

# Timber structures — Strength graded structural timber with rectangular cross section

**Part 4: Machine grading — Grading  
machine settings for machine  
controlled systems**

ICS 79.040; 79.120.10

## National foreword

This British Standard is the UK implementation of EN 14081-4:2009. It supersedes BS EN 14081-4:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/518, Structural timber.

A list of organizations represented on this committee can be obtained on request to its secretary.

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## Timber structures - Strength graded structural timber with rectangular cross section - Part 4: Machine grading - Grading machine settings for machine controlled systems

Structures en bois - Bois de structure de section rectangulaire classé selon la résistance - Partie 4: Classement par machine - Réglages pour les systèmes de contrôle par machine

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## Foreword

This document (EN 14081-4:2009) has been prepared by Technical Committee CEN/TC 124 "Timber structures", the secretariat of which is held by SFS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2009, and conflicting national standards shall be withdrawn at the latest by November 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14081-4:2005+A4:2008.

Other parts of this European Standard are

EN 14081-1, *Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements*

EN 14081-2, *Timber structures - Strength graded structural timber with rectangular cross section - Part 2: Machine Grading; additional requirements for initial type testing*

EN 14081-3, *Timber structures - Strength graded structural timber with rectangular cross section - Part 3: Machine Grading; additional requirements for factory production control*

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## 1 Scope

This European Standard gives settings, derived according to the requirements given in EN 14081-2, for various combinations of strength classes or grades, grading machines and species from particular sources of growth. These settings are only applicable to timber from the sources indicated in the tables.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 336, *Structural timber – Sizes, permitted deviations*

EN 14081-1:2005, *Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements*

EN 14081-2:2005, *Timber structures - Strength graded structural timber with rectangular cross section - Part 2: Machine Grading; additional requirements for initial type testing*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14081-1:2005, EN 14081-2:2005 and the following apply.

### 3.1 Speed range

maximum and minimum throughput speeds appropriate to the critical speed for the derived settings (see 6.2.2 of EN 14081-2:2005).

## 4 Symbols

$a$	deflection (in mm)
$b$	width of timber cross section (in mm)
$E_{t,mean}$	characteristic mean tensile modulus of elasticity parallel to grain (in $N/mm^2$ )
$E_{0,mean}$	characteristic mean bending modulus of elasticity parallel to grain (in $N/mm^2$ )
$E_{dyn}$	value of dynamic modulus of elasticity (in $N/mm^2$ )
$E_{mod}$	model value of modulus of elasticity (units as stated)
$F$	force (units as stated)
$f_{t,k}$	characteristic tensile strength (in $N/mm^2$ )

$f_{m,k}$	characteristic bending strength (in $\text{N/mm}^2$ )
$f_{\text{mod}}$	model value of strength (in $\text{N/mm}^2$ )
$I$	indicating property (units as stated)
$P$	pressure (units as stated)
$t$	thickness of timber cross section (in mm)
$v_c$	conveyer speed (in m/sec)
$\rho_k$	characteristic value of density (in $\text{kg/m}^3$ )
$\rho_{\text{mod}}$	model value of density (in $\text{kg/m}^3$ )
subscripts	
n	for setting being calculated
a	actual size measured as the average dimension of a batch

## 5 Settings for timber strength grading machines

Tables 1 to 15 give settings for certain grades, timber species and types of grading machine.

The accepted grading machines and settings in this European Standard are based on initial type testing (ITT) and initial type calculation (ITC). When additional ITT and ITC documentation from the manufacturers has been evaluated by CEN/TC124/TG1, the accepted values are given in an ITT report, which is the basis for certification by the Notified Bodies overseeing the producers' factory production control (FPC). Those ITT reports may be used as ITT documentation before the information they contain becomes available in an amendment or revision of this European Standard, EN 14081-4.

Table 1-1 - Settings for Cook Bolinder (Tecmach) machine types SG-AR, SG-AF and SG-TF

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value Force $F$ (kN)	Comments and additional requirements
UK Ireland	GB IE	Spruce	$35 \leq t_n \leq 75$	C24	2,68	Requirements for grading: - Air temperature between +10°C and +35°C - Relative humidity in the air: $\leq 85\%$ - Timber temperature: $\geq -10\text{ °C}$ - Timber mean moisture content: $> 10\%$ - Maximum feed speed: 150 m/min  The following equations shall be used to calculate settings for the target size $b_n \times t_n$ . (Note. For timber with a thickness to tolerance class 1, i.e. sawn, $t_n$ in the following equations is the target $t_n + 1$ mm).  $a_n = 830,7 t_n^{-1,299} \quad (\text{mm})$ $P_n = 4,412 F_n / t_n^{0,61} \quad (\text{bar})$ $F_n = \frac{F b_n t_n^{1,701}}{(413,9 t_n + 57273)} \quad (\text{kN})$
		<i>Picea abies</i>	75	C16	2,27	
		<i>Picea sitchensis</i>	$60 \leq b_n \leq 300$	C16	1,24	
		Pine	$35 \leq t_n \leq 75$	C24	2,79	
Chile	CL	pine	50	C16	1,43	
		<i>Pinus radiata</i>	$60 \leq b_n \leq 300$	C24	2,32	
				C16	2,09	
				C16	0,92	

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

Table 1-2 - Settings for Cook Bolinder (Tecmach) machine types SG-AR, SG-AF and SG-TF (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $f_{mod}$	Comments and adjustments for size
Estonia	EE	Spruce <i>Picea abies</i>	$30 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C18	20,8	Requirements for grading: - Air temperature between +10°C and +35°C - Relative humidity in the air: $\leq 85\%$ - Timber temperature: $\geq -10\text{ °C}$ - Timber mean moisture content: $> 10\%$ - Maximum feed speed: 150 m/min  The following equations shall be used to calculate settings for the target size $b_n \times t_n$ . (Note. For timber with a thickness to tolerance class 1, i.e. sawn, $t_n$ in the following equations is the target $t_n + 1$ mm). $P_n = 4,412 F_n / t_n^{0,61} \quad (\text{bar})$ $F_n = (5,5 I_n a_n b_n t_n^3) 10^{-12} \quad (\text{kN})$ $a_n = 830,7 t_n^{-1,299} \quad (\text{mm})$ $I_n = \left[ \frac{4228}{t_n^{0,22} b_n^{0,24}} \right] f_{mod}^{0,79}$
Finland	FI			C24	20,8	
Latvia	LV			C27	21,8	
Norway	NO			C30	28,5	
Russia <sup>d)</sup>	RU			C35	46,5	
Sweden	SE			C24	20,0	
Poland	PL			C40	54,5	
Finland	FI	Pine <i>Pinus sylvestris</i>		C30	30,6	
Norway	NO			C18	23,8	
Sweden	SE					
Latvia	LV					

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>d)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

Table 1-3 - Settings for Cook Bolinder (Tecmach) machine types SG-AR, SG-AF and SG-TF (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value Force $F$ (kN)	Comments and adjustments for size
Spain	ES	Scots pine <i>Pinus sylvestris</i>	$35 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C27 C16	2,84 1,71	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +10°C and +35°C</li> <li>- Relative humidity in the air: <math>\leq 85\%</math></li> <li>- Timber temperature: <math>\geq -10\text{ °C}</math></li> <li>- Timber mean moisture content: <math>&gt; 10\%</math></li> <li>- Maximum feed speed: 100 m/min</li> </ul> <p>The following equations shall be used to calculate settings for the target size <math>b_n \times t_n</math>. (Note. For timber with a thickness to tolerance class 1, i.e. sawn, <math>t_n</math> in the following equations is the target <math>t_n + 1</math> mm).</p> $a_n = 830,7 t_n^{-1,299} \quad (\text{mm})$ $P_n = 4,412 F_n / t_n^{0,61} \quad (\text{bar})$ $F_n = \frac{F b_n t_n^{1,701}}{(413,9 t_n + 57273)}$
Spain	ES	Corsican pine <i>Pinus nigra</i>	$40 \leq t_n \leq 70$ $100 \leq b_n \leq 200$	C30 C18	Not relevant as all settings shall be calculated using equations in comments column	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +10°C and 35°C</li> <li>- Relative humidity in the air: <math>&lt; 85\%</math></li> <li>- Timber temperature: <math>&gt; -10\text{ °C}</math></li> <li>- Timber mean moisture content: <math>&gt; 10\%</math></li> <li>- Maximum feed speed: 100 m/min</li> </ul> <p>The following equations shall be used to calculate settings for the target size <math>b_n \times t_n</math>. (Note. For timber with a thickness to tolerance class 1, i.e. sawn, <math>t_n</math> in the following equations is the target <math>t_n + 1</math> mm).</p> $a_n = 830,7 t_n^{-1,299} \quad (\text{mm})$ $P_n = 4,412 F_n / t_n^{0,61} \quad (\text{bar})$ $F_{n,C30} = (96,2979 - 0,489321 t_n) a_n b_n t_n^3 / (1,3189433 \cdot 10^9)$ $F_{n,C18} = (54,4979 - 0,489321 t_n) a_n b_n t_n^3 / (1,3189433 \cdot 10^9)$

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

Table 2-1 -Settings for Computermatic and Micromatic machines

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value Deflection $a$ (mm)	Comments and additional requirements
UK Ireland	GB IE	Spruce	$35 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C24	6,35	Requirements for grading: - Relative humidity in the air: $\leq 85$ % - Timber temperature: $\geq -10$ °C - Timber mean moisture content: $> 10$ % - Maximum feed speed: 105 m/min  The following equations shall be used to calculate settings for the target size $b_n \times t_n$ . (Note. For timber with a thickness to tolerance class 1, i.e. sawn, $t_n$ in the following equations is the target $t_n + 1$ mm).  $F_n = 0,0101 b_n t_n^2$ (N)  $a_n = \frac{36,71a(0,00567t_n + 0,7846)}{t_n(0,9851 \times 10^{-5} t_n b_n + 0,91)}$ (Bits)  Actual deflection settings are determined from $a_n/0,19$ rounded to the nearest whole number. Refer to calibration tables for machine to convert Force $F_n$ to pressure setting
		<i>Picea abies</i>		C16	7,49	
		<i>Picea sitchensis</i>	C16	13,78		
		Pine	$35 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C24	6,10	
<i>Pinus nigra</i>	C16	8,90				
<i>Pinus sylvestris</i>	C16	12,74				
Chile	CL	Radiata pine	$35 \leq t_n \leq 50$ $60 \leq b_n \leq 300$	C27	5,62	
		<i>Pinus radiata</i>		C16	11,86	
				C24	7,35	
				C16	8,13	
				C16	18,52	
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber sizes shall be to EN 336 <sup>c)</sup> Grades prefixed by C are strength classes given in EN 338						

Table 2-2 - Settings for Computermatic and Micromatic machines (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $IP = f_{mod}$	Comments and additional requirements
Norway	NO	Sitka spruce <i>Picea Sitchensis</i>	$33 \leq t_n \leq 53$ $88 \leq b_n \leq 218$	C30 C18	38,8 27,9	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Relative humidity in the air: <math>\leq 85\%</math></li> <li>- Timber temperature: <math>\geq -10\text{ °C}</math></li> <li>- Timber mean moisture content: <math>&gt; 10\%</math></li> <li>- Maximum feed speed: 105 m/min</li> </ul> <p>The following equations shall be used to calculate settings for the target size <math>b_n \times t_n</math> where <math>b_n</math> and <math>t_n</math> are target dimensions. Refer to calibration tables for machine to convert <math>F_n</math> to pressure setting.</p> $F_n = 0,0101 \cdot b_n \cdot t_n^2 \quad (\text{N})$ $a_n = \frac{8063 \cdot t_n^{-0,814} \cdot b_n^{0,152}}{f_{mod} \cdot \left(1 - \frac{2,14 \cdot t_n^{0,186} \cdot b_n^{0,152}}{f_{mod}}\right)} \quad (\text{Bits})$ <p>Actual deflection setting <math>a_n</math> shall be rounded to the nearest whole number of Bits (Bits are units of 0,19mm). If the actual thickness <math>t_a</math> exceeds the target thickness <math>t_n</math> by more than 1 mm then the pressure shall be increased by</p> $\left(\frac{t_a}{t_n}\right)^3$
<p><sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  <sup>b)</sup> Timber sizes shall be to EN 336  <sup>c)</sup> Grades specified by C are strength classes given in EN 338</p>						

