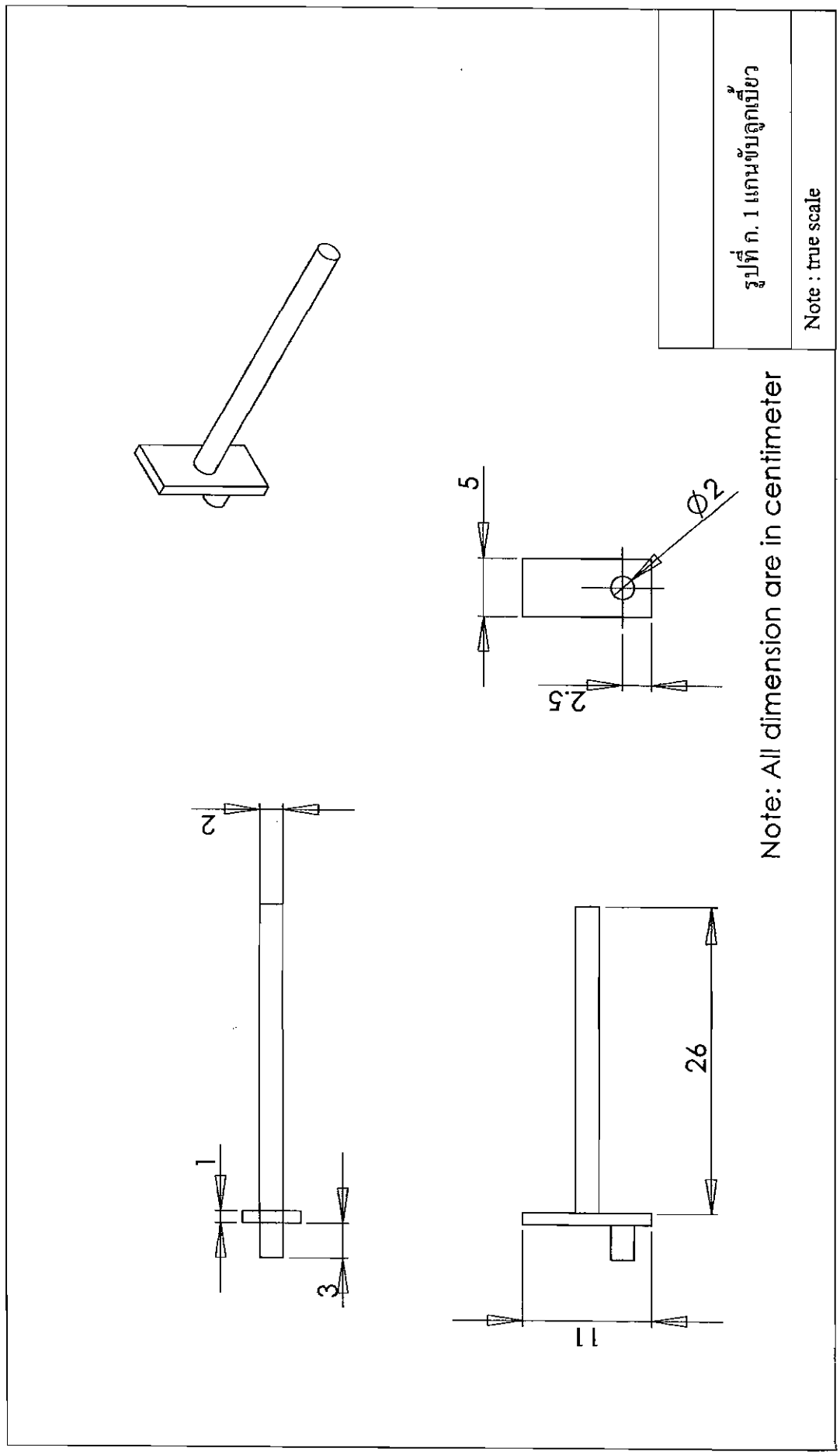
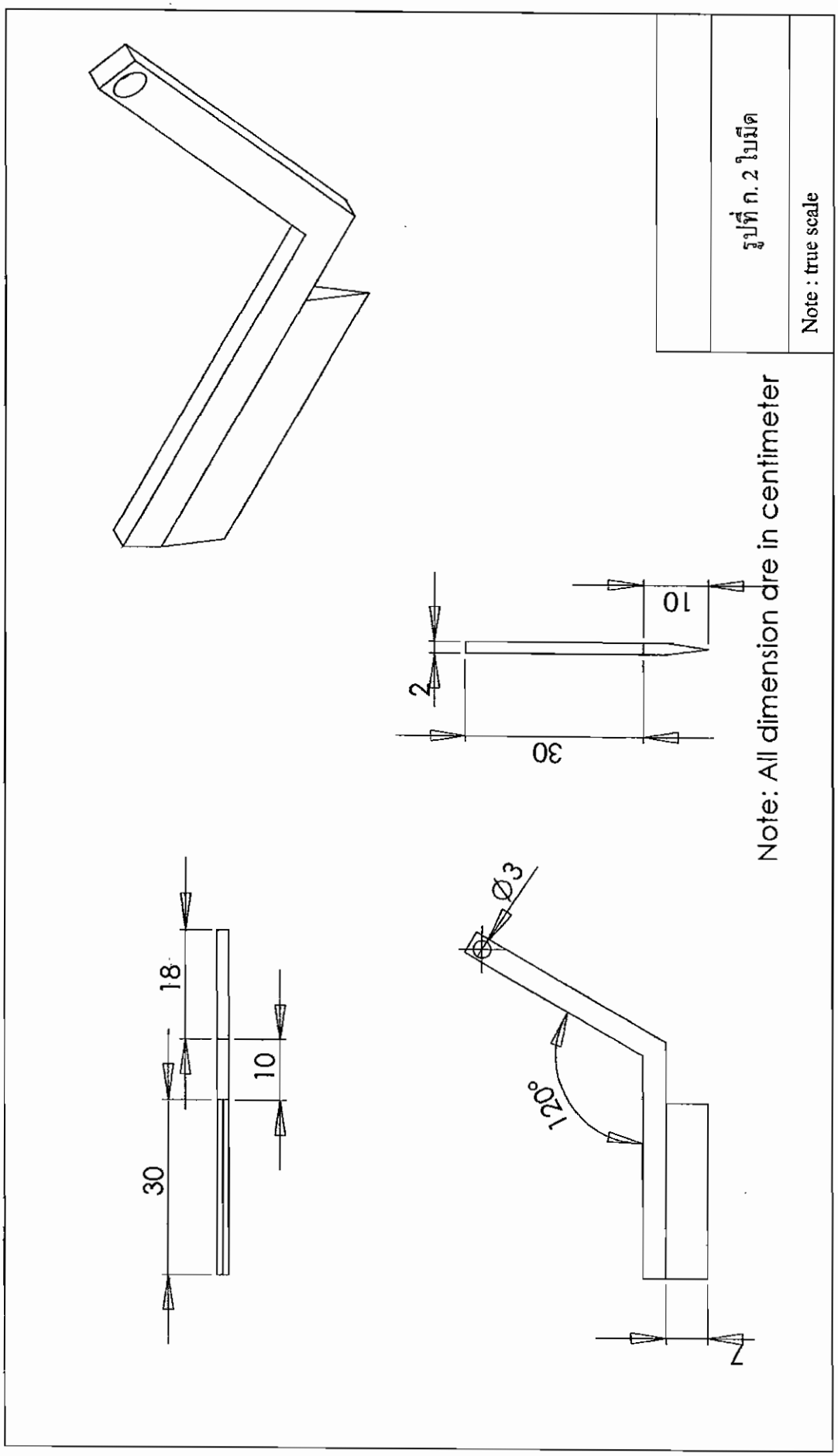
