

ALBERTA SCALING MANUAL

SCALING STANDARDS

2.0	Scaling Standards	2
2.1	Scale Site Authorization	2
2.2	Scaler Requirements	2
2.2.1	Scaling Permit Requirements	2
2.2.2	Proficiency	3
2.2.3	Revocation of Scaling Permit	3
2.3	Scaling Tools / Equipment	4
2.4	Time of Scale	5
2.5	Spreading and Bucking of Loads	5
2.6	Numbering of Logs	6
2.7	Check Scaling	6
2.8	Refusal to Scale	10
2.9	Species / Condition / Product Codes	10
2.9.1	Species Code	11
2.9.2	Condition Code	12
2.9.3	Product Code	13
2.10	Utilization Standards	15
2.11	Log Measurements	15
2.11.1	Diameters	15
2.11.2	Butt Diameter	18
2.11.3	Basal Area	20
2.11.4	Length Measurement	20
2.11.5	Trim allowance	23
2.12	Special Product Codes	25
2.12.1	Undersize Logs	25
2.12.2	Small Stem Logs	25
2.12.3	Undersize Trees	26

2.0 Scaling Standards

2.1 Scale Site Authorization

Scale sites must be approved through application to the Provincial Timber Scaling Supervisor.

The form for application is found in appendix 1. This form is completed by the applicant, and reviewed by a local forestry officer prior to submission to the Provincial Timber Scaling Supervisor.

A smaller sized timber operation, which has access to an authorized weigh scale owned by another site operator, may apply for mass scale site authorization. The conditions and application under which such authorizations will be approved is found in appendix 2.

2.2 Scaler Requirements

2.2.1 Scaling Permit Requirements

One must possess a valid scaling permit in order to scale timber at a Public Land and Forest Division (PLFD) approved scale site.

The Scaling Permit Program Policy and Procedure Manual is on the departmental website at <http://www3.gov.ab.ca/srd/forests/managing/> and details the requirements necessary for obtaining and maintaining a scaling permit in Alberta.

The PLFD of Alberta Sustainable Resource Development (SRD) will issue a scaler's permit to those who meet the following criteria:

- Successfully completed a scaling course delivered by an instructor approved by PLFD and,
- Successfully passes the Forest Management Branch's Board of Examiners Scaling Permit Exam or Tree Length scale exam. Upon passing the Tree Length exam a modified scalers permit may be issued.
- Paid the prescribed fee for a permit.

Once a permit is issued it is valid for a period of five years, after which a scaling refresher course is required. After successfully completing the refresher course, one must pass the Board of Examiners' Refresher Course Permit Exam.

There are many requirements for one who possesses a scaling permit. In order to maintain a valid permit it is expected and required that the individual will conduct their scaling activities in a conscientious manner consistent with the procedures outlined in this manual, the Scaling Regulation, and the Timber Management Regulation.

2.2.2 Proficiency

It is very important that scalers have a thorough understanding of all guidelines, and a motivation to produce reliable, accurate data.

Scalers must be proficient and knowledgeable in the following procedures/concepts:

- All guidelines and procedures detailed in this manual regarding the measurement of timber.
- All scaling methods detailed in this manual, as well as the applicability of, and differences between, each method.
- All relevant legislation, directives, and policy.
- All guidelines and procedures detailed in this manual regarding mass scaling.
- Species identification.
- The applicability of dues modifiers.

2.2.3 Revocation of Scaling Permit

In certain situations a scaler may have their permit revoked. The following is an excerpt from the Scaling Regulation (AR195/2002):

Term of Permit **11 (1)** A scaler's permit expires on the date specified on the permit.

(2) Notwithstanding subsection (1), the Minister may cancel or suspend a scaler's permit

(a) if the holder of the permit contravenes the Act of the regulations under the Act, or

(b) if, in the Minister's opinion, it is in the public interest to cancel or suspend the permit.

2.3 Scaling Tools / Equipment

There are many tools used to scale wood. The photo below shows some of the basic tools used:



1. Tree marking paint
2. Lumber crayons
3. Flagging tape – check with the mill before using plastic flagging tape; most pulp mills do not allow the use of plastic tape.
4. Scaling stick – The Alberta scale stick is a fibreglass stick marked in 2cm classes with the equivalent basal area shown for each class. If a diameter is to be measured outside bark, then a caliper or gauge will be used as long as an allowance for bark thickness is taken into account.
5. Calculator
6. Logger's tape

7. Handheld data collector – there are many different kinds of data collectors currently on the market, and the PLFD does not endorse any one product. Any questions as to the suitability of these computers should be directed to the Provincial Timber Scaling Supervisor of the PLFD since there are minimum data capture requirements that must be met.
8. Tally sheets and volume tables – used when a handheld data collector is not available.

2.4 Time of Scale

For mass scale operations, sample scale loads must be scaled within a maximum of 30 days of the load crossing the scale; however, this does not mean that all loads are granted the full 30-day provision since scale data must be submitted to the PLFD within 21 days following the end of the month. For example:

Delivery to a sawmill that reports scale data monthly:

- a. A load from a timber license is delivered January 3, 2003 and is selected as a sample load. This load must be scaled by February 3, 2003, and the scale data reported to the PLFD by February 21, 2003.
- b. A second load from the same source is selected as a sample load on January 30, 2003. This load must be scaled and the data reported to the PLFD by February 21, 2003.

Delivery to an OSB mill that reports scale data by payment periods:

- a. A load is delivered to the mill on February 28, 2003 is selected as a sample. The mill is not required to report their scale data until May 21, 2003. The load must be scaled by March 28, 2003 and the data must be reported, as February data, to the PLFD by May 21, 2003. All sample data reported in this fashion must have the month scaled identified.

2.5 Spreading and Bucking of Loads

Logs being scaled by the Smalian Scale method will be spread out in such a manner that allows full access to each log for measuring. The use of brow logs to support the load off ground, is encouraged. Log decks or piles must be laid out to facilitate easy measurement required on a log face.

