

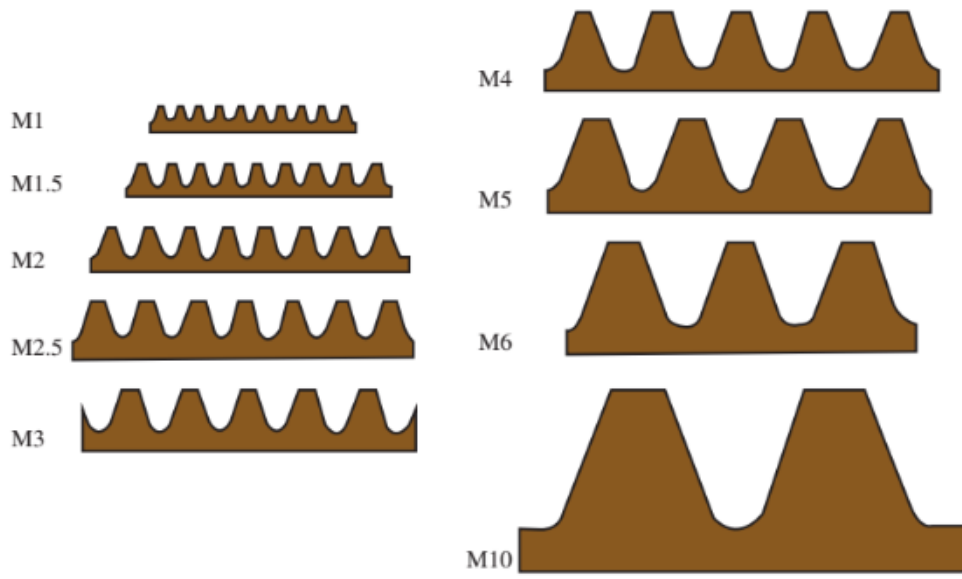
Lampiran 1 Tabel Faktor Kejutan dan Fatik (Sumber : Khurmi, hal.531)

<i>Nature of load</i>	K_m	K_t
1. Stationary shafts		
(a) Gradually applied load	1.0	1.0
(b) Suddenly applied load	1.5 to 2.0	1.5 to 2.0
2. Rotating shafts		
(a) Gradually applied or steady load	1.5	1.0
(b) Suddenly applied load with minor shocks only	1.5 to 2.0	1.5 to 2.0
(c) Suddenly applied load with heavy shocks	2.0 to 3.0	1.5 to 3.0

TABLE 9-1 Suggested Overload Factors, K_o

Driven Machine				
Power source	Uniform	Light shock	Moderate shock	Heavy shock
Uniform	1.00	1.25	1.50	1.75
Light shock	1.20	1.40	1.75	2.25
Moderate shock	1.30	1.70	2.00	2.75

Lampiran 3 Gambar Pemilihan Modul



Lampiran 4 Tabel Jumlah Gigi (Robert L. Mott hal.291)

For a pinion meshing with a rack		For a 20°, full-depth pinion meshing with a gear		
Tooth form	Minimum number of teeth	Number of pinion teeth	Maximum number of gear teeth	Maximum ratio
14½°, involute, full-depth	32	17	1309	77.00
20°, involute, full-depth	18	16	101	6.31
25°, involute, full-depth	12	15	45	3.00
		14	26	1.85
		13	16	1.23

Lampiran 5 Faktor Ukuran K_s (Robert L. Mott hal.359)

TABLE 9-2 Suggested Size Factors, K_s

Diametral pitch, P_d	Metric module, m	Size factor, K_s
≥ 5	≤ 5	1.00
4	6	1.05
3	8	1.15
2	12	1.25
1.25	20	1.40

Lampiran 6 Tabel Faktor Koreksi K₀, Mitshuboshi 2-18

Driven machine	Rated max. output of 300% or less			Rated max. output of more than 300%		
	AC motor (standard motor, synchronized motor) DC motor (Shunt) 2 or higher cylinder engine			Special motor (High torque) DC motor (Series coil) 1-cylinder engine Operation by line shaft or clutch		
	Running time (hr/day)			Running time (hr/day)		
	3-5	8-12	16-24	3-5	8-12	16-24
● Display equipment ● Medical equipment	1.0	1.2	1.4	1.2	1.4	1.6
● Carpenter's lathe ● Band saw	1.2	1.4	1.6	1.4	1.6	1.8
● Packaging machine ● Light load belt conveyor ● Screen	1.3	1.5	1.7	1.5	1.7	1.9
● Liquid stirring machine ● Drilling machine ● Lathe ● Threading machine ● Circular saw ● Planer	1.4	1.6	1.8	1.6	1.8	2.0
● Grinder ● Mixer (Cement/Viscous medium) ● Boring machine ● Milling machine ● Centrifugal compressor ● Vibrating screen ● Rotary compressor ● Injection molding machine ● Shaping machine ● Belt conveyor (ore, coal or sand)	1.5	1.7	1.9	1.7	1.9	2.1
● Extraction pump ● Hoist ● Elevator ● Washer ● Rubber processing machine (Calender, roll, extrusion machine) ● Fan ● Blower ● Conveyor (Apron, pan, bucket elevator) ● Textile machine	1.6	1.8	2.0	1.8	2.0	2.2
● Centrifugal separator ● Conveyor (Flight or screw) ● Hammer mill ● Papermaking machine (Pulper and beater)	1.7	1.9	2.1	1.9	2.1	2.3
● Kiln machinery (Brick or kneading machine) ● Mine propeller ● Air circulator	1.8	2.0	2.2	2.0	2.2	2.4

Lampiran 7 Faktor K_r dan faktor K_i Mitshuboshi 2-18

2. K_r

Speed ratio correction factor (K_r)

Table 2 -17

Speed ratio	Correction factor K_r
1.00~1.24	0
1.25~1.74	0.1
1.75~2.49	0.2
2.50~3.49	0.3
3.50 and higher	0.4

3. K_i

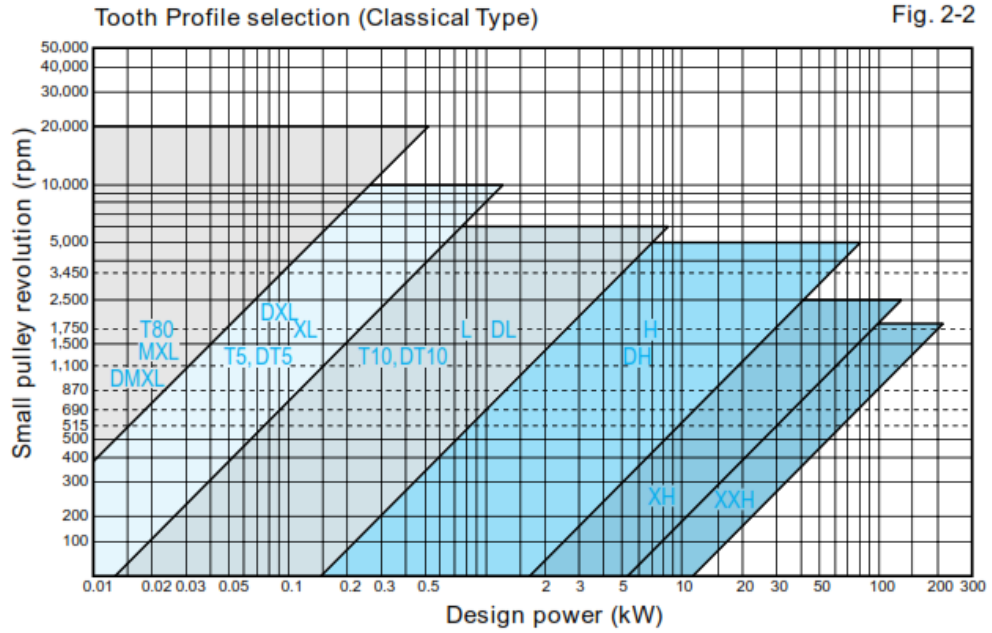
Idler correction factor (K_i)

Table 2 -18

Idler position	Correction factor(K_i)
When used on belt inner side on slack side of belt	0
When used on belt outer side on slack side of belt	0.1
When used on belt inner side on tight side of belt	0.1
When used on belt outer side on tight side of belt	0.2

* The idler correction factor is $K_i \times n$ when using n number of idler pulleys.

Lampiran 8 Pemilihan Jenis Sabuk Sumber Mitshuboshi 2-19



Lampiran 9 Jumlah puli minimum yang di izinkan. Sumber Mitshuboshi 2-20

Allowable minimum number of teeth Table 2-19

Revolution (rpm)	S2M	S3M DS3M	S5M DS5M	S8M DS8M	S14M DS14M	T80 MXL DMXL	XL DXL	L DL	H DH	XH	XXH	T5 DT5	T10 DT10
Over 3,500	20	20	–	30	–	–	16	20	24	–	–	20	22
3,500	18	18	24	28	48	16	12	16	20	30	–	16	20
1,750	16	16	20	26	40	14	11	14	18	26	26	14	18
1,160	14	14	16	24	38	12	10	12	16	24	24	12	16
870	14	14	14	22	34	–	10	12	14	22	22	12	14
690	–	–	–	–	–	–	10	12	14	20	20	12	14
575	–	–	–	–	–	–	10	12	14	18	18	12	14

Type	Tooth number	Pitch diameter (mm)
MTS3M	24	22.92
MTS5M	14	22.28
MTS8M	24	61.12
MTS14M	28	124.78