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Table 2-3 - Settings for Computermatic and Micromatic machines (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value Deflection $a$ (mm)	Comments and additional requirements	
Finland	FI	Spruce	$30 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C24	9,82	Requirements for grading: - Relative humidity in the air: $\leq 85\%$ - Timber temperature: $\geq -10\text{ °C}$ - Timber mean moisture content: $> 10\%$ - Maximum feed speed: 105 m/min  The following equations shall be used to calculate settings for the target size $b_n \times t_n$ where $b_n$ and $t_n$ are target dimensions. Refer to calibration tables for machine to convert $F_n$ to pressure setting. $F_n = 0,0101 b_n t_n^2 \quad (\text{N})$ $a_n = \frac{50a}{t_n} \left( \frac{t_n}{50} \right)^{0,186} \left( \frac{b_n}{150} \right)^{-0,0901} / 0,19 \quad (\text{Bits})$ Actual deflection settings $a_n$ shall be rounded to the nearest whole number of Bits (Bits are units of 0,19 mm). If the actual thickness $t_a$ exceeds the target thickness $t_n$ more than 1 mm then the pressure shall be increased by $\left( \frac{t_a}{t_n} \right)^3$	
Norway	NO	<i>Picea</i>		C27	6,21		
Sweden	SE	<i>Abies</i>		C30	4,75		
Estonia	ES			C35	3,40		
Latvia	LV			C27	5,85		
Russia <sup>d)</sup>	RU			C16	8,92		
Poland	PL			C30	4,75		
				C18	9,82		
Finland	FI	Pine			C30		4,46
Norway	NO	<i>Pinus</i>			C24		5,49
Sweden	SE	<i>Sylvestris</i>		C18	8,92		
Latvia	LV			C35	3,40		
				C24	4,94		
				C18	7,96		
				C40	2,83		
				C27	5,49		

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Grades specified by C are strength classes given in EN 338  
<sup>d)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

Table 2-4 - Settings for Computermatic and Micromatic machines (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade or grade combination	Model value Deflection $a$ (mm)	Comments and additional requirements
Finland Norway Sweden Estonia Latvia Russia <sup>c)</sup> Poland	FI NO SE ES LV RU PL	Spruce <i>Picea</i> <i>Abies</i>	$30 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	TR26	6,21	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Relative humidity in the air: <math>\leq 85\%</math></li> <li>- Timber temperature: <math>\geq -10\text{ °C}</math></li> <li>- Timber mean moisture content: <math>&gt; 10\%</math></li> <li>- Maximum feed speed: 105 m/min</li> </ul> <p>The following equations shall be used to calculate settings for the target size <math>b_n \times t_n</math> where <math>b_n</math> and <math>t_n</math> are target dimensions. Refer to calibration tables for machine to convert <math>F_n</math> to pressure setting.</p> $F_n = 0,0101b_n t_n^2 \quad (\text{N})$ $a_n = \frac{50a}{t_n} \left(\frac{t_n}{50}\right)^{0,186} \left(\frac{b_n}{150}\right)^{-0,0901} / 0,19 \quad (\text{Bits})$ <p>Actual deflection settings <math>a_n</math> shall be rounded to the nearest whole number of Bits (Bits are units of 0,19 mm). If the actual thickness <math>t_a</math> exceeds the target thickness <math>t_n</math> more than 1 mm then the pressure shall be increased by</p> $\left(\frac{t_a}{t_n}\right)^3.$ <p>TR26 is a UK grade for trussed rafters. Its primary characteristic values are: <math>f_{m,k} = 28,3 \text{ N/mm}^2</math>, <math>E_{0,\text{mean}} = 11,0 \text{ kN/mm}^2</math>, <math>\rho_k = 370 \text{ kg/m}^3</math> Other characteristic values can be calculated from the equations given in EN 384.</p>
Finland Norway Sweden Latvia	FI NO SE LV	Pine <i>Pinus</i> <i>Sylvestris</i>				

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

Table 3-1 - Settings for Raute Timgrader machines (Model given in TG1/1007/06)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $f_{mod}$	Comments and additional requirements								
Finland Norway Sweden Estonia. Latvia Russia <sup>d)</sup> Poland	FI NO SE ES LV RU PL	Spruce <i>Picea abies</i>	$30 \leq t_n \leq 50$ $60 \leq b_n \leq 225$	C45 C30 C18 C40 C30 C18 C35 TR26 C18	56,5 34,1 22,0 53,4 34,3 22,0 44,6 34,1 22,0	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +10°C and +50°C</li> <li>- Relative humidity in the air: <math>\leq 85\%</math></li> <li>- Timber temperature: <math>\geq -10\text{ °C}</math></li> <li>- Timber mean moisture content: <math>&gt; 10\%</math></li> <li>- Feed speed between 48 m/min and 124 m/min</li> <li>- Cupped timber shall not be graded</li> </ul> <p>The following equation shall be used to calculate settings</p> $F_n = 0,002792 t_n^{2,093} b_n^{0,740} f_{mod}^{0,630} a$ <p>where <math>F_n</math> is the indicating property in N (to obtain the indicating property in kilopond <math>F_n</math> shall be divided by 9,81), <math>t_n</math> is the target thickness in mm, <math>b_n</math> is the target width in mm (Note: For timber with a thickness to tolerance class 1, i.e. sawn, <math>t_n</math> in the above equation is the target <math>t_n + 1</math> mm) and <math>f_{mod}</math> is given in the 6th column of this table for each grade. <math>a</math> is the pre-set deflection in mm and shall be:</p> <table style="width: 100%; border: none;"> <tr> <td><math>a = 1,6\text{ mm}</math> for <math>47 \leq t_n \leq 50\text{ mm}</math></td> <td><math>a = 2,0\text{ mm}</math> for <math>36 \leq t_n \leq 37\text{ mm}</math></td> </tr> <tr> <td><math>a = 1,7\text{ mm}</math> for <math>44 \leq t_n \leq 46\text{ mm}</math></td> <td><math>a = 2,1\text{ mm}</math> for <math>34 \leq t_n \leq 35\text{ mm}</math></td> </tr> <tr> <td><math>a = 1,8\text{ mm}</math> for <math>41 \leq t_n \leq 43\text{ mm}</math></td> <td><math>a = 2,2\text{ mm}</math> for <math>32 \leq t_n \leq 33\text{ mm}</math></td> </tr> <tr> <td><math>a = 1,9\text{ mm}</math> for <math>38 \leq t_n \leq 40\text{ mm}</math></td> <td><math>a = 2,3\text{ mm}</math> for <math>30 \leq t_n \leq 31\text{ mm}</math></td> </tr> </table> <p>The pre-set pressure shall be 23 Bar</p> <p>The settings for C35-TR26-C18 can also be used for C35-C24-C18</p> <p>The characteristic values for the TR26 grade are:  <math>f_{m,k} = 28,3\text{ N/mm}^2</math>, <math>E_{0,mean} = 11,0\text{ kN/mm}^2</math>, <math>\rho_k = 370\text{ kg/m}^3</math>            Other characteristic values can be calculated from the equations given in EN 384.</p>	$a = 1,6\text{ mm}$ for $47 \leq t_n \leq 50\text{ mm}$	$a = 2,0\text{ mm}$ for $36 \leq t_n \leq 37\text{ mm}$	$a = 1,7\text{ mm}$ for $44 \leq t_n \leq 46\text{ mm}$	$a = 2,1\text{ mm}$ for $34 \leq t_n \leq 35\text{ mm}$	$a = 1,8\text{ mm}$ for $41 \leq t_n \leq 43\text{ mm}$	$a = 2,2\text{ mm}$ for $32 \leq t_n \leq 33\text{ mm}$	$a = 1,9\text{ mm}$ for $38 \leq t_n \leq 40\text{ mm}$	$a = 2,3\text{ mm}$ for $30 \leq t_n \leq 31\text{ mm}$
$a = 1,6\text{ mm}$ for $47 \leq t_n \leq 50\text{ mm}$	$a = 2,0\text{ mm}$ for $36 \leq t_n \leq 37\text{ mm}$													
$a = 1,7\text{ mm}$ for $44 \leq t_n \leq 46\text{ mm}$	$a = 2,1\text{ mm}$ for $34 \leq t_n \leq 35\text{ mm}$													
$a = 1,8\text{ mm}$ for $41 \leq t_n \leq 43\text{ mm}$	$a = 2,2\text{ mm}$ for $32 \leq t_n \leq 33\text{ mm}$													
$a = 1,9\text{ mm}$ for $38 \leq t_n \leq 40\text{ mm}$	$a = 2,3\text{ mm}$ for $30 \leq t_n \leq 31\text{ mm}$													
Finland Norway Sweden Latvia Russia <sup>d)</sup>	FI NO SE LV RU	Pine <i>Pinus sylvestris</i>	$30 \leq t_n \leq 50$ $60 \leq b_n \leq 225$	C45 C30 C18 C40 C30 C18 C35 TR26 C18	56,5 34,1 22,0 53,4 34,3 22,0 44,6 34,1 22,0	<p>The pre-set pressure shall be 23 Bar</p> <p>The settings for C35-TR26-C18 can also be used for C35-C24-C18</p> <p>The characteristic values for the TR26 grade are:  <math>f_{m,k} = 28,3\text{ N/mm}^2</math>, <math>E_{0,mean} = 11,0\text{ kN/mm}^2</math>, <math>\rho_k = 370\text{ kg/m}^3</math>            Other characteristic values can be calculated from the equations given in EN 384.</p>								

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005<sup>b)</sup> Timber sizes shall be to EN 336<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338<sup>d)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 4-1 - Settings for Euro-GreComat 702 (Model given in TG1/0107/08)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $f_{mod}$	Comments and additional requirements																				
Germany Austria Czech Republic	DE AT CZ	Spruce <i>Picea abies</i>  Fir <i>Abies alba</i>	$30 \leq t_n \leq 50$ $95 \leq b_n \leq 280$  $30 \leq t_n \leq 55$ $80 \leq b_n \leq 280$	L36 L25  L35 L24	34,5 22,3  34,0 21,0	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Timber temperature: <math>&gt; 0^\circ\text{C}</math></li> <li>- Mean moisture content of each piece between 8% and 20%</li> <li>- Feed speed between 80 and 300 m/min</li> <li>- Timber surface planed or sawn</li> </ul> <p>These grades apply to timber where tensile strength controls the design.</p> <p>The characteristic values for the grades are:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>L36</th> <th>L35</th> <th>L25</th> <th>L24</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>22,0</td> <td>21,0</td> <td>14,5</td> <td>14,0</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>13,0</td> <td>13,0</td> <td>11,0</td> <td>11,0</td> </tr> <tr> <td><math>\rho_k</math> (kg/m<sup>3</sup>)</td> <td>400</td> <td>400</td> <td>350</td> <td>350</td> </tr> </tbody> </table>		L36	L35	L25	L24	$f_{t,k}$ (N/mm <sup>2</sup> )	22,0	21,0	14,5	14,0	$E_{t,mean}$ (kN/mm <sup>2</sup> )	13,0	13,0	11,0	11,0	$\rho_k$ (kg/m <sup>3</sup> )	400	400	350	350
	L36	L35	L25	L24																						
$f_{t,k}$ (N/mm <sup>2</sup> )	22,0	21,0	14,5	14,0																						
$E_{t,mean}$ (kN/mm <sup>2</sup> )	13,0	13,0	11,0	11,0																						
$\rho_k$ (kg/m <sup>3</sup> )	400	400	350	350																						
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005																										
<sup>b)</sup> Timber size shall be to EN 336																										

Table 5-1 - Settings for GoldenEye 702 (Model given in TG1/1005/08 for GB &amp; IE; TG1/1005/09Rev for DE, AT &amp; CZ)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value <i>I</i>	Comments and additional requirements
UK Ireland	GB IE	Sitka spruce <i>Picea sitchensis</i>	$35 \leq t_n \leq 80$ $70 \leq b_n \leq 260$	C24 C16 C16	$E_{mod} = 10\,800$ $E_{mod} = 6\,000$ $E_{mod} = 5\,200$	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 10% and 30% - Maximum feed speed: 450 m/min - Timber surface planed or sawn  The moisture content shall be measured for each piece by an In-line system.
Germany Austria Czech Republic	DE AT CZ	Spruce <i>Picea abies</i>  Fir <i>Abies alba</i>	$38 \leq t_n \leq 100$ $89 \leq b_n \leq 250$	C27 C16 C24 C18 C24 C16	$f_{mod} = 36,0$ $f_{mod} = 21,4$ $f_{mod} = 34,4$ $f_{mod} = 30,8$ $f_{mod} = 34,4$ $f_{mod} = 29,8$	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 8% and 18% - Maximum feed speed: 450 m/min - Timber surface planed or sawn

