

LAMPIRAN 1
BIODATA DIRI



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Tempat, tanggal lahir : Cilacap, 30 April 2000
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Pendidikan Formal

Jenjang	Prodi/jurusan	Nama sekolah	Tahun lulus
SD	-	SD N Gumilir 05 Cilacap	2012
SMP	-	SMP N 5 Cilacap	2015
SMA/SMK	Teknik Mesin	SMK Dr. Soetomo Cilacap	2018
Perguruan Tinggi	DIII Teknik Mesin	Politeknik Negeri Cilacap	2021

Penulis telah mengikuti seminar Tugas Akhir pada tanggal 14 Oktober 2021, sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A.Md.).

LAMPIRAN 2

TABEL PERHITUNGAN PROSES PRODUKSI

Tabel 1 Data material, kecepatan potong, sudut mata bor HSS, dan cairan pendingin proses gurdi [Widarto, 2008 halaman 236]

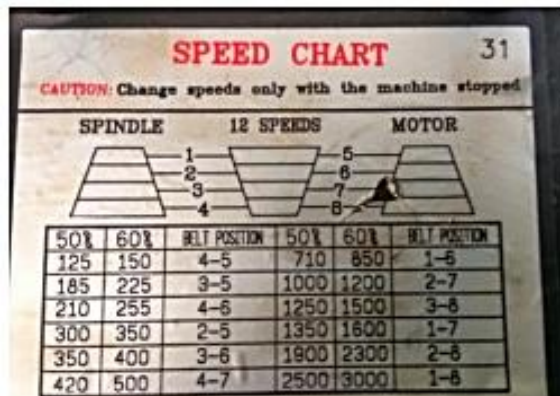
Material	Cutting Speed		Point Angle	LIP Clearance	Coolants
	(Meters/Minute)	(Feet/Minute)			
	MPM	FPM			
Aluminium And Alloys	61.00 - 91.50	200 - 300	90 - 130 deg	12 - 15 deg	Kerosene-Kerosene & Lard Oil/ Soluble Oil
Armor Plate	12.20 - 18.25	40 - 50	135 - 140 deg	6 - 9 deg	Light Machine Oil
Brass	61.00 - 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	** **	** **	Dry/Soluble Oil/Mineral Oil/Lard Oil
Glass (CarbOn Drills)	6.10 - 9.15	20 - 30	** **	** **	Dry/Soluble Oil/Mineral Oil/Lard Oil
Iron, Malleable	15.25 - 27.45	50 - 90	90 - 100 deg	12 - 15 deg	Light Machine Oil
Magnesium And Alloys	76.26 - 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, 0.2-0.3ct	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	Dry/Soluble Oil/Sulfur Oil/Lard Oil
Steel (High Carbon 1.2c)	15.25 - 18.30	50 - 60	118 - 145 deg	7 - 9 deg	Dry/Soluble Oil/Sulfur Oil/Lard Oil
Steel, Forged	15.25 - 18.30	50 - 60	118 - 145 deg	7 - 12 deg	Dry/Soluble 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	92.50 - 122.2	300 - 400	60 - 70 deg	10 - 15 deg	Dry

- 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 1 Rumus empiris gerak makan per mata potong gurdi [Widarto, 2008 halaman 251]



Gambar 2 Kecepatan *spindle* pada mesin gurdi

Tabel 2 Karakter mekanik material [Callister, 2007 halaman 361]