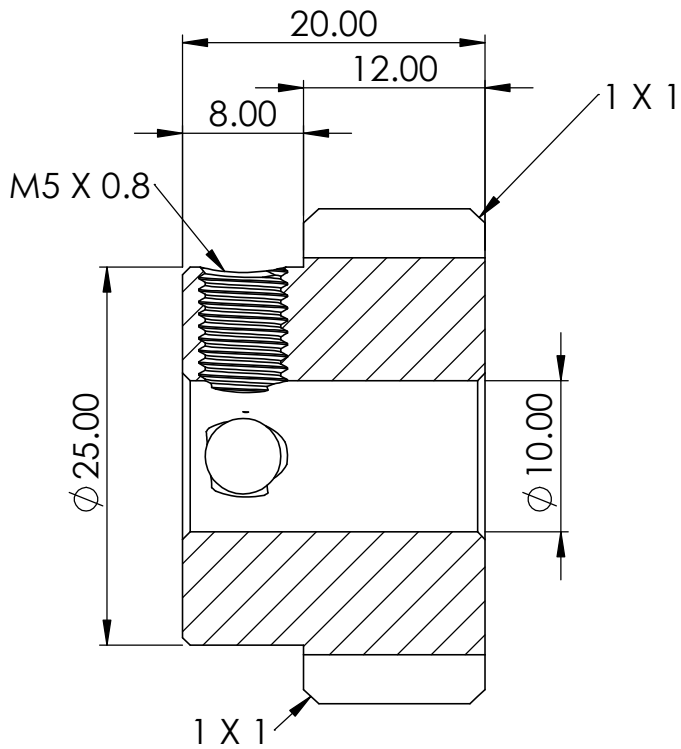
Lampiran 10 tabel faktor koreksi Mitshuboshi tabel 2-20

Teeth in mesh correction factor (Km)

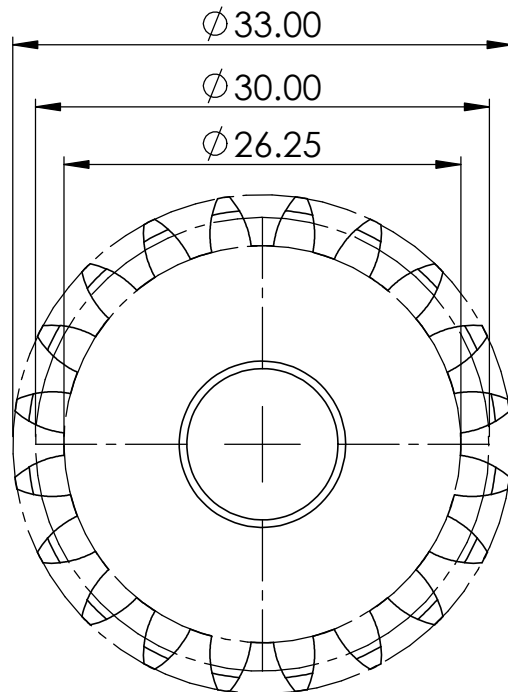
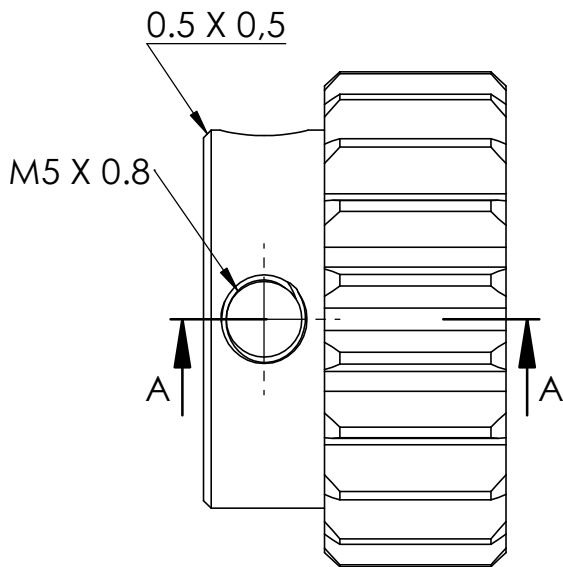
Table 2 -20


Number of teeth in mesh	6 or more	5	4	3	2
Factor Km	1.0	0.8	0.6	0.4	0.2

Lampiran 11
Desain Mesin

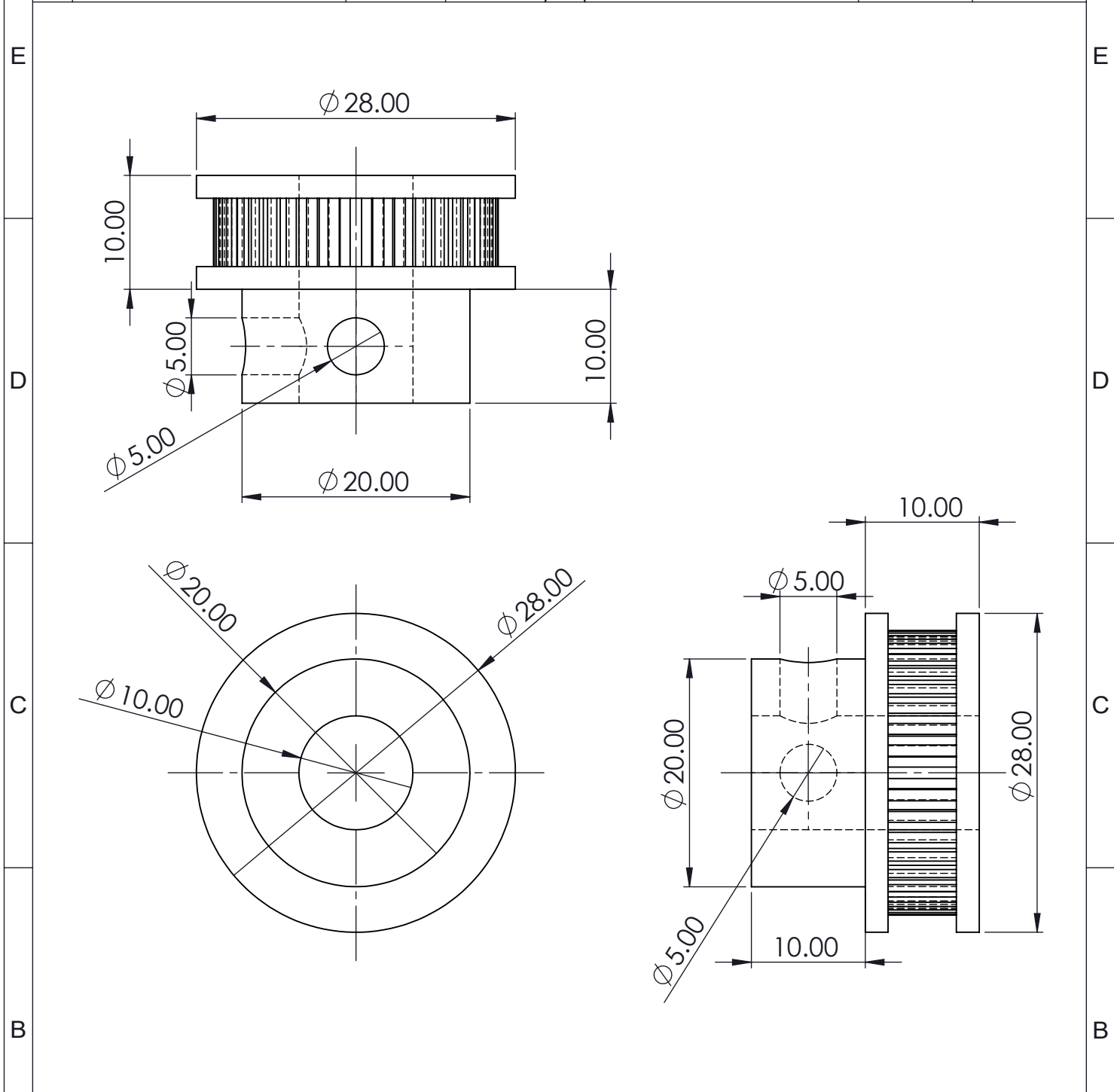


SECTION A-A
SCALE 2 : 1



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO.ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER	PROYEKSI		
<	6	120	30	400	1000	2000						
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2						
SPUR GEAR M1,5 Z20									SKALA	DIGAMBAR	QONI	
									2.1	DIPERIKSA		
										DISAHKAN		
 POLITEKNIK NEGERI CILACAP									FORMAT	NO.GAMBAR		
									A 4			

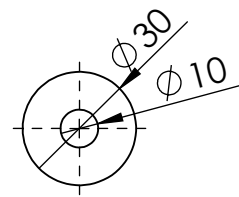
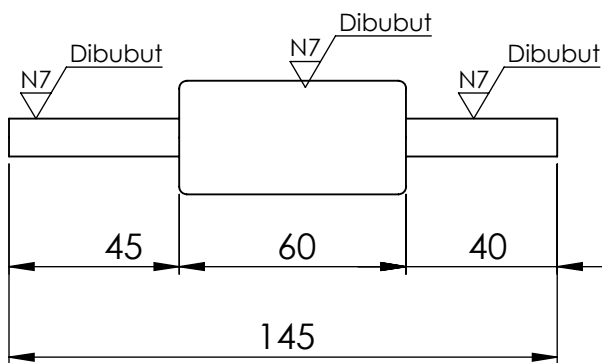
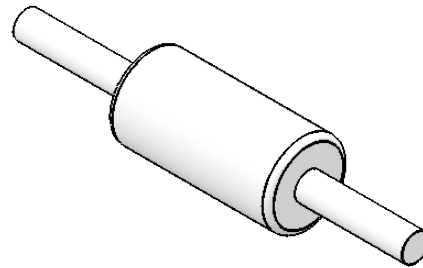
5		4		3		2		1	
NO	PERUBAHAN	TANGGAL	NAMA	NO	PERUBAHAN	TANGGAL	NAMA		
				△					