Logs shall be physically bucked in lengths corresponding to and generally in proportion to that of the mills product lengths. They will be measured up from the butt of the log/tree. No bucking of log/tree will occur where top piece is a code 99 and the resulting length is less than 2.4 metres in length. The Provincial Timber Scaling Supervisor shall only grant exceptions to this practice through written authorization.

2.6 Numbering of Logs

Log numbering is required when scaling with the Smalian Scale standard. All logs are to be numbered sequentially starting from either end of the deck at the number one. Exception to this rule must be with written approval from the PLFD check scaler. This consideration may allow for fewer logs to be numbered; in such cases no less than every fifth log may be numbered. In such instances the numbering must allow the check scaler to follow the sequence easily and be able to identify a specific log.

The Public Land and Forest Division reserve the use of red for scaling activities. Industry scalers must therefore use another color.

2.7 Check Scaling

In order to ensure a uniform scaling procedure is maintained throughout the province, PLFD staff will scale a percentage of loads scaled by the company and compare the results. This process is referred to as check scaling. Directive 97-11, Checking Weigh Scale Operations, details the requirements for check scaling.

The four most recently scaled loads must be available to the PLFD for check scaling, and therefore they may not be moved or altered until released by the PLFD. Alternatively, arrangements may be made with the PLFD check scaler as to how many loads must be available and the procedures for releasing loads, but written authorization must be obtained prior to deviating from standard procedure.

The company shall not know in advance which loads are to be check scaled.

An acceptable scale will be within $\pm 3.00\%$ of the check scale, notwithstanding any additional demerit system implemented by the department. The following formula is used to calculate the percent difference between the two scales:

$$\% \text{ Difference} = \frac{\text{Company Net Scale} - \text{PLFD Net Scale}}{\text{PLFD Net Scale}} \times 100$$

If the company scale is outside the range of $\pm 3.00\%$, the scaler and check scaler shall re-examine the two scales to determine where the differences occurred. If the scales cannot be reconciled then the PLFD scale will be used.

Once a PLFD check scaler begins a check scale, no wood is to be removed until the scaling is complete, the results compiled, and any differences resolved.

The PLFD check scaler shall make every effort to check scale as soon as possible after the original scale.

It is important to consider that the +/- 3.00% acceptable tolerance limit does not fully constitute adequate check scaling. Other check scaling activities include, but are not limited to, briefly reviewing each sample load to identify seemingly unrealistic values, focusing check scales on potentially problem loads, identifying biased measurements, and evaluating defect measurements.

When checking of tree length scale decks the scale will often not come within the +/- 3.00% due to the inherent variability of the scale methodology. Check scaling conducted at approved tree length scale sites should therefore focus on ensuring accurate delineation of unscaled timber, source segregation, proper species identification, accurate length and diameter measurement and the application of the volume tables.

In light of the above points the department may implement a check scale process involving a demerit system, which could lead to the rejection of a scale load.

The PLFD check scaler shall ensure that form TM119 “Monthly Check Scale Report” is completed and submitted to the Provincial Timber Scaling Supervisor monthly. Submission of these forms is required even if no check scale loads have been completed for a given month, and in such cases the header information will be completed and “*No Check Scales*” will be written across the form.

The following provides an example of how a monthly check scale report would be completed.



MONTHLY CHECK SCALE REPORT

COMPANY _____ **a**

MILL:

M							
---	--	--	--	--	--	--	--

MONTH:

--	--	--	--	--	--	--	--

(Y Y Y Y M M)

MILL LOCATION: _____

DISPOSITION	LOAD NO.	CO. NET SCALE	A.F.S. NET SCALE	DIFF.	% DIFF.	CULL		ITEM 1. (SEE BELOW)	ITEM 2. (SEE BELOW)	SCALER	CHECK SCALER
b	c	d	e	f	g	h	i	j	k	l	m
TOTALS FOR MONTH:											

Answer Yes or No to above
ITEM 1. Was review of scaling required to bring scale within 3% limits?
ITEM 2. Were A.F.S. figures used in calculating on TM 44's?

COST CALCULATIONS					
CHECK SCALER	SCALING (DAYS)	CHECKING (DAYS)	TOTAL (DAYS)	RATE/DATE	COST (\$)
TOTALS					

Rate/Day = monthly salary 21.7
Round work to nearest ¼ day
Round dollars to nearest whole dollar

COMPANY SCALERS		PERMIT NO.
n		
NO. OF LOADS SCALED	CHECKED	% CHECKED
NO. OF "YES" ON ITEMS 1 & 2		

COMMENTS:

Signature

Received by	Date	Checked by	Date	Entered by	Date

WHITE - H.O. TM BRANCH CANARY - FOREST HEADQUARTERS PINK - RANGER DISTRICT

Figure 2.1 – Monthly Check Scale Report

TM119s consist of the following (see lettered references):

- a. **HEADER INFORMATION** – the company name, mill location, mill number, and the month the check scales were completed are recorded.
- b. **DISPOSITION** – the disposition or harvest authority from which the check scale load originated.
- c. **LOAD NUMBER** – the load number being check scaled.
- d. **CO. NET SCALE** – the company scaler’s net scale, as obtained from the TM32 (see section 3).
- e. **PLFD NET SCALE** – the check scaler’s net scale.
- f. **DIFF.** – the difference between the PLFD net scale and the company net scale.
- g. **% DIFF** – the percent difference between the net scales.
- h. **CULL, CO.** – the company scaler’s cull volume.
- i. **CULL, PLFD** – the check scaler’s cull volume.
- j. **ITEM 1** – item 1 is a yes or no answer to the question “*was a review of scaling required to bring the scale within 3% limits?*” When a check scale results greater than 3.00% difference, the scaler and check scaler will review the measurements to determine where the differences occur. Once these differences are identified and corrected, the revised volumes (either PLFD or company volumes) will be recorded on this form, and “yes” will be entered in the item 1 column.
- k. **ITEM 2** – item 2 is a yes or no answer to the question “*were PLFD figures used in calculating TM44s?*” When a check scale is outside of the 3.00% limit and the numbers/measurements cannot be reconciled, PLFD volumes will be used for TM44 calculations. In such a case “yes” is entered in the item 2 column.
- l. **SCALER** – the name of the company scaler.
- m. **CHECK SCALER** – the name of the check scaler.