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 5-2 - Settings for GoldenEye 702 (Model given in TG1/0506/05a) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade or grade combination	Model value $f_{mod}$	Comments and additional requirements																				
Germany Austria Czech Republic	DE AT CZ	Spruce <i>Picea abies</i> Fir <i>Abies alba</i>	$30 \leq t_n \leq 50$ $95 \leq b_n \leq 280$	L25 L17 L36 L25 L17 L40 L25 L17	21,6 16,9 32,9 26,8 14,7 39,6 20,8 19,1	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Timber temperature: <math>&gt; 0^\circ\text{C}</math></li> <li>- Mean moisture content of each piece between 7% and 15%</li> <li>- Maximum feed speed: 450 m/min</li> <li>- Timber surface planed or sawn</li> </ul> <p>These grades apply to timber where tensile strength controls the design.</p> <p>The characteristic values for the grades are:</p> <table border="1"> <thead> <tr> <th></th> <th>L40</th> <th>L36</th> <th>L25</th> <th>L17</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math> (kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>350</td> <td>320</td> </tr> </tbody> </table>		L40	L36	L25	L17	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	14,5	11,0	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	11,0	9,0	$\rho_k$ (kg/m <sup>3</sup> )	420	400	350	320
	L40	L36	L25	L17																						
$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	14,5	11,0																						
$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	11,0	9,0																						
$\rho_k$ (kg/m <sup>3</sup> )	420	400	350	320																						
<p><sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.</p> <p><sup>b)</sup> See Clause 7.3 in EN 14081-1:2005</p> <p><sup>c)</sup> Timber size shall be to EN 336</p>																										

Table 5-3 - Settings for GoldenEye 702 (Model given in TG1/0308/15Rev) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade or grade combination	Model value			Comments and additional requirements
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$	
Germany Austria	DE AT	Spruce <i>Picea abies</i>	$35 \leq t_n \leq 110$ $80 \leq b_n \leq 258$	C24	26,4	4 900	322	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 10% and 18% - Maximum feed speed: 450 m/min - Timber surface planed or sawn  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11000 \text{ N/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
				C27	34,2	5 000	344	
				C16	22,1	4 900	322	
		Fir <i>Abies alba</i>		C30	41,5	5 700	360	
				C16	16,2	4 900	322	
		C35		52,0	10 000	396		
		C27		37,8	5 000	347		
		C16		15,4	4 900	322		
		TR26		37,7	5 000	344		
		C16		17,4	4 900	322		

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

Table 5-4 - Settings for GoldenEye 702 (Model given in TG1/1007/15Rev) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade or grade combination	Model value			Comments and additional requirements																												
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$																													
Germany	DE	Spruce	$26 \leq t_n \leq 66$	L22	6,8	5 200	305	Requirements for grading: - Timber temperature: > 0°C - Mean moisture content of each piece between 7% and 15% - Maximum feed speed: 450 m/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td>L40</td> <td>L36</td> <td>L30</td> <td>L27</td> <td>L25</td> </tr> <tr> <td><math>f_{t,k}</math></td> <td>(N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>16,0</td> <td>14,5</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>(kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,5</td> <td>11,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td>(kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>380</td> <td>370</td> <td>350</td> </tr> </table>			L40	L36	L30	L27	L25	$f_{t,k}$	(N/mm <sup>2</sup> )	26,0	22,0	18,0	16,0	14,5	$E_{t,mean}$	(kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,5	11,0	$\rho_k$	(kg/m <sup>3</sup> )	420	400	380	370	350
		L40	L36	L30	L27	L25																														
$f_{t,k}$	(N/mm <sup>2</sup> )	26,0	22,0	18,0	16,0	14,5																														
$E_{t,mean}$	(kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,5	11,0																														
$\rho_k$	(kg/m <sup>3</sup> )	420	400	380	370	350																														
Austria	AT	<i>Picea</i>	$63 \leq b_n \leq 319$	L25	16,9	3 900	334																													
Czech Republic	CZ	<i>abies</i>		L27	21,0	4 000	377																													
Switzerland	CH	Fir <i>Abies alba</i>		L17	12,4	6 800	305																													
Finland	FI		L30	25,4	7 900	390																														
Norway	NO		L17	6,8	5 200	305																														
Sweden	SE		L40	39,8	11 600	434																														
Estonia	ES		L25	19,1	8 600	322																														
Latvia	LV		L36	32,3	10 100	412																														
Russia <sup>d)</sup>	RU		L25	20,9	8 900	331																														
Poland	PL		L17	16,4	7 900	305																														
			L40	39,8	11 600	434																														
			L30	31,2	9 400	385																														
		L17	6,8	5 200	305																															

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Settings apply only to timber grown west of the Ural mountain range in Russia and north of the 55° line of latitude.

Table 5-5 - Settings for GoldenEye 702 (Model given in TG1/1007/08a) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade or grade combination	Model value			Comments and additional requirements																												
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$																													
Finland	FI	Spruce	$34 \leq t_n \leq 55$	LD26	35,6	11800	407	Requirements for grading: - Timber temperature > 0°C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than ±4 % from the mean value. - Maximum feed speed 450 m/min for X-ray part. - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td></td> <td></td> <td>LD26</td> <td>LD22</td> <td>LD18</td> <td>LD15</td> <td>LD11</td> </tr> <tr> <td><math>f_{t,k}</math></td> <td>N/mm<sup>2</sup></td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>kN/m<sup>2</sup></td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td>kg/m<sup>3</sup></td> <td>410</td> <td>390</td> <td>370</td> <td>350</td> <td>320</td> </tr> </table>			LD26	LD22	LD18	LD15	LD11	$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$	kN/m <sup>2</sup>	14,0	13,0	12,0	11,0	9,0	$\rho_k$	kg/m <sup>3</sup>	410	390	370	350	320
		LD26	LD22	LD18	LD15	LD11																														
$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0																														
$E_{t,mean}$	kN/m <sup>2</sup>	14,0	13,0	12,0	11,0	9,0																														
$\rho_k$	kg/m <sup>3</sup>	410	390	370	350	320																														
Norway	NO	<i>Picea</i>	$90 \leq b_n \leq 220$	LD18	23,8	10300	365																													
Sweden	SE	<i>abies</i>		LD11	9,0	7000	315																													
Estonia	ES			LD26	35,6	11800	426																													
Latvia	LV			LD15	9,5	7500	325																													
Russia <sup>d)</sup>	RU			LD22	27,3	10800	385																													
Poland	PL			LD15	14,3	10000	353																													
				LD22	27,3	10800	385																													
				LD11	9,0	7000	315																													
				LD18	10,0	8000	356																													
				LD15	9,5	7500	325																													

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 5-6 - Settings for GoldenEye 702 (Model given in TG1/0307/07) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value $f_{mod}$	Comments and additional requirements
Finland	FI	Spruce	$32 \leq t_n \leq 82$	C40	55,6	Requirements for grading: - Timber temperature: $> 0 \text{ }^\circ\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4 \%$ from the mean value. - Timber surface finish planed or sawn - Maximum feed speed: 450 m/min  The settings for C30-C18 can also be used for TR26-C18  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11,0 \text{ kN/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
Norway	NO	<i>Picea</i>	$68 \leq b_n \leq 305$	C30	40,2	
Sweden	SE	<i>abies</i>		C18	13,5	
Estonia	ES			C30	36,5	
Latvia	LV			C18	13,5	
Russia <sup>e)</sup>	RU			C35	52,3	
Poland	PL			C27	37,6	
				C18	13,5	
				C35	52,3	
				C24	22,7	
				C27	35,9	
				C16	13,5	
		TR26		29,9		
		C16	13,5			
		C24	13,5			

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber sizes shall be according to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 5-7 - Settings for GoldenEye 702 (Model given in TG1/0308/09) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value		Comments and additional requirements
					$f_{mod}$	$\rho_{mod}$	
Finland	FI	Spruce	$32 \leq t_n \leq 82$	C40	52,3	410	Requirements for grading: - Timber temperature: $> 0 \text{ }^\circ\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4 \%$ from the mean value. - Timber surface finish planed or sawn - Maximum feed speed: 450 m/min  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11,0 \text{ kN/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
Norway	NO	<i>Picea</i>	$68 \leq b_n \leq 305$	C30	40,8	370	
Sweden	SE	<i>abies</i>		C18	16,5	310	
Estonia	ES			C40	52,3	410	
Latvia	LV			TR26	30,3	350	
Russia <sup>e)</sup>	RU			C16	16,5	300	
				C40	52,3	410	
				C27	33,9	360	
				C18	29,3	310	
				C40	52,3	410	
				C27	33,0	360	
				C16	16,5	300	
				C40	52,3	410	
		C24	16,5	310			
		C35	48,3	390			
		C30	40,8	375			
		C18	16,5	310			
		C35	48,3	390			
		TR26	33,5	360			
		C18	27,9	310			

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber sizes shall be according to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 5-8 - Settings for GoldenEye 702 (Model given in TG1/0308/09) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value		Comments and additional requirements
					$f_{mod}$	$\rho_{mod}$	
Finland	FI	Spruce <i>Picea</i> <i>abies</i>	$32 \leq t_n \leq 82$ $68 \leq b_n \leq 305$	C35	48,3	390	Requirements for grading: - Timber temperature: > 0 °C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than ±4 % from the mean value. - Timber surface finish planed or sawn - Maximum feed speed: 450 m/min  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11,0 \text{ kN/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
Norway	NO			C27	35,7	360	
Sweden	SE			C18	26,1	310	
Estonia	ES			C35	48,3	390	
Latvia	LV			C24	30,0	340	
Russia <sup>e)</sup>	RU			C16	16,5	300	
				C35	48,3	390	
				C18	16,5	310	
				C30	31,3	370	
				C18	27,0	310	
		C30	31,3	370			
		C16	16,5	300			
		TR26	26,5	360			
		C27	21,8	340			
		C24	16,5	310			

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber sizes shall be according to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 5-9 - Settings for GoldenEye 702 (Model given in TG1/0308/10) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value $f_{mod}$	Comments and additional requirements
Finland Russia <sup>e)</sup>	FI RU	Pine <i>Pinus sylvestris</i>	$35 \leq t_n \leq 70$ $90 \leq b_n \leq 220$	C40	52,4	Requirements for grading: - Timber temperature: > 0 °C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than ±4 % from the mean value. - Timber surface finish planed or sawn - Maximum feed speed: 450 m/min  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11,0 \text{ kN/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
				C30	44,6	
				C18	8,5	
				C40	52,4	
				C24	35,8	
				C16	8,5	
				C35	45,4	
				C24	35,8	
				C18	24,4	
				C35	45,4	
				C24	38,7	
				C16	8,5	
				C35	45,4	
				C18	8,5	
				C30	32,2	
C18	28,6					
C30	32,4					
C16	12,2					
TR26	31,2					
C16	14,0					
C27	28,3					
C16	22,2					
C24	20,7					

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber sizes shall be according to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 5-10 - GoldenEye 702 machine (Model given in TG1/0508/12Rev) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value $f_{mod}$	Comments and additional requirements
France	FR	Douglas fir <i>Pseudotsuga menziesii</i>	$30 \leq t_n \leq 77$ $81 \leq b_n \leq 319$	C 40	54,3	Requirements for grading: - Timber temperature: > 0°C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than +/-4% from the mean value  - Maximum feed speed: 450 m/min - Timber surface planed or sawn
				C 30	46,2	
				C 18	28,7	
				C 35	50,0	
				C 24	46,3	
				C 18	32,2	
				C 35	50,0	
C 18	28,0					
				C 30	44,0	
				C 18	30,4	
				C 24	41,0	
				C 18	33,8	
				C 18	21,1	

