

LAMPIRAN 1
TABEL GAYA PISTON SILINDER DARI BERBAGAI UKURAN
PADA TEKANAN 1-10 BAR

Tabel 1A. Gaya piston silinder dari berbagai ukuran pada tekanan 1-10 bar
 Pramono (2008)

Diame ter Piston (mm)	Tekanan Kerja (bar)									
	1	2	3	4	5	6	7	8	9	10
	Gaya Piston (kgf)									
6	0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6	1,8	2,0
12	1	2	3	4	5	6	7	8	9	10
16	2	4	6	8	10	12	14	16	18	20
25	4	9	13	17	21	24	30	34	38	42
35	8	17	26	35	43	52	61	70	78	86
40	12	24	36	48	60	72	84	96	108	120
50	17	35	53	71	88	106	124	142	159	176
70	34	69	104	139	173	208	243	278	312	346
100	70	141	212	283	353	424	495	566	636	706
140	138	277	416	555	693	832	971	1110	1248	1386
200	283	566	850	1133	1416	1700	1983	2266	2550	2832
250	433	866	1300	1733	2166	2600	3033	3466	3800	4332

LAMPIRAN 2



TABEL DATA MATERIAL, *CUTTING SPEED*, DAN SPESIFIKASI KECEPATAN PUTARAN SPINDLE MESIN BUBUT

Tabel 2A Data material dan *cutting speed* proses bubut

Material	Teg. Tarik (kg/mm ²)	CS (m/mnt)	Material	Teg. Tarik (kg/mm ²)	CS (m/mnt)
Plain carbon steel			Spring Steel (JIS Grade)		
ST37 / MS	37	32	SUP4, 6, 7, 9, 10, 11	125	13
1080 / S30C	48	32	SUS 302, 304, 316 WPA	170	5
1085 / S35C	52	25	SUS 302,304, WPB	210	5
1040 / S40C	55	25	SUS 631J1 WPC	200	5
1045 / S45C / EMS45 / 1730	58	25	Stainless Steel		
1050 / S50C / ST60	62	25	304, 304L, 316, 316L	70	18
1055 / S55C	66	25	410, 416	77	18
Alloy Steel (JIS Grade)			420, 420F	84	18
SNC2, 3, 21	95	18	440C, 440F	91	18
SNC22	100	13	Copper		
SNCM1, 2, 22	90	18	Lead Bronze		
SNCM7, 8, 23, 25	100	13	Phospor Bronze		
SCr3, 4, 21, 22	90	18	Pure Aluminum		
SCr5	100	13	Aluminum Alloy		
SCM2, 3, 21, 22	90	18	Cast Iron		
SCM4, 5, 23	100	13	GG20		25
Tool Steel (AISI Grade)			GG25		18
W Series	70	18	GG30,35,40		18
O Series	135	13	GG45,50		13
D Series	140	13	GG55,60		5
A Series	140	13			
H Series	140	13			
L Series	100	13			
P Series	100	13			
S Series	130	13			
HSS T Series	150	13			
HSS M Series	140	13			

	1	2	3
A	60	220	860
B	92	360	1400
C	140	530	2000

Gambar 2A Variasi kecepatan *spindle* pada mesin bubut

LONGITUDINAL FEED					TRANSVERSE FEED				
									
1	M				1	M			
	D	E	F	G		D	E	F	G
1	0.044	0.088	0.176	0.352	1	0.020	0.039	0.079	0.158
2	0.050	0.099	0.198	0.396	2	0.022	0.044	0.089	0.178
3	0.052	0.105	0.210	0.420	3	0.023	0.047	0.094	0.188
4	0.055	0.110	0.220	0.440	4	0.024	0.049	0.098	0.196
5	0.060	0.121	0.242	0.484	5	0.027	0.054	0.109	0.218
6	0.063	0.127	0.254	0.508	6	0.028	0.057	0.114	0.228
7	0.066	0.132	0.264	0.528	7	0.029	0.059	0.118	0.236
8	0.072	0.144	0.287	0.574	8	0.032	0.064	0.128	0.256
9	0.075	0.149	0.298	0.596	9	0.033	0.067	0.134	0.268
10	0.077	0.154	0.308	0.616	10	0.034	0.069	0.138	0.276
11	0.083	0.166	0.331	0.662	11	0.037	0.074	0.148	0.296

Gambar 2B Variasi *feeding* pada mesin bubut

LAMPIRAN 3

TABEL DATA MATERIAL, *CUTTING SPEED*, DAN SPESIFIKASI KECEPATAN PUTARAN *SPINDLE* MESIN GURDI

Tabel 3A Data material dan *cutting speed* proses gurdi (Widarto, 2008)

MATERIAL	CUTTING SPEEDS L. (METERS/MINUTE) (FEET/MINUTE)		POINT ANGLE	LIP CLEARANCE	COOLANTS
	MPM	FPM			
Aluminum And Alloys	61.00 - 91.50	200 - 300	90 - 130 deg	12 - 15 deg	Kerosene/Kerosene & Lard Oil/ Soluble Oil
Armor Plate	12.20 - 18.25	40 - 50	135 - 140 deg	6 - 9 deg	Light Machine Oil
Brass	61.00 - 91.50	200 - 300	118 - 118 deg	12 - 15 deg	Dry/ Soluble Oil/Kerosene/Lard Oil
Bronze	61.00 - 91.50	200 - 300	110 - 118 deg	12 - 15 deg	Dry/ Soluble Oil/Mineral Oil/Lard Oil
Bronze, High Tensile	21.35 - 45.75	70 - 150	100 - 110 deg	12 - 15 deg	Dry/ Soluble Oil/Mineral Oil/Lard Oil
Cast Iron, Soft	30.50 - 45.75	100 - 150	90 - 100 deg	12 - 15 deg	Air Jet Dry/ Soluble Oil
Cast Iron, Medium	21.35 - 30.50	70 - 100	100 - 110 deg	12 - 15 deg	Air Jet Dry/ Soluble Oil
Cast Iron, Hard	21.35 - 30.50	70 - 100	100 - 118 deg	8 - 12 deg	Air Jet Dry/ Soluble Oil
Cast Iron, Chilled	9.15 - 12.20	30 - 40	118 - 135 deg	5 - 9 deg	Air Jet Dry/ Soluble Oil
Copper	61.00 - 91.50	200 - 300	100 - 118 deg	12 - 15 deg	Air Jet Dry/ Soluble Oil
Copper Graphite Alloy (Carbon Drills)	18.30 - 21.35	60 - 70	**_**	**_**	Soluble Oil/Dry/Mineral Oil/Kerosene
Glass (Carbon Drills)	6.10 - 9.15	20 - 30	**_**	**_**	Soluble Oil/Dry/Mineral Oil/Kerosene
Iron, Malleable	15.25 - 27.45	50 - 90	90 - 100 deg	12 - 15 deg	Light Machine Oil
Magnesium And Alloys	76.25 - 122.0	250 - 400	70 - 118 deg	12 - 15 deg	Soluble Oil
Monel Nickel	4.15 - 15.28	30 - 50	118 - 125 deg	10 - 12 deg	Compressed Air/Mineral Oil
Nickel Alloys	12.20 - 18.30	40 - 60	135 - 140 deg	5 - 7 deg	Lard Oil/Soluble Oil
Plastic, Hot Set	30.50 - 91.50	100 - 300	60 - 90 deg	10 - 12 deg	Lard Oil/Soluble Oil
Plastic, Cold Set	30.50 - 91.50	100 - 300	118 - 135 deg	12 - 20 deg	Soap Solution
Steel, Low Carbon, 0.2-0.3c	24.40 - 33.55	80 - 110	110 - 118 deg	7 - 9 deg	Soap Solution
Steel, Medium Carbon 0.4-0.5c	21.35 - 24.40	70 - 80	118 - 125 deg	7 - 9 deg	Soluble Oil/Mineral Oil/Sulfur Oil/Lard Oil
Steel (High Carbon 1.2c)	15.25 - 18.30	50 - 60	118 - 145 deg	7 - 9 deg	Soluble Oil/Mineral Oil/Sulfur Oil/Lard Oil
Steel, Forged	15.25 - 18.30	50 - 60	118 - 145 deg	7 - 12 deg	Soluble Oil/Mineral Oil/Sulfur Oil/Lard Oil
Steel, Alloy	15.25 - 21.35	50 - 70	118 - 125 deg	10 - 12 deg	Mineral Lard Oil
Steel, Alloy 300 To 400 Brinell	6.10 - 9.15	20 - 30	130 - 140 deg	7 - 10 deg	Soluble Oil
Steel, Stainless, Free Machining	9.15 - 24.40	30 - 80	110 - 118 deg	8 - 12 deg	Soluble Oil
Steel, Stainless, Hard	4.57 - 15.25	15 - 50	118 - 135 deg	6 - 8 deg	Soluble Oil
Steel, Manganese	3.66 - 4.57	12 - 15	140 - 150 deg	7 - 10 deg	Soluble Oil
Stone (Carbide Drills)	7.63 - 9.15	25 - 30	**_**	**_**	Water Solution
Wood	91.50 - 122.2	300 - 400	60 - 70 deg	10 - 15 deg	Dry