- n. **SUMMARY INFORMATION** – in this section the following information is required: the names of the company scalers, their permit numbers, the number of loads scaled for that month, the number of loads checked, the percent of the loads checked, and the number of “yes” answers for items 1 and 2 for that month.
- o. **COST CALCULATIONS** – this information is recorded so that the cost of check scaling may be monitored. The names of the check scalers, the number of days scaled, the daily pay rate of the check scalers are all recorded in this section.

2.8 Refusal to Scale

A scaler or check scaler may refuse to scale a load when one or more of the following conditions exist:

- the wood is spread in such a fashion that an accurate scale cannot be conducted.
- the wood is spread in such a fashion or location that it cannot be safely scaled.
- the wood has been improperly bucked or otherwise altered (e.g. defect(s) bucked off).
- refuse to check scale if the wood has been moved or re-piled since the original company scale.

Once a scaler or check scaler refuses to scale a load one of two procedures is required:

- if the refusal is the result of the poor spreading of the logs or the location of the logs (ie. safety hazard), and if the load has not yet been scaled, then it may be re-arranged or re-located.
- if a new sample load must be selected due to any reason, then a new load must be selected at random, as arranged with a local Forest Officer, for sample scaling.

2.9 Species / Condition / Product Codes

Each log or group of logs is assigned species/condition/product (SPCDPR) code. All three elements of this code are essential since they affect such things as Crown dues rates, Crown dues modifiers, and chargeability.

2.9.1 Species Code

The wood of various species differs in appearance and their properties, and consequently their commercial value and use as well. Species are also generally grouped in a classification of coniferous and deciduous, and it is these groupings upon which authorized allowable cuts are based.

The scaler must be able to recognize species in order to determine the volume accountable to either the coniferous or deciduous allowable cut. Further, some species that have a lower economic value due to tendencies for lower recovery, produce lesser grade product, or require additional processing, can be subject to lesser crown rates if the scaler has properly identified and scaled the species.

The Timber Management Regulation provides for dues relief for specified species used for particular primary timber products. See section 8.0, Crown Dues Modifiers – Low Commercial Species.

Each timber species scaled is represented by a single or two digit alpha code. The codes are shown in the following table:

Code	Species
A	Aspen
AB	Aspen / balsam poplar
B	Birch
DF	Douglas-fir
F	Balsam fir
FA	Alpine fir
IC	Incidental Conifer
ID	Incidental deciduous
IF	Incidental fir
LT	Larch (tamarack)
OC	Other coniferous
OD	Other deciduous
P	Pine
PB	Balsam poplar
PF	Limber pine
PW	Whitebark pine
S	Spruce
SB	Black spruce
SE	Engelmann spruce
SW	White spruce
SP	Spruce and pine

Table 2.1 – Species Codes

Usually scalers do not need to identify spruce and pine species separately. If these species need not be individually identified, record them as SP. If, for example, a spruce/jack pine load was harvested from an area where the pine qualifies for a reduced dues rate, then the pine should be identified separately.

On occasion isolated logs of a differing species group (coniferous versus deciduous) will show up in a scale load. As these logs contribute to the sample load weight then they must be included in the sample scale. The logs may be scaled such that the species is the same with the rest of the load.

2.9.2 Condition Code

The condition of timber generally refers to the physical state of the timber before harvest. Undamaged, physiologically living timber is classified as green and will represent the greater majority of timber scaled. Although there are various timber conditions, which are subject to lesser crown rates, these conditions are most often captured at the timber disposition or scaling population level. Bear in mind that timber condition dues modifiers are intended to recognize potential economic losses due to damaged or endangered timber and are not intended for isolated logs or trees occurring in the normal course of harvest.

The methodology of capturing the volume eligible for a timber condition modifier is somewhat dependant on the type of damage. Fire and insect damaged timber (areas) can be clearly segregated and hauled separately from any green timber. A separate scaling population can thus be created specifically for these condition codes and the scaler records the scale data accordingly.

In the cases of blow down or endangered timber, identity from green timber is not obvious and the approach to capture the volume is done by issuing a specific timber disposition or determining an eligible volume (or a percent of the dispositions harvest) through field surveys. The scaling populations under which such timber is delivered shall have the timber condition as green. However by virtue of the condition codes assigned to the timber disposition or as a result of approved eligible dues modified volumes, the Timber Production and Revenue System (T.P.R.S.) will calculate and recode the appropriate volume with the proper timber condition code.

The following table outlines the accepted condition codes used in scaling:

Code	Condition
BD	Blow down
BK	Beetle Killed
D	Dead
EN	Endangered
FK	Fire Killed
GR	Green
ID	Insect Damaged
IR	Interior Rot
IS	Industrial Salvage
OD	Other Damage
TD	Timber Damage

Table 2.2 – Condition Codes

2.9.3 Product Code

The product codes used in scaling are not only a partial reflection of the intended use for the timber but are also used to indicate smaller log sizes and timber which is harvested but is not accountable to the allowable cut.

Product codes have been created to address the various dues rates assigned to the different products manufactured as well a means of obtaining a volume for those log sizes eligible for lesser crown charges rates.

Product codes are two digit numerical numbers and are assigned to scaled logs primarily on the basis of the products manufactured at the receiving scale site and secondly on the log size or determination of non chargeable.

Table 2.3 on the following page outlines the scaling product codes used in Alberta.