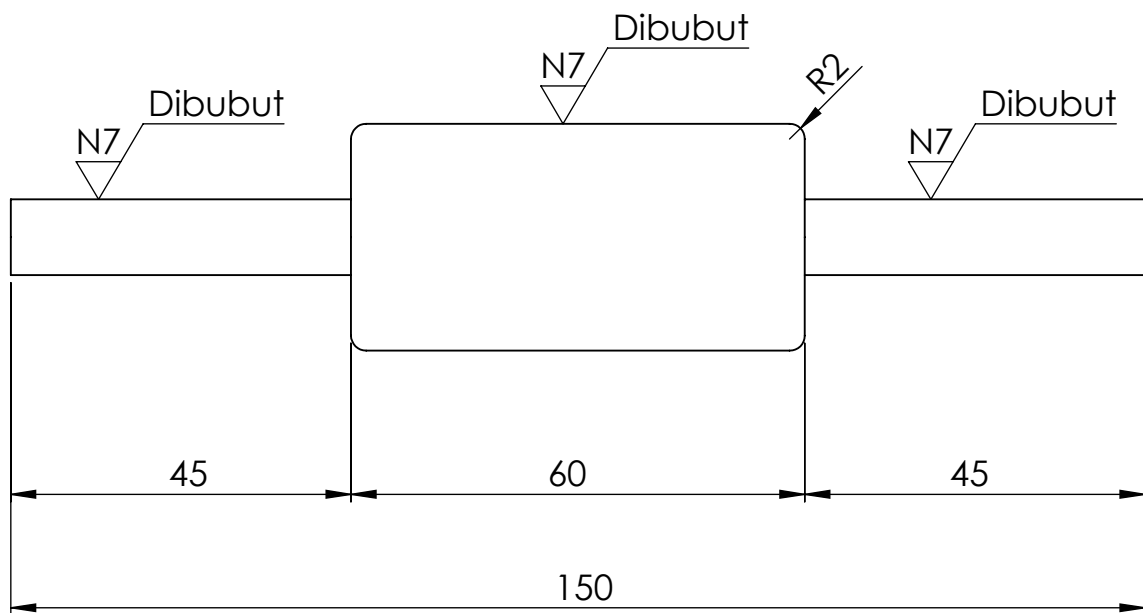
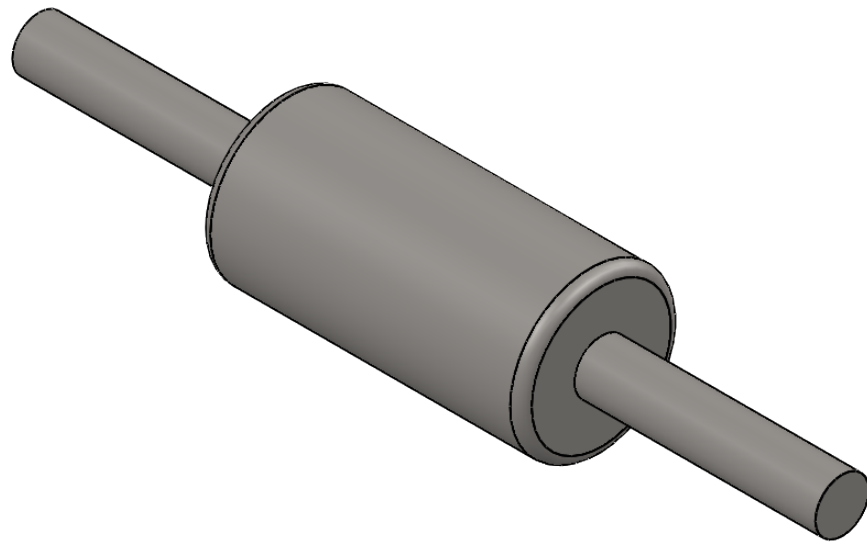
1	PULLY					Alumunium	Lihat detail		-	
JML	NAMA BAGIAN					BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	F
>	0	6	30	120	400	1000	UKURAN LANJUT	NO. ORDER		
<	6	30	120	400	1000	2000				
TOL	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2				
NAMA :								SKALA	DIGAMBAR	ANGEL
PULLY								1:2	DIPERIKSA	
									DISAHKAN	
NO. ASSY. :								FORMAT		
POLITEKNIK NEGERI CILACAP, JURUSAN TEKNIK MESIN JL. dr. SOETOMO, NO. 01, SIDAKAYA, CILACAP, 53212 TELP : 0282 - 533329, E-mail : tmpnc@politeknikcilacap.ac.id								A4		

PERUBAHAN DARI :

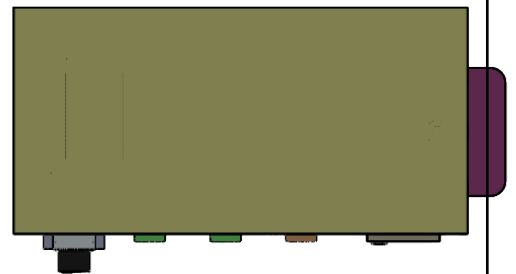
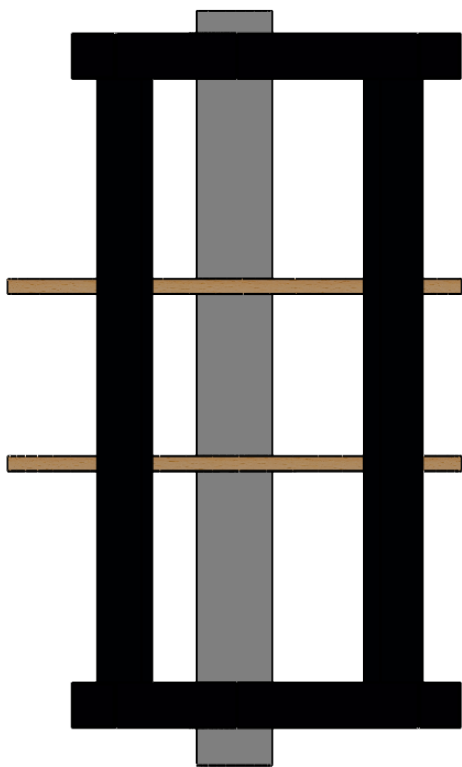
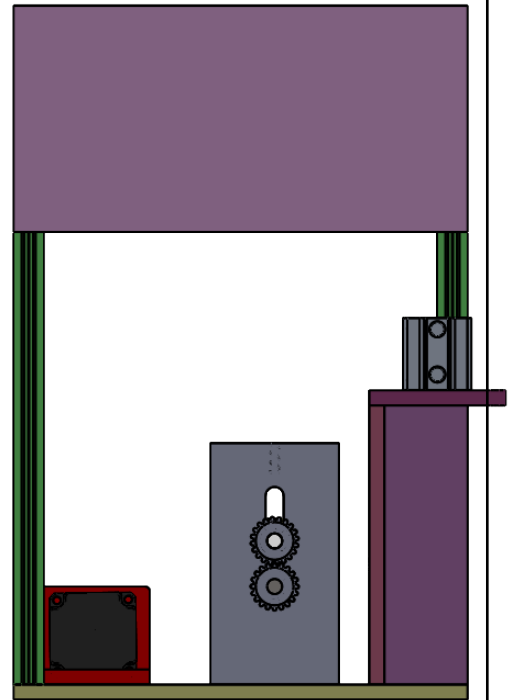
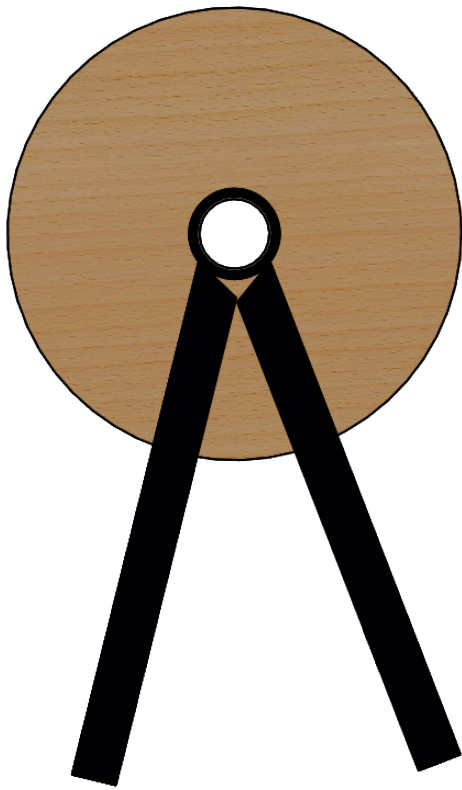
DIGANTI DENGAN :



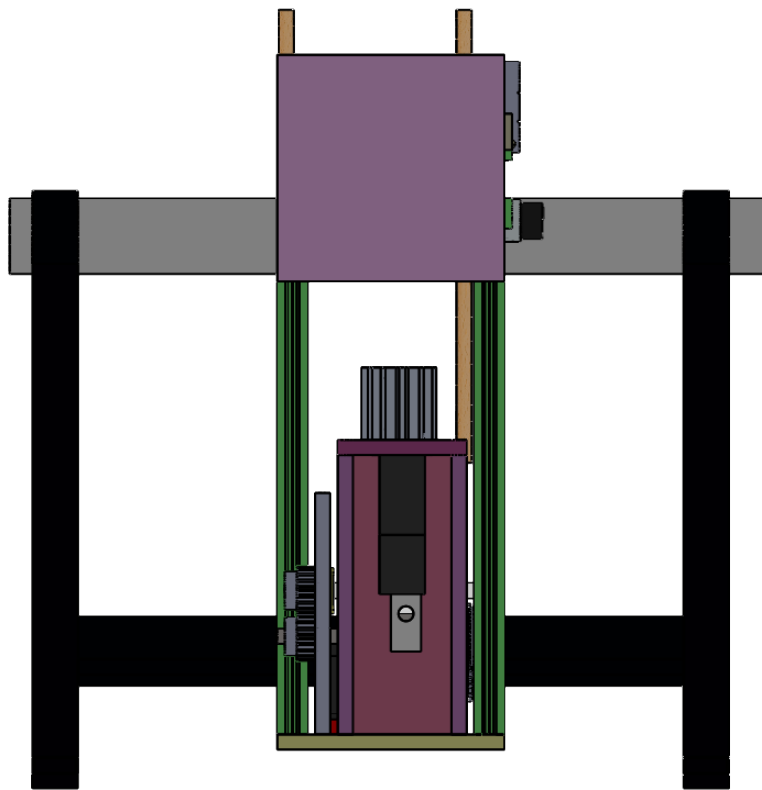
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER	PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Roller Atas								SKALA	DIGAMBAR	Qoni	
								1:2	DIPERIKSA		
									DISAHKAN		
								FORMAT	NO. GAMBAR		
 POLITEKNIK NEGERI CILACAP								A4			