SPEED CHART . 31
CAUTION: Change speeds only with the machine stopped

SPINDLE 12 SPEEDS MOTOR

50%	60%	BELT POSITION	50%	60%	BELT POSITION
125	150	4-5	710	850	1-6
185	225	3-5	1000	1200	2-7
210	255	4-6	1250	1500	3-8
300	350	2-5	1350	1600	1-7
350	400	3-6	1900	2300	2-8
420	500	4-7	2500	3000	1-8

Gambar 3A Variasi kecepatan *spindle* mesin gurdi

- Untuk baja

$$f = 0,084\sqrt[3]{d}; mm / put \dots\dots\dots(8.2)$$

- Untuk besi tuang

$$f = 0,1\sqrt[3]{d}; mm / put \dots\dots\dots(8.3)$$

Gambar 3B Rumus empiris gerak makan gurdi

LAMPIRAN 4
DOKUMENTASI





LAMPIRAN 5

TABEL RINCIAN BIAYA

Tabel 5A Rincian Biaya Produksi Mesin Pembuat Stik Kentang

No	Nama Komponen	Qty	Panjang (mm)	Harga Satuan	Total
1.	Motor listrik 0,5 Hp	1		Rp. 1.200.000	Rp. 1.200.000
2.	Puli 3 inci	1		Rp. 25.000	Rp. 25.000
3.	Puli 6 inci	1		Rp. 75.000	Rp. 75.000
	Poros S45C	1	1000	Rp. 80.000	Rp. 80.000
4	<i>Bearing</i> UCF 204	2		Rp. 35.000	Rp. 70.000
5	<i>V-Belt</i> Tipe A	1		Rp. 30.000	Rp. 30.000
6	Besi siku 40x40x3m	2	6.000	Rp. 127.000	Rp. 254.000
7	Plat alumunium 2000x1000x0,8	1		Rp. 360.000	Rp. 360.000
8	Plat galvalum 2000 x 1000 x 0,5			Rp. 118.000	Rp. 118.000
9	Siku alumunium	1	6.000	Rp. 35.000	Rp. 35.000
10	Ampelas <i>grid</i> 300	3	1.000	Rp. 15.000	Rp. 60.000
11	Saklar <i>on/off</i>	1		Rp. 50.000	Rp. 50.000
12	Silinder pneumatik Ø 32mm	1		Rp. 200.000	Rp. 200.000
13	Selang pneumatik	2	1.000	Rp. 4.000	Rp. 8.000
14	Flow control pneumatik	2		Rp. 10.000	Rp. 20.000
15	<i>Mechanical valve</i> <i>type switch</i>	1		Rp. 100.000	Rp. 100.000
16	<i>Fitting</i> lurus <i>female</i> 1/4"	1		Rp. 8.000	Rp. 8.000
17	<i>Linear bearing</i>	2		Rp. 37.000	Rp. 74.000
18	<i>Fitting</i> lurus <i>male</i> 1/4"	3		Rp. 4.000	Rp. 12.000
19	<i>Fitting</i> lurus <i>male</i> 1/2"	2		Rp. 6.000	Rp. 12.000

20	Pisau pemotong kentang	1		Rp. 42. 000	Rp. 42.000
21	Dempul	1		Rp. 25.000	Rp. 25.000
22	Cat avian	1		Rp. 50.000	Rp. 50.000
23	Lem dextone	1		Rp. 19.000	Rp. 19.000
Total Biaya				Rp. 2.927.000	

LAMPIRAN 7
BIODATA PENULIS

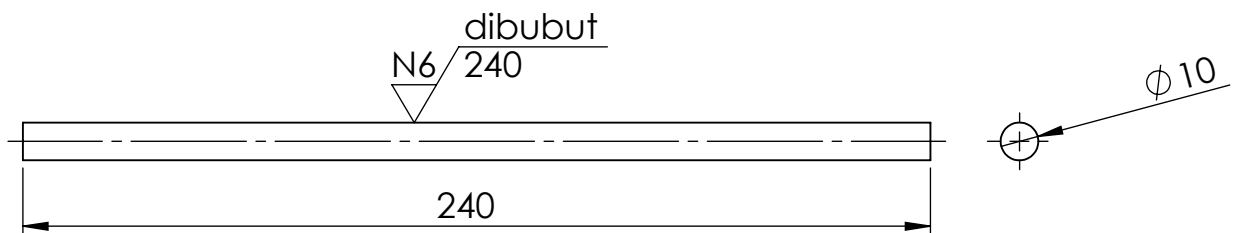
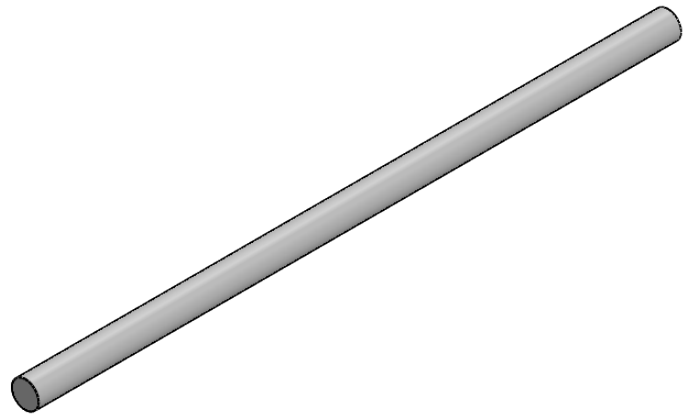