Code	Description	Notes
<i>Products Codes Specific to Mass Scaling</i>		
01	Sawlog, coniferous pulp	
02	Deciduous pulp	
14	Veneer	
18	Oriented Strand Board (OSB)	
19	Laminated veneer lumber (LVL)	
<i>Product Code for Log Size Delineation</i>		
06	Small stem conifer and small stem deciduous used for Oriented Strand Board (OSB).	This small stem code refers to logs that have less than or equal to 0.024 gross volume per metre of length (m ³ /m). This code may only be used for coniferous logs intended for the manufacture of lumber, pulp, roundwood products, or laminated veneer lumber and coniferous or deciduous used for OSB. These logs are accounted as volume chargeable, but at a reduced dues rate as per the Timber Management Regulation.
<i>Product Code Based on Utilization Standard</i>		
99	Undersize	Undersize timber refers to timber that does not meet a minimum size requirement. (See section 2.10).
<i>Product Code not normally associated with Mass Scaling</i>		
20	Fuelwood	

Table 2.3 – Product Codes

2.10 Utilization Standards

The utilization standard dictates, for a given harvest authority, the minimum tree size an operator must harvest and utilize; and the calculation of the allowable cut for the disposition is based on this same standard. The standard includes a minimum tree size with a defined minimum merchantable length for a given minimum butt and top diameter, and is expressed in 1-centimetre classes (i.e.: minimum tree having 2.4 metres of merchantable length @ 15/11; 15 cm butt/ 11 cm top). To correlate the harvest volume to the allowable cut the utilization standard must be taken into consideration. The scaler must then ensure that the scale captures all volume to the minimum top size (quota or FMA chargeable) consistent with the minimum top diameter of the timber disposition. Note: The scaler shall also scale any other volume in the load, which is not chargeable.

2.11 Log Measurements

2.11.1 Diameters

Diameters are measured **inside** the bark, and are recorded in 2cm classes with the even number being the class midpoint, and the odd numbers defining the class boundaries.

For example:

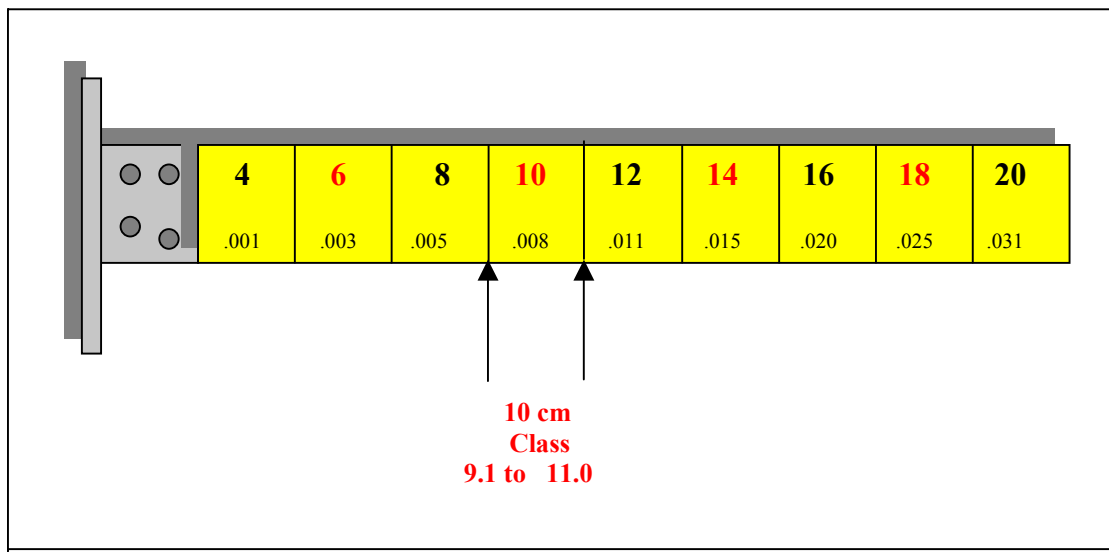
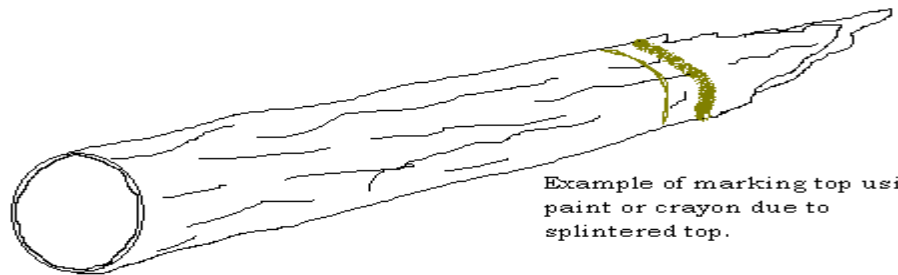


Figure 2.2 – Diameter Classes

Diameters are measured across the end of a log wherever possible. If this is not possible (i.e. – broken top) then the diameter may be taken outside the bark using a caliper or scale stick, ensuring that an adjustment is made to account for bark thickness. **Note that the zero point on the scaling stick is on the inside of the tine.**

Anytime a diameter is NOT measured on the face of a log, the scaler will mark with paint or crayon the point at which the diameter was measured. An example would be the measurement of a splintered or broken top.



Example of marking top using paint or crayon due to splintered top.

Perfectly round logs need to be measured only once. An irregularly shaped log, however, needs to be measured at least twice: once across the narrowest part and one across the widest part (i.e.: minimum and maximum). These two figures are then averaged to get the diameter class. **If the average is an odd centimetre class, then the average is taken to the closest diameter that is divisible by four (black diameters on the scale stick).** It is important to note that while measuring the diameter, the scale stick must pass through the geometric center of the log and **not** through the pith, since the pith may be located significantly off center. When two measurements are taken, they should be taken at right angles to each other wherever possible.

