ENR 1.7 ALTIMETER SETTING PROCEDURES

1. Introduction

1.1 Applicable Regulations

The following documents are applicable for altimeter setting in the Swiss FIR/UIR:

- **ICAO Annex 2, Rules of the Air:** no differences.
- **ICAO Doc 8168-OPS/611, Aircraft Operations:** no differences.
- **Implementing Regulation (EU) 923/2012** (Standardised European Rules of the Air): no differences.

1.2 Definitions (references relate to ICAO LEXICON DOC 9110 Vol. II definitions)

When the following terms are used in the text of this chapter they have the following meanings:

Term	Meaning	ICAO Lexicon
Altitude:	The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.	A 96
Elevation:	The vertical distance of a level, a point or an object affixed to the surface of the earth, measured from sea level.	E 6
Flight level:	A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2 mb, and is separated from other such surfaces by specific pressure intervals.	F 22
Height:	The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.	H 6
Level:	A generic term relating to the VER PSN of an aircraft in FLT and meaning variously, HGT, ALT or FLT FL.	L 8
Transition altitude:	The altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes.	T 26
Transition layer:	The airspace between the transition altitude and the transition level.	T 27
Transition level:	The lowest flight level available for use above the transition altitude.	T 28

1.3 Terrain clearance

The lowest usable FLs for operations in controlled airspace taking into account terrain clearance will be determined by the appropriate ATC units.

1.4 Transition altitude

The TA for the APs of Bern-Belp, Genève, Les Eplatures and Zurich are indicated in AD 2.17 and on the IACs.

1.5 Transition level

When the transition level cannot be transmitted on the ATIS, it will be provided to the pilots in the approach clearance.

2. Basic altimeter setting procedures

2.1 Altimeter setting procedure

The VER PSN of ACFT when **at or below** the TA shall be expressed in **terms of ALT**, whereas PSN **at or above** the TRL shall be expressed in terms of FLs.

While PSG through the transition layer, VER PSN shall be expressed in terms of FLs when ascending and in terms of ALT when descending.

2.2 QNH

The QNH will be transmitted unasked to arriving and departing ACFT.

2.3 En route

The VER PSN of ACFT during ENR FLT shall be expressed in terms of FLs compatible with the indications in ENR 3.1.3, ENR 3.2.1, ENR 3.3.1 and ENR 3.5.1.

2.4 QFE

A QFE setting will be transmitted O/R only. Reference points are as follows:

AP	Bern-Belp	AP ELEV:	LSZB AD 2.2
AP	Genève	THR 22:	LSGG AD 2.12
		THR 04:	LSGG AD 2.12
AP	Zurich	THR 14:	LSZH AD 2.12
		THR 16:	LSZH AD 2.12
		THR 10:	LSZH AD 2.12
		THR 28:	LSZH AD 2.12

2.5 Missed approach

The procedures in ENR 1.7.2.1 shall apply in the event of a missed APCH.

2.6 Flight planning

The true ALT of the lowest FL usable on AWYs A1 and A9 will be determined in time intervals of three HR by the MET service. It may be obtained from the competent ATC unit O/R.

The MET information required for FLT planning may be obtained from the MET office at Geneva for the Geneva area or at Zurich for the Zurich and Ticino area.

3. Description of altimeter setting regions

Switzerland is divided into three altimeter setting regions, which are:

a. Zurich altimeter setting region.
b. Geneva altimeter setting region.
c. Ticino altimeter setting region.

The atmospheric pressure for the Ticino region will be transmitted O/R by the FIC or MET centres at Geneva and Zurich. For flights conducted in accordance with VFR, the QNH values for the respective altimeter setting region shall be used.

QNH and QFE values will be transmitted in whole millibars only and rounded down to the nearest whole millibar.
FL zero is located at the standard atmospheric pressure level of 1013.2 millibar (29.92 in.) at MSL. Consecutive FLs are separated by a pressure interval corresponding to 500 ft (152.4 m) in the standard atmosphere.

4. Procedures applicable to operators (including pilots)

4.1 Altimeter test

According to the ICAO documents mentioned in ENR 1.7.1.1, the pilot-in-command or another crew member charged with the responsibility has the duty to carry out a test of the altimeter(s) prior to the commencement of a FLT, in order to ensure that its indications are correct.

