

**CIVIL AVIATION REGULATIONS**

**SURINAME**

**PART 16**

**UNITS OF MEASUREMENT  
TO BE USED IN  
AIR AND GROUND OPERATIONS**

**VERSION 1.0**

**DECEMBER 2010**



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## 16.1 APPLICABILITY

### 16.1.1 Applicability

These Regulations shall be applicable to all aspects of civil aviation air and ground operations within the Republic of Suriname and the airspace controlled by Suriname.

## 16.2 STANDARD APPLICATION OF UNITS OF MEASUREMENT

### 16.2.1 SI Units

16.2.1.1 The International System of Units (SI) developed and maintained by the General Conference of Weights and Measures (CGPM) shall, subject to the provisions of 16.3.2 and 16.3.3, be used as the standard system of units of measurement for all aspects of national and international civil aviation air and ground operations.

#### 16.2.1.2 Prefixes

The prefixes and symbols listed in Table 3-1 shall be used to form names and symbols of the decimal multiples and sub-multiples of SI units.

**Table 3-1. SI unit prefixes**

<i>Multiplication Factor</i>			<i>Prefix</i>	<i>Symbol</i>
1 000 000 000 000 000 000	=	10 <sup>18</sup>	exa	E
1 000 000 000 000 000	=	10 <sup>15</sup>	peta	P
1 000 000 000 000	=	10 <sup>12</sup>	tera	T
1 000 000 000	=	10 <sup>9</sup>	giga	G
1 000 000	=	10 <sup>6</sup>	mega	M
1 000	=	10 <sup>3</sup>	kilo	k
100	=	10 <sup>2</sup>	hecto	h
10	=	10 <sup>1</sup>	deca	da
0.1	=	10 <sup>-1</sup>	deci	d
0.01	=	10 <sup>-2</sup>	centi	c
0.001	=	10 <sup>-3</sup>	milli	m
0.000 001	=	10 <sup>-6</sup>	micro	μ
0.000 000 001	=	10 <sup>-9</sup>	nano	n
0.000 000 000 001	=	10 <sup>-12</sup>	pico	p
0.000 000 000 000 001	=	10 <sup>-15</sup>	femto	f
0.000 000 000 000 000 001	=	10 <sup>-18</sup>	atto	a

## 16.2.2 Non-SI Units

### 16.2.2.1 Non-SI units for permanent use with the SI

The non-SI units listed in Table 3-2 shall be used either in lieu of, or in addition to, SI units as primary units of measurement but only as specified in Table 3-4.

**Table 3-2. Non-SI units for use with the SI**

Specific quantities in Table 3-4 related to	Unit	Symbol	Definition (in terms of SI units)
mass	tonne	t	1 t = 10 <sup>3</sup> kg
plane angle	degree	°	1° = (π/180) rad
	minute	'	1' = (1/60)° = (π /10 800) rad
	second	"	1" = (1/60)' = (π /648 000) rad
temperature	degree Celsius	°C	1 unit °C = 1 unit K <sub>a</sub> )
time	minute	min	1 min = 60 s
	hour	h	1 h = 60 min = 3 600 s
	day	d	1 d = 24 h = 86 400 s
	week, month, year	-	
volume	litre	L	1 L = 1 dm <sup>3</sup> = 10 <sup>-3</sup> m <sup>3</sup>

### 16.3.2.2 Non-SI alternative permitted for temporary use with SI

The non-SI units listed in Table 3-3 shall be permitted for temporary use as alternate units of measurement but only for those specific quantities listed in Table 3-4.

**Table 3-3. Non-SI alternative units permitted for temporary use with the SI**

Specific quantities in Table 3-4 related to	Unit	Symbol	Definition (in terms of SI units)
distance (long)	nautical mile	NM	1 NM = 1 852 m
distance (vertical)*	foot	ft	1 ft = 0.304 8 m
speed	knot	kt	1 kt = 0.514 444 m/s

\* *altitude, elevation, height, vertical speed*

**16.2.3 Application of specific units**

16.2.3.1 The application of units of measurement for certain quantities used in civil aviation air and ground operations shall be in accordance with Table 3-4.

**Table 3-4. Standard application of specific units of measurement**

Ref. No. and Quantity		Primary unit (symbol)	Non-SI alternative unit (symbol)
<b>1. Direction / Space / Time</b>			
1.1	altitude	m	ft
1.2	area	m <sup>2</sup>	
1.3	distance (long) <sup>a)</sup>	km	NM
1.4	distance (short)	m	
1.5	elevation	m	ft
1.6	endurance	h and min	
1.7	height	m	ft
1.8	latitude	° ' "	
1.9	length	m	
1.10	longitude	° ' "	
1.11	plane angle (when required, decimal subdivisions of the degree shall be used)	°	
1.12	runway length	m	
1.13	runway visual range	m	
1.14	tank capacities (aircraft) <sup>b)</sup>	L	
1.15	time	s min h d week month year	
1.16	visibility <sup>c)</sup>	km	
1.17	volume	m <sup>3</sup>	
1.18	wind direction (wind directions other than for a landing and take-off shall be expressed in degrees true; for landing and take-off wind directions shall be expressed in degrees magnetic)	°	
<b>2. Mass related</b>			
2.1	air density	kg / m <sup>3</sup>	
2.2	area density	kg / m <sup>2</sup>	
2.3	cargo capacity	kg	
2.4	cargo density	kg / m <sup>3</sup>	
2.5	density (mass density)	kg / m <sup>3</sup>	
2.6	fuel capacity (gravimetric)	kg	
2.7	gas density	kg / m <sup>3</sup>	
2.8	gross mass or payload	kg t	
2.9	hoisting provisions	kg	
2.10	linear density	kg / m	