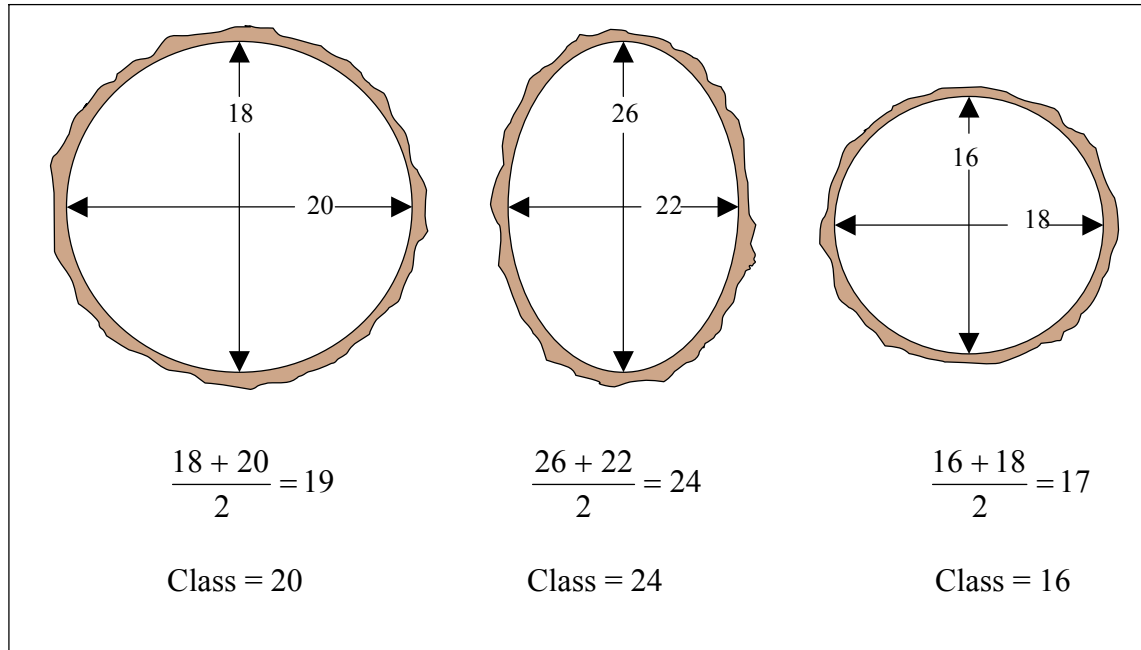


Figure 2.3a – Diameter Measurement

Sometimes more than two measurements are taken at different angles to ensure that the correct reading is obtained. It is important to remember that the only two measurements that are averaged are indeed the maximum reading and the minimum reading. Any readings in between are discounted.

Abnormal swellings or indentations on the log must be accounted for by either expanding or reducing the diameter to a projected shape as noted in the following diagrams.

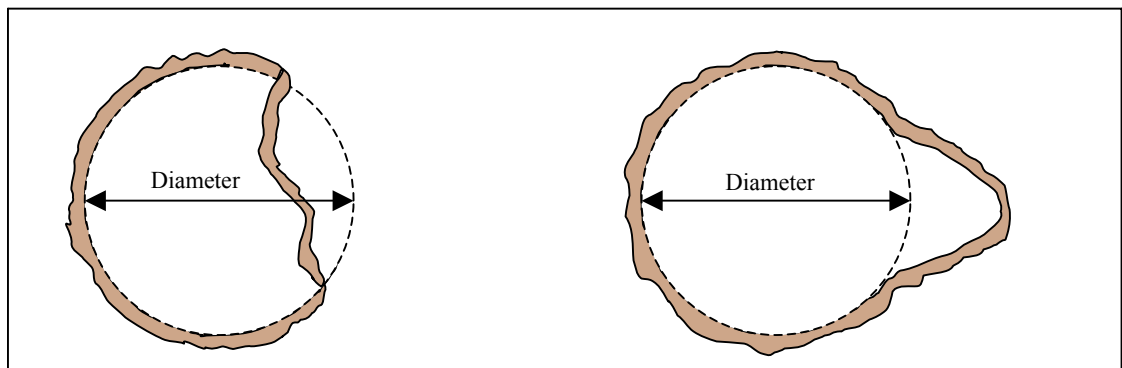


Figure 2.3b – Diameter Measurement

As discussed in section 2.10, the utilization standard dictates the minimum top diameter scaled to for a given load. If a log has a top diameter that is smaller than the minimum top diameter, the scaler will find the point on the log where the minimum top diameter occurs. The length is measured up to the minimum top, and the left over piece, if 0.6m in length and longer, will be recorded as product code 99: undersize. For example:

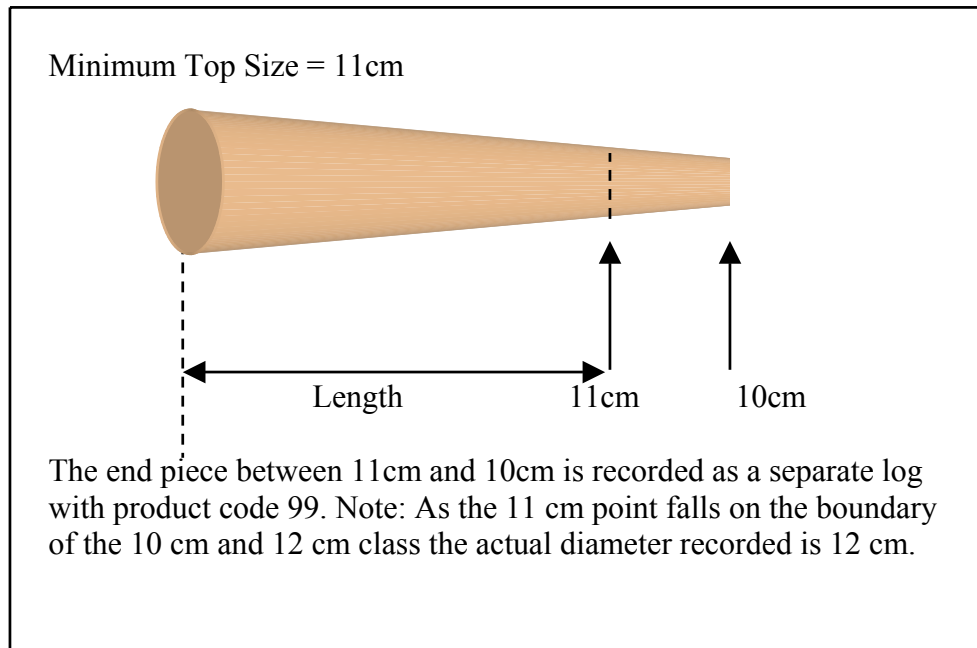


Figure 2.4 – Top Diameter Measurement

Section 2.12 will discuss the relationship between top diameter and product code designation.

2.11.2 Butt Diameter

The procedures for measuring the butt diameter are very similar to the top diameter measurement. The diameter is measured inside the bark, and if the log is perfectly round only one measurement is required. An irregularly shaped log requires more than one measurement, and the maximum and minimum readings are averaged to get the actual diameter.