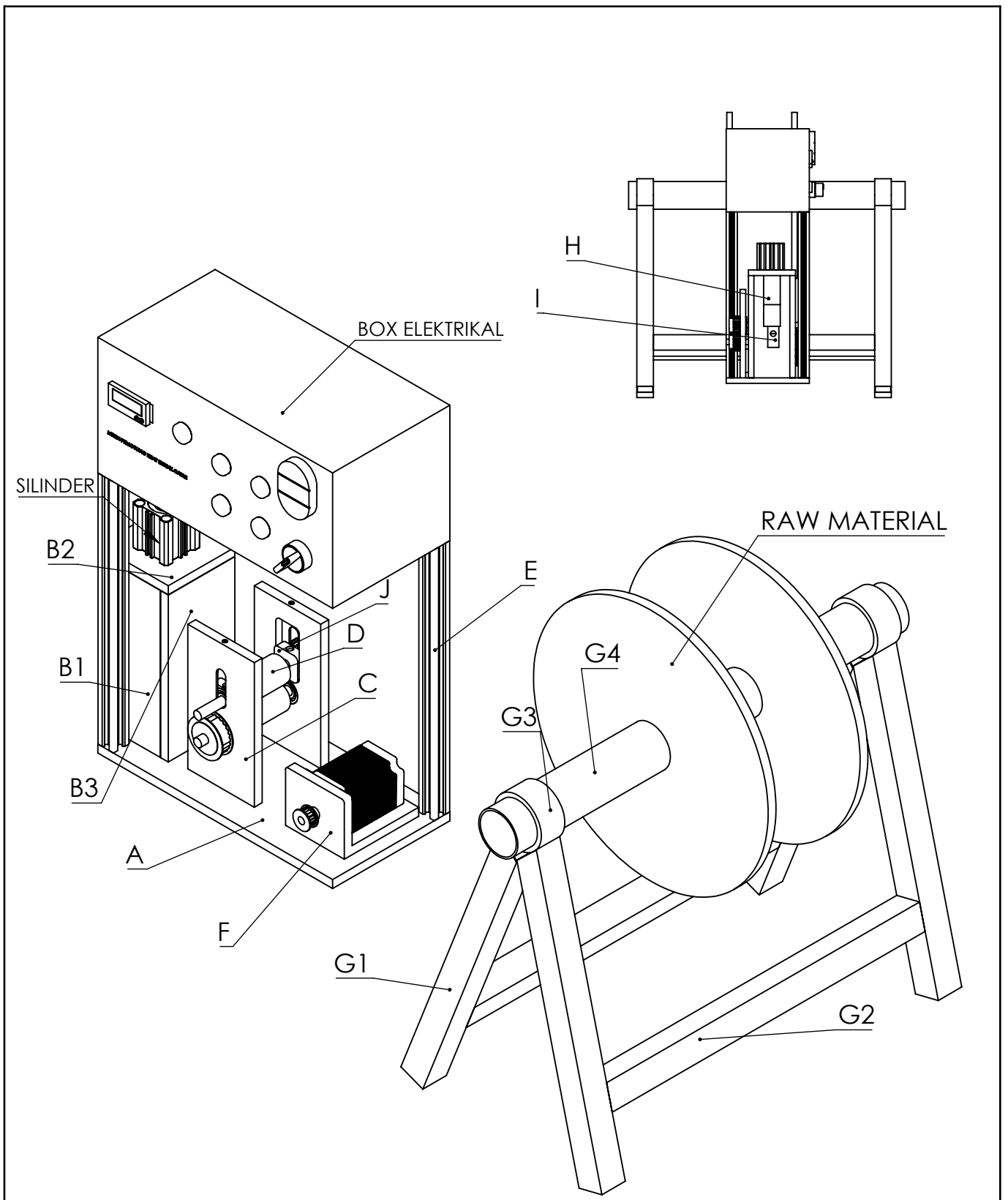


JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Roller Bawah								SKALA	DIGAMBAR	Qoni	
								1:1	DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT	NO. GAMBAR		
								A4			

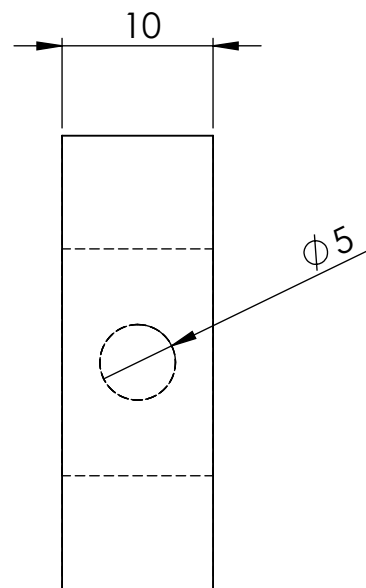
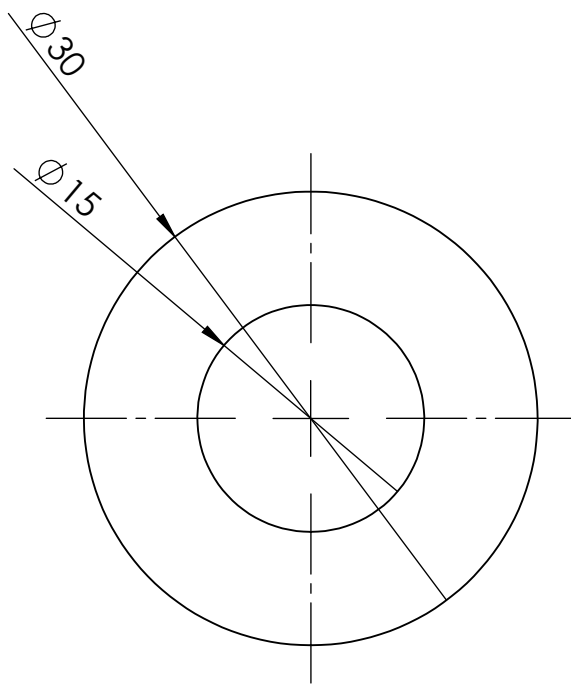
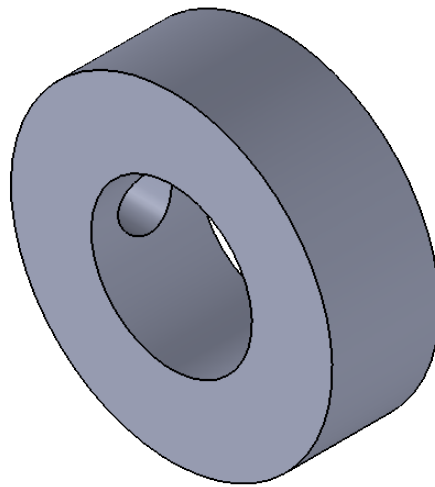


JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Mesin Pemotong Heat Shrink Tube									SKALA 1:10	DIGAMBAR	Qoni
										DIPERIKSA	
										DISAHKAN	
									FORMAT A4	NO. GAMBAR	
POLITEKNIK NEGERI CILACAP											

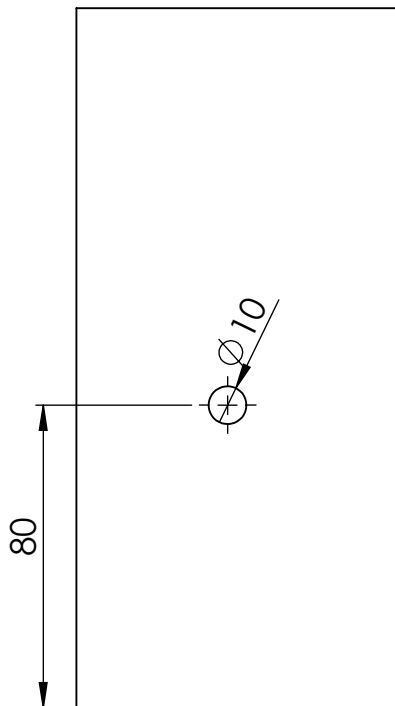
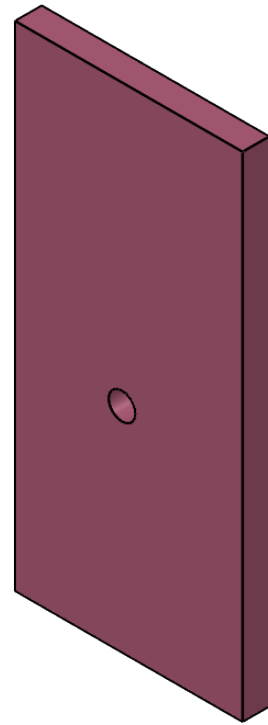
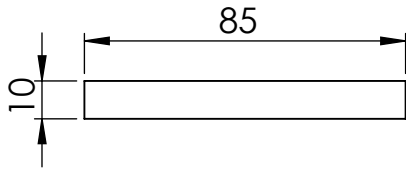