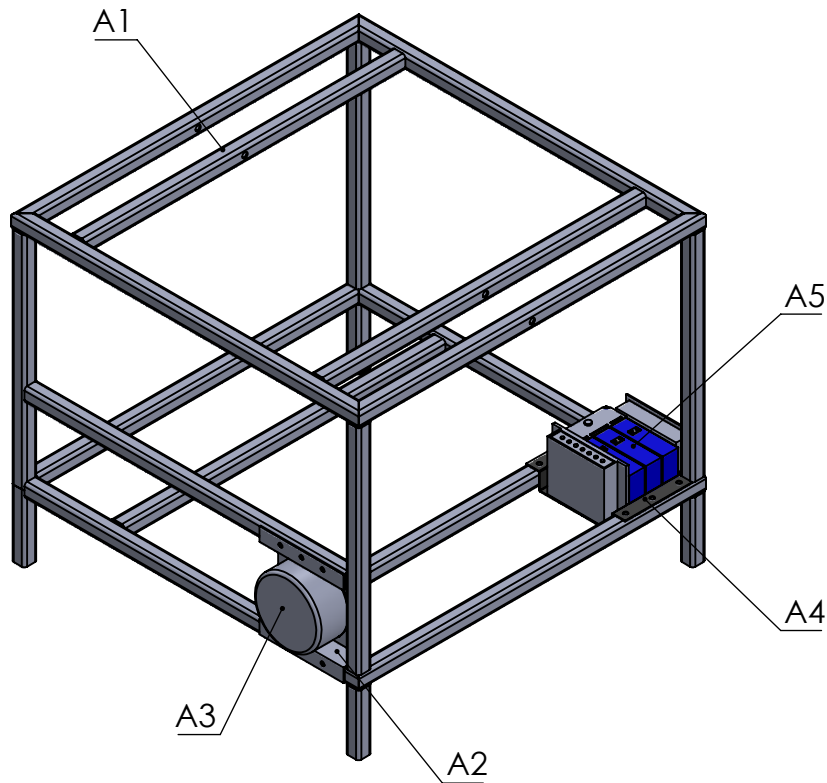
<i>AISI/SAE or ASTM Number</i>	<i>Tensile Strength [MPa (ksi)]</i>	<i>Yield Strength [MPa (ksi)]</i>	<i>Ductility [%EL in 50 mm (2 in.)]</i>	<i>Typical Applications</i>
Plain Low-Carbon Steels				
1010	325 (47)	180 (26)	28	Automobile panels, nails, and wire
1020	380 (55)	205 (30)	25	Pipe; structural and sheet steel
A36	400 (58)	220 (32)	23	Structural (bridges and buildings)
A516 Grade 70	485 (70)	260 (38)	21	Low-temperature pressure vessels
High-Strength, Low-Alloy Steels				
A440	435 (63)	290 (42)	21	Structures that are bolted or riveted
A633 Grade E	520 (75)	380 (55)	23	Structures used at low ambient temperatures
A656 Grade 1	655 (95)	552 (80)	15	Truck frames and railway cars

Tabel 3 Harga Sf_1 dan Sf_2 [Sularso, 2008 halaman 08]

Jenis bahan	Sf_1	Sf_2
Bahan SF dengan kekutan yang dijamin	5,6	1,3 – 3,0
Bahan S-C dan baja paduan	6,0	1,3 – 3,0

Tabel 4 Faktor koreksi momen puntir [Sularso, 2008 halaman 08]

Beban yang dikenakan	Kt
Halus	1,0
Sedikit kejutan atau tumbukan	1,0 – 1,5
Kejutan atau tumbukan besar	1,5 – 3,0



1	KOMPONEN ELEKTRONIK	-	-	-	A5	-
1	PLAT PENYANGGA	S45C	148 X 100 X 25	150 X 105 X 25	A4	-
1	GENERATOR DC	-	Ø94 X ±49	-	A3	-
1	BASE GENERATOR	S45C	126 X 140 X 30	150 x 150 x 50	A2	-
1	RANGKA MESIN	ASTM A440	500 X 500 X 430	550 X 550 X 450	A1	-
JML	NAMA BAGIAN	BAHAN	UKURAN JADI	UKURAN KASAR	NO.ID	KETERANGAN

>	0	6	30	120	400	1000	PENERJAAN LANJUT	NO. ORDER	PROYEKSI
<	6	30	120	400	1000	2000			
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2			

NAMA				SKALA	DIGAMBAR	21-09-21	RIZKIA
RANCANG BANGUN RANGKA MESIN PEMBANGKIT LISTRIK TENAGA MAGNET				1:8	DIPERIKSA		
					DISAHKAN		
					SATUAN		MM
NO. ASSY : -				FORMAT	NO.1		
JTM POLITEKNIK NEGERI CILACAP				A4			

