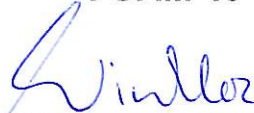



**SUPPLEMENT O2**  
**TO THE AIRPLANE FLIGHT MANUAL DA 40 F**  
**INTENTIONAL SPIN**  
**DA 40 F**

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This Flight Manual has been verified for EASA by the Austrian Civil Aviation Authority Austro Control (ACG) as Primary Certification Authority (PCA) in accordance with the valid Certification Procedures and approved by EASA with approval no. 02531.

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**0.1 RECORD OF REVISIONS**

Rev. No.	Reason	Chapter	Page(s)	Date of Revision	EASA Approval No.	ACG Verification	Date Inserted	Signature

## 0.2 LIST OF EFFECTIVE PAGES

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## **1. GENERAL**

### **1.1 INTRODUCTION**

This Supplement supplies the information necessary for the operation of the airplane when an Intentional Spin maneuver is performed. The information contained within this Supplement is to be used in conjunction with the complete AFM.

#### **NOTE**

This Supplement can only become effective if certain other design change advisories (modifications) are either incorporated or not incorporated in the DA 40 F. Refer to Section 2.16.9 of this Supplement.

This Supplement to the "Airplane Flight Manual DA 40 F" is a permanent part of the AFM and must remain in the AFM at all times when the airplane is certified to perform an Intentional Spin maneuver.

#### **CAUTION**

It is strongly recommended to use a personal parachute for intentional spinning. Refer to Section 3.7.4 for bailing out procedure.

#### **NOTE**

The following type of personal parachute has been demonstrated as suitable for use in the DA 40 F:

Thinback T104 complying with TSO-C23.

## **2. OPERATING LIMITATIONS**

### **2.7 MASS (WEIGHT)**

For intentional spinning:

#### **NOTE**

Operation is limited to the Utility Category. No baggage is allowed in the airplane.

Maximum take-off mass (Utility Category)	:	980 kg	2161 lb
Maximum load in baggage compartment	:	0 kg	0 lb
Minimum flight mass	:	840 kg	1852 lb



## **2.8 CENTER OF GRAVITY**

### **WARNING**

The position of the center of gravity (CG) is essential for the behavior of the airplane during an intentional spin maneuver. Exceeding the CG limitations reduces the controllability and stability of the airplane.

#### Center of gravity limitations

The center of gravity (CG) for a flight, when an intentional spin is planned, must lie between the following limits:

##### *Most forward CG:*

2.45 m (96.4 in) aft of DP

##### *Most rearward CG:*

- a) Standard Tank : 2.50 m (98.4 in) aft of DP
- b) Long Range Tank : must not be installed

Refer to Section 6.4 of this Supplement for a graphic illustration of the CG limitations.

## **2.9 APPROVED MANEUVERS**

### *b) Utility Category:*

- 1) All normal flight maneuvers;
- 2) stalling (with the exception of dynamic stalling);
- 3) lazy eights, chandelles, as well as steep turns and similar maneuvers, in which an angle of bank of not more than 90° is attained; and
- 4) intentional spin up to 6 turns.

### **CAUTION**

Aerobatics and flight maneuvers with more than 90° of bank are not permitted in the Utility Category.

### **CAUTION**

The accuracy of the attitude gyro (artificial horizon) and the directional gyro is affected by the maneuvers approved under items 3 and 4 if the bank angle exceeds 60°. Such maneuvers may therefore only be flown when the above mentioned instruments are not required for the present kind of operation.

## **2.13 KINDS OF OPERATION**

Minimum operational equipment (serviceable)

### **NOTE**

National regulations may require an accelerometer (g-meter)  
and/or a personal parachute for intentional spinning.

## **2.14 FUEL**

### **WARNING**

The wing mass distribution is essential for the behavior of the airplane during an intentional spin maneuver. Exceeding the fuel limitations reduces the controllability and stability of the airplane.

Additional fuel quantity limitations for an intentional spin maneuver

#### *a) Standard Tank:*

Total fuel quantity : 2 x 10 US gal (approx. 38 liters)

Max. permissible difference  
between right and left tank : 3 US gal (approx. 11.3 liters)

#### *b) Long Range Tank:*

Must not be installed.