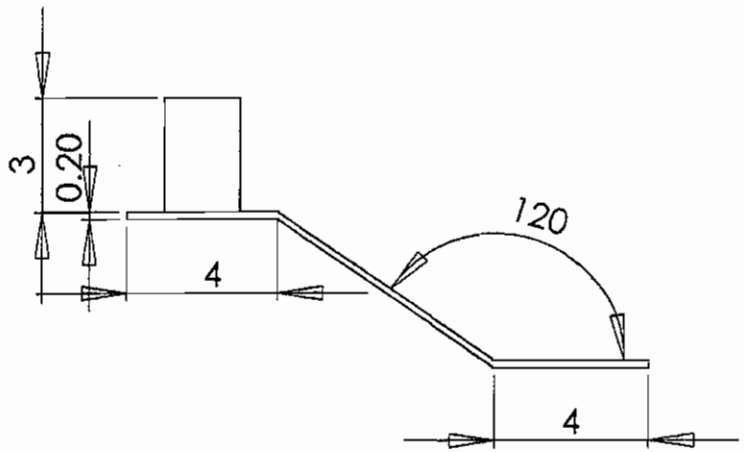
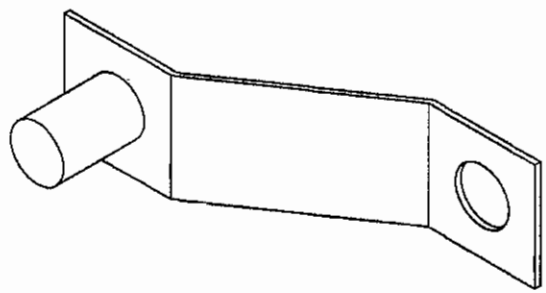
ภาคผนวก ก