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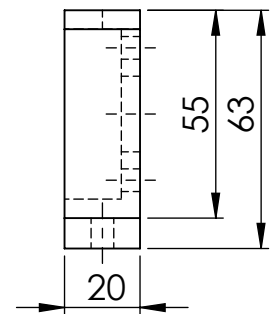
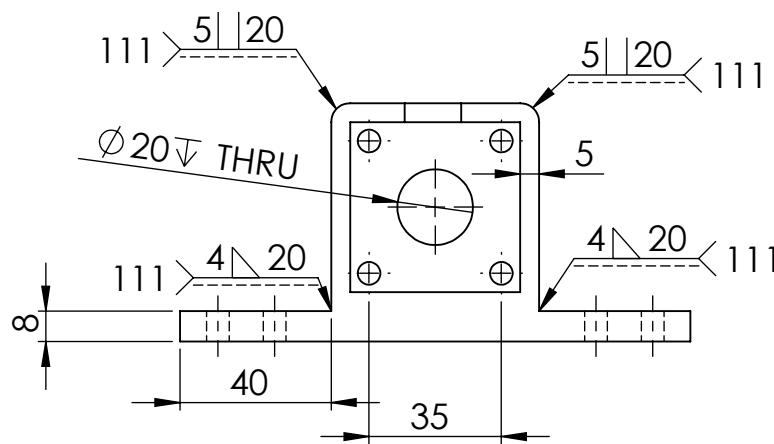
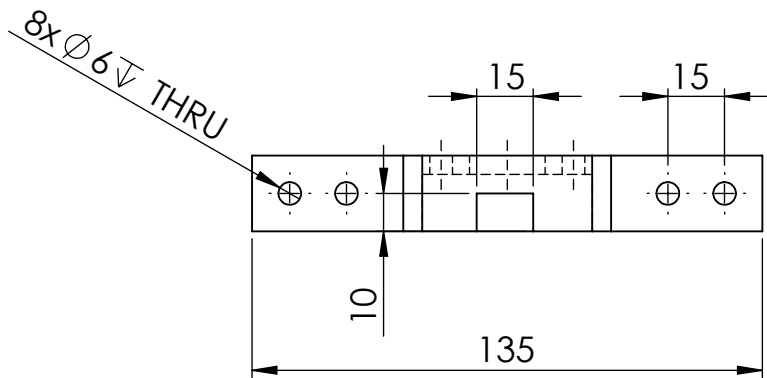
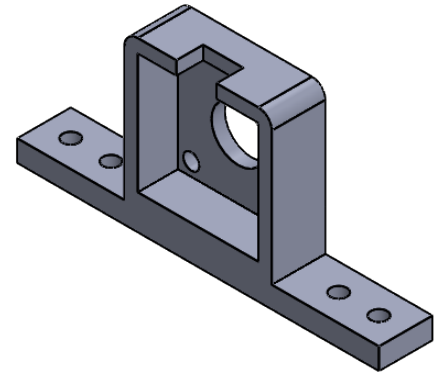
Nama : Nandhika Axel Saputra
Tempat, tanggal lahir : Cilacap, 5 Januari 2003
NIM : 200103007
Prodi : D3-Teknik Mesin
Jurusan : Rekayasa Mesin dan Industri Pertanian
Alamat : Jalan RE. Martadinata, No. 208, RT03/RW10, Kelurahan
Tambakreja, Kecamatan Cilacap Selatan, Kabupaten
Cilacap, Jawa Tengah
Telephone/Hp : 082138355470
e-mail : nandhikaaxelsaputra@gmail.com
Hobi : Bermain sepak bola, tenis meja, badminton
Motto hidup : Tidak ada kesuksesan tanpa kerja keras, tidak ada
keberhasilan tanpa kebersamaan, dan tidak ada
kemudahan tanpa doa.

B. RIWAYAT PENDIDIKAN

- SD Negeri Tambakreja 10 : Tahun 2008 - 2014
- SMP Negeri 3 Cilacap : Tahun 2014 - 2017
- SMK Dr. Soetomo Cilacap : Tahun 2017 - 2020
- Politeknik Negeri Cilacap : Tahun 2020 - 2023
Teknik Mesin

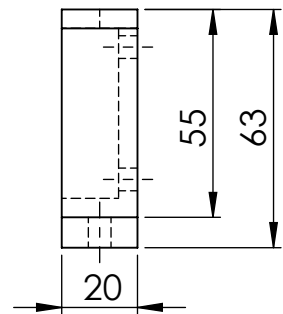
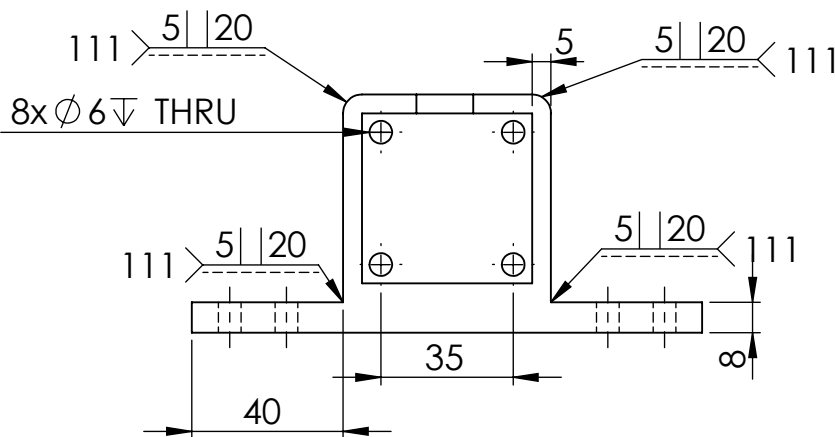
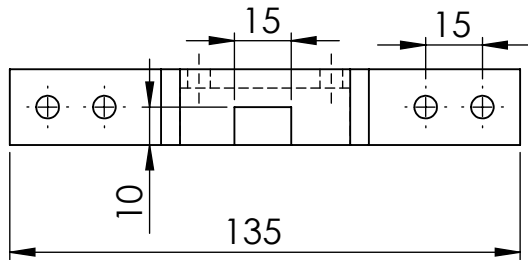
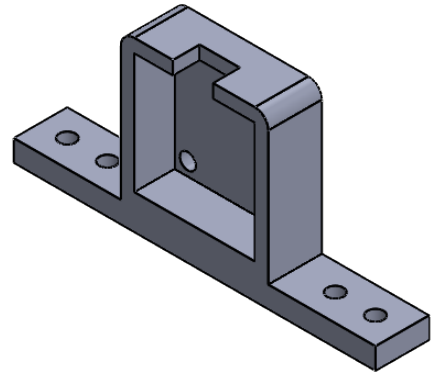