## **2.15 LIMITATION PLACARDS**

On the Instrument panel:

This airplane may only be operated in accordance with the Airplane Flight Manual. It can be operated in the "Normal" and "Utility" categories in non-icing conditions. Provided that national operational requirements are met and the appropriate equipment is installed, this airplane is approved for the following kinds of operation: day VFR, night VFR and IFR. All aerobatic maneuvers except spinning are prohibited. For further operational limitations refer to the Airplane Flight Manual.

No smoking.

Aerobatic manoeuvres are limited to spinning up to 6 turns. Maximum entry altitude is 12,000 ft. Recommended entry speeds are:

50 KIAS (980 kg/2161 lb)  
48 KIAS (900 kg/1984 lb)  
46 KIAS (840 kg/1852 lb)

Recovery from spinning:

- 1) Throttle.....IDLE
- 2) Ailerons.....Neutral
- 3) Rudder.....Apply full opposite
- 4) Elevator.....Push fully forward
- 5) Rotation  
has stopped...Rudder neutral
- 6) Elevator.....Pull slightly

## **2.16 OTHER LIMITATIONS**

### **2.16.9 OTHER LIMITATIONS FOR INTENTIONAL SPIN MANEUVERS**

In addition to the limitations shown on the previous pages of Chapter 2 of this Supplement the following limitations must be complied with when intentional spin maneuvers are conducted:

#### Modifications which **MUST** be incorporated

Intentional Spin (OÄM 40-201)

mt-Propeller (OÄM 40-203)

Canopy Jettison System (OÄM-40-232)

#### Modifications which **MUST NOT** be incorporated

Long Range Tanks (OÄM 40-071)

Wheel Fairings (OÄM 40-105, OÄM 40-106, OÄM 40-165, OÄM 40-166)

#### Category restriction

Operation in the Utility Category only (max. 2 persons)

#### Operational restrictions

Flaps retracted

Max. 6 turns spinning

Spin entry in accordance with the procedure given in Section 4A.4.20 of this Supplement.

### **3. EMERGENCY PROCEDURES**

#### **3.6 RECOVERY FROM AN UNINTENTIONAL SPIN**

Spin recovery information given in the main part of the AFM remains valid.

For intentional spins and spin recovery refer to Section 4.A, NORMAL OPERATING PROCEDURES of this Supplement.

### **3.7.4 CANOPY JETTISON**

#### **Bailing out**

#### **WARNING**

For bailing out an approved parachute must be used.

#### **CAUTION**

It is strongly recommended to use a personal parachute for intentional spinning.

#### **CAUTION**

Steps 1 to 5 must be carried out in the described order.

1. Red jettison lever (front) . . . . . pull powerfully to disconnect  
the canopy from the canopy  
hinge
2. Canopy . . . . . push up with both hands

#### **WARNING**

If the canopy must be jettisoned because of an emergency situation, the regular canopy lever must remain locked.

3. Seat Belt . . . . . release, move clear of body
4. Headset . . . . . disconnect, move clear of  
body
5. Exit the airplane

#### **CAUTION**

After exiting the airplane with a personal parachute, wait until completely clear of airplane before pulling the rip cord.

## **4A. NORMAL OPERATING PROCEDURES**

### **4A.4.20 INTENTIONAL SPIN**

#### **NOTE**

An intentional spin maneuver constitutes a NORMAL OPERATING PROCEDURE if the airplane is operated within the limitations prescribed in Chapter 2 of this Supplement.

#### **Flight preparation**

#### **NOTE**

If the regulations under which the airplane is operated requires the pilots to carry personal parachutes for a spin maneuver, the pilots must make themselves familiar with the use of the personal parachute, the Canopy Jettison System and the Emergency Procedures.



Additional pre-flight checks:**NOTE**

For a flight with an intentional spin maneuver the Normal Operating procedures of the AFM apply. However, additional pre-flight checks must be performed.