It is important to note that the butt of a tree may naturally flare out, and a scaler must make an adjustment to obtain the true butt diameter. For example:

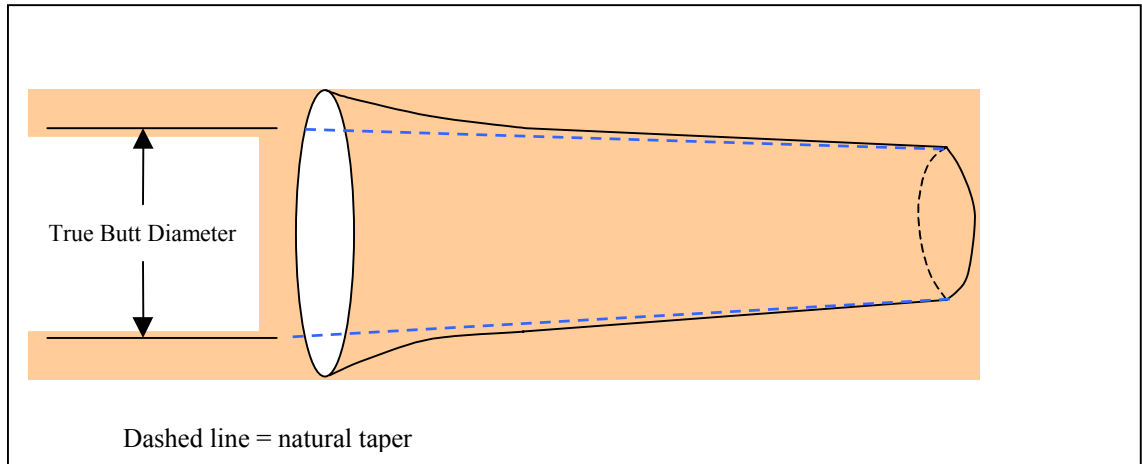


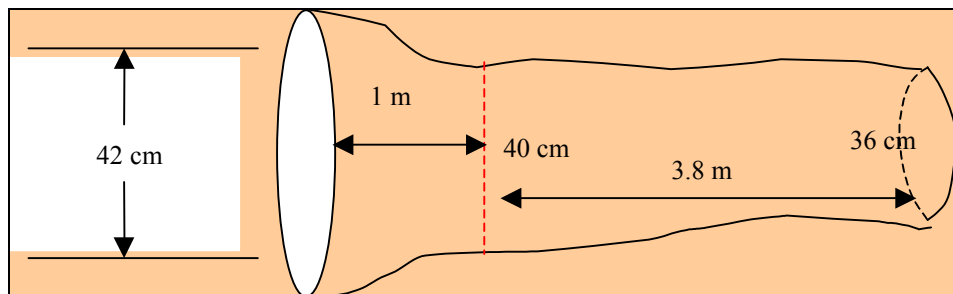
Figure 2.5 – Butt Diameter Measurement

Some tree-butt diameters are anything but round, and these may have to be measured farther up the where any taper/abnormality will not affect the diameter measurement. In this case the use of calipers and/or a diameter tape will provide the most accurate results, as long as bark thickness is accounted for. Care must be taken to ensure that only flare and abnormalities are eliminated, but not the log’s natural taper.

Optional Measurement Approach

To reduce the impact of potential butt diameter over-estimation, a pencil bucked section of 1 metre in length from the butt, will be accepted as an optional scale practice. The intent is to use this practice in situations only of abnormal or difficult to assess butt flare situations.

The following illustration shows how this is applied. A line is painted at 1 metre from the bottom of the 4.8 metre log and the inside bark diameter is determined at that point. The first section is then scaled as a 42 cm butt, 40 cm top, with a 1.0 m length. The resultant piece is scaled as a second log with a butt diameter of 40 cm, 36 cm top diameter and a length of 3.8 m.



2.11.3 Basal Area

Sometimes a scaler will have to determine the basal area of a log face in order to calculate a defect deduction. The basal area (BA) may be obtained in one of three ways. The basic formula for determining BA (1000x) is as follows.

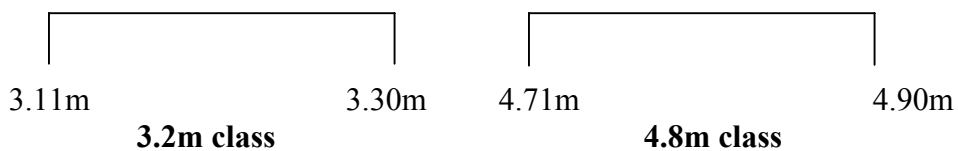
$$BA = \pi \left(\frac{D}{200} \right)^2 \times 1000$$

More efficiently, a scaler may obtain the BA by either referencing the table entitled Basal Area – m² (square metres) (1000x), see table 1 of appendix 7, or by referencing the scale stick which shows the BA (1x) in small type under the diameter class.

2.11.4 Length Measurement

Logs will be measured with any linear measuring device such as a logger’s tape. Some logger’s tapes have different leaders on the end, and the actual point where zero occurs will vary from tape to tape depending upon the brand and/or type of leader. It is therefore essential that prior to scaling a scaler “calibrate” the tape by finding the actual zero point. This can be done by using the scale stick to line up the same number on both the stick and the tape, and noting where the zero point is on the tape.

The log lengths used in the calculation of volume are in 0.2 metre (m) classes. For example:



The length measurement recording accuracy shall depend on whether trim allowances are considered or not. If trim is not considered the scaler shall simply measure the full log length and record to the nearest 0.2 metre class as noted in the above class examples. (Refer to Smalian TM32 – no trim, tally sheet example Figure 3.1d in the Smalian scaling section).

Where trim allowance is a consideration then log lengths shall be measured and recorded to the nearest 1 centimetre (1 cm or 0.01m). The scale compilation program (Micro Log Scale) program will reduce the total log length by the allowable trim allowance and register the result into the proper 0.2 m length classes. (Refer to Smalian TM32 – trim allowances, tally sheet example Figure 3.1c in the Smalian scaling section).

