CROSS SIGHT

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INSTRUCTIONS

THE POCKET HEIGHT SIGHT

The CROSS SIGHT from Forest Applications is a tool that if used properly, can be very valuable in taking information needed to fell trees with greater safety and accuracy. This CROSS SIGHT should be used as a tool and is only as accurate as the user. The instructions on this page are to describe the tool's use and to give explanation as to how the tool performs. The CROSS SIGHT is designed to assist with and can be very accurate in the following information areas:

-To assist in estimating total tree height, or to any point on the tree.

-To assist in estimating side or back lean of a tree.

-To assist in calculations to determine necessary lift for wedging a tree.

TREE HEIGHT

The CROSS SIGHT is a pocket size height measure tool using the old technique of an equal sided triangle, with one corner of the triangle being placed at the eye. When the user places the tool flush against their brow (Fig. 1), sighting to the top and bottom of the locator marks on the cross, a triangle of sight is formed. The user may then sight a tree between the two marks. The part, or all of the tree that is seen between the locator marks on the card, will be the distance from the user to the base of the tree (Fig. 2). The user must walk forward

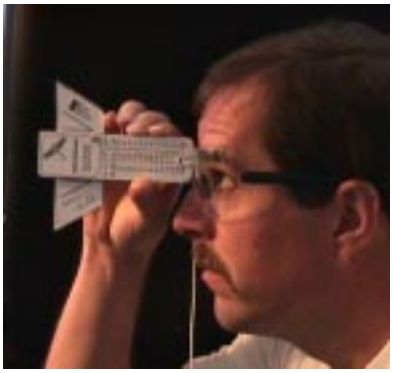

FIG. 1

toward the object or backup from the tree, until the desired portion of the tree is within the cross points. To take an accurate measure of this height or length of the tree, a measuring tape can then be used to measure the distance from the user to the tree base.

IMPORTANT: THE SIGHTING MUST BE TAKEN LEVEL TO THE BASE OF THE TREE. ANY DROP OR RISE IN GROUND LEVEL WILL CAUSE THE CALCULATION TO BE WRONG! ADJUSTMENTS MUST BE MADE TO THE CALCULATION IF THE USER IS NOT LEVEL WITH THE BASE OF THE OBJECT BEING MEASURED! If the user is lower than the tree ground elevation he must move closer to the tree the amount of ground fall. If the user is higher, he must back up the amount of ground fall.

SIDE LEAN - BACK LEAN

The CROSS SIGHT can assist in taking important side or back lean information when observing a tree prior to felling. The string attached to the CROSS SIGHT card can be weighted by inserting the saw wrench or other objects in the bottom loop

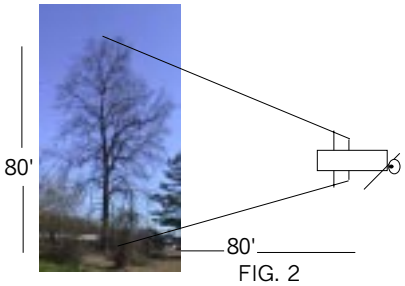

FIG. 2

of the string, and using the string as a plumb line. The user can sight the tree from the top, or weighted mass of the tree to the ground, to determine the lean. It is important the weighted mass of the tree be estimated properly. The weighted mass of the tree can be determined by looking at the total crown of the tree. Take into consideration any long running or large limbs. Observe where the mass of the top limbs are, draw an imaginary circle around this weighted mass (Fig. 3), then hold your plumb line in the center of this mass to determine the weighted lean to the ground.

LIFT CALCULATIONS

With the CROSS SIGHT, calculations for wedge lift can be easily be determined. Once you have determined the estimated height and lean of the tree, the CROSS SIGHT information written on the tool can quickly help you do the calculations.

The SEGMENT chart (chart 1) gives a quick reference to determining the segment count of a tree. A segment is a square block of the diameter of the tree at the base. For instance, if a tree is 12" in diameter from the pivot point of the hinge to the back of the tree at the wedging point, a segment of that tree is a 12" square. To determine how many segments are in the tree's total height you divide the segment size into the height of the total tree. If you have estimated the height of the tree to be 80 feet and the segment size is 12", the segment count of

FIG.3

the tree is 80. Look at the segment chart closely. You will find the numbers on the chart are simply arrived at by dividing the diameter of the tree into the height of the tree.