- a) Wheel fairings . . . . . must NOT be installed
- b) Loose objects in cabin (e.g. pencils, maps) . stowed and secured
- c) Airplane equipment (e.g. unused seat belts) secured
- d) Seating position . . . . . check for suitable position,  
pilot must reach controls  
easily
- e) Rudder pedal adjustment . . . . . check seat position, pilot  
must achieve maximum  
travel of the pedals
- f) Flight controls . . . . . check for full travel and  
movement
- g) Pilots seat belts . . . . . properly tightened and  
fastened
- h) Canopy Jettison System . . . . . operative

Perform the following procedures according to the main part of the AFM:

- Starting the Engine
- Before Taxiing
- Taxiing
- Before Take-Off
- Take-Off
- Climb

Intentional Spin

**WARNING**

To perform an intentional spin maneuver the pilot must have received an instruction in both spin entry and spin recovery procedures from a qualified instructor who is familiar with the spin characteristics of the DA 40 F.

**CAUTION**

Before entering the intentional spin maneuver climb to a safe height above ground. When the intentional spin maneuver is completed the remaining height must be 4000 ft above ground or more. Use the following table to calculate a safe entry altitude. Due to differences in pilot skills and weather conditions, the altitude loss may differ considerably.

Minimum Spin entry altitudes above ground and altitude loss**CAUTION**

Intentional spins are prohibited above altitudes of 12000 ft.

<b>Number of spins</b>	<b>Altitude loss [ft]</b>	<b><u>Minimum</u> spin entry altitude [ft]</b>
<b>1</b>	<b>1500</b>	<b>5500</b>
<b>2</b>	<b>1800</b>	<b>5800</b>
<b>3</b>	<b>2100</b>	<b>6100</b>
<b>4</b>	<b>2400</b>	<b>6400</b>
<b>5</b>	<b>2700</b>	<b>6700</b>
<b>6</b>	<b>3000</b>	<b>7000</b>

Spin characteristics:*Left spins:*

- spin is fully stabilized after 2 to 2.5 turns
- spin is deep, fast (approx. 1.5 sec. per turn) and smooth; mildly oscillating during first 2 turns

*Right spins:*

- with forward CG: the airplane is reluctant to enter right hand spin, a slightly higher airspeed deceleration rate may be necessary
- first turn is slow, second turn is very fast and steep
- after 2 turns the spin is stabilized at a steep and fast rate (approx. 1.5 sec. per turn)

Minor changes in spin characteristics and recovery are expected between 3 and 6 turns.  
For training purposes 1 to 3 turn spin maneuvers are recommended.

### NOTE

To maintain pilot's orientation spins should be performed with  
ground in sight and a clearly visible horizon line.

#### Spin entry procedure

- a) Loose objects in cabin (e.g. pencils, maps) . check stowed and secured
- b) Airplane equipment (e.g. unused seat belts) . check secured
- c) Pilot's seat belts . . . . . tight and fastened
- d) Fuel quantity . . . . . max. 10 US gal (37.8l) per side  
max. imbalance 3 US gal

### WARNING

Do not spin more than 6 turns. Otherwise the engine may stop  
due to fuel depletion.

### NOTE

Spins may induce a spurious transient LOW FUEL  
annunciation and associated aural warning.

- e) Flaps . . . . . check, retracted
- f) Throttle . . . . . not more than 1800 RPM

### NOTE

At forward CG locations it might be necessary to apply power  
up to 1800 RPM for spin entry.

- g) Ailerons . . . . . neutral
- h) Elevator trim for . . . . . 80 KIAS (980 kg / 2161 lb)  
77 KIAS (900 kg / 1984 lb)  
74 KIAS (840 kg / 1852 lb)

- i) Reduce airspeed ..... drop rate 2 to 3 kts. per sec.
- j) When airplane stalls ..... apply elevator fully up and  
full rudder in direction of  
desired spin

### CAUTION

If the airplane fails to enter a spin and starts to perform a nose down spiral (check for increasing airspeed and g-forces), recover promptly but smoothly from the dive.

- k) When airplane enters spin ..... hold the controls in this  
position
- l) Throttle ..... check IDLE
- m) Altimeter ..... monitor altitude

Spin recovery procedure

- a) Throttle ..... check IDLE
- b) Ailerons ..... check neutral
- c) Rudder ..... apply full opposite rudder to  
the direction of spin
- d) Elevator ..... Push stick briskly fully  
forward and hold
- e) When rotation has stopped ..... bring rudder to neutral  
position
- f) Elevator ..... pull slightly to recover  
smoothly from the dive

If spin recovery fails

- a) Rudder ..... full in direction of spin
- b) Elevator ..... fully up
- c) Wait until 1.5 turns are performed
- d) Perform the spin recovery procedure again

**4B. ABNORMAL OPERATING PROCEDURES**

No change.