Most logs are bucked such that both log ends (faces) are cut straight (perpendicular to the length) making the length measurement very straightforward. For example:

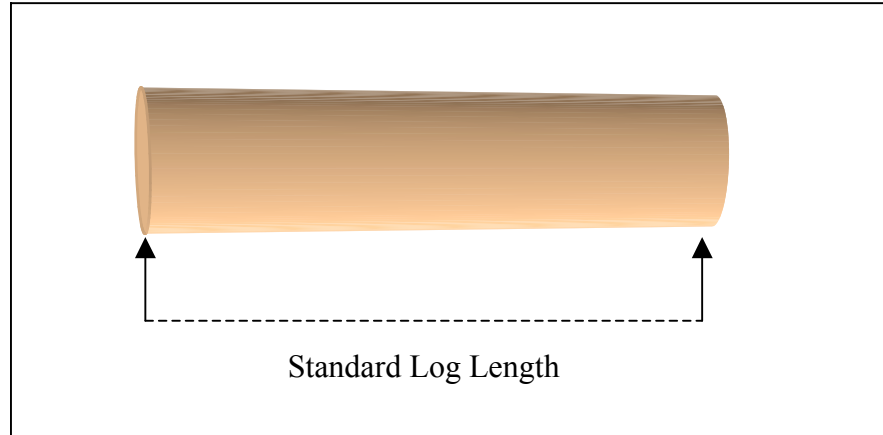


Figure 2.6a – Length Measurement

The length of a log with sweep or crook shall be measured as if were straightened out. Some logs are not bucked with a straight face on each end, and in these cases the log length is obtained by measuring to and from the geometric center of each face. For example:

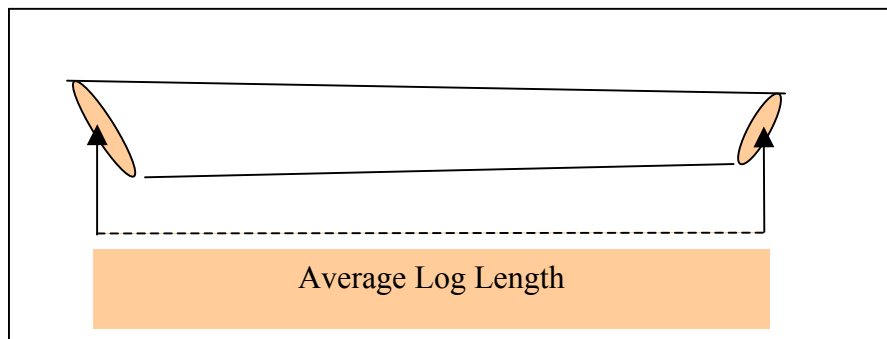


Figure 2.6b – Length Measurement (Irregular Ends)

When measuring the length of a broken log it must be closely looked at to determine if the break was the result of mechanical damage, or the result of an unavoidable condition such as pre-existing soft rot.

Since mechanically induced breakage is considered avoidable, the log length is measured to the very end of the broken piece when the other piece is missing. An unavoidable break will be measured to a point halfway down the break when the other piece is missing. See the following examples.

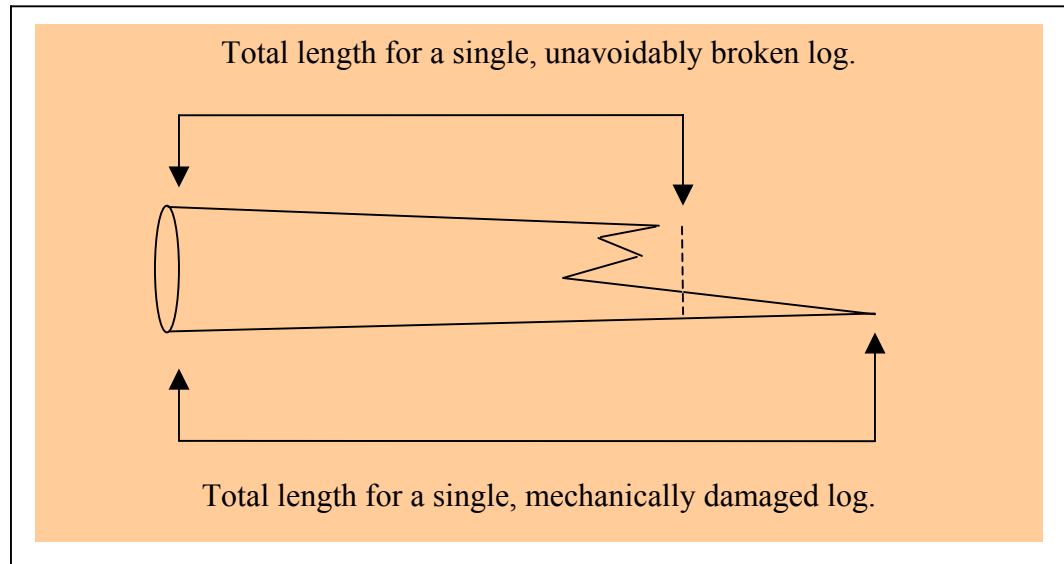


Figure 2.6c – Length Measurement (Broken Top)

If the other piece of the broken log is present then the total log length may be obtained by measuring to the end of the break on one piece, and to the beginning of the break on the other. For example:

