

LAMPIRAN 1
(Biodata Penulis)

BIODATA PENULIS



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Hobi : Memancing, Jogging, dan Renang
Motto : “ Jangan biarkan hari kemarin menyita terlalu banyak waktu hari ini”

Riwayat Pendidikan :

- SD Negeri 01 Adirejawetan : Tahun 2007-2013
- SMP Negeri 01 Adipala : Tahun 2013-2016
- SMK Negeri 02 Cilacap : Tahun 2016-2019
- Politeknik Negeri Cilacap : Tahun 2019-2023

Penulis telah mengikuti Sidang Tugas Akhir pada tanggal 9 Januari 2023, sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A.Md.)

Saya yang bersangkutan,

(Hendri Setiawan)

LAMPIRAN 2

(Tabel Perhitungan Elemen Mesin)

Tabel 1 Faktor koreksi daya [Sularso, 2008]

Daya yang di transmisikan	f_c
Daya rata-rata yang diperlukan	1,2-2,0
Daya maksimum yang diperlukan	0,8-1,2
Daya normal	1,0-1,5

Mesin yang digerakkan		Penggerak					
		Momen puntir puncak 200%			Momen puntir puncak >200%		
		Motor arus bolak balik (momen normal, sangkar baging sinkron), motor arus searah (lilitan shunt)			Motor arus bolak balik (momen tinggi, fasa tunggal, lilitan seri), motor arus searah (lilitan kompon, lilitan seri), mesin torak kopling tak tetap.		
		Jumlah jam kerja tiap hari			Jumlah jam kerja tiap hari		
		3-5 jam	8-10 jam	16-24 jam	3-5 jam	8-10 jam	16-24 jam
Variasi beban sangat kecil	Pengaduk zat cair, kipas angin, blower (sampai 7,5 kW) pompa sentrifugal, konveyor tugas ringan	1	1,1	1,2	1,2	1,3	1,4
Variasi beban kecil	Konveyor sabuk (pasir, batu bara), pengaduk, kipas angin (lebih dari 7,5 kW), mesin torak, peluncur, mesin perkakas, mesin percetakan	1,2	1,3	1,4	1,4	1,5	1,6
Variasi beban sedang	Konveyor (ember, sekrup), pompa torak, kompresor, gilingan palu, pengocok, roots-blower, mesin tekstil, mesin kayu	1,3	1,4	1,5	1,6	1,7	1,8
Variasi beban besar	Penghancur, gilingan bola atau batang, pengangkat, mesin pabrik karet (rol, kalender)	1,5	1,6	1,7	1,8	1,9	2

Tabel 2 harga sf_1 dan sf_2 [Sularso, 2008]

Jenis Bahan	sf_1	sf_2
Bahan SF dengan kekuatan yang dijamin	5,6	1,3-3,0
Bahan S-C dan baja paduan	6,0	1,3-3,0

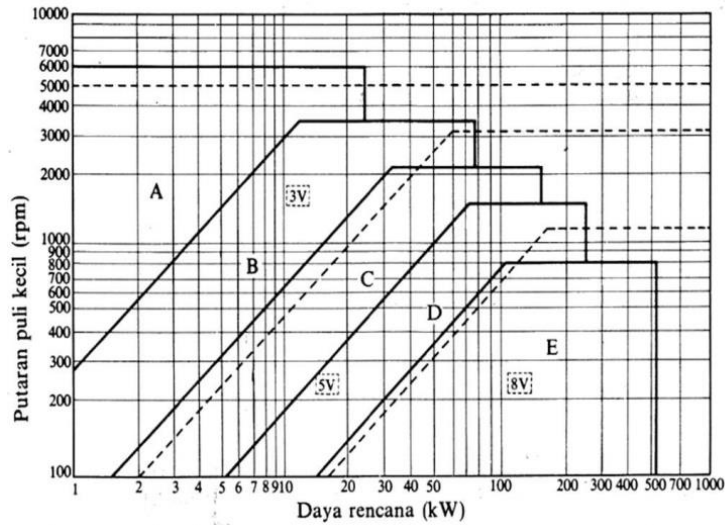
Tabel 3 Harga faktor C_b [Sularso, 2008]

Pembebanan	C_b
Diperkirakan terjadi beban lentur	1,2-3,0
Diperkirakan tidak terjaditerjadi beban lentur	1,0

Tabel 4 Faktor koreksi K_m dan K_t [Khurmi & Gupta (2005)]

