid (if OÄM 42-160 AND OÄM 42-203 are installed; see NOTE on previous page) (1.1 kg/liter) (9.2 lb/US gal) Lever arm: 4.52 m (178.0 in)	0 0	0.0 0.0		
11. Total mass & total moment with empty fuel tanks (Total of 1.through 10.)	1655.5 3651	3958.7 343,717		
12. Usable fuel, main tanks (0.84 kg/liter) (7.01 lb/US gal) Lever arm: 2.63 m (103.5 in)	159 351	418.2 36,329		
13. Usable fuel, auxiliary tanks (if installed) (0.84 kg/liter) (7.01 lb/US gal) Lever arm: 3.20 m (126.0 in)	84 185	268.8 23,310		
14. Total mass & total moment with fuel & de-icing fluid (Total of 11. through 13.)	1898.5 4187	4645.7 403,356		

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. MASS AND BALANCE

6.4 FLIGHT MASS AND CENTER OF GRAVITY

6.4.4 PERMISSIBLE CENTER OF GRAVITY RANGE



5.3.6 TAKE-OFF DISTANCE

Conditions:

- Power lever both MAX
- Flaps UP or APP
- Runway dry, paved, level
- Nose wheel lift-off @ V_R
- Airspeed for initial climb @ V_{50}

The following factors are to be applied to the computed take-off distance for the noted condition:

- Headwind: Decrease by 10% for each 14 kt (7.2 m/s) headwind.
- Tailwind: Increase by 10% for each 3 kt (1.5 m/s) tailwind.
- Grass runway, dry, 5 cm (2 in) long: Increase the ground roll by 10%.
- Grass runway, dry, 5 cm (2 in) to 10 cm (3.9 in) long: Increase the ground roll by 15%.
- Grass runway, dry, 25 cm (9.8 in) long: Increase the ground roll by 25%.
- Grass runway, longer than 25 cm (9.8 in): A take-off should not be attempt.
- Grass runway, wet: Increase the dry grass runway distance calculation by 10%.
- Soft ground: Increase the ground roll by 45% (in addition to the grass runway distance calculation, if applicable).
- Uphill slope: Increase the ground roll by 9% for each 1% (1 m per 100 m or 1 ft per 100 ft) slope.

If brakes are not held while applying power, distances apply where full power setting is complete.

Doc. No. 7.01.16-E	Rev. 4	02-Oct-2017	Page 5 - 9
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WARNING

For a safe take-off the available runway length must be at least equal to the take-off distance over a 50 ft (15 m) obstacle.

WARNING

Poor maintenance condition of the airplane, deviation from the given procedures, uneven runway, as well as unfavorable external factors (rain, unfavorable wind conditions, including cross-wind) will increase the take-off distance.

CAUTION

The factors in the above corrections are typical values. On wet ground or wet soft grass covered runways the take-off roll may become significantly longer than stated above. In any case the pilot must allow for the condition of the runway to ensure a safe take-off.

The above corrections for runway slope should be used with caution since published runway slope data is usually the net slope from one end of the runway to the other. Runways may have positions at their length at greater or lesser slopes than published slope, lengthening (or shortening) the take-off roll estimated with these tables.

NOTE

The effect of 50% of the headwind component and 150% of the tailwind component is already incorporated in the head- and tailwind factors.

Page 5 - 10	Rev. 4 02-Oct-2017	Doc. No. 7.01.16-E
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Take-Off Distance - Normal Procedure - 1900 kg / 4189 lb