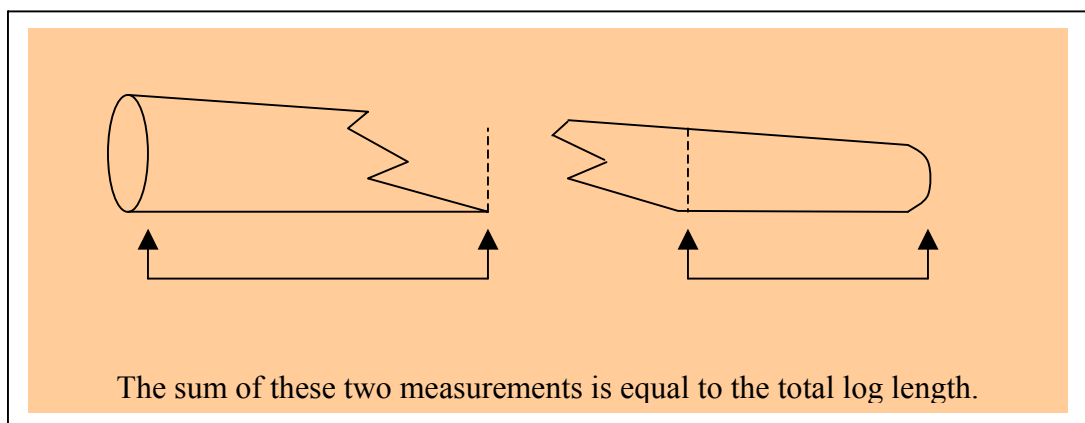


Figure 2.6d – Length Measurement (Broken Piece)

The maximum log length for scaling in Alberta is 7.2m. A log, which is longer than 7.2m must be scaled as or bucked into two or more logs.

2.11.5 Trim allowance

Section 2.11.4 (above) covers the basics of length measurement, and this section discusses the incorporation of trim allowance into the log's length.

Trim allowance permits a small portion of additional length to each log in order to make the final target product length. The amount of trim allowed is dependent upon the log length. The following table shows the trim allowed for different log lengths.

Length Range (m)	Trim Allowance
<2.40	none
2.40 – 3.59	5 cm
3.60 – 4.79	10 cm
4.80+	15 cm

Table 2.4 – Trim Allowance

To explain the application of trim the following examples are provided.

Example 1. Total log length = 3.59 m
Trim allowance = 0.05 m
Resultant length = 3.54 m which falls in the 3.6 m class

Example 2. Total log length = 3.60 m
Trim allowance = 0.10 m
Resultant length = 3.50m which falls in the 3.4 m class

It is apparent in these examples that you cannot take the full log length and simply reduce it by the above table 2.4 -trim allowances. By doing so we would actually record a longer log in a shorter log class.

The correct trim allowance for Example 2 would be 5 cm trim. See the following diagram.

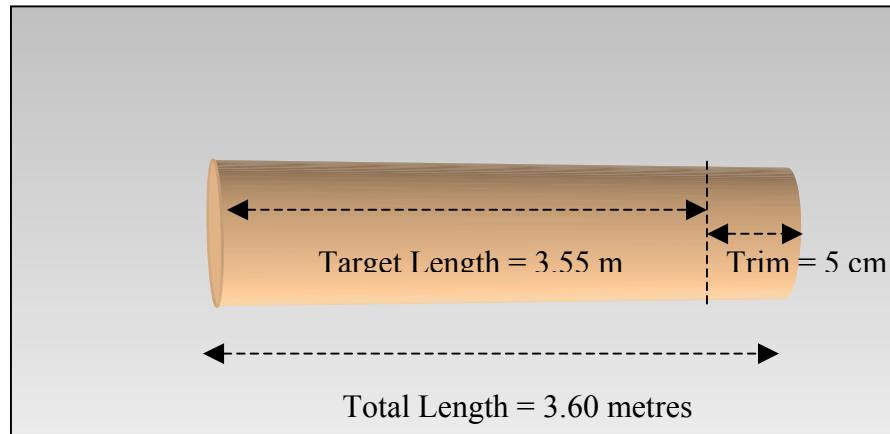


Figure 2.7 - Display of Example 2

A more practical approach is to take the full length and make a length reduction such that the allowable trim is accounted for but also places the log in the correct log length class. The following table is to be used when reducing the total log length when scaling with trim allowance.

Length Range (m)	Length Reduction
<2.40	none
2.40 – 3.60	5 cm
3.61 – 4.85	10 cm
4.86+	15 cm

Table 2.5 – Length Reduction Application for Trim

Trim allowance is limited to the scaling of timber intended for specific products only. The following table indicates where trim allowances may be applied.

Species	Product	Trim Allowance
Coniferous	Roundwood Products, Lumber, and Pulp	Yes
	Veneer	Yes
	Laminated Veneer Lumber	Yes
	Oriented Strand Board	No
	Fuelwood	No
Deciduous	Lumber	Yes
	Veneer	Yes
	Laminated Veneer Lumber	Yes
	Pulp	No
	Oriented Strand Board	No
	Fuelwood	No

Table 2.6 – Trim Allowance by Intended Product of Scale

2.12 Special Product Codes

The end product of a load of logs (i.e. lumber, pulp, etc) will dictate the product code assigned to load, population, or disposition. However, the size of a log or tree relative to top diameter and length may change the product code designation of an individual tree or log.

2.12.1 Undersize Logs

If the diameter of a log does not meet the minimum top size, as dictated by the utilization standard, anywhere along its length, the whole log is recorded as product code 99: undersize. A measured undersize log may be as short as 0.6 metres. Undersize logs are not quota or FMA chargeable.

A log that has a butt diameter greater than the minimum top size, and a top diameter of less than the minimum top size, will achieve the minimum diameter somewhere along its length. Such a log will be scaled as two pieces: one piece being recorded as product code 99. (See figure 2.4 in section 2.11.1).

2.12.2 Small Stem Logs

A small stem log qualifies for a reduced dues rate due to size. A log is considered small stem when it is less than or equal to 0.024 cubic metres of gross volume per lineal metre of length (m³/m).

2.12.3 Undersize Trees

The scaling of a tree brought into the scale yard is somewhat different from scaling a log. It is sometimes difficult to distinguish between a log and a stand-alone tree, so extra care must be taken to ensure that the piece in question is indeed a whole tree. To identify a stand-alone tree look for a definite butt (butt flare, etc) tapering sharply into the top or a cut, which is specific to the harvesting equipment employed.

The tree will be considered merchantable if it has the minimum usable length to the minimum top utilization diameter for the disposition. The minimum butt diameter (as applied to the utilization standard for the disposition) may be considered when scaling by the Smalian method. If there is no defined merchantable length (i.e.: private timber) then a usable product length of 2.4 metres will apply.

If the tree does not have the minimum length it may be recorded as code 99: undersize.

Undersize trees are not chargeable volumes.