DILARANG MEMFOTOKOPI, MEMPERBANYAK, MENYALIN, MEMINDAHKANTANGKANKAN GAMBAR INI TANPA IZIN TERTULIS DARI POLITEKNIK NEGERI CILACAP



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E

E

D

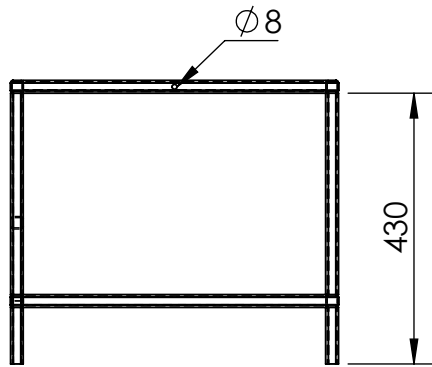
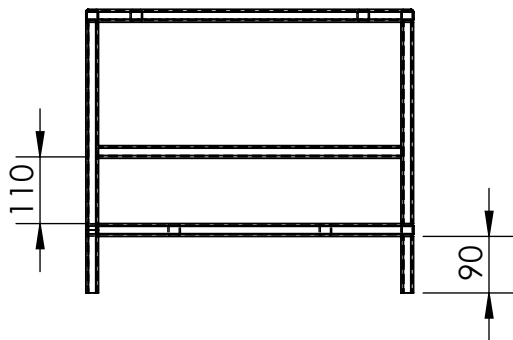
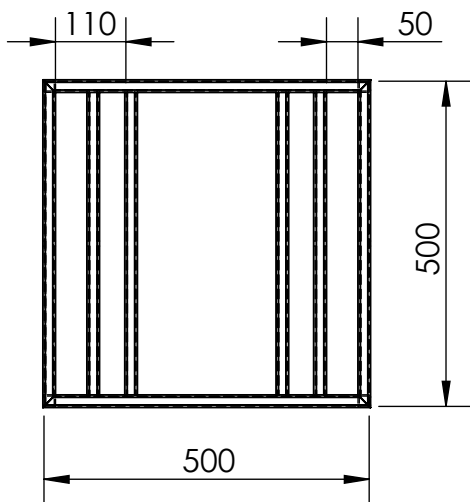
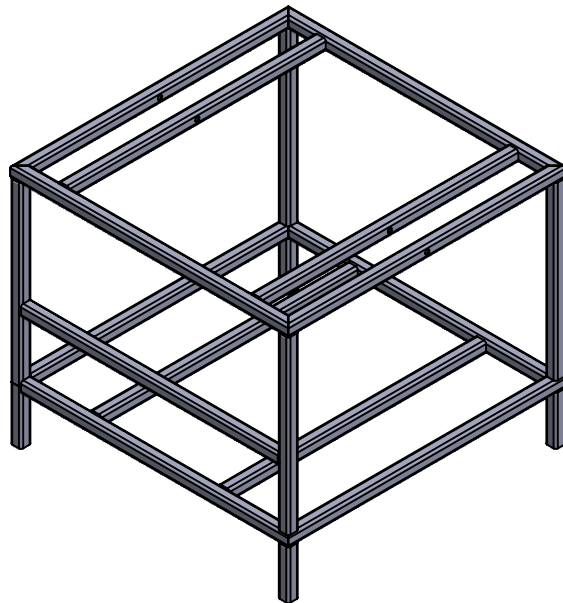
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C

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A



1	RANGKA MESIN		ASTM A440	500 X 500 X 430	550 X 550 X 450	A1	-	
JML	NAMA BAGIAN		BAHAN	UKURAN JADI	UKURAN KASAR	NO.ID	KETERANGAN	
>	0	6	30	120	400	1000	PENERJAAN LANJUT NO. ORDER PROYEKSI 	
<	6	30	120	400	1000	2000		
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2		
NAMA					SKALA	DIGAMBAR	21-09-21	RIZKIA
RANGKA MESIN					1:12	DIPERIKSA		
						DISAHKAN		
NO. ASSY :-					SATUAN		MM	
JTM POLITEKNIK NEGERI CILACAP					FORMAT	NO.2/A1		
					A4			