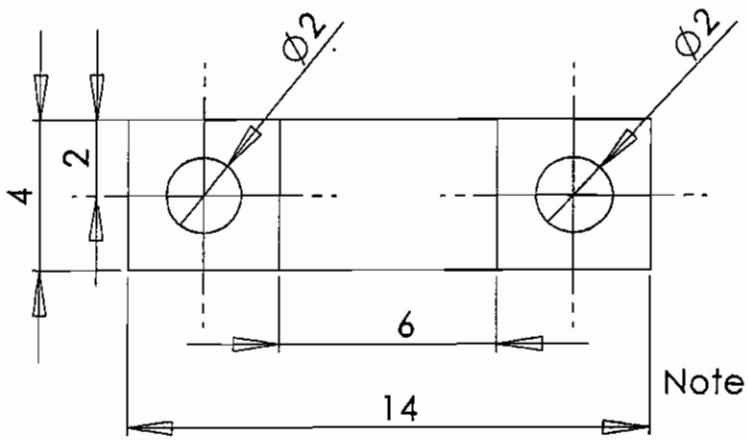
แสดงรูปส่วนประกอบของเครื่องซอยใบยาสูบ

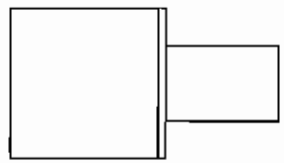

รูปที่ ก. 1 แกนขับลูกเบี้ยว
Note : true scale
Note: All dimension are in centimeter
5
Ø2
2.5
2
1
3
26
11


รูปที่ ก. 2 ใบมีด
Note : true scale
Note: All dimension are in centimeter
10
2
30
Ø3
120°
18
10
30
7