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									DISAHKAN		
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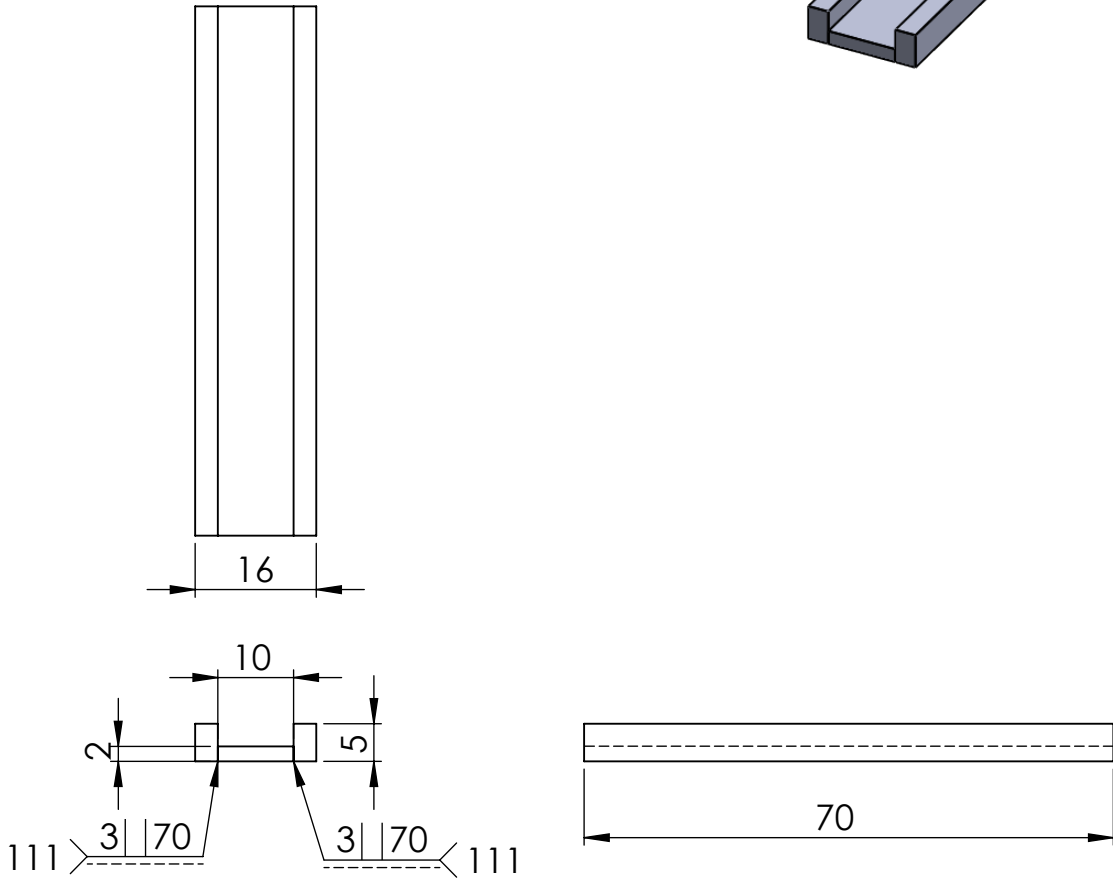
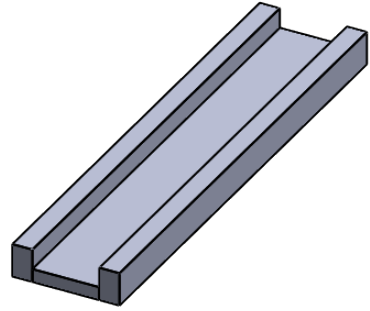
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<	6	30	120	400	1000	2000					
TOL	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2					
DUDUKAN PNEUMATIK DEPAN								SKALA 1 : 2	DIGAMBAR	AXEL	15-8-2023
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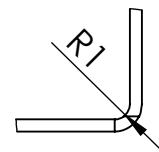
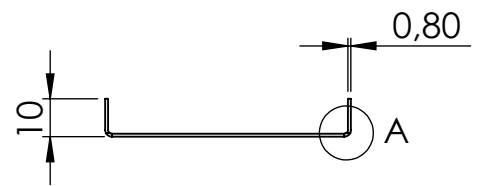
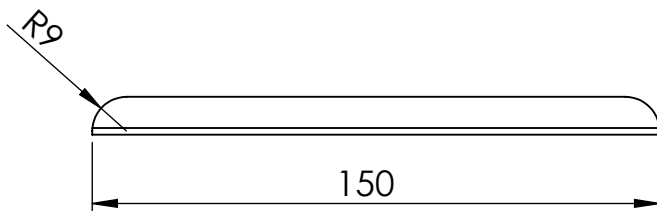
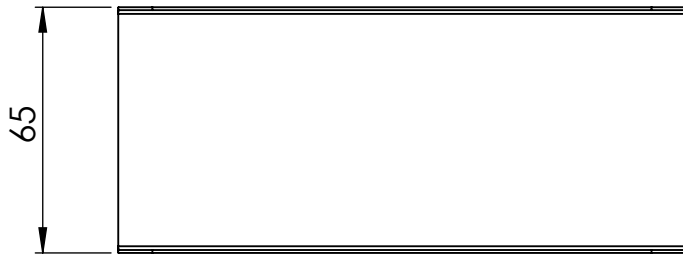
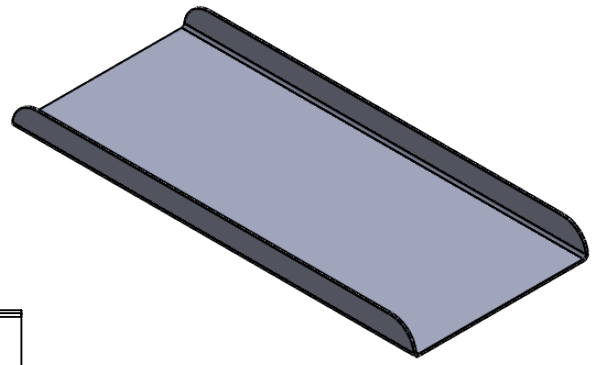
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<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
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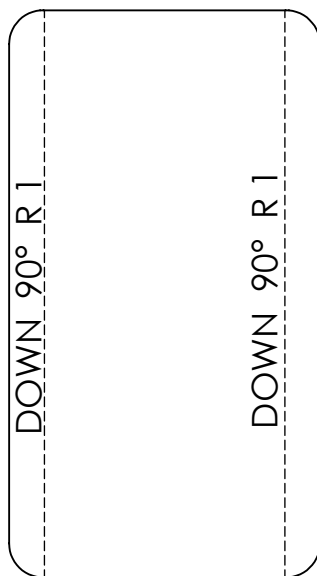