Nature of load	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

Tabel 5 Diagram pemilihan sabuk V

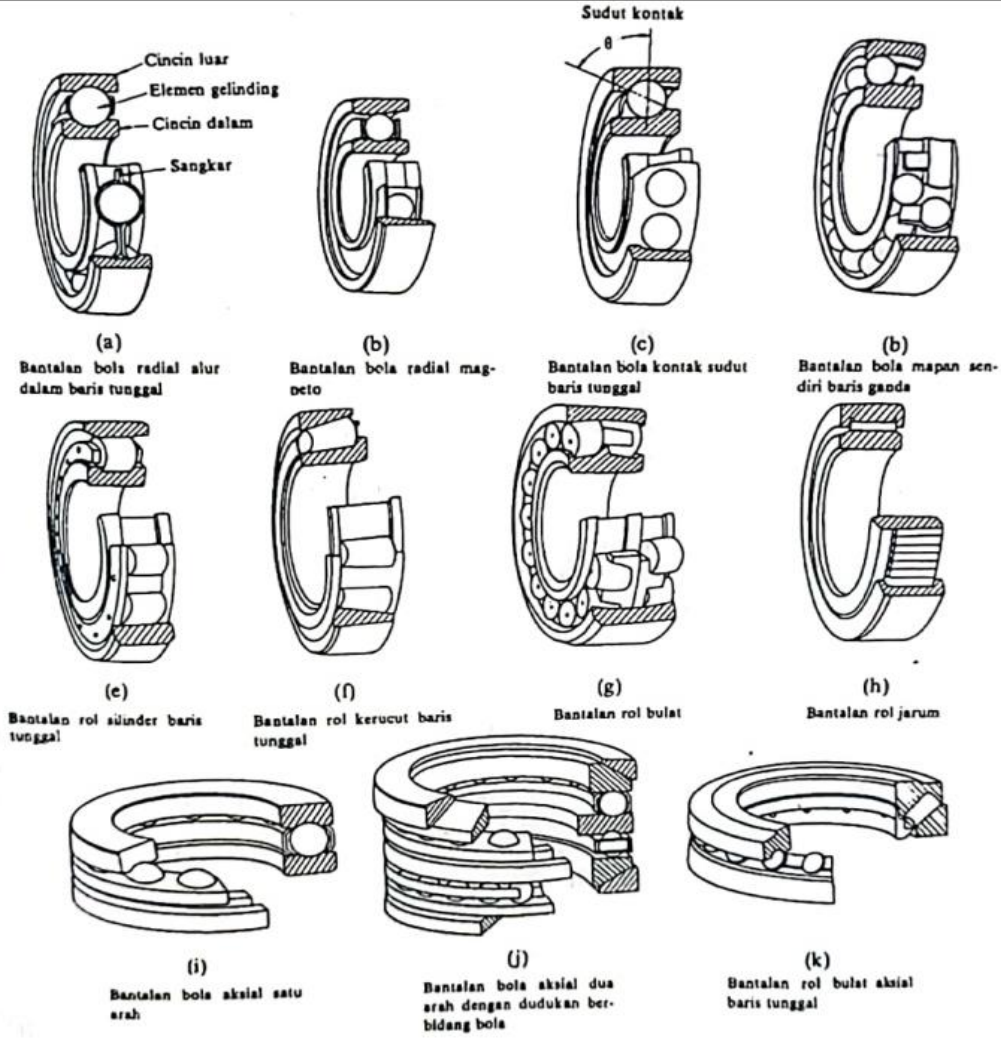


Tabel 6 Panjang sabuk V standar [Sularso, 2008]

Nomor nominal		Nomor nominal		Nomor nominal		Nomor nominal	
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
10	254	45	1143	80	2032	115	2921
11	279	46	1168	81	2057	116	2946
12	305	47	1194	82	2083	117	2972
13	330	48	1219	83	2108	118	2997
14	356	49	1245	84	2134	119	3023
15	381	50	1270	85	2159	120	3048
16	406	51	1295	86	2184	121	3073
17	432	52	1321	87	2210	122	3099
18	457	53	1346	88	2235	123	3124
19	483	54	1372	89	2261	124	3150
20	508	55	1397	90	2286	125	3175
21	533	56	1422	91	2311	126	3200
22	559	57	1448	92	2337	127	3226
23	584	58	1473	93	2362	128	3251
24	610	59	1499	94	2388	129	3277
25	635	60	1524	95	2413	130	3302
26	660	61	1549	96	2438	131	3327
27	686	62	1575	97	2464	132	3353
28	711	63	1600	98	2489	133	3378
29	737	64	1626	99	2515	134	3404
30	762	65	1651	100	2540	135	3429
31	787	66	1676	101	2565	136	3454
32	813	67	1702	102	2591	137	3480
33	838	68	1727	103	2616	138	3505
34	864	69	1753	104	2642	139	3531
35	889	70	1778	105	2667	140	3556
36	914	71	1803	106	2692	141	3581
37	940	72	1829	107	2718	142	3607
39	965	73	1854	108	2743	143	3632
39	991	74	1880	109	2769	144	3658
40	1016	75	1905	110	2794	145	3683
41	1041	76	1930	111	2819	146	3708
42	1067	77	1956	112	2845	147	3734
43	1092	78	1981	113	2870	148	3759
44	1118	79	2007	114	2896	149	3785