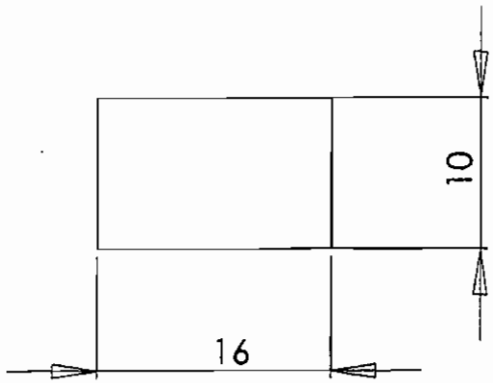


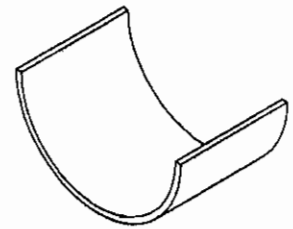


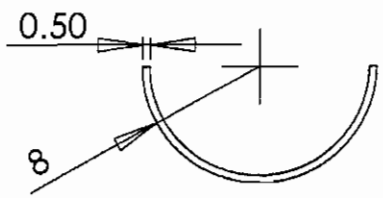
Note: All dimension are in centimeter

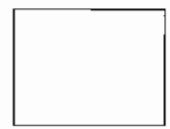
รูปที่ ก. 3 แกนขับใบมีด

Note : true scale





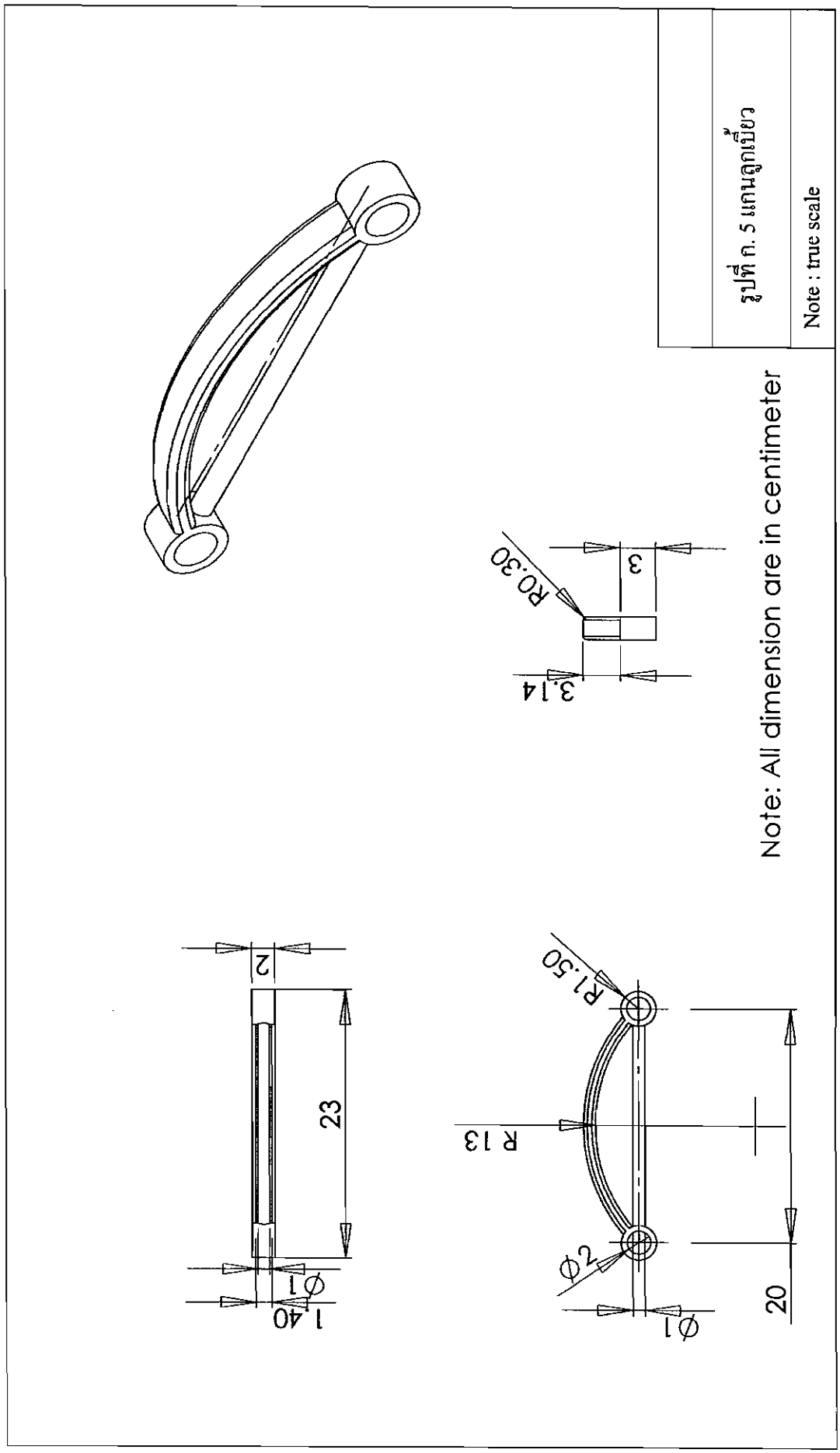


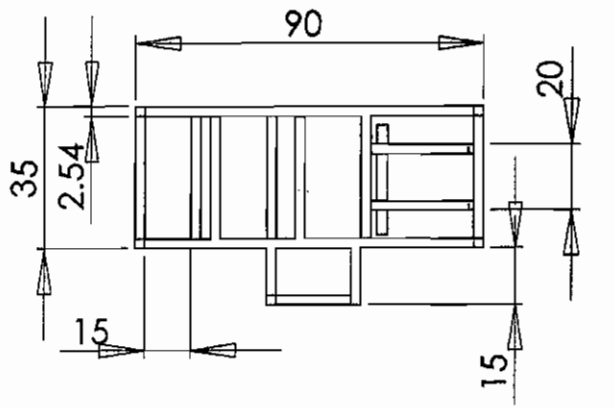