4.2 QNH setting

When it is intended to use a QNH setting for the FLT, set the altimeter for the test to the QNH setting of the AD concerned. Then, particularly if the PWR plant is not running, the altimeter should be tapped lightly before reading. A SVCBL altimeter will indicate the real ELEV when so set.

4.3 QFE setting

When a QFE setting is used, the same procedure as in ENR 1.7.4.2 should be applied. When set, however, the altimeter will indicate the HGT in relation to the QFE reference point.

5. Cruising levels

5.1 IFR FLTs

a. outside of controlled airsace:
An IFR flight operating in level cruising flight outside of controlled airspace shall be flown at a cruising level appropriate to its track as specified in the table of cruising levels in ENR 1.7 5.3 except when otherwise specified by the competent authority for flight at or below 900 m (3000 ft) above mean sea level.

b. within controlled airspace:
An IFR flight operating in cruising flight in controlled airspace shall be flown at a cruising level, or, if authorised by ATS unit to employ cruise climb techniques, between two levels or above a level, selected from the table of cruising levels in ENR 1.7.5.3 except that the correlation of levels to track prescribed therein shall not apply whenever otherwise indicated in air traffic control clearances or specified by the competent authority in aeronautical information publications.

5.2 VFR FLTs

Except where otherwise indicated in air traffic control clearances or specified by the competent authority, VFR flights in level cruising flight when operated above 900 m (3000 ft) from the ground or water shall be conducted at a cruising level appropriate to the track as specified in the table of cruising levels in ENR 1.7.5.3.

5.3 Table of cruising levels

Implementing Regulation (EU) 923/2012 (Standardised European Rules of the Air), Appendix 3 applies up to FL195. In accordance with Art. 5005 letter g and Art. 5020 letter b, the table is adapted above FL195 to align with the orientation of the major traffic flows.

VFR FLTs at and above FL 200 require prior co-ordination (REF ENR 1.4.2).

Magnetic track

000°-179°						180°- 359°					
IFR flight			VFR flight			IFR flight			VFR flight		
Flight level	Altitude		Flight level	Altitude		Flight level	Altitude		Flight level	Altitude	
	Feet	Metres		Feet	Metres		Feet	Metres		Feet	Metres
				___	___				___	___	___
10	1 000	300	___	___	___	20	2 000	600	___	___	___
30	3 000	900	35	3 500	1 050	40	4 000	1 200	45	4 500	1 350
50	5 000	1 500	55	5 500	1 700	60	6 000	1 850	65	6 500	2 000
70	7 000	2 150	75	7 500	2 300	80	8 000	2 450	85	8 500	2 600
90	9 000	2 750	95	9 500	2 900	100	10 000	3 050	105	10 500	3 200
110	11 000	3 350	115	11 500	3 500	120	12 000	3 650	125	12 500	3 800
130	13 000	3 950	135	13 500	4 100	140	14 000	4 250	145	14 500	4 400
150	15 000	4 550	155	15 500	4 700	160	16 000	4 900	165	16 500	5 050
170	17 000	5 200	175	17 500	5 350	180	18 000	5 500	185	18 500	5 650
190	19 000	5 800	195	19 500	5 950						
090°-269°						270°-089°					
						200	20 000	6 100	205	20 500	6 250
210	21 000	6 400	215	21 500	6 550	220	22 000	6 700	225	22 500	6 850
230	23 000	7 000	235	23 500	7 150	240	24 000	7 300	245	24 500	7 450
250	25 000	7 600	255	25 500	7 750	260	26 000	7 900	265	26 500	8 100
270	27 000	8 250	275	27 500	8 400	280	28 000	8 550	285	28 500	8 700
290	29 000	8 850				300	30 000	9 150			
310	31 000	9 450				320	32 000	9 750			
330	33 000	10 050				340	34 000	10 350			
350	35 000	10 650				360	36 000	10 950			
370	37 000	11 300				380	38 000	11 600			
390	39 000	11 900				400	40 000	12 200			
410	41 000	12 500				430	43 000	13 100			
450	45 000	13 700				470	47 000	14 350			
490	49 000	14 950				510	51 000	15 550			
etc.	etc.	etc.				etc.	etc.	etc.			