<sup>a)</sup> These settings are approved to permit each piece of timber to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 6-1 - Settings for Euro-GreComat 704 (Model given in TG2/0103/02)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $f_{mod}$	Comments and additional requirements																				
Germany Austria Czech Republic	DE AT CZ	Spruce <i>Picea abies</i>  Fir <i>Abies alba</i>	$18 \leq t_n \leq 55$ $80 \leq b_n \leq 280$	L40 L35 L24 L16	40,0 31,0 19,0 14,0	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Timber temperature: &gt; 0°C</li> <li>- Mean moisture content of each piece between 7% and 15%</li> <li>- Feed speed between 80 and 120 m/min</li> <li>- Timber surface planed</li> </ul> <p>These grades apply to timber where tensile strength controls the design.</p> <p>The characteristic values for the grades are:</p> <table border="1"> <thead> <tr> <th></th> <th>L40</th> <th>L35</th> <th>L24</th> <th>L16</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>26,0</td> <td>21,0</td> <td>14,0</td> <td>10,0</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>11,0</td> <td>8,0</td> </tr> <tr> <td><math>\rho_k</math> (kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>350</td> <td>310</td> </tr> </tbody> </table>		L40	L35	L24	L16	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	21,0	14,0	10,0	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	11,0	8,0	$\rho_k$ (kg/m <sup>3</sup> )	420	400	350	310
	L40	L35	L24	L16																						
$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	21,0	14,0	10,0																						
$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	11,0	8,0																						
$\rho_k$ (kg/m <sup>3</sup> )	420	400	350	310																						
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005																										
<sup>b)</sup> Timber size shall be to EN 336																										

Table 6-2 - Settings for Euro-GreComat 704 (Model given in TG1/1006/08) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $f_{mod}$	Comments and additional requirements																
Finland	FI	Spruce	$20 \leq t_n \leq 50$	LS22	31	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Timber mean moisture content between 7% and 15% - Feed speed between 80 m/min and 120 m/min - Timber surface planed  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>LS22</th> <th>LS18</th> <th>LS15</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> </tr> <tr> <td><math>\rho_k</math><sup>d)</sup> (kg/m<sup>3</sup>)</td> <td>390</td> <td>370</td> <td>350</td> </tr> </tbody> </table>		LS22	LS18	LS15	$f_{t,k}$ (N/mm <sup>2</sup> )	22,0	18,0	14,5	$E_{t,mean}$ (kN/mm <sup>2</sup> )	13,0	12,0	11,0	$\rho_k$ <sup>d)</sup> (kg/m <sup>3</sup> )	390	370	350
	LS22	LS18	LS15																			
$f_{t,k}$ (N/mm <sup>2</sup> )	22,0	18,0	14,5																			
$E_{t,mean}$ (kN/mm <sup>2</sup> )	13,0	12,0	11,0																			
$\rho_k$ <sup>d)</sup> (kg/m <sup>3</sup> )	390	370	350																			
Norway	NO	<i>Picea</i>	$80 \leq b_n \leq 280$	LS18	23																	
Sweden	SE	<i>abies</i>		LS15	14																	
Estonia	ES			LS22	36																	
Latvia	LV			LS15	29																	
Russia <sup>c)</sup>	RU																					
Poland	PL																					
Germany	DE																					
Austria	AT																					
Czech Republic	CZ																					

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber size shall be to EN 336

<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

<sup>d)</sup> The density values are indicative only and were not taken into account when calculating settings

Table 7-1 - Settings for Dynagrade machine (including HC and XHC)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i> (machine units)	Comments and additional requirements
Finland Norway Sweden Estonia Latvia Russia <sup>d)</sup> Poland	FI NO SE ES LV RU PL	Spruce <i>Picea abies</i>	$34 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C24 C24 C16 C27 C27 C16 C30 C30	4 300 000 5 010 000 4 350 000 5 080 000 5 230 000 4 350 000 6 480 000 6 480 000	Requirements for grading: - Air temperature between +10°C and +50°C - Relative humidity in the air: < 85 % - Timber temperature > -10 °C - Timber mean moisture content between 10% and 16% Dynagrade - Conveyor speed: $\leq 1$ m/sec - Spacing between pieces: $\geq 200$ mm - Grading speed: $\leq 100$ pieces/min
Finland Norway Sweden Latvia	FI NO SE LV	Pine <i>Pinus sylvestris</i>		C18 C30 C24 C30 C24 C18 C35 C24 C18 C30 C16 C27 C18	4 350 000 7 250 000 5 550 000 6 520 000 5 970 000 4 490 000 7 780 000 5 680 000 5 130 000 6 480 000 4 350 000 5 850 000 5 040 000	Dynagrade HC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm - Grading speed for widths $\leq 250$ mm: $\leq 150$ pieces/min Dynagrade XHC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm - Grading speed for widths $\leq 100$ mm: $\leq 240$ pieces/min for $100 < b \leq 250$ mm: $78000/(b+225)$ pieces/min Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions. Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content ( <i>u</i> ) may be used if the average moisture content of a batch is between ( <i>u</i> -2)% and 20 %  $I_u = 1 - 0.0123 \cdot (u - 12) \cdot I_{12} \quad (1)$

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>d)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

Table 7-2 - Settings for Dynagrade machine (including HC and XHC) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i> (machine units)	Comments and additional requirements
Finland Norway Sweden Latvia	FI NO SE LV	Pine <i>Pinus sylvestris</i>	$34 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	C24	4 180 000	Requirements for grading: - Air temperature between +10°C and +50°C - Relative humidity in the air: < 85 % - Timber temperature: > -10 °C - Timber mean moisture content between 10% and 16% Dynagrade - Conveyor speed: $\leq 1$ m/sec - Spacing between pieces: $\geq 200$ mm - Grading speed: $\leq 100$ pieces/min Dynagrade HC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm - Grading speed for widths $\leq 250$ mm: $\leq 150$ pieces/min Dynagrade XHC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm - Grading speed for widths $\leq 100$ mm: $\leq 240$ pieces/min for $100 < b \leq 250$ : $78000/(b+225)$ pieces/min Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions. Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content ( <i>u</i> ) may be used if the average moisture content of a batch is between ( <i>u</i> -2)% and 20 % $I_u = 1 - 0.0123 \cdot (u - 12) \cdot I_{12} \quad (1)$
				C24	5 150 000	
				C16	4 180 000	
				C27	4 730 000	
				C27	5 330 000	
				C16	4 180 000	
				C30	5 500 000	
				C30	5 500 000	
				C18	4 180 000	
				C30	6 460 000	
				C24	5 220 000	
				C30	5 840 000	
				C24	5 580 000	
				C18	4 960 000	
				C35	6 470 000	
				C24	5 220 000	
C18	4 960 000					
C30	5 500 000					
C16	4 180 000					
C27	5 330 000					
C18	4 550 000					

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

Table 7-3 - Settings for Dynagrade machine (including HC and XHC) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value <i>I</i> (machine units)	Comments and additional requirements
Finland	FI	Spruce	$31 \leq t_n \leq 110$	C24	4 300 000	Requirements for grading: - Air temperature between +10°C and +50°C - Relative humidity in the air: < 85 % - Timber temperature: > -10 °C - Timber mean moisture content between 10% and 16% Dynagrade - Conveyor speed: $\leq 1$ m/sec - Spacing between pieces: $\geq 200$ mm - Grading speed: $\leq 100$ pieces/min Dynagrade HC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm - Grading speed for widths $\leq 250$ mm: $\leq 150$ pieces/min Dynagrade XHC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm Grading speed for widths $\leq 100$ mm: $\leq 240$ pieces/min for $100 < b \leq 250$ : $78000/(b+225)$ pieces/min Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions.+ Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content ( <i>u</i> ) may be used if the average moisture content of a batch is between ( <i>u</i> -2)% and 20 % $I_u = 1 - 0.0123 \cdot (u - 12) \cdot I_{12} \quad (1)$ TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3$ N/mm <sup>2</sup> , $E_{0,mean} = 11,0$ kN/mm <sup>2</sup> , $\rho_k = 370$ kg/m <sup>3</sup> Other characteristic values can be calculated from the equations given in EN 384.
Norway	NO	<i>Picea</i>	$60 \leq b_n \leq 300$	TR26	6 150 000	
Sweden	SE	<i>abies</i>		C16	4 300 000	
Estonia	ES			TR26	6 150 000	
Latvia	LV	Fir		C18	4 300 000	
Russia <sup>c)</sup>	RU	<i>Abies</i>		C27	6 150 000	
Poland	PL	<i>alba</i>		C18	4 420 000	
Germany	DE			C30	6 900 000	
Austria	AT			C18	4 300 000	
Czech Republic	CZ			C30	6 900 000	
				C24	5 770 000	
				C18	4 650 000	

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338





Table 7-6 - Settings for Dynagrade machine (including HC and XHC) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade or grade combination	Model value <i>I</i> (machine units)	Comments and additional requirements																								
Finland Norway Sweden	FI NO SE	Pine <i>Pinus sylvestris</i>	$19 \leq t_n \leq 53$ $85 \leq b_n \leq 248$	LS15 LS18 LS22 LS11 LS22 LS15 LS22 LS18 LS26 LS15 LS26 LS18	5 350 000 5 840 000 6 240 000 4 360 000 6 350 000 5 500 000 6 400 000 6 070 000 6 460 000 5 500 000 6 730 000 6 280 000	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +10°C and +50°C</li> <li>- Relative humidity in the air: &lt; 85 %</li> <li>- Timber temperature: &gt; -10 °C</li> <li>- Timber mean moisture content between 10% and 16%</li> </ul> <p>Dynagrade</p> <ul style="list-style-type: none"> <li>- Conveyor speed: <math>\leq 1</math> m/sec</li> <li>- Spacing between pieces: <math>\geq 200</math>mm</li> <li>- Grading speed: <math>\leq 100</math> pieces/min</li> </ul> <p>Dynagrade HC</p> <ul style="list-style-type: none"> <li>- Conveyor speed: <math>\leq 1,3</math> m/sec</li> <li>- Spacing between pieces: <math>\geq 225</math>mm</li> <li>- Grading speed for widths <math>\leq 250</math>mm: <math>\leq 150</math> pieces/min</li> </ul> <p>Dynagrade XHC</p> <ul style="list-style-type: none"> <li>- Conveyor speed: <math>\leq 1,3</math> m/sec</li> <li>- Spacing between pieces: <math>\geq 225</math>mm</li> </ul> <p>Grading speed</p> <ul style="list-style-type: none"> <li>for widths <math>\leq 100</math>mm: <math>\leq 240</math> pieces/min</li> <li>for <math>100 &lt; b \leq 250</math>: <math>78000/(b+225)</math> pieces/min</li> </ul> <p>These grades apply to timber where tensile strength controls the design. Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions.</p> <p>Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content (<i>u</i>) may be used if the average moisture content of a batch is between (<i>u</i>-2)% and 20 %</p> $I_u = 1 - 0.0123 \cdot (u - 12) \cdot I_{12} \quad (1)$ <p>Characteristic values of the grades:</p> <table border="1"> <thead> <tr> <th></th> <th>LS26</th> <th>LS22</th> <th>LS18</th> <th>LS15</th> <th>LS11</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k^{c)}</math> (kg/m<sup>3</sup>)</td> <td>435</td> <td>435</td> <td>435</td> <td>420</td> <td>405</td> </tr> </tbody> </table>		LS26	LS22	LS18	LS15	LS11	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	9,0	$\rho_k^{c)}$ (kg/m <sup>3</sup> )	435	435	435	420	405
	LS26	LS22	LS18	LS15	LS11																									
$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	11,0																									
$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	9,0																									
$\rho_k^{c)}$ (kg/m <sup>3</sup> )	435	435	435	420	405																									
<p><sup>a)</sup> See Clause 7.3 in EN 14081-1:2005</p> <p><sup>b)</sup> Timber sizes shall be to EN 336</p> <p><sup>c)</sup> The density values are indicative only and were not taken into account when calculating settings</p>																														