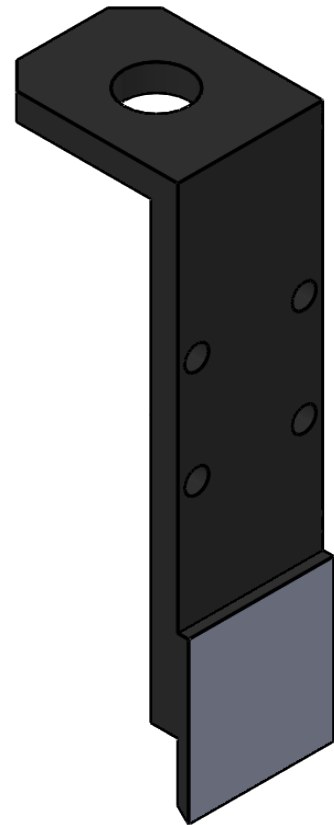
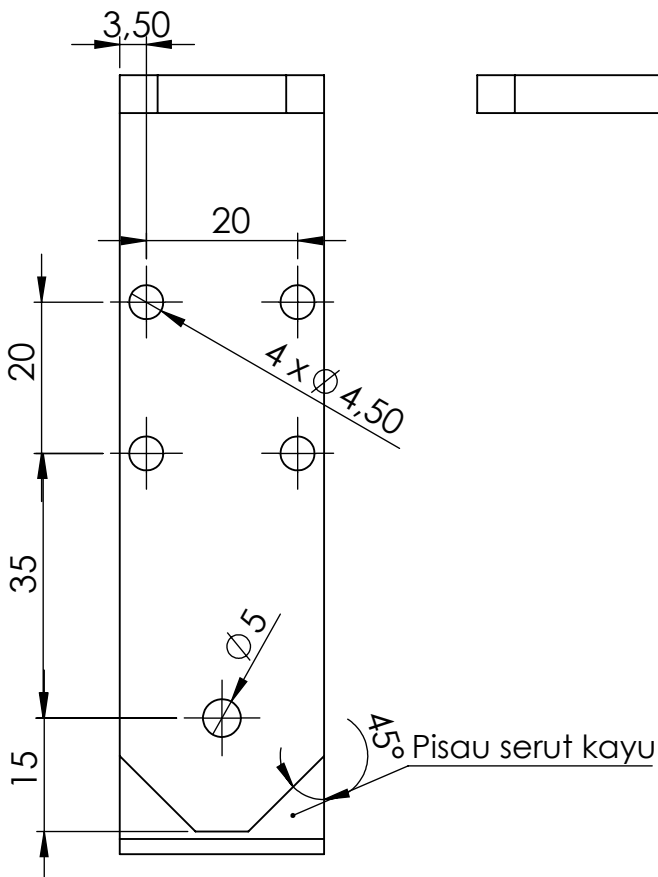
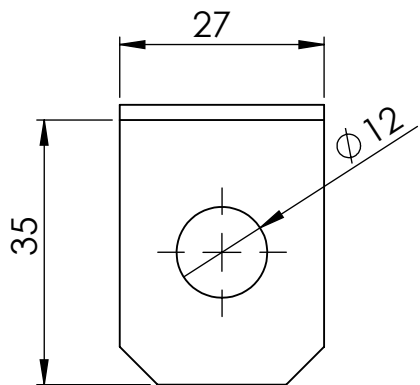
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER			
<	6	30	120	400	1000	2000						
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2						
<h2>Mesin Pemotong Heat Shrink Tube</h2>									SKALA	DIGAMBAR	Qoni	
									1:10	DIPERIKSA		
										DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT	NO. GAMBAR		
									A4			



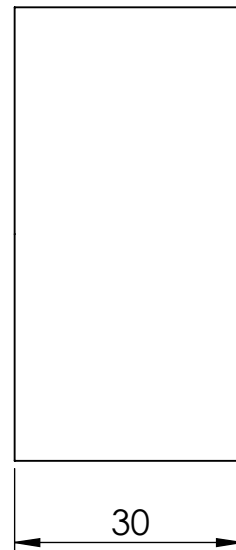
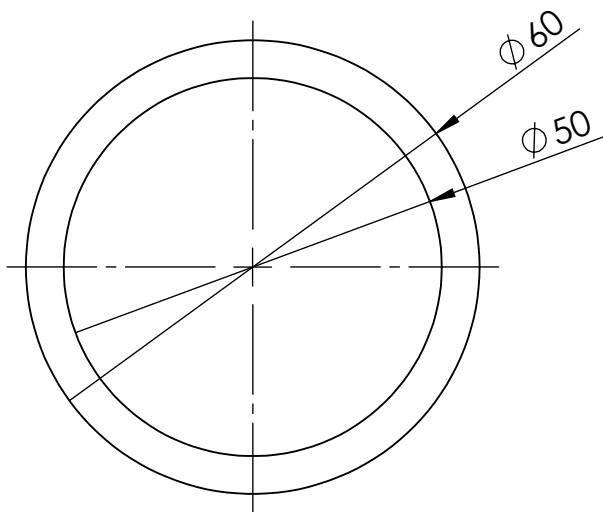
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER	PROYEKSI		
<	6	30	120	400	1000	2000						
TOL	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2						
Stand bahan 8 locker									SKALA	DIGAMBAR	Angel	
									2:1	DIPERIKSA		
										DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT	NO. GAMBAR		
									A4			



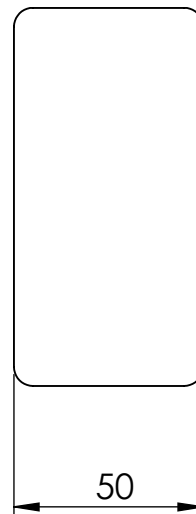
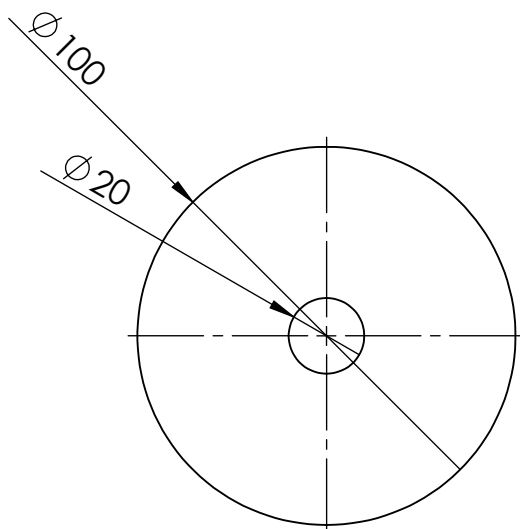
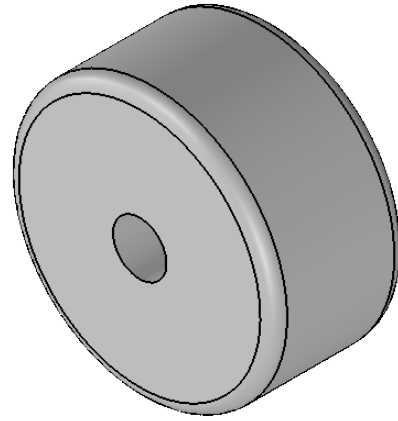
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER	PROYEKSI 		
<	6	30	120	400	1000	2000						
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2						
Toolpost 3									SKALA	DIGAMBAR	Qoni	
									1:2	DIPERIKSA		
										DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT	NO. GAMBAR		
									A4			



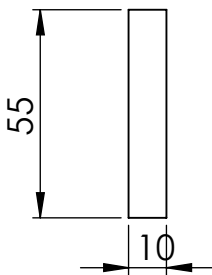
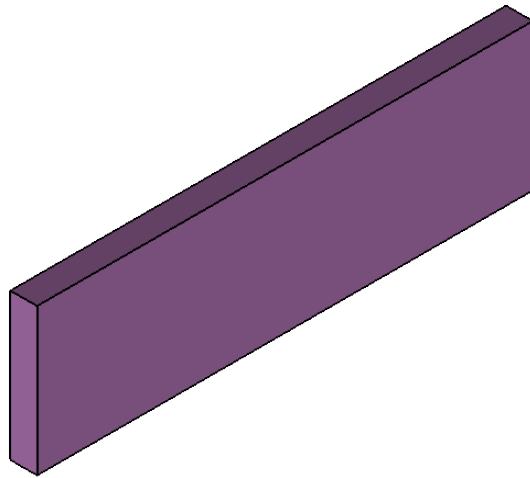
JML	NAMA BAGIAN					BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER	PROYEKSI		
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Pisau								SKALA 1:1	DIGAMBAR	Qoni	
									DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT A4	NO. GAMBAR		



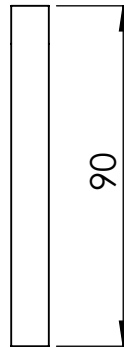
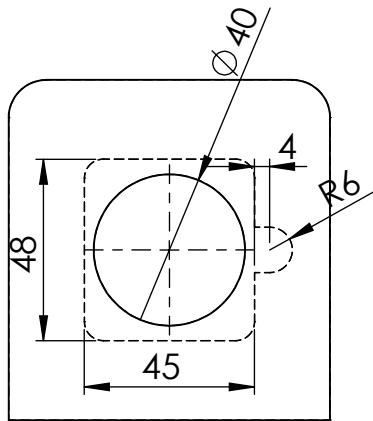
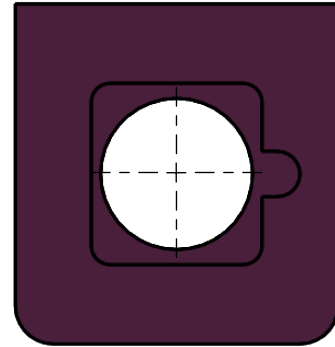
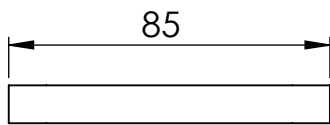
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER		
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Penyangga raw material G3									SKALA 1:1	DIGAMBAR	Qoni
									DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT A4	NO. GAMBAR	



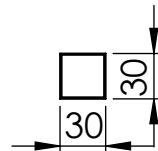
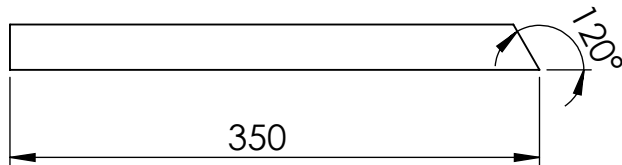
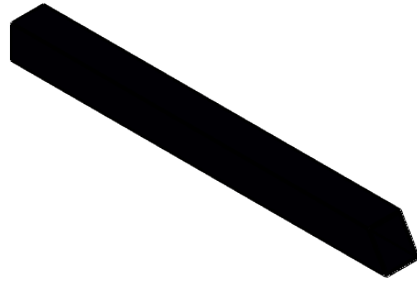
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER		
<	6	30	120	400	1000	2000					
TOL	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2					
Stand Bahan 7 piringan dalam									SKALA 1:2	DIGAMBAR	Angel
									DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT A4	NO. GAMBAR	