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E

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D

C

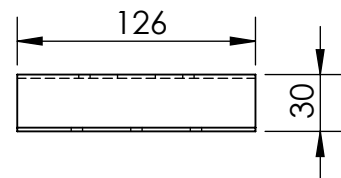
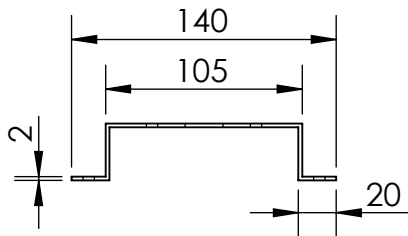
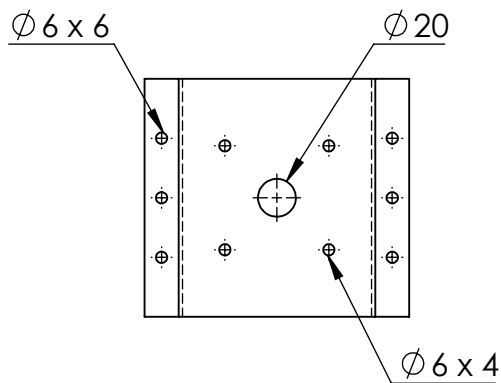
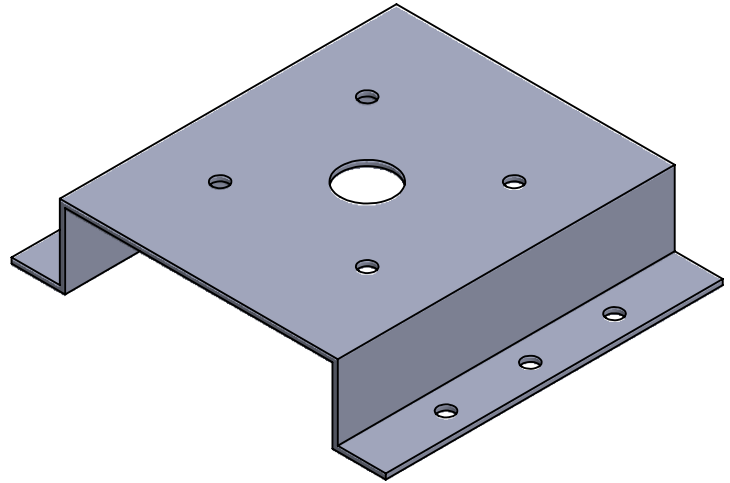
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A

A



1	BASE GENERATOR					S45C	126 X 140 X 30	150 X 150 X 50	A2	-
JML	NAMA BAGIAN					BAHAN	UKURAN JADI	UKURAN KASAR	NO.ID	KETERANGAN
>	0	6	30	120	400	1000	PENERJAAN LANJUT		NO. ORDER	PROYEKSI
<	6	30	120	400	1000	2000				
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2				