Table 7-7 - Settings for Dynagrade machine (including HC and XHC) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i> (machine units)	Comments and additional requirements
Finland Norway Sweden Estonia Latvia Russia <sup>d)</sup> Poland	FI NO SE ES LV RU PL	Spruce <i>Picea abies</i>	$31 \leq t_n \leq 110$ $60 \leq b_n \leq 300$	TR26 TR26 C18 TR26 C16	5 520 000 5 850 000 5 040 000 5 850 000 4 350 000	Requirements for grading: - Air temperature between +10°C and +50°C - Relative humidity in the air: < 85 % - Timber temperature: > -10 °C - Timber mean moisture content between 10% and 16% Dynagrade - Conveyor speed: $\leq 1$ m/sec - Spacing between pieces: $\geq 200$ mm - Grading speed: $\leq 100$ pieces/min Dynagrade HC - Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm - Grading speed for widths $\leq 250$ mm: $\leq 150$ pieces/min Dynagrade XHC Conveyor speed: $\leq 1,3$ m/sec - Spacing between pieces: $\geq 225$ mm Grading speed for widths $\leq 100$ mm: $\leq 240$ pieces/min for $100 < b \leq 250$ : $78000/(b+225)$ pieces/min Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions. Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content ( <i>u</i> ) may be used if the average moisture content of a batch is between ( <i>u</i> -2)% and 20 % $I_u = 1 - 0.0123 \cdot (u - 12) \cdot I_{12} \quad (1)$ TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3$ N/mm <sup>2</sup> , $E_{0,mean} = 11,0$ kN/mm <sup>2</sup> , $\rho_k = 370$ kg/m <sup>3</sup> Other characteristic values can be calculated from the equations given in EN 384.
Finland Norway Sweden Latvia	FI NO SE LV	Pine <i>Pinus sylvestris</i>	$34 \leq t_n \leq 75$ $60 \leq b_n \leq 300$	TR26 TR26 C18 TR26 C16	5 210 000 5 220 000 4 550 000 5 220 000 4 180 000	

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338  
<sup>d)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia

Table 7-8 - Settings for Dynagrade machine (including HC and XHC) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i> (Machine units)	Comments and additional requirements
Norway	NO	Sitka spruce <i>Picea</i> <i>Sitchensis</i>	$33 \leq t_n \leq 53$ $88 \leq b_n \leq 218$	C24 C18	5 450 000 4 600 000	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +10°C and +50°C</li> <li>- Relative humidity in the air: &lt; 85 %</li> <li>- Timber temperature: &gt; -10 °C</li> <li>- Timber mean moisture content between 10% and 16%</li> </ul> <p>Dynagrade</p> <ul style="list-style-type: none"> <li>- Conveyor speed: <math>\leq 1</math> m/sec</li> <li>- Spacing between pieces: <math>\geq 200</math>mm</li> <li>- Grading speed: <math>\leq 100</math> pieces/min</li> </ul> <p>Dynagrade HC</p> <ul style="list-style-type: none"> <li>- Conveyor speed: <math>\leq 1,3</math> m/sec</li> <li>- Spacing between pieces: <math>\geq 225</math>mm</li> <li>- Grading speed for widths <math>\leq 250</math>mm: <math>\leq 150</math> pieces/min</li> </ul> <p>Dynagrade XHC</p> <ul style="list-style-type: none"> <li>- Conveyor speed: <math>\leq 1,3</math> m/sec</li> <li>- Spacing between pieces: <math>\geq 225</math>mm</li> <li>- Grading speed <ul style="list-style-type: none"> <li>for widths <math>\leq 100</math>mm: <math>\leq 240</math> pieces/min</li> <li>for <math>100 &lt; b \leq 250</math>: <math>78000/(b+225)</math> pieces/min</li> </ul> </li> </ul> <p>Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions.</p> <p>Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content (<i>u</i>) may be used if the average moisture content of a batch is between (<i>u</i>-2)% and 20 %</p> $I_u = 1 - 0.0123 \cdot (u - 12) \cdot I_{12} \quad (1)$

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Grades specified by C are strength classes given in EN 338

Table 8-1 - Settings for VISCAN machine (Model given in TG1/1005/03)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $E_{mod}$	Comments and additional requirements																								
Germany	DE	Spruce	$26 \leq t_n \leq 110$	L25	10 100	Requirements for grading: - Timber temperature $> 0^\circ\text{C}$ - Mean moisture content of each piece between 7% and 15% - Maximum feed speed 150 boards/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th>L40</th> <th>L36</th> <th>L30</th> <th>L25</th> <th>L17</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math> (kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>380</td> <td>350</td> <td>320</td> </tr> </tbody> </table>		L40	L36	L30	L25	L17	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	9,0	$\rho_k$ (kg/m <sup>3</sup> )	420	400	380	350	320
	L40	L36	L30	L25	L17																									
$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	11,0																									
$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	9,0																									
$\rho_k$ (kg/m <sup>3</sup> )	420	400	380	350	320																									
Austria	AT	<i>Picea</i>	$60 \leq b_n \leq 319$	L25	10 100																									
Czech Republic	CZ	<i>abies</i>		L17	6 300																									
		Fir		L30	12 000																									
		<i>Abies alba</i>		L17	4 100																									
				L36	13 200																									
				L25	10 500																									
				L40	14 100																									
				L30	12 900																									
				L17	4 100																									

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber size shall be to EN 336

Table 8-2 - Settings for ViSCAN machine (Model given in TG1/1007/17Rev) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $E_{mod}$	Comments and additional requirements
Germany	DE	Spruce	$26 \leq t_n \leq 110$	C18	6 200	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 8% and 20% - Maximum feed speed: 150 pieces/min - Timber surface planed or sawn  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11000 \text{ N/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
Austria	AT	<i>Picea</i>	$60 \leq b_n \leq 319$	C24	8 700	
Czech Republic	CZ	<i>abies</i>		C27	10 200	
			C16	8 000		
		Fir		TR26	10 200	
		<i>Abies alba</i>		C16	7 100	
				C30	11 600	
				C18	7 600	
				C30	11 600	
				C24	10 400	
				C16	7 100	

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be according to EN 336  
<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

Table 8-3 - Settings for ViSCAN machine (Model given in TG1/0308/16Rev ) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $E_{mod}$	Comments and additional requirements
Germany Austria Czech Republic	DE	Spruce	$26 \leq t_n \leq 110$	C18	1 900	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 8% and 20% The moisture content of the individual timber pieces shall not deviate more than $\pm 4$ percentage points from the mean value. - Maximum feed speed: 150 pieces/min - Timber surface planed or sawn  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11000 \text{ N/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
	AT	<i>Picea</i>	$60 \leq b_n \leq 319$	C24	5 400	
	CZ	<i>abies</i>		C27	6 200	
			Fir	C16	4 400	
		<i>Abies alba</i>	TR26	6 400		
			C16	3 900		
			C30	6 800		
		C16	3 300			
			C35	9 900		
			C27	6 800		
			C16	3 100		

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be according to EN 336  
<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

Table 8-4 - Settings for ViSCAN machine (Model given in TG1/0308/14Rev ) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $E_{mod}$	Comments and additional requirements																												
Germany	DE	Spruce	$26 \leq t_n \leq 110$	L22	5 800	Requirements for grading: - Timber temperature $> 0^\circ\text{C}$ - Mean moisture content of each piece between 8% and 20% - Maximum feed speed 150 boards/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td></td> <td></td> <td>L36</td> <td>L30</td> <td>L27</td> <td>L25</td> <td>L22</td> </tr> <tr> <td><math>f_{t,k}</math></td> <td>(N/mm<sup>2</sup>)</td> <td>22,0</td> <td>18,0</td> <td>16,0</td> <td>14,5</td> <td>13,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>(kN/mm<sup>2</sup>)</td> <td>13,0</td> <td>12,0</td> <td>11,5</td> <td>11,0</td> <td>10,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td>(kg/m<sup>3</sup>)</td> <td>400</td> <td>380</td> <td>370</td> <td>350</td> <td>340</td> </tr> </table>			L36	L30	L27	L25	L22	$f_{t,k}$	(N/mm <sup>2</sup> )	22,0	18,0	16,0	14,5	13,0	$E_{t,mean}$	(kN/mm <sup>2</sup> )	13,0	12,0	11,5	11,0	10,0	$\rho_k$	(kg/m <sup>3</sup> )	400	380	370	350	340
		L36	L30	L27	L25		L22																											
$f_{t,k}$	(N/mm <sup>2</sup> )	22,0	18,0	16,0	14,5		13,0																											
$E_{t,mean}$	(kN/mm <sup>2</sup> )	13,0	12,0	11,5	11,0		10,0																											
$\rho_k$	(kg/m <sup>3</sup> )	400	380	370	350		340																											
Austria	AT	<i>Picea</i>	$60 \leq b_n \leq 319$	L25	7 800																													
Czech Republic	CZ	<i>abies</i>		L27	10 700																													
				L17	7 500																													
Switzerland	CH	Fir		L30	11 900																													
Finland	FI	<i>Abies</i>		L25	9 300																													
Norway	NO	<i>alba</i>		L17	7 800																													
Sweden	SE			L36	13 800																													
Estonia	ES			L25	8 600																													
Latvia	LV			L17	8 200																													
Russia <sup>c)</sup>	RU																																	
Poland	PL																																	
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber size shall be to EN 336 <sup>c)</sup> Settings apply only to timber grown west of the Ural and north of the 55 degree line of latitude																																		

Table 8-5 - Settings for ViSCAN machine (Model given in TG1/0107/07) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $E_{mod}$	Comments and additional requirements
Finland	FI	Spruce	$26 \leq t_n \leq 110$	C35	14 500	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4\%$ from the mean value. - Maximum feed speed: 150 pieces/min - Timber surface planed or sawn  The settings for C27-C18 can also be used for TR26-C18 The settings for C27-C16 can also be used for TR26-C16
Norway	NO	<i>Picea</i>	$60 \leq b_n \leq 319$	C27	10 600	
Sweden	SE	<i>abies</i>		C18	6 300	
Estonia	ES			C35	14 500	
Latvia	LV			C24	6 000	
Russia <sup>d)</sup>	RU			C30	11 600	
Poland	PL			C24	9 700	
				C18	7 500	
				C30	11 600	
				C18	6 000	
				C27	9 600	
			C18	7 700		
			C27	9 600		
			C16	6 000		
			C24	6 000		

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be according to EN 336  
<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338  
<sup>d)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 8-6 - Settings for ViSCAN machine (Model given in TG1/0308/07) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $E_{mod}$	Comments and additional requirements
Finland	FI	Spruce	$26 \leq t_n \leq 110$	C35	13800	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4\%$ from the mean value. - Maximum feed speed: 150 pieces/min - Timber surface planed or sawn  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11,0 \text{ kN/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
Norway	NO	<i>Picea</i>	$60 \leq b_n \leq 319$	C30	11600	
Sweden	SE	<i>abies</i>		C18	6200	
Estonia	ES			C35	13800	
Latvia	LV			TR26	9200	
Russia <sup>d)</sup>	RU			C18	7900	
				C35	13800	
				C27	9600	
				C18	7800	
				C35	13800	
				C24	8300	
				C16	7000	
				C35	13800	
				C18	6200	
				C30	10600	
				C18	6200	
			C30	10600		
			C16	6100		
			TR26	8000		
			C27	8300		
			C16	7000		
			C27	7800		
			C24	6200		

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be according to EN 336  
<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338  
<sup>d)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 8-7 - Settings for ViSCAN machine (Model given in TG1/0308/08) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $E_{mod}$	Comments and additional requirements
Finland Sweden Russia <sup>d)</sup>	FI SE RU	Pine <i>Pinus sylvestris</i>	$35 \leq t_n \leq 70$ $90 \leq b_n \leq 220$	C35 C24 C18 C35 C24 C16 C35 C18 C30 C18 C30 C16 TR26 C16 C27 C16 C24	12300 9900 7800 12300 10500 5000 12300 5000 9500 7900 9500 5000 8900 6000 8600 7100 7100	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Timber temperature: <math>&gt; 0^\circ\text{C}</math></li> <li>- Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than <math>\pm 4\%</math> from the mean value.</li> <li>- Maximum feed speed: 150 pieces/min</li> <li>- Timber surface planed or sawn</li> </ul> <p>TR26 is a UK grade for trussed rafters. Its primary characteristic values are:  <math>f_{m,k} = 28,3 \text{ N/mm}^2</math>, <math>E_{0,mean} = 11,0 \text{ kN/mm}^2</math>, <math>\rho_k = 370 \text{ kg/m}^3</math>            Other characteristic values can be calculated from the equations given in EN 384.</p>
<p><sup>a)</sup> See Clause 7.3 in EN 14081-1:2005</p> <p><sup>b)</sup> Timber sizes shall be according to EN 336</p> <p><sup>c)</sup> Grades prefixed by C are strength classes given in EN 338</p> <p><sup>d)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude</p>						