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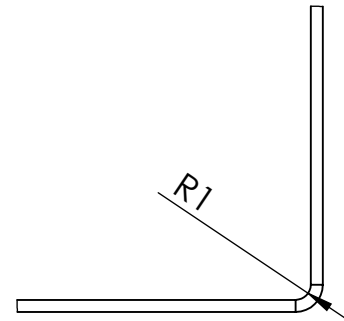
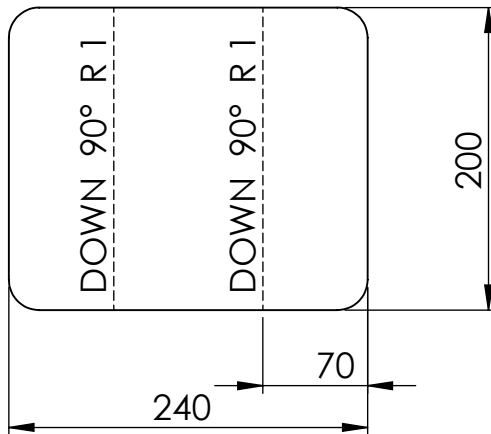
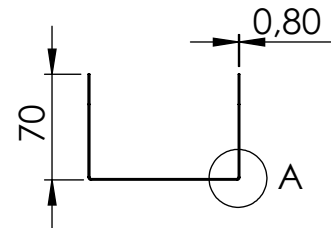
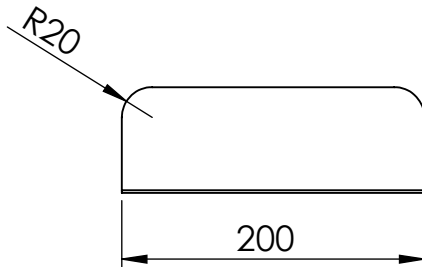
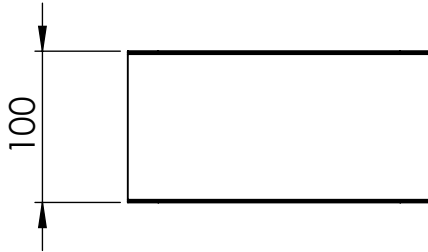
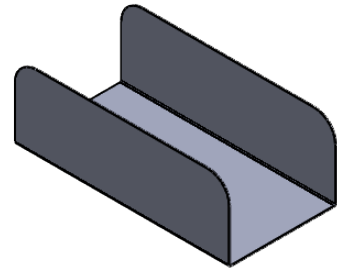
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<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
<h1>DUDUKAN PISAU PEMOTONG</h1>								SKALA 1 : 1	DIGAMBAR	AXEL	15-8-2023
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									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT A4	NO. GAMBAR		



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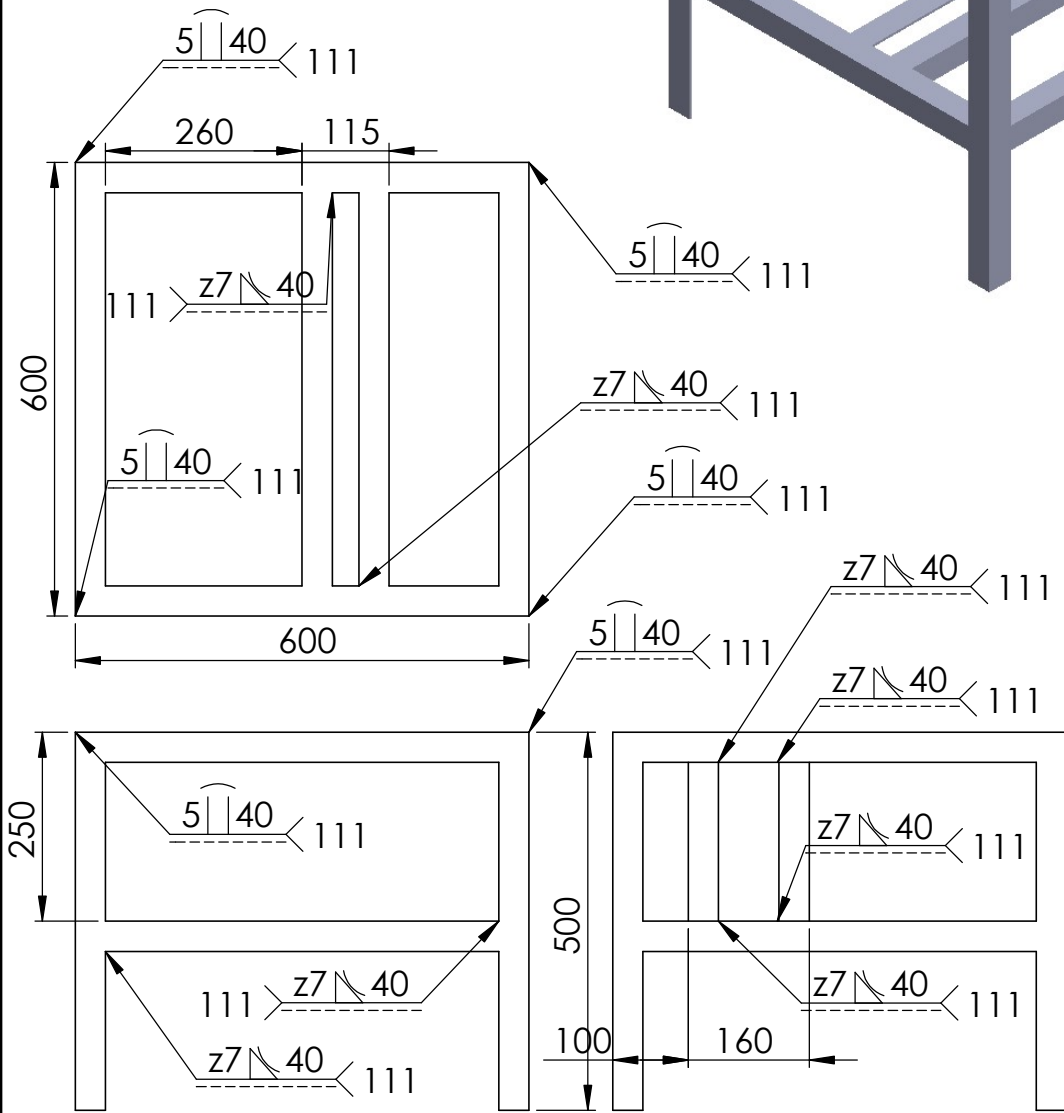
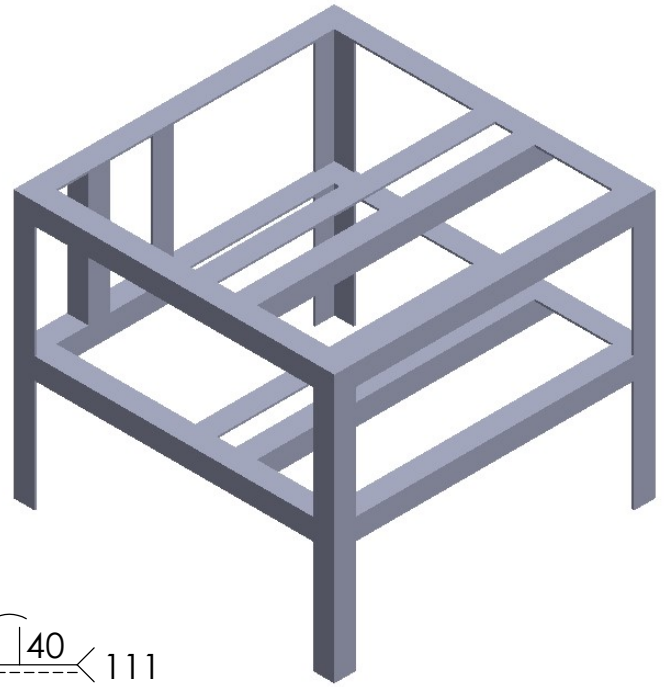


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>	0	6	30	120	400	1000	Pengerjaan Lanjut		NO. ORDER		
<	6	30	120	400	1000	2000					
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
LINTASAN KENTANG								SKALA	DIGAMBAR	AXEL	15-8-2023
								1 : 2	DIPERIKSA		
									DISAHKAN		
								FORMAT	NO. GAMBAR		
POLITEKNIK NEGERI CILACAP								A4			