Weight: 1900 kg / 4189 lb

Flaps: UP

 V_R : 76 KIAS

Power: MAX

 V_{50} : 83 KIAS

Runway: dry, paved, level

Press. Alt. [ft] / [m]	Distance [m]	Outside Air Temperature - [°C] / [°F]						ISA
		0 / 32	10 / 50	20 / 68	30 / 86	40 / 104	50 / 122	
SL	Ground Roll	370	390	410	450	520	640	400
	15 m / 50 ft	670	710	730	800	960	1210	716
1000 305	Ground Roll	390	410	440	480	570	690	417
	15 m / 50 ft	710	740	780	860	1060	1310	743
2000 610	Ground Roll	420	440	470	510	620	750	435
	15 m / 50 ft	740	770	820	920	1150	1420	773
3000 914	Ground Roll	440	460	490	550	670	810	456
	15 m / 50 ft	770	810	870	990	1250	1550	803
4000 1219	Ground Roll	460	490	530	600	730	880	477
	15 m / 50 ft	810	850	920	1080	1350	1670	838
5000 1524	Ground Roll	490	520	560	650	790		500
	15 m / 50 ft	850	900	990	1180	1470		874
6000 1829	Ground Roll	520	550	600	710	860		523
	15 m / 50 ft	900	950	1050	1280	1600		910
7000 2134	Ground Roll	550	590	640	780	930		549
	15 m / 50 ft	950	1010	1130	1400	1740		951
8000 2438	Ground Roll	580	620	690	840	1010		577
	15 m / 50 ft	1000	1080	1210	1520	1880		995
9000 2743	Ground Roll	620	670	760	920	1110		606
	15 m / 50 ft	1060	1150	1330	1680	2090		1040
10000 3048	Ground Roll	660	720	840	1030			638
	15 m / 50 ft	1140	1250	1500	1910			1094

For the distance in [ft] divide by 0.3048 or multiply by 3.28.

5.3.7 CLIMB PERFORMANCE (ALL ENGINES OPERATING)

Conditions:

- Power lever both 92%
- Flaps UP or APP
- Landing gear retracted
- Airspeed V_Y

The climb performance tables show the rate of climb. The gradient of climb can be calculated using the following formula:

$$\text{Gradient [\%]} = \frac{ROC [fpm]}{TAS [KTAS]} \cdot 0.98$$

NOTE

Rate of climb at MTOM (1900 kg / 4189 lb) with a power setting of 100% at MSL and ISA conditions:

- 1337 ft/min (6.8 m/s) with flaps UP
- 1267 ft/min (6.4 m/s) with flaps APP

NOTE

If MÄM 42-678 is installed, the rate of climb at MTOM (1999 kg / 4407 lb) with a power setting of 100% at MSL and ISA conditions:

- 1243 ft/min (6.3 m/s) with flaps UP
- 1183 ft/min (6.0 m/s) with flaps APP

All Engines Operating Climb - Flaps UP

Flaps: UP

Power: 92%

V_Y : 92 KIAS above 1900 kg (4189 lb)
90 KIAS up to 1900 kg (4189 lb)

Gear: retracted

Weight [kg] / [lb]	Press. Alt. [ft]	Press. Alt. [m]	Rate of Climb - [ft/min]								
			Outside Air Temperature - [°C] / [°F]								ISA
			-20 -4	-10 14	0 32	10 50	20 68	30 86	40 104	50 122	
1999 / 4407	SL		1120	1120	1120	1110	1110	1100	1040	880	1114
	2000	610	1120	1110	1110	1100	1090	1090	970	820	1103
	4000	1219	1110	1100	1090	1090	1080	1050	900	760	1092
	6000	1829	1090	1090	1080	1070	1070	990	840		1081
	8000	2438	1080	1070	1060	1050	1040	930	780		1069
	10000	3048	1060	1050	1040	1040	990	820			1052
	12000	3658	1040	1030	1020	1020	850	680			1033
	14000	4267	1020	1020	960	830	660	520			1021
	16000	4877	1010	940	820	680	540				1007
	18000	5486	890	800	700	560	410				895
1900 / 4189	SL		1210	1210	1200	1200	1200	1190	1130	960	1203
	2000	610	1200	1200	1200	1190	1180	1180	1050	890	1193
	4000	1219	1200	1190	1180	1170	1170	1140	98	830	1181
	6000	1829	1180	1170	1170	1160	1150	1080	920		1169
	8000	2438	1170	1160	1150	1150	1130	1010	860		1158
	10000	3048	1150	1140	1130	1130	1080	900			1144
	12000	3658	1130	1120	1120	1110	930	750			1124
	14000	4267	1110	1110	1050	920	740	590			1113
	16000	4877	1100	1030	910	760	610				1102
	18000	5486	980	890	780	630	480				986

5.3.8 ONE ENGINE INOPERATIVE CLIMB PERFORMANCE

Conditions:

- Remaining engine 92% load
- Dead engine feathered and secured
- Flaps UP
- Landing gear retracted
- Airspeed $V_{YSE} = 85$ KIAS
- Sideslip one ball out, max. 5° bank

NOTE

With respect to handling and performance, the left-hand engine (pilots view) is considered the "critical" engine.