Tabel 7 Faktor V, X, Y Dan X0, Y0. [Sularso, 2008]

Jenis bantalan	Beban putar pd cincin dalam	Beban putar pada cincin luar	Baris tunggal		Baris ganda				e	Baris tunggal		Baris ganda			
			$F_a/VF_r > e$		$F_a/VF_r \leq e$					X ₀	Y ₀	X ₀	Y ₀		
			V	X	Y	X	Y	X						Y	
Bantalan bola alur dalam	$F_a/C_0 = 0,014$	1	1,2	0,56	2,30	1	0	0,56	2,30	0,19	0,6	0,5	0,6	0,5	
	$= 0,028$				1,99				1,90						0,22
	$= 0,056$				1,71				1,71						0,26
	$= 0,084$				1,55				1,55						0,28
	$= 0,11$				1,45				1,45						0,30
	$= 0,17$				1,31				1,31						0,34
	$= 0,28$				1,15				1,15						0,38
$= 0,42$	1,04	1,04	0,42												
$= 0,56$	1,00	1,00	0,44												
Bantalan bola sudut	$\alpha = 20^\circ$	1	1,2	0,43	1,00	1,09	0,70	1,63	0,57	0,5	0,5	1	0,42	0,84	
	$= 25^\circ$			0,41	0,87	0,92	0,67	1,41	0,68				0,38	0,76	
	$= 30^\circ$			0,39	0,76	0,78	0,63	1,24	0,80				0,33	0,66	
	$= 35^\circ$			0,37	0,66	0,66	0,60	1,07	0,95				0,29	0,58	
	$= 40^\circ$			0,35	0,57	0,55	0,57	0,93	1,14				0,26	0,52	



Tabel 8 Ukuran Pasak Berdasarkan Diameter [R Lmott, 2009]

U.S. inch sizes				SI metric sizes			
Nominal shaft diameter		Key dimensions		Nominal shaft diameter		Key dimensions	
Over (in)	to-including (in)	Width, <i>W</i> (in)	Height, <i>H</i> (in)	Over (mm)	to-including (mm)	Width, <i>W</i> (mm)	Height, <i>H</i> (mm)
0.3125	0.4375	0.09375	0.09375	6	8	2	2
0.4375	0.5625	0.1250	0.1250	8	10	3	3
0.5625	0.875	0.1875	0.1875	10	12	4	4
0.875	1.250	0.2500	0.2500	12	17	5	5
1.250	1.375	0.3125	0.3125	17	22	6	6
1.375	1.75	0.375	0.375	22	30	8	7
1.75	2.25	0.500	0.500	30	38	10	8
2.25	2.75	0.625	0.625	38	44	12	8
2.75	3.25	0.750	0.750	44	50	14	9
3.25	3.75	0.875	0.875	50	58	16	10
3.75	4.50	1.00	1.00	58	65	18	11
4.50	5.50	1.25	1.25	65	75	20	12
5.50	6.50	1.50	1.50	75	85	22	14
6.50	7.50	1.75	1.50	85	95	25	14
7.50	9.00	2.00	1.50	95	110	28	16
9.00	11.00	2.50	1.75	110	130	32	18
11.00	13.00	3.00	2.00	130	150	36	20
13.00	15.00	3.50	2.50	150	170	40	22
15.00	18.00	4.00	3.00	170	200	45	25
18.00	22.00	5.00	3.50	200	230	50	28
22.00	26.00	6.00	4.00	230	260	56	32
26.00	30.00	7.00	5.00	260	290	63	32
				290	330	70	36
				330	380	80	40
				380	440	90	45
				440	500	100	50

Note: Key sizes above the horizontal line are square; others are rectangular.

Design Faktor Pasak. [R Lmott, 2009]

Faktor perancangan (design factor)

Ductile Materials

1. *N* = 1.25 to 2.0. Design of structures under static loads for which there is a high level of confidence in all design data.
2. *N* = 2.0 to 2.5. Design of machine elements under dynamic loading with average confidence in all design data. (Typically used in problem solutions in this book.)
3. *N* = 2.5 to 4.0. Design of static structures or machine elements under dynamic loading with uncertainty about loads, material properties, stress analysis, or the environment.
4. *N* = 4.0 or higher. Design of static structures or machine elements under dynamic loading with uncertainty about some combination of loads, material properties, stress analysis, or the environment. The desire to provide extra safety to critical components may also justify these values.

Brittle Materials

5. *N* = 3.0 to 4.0. Design of structures under static loads for which there is a high level of confidence in all design data.
6. *N* = 4.0 to 8.0. Design of static structures or machine elements under dynamic loading with uncertainty about loads, material properties, stress analysis, or the environment.

Tabel 9 Pemilihan Jenis Material Pasak [R Lmott, 2009]

Material designation	Tensile strength s_u		Yield strength s_y	
	(ksi)	(MPa)	(ksi)	(MPa)
Carbon steels (SAE)				
1018	64	441	54	372
1035	72	496	39.5	272
1045	91	627	77	531
1095	140	965	83	572
Alloy steels (SAE)				
4140	102	703	90	621
8630	100	690	95	655
Stainless steels (SAE)				
303	90	621	35	241
304	85	586	35	241
316	85	586	35	241
416	75	517	40	276
Aluminum				
6061	18	124	12	83

Source: Adapted from Internet site 20.
Note: Strength properties typical, not guaranteed.

Tabel 10 Tegangan tarik dan kecepatan potong

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
1030 / S30C	48	32	SUS 302, 304, 316 WPA	170	5
1035 / 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	70		
SNCM7, 8, 23, 25	100	13	Lead Bronze		
SCr3, 4, 21, 22	90	18	50-70		
SCr5	100	13	Phosphor Bronze		
SCM2, 3, 21, 22	90	18	40-50		
SCM4, 5, 23	100	13	Pure Aluminum		
Tool Steel (AISI Grade)			200-300		
W Series	70	18	Aluminum Alloy		
O Series	135	5	70-120		
D Series	140	5	Cast Iron		
A Series	140	5	GG20		
H Series	140	5	GG25		
L Series	100	13	GG30, 35, 40		
P Series	100	13	GG45, 50		
S Series	130	5	GG55, 60		
HSS T Series	150	5			
HSS M Series	140	5			

LAMPIRAN 3

(Tabel Perhitungan Proses Produksi)

Tabel 1 Jenis pahat, geometri pahat, v, dan f [Widarto, 2008]

Workpiece material	Tensile strength in kp/mm^2	1) Tool	Cutting angle clearance/top		Feed in mm/rev.				Coolant and Lubricant	
			α°	γ°	0,1	0,2	0,4	0,8	Roughing	Finishing
Steel St 34, St 37, St 42	up to 50.	SS S ₁	8 5	14 10		60 236	45 200	34 170	E	E or P
St 50, St 60	50...70	SS S ₁	8 5	14 10	240	205	32	24	E	E or P
St 70	70...85	SS S ₁	8 5	14 10	200	170	132	106	E	E or P
Cast steel	50...70	SS S ₁	8 5	10 6	118	100	85	71	E	dry
Alloyed steel	85...100	SS S ₁	8 5	10 6	150	118	95	75	E	E or P
Mn-Steel, Cr-Ni-steel, Cr-Mo-steel	100...140	SS S ₁	8 5	6 6		16 75	11 60	8 50	E	E or P
other alloyed steels	140...180	SS S ₁	8 5	6 6	60	48	38	32	E	E or P
Tool steel	150...180	SS S ₁	8 5	6 6	50	40	32	27	E	Colza oil or P
C. I. 20, C. I. 25	hardness Brinell 200...250	SS H ₁	8 5	0 0	106	90	75	63	dry or E	dry
Copper alloys	hardness Brinell 80...120	SS G ₁	8 5	0 6		125 530	85 450	56 400	dry, E or L	dry
Cast bronze		SS G ₁	8 5	0 6		63 280	53 236	43 200	E or L	dry
Light alloys aluminium		SS G ₁	12 12	30 30	400 1320	300 1120	200 950	118 850	E or P soap spirit	E or P soap spirit
Aluminium alloys (11...13%Si)		SS G ₁	12 12	18 18	100 224	67 190	45 160	30 140	E	Oil S 11 or P
Magnesium alloys*		SS G ₁	8 5	6 6	1000 1800	900 1500	800 1250	750 1060	dry or with non-combustible oil	dry or with non-combustible oil
Platics and hard rubber		SS G ₁	12 12	10 10	300	280	250	224	dry	dry
Bakelite, Novotext, Pertinax hard plastic		SS G ₁	12 12	14 14	280	212	170	132	dry	dry

Tabel 2 Kecepatan potong proses bubut rata dan proses ulir untuk pahat HSS [Widarto,2008]

MATERIAL	STRAIGHT TURNING SPEED		THREADING SPEED	
	FEET PER MINUTE	METERS PER MINUTE	FEET PER MINUTE	METERS PER MINUTE
LOW-CARBON STEEL	80-100	24.4-30.5	35-40	10.7-12.2
MEDIUM-CARBON STEEL	60-80	18.3-24.4	25-30	7.6-9.1
HIGH-CARBON STEEL	35-40	10.7-12.2	15-20	4.6-6.1
STAINLESS STEEL	40-50