DETAIL A
SCALE 2 : 1

1	NAMA BAGIAN						ALUMINIUM	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					
<h1>OUTPUT KENTANG</h1>								SKALA	DIGAMBAR	AXEL	15-8-2023
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POLITEKNIK NEGERI CILACAP								A4			

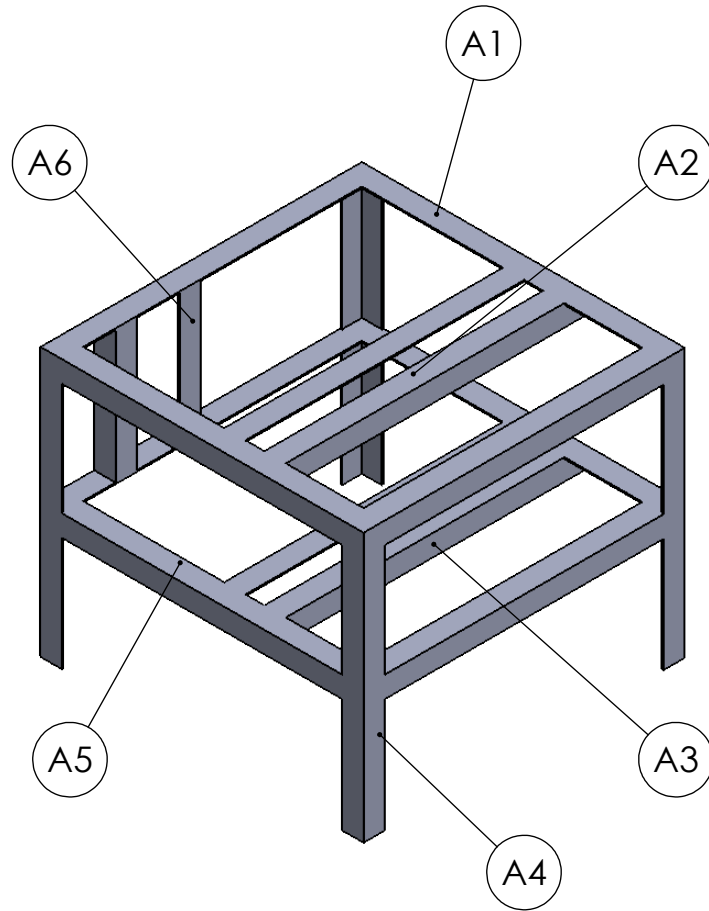


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111	SMAW

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<	6	30	120	400	1000	2000				
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2				

RANGKA

SKALA 1 : 10	DIGAMBAR	15/8/23	AXEL
	DIPERIKSA		
	DISAHKAN		

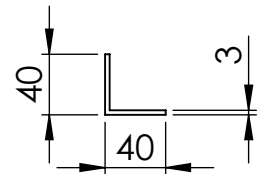
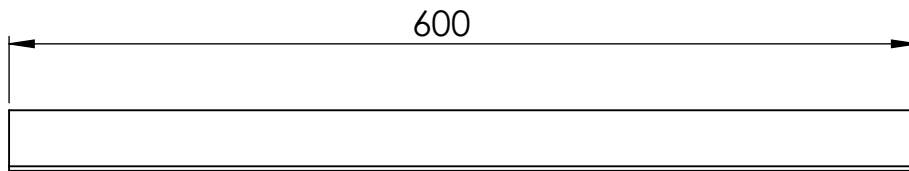
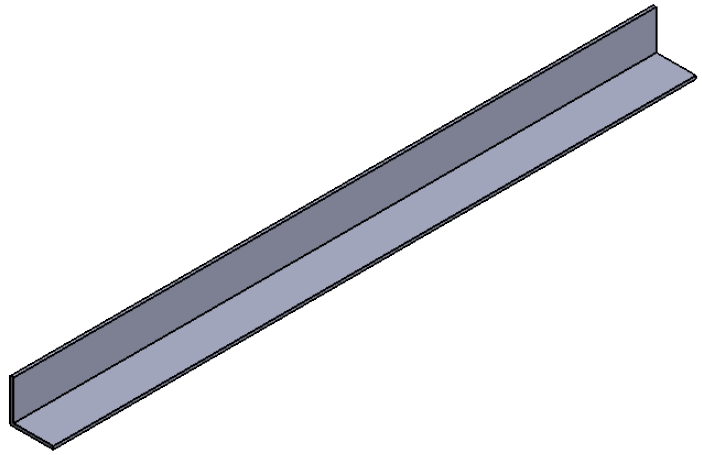


4	RANGKA BAGIAN ATAS	A1	LIHAT DETAIL	ASTM A36	DIBUAT
2	DUDUKAN BANTALAN ATAS	A2	LIHAT DETAIL	ASTM A36	DIBUAT
2	DUDUKAN BANTALAN BAWAH	A3	LIHAT DETAIL	ASTM A36	DIBUAT
4	RANGKA KAKI	A4	LIHAT DETAIL	ASTM A36	DIBUAT
4	RANGKA BAGIAN BAWAH	A5	LIHAT DETAIL	ASTM A36	DIBUAT
2	DUDUKAN MOTOR LISTRIK	A6	LIHAT DETAIL	ASTM A36	DIBUAT

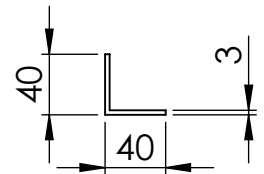
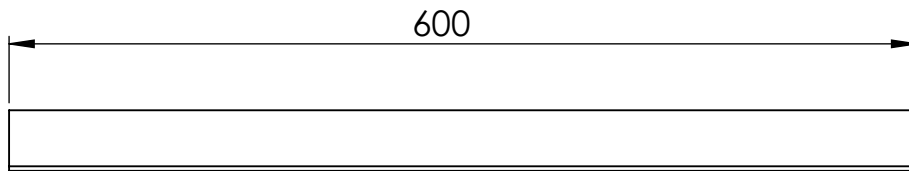
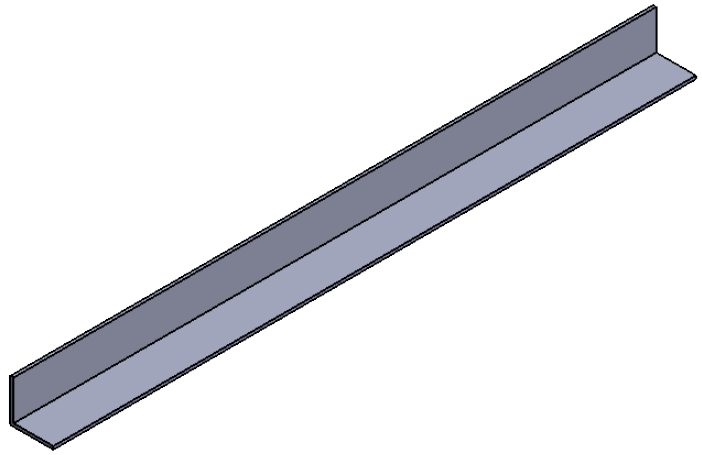
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TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2				