**5. PERFORMANCE**

No change.

## **6. MASS AND BALANCE**

### **6.4 FLIGHT MASS AND CENTER OF GRAVITY**

#### **WARNING**

The position of the center of gravity (CG) is essential for the behavior of the airplane during an intentional spin maneuver. Exceeding the CG limitations reduces the controllability and stability of the airplane.

#### Center of gravity limitations

The center of gravity (CG) for an intentional spin must lie between the following limits:

#### *Most forward CG:*

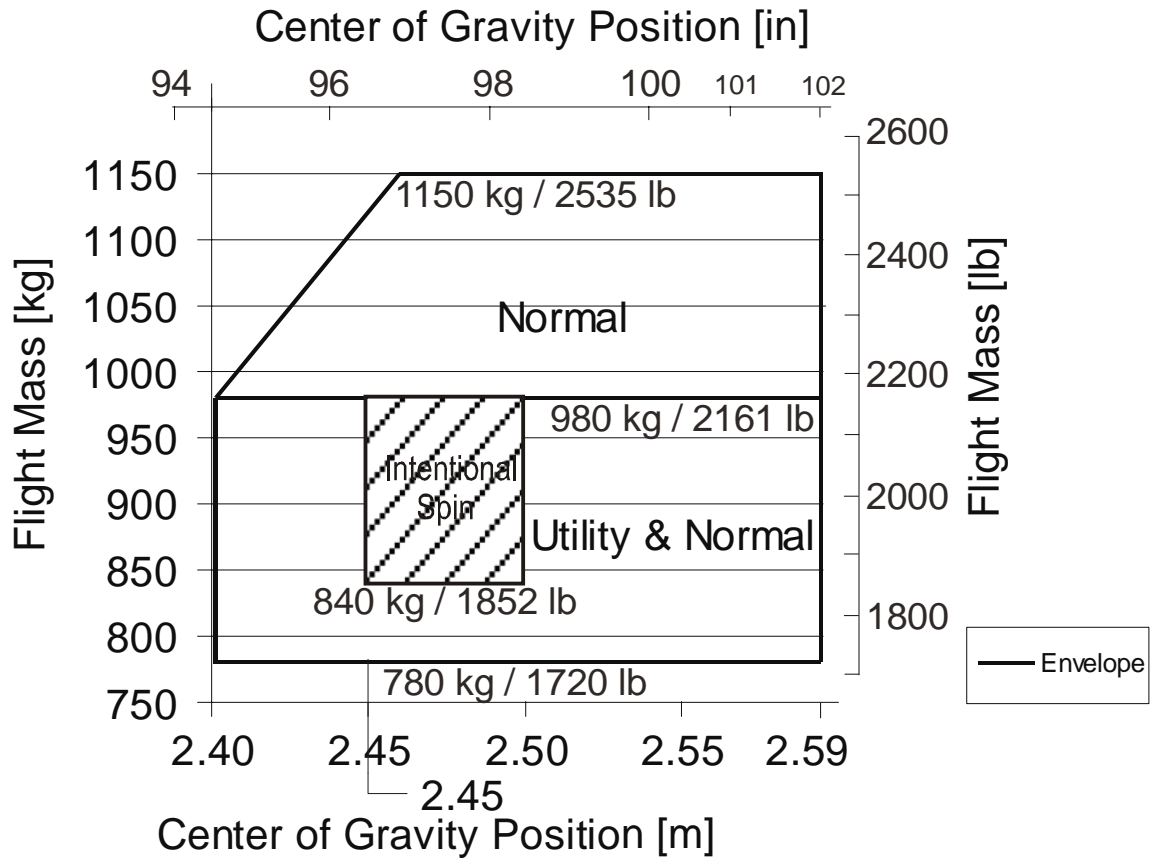
2.45 m (96.4 in) aft of DP

#### *Most rearward CG:*

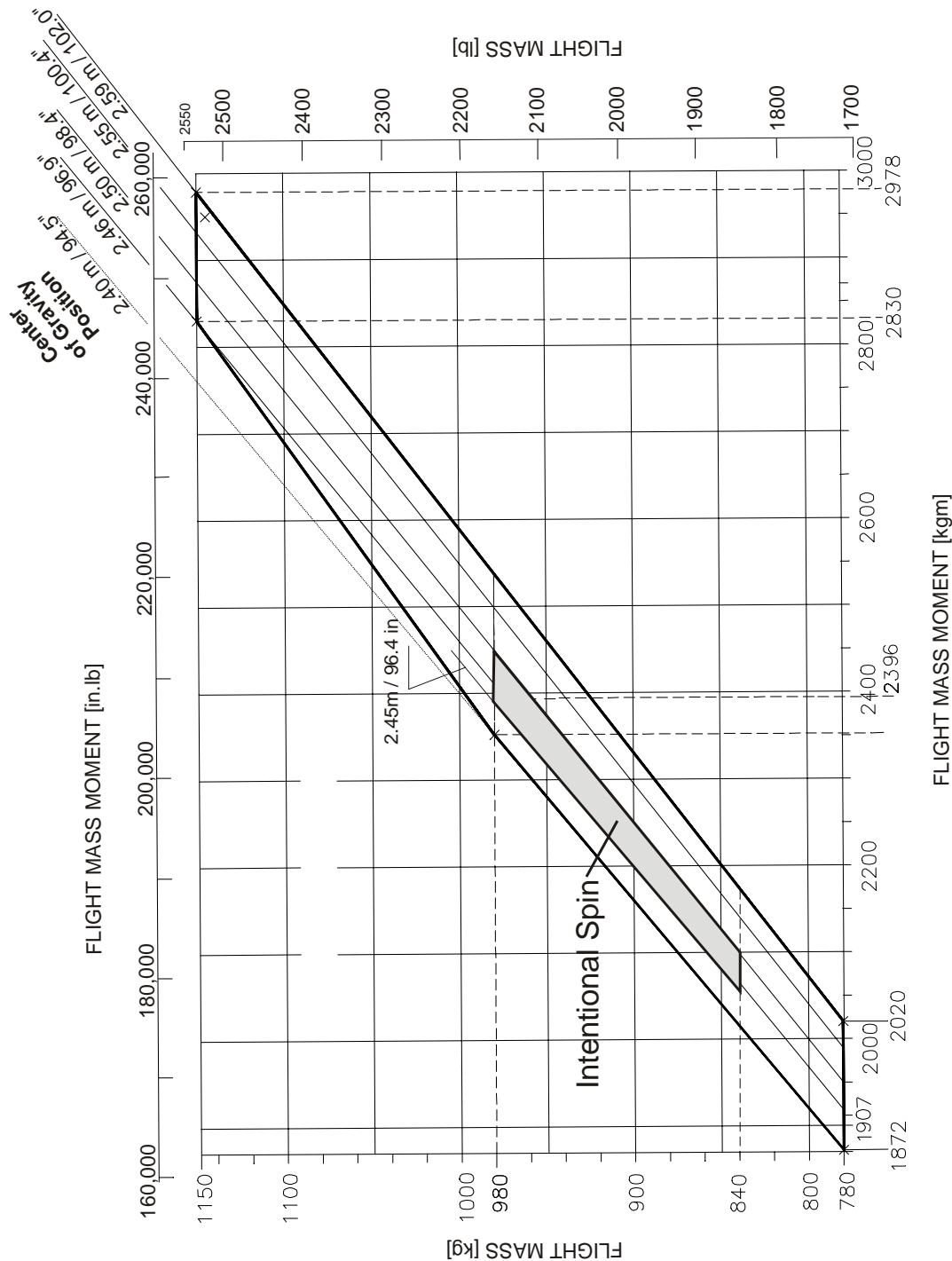
- a) Standard Tank : 2.50 m (98.4 in) aft of DP
- b) Long Range Tank : must not be installed



#### 6.4.4 PERMISSIBLE CENTER OF GRAVITY RANGE



6.4.5 PERMISSIBLE MOMENT RANGE



**7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS**

No change.

**8. AIRPLANE HANDLING, CARE AND MAINTENANCE**

No change.

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