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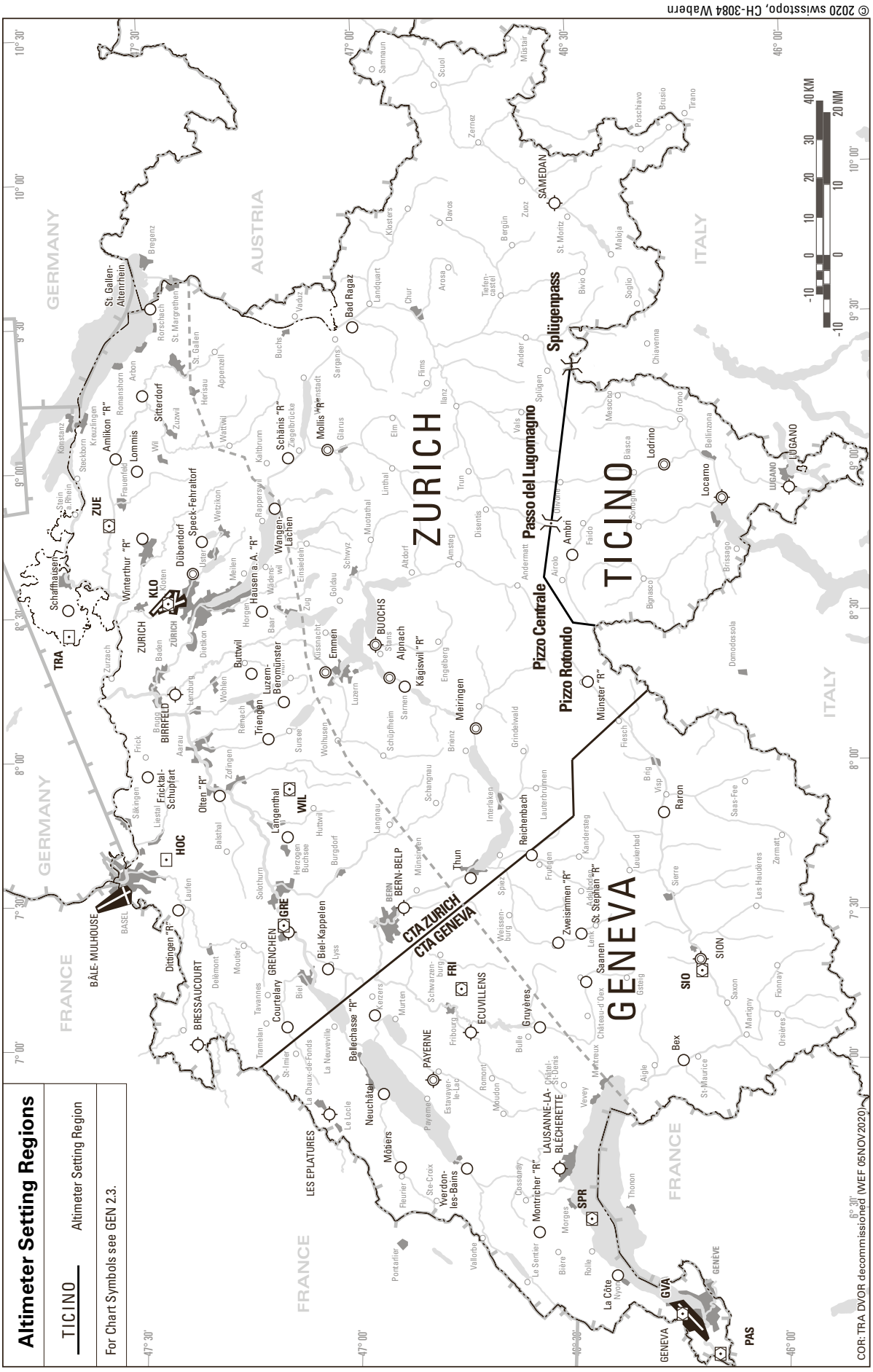
Figure 1. Altimeter Setting Regions