The climb performance tables show the rate of climb. The gradient of climb can be calculated using the following formula:

$$\text{Gradient } [\%] = \frac{ROC [fpm]}{TAS [KTAS]} \cdot 0.98$$

One Engine Inoperative Climb

Flaps: UP

Power: feathered / 92%

V_{YSE}: 85 KIAS

Gear: retracted

Weight [kg] / [lb]	Press. Alt. [ft]	Press. Alt. [m]	Rate of Climb - [ft/min]								
			Outside Air Temperature - [°C] / [°F]								ISA
			-20 -4	-10 14	0 32	10 50	20 68	30 86	40 104	50 122	
1999 / 4407	SL		270	255	245	235	225	210	185	120	230
	2000	610	245	235	220	210	200	190	140	80	212
	4000	1219	225	210	200	185	175	160	95	40	193
	6000	1829	200	185	175	160	150	120	55		170
	8000	2438	175	160	145	130	120	75	15		147
	10000	3048	145	130	115	100	80	10			123
	12000	3658	115	95	85	70	0	-70			97
	14000	4267	85	70	35	-30	-105	-160			75
	16000	4877	55	10	-50	-120	-180				50
	18000	5486	-25	-75	-135	-195	-255				-19
1900 / 4189	SL		305	295	285	270	260	250	225	155	269
	2000	610	285	270	260	250	240	225	175	110	250
	4000	1219	260	250	235	225	210	195	130	70	231
	6000	1829	235	225	210	195	185	155	90		208
	8000	2438	210	195	180	165	155	110	45		184
	10000	3048	180	165	150	140	115	40			160
	12000	3658	150	135	120	110	30	-45			134
	14000	4267	120	105	70	0	-75	-135			111
	16000	4877	90	45	-20	-90	-155				86
	18000	5486	10	-45	-105	-170	-235				14

5.3.12 GO-AROUND CLIMB PERFORMANCE

Conditions:

- Power lever both MAX
- Flaps LDG
- Landing gear extended
- Airspeed:
 - Up to 1900 kg (4189 lb) $V_{REF} = 84$ KIAS
 - Above 1900 kg (4189 lb) $V_{REF} = 86$ KIAS

The climb performance charts show the rate of climb. The gradient and angle of climb can be calculated using the following formula:

$$Gradient [\%] = \frac{ROC [fpm]}{TAS [KTAS]} \cdot 0.98$$

NOTE

The angles of climb at MSL and ISA condition are:

4.7° for Maximum Take-Off Mass (1900 kg / 4189 lb)

5.1° for Maximum Landing Mass (1805 kg / 3979 lb)

If MÄM 42-678 is carried out:

3.9° for Maximum Take-Off Mass (1999 kg / 4407 lb)

Go-Around Climb Performance

Flaps: LDG

Power: MAX

V_{REF}: 86 KIAS above 1900 kg (4189 lb)

Gear: extended

84 KIAS up to 1900 kg (4189 lb)

Weight [kg] / [lb]	Press. Alt. [ft]	Press. Alt. [m]	Rate of Climb - [ft/min]								
			Outside Air Temperature - [°C] / [°F]								ISA
			-20 -4	-10 14	0 32	10 50	20 68	30 86	40 104	50 122	
1999 / 4407	SL		635	620	600	585	570	505	375	240	580
	2000	610	605	585	570	550	515	425	280	155	552
	4000	1219	570	550	530	510	450	340	200	80	517
	6000	1829	530	505	485	455	380	250	120		480
	8000	2438	485	460	440	400	310	170	45		443
	10000	3048	440	415	380	310	190	40			405
1900 / 4189	SL		735	715	700	685	670	605	470	325	678
	2000	610	700	685	665	650	620	525	375	240	652
	4000	1219	670	650	635	615	555	440	290	160	622
	6000	1829	635	610	590	560	485	345	210		585
	8000	2438	590	565	545	505	410	265	135		548
	10000	3048	545	520	485	415	290	135			509
1805 / 3979	SL		794	777	760	744	728	659	518	366	735
	2000	610	761	744	726	710	675	578	420	276	708
	4000	1219	727	709	693	671	611	488	330	193	677
	6000	1829	693	670	647	614	536	390	244		640
	8000	2438	647	623	600	557	462	304	165		602
	10000	3048	599	574	539	465	333	169			562