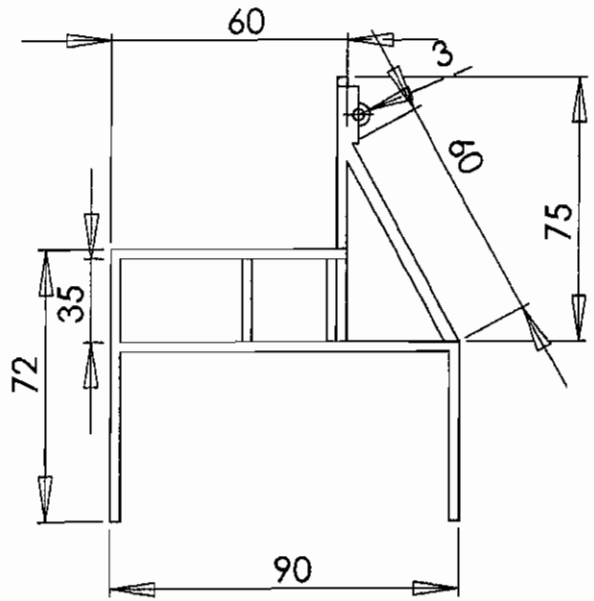
Note: All dimension are in centimeter

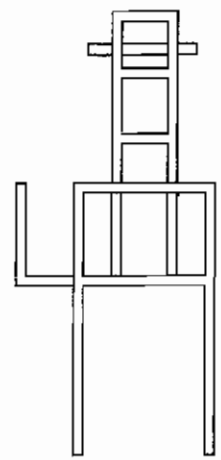
รูปที่ ก. 4 รางรองใบยาสูบ

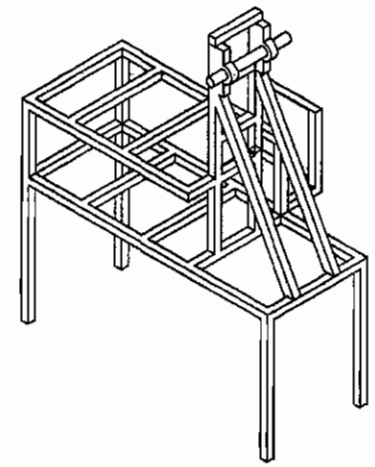
Note : true scale


รูปที่ ก. 5 แกนลูกเบี้ยว
Note : true scale
Note: All dimension are in centimeter
R0.30
3
3.14
R1.50
R 13
20
2
23
1.40