Altimeter Setting Regions
TICINO
Altimeter Setting Region
For Chart Symbols see GEN 2.3.
ZURICH
GENEVA
TICINO
GERMANY
FRANCE
AUSTRIA
ITALY
CTA ZURICH
CTA GENEVA
Passo del Lugomagno
Pizzo Centrale
Pizzo Rotondo
Splügenpass
BÂLE- MULHOUSE
ZURICH
GENEVA
LUGANO
SAMEDAN
BERN-BELP
Thun
Interlaken
Meiringen
Reichenbach
Raron
SION
Saanen
Zweisimmen "R"
St. Stephan "R"
Münster "R"
Ambri
Lodrino
Locarno
Bad Ragaz
Mollis "R"
Schänis "R"
Amlikon "R"
Sitterdorf
Dübendorf
Speck-Fehraltorf
Winterthur "R"
Wangen-Lachen
Hausen a.A. "R"
Buttwil
Luzern-Beromünster
Triengen
Emmen
Alpnach
Kägiswil "R"
BUOCHS
BIRRFELD
Fricktal-Schupfart
Olten "R"
Langenthal
WIL
HOC
GRE
GRENCHEN
Biel-Kappelen
Dittingen "R"
BRESSAUCOURT
Courtelary
Bellechasse "R"
PAYERNE
FRI
ECUVILLENS
Gruyères
Bex
SIO
Neuchâtel
Môtiers
LES EPLATURES
LAUSANNE-LA-BLÉCHERETTE
SPR
Montricher "R"
La Côte
GVA
PAS
St. Gallen-Altenrhein
TRA
Schaffhausen
ZUE
KLO
Splügen
Andermatt
Airolo
Faido
Biasca
Bellinzona
Chiavenna
Tirano
Brusio
Poschiavo
Scuol
Samnaun
Müstair
Zernez
Davos
Klosters
Arosa
Chur
Landquart
Flims
Ilanz
Elm
Linthal
Glarus
Sargans
Vaduz
Buchs
Appenzell
St. Gallen
Rorschach
St. Margrethen
Bregenz
Romanshorn
Arbon
Kreuzlingen
Konstanz
Stein a. Rhein
Steckborn
Frauenfeld
Wil
Zuzwil
Hemau
Wattwil
Uzwil
Wetzikon
Rapperswil
Kaltbrunn
Ziegelbrücke
Uetikon
Meilen
Horgen
Wädenswil
Einsiedeln
Zug
Goldau
Schwyz
Muotathal
Altdorf
Amsteg
Disentis
Trun
Vals
Andeer
Splügen
Mesocco
Grono
Soazza
Roveredo
Lumino
Giubiasco
Cadenazzo
Tenero
Gordola
Ascona
Brissago
Domodossola
Bignasco
Airolo
Fiesch
Brig
Visp
Saas-Fee
Zermatt
Les Haudères
Sierre
Lauterbad
Kandersteg
Lauterbrunnen
Grindelwald
Schangnau
Brienz
Engelberg
Sarnen
Schüpfheim
Luzern
Küssnacht
Wolhusen
Sursee
Reinach
Wohlen
Lenzburg
Baden
Brugg
Aarau
Frick
Säkingen
Liestal
Laufen
Balsthal
Zofingen
Solothurn
Herzogen Buchsee
Burgdorf
Huttwil
Langnau
Schangnau
Münsingen
Spiez
Weissenburg
Frutigen
Lauterbrunnen
Lauenen
Saanen
Gstaad
Château-d'Oex
Aigle
Bex
St-Maurice
Martigny
Saxon
Fully
Orsières
Fionnay
Les Haudères
Zermatt
Saas-Fee
Visp
Brig
Fiesch
Ulrichen
Oberwald
Andermatt
Disentis
Trun
Ilanz
Flims
Chur
Arosa
Davos
Klosters
Landquart
Bad Ragaz
Vaduz
Buchs
Sargans
Mollis
Glarus
Linthal
Elm
Wattwil
Uzwil
Wil
Zuzwil
Hemau
Appenzell
St. Gallen
Rorschach
St. Margrethen
Bregenz
Romanshorn
Arbon
Kreuzlingen
Konstanz
Stein a. Rhein
Steckborn
Frauenfeld
Amlikon "R"
Lommis
Sitterdorf
Dübendorf
Speck-Fehraltorf
Winterthur "R"
Wangen-Lachen
Hausen a.A. "R"
Schänis "R"
Ziegelbrücke
Uetikon
Meilen
Horgen
Wädenswil
Einsiedeln
Zug
Goldau
Schwyz
Muotathal
Altdorf
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Bellinzona
Chiavenna
Tirano
Brusio
Poschiavo
Scuol
Samnaun
Müstair
Zernez
Davos
Klosters
Arosa
Chur
Landquart
Flims
Ilanz
Elm
Linthal
Glarus
Sargans
Vaduz
Buchs
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