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		DISAHKAN		

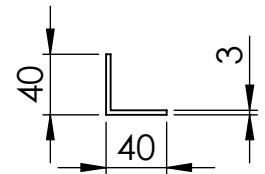
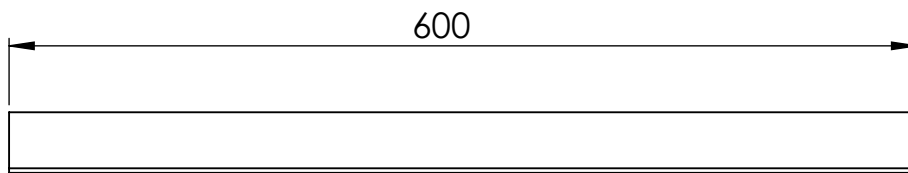
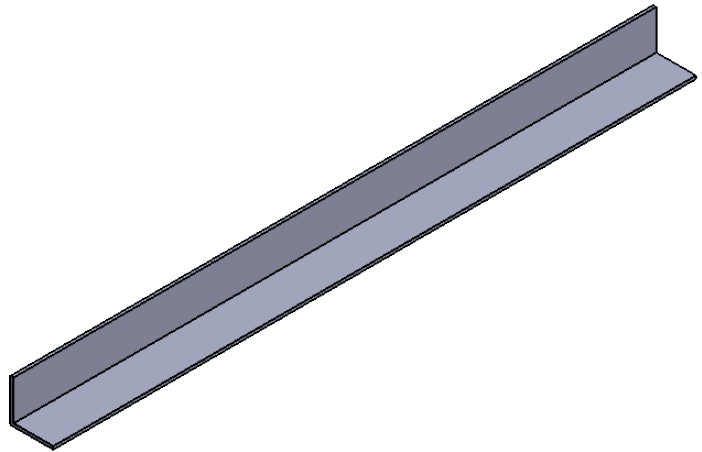
POLITEKNIK NEGERI CILACAP	FORMAT A4	NO. GAMBAR
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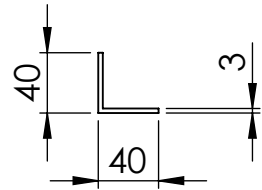
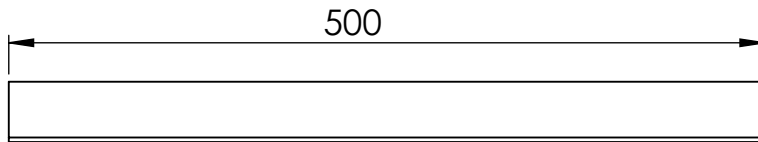
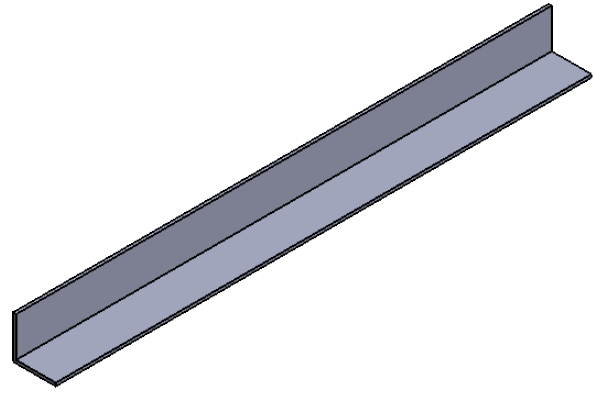
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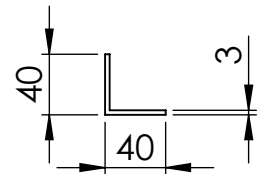
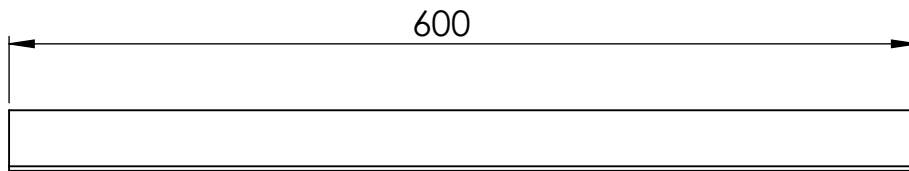
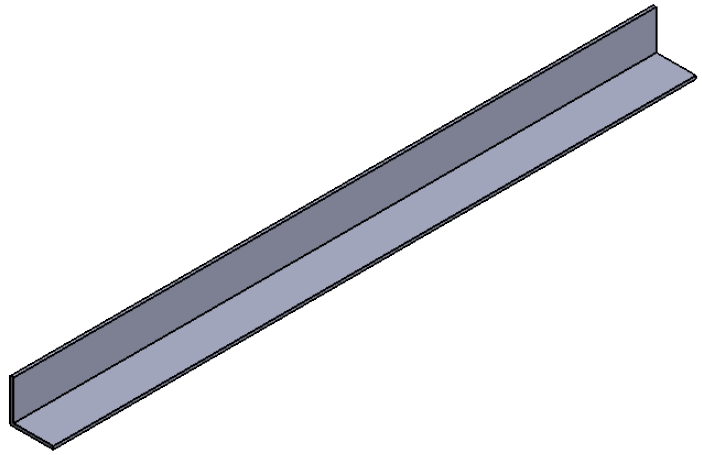
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									DISAHKAN			
POLITEKNIK NEGERI CILACAP								FORMAT A4	NO. GAMBAR			