5.3.11 LANDING DISTANCES

Conditions:

- Power lever both IDLE
- Flaps LDG, APP or UP
- Runway dry, paved, level
- Approach speed V_{REF}

The following factors are to be applied to the computed landing distance for the noted condition:

- Headwind: Decrease by 10% for each 14 kt (7.2 m/s) headwind.
- Tailwind: Increase by 10% for each 3 kt (1.5 m/s) tailwind.
- Paved runway, wet: Increase by 15%.
- Grass runway, dry, 5 cm (2 in) long: Increase the ground roll by 10%.
- Grass runway, dry, 5 cm (2 in) to 10 cm (3.9 in) long: Increase the ground roll by 15%.
- Grass runway, dry, longer than 10 cm (3.9 in): Increase the ground roll at least by 25%.
- Grass runway, wet or soft runway: Increase the ground roll by 10%.
- Downhill slope: Increase the ground roll by 9% for each 1% (1 m per 100 m or 1 ft per 100 ft) of slope.

WARNING

For a safe landing the available runway length must be at least equal to the landing distance over a 50 ft (15 m) obstacle.

WARNING

Poor maintenance condition of the airplane, deviation from the given procedures, uneven runway, as well as unfavorable external factors (rain, unfavorable wind conditions, including cross-wind) will increase the landing distance.

CAUTION

The factors in the above corrections are typical values. On wet ground or wet soft grass covered runways the landing distance may become significantly longer than stated above. In any case the pilot must allow for the condition of the runway to ensure a safe landing.

The above corrections for runway slope should be used with caution since published runway slope data is usually the net slope from one end of the runway to the other. Runways may have positions at their length at greater or lesser slopes than published slope, lengthening (or shortening) the landing roll estimated with these tables.

NOTE

The effect of 50% of the headwind component and 150% of the tailwind component is already incorporated in the head- and tailwind factors.

Page 5 - 32	Rev. 4 02-Oct-2017	Doc. No. 7.01.16-E
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Landing Distance - Flaps LDG - 1900 kg / 4189 lb								
Weight:		1900 kg / 4189 lb			Flaps: LDG			
V _{REF} :		84 KIAS			Power: IDLE			
Runway: dry, paved, level								
Press. Alt. [ft] / [m]	Distance [m]	Outside Air Temperature - [°C] / [°F]						ISA
		0 / 32	10 / 50	20 / 68	30 / 86	40 / 104	50 / 122	
SL	Ground Roll	360	370	380	390	430	480	372
	15 m / 50 ft	600	620	630	650	700	780	620
1000 305	Ground Roll	370	380	390	410	450	500	381
	15 m / 50 ft	620	630	650	670	740	820	635
2000 610	Ground Roll	380	390	410	420	470	530	392
	15 m / 50 ft	630	650	670	690	770	860	652
3000 914	Ground Roll	400	410	420	440	500	560	405
	15 m / 50 ft	650	670	690	720	810	910	668
4000 1219	Ground Roll	410	420	440	460	520	590	415
	15 m / 50 ft	670	700	720	760	850	950	685
5000 1524	Ground Roll	420	440	450	490	550		428
	15 m / 50 ft	700	720	740	800	900		704
6000 1829	Ground Roll	440	450	470	520	580		442
	15 m / 50 ft	720	740	770	840	940		722
7000 2134	Ground Roll	460	480	490	550	620		459
	15 m / 50 ft	750	780	800	890	1000		751
8000 2438	Ground Roll	490	510	530	600	670		488
	15 m / 50 ft	790	820	850	960	1070		788
9000 2743	Ground Roll	530	550	580	660	740		523
	15 m / 50 ft	840	870	920	1030	1160		832
10000 3048	Ground Roll	580	590	640	730			562
	15 m / 50 ft	900	930	1000	1120			884
For the distance in [ft] divide by 0.3048 or multiply by 3.28.								