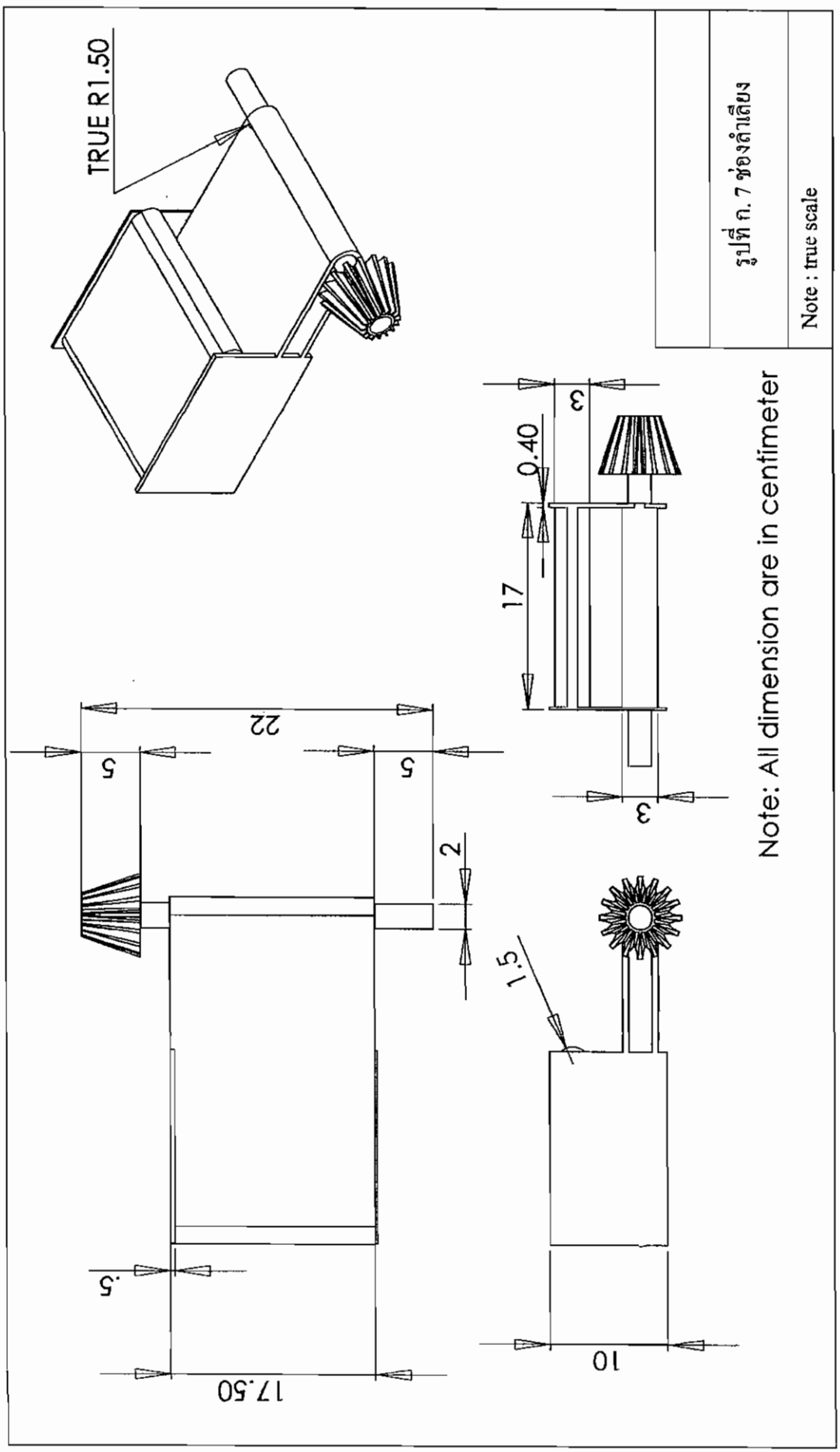




Note: All dimension are in centimeter

รูปที่ ก .6
โครงสร้างเครื่องซอยใบยาสูบ

Note : true scale


TRUE R1.50
3
0.40
17
3
22
5
5
2
1.5
.5
17.50
10
Note: All dimension are in centimeter
รูปที่ ก. 7 ช่องดำเนียน
Note : true scale

ภาคผนวก ข

แสดงตาราง

ตารางที่ ข .1 แสดงทฤษฎีเกี่ยวกับแรงตัด

Table 6. Cutting energy and cutting force for biological materials
Calculated from data in Chancellor (1987).

This table contains data from tests with very different types of cutting devices, performed under different circumstances, as shown by the explanations below. The data should, therefore, be expected to vary. However, a thorough study of the original reports may make a reduction in the variations possible, if sufficient data have been reported. Such an evaluation has not been done for this book. The variables, used to represent the cutting energy and cutting force have been discussed in Chapter 6. In order to convert the presented data to other, often used, data the following conversions can be done.

Cutting power POC = 1000 * ENCSA * (MAT / 1.45) / LLP, kW
Max. cutting force FOCMX = FOCSA * AES / 1000, kN
Spec. cutting energy ENCS = 1000 * (ENCSA / 1.45) / LLP, kJ/kg

where MAT = capacity or throughput in kg d.m./s
LLP = particle length in mm
AES = solids cross-sectional area mm^2
= 1000 * MAL / 1.45
MAL = mass per unit length of cut layer, g d.m./mm or kg d.m./m
3.6 kJ/kg = 1 kWh/Mg = 1 kWh/tonne.

The specific energy value ENCSA as reported can be calculated most easily for forage harvesters. It can, however, be used also for mowers as shown in Section 6.16 but it is not certain that the values in Table 6 have been calculated in this way. ENCSA-values for field tests of mowers from Table 6 should be used with reservation.