Table 8-8 - Settings for ViSCAN machine (Model given in TG1/1007/07d) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $E_{mod}$	Comments and additional requirements																												
Finland	FI	Spruce	$26 \leq t_n \leq 110$	LD26	14600	Requirements for grading: - Timber temperature $> 0^\circ\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4\%$ from the mean value. - Maximum feed speed 150 boards/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th></th> <th>LD26</th> <th>LD22</th> <th>LD18</th> <th>LD15</th> <th>LD11</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math></td> <td><math>\text{N/mm}^2</math></td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td><math>\text{kN/m}^2</math></td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td><math>\text{kg/m}^3</math></td> <td>410</td> <td>390</td> <td>370</td> <td>350</td> <td>320</td> </tr> </tbody> </table>			LD26	LD22	LD18	LD15	LD11	$f_{t,k}$	$\text{N/mm}^2$	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$	$\text{kN/m}^2$	14,0	13,0	12,0	11,0	9,0	$\rho_k$	$\text{kg/m}^3$	410	390	370	350	320
		LD26	LD22	LD18	LD15		LD11																											
$f_{t,k}$	$\text{N/mm}^2$	26,0	22,0	18,0	14,5		11,0																											
$E_{t,mean}$	$\text{kN/m}^2$	14,0	13,0	12,0	11,0		9,0																											
$\rho_k$	$\text{kg/m}^3$	410	390	370	350		320																											
Norway	NO	<i>Picea</i>	$60 \leq b_n \leq 319$	LD18	10900																													
Sweden	SE	<i>abies</i>		LD11	6000																													
Estonia	ES			LD26	14600																													
Latvia	LV			LD15	7000																													
Russia <sup>c)</sup>	RU			LD22	13800																													
Poland	PL			LD15	7000																													
				LD22	13800																													
				LD11	6000																													
				LD18	10700																													
				LD15	7000																													

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be according to EN 336  
<sup>c)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 8-9 - Settings for ViSCAN machine (Model given in TG1/1007/07c) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $E_{mod}$	Comments and additional requirements																												
Finland	FI	Spruce <i>Picea</i> <i>abies</i>	$26 \leq t_n \leq 110$ $60 \leq b_n \leq 319$	LS26	12800	Requirements for grading: - Timber temperature > 0°C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than ±4 % from the mean value. - Maximum feed speed 150 boards/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are:																												
Norway	NO			LS18	11600																													
Sweden	SE			LS11	6000																													
Estonia	ES			LS26	12800																													
Latvia	LV			LS15	7000																													
Russia <sup>c)</sup>	RU			LS22	10800																													
Poland	PL			LS11	6000																													
				LS18	7800																													
				LS15	7000																													
						<table border="1"> <thead> <tr> <th></th> <th></th> <th>LS26</th> <th>LS22</th> <th>LS18</th> <th>LS15</th> <th>LS11</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math></td> <td>N/mm<sup>2</sup></td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>kN/mm<sup>2</sup></td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k^{d)}</math></td> <td>kg/m<sup>3</sup></td> <td>380</td> <td>370</td> <td>360</td> <td>350</td> <td>320</td> </tr> </tbody> </table>			LS26	LS22	LS18	LS15	LS11	$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$	kN/mm <sup>2</sup>	14,0	13,0	12,0	11,0	9,0	$\rho_k^{d)}$	kg/m <sup>3</sup>	380	370	360	350	320
		LS26	LS22	LS18	LS15	LS11																												
$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0																												
$E_{t,mean}$	kN/mm <sup>2</sup>	14,0	13,0	12,0	11,0	9,0																												
$\rho_k^{d)}$	kg/m <sup>3</sup>	380	370	360	350	320																												
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber sizes shall be according to EN 336 <sup>c)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude <sup>d)</sup> The density values are indicative only and were not taken into account when calculating settings																																		

Table 8-10 - Settings for ViSCAN machine (Model given in TG1/0508/13Rev) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value $E_{mod}$	Comments and additional requirements
France	FR	Douglas fir <i>Pseudotsuga menziesii</i>	$30 \leq t_n \leq 77$ $81 \leq b_n \leq 319$	C 40	18 600	Requirements for grading: - Timber temperature: > 0°C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than ±4 percentage points from the mean value. - Maximum feed speed: 150 pieces/min - Timber surface planed or sawn
				C 30	14 500	
				C 18	10 000	
				C 35	16 600	
				C 24	14 000	
				C 18	10 300	
				C 35	16 500	
				C 18	9 300	
C 30	13 900					
C 18	10 300					
C 24	11 900					
C 18	11 200					
C 18	8 700					

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>c)</sup> Timber size shall be to EN 336  
<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 9-1 - Settings for EuroGreComat 706 (Model given in TG1/0107/09)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value $f_{mod}$	Comments and additional requirements																								
Germany Austria Czech Republic	DE AT CZ	Spruce <i>Picea abies</i>  Fir <i>Abies alba</i>	$30 \leq t_n \leq 50$ $95 \leq b_n \leq 280$	L25 L17 L30 L17 L36 L25 L40 L25	20,1 16,5 27,5 5,5 31,7 21,9 37,5 20,6	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Timber temperature: <math>&gt; 0^\circ\text{C}</math></li> <li>- Mean moisture content between 7% and 15%</li> <li>- Feed speed: Frequency device <math>\leq 150</math> boards/min X-ray scanner between 80 and 300 m/min</li> <li>- Timber surface planed or sawn</li> </ul> <p>These grades apply to timber where tensile strength controls the design.</p> <p>The characteristic values for the grades are:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>L40</th> <th>L36</th> <th>L30</th> <th>L25</th> <th>L17</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math> (kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>380</td> <td>350</td> <td>320</td> </tr> </tbody> </table>		L40	L36	L30	L25	L17	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	9,0	$\rho_k$ (kg/m <sup>3</sup> )	420	400	380	350	320
	L40	L36	L30	L25	L17																									
$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	11,0																									
$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	9,0																									
$\rho_k$ (kg/m <sup>3</sup> )	420	400	380	350	320																									
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005																														
<sup>b)</sup> Timber size shall be to EN 336																														





Table 10-3 - Settings for GoldenEye 706 (Model given in TG1/1007/14Rev) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade or grade combination	Model value			Comments and additional requirements																																												
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$																																													
Germany	DE	Spruce	$26 \leq t_n \leq 66$	L22	6,6	5 300	305	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 8% and 20% - Feed speed: Frequency device $\leq 150$ boards/min X-ray scanner $\leq 450$ m/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td>L40</td> <td>L36</td> <td>L30</td> <td>L27</td> <td>L25</td> </tr> <tr> <td><math>f_{t,k}</math></td> <td>(N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>16,0</td> <td>14,5</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>(kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,5</td> <td>11,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td>(kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>380</td> <td>370</td> <td>350</td> </tr> </table> <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td>L22</td> <td>L17</td> </tr> <tr> <td><math>f_{t,k}</math></td> <td>(N/mm<sup>2</sup>)</td> <td>13,0</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>(kN/mm<sup>2</sup>)</td> <td>10,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td>(kg/m<sup>3</sup>)</td> <td>340</td> <td>320</td> </tr> </table>			L40	L36	L30	L27	L25	$f_{t,k}$	(N/mm <sup>2</sup> )	26,0	22,0	18,0	16,0	14,5	$E_{t,mean}$	(kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,5	11,0	$\rho_k$	(kg/m <sup>3</sup> )	420	400	380	370	350			L22	L17	$f_{t,k}$	(N/mm <sup>2</sup> )	13,0	11,0	$E_{t,mean}$	(kN/mm <sup>2</sup> )	10,0	9,0	$\rho_k$	(kg/m <sup>3</sup> )	340	320
		L40	L36	L30	L27	L25																																														
$f_{t,k}$	(N/mm <sup>2</sup> )	26,0	22,0	18,0	16,0	14,5																																														
$E_{t,mean}$	(kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,5	11,0																																														
$\rho_k$	(kg/m <sup>3</sup> )	420	400	380	370	350																																														
		L22	L17																																																	
$f_{t,k}$	(N/mm <sup>2</sup> )	13,0	11,0																																																	
$E_{t,mean}$	(kN/mm <sup>2</sup> )	10,0	9,0																																																	
$\rho_k$	(kg/m <sup>3</sup> )	340	320																																																	
Austria	AT	<i>Picea</i>	$63 \leq b_n \leq 319$	L25	13,5	3 900	334																																													
Czech Republic	CZ	<i>abies</i>		L27	17,4	4 000	377																																													
Switzerland	CH	Fir		L17	11,1	6 900	305																																													
Finland	FI	<i>Abies alba</i>		L30	21,1	7 700	390																																													
Norway	NO			L17	6,8	5 300	305																																													
Sweden	SE			L40	34,4	11 100	434																																													
Estonia	ES			L25	18,1	8 300	325																																													
Latvia	LV			L36	28,5	9 600	412																																													
Russia <sup>d)</sup>	RU			L25	17,4	9 200	343																																													
Poland	PL			L17	14,7	7 900	305																																													
				L40	34,4	11 100	434																																													
				L30	26,0	9 900	386																																													
				L17	6,6	5 300	305																																													

<sup>a)</sup> These settings are approved to permit each piece of timber with a width up to 250 mm to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces (splitting) with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Settings apply only to timber grown west of the Ural mountain range in Russia and north of the 55° line of latitude.





Table 10-6 - Settings for GoldenEye 706 (Model given in TG1/0308/11) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value			Comments and additional requirements
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$	
Finland	FI	Spruce	$32 \leq t_n \leq 82$	C45	57,3	14000	430	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4\%$ from the mean value. - Timber surface planed or sawn - Feed speed: Frequency device $\leq 150$ pieces/min X-ray scanner $\leq 450$ m/min  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k} = 28,3 \text{ N/mm}^2$ , $E_{0,mean} = 11,0 \text{ kN/mm}^2$ , $\rho_k = 370 \text{ kg/m}^3$ Other characteristic values can be calculated from the equations given in EN 384.
Norway	NO	<i>Picea</i>	$68 \leq b_n \leq 305$	C35	44,4	11000	390	
Sweden	SE	<i>abies</i>		C24	32,0	8500	340	
Estonia	ES			C16	17,8	6500	300	
Latvia	LV			C45	57,3	14000	430	
Russia <sup>e)</sup>	RU			C30	28,6	8000	370	
				C18	23,1	7500	310	
				C40	48,9	12000	410	
				C30	37,6	10000	370	
				C18	15,5	5500	310	
				C40	48,9	12000	410	
				TR26	28,9	9300	350	
				C18	23,2	7600	310	
				C40	48,9	12000	410	
				TR26	28,9	7500	350	
				C16	17,3	5500	300	
				C40	48,9	12000	410	
				C27	25,4	8900	360	
				C18	21,1	8000	310	
				C40	48,9	12000	410	
				C27	28,9	8700	350	
				C16	17,3	5500	300	

<sup>a)</sup> These settings are approved to permit each piece of timber with a width up to 250 mm to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces (splitting) with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude



Table 10-8 - Settings for GoldenEye 706 (Model given in TG1/0308/12) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value		Comments and additional requirements
					$f_{mod}$	$E_{mod}$	
Finland Russia <sup>e)</sup>	FI RU	Pine <i>Pinus sylvestris</i>	$35 \leq t_n \leq 70$ $90 \leq b_n \leq 220$	C40	52,0	12000	Requirements for grading: - Timber temperature: $> 0^{\circ}\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4\%$ from the mean value. - Timber surface planed or sawn - Feed speed: Frequency device $\leq 150$ pieces/min X-ray scanner $\leq 450$ m/min
				C35	46,3	10000	
				C24	35,9	9100	
				C16	13,7	5000	
				C40	50,8	12000	
				C30	39,9	10500	
				C18	13,7	5500	
				C40	50,8	12000	
				C24	30,7	9000	
				C16	13,7	5000	
				C35	43,9	11000	
				C24	32,2	9300	
C18	24,7	7000					
C35	43,9	11000					
C24	32,5	9600					
C16	13,7	5000					
C35	43,9	11000					
C18	16,5	5500					