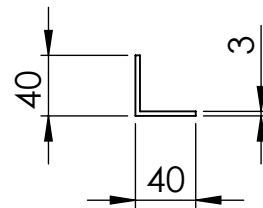
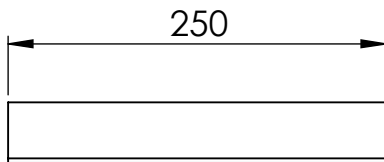
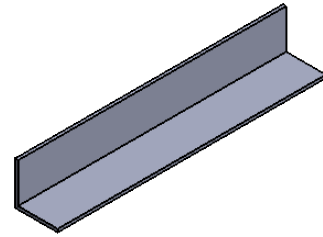
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POLITEKNIK NEGERI CILACAP								FORMAT	NO. GAMBAR		
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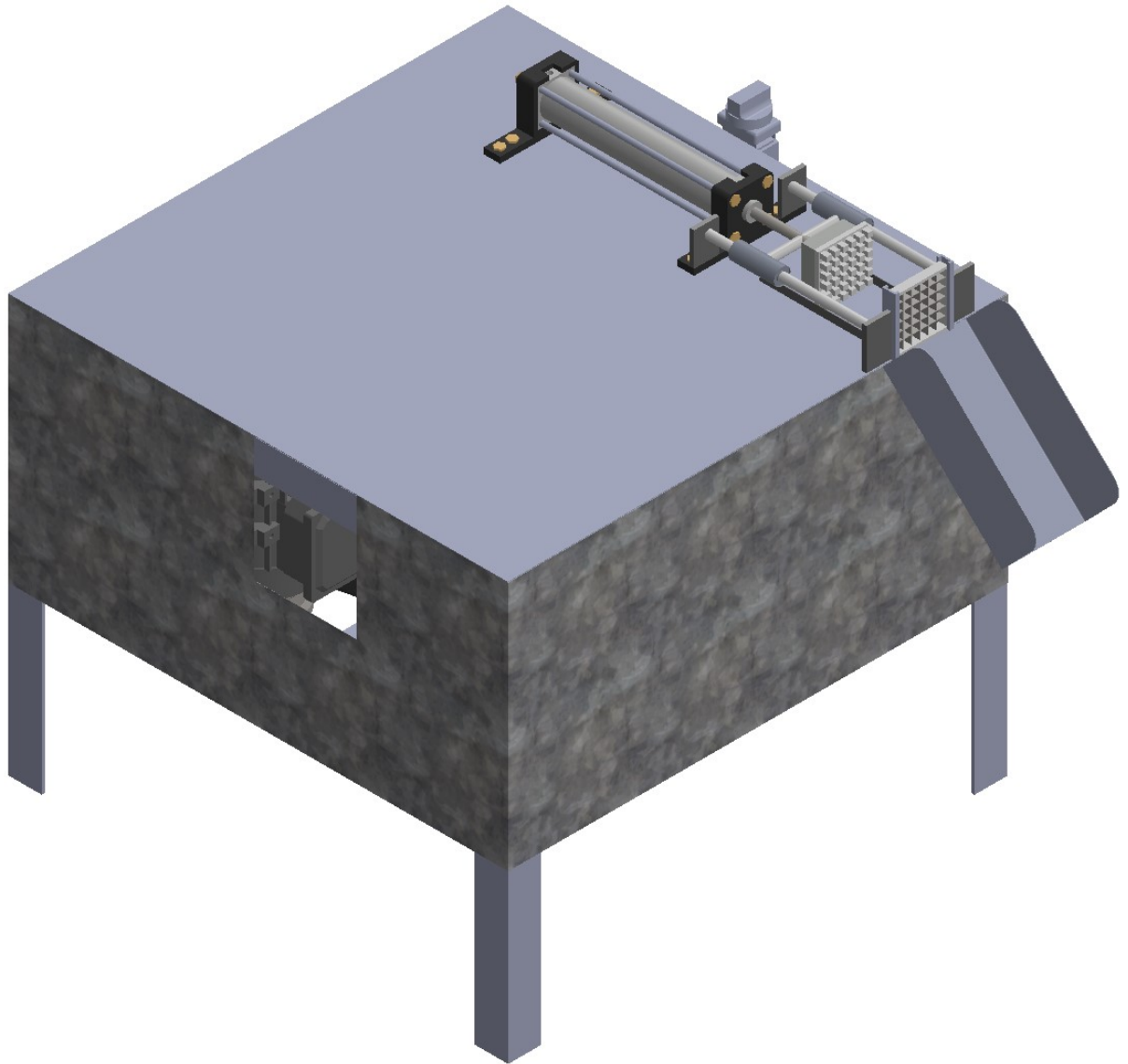
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POLITEKNIK NEGERI CILACAP								FORMAT	NO. GAMBAR		
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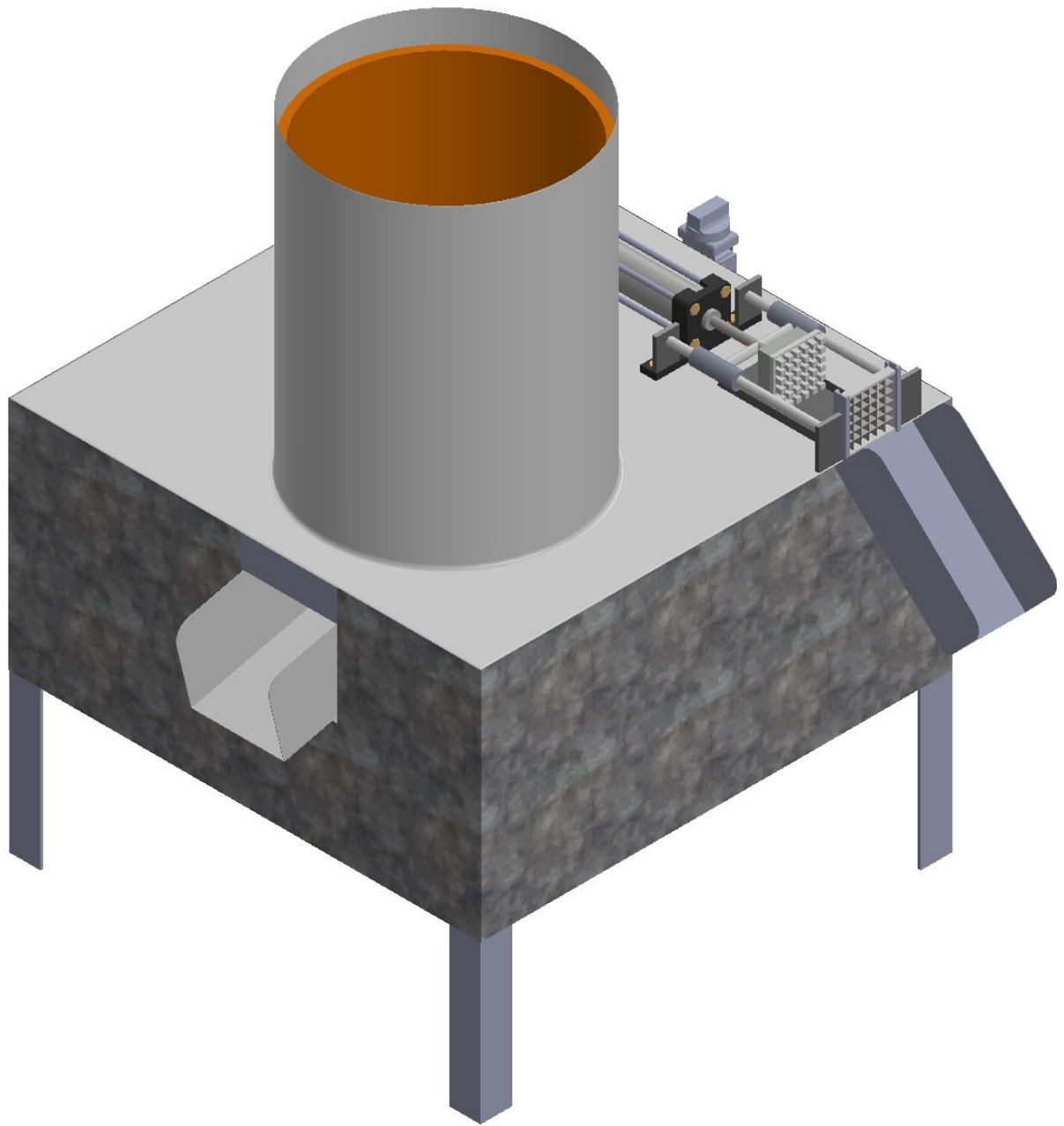
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RANGKA BAGIAN BAWAH								SKALA	DIGAMBAR	AXEL	15-08-2023
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									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT	NO. GAMBAR		
								A4			



2	DUDUKAN MOTOR LISTRIK						A6	LIHAT DETAIL		ASTM A36	DIBUAT
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TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2					
<h1>DUDUKAN MOTOR LISTRIK</h1>								SKALA	DIGAMBAR	AXEL	15-08-2023
									DIPERIKSA		
									DISAHKAN		
POLITEKNIK NEGERI CILACAP								FORMAT	NO. GAMBAR		
								A4			



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
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<h1>ASSEMBLY SISTEM PEMOTONG</h1>									SKALA	DIGAMBAR	15/8/23	AXEL
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									POLITEKNIK NEGERI CILACAP			
									A4			



JML	NAMA BAGIAN						BAHAN	UKURAN JADI	UKURAN KASAR	NO. ID	KETERANGAN	
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									POLITEKNIK NEGERI CILACAP			
									A4			