Explanations

Device: FHSB = forage harvester, shear bar type
HM = hay mower, sickle bar type.
FTM = flail-type mower
FTC = flail-type chopper

Type of test:
LL = laboratory test with laboratory equipment
LF = laboratory test with field equipment
FF = field test with field equipment

Notes: a/ includes air movement energy
b/ maximum force in N for hay-mower type device (HM)
c/ average force based on 41 percent of stroke in active cutting, according to Kepner (1952).
d/ includes acceleration energy

Material	Moisture content percent w.b.	Energy ENCSA J/mm^2	Force FOCSA N/mm^2	Force FOCSMX N/mm b/	Device See above	Test See above	Ref. See below
Alfalfa	6-10	0.067-0.100	-	-	FHSB	LF	20
	15	0.063	4.90	8.1b/	HM	LL	1
	5-28	0.093-0.212	-	-	FHSB	LL	15
	15	0.188-0.240	-	0.9-1.9	Slice	LL	1
	15	0.109-0.117	-	-	Saw	LL	1
	20	0.042-0.071	4.95-11.0	9.2-16.5	FHSB	LF	1
	28-60	0.029-0.082	-	-	FHSB	LL	10
	42-69	0.049-0.111	5.70-5.60	-	FHSB	LF	14
	43	0.074-0.076	14.3-18.2	30.6-42	FHSB	LL	12
	54	0.480	5.55	19.5	FTM	LL	35
	56	0.069-0.115	-	-	FHSB	FF	21,22
	58	0.065-0.076	-	-	FHSB	LF	13

ตารางที่ ข .1(ต่อ)แสดงทฤษฎีเกี่ยวกับแรงตัด

Material	Moisture content percent w.b.	Energy ENCSA J/mm^2	Force FOCSA N/mm^2	Force FOCSMX N/mm b/	Device See above	Test See above	Ref. See below
	63	1.600	-	-	FTC	FF	41
	70	0.009-0.048	-	-	FHSB	LF	17
	72	0.067-0.130	-	-	FSHB	FF	9
	73	1.275	0.96	-	FTC	FF	40
	74	0.175-0.234a/	-	-	FHSB	LF	7
	75	0.137-0.190	-	-	FTM	LL	36
	77	0.850-1.350	27.3-43.3c/	11-17 c/	HM	FF	26
	77	0.027	15.2	2.7 b/	HM	LL	29
	-	0.162-0.647	-	-	FTM	LL	29
	77	2.730	0.9	-	FTM	FF	26
Typical		0.082	9.3				1
Range		0.009-0.212	4.9-18.2				1
Range for FSHB		0.056-0.102					
	-	0.130-0.185			Slicing		1
Corn	45-70	0.043-0.140	-	-	FHSB	FF	8
	60	0.045-0.220	-	-	FHSB	FF	21,22
	64	0.086-0.093	-	-	FHSB	LF	13
	71	0.162-0.252d/	-	-	FHSB	LF	16
	75	0.052-0.113	-	-	FHSB	FF	9
	75-80	0.066-0.130	1.0-3.0	-	FHSB	LL	19
	75	0.030	2.4	25 b/	HM	LF	27
	82	0.032	3.6	4.9 b/	HM	LL	29
	83	2.750	-	-	FTC	FF	42
	87	1.950-3.000	62 - 74 c/	15-31 c/	HM	FF	26
	87	5.270	-	-	FTM	FF	36
Typical		0.075	2.5	-			1
Range		0.030-0.140	1.0-3.6				1
Range for FSHB		0.055-0.130					
Corn.stalks							
Corn.stalks	19-27	0.036-0.075	-	-	FHSB	LF	18
stalks+ ears	22	0.021	-	-	FHSB	LF	18
ave			2.75				
range			0.7-4.5				
Red clover	70	1.325	-	-	FTC	FF	41
Timothy	7-72	0.097-0.107	-	-	FHSB	LL	11
	54	0.023	3.5	2.4 b/	HM	LL	1
Ave		0.065	7.5		HM		1
Ryegrass	75	0.023	0.64	-	HM	LL	31
Mixed hay	75	0.300	10.8	2.5 b/	HM	FF	25
Grasses	74	1.100	-	7.9	FTM	LL	37
	74	2.050	-	-	FTM	FF	38
Sudan grass	70	0.887	-	-	FTC	FF	40
	75	0.158-0.244	-		FTM	LL	36
Wheat	47.5	-	13.8	5.7	FTM	LL	35
Oats	74	0.960	-	-	FTM	LL	37
		0.188-0.375	-	-	FTM	LL	29
Rice straw	14	0.072	4.6	21 b/	HM	LF	30
	44-65	0.062	53.3	1.4 b/	HM	LL	30
	71	0.092	6.1	28 b/	HM	LF	30
	-	0.150	2.7		Sickle		28
Ave		0.077	8.8				1