<sup>a)</sup> These settings are approved to permit each piece of timber with a width up to 250 mm to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces (splitting) with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 10-9 - Settings for GoldenEye 706 (Model given in TG1/0308/12) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value		Comments and additional requirements
					$f_{mod}$	$E_{mod}$	
Finland Russia <sup>e)</sup>	FI RU	Pine <i>Pinus sylvestris</i>	$35 \leq t_n \leq 70$ $90 \leq b_n \leq 220$	C30	28,1	8500	Requirements for grading: - Timber temperature: $> 0^{\circ}\text{C}$ - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than $\pm 4\%$ from the mean value. - Timber surface planed or sawn - Feed speed: Frequency device $\leq 150$ pieces/min X-ray scanner $\leq 450$ m/min  TR26 is a UK grade for trussed rafters. Its primary characteristic values are: $f_{m,k}=28,3$ N/mm <sup>2</sup> , $E_{0,mean}=11,0$ kN/mm <sup>2</sup> , $\rho_k=370$ kg/m <sup>3</sup> Other characteristic values can be calculated from the equations given in EN 384.
				C18	20,6	8100	
				C30 C16	28,1 16,0	8500 5000	
				TR26 C16	29,0 20,6	7000 5000	
				C27 C16	25,4 21,8	8000 6300	
C24	21,3	5500					

<sup>a)</sup> These settings are approved to permit each piece of timber with a width up to 250 mm to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces (splitting) with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

<sup>e)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 10-10 - Settings for GoldenEye 706 (Model given in TG1/1007/09a) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade or grade combination	Model value			Comments and additional requirements																												
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$																													
Finland	FI	Spruce	$34 \leq t_n \leq 55$	LD26	33,8	11000	420	Requirements for grading: - Timber temperature > 0°C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than ±4 % from the mean value. - Maximum feed speed 150 boards/min for Viscan part and 450 m/min for X-ray part. - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table border="1" style="margin-left: 20px; margin-top: 10px;"> <thead> <tr> <th></th> <th></th> <th>LD26</th> <th>LD22</th> <th>LD18</th> <th>LD15</th> <th>LD11</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math></td> <td>N/mm<sup>2</sup></td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>kN/mm<sup>2</sup></td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k</math></td> <td>kg/m<sup>3</sup></td> <td>410</td> <td>390</td> <td>370</td> <td>350</td> <td>320</td> </tr> </tbody> </table>			LD26	LD22	LD18	LD15	LD11	$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$	kN/mm <sup>2</sup>	14,0	13,0	12,0	11,0	9,0	$\rho_k$	kg/m <sup>3</sup>	410	390	370	350	320
		LD26	LD22	LD18	LD15	LD11																														
$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0																														
$E_{t,mean}$	kN/mm <sup>2</sup>	14,0	13,0	12,0	11,0	9,0																														
$\rho_k$	kg/m <sup>3</sup>	410	390	370	350	320																														
Norway	NO	<i>Picea</i>	$90 \leq b_n \leq 220$	LD22	30,6	11000	411																													
Sweden	SE	<i>abies</i>		LD15	8,3	7800	341																													
Estonia	ES			LD26	33,8	11000	420																													
Latvia	LV			LD18	22,3	9200	369																													
Russia <sup>d)</sup>	RU			LD11	7,0	5000	315																													
Poland	PL			LD26	33,8	12000	420																													
				LD15	7,5	6000	325																													
				LD22	22,9	10000	388																													
				LD15	14,5	9700	369																													
				LD22	22,9	10000	388																													
				LD11	7,0	5000	315																													
				LD18	10,8	7000	356																													
				LD15	7,5	6000	325																													

<sup>a)</sup> These settings are approved to permit each piece of timber with a width up to 250 mm to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces (splitting) with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Settings apply only to timber grown west of the Urals and north of the 55 degree line of latitude

Table 10-11 - Settings for GoldenEye 706 machine (Model given in TG1/0508/11Rev) (continued)

Source country or countries	Source mark <sup>b)</sup>	Species	Permitted timber size <sup>a) c)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value $f_{mod}$	Comments and additional requirements
France	FR	Douglas fir <i>Pseudotsuga menziesii</i>	$30 \leq t_n \leq 77$ $81 \leq b_n \leq 319$	C 40	58,6	Requirements for grading: - Timber temperature: > 0°C - Timber mean moisture content between 8% and 20%. The moisture content of the individual timber pieces shall not deviate more than +/-4% from the mean value - Maximum feed speed: X-ray scanner not greater than 450 m/min ViSCAN not greater than 150 boards/min - Timber surface planed or sawn
				C 30	43,6	
				C 18	24,9	
				C 35	51,2	
				C 24	42,5	
				C 18	24,9	
				C 35	51,2	
				C 18	23,3	
C 30	41,2					
C 18	24,9					
C 24	37,0					
C 18	28,5					
C 18	18,0					

<sup>a)</sup> These settings are approved to permit each piece of timber with a width up to 250mm to be graded as if it is two pieces of timber of smaller widths. The timber is subsequently cut lengthwise into two pieces with the correct grade marked on each piece. This requires the machine to have the appropriate software, and the timber sizes before and after grading, to be as required by that software. The sizes of the two pieces after splitting must be within the permitted timber size. This note is valid for all approved source countries and species for this machine.

<sup>b)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>c)</sup> Timber size shall be to EN 336

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 11-1 - Settings for Timber Grader MTG with connected balance (Model given in TG1/0307/05)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade <sup>d)</sup> combination	Model value			Comments and additional requirements
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$	
Germany	DE	Spruce	$18 \leq t_n \leq 69$	C30	48,10	13 075	380	Requirements for grading: - Timber surface planed or sawn - Timber temperature: $> 0$ °C. - Timber mean moisture content between 10 and 25 % with a minimum and maximum value within +/- 5 percentage points from the mean value. - Grading procedure according to the Timber Grader MTG manual from Brookhuis Micro-Electronics. - Grading in combination with the visual override requirements according to table 1 of EN 14081-1:2005. - Measuring area on either end, measuring surface circular sawn flat - Grading set-up according to the requirements in the Timber Grader MTG technical specifications of BME. Balance connection for automatic weight readings according specifications of BME - Tolerances according to the requirements in the Timber Grader MTG technical specifications of BME: - Marking is not automatic so extra requirements for Factory Production Control are required.  The $k_v$ factor of EN 384 is not applied for the derivation of the settings.
Italy	IT	<i>Picea</i>	$55 \leq b_n \leq 220$	C24	42,30	11 000	350	
Slovenia	SI	<i>Abies</i>		C18	28,75	8 625	320	
Austria	AT							
Finland	FI							
Norway	NO							
Sweden	SE							
Russia <sup>c)</sup>	RU							

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55<sup>o</sup> line of latitude in Russia  
<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 11-2 - Settings for Timber Grader MTG with connected balance; (Model given in TG1/0308/04) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade <sup>d)</sup> combination	Model value			Comments and additional requirements
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$	
Finland Russia <sup>c)</sup> Sweden	FI RU SW	Spruce <i>Picea</i> <i>Abies</i>	$35 \leq t_n \leq 69$ $90 \leq b_n \leq 220$	C30	36,5	11 100	380	Requirements for grading: - Timber surface planed or sawn - Timber temperature: $> 0$ °C. - Timber mean moisture content between 10 and 25 % with a minimum and maximum value within +/- 5 percentage points from the mean value moisture content of the batch. - Grading procedure according to the Timber Grader MTG manual from Brookhuis Micro-Electronics. - Grading in combination with the visual override requirements according to table 1 of EN 14081-1:2005. - Measuring area on either end, measuring surface circular sawn flat - Grading set-up according to the requirements in the Timber Grader MTG technical specifications of BME. Balance connection for automatic weight readings according specifications of BME - Tolerances according to the requirements in the Timber Grader MTG technical specifications of BME: - Marking is not automatic so extra requirements for Factory Production Control are required.  The $k_v$ factor of EN 384 is not applied for the derivation of the settings.
				C24	32,0	10 400	350	
				C18	26,0	9 400	320	
				C35	45,1	11 800	400	
				C24	31,5	10 400	350	
				C18	25,3	9 400	320	
				C40	49,1	12 100	420	
C30	36,7	10 800	380					
C18	25,0	8 000	320					

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain and north of the 55° line of latitude range in Russia

<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 11-3 - Settings for Timber Grader MTG with connected balance; (Model given in TG1/0308/05) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade <sup>d)</sup> combination	Model value			Comments and additional requirements
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$	
Finland Russia <sup>c)</sup> Sweden	FI RU SW	Pine <i>Pinus</i> <i>Sylvestris</i>	$35 \leq t_n \leq 69$ $90 \leq b_n \leq 220$	C30 C24 C18	36,6 31,3 27,7	11 600 10 000 9 000	380 350 320	Requirements for grading: - Timber surface planed or sawn - Timber temperature: > 0 °C. - Timber mean moisture content between 10 and 25 % with a minimum and maximum value within +/- 5 percentage points from the mean value moisture content of the batch. - Grading procedure according to the Timber Grader MTG manual from Brookhuis Micro-Electronics. - Grading in combination with the visual override requirements according to Table 1 of EN 14081-1:2005. - Measuring area on either end, measuring surface circular sawn flat - Grading set-up according to the requirements in the Timber Grader MTG technical specifications of BME. Balance connection for automatic weight readings according specifications of BME - Tolerances according to the requirements in the Timber Grader MTG technical specifications of BME: - Marking is not automatic so extra requirements for Factory Production Control are required.  The $k_v$ factor of EN 384 is not applied for the derivation of the settings.
				C35	44,4	11 800	400	
				C24	31,7	9 700	350	
				C18	28,4	8 700	320	
				C40	51,4	12 700	420	
				C30	42,6	11 480	380	
				C18	22,0	7 000	320	

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain and north of the 55° line of latitude range in Russia  
<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 12-1 - Settings for Precigrader machine

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade <sup>d)</sup> or grade combination	Model value <i>I</i>	Comments and additional requirements
Finland	FI	Spruce	$31 \leq t_n \leq 110$	C24	8 130	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +5°C and +35°C</li> <li>- Relative humidity in the air: &lt; 85 %</li> <li>- Timber temperature: &gt; -10 °C</li> <li>- Timber mean moisture content between 8% and 16%</li> <li>- Conveyor speed: <math>0,2 &lt; v_c &lt; 1,3</math> m/sec</li> <li>- Grading speed: <math>\leq 180</math> pieces/min</li> </ul> <p>Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions.</p> <p>Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content (<i>u</i>) may be used if the average moisture content of a batch is between (<i>u</i>-2)% and 20 %</p> $I_u = 1 - 0.0102 \cdot (u - 12) \cdot I_{12} \quad (1)$ <p>TR26 is a UK grade for trussed rafters. Its primary characteristic values are:  <math>f_{m,k} = 28,3</math> N/mm<sup>2</sup>, <math>E_{0,mean} = 11,0</math> kN/mm<sup>2</sup>, <math>\rho_k = 370</math> kg/m<sup>3</sup>            Other characteristic values can be calculated from the equations given in EN 384.</p>
Norway	NO	<i>Picea</i>	$60 \leq b_n \leq 300$	C30	11 180	
Sweden	SE	<i>abies</i>				
Estonia	ES	Fir <i>Abies</i> <i>alba</i>		TR26	10 050	
Latvia	LV			C16	5 970	
Russia <sup>c)</sup>	RU			TR26	10 120	
Poland	PL			C18	7 140	
Germany	DE			C30	10 910	
Austria	AT			C18	5 970	
Czech Republic	CZ			C30	12 900	
				C24	9 110	
				C35	13 150	
				C18	5 970	
				C35	13 250	
				C24	8 960	
		C40	14 340			
		C24	8 760			
		C30	12 400			
		C24	10 810			
		C18	8 810			
		C35	13 790			
		C30	12 430			
		C18	5 970			
		C40	14 760			
		C30	11 350			
		C18	5 970			

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber sizes shall be to EN 336  
<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55° line of latitude in Russia  
<sup>d)</sup> Grades prefixed by C are strength classes given in EN 338