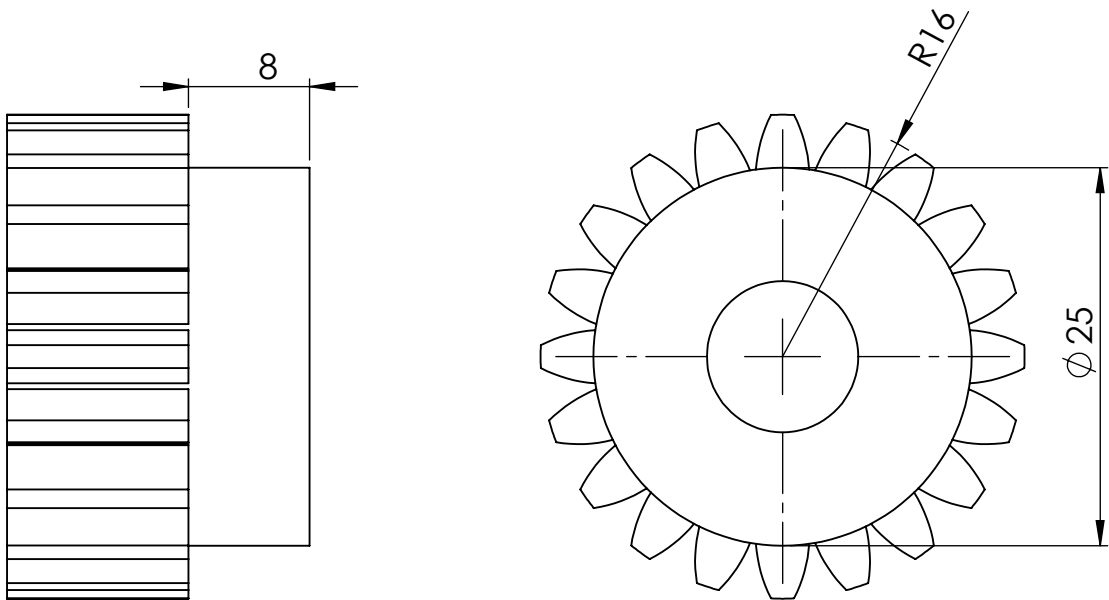
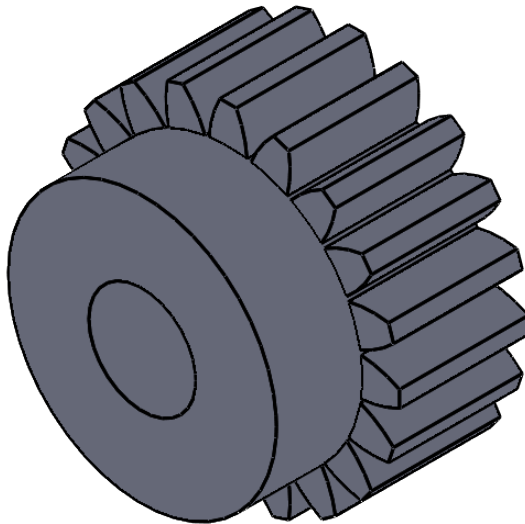
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 		
<	6	30	120	400	1000	2000						
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2						
Toolpost 1									SKALA	DIGAMBAR	Qoni	
									1:2	DIPERIKSA		
										DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT	NO. GAMBAR		
									A4			



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER	PROYEKSI		
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
<h2>Toolpost 2</h2>								SKALA 1:2	DIGAMBAR	Qoni	
									DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT A4	NO. GAMBAR		

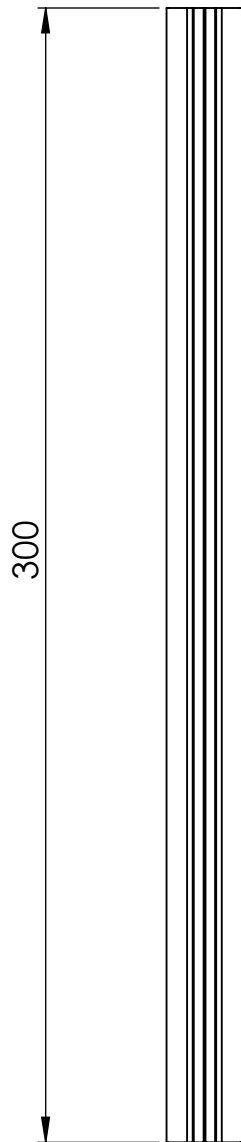
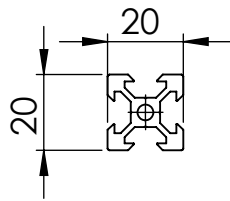


JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Penyangga raw material G1								SKALA 1:5	DIGAMBAR	Qoni	
									DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT A4	NO. GAMBAR		

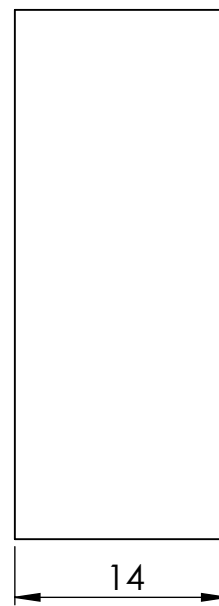
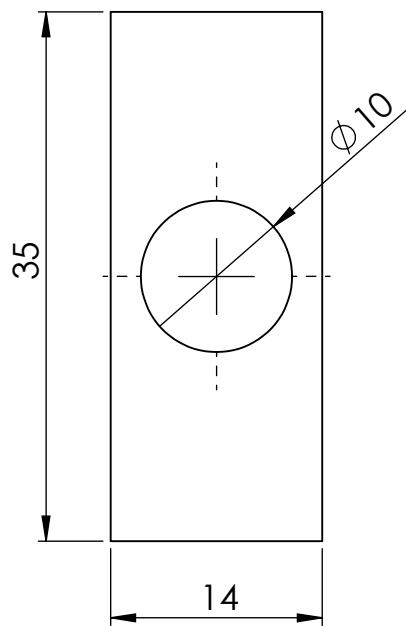
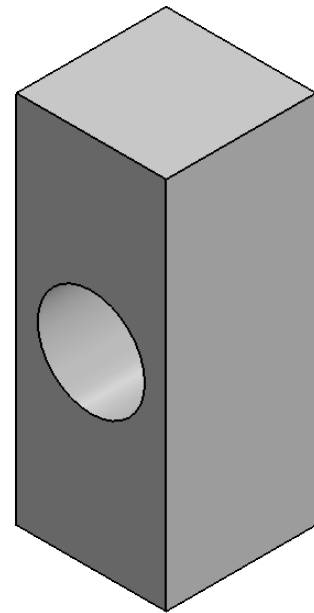
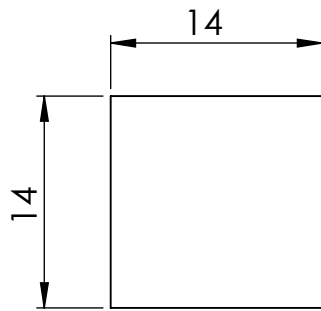


JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER		
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Spure Gear									SKALA 2:1	DIGAMBAR Angel	
									DIPERIKSA		
									DISAHKAN		
									FORMAT A4	NO. GAMBAR	





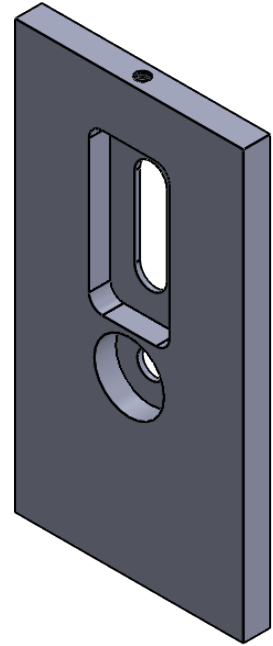
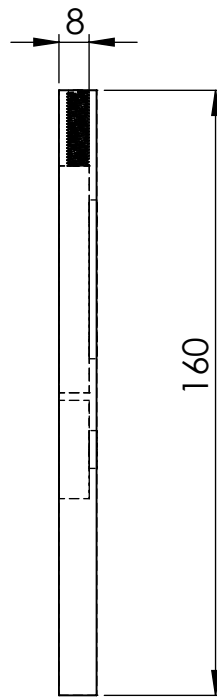
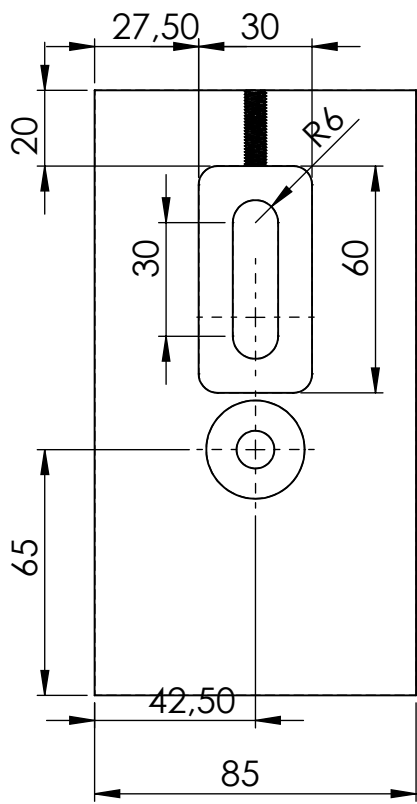
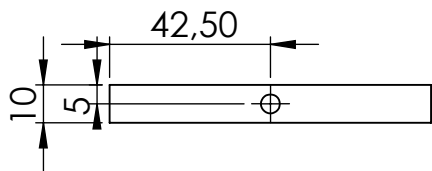
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER			
<	6	30	120	400	1000	2000						
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2						
Penyangga Box Elektrikal									SKALA	DIGAMBAR		
									1:2	DIPERIKSA		
										DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT	NO. GAMBAR		
									A4			



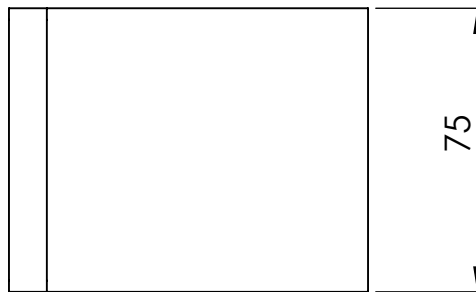
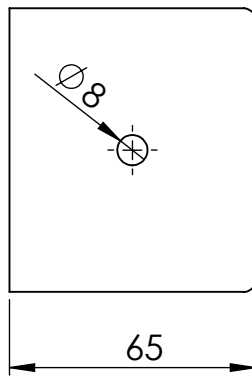
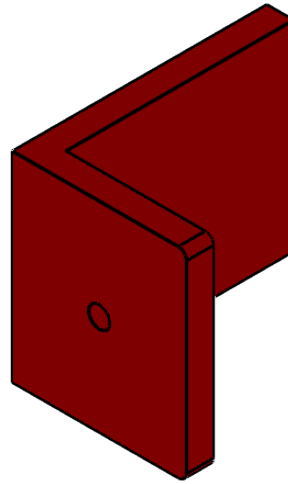
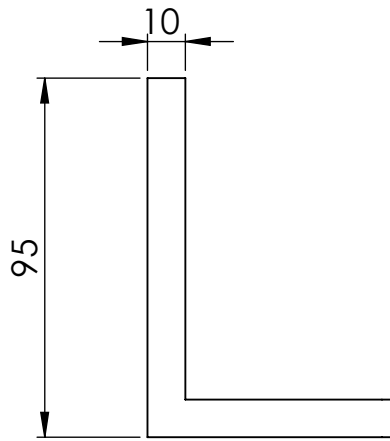
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER		
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Dudukan Pisau									SKALA 2:1	DIGAMBAR Qoni	
									DIPERIKSA		
									DISAHKAN		
									FORMAT A4	NO. GAMBAR	



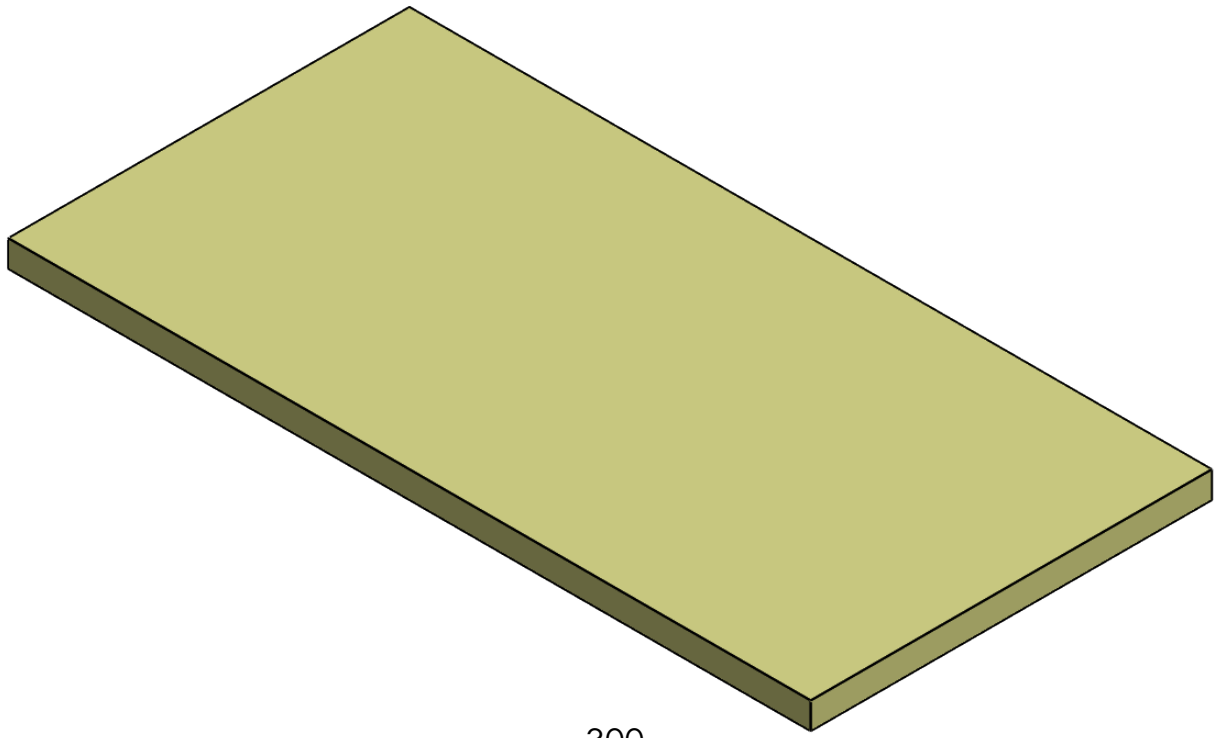
POLITEKNIK NEGERI CILACAP



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000						
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2						
Dudukan Roller									SKALA	DIGAMBAR	Angel	
									1:2	DIPERIKSA		
										DISAHKAN		
POLITEKNIK NEGERI CILACAP									FORMAT	NO. GAMBAR		
									A4			



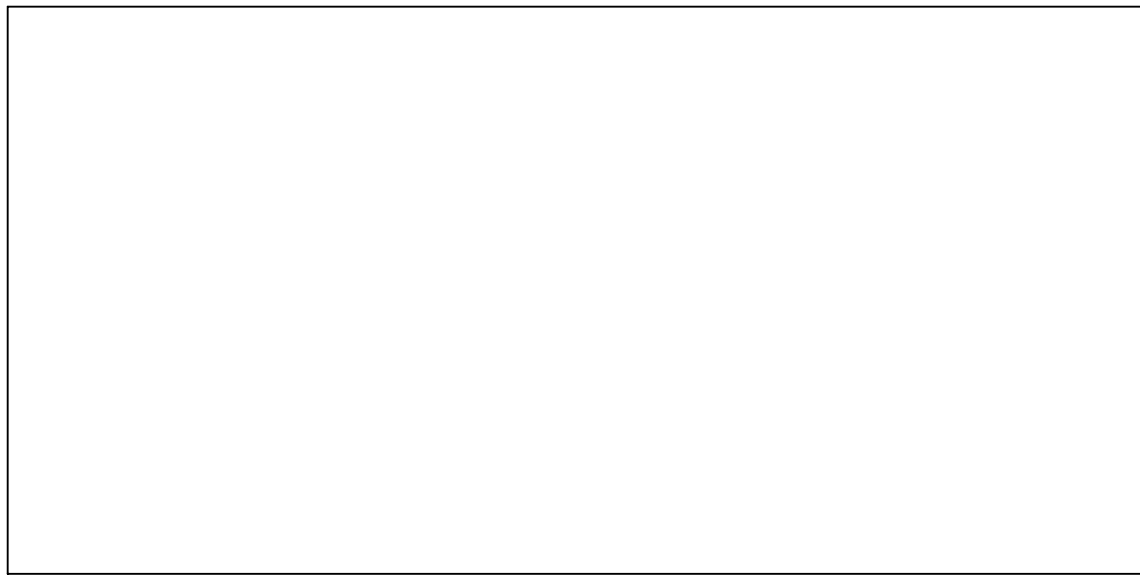
JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Dudukan Motor									SKALA 1:2	DIGAMBAR	
									DIPERIKSA		
									DISAHKAN		
									FORMAT A4	NO. GAMBAR	
 POLITEKNIK NEGERI CILACAP											




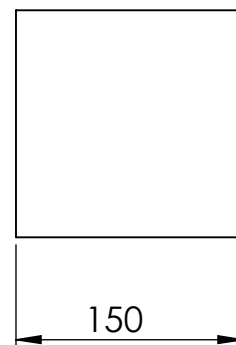
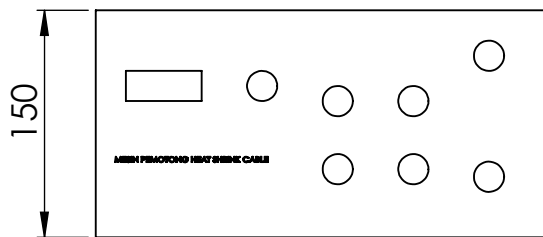
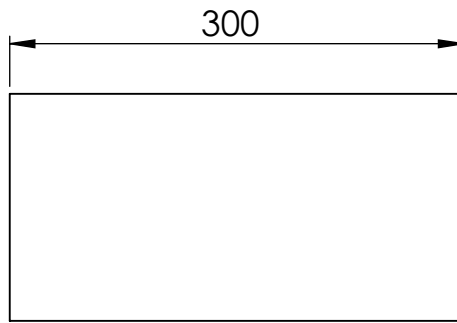
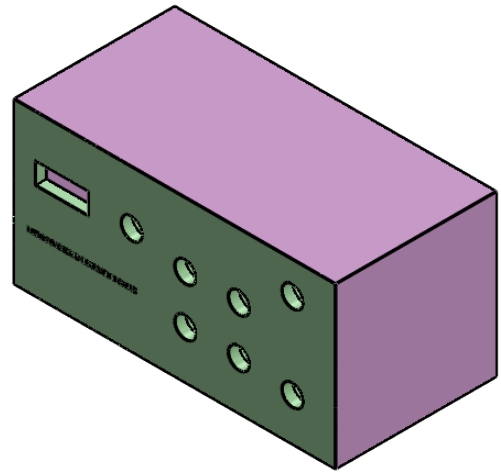
300

10

150



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
<h1>Base</h1>									SKALA 1:5	DIGAMBAR Qoni	
									DIPERIKSA		
									DISAHKAN		
									FORMAT A4	NO. GAMBAR	
 POLITEKNIK NEGERI CILACAP											



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN
>	0	6	30	120	400	1000	Pengerjaan Lanjut	NO. ORDER		PROYEKSI 	
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
Assembly Box Elektrikal								SKALA	DIGAMBAR		
								1:5	DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT	NO. GAMBAR		
								A4			

Lampiran 12
Jadwal Tugas Akhir

Lampiran 13
Bill Of Material

Bill of Material (BOM)

No	Nama Komponen	No.ID	Spesifikasi	Satuan	Harga persatuan	Jumlah pemakaian per satuan		Jumlah	Harga Komponen
						Panjang (mm)	Berat (kg)		
Base									
1	Base	A	Aluminium 300 x 150 x 10 mm	berat	Rp 100,000.00		1.2	1	Rp 120,000.00
Jumlah Harga									Rp 120,000.00
Sub Assy Toolpost									
2	Toolpost	B1	Aluminium 190 x 60 x 10 mm	berat	Rp 100,000.00		0.8	1	Rp 80,000.00
3	Toolpost	B2	Aluminium 90 x 95 x 10 mm	berat	Rp 100,000.00		0.6	1	Rp 60,000.00
4	Toolpost	B3	Aluminium 190 x 90 x 10 mm	berat	Rp 100,000.00		0.95	1	Rp 95,000.00
Jumlah Harga									Rp 235,000.00
Sub Assy roller									
5	Dudukan roller	C	Aluminium 165 x 90 x 10 mm	berat	Rp 100,000.00		0.9	2	Rp 180,000.00
6	Roller	D	Aluminium Ø 35 mm x 155 mm	berat	Rp 100,000.00		0.8	2	Rp 160,000.00
7	Rumah Bearing	J	Aluminium 34 x 34 x 10 mm	berat	Rp 100,000.00		0.1	2	Rp 20,000.00
8	Bearing		Mini Bearing leher hole 10 mm	buah	Rp 6,000.00			4	Rp 24,000.00
9	Roda gigi		Roda gigi Rack 1,5 M 20 T Bore 10 mm	buah	Rp 120,000.00			2	Rp 240,000.00
10	Timing pulley		Timing pulley 20 Teeth bore 5 mm	buah	Rp 9,600.00			1	Rp 9,600.00
11	Timing pulley		Timing pulley 40 Teeth bore 10 mm	buah	Rp 20,000.00			1	Rp 20,000.00
12	Timing Belt		Timing Belt GT2 6mm 350 mm	buah	Rp 16,000.00			1	Rp 16,000.00
Jumlah Harga									Rp 669,600.00
Sub Assy Penyangga box elektrik									
13	Penyangga box elektrik	E	Aluminium profile 20 x 20 x 300 mm	panjang	Rp 50.00	300		2	Rp 30,000.00
Jumlah Harga									Rp 30,000.00
Dudukan motor									
14	Dudukan motor	F	Motor bracket	buah	Rp 27,200.00			1	Rp 27,200.00
Jumlah Harga									Rp 27,200.00
Sub Assy Penyangga Raw Material									
15	Penyangga raw material	G1	Besi hollow 30 x 30 mm x 350 mm	berat	Rp 10,000.00		0.5	4	Rp 20,000.00
16	Penyangga raw material	G2	Besi hollow 30 x 30 mm x 400 mm	berat	Rp 10,000.00		0.5	2	Rp 10,000.00
17	Penyangga raw material	G3	Besi pipa Ø 70 mm sepanjang 20 mm	berat	Rp 10,000.00		0.1	1	Rp 1,000.00
18	Penyangga raw material	G4	Besi pipa Ø 50 mm sepanjang 500 mm	berat	Rp 10,000.00		0.9	1	Rp 9,000.00
Jumlah Harga									Rp 40,000.00
Sub Assy Pisau									
19	Pisau	H	Plat besi 140 x 27 x 5 mm	berat	Rp 10,000.00		0.2	1	Rp 2,000.00
20	Mata pisau		Mata pisau planer Makita HSS	buah	Rp 45,000.00			1	Rp 45,000.00
	Dudukan pisau	I	Besi ass persegi ukuran 37 x 16 x 12 mm	berat	Rp 10,000.00		0.3	1	Rp 3,000.00
21	Linear guide		Linear guide MGN 12 panjang 150 mm	buah	Rp 145,500.00			1	Rp 145,500.00
22	Pneumatik		Pneumatic compact cylinder 32 x 10	buah	Rp 155,000.00			1	Rp 155,000.00
23	Air regulator		Air regulator 1/4 inch	buah	Rp 44,000.00			1	Rp 44,000.00
24	Solenoid valve		Solenoid valve 4v210 08 Airtac 220 v DC	buah	Rp 69,500.00			1	Rp 69,500.00
25	Fitting pneumatik		Fitting elbow OD 6mm drat 1/4"	buah	Rp 3,500.00			2	Rp 7,000.00
26	Fitting pneumatik		Fitting elbow OD 6mm drat 1/8"	buah	Rp 4,500.00			3	Rp 13,500.00
27	Fitting pneumatik		Fitting lurus male OD 6mm drat 1/8"	buah	Rp 2,800.00			3	Rp 8,400.00
28	Selang PU		Selang PU OD 6mm x 4mm	meter	Rp 2.50	4000			Rp 10,000.00
Jumlah Harga									Rp 502,900.00
Elektrikal									
29	Arduino Mega 2560		Arduino Mega 2560 R3 CH340 Atmega2560	buah	Rp 172,500.00			1	Rp 172,500.00
30	Motor Stepper Nema 17		Nema 17 17HS3401 Stepper motor 12 V 1,3 A	buah	Rp 79,000.00			1	Rp 79,000.00
31	Power supply		Power supply switching PSU 24V	buah	Rp 92,500.00			1	Rp 92,500.00
32	Stepper motor driver		TB6600 Stepper motor driver 4A 42V DC	buah	Rp 64,000.00			1	Rp 64,000.00
33	Relay		Thyristor AC Switch Relay 220 V AC 16A Max 3.3 A & 5V Logic for Arduino	buah	Rp 26,000.00			1	Rp 26,000.00
34	Step down		LM 2596HVS 4,5-60 V TO 3-40V Step down module buck converter	buah	Rp 11,200.00			1	Rp 11,200.00
35	Infrared obstacle sensor		Infrared obstacle sensor	buah	Rp 4,500.00			1	Rp 4,500.00
36	Jumper kabel		Jumper cable 10cm male to female	buah	Rp 9,000.00			2	Rp 18,000.00
37	Jumper kabel		Jumper cable 10cm male to male	buah	Rp 9,500.00			2	Rp 19,000.00
38	Kabel		Kabel	meter	Rp 2,500.00			5	Rp 12,500.00
39	Keypad		Matrix array 16 key membrane switch keypad	buah	Rp 5,000.00			1	Rp 5,000.00
40	Pin header female		Pin header female strip single row 1 x 40 2,54 mm	buah	Rp 1,200.00			3	Rp 3,600.00
41	Pin header male		Pin header male strip single row 1x40 2,54 mm	buah	Rp 900.00			3	Rp 2,700.00
42	LCD Module		LCD 20 x 4 with I2C serial interface	buah	Rp 54,000.00			1	Rp 54,000.00
43	PCB		PCB dot matrix thru hole double layer 8 x 12 cm	buah	Rp 13,400.00			1	Rp 13,400.00
44	Terminal PCB block		Terminal PCB Block screw 2 pin K F301-2p	buah	Rp 500.00			6	Rp 3,000.00
Jumlah Harga									Rp 580,900.00
Lain lain									
45	Baut L M6		M6 x 20 mm	buah	Rp 1,650.00			5	Rp 8,250.00
46	Baut L M5		M5 x 30 mm	buah	Rp 2,000.00			20	Rp 40,000.00
47	Baut L M4		M4 x 16 mm	buah	Rp 625.00			10	Rp 6,250.00
48	Baut L M3		M3 x 10 mm	buah	Rp 500.00			10	Rp 5,000.00
49	Elektroda		Elektroda RD Ø 2 mm	berat	Rp 40,000.00		0.25		Rp 10,000.00
50	Pilox		Pilox hitam	buah	Rp 40,000.00			1	Rp 40,000.00
51	Mata gerinda		Mata gerinda	buah	Rp 4,000.00			2	Rp 8,000.00
52	Panel Box		Junction box PVC 300 x 220 x 120 mm	buah	Rp 120,000.00			1	Rp 120,000.00
53	Kabel Ties		Kabel ties nylon 100 pcs	pak	Rp 5,000.00			1	Rp 5,000.00
54	Heatshrink tube		heatshrink tube 6 mm 100 m	meter	Rp 1,650.00			100	Rp 165,000.00
Jumlah Harga									Rp 407,500.00
TOTAL Bill Of Material									Rp 2,613,100.00

LAMPIRAN 14
BIODATA PENULIS



Nama : Angelia Kusuma Sejati
Tempat,tanggal lahir : Cilacap,31 maret 2003
NPM : 210103004
Prodi : DIII-Teknik Mesin
Jurusan :Rekayasa Mesin Dan Industri Pertanian
Alamat : Jalan Teri RT 03/13 Cilacap Selatan
Telepon/hp : 082322867469
e-mail : Angeliasejati1@gmail.com
Hobi :memasak dan menyanyi
Motto : yang penting tidak menyusahkan orang lain.

RIWAYAT PENDIDIKAN :

1. Sd Negeri Sidakaya 02 Cilacap : 2009-2015
2. Smp Negeri 8 Cilacap : 2015-2018
3. Smk Migas Muhammadiyah Cilacap : 2018-2021