ตารางที่ ช .1(ต่อ)แสดงทฤษฎีเกี่ยวกับแรงตัด

Material	Moisture content, percent w.b.	Energy ENCSA J/mm^2	Force FOCSA N/mm^2	Force FOCSMX N/mm b/	Device See above	Test See above	Ref. See below
Rape	78	0.480	4.8	6.3	FTM	LL	35
Soybeans	81	1.885	-	-	FTC	FF	42
	-	2.040	-	-	Bandsaw		45
	-	0.260	-	-	Helical		23,51
Sunflower	81	0.455	7.9	7.3	FTM	LL	33,34,35
Sugar beets	77	0.031	-	5.0	Wire		56
Tobacco		-	4.7				1
Fruits	85-93	0.025-0.050	-	-			57
Douglas fir	5	0.336	-	-	FTC	LF	39
Lodgepole pine	27	0.223	-	-	FTC	LF	39
Sugarpine,cross		0.100	-	273	knife		2
,parallel		0.028	-	75	knife		2
Wood, ave		0.068	-	170 ✓	sawing		1
ave		0.280	-	-	chipping		1
range				26-687	sawing		1
Meats	70-82	0.053-0.125	-	-			57

ตารางที่ ข .2 แสดงค่าวิกฤติของการแจกแจง t

P(T >t)

ν \ α	0.40	0.25	0.10	0.05	0.025	0.01	0.005	0.0005
1	0.325	1.000	3.078	6.314	12.706	31.821	63.657	636.619
2	0.289	0.816	1.886	2.920	4.303	6.965	9.925	31.598
3	0.277	0.765	1.638	2.353	3.182	4.541	5.841	12.924
4	0.271	0.741	1.533	2.132	2.776	3.747	4.604	8.610
5	0.267	0.727	1.476	2.015	2.571	3.365	4.032	6.869
6	0.265	0.718	1.440	1.943	2.447	3.143	3.707	5.959
7	0.263	0.711	1.415	1.895	2.365	2.998	3.499	5.408
8	0.262	0.706	1.397	1.860	2.306	2.896	3.355	5.041
9	0.261	0.703	1.383	1.833	2.262	2.821	3.250	4.781
10	0.260	0.700	1.372	1.812	2.228	2.764	3.169	4.587
11	0.260	0.697	1.363	1.796	2.201	2.718	3.106	4.437
12	0.259	0.695	1.356	1.782	2.179	2.681	3.055	4.318
13	0.259	0.694	1.350	1.771	2.160	2.650	3.012	4.221
14	0.258	0.692	1.345	1.761	2.145	2.624	2.977	4.140
15	0.258	0.691	1.341	1.753	2.131	2.602	2.947	4.073
16	0.258	0.690	1.337	1.746	2.120	2.583	2.921	4.015
17	0.257	0.689	1.333	1.740	2.110	2.567	2.898	3.965
18	0.257	0.688	1.330	1.734	2.101	2.552	2.878	3.922
19	0.257	0.369	1.328	1.729	2.093	2.539	2.861	3.883
20	0.257	0.687	1.325	1.725	2.086	2.528	2.845	3.850
21	0.257	0.686	1.323	1.721	2.080	2.518	2.831	3.819
22	0.256	0.686	1.321	1.717	2.074	2.508	2.819	3.792
23	0.256	0.685	1.319	1.714	2.069	2.500	2.807	3.767
24	0.256	0.685	1.318	1.711	2.064	2.492	2.797	3.745
25	0.256	0.684	1.316	1.708	2.060	2.485	2.787	3.725
26	0.256	0.684	1.315	1.706	2.056	2.479	2.779	3.707
27	0.256	0.684	1.314	1.703	2.052	2.473	2.771	3.690
28	0.256	0.683	1.313	1.701	2.048	2.467	2.763	3.674
29	0.256	0.683	1.311	1.699	2.045	2.462	2.756	3.659
30	0.256	0.683	1.310	1.697	2.042	2.457	2.750	3.646
40	0.255	0.681	1.303	1.684	2.021	2.423	2.704	3.551
60	0.254	0.679	1.296	1.671	2.000	2.390	2.660	3.460
120	0.254	0.677	1.289	1.658	1.980	2.358	2.617	3.373
∞	0.253	0.674	1.282	1.645	1.960	2.326	2.576	3.291