Ref. No. and Quantity	Primary unit (symbol)	Non-SI alternative unit (symbol)
2.11 liquid density	kg / m <sup>3</sup>	
2.12 mass	kg	
2.13 moment of inertia	kg · m <sup>2</sup>	
2.14 moment of momentum	kg · m <sup>2</sup> /s	
2.15 momentum	kg · m /s	
<b>3. Force related</b>		
3.1 air pressure (general)	kPa	
3.2 altimeter setting	hPa	
3.3 atmospheric pressure	hPa	
3.4 bending moment	kN · m	
3.5 force	N	
3.6 fuel supply pressure	kPa	
3.7 hydraulic pressure	kPa	
3.8 modulus of elasticity	MPa	
3.9 pressure	kPa	
3.10 stress	MPa	
3.11 surface tension	mN/m	
3.12 thrust	kN	
3.13 torque	N · m	
3.14 vacuum	Pa	
<b>4. Mechanics</b>		
4.1 airspeed d)	km/h	Kt
4.2 angular acceleration	rad/s <sup>2</sup>	
4.3 angular velocity	rad/s	
4.4 energy or work	J	
4.5 equivalent shaft power	kW	
4.6 frequency	Hz	
4.7 ground speed	km/h	Kt
4.8 impact	J/m <sup>2</sup>	
4.9 kinetic energy absorbed by brakes	MJ	
4.10 linear acceleration	/s <sup>2</sup>	
4.11 power	kW	
4.12 rate of trim	°/s	
4.13 shaft power	kW	
4.14 velocity	m/s	
4.15 vertical speed	m/s	
4.16 wind speed	km/h Kt	
<b>5. Flow</b>		
5.1 engine airflow	kg/s	
5.2 engine waterflow	kg/h	
5.3 fuel consumption (specific)		
piston engines	kg/(kW · h)	
turbo-shaft engines	kg/(kW · h)	
jet engines	kg/(kN · h)	

Ref. No. and Quantity	Primary unit (symbol)	Non-SI alternative unit (symbol)
5.4	fuel flow	kg/h
5.5	fuel tank filling rate (gravimetric)	kg/min
5.6	gas flow	kg/s
5.7	liquid flow (gravimetric)	g/s
5.8	liquid flow (volumetric)	L/s
5.9	mass flow	kg/s
5.10	oil consumption	
	gas turbine	kg/h
	piston engines (specific)	g/(kW · h)
5.11	oil flow	g/s
5.12	pump capacity	L/min
5.13	ventilation airflow	m <sup>3</sup> /min
5.14	viscosity (dynamic)	Pa · s
5.15	viscosity (kinematic)	m <sup>2</sup> /s
<b>6. Thermodynamics</b>		
6.1	coefficient of heat transfer	W/(m <sup>2</sup> · K)
6.2	heat flow per unit area	J/m <sup>2</sup>
6.3	heat flow rate	W
6.4	humidity (absolute)	g/kg
6.5	coefficient of linear expansion	°C <sup>-1</sup>
6.6	quantity of heat	J
6.7	temperature	°C
<b>7. Electricity and magnetism</b>		
7.1	capacitance	F
7.2	conductance	S
7.3	conductivity	S/m
7.4	current density	A/m <sup>2</sup>
7.5	electric current	A
7.6	electric field strength	C/m <sup>2</sup>
7.7	electric potential	V
7.8	electromotive force	V
7.9	magnetic field strength	A/m
7.10	magnetic flux	Wb
7.11	magnetic flux density	T
7.12	power	W
7.13	quantity of electricity	C
7.14	resistance	Ω
<b>8. Light and related electromagnetic radiations</b>		
8.1	illuminance	lx
8.2	luminance	cd/m <sup>2</sup>
8.3	luminous exitance	lm/m <sup>2</sup>
8.4	luminous flux	lm
8.5	luminous intensity	cd
8.6	quantity of light	lm · s
8.7	radiant energy	J
8.8	wavelength	m



Ref. No. and Quantity	Primary unit (symbol)	Non-SI alternative unit (symbol)
<b>9. Acoustics</b>		
9.1	frequency	Hz
9.2	mass density	kg/m <sup>3</sup>
9.3	noise level	dB <sup>e</sup>
9.4	period, periodic time	s
9.5	sound intensity	W/m <sup>2</sup>
9.6	sound power	W
9.7	sound pressure	Pa
9.8	sound level	dB <sup>e</sup>
9.9	static pressure (instantaneous)	Pa
9.10	velocity of sound	m/s
9.11	volume velocity (instantaneous)	m <sup>3</sup> /s
9.12	wavelength	m
<b>10. Nuclear physics and ionizing radiation</b>		
10.1	absorbed dose	Gy
10.2	absorbed dose rate	Gy/s
10.3	activity of radionuclides	Bq
10.4	dose equivalent	Sv
10.5	radiation exposure	C/kg
10.6	exposure rate	C/kg · s

- a) As used in navigation, generally in excess of 4 000 m.
- b) Such as aircraft fuel, hydraulic fluids, water, oil and high pressure oxygen vessels.
- c) Visibility of less than 5 km may be given in m.
- d) Airspeed is sometimes reported in flight operations in terms of the ratio MACH number.
- e) The decibel (dB) is a ratio which may be used as a unit for expressing sound pressure level and sound power level. When used, the reference level must be specified.

**16.3 TERMINATION OF USE OF NON-SI ALTERNATE UNITS**

16.3.1 The use in international civil aviation operations of the alternative non-SI units listed in Table 3-3 shall be terminated on the dates listed in Table 4-1.

**Table 4-1. Termination dates for non-SI alternative units**

Non-SI alternative unit	Termination date
Knot } Nautical mile }	not established
Foot	not established