NAMA

BASE GENERATOR

NO. ASSY : -

SKALA

1:4

DIGAMBAR

21-09-21

RIZKIA

DIPERIKSA

DISAHKAN

SATUAN

M M



JTM POLITEKNIK NEGERI CILACAP

FORMAT

A4

NO.3/A2

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F

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E

D

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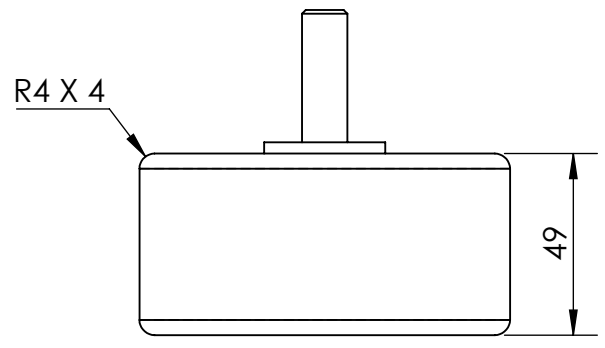
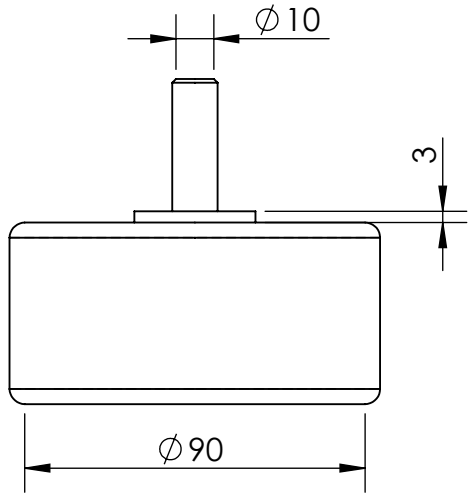
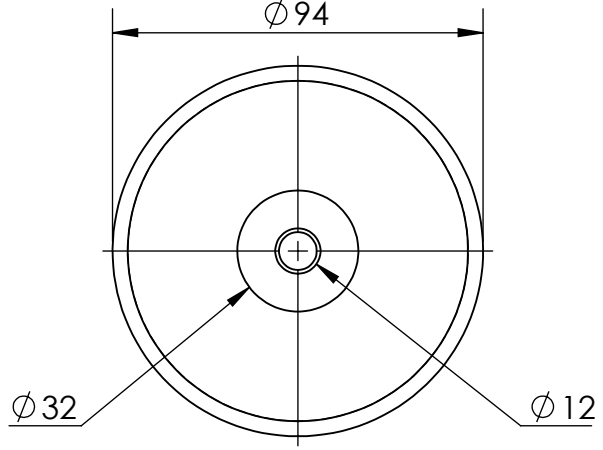
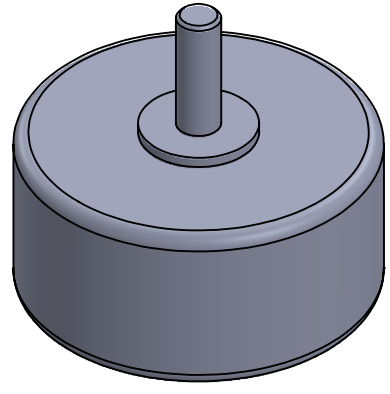
C

B

B

A

A



DILARANG MEMFOTOKOPI, MEMPERBANYAK, MENYALIN, MEMINDAHTANGKAN GAMBAR INI TANPA IZIN TERTULIS DARI POLITEKNIK NEGERI CILACAP

1	GENERATOR DC					-	$\phi 94 \times \pm 49$	-	A3	-
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				

NAMA				SKALA	DIGAMBAR	21-09-21	RIZKIA
<h1>GENERATOR DC</h1>				1:2	DIPERIKSA		
					DISAHKAN		
					SATUAN		MM
NO. ASSY : -				FORMAT	NO.4/A3		
				A4			



JTM POLITEKNIK NEGERI CILACAP

FORMAT
A4

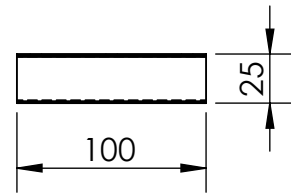
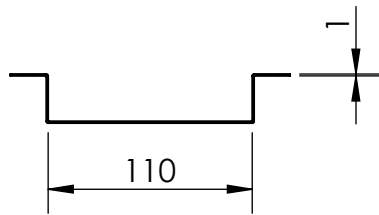
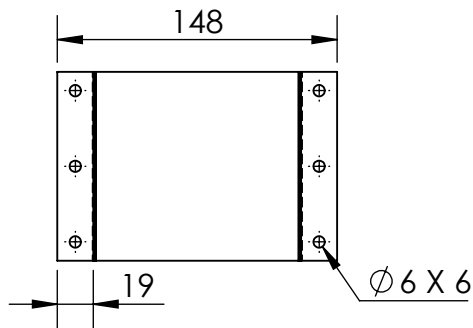
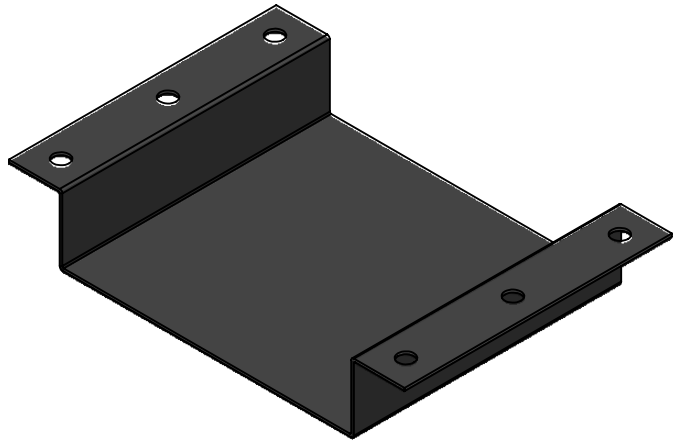
NO.4/A3