Once the number of segments is calculated, the lift needed can be found on the LIFT CALCULATION chart (chart 2). If you take one segment(a square) and lift the lower corner 1", the opposite corner moves forward the same amount. This is true with any amount you move or lift (pivot) the square. If you stack several segments on top of

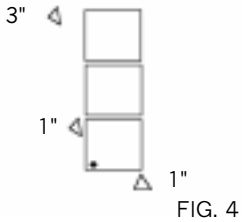

FIG. 4

each other, and move the lower corner in the same fashion, the top segment moves forward 1" times (X's) how many you have stacked. If you have 10 segments stacked, the top segment moves 10". If you move 80 segments by lifting 1" at the corner of the bottom segment, the top segment moves over

Chart 1

TREE HEIGHT \ SEGMENT (TREE DIA.)	8	10	12	14	16	18	20	22	24	26	28	30
45	68	54	45	39	34	30	27	25	23	21	19	18
50	75	60	50	43	38	33	30	27	25	23	21	20
55	83	66	55	47	41	37	33	30	28	25	24	22
60	90	72	60	51	45	40	36	33	30	28	26	24
65	98	78	65	56	49	43	39	35	33	30	28	26
70	105	84	70	60	53	47	42	38	35	32	30	28
75	113	90	75	64	56	50	45	41	38	35	32	30
80	120	96	80	69	60	53	48	44	40	37	34	32
85	128	102	85	73	64	57	51	46	43	39	36	34
90	135	108	90	77	68	60	54	49	45	42	39	36
95	143	114	95	81	71	63	57	52	48	44	41	38
100	150	120	100	86	75	67	60	55	50	46	43	40
105	158	126	105	90	79	70	63	57	53	48	45	42
110	165	132	110	94	83	73	66	60	55	51	47	44
115	173	138	115	99	86	77	69	63	58	53	49	46
120	180	144	120	103	90	80	72	65	60	55	51	48

Chart 2

FT. LEAN \ SEGMENT (LIFT)	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
1	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2	1.2	1.1	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6
3	1.6	1.4	1.3	1.2	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7
4	2.0	1.7	1.6	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.9
5	2.4	2.1	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0
6	2.8	2.4	2.2	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1
7	3.2	2.8	2.5	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2
8	3.6	3.1	2.8	2.5	2.3	2.1	2.0	1.9	1.7	1.7	1.6	1.5	1.4	1.4	1.3
9	4.0	3.5	3.1	2.8	2.5	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.5
10	4.4	3.8	3.4	3.0	2.8	2.6	2.4	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.6
11	4.8	4.1	3.7	3.3	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.8	1.7
12	5.2	4.5	4.0	3.6	3.3	3.0	2.8	2.6	2.4	2.3	2.2	2.1	2.0	1.9	1.8

80". A tree with 80 segments theoretically having 80" of backlean could be wedged over with approximately 1" of lift from the wedge (Fig. 4). The lift calculation divides the segment count into the amount of lean. This gives the lift needed to move the object straight up and overcome the lean. Follow down the chart from the segment number to the estimated backlean. The number listed is the amount of wedge lift in inches needed. A factor of .375 of an inch has added to compensate for the kerf taken from the saw cut.

The chart printed on the CROSS SIGHT gives a simplified version for quick use in the field. The tree top movements are calculated using 1 foot and 2 foot diameters at the tree base. The center column corresponds to the approximate measured height of the tree. If the tree base is approximately 1 foot, follow the first column down to the number of inches the top will move when lifted 1 inch, adjacent left of the height footage. If the tree base is 2 feet, the top will move the distance in inches shown in the adjacent column three. Example: A 65 foot tall tree with a two foot base will move approximately 33 inches at the top when lifted 1 inch at the back cut.

IMPORTANT

There are a lot of factors involved in successfully completing a felling task. The CROSS SIGHT card only gives the user a calculated reasoning to be able to complete such a task. It is important that the user be properly trained and experienced in felling trees and its hazards before attempting to fell the tree.

If the user wears eye glasses or safety glasses, the CROSS SIGHT may need to be modified or measurements adjusted to assure accuracy. Some lenses will distort the sight distance of the tool. The user must recognize this potential miscalculation problem. Do not attempt to fell a tree in close proximity to obstacles or hazards until you have practiced with this tool. As with any tool experience is a valued teacher.

The CROSS SIGHT is a tool designed by Forest Applications Training, Inc. to assist the user in taking accurate information before and during the felling of a tree. Forest Applications Training, Inc. nor any of its instructors or sponsors are liable for any property damage or injury related to this tool or the use of it. Use this tool at your own risk!

Forest Applications Training, Inc.

Designed by:

Tim Arnold

CROSS SIGHT

THE POCKET HEIGHT SIGHT

The CROSS SIGHT is an authorized tool of the Forest Applications Training Program. For information regarding the CROSS SIGHT contact: Forest Applications Training, Inc. PO Box 1048, Hiram, GA 30141-1048.