Table 12-2 - Settings for Precigrader machine (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade or grade combination	Model value <i>I</i>	Comments and additional requirements																																			
Finland	FI	Spruce	$19 \leq t_n \leq 53$	LS15	7 820	Requirements for grading: - Air temperature between +5°C and +35°C - Relative humidity in the air: < 85 % - Timber temperature: > -10 °C - Timber mean moisture content between 8% and 16% - Conveyor speed: $0,2 < v_c < 1,3$ m/sec - Grading speed: $\leq 180$ pieces/min  Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions. Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content ( <i>u</i> ) may be used if the average moisture content of a batch is between ( <i>u</i> -2)% and 20 %  $I_u = 1 - 0.0102 \cdot (u - 12) \cdot I_{12} \quad (1)$  These grades apply to timber where tensile strength controls the design.  <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td>LS2</td> <td>LS2</td> <td>LS1</td> <td>LS1</td> <td>LS1</td> </tr> <tr> <td></td> <td></td> <td>6</td> <td>2</td> <td>8</td> <td>5</td> <td>1</td> </tr> <tr> <td><i>f<sub>t,k</sub></i></td> <td>N/mm<sup>2</sup></td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><i>E<sub>t,mean</sub></i></td> <td>kN/mm<sup>2</sup></td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><i>ρ<sub>k</sub></i><sup>d)</sup></td> <td>kg/m<sup>3</sup></td> <td>455</td> <td>415</td> <td>390</td> <td>360</td> <td>340</td> </tr> </table>			LS2	LS2	LS1	LS1	LS1			6	2	8	5	1	<i>f<sub>t,k</sub></i>	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0	<i>E<sub>t,mean</sub></i>	kN/mm <sup>2</sup>	14,0	13,0	12,0	11,0	9,0	<i>ρ<sub>k</sub></i> <sup>d)</sup>	kg/m <sup>3</sup>	455	415	390	360	340
		LS2	LS2	LS1	LS1		LS1																																		
		6	2	8	5		1																																		
<i>f<sub>t,k</sub></i>	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5		11,0																																		
<i>E<sub>t,mean</sub></i>	kN/mm <sup>2</sup>	14,0	13,0	12,0	11,0		9,0																																		
<i>ρ<sub>k</sub></i> <sup>d)</sup>	kg/m <sup>3</sup>	455	415	390	360		340																																		
Norway	NO	<i>Picea</i>	$85 \leq b_n \leq 248$	LS18	10 760																																				
Sweden	SE	<i>abies</i>		LS22	12 150																																				
Estonia	ES	Fir <i>Abies</i> <i>alba</i>		LS11	5 050																																				
Latvia	LV			LS22	12 510																																				
Russia <sup>c)</sup>	RU			LS15	10 700																																				
Poland	PL			LS22	12 920																																				
Germany	DE			LS18	11 990																																				
Austria	AT			LS26	14 490																																				
Czech Republic	CZ			LS15	9 290																																				
				LS26	14 490																																				
				LS18	11 430																																				

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber sizes shall be to EN 336

<sup>c)</sup> Settings apply only to timber grown west of the Ural mountain range and north of the 55° line of latitude in Russia

<sup>d)</sup> The density values are indicative only and were not taken into account when calculating settings

Table 12-3 - Settings for Precigrader machine (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber sizes <sup>b)</sup> (mm)	Grade or grade combination	Model value <i>I</i>	Comments and additional requirements																												
Finland Norway Sweden	FI NO SE	Pine <i>Pinus sylvestris</i>	$19 \leq t_n \leq 53$ $85 \leq b_n \leq 248$	LS15 LS18 LS22 LS11 LS22 LS15 LS22 LS18 LS26 LS15 LS26 LS18	9 610 11 380 13 150 7 790 13 150 10 520 13 310 11 720 14 130 10 150 14 130 12 370	<p>Requirements for grading:</p> <ul style="list-style-type: none"> <li>- Air temperature between +5°C and +35°C</li> <li>- Relative humidity in the air: &lt; 85 %</li> <li>- Timber temperature: &gt; -10 °C</li> <li>- Timber mean moisture content between 8% and 16%</li> <li>- Conveyor speed: <math>0,2 &lt; v_c &lt; 1,3</math> m/sec</li> <li>- Grading speed: <math>\leq 180</math> pieces/min</li> </ul> <p>Actual setting, <i>I</i> is given in machine units and it is not affected by the timber dimensions.</p> <p>Where timber has a mean moisture content higher than 12% the settings can be calculated according to equation (1) and rounded to 3 significant digits. The settings for a certain nominal moisture content (<i>u</i>) may be used if the average moisture content of a batch is between (<i>u</i>-2)% and 20 %</p> $I_u = 1 - 0.0102 \cdot (u - 12) \cdot I_{12} \quad (1)$ <p>These grades apply to timber where tensile strength controls the design.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th></th> <th>LS26</th> <th>LS22</th> <th>LS18</th> <th>LS15</th> <th>LS11</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math></td> <td>N/mm<sup>2</sup></td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> <td>11,0</td> </tr> <tr> <td><math>E_{t,mean}</math></td> <td>kN/m<sup>2</sup> m</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> <td>9,0</td> </tr> <tr> <td><math>\rho_k^{c)}</math></td> <td>kg/m<sup>3</sup></td> <td>500</td> <td>480</td> <td>450</td> <td>430</td> <td>405</td> </tr> </tbody> </table>			LS26	LS22	LS18	LS15	LS11	$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0	$E_{t,mean}$	kN/m <sup>2</sup> m	14,0	13,0	12,0	11,0	9,0	$\rho_k^{c)}$	kg/m <sup>3</sup>	500	480	450	430	405
		LS26	LS22	LS18	LS15	LS11																												
$f_{t,k}$	N/mm <sup>2</sup>	26,0	22,0	18,0	14,5	11,0																												
$E_{t,mean}$	kN/m <sup>2</sup> m	14,0	13,0	12,0	11,0	9,0																												
$\rho_k^{c)}$	kg/m <sup>3</sup>	500	480	450	430	405																												
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005																																		
<sup>b)</sup> Timber sizes shall be to EN 336																																		
<sup>c)</sup> The density values are indicative only and were not taken into account when calculating settings																																		

Table 12-4 - Settings for Precigrader machine (Model given in TG1/0508/15Rev).

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value $E_{dyn}$	Comments and additional requirements
France	FR	Douglas fir <i>Pseudotsuga menziesii</i>	$30 \leq t_n \leq 77$ $81 \leq b_n \leq 242$	C 40	16 570	Requirements for grading: - Air temperature between +5°C and +35°C - Relative humidity in the air: < 85 % - Timber temperature: > -10 °C - Timber mean moisture content between 8% and 16%. The moisture content of the individual timber pieces shall not deviate more than +/-4% from the mean value - Conveyor speed: $0,2 < v_c < 1,3$ m/sec - Grading speed: $\leq 180$ pieces/min - Timber surface planed or sawn
				C 30	14 890	
				C 18	9 200	
				C 40	16 570	
				C 24	13 380	
				C 18	9 510	
				C 40	16 570	
C 18	8 900					
				C 30	14 890	
				C 18	9 200	
				C 24	12 830	
				C 18	9 650	
				C 18	8 900	

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005

<sup>b)</sup> Timber size shall be to EN 336

<sup>c)</sup> Grades prefixed by C are strength classes given in EN 338

Table 13-1 - Settings for Grademaster (Model given in TG1/1007/13Rev)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade or grade combination	Model value			Comments and additional requirements																				
					$f_{mod}$	$E_{mod}$	$\rho_{mod}$																					
Germany Austria Czech Republic	DE	Spruce	$27 \leq t_n \leq 49$	L25	12,0	5 700	324	Requirements for grading: - Timber temperature: $> 0^\circ\text{C}$ - Mean moisture content of each piece between 8% and 20% - Feed speed: Frequency device $\leq 25$ boards/min Optical scanner $\leq 180$ m/min - Timber surface planed or sawn  These grades apply to timber where tensile strength controls the design.  The characteristic values for the grades are: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th>L40</th> <th>L36</th> <th>L30</th> <th>L25</th> </tr> </thead> <tbody> <tr> <td><math>f_{t,k}</math> (N/mm<sup>2</sup>)</td> <td>26,0</td> <td>22,0</td> <td>18,0</td> <td>14,5</td> </tr> <tr> <td><math>E_{t,mean}</math> (kN/mm<sup>2</sup>)</td> <td>14,0</td> <td>13,0</td> <td>12,0</td> <td>11,0</td> </tr> <tr> <td><math>\rho_k</math> (kg/m<sup>3</sup>)</td> <td>420</td> <td>400</td> <td>380</td> <td>350</td> </tr> </tbody> </table>		L40	L36	L30	L25	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0	$\rho_k$ (kg/m <sup>3</sup> )	420	400	380	350
		L40	L36	L30	L25																							
	$f_{t,k}$ (N/mm <sup>2</sup> )	26,0	22,0	18,0	14,5																							
	$E_{t,mean}$ (kN/mm <sup>2</sup> )	14,0	13,0	12,0	11,0																							
	$\rho_k$ (kg/m <sup>3</sup> )	420	400	380	350																							
	AT	<i>Picea</i>	$77 \leq b_n \leq 280$	L30	20,2	5 700	378																					
	CZ	<i>abies</i>		L36	27,7	9 000	403																					
L25			18,9	9 400	324																							
		Fir		L40	45,0	13 000	435																					
		<i>Abies alba</i>		L36	29,0	10 100	404																					
				L25	19,4	9 100	324																					

<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005  
<sup>b)</sup> Timber size shall be to EN 336

Table 14-1 - Settings for E-scan machine (Model given in TG1/0508/17Rev).

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i>	Comments and additional requirements
France	FR	Douglas fir <i>Pseudotsuga menziesii</i>	$30 \leq t_n \leq 77$ $81 \leq b_n \leq 280$	C 30	46,0	Requirements for grading: - Timber temperature: > 0°C - Timber mean moisture content between 8% and 18%  - Maximum feed speed: 120 pieces/min - Timber surface planed or sawn
				C 18	27,1	
				C 24 C 18	40,3 31,3	
				C 18	23,7	
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber size shall be to EN 336 <sup>c)</sup> Grades prefixed by C are strength classes given in EN 338						

Table 15-1 - Settings for Triomatic machine (Model given in TG1/0508/14Rev).

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i>	Comments and additional requirements
France	FR	Douglas fir <i>Pseudotsuga menziesii</i>	$41 \leq t_n \leq 77$ $127 \leq b_n \leq 319$	C 30	54,1	Requirements for grading : Timber mean moisture content between 8 and 20%. The moisture content of the individual timber pieces shall not deviate more than +/-4% from the mean value  Timber temperature greater than 0°C  Timber surface finish planed or sawn Feed speed between 30 at 40 pieces/min with one couple of sensors
				C 18	26,2	
				C 24 C 18	39,6 33,1	
				C 18	23,5	
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber size shall be to EN 336 <sup>c)</sup> Grades prefixed by C are strength classes given in EN 338						

Table 15-2 - Settings for Triomatic machine (Model given in TG1/0308/19Rev) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i>	Comments and additional requirements
France	FR	Spruce : <i>Picea abies</i>	$38 \leq t_n \leq 63$ $100 \leq b_n \leq 200$	C 30	41,8	Requirements for grading :  Timber mean moisture content between 8 and 20%. The moisture content of the individual timber pieces shall not deviate more than +/-4% from the mean value  Timber temperature greater than 0°C  Timber surface finish planed or sawn Feed speed between 30 at 40 pieces/min with one couple of sensors
				C 18	26,7	
		Fir : <i>Abies alba</i>		C 24	34,1	
				C 18	26,6	
<sup>a)</sup> See Clause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber size shall be to EN 336 <sup>c)</sup> Grades prefixed by C are strength classes given in EN 338						

Table 15-3 - Settings for Triomatic machine (Model given in TG1/0308/18Rev ) (continued)

Source country or countries	Source mark <sup>a)</sup>	Species	Permitted timber size <sup>b)</sup> (mm)	Grade <sup>c)</sup> or grade combination	Model value <i>I</i>	Comments and additional requirements
Finland Russia <sup>d)</sup>	FI RU	Spruce : <i>Picea abies</i>	$38 \leq t_n \leq 63$ $100 \leq b_n \leq 200$	C 35 C 24  C 30 C 18  C24	47,8 32,3  38,0 31,9  32,3	Requirements for grading :  Timber mean moisture content between 8 and 20%. The moisture content of the individual timber pieces shall not deviate more than +/-4% from the mean value  Timber temperature greater than 0°C  Timber surface finish planed or sawn Feed speed between 30 at 40 pieces/min with one couple of sensors
<sup>a)</sup> See Cclause 7.3 in EN 14081-1:2005 <sup>b)</sup> Timber size shall be to EN 336 <sup>c)</sup> Grades prefixed by C are strength classes given in EN 338 <sup>d)</sup> Settings apply only to timber grown west of the Ural mountain and north of the 55° line of latitude range in Russia						

## Bibliography

- [1] EN 338, *Structural timber – Strength classes*
- [2] EN 384, *Structural timber – Determination of characteristic values of mechanical properties and density*

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