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2

1



1	PLAT PENYANGGA		S45C	148 X 100 X 25	150 X 105 X 25	A4	-	
JML	NAMA BAGIAN		BAHAN	UKURAN JADI	UKURAN KASAR	NO.ID	KETERANGAN	
>	0	6	30	120	400	1000	PENERJAAN LANJUT NO. ORDER PROYEKSI	
<	6	30	120	400	1000	2000		
TOL	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2		
NAMA					SKALA	DIGAMBAR	21-09-21	RIZKIA
<h1 style="text-align: center;">PLAT PENYANGGA</h1>					1:4	DIPERIKSA		
						DISAHKAN		
NO. ASSY : -					SATUAN		MM	
JTM POLITEKNIK NEGERI CILACAP					FORMAT	<h2 style="text-align: center;">NO.5/A4</h2>		
					A4			

LAMPIRAN 4
DAFTAR SIMBOL SATUAN DAN KONVERSI

Tabel 1 Daftar dan satuan listrik standar internasional

Besaran	Satuan	Simbol
Tegangan	Volt	V
Arus listrik	Ampere	A
Hambatan	Ohm	Ω
Muatan listrik	Coulumb	C
Daya listrik	Watt	W
Frekuensi	Hertz	Hz
Energi	Joule	J

Tabel 2 Prefix satuan standar internasional

Prefix	Simbol	Desimal	10^n
Terra	T	1.000.000.000.000	10^{12}
Giga	G	1.000.000.000	10^9
Mega	M	1.000.000	10^6
Kilo	k	1.000	10^3
Centi	c	1/100	10^{-2}
Mili	M	1/1.000	10^{-3}
Micro	μ	1/1.000.000	10^{-6}
Nano	N	1/1.000.000.000	10^{-9}
Pico	p	1/1.000.000.000.000	10^{-12}

Tabel 3 Daftar simbol dan satuan

Nama	Satuan	Simbol
Beban/gaya	N	F
Massa benda	Kg	m
Percepatan gravitasi	10 m/s^2	g

Tabel 3 Daftar simbol dan satuan (lanjutan)

Nama	Satuan	Simbol
Luasan bidang	M	A
Tegangan geser beban	N/mm ²	τ_{beban}
Tegangan lentur beban	N/mm ²	σ_{beban}
Tegangan geser	Kg/mm ²	τ
Tegangan lentur	Kg/mm ²	σ
Tegangan geser yang diizinkan	N/mm ²	τ_{ijin}
Tegangan lentur yang diizinkan	N/mm ²	σ_{ijin}
Putaran	Rpm	n
Kecepatan	m/s	V
Momen puntir rencana	Kg/mm ²	T
Daya rencana	kW	Pd
Jarak sumbu poros	mm	C
Panjang sabuk-V	mm	L
Berat jenis	Kg/mm ³	γ
Beban terpusat	N/mm	P _t
Beban merata	N/mm	Q
Momen terbesar	N/mm	MC
Fluks magnet	Webber	Wb
Rapat fluks magnet	Tesla	T

Tabel 4 Konversi satuan

1 m = 100 cm	1 m = 1.000 mm
1 cm = 10 mm	1 joule = 0,001 kJ
1 inchi = 25,4 mm	1 watt hour = 3.600 J
1 kg = 1.000 g	1 kilowatt = 1.000 watt hour
1 N = 0,1 kg	1 watt = 0,001 kWh
1 kVA = 0,8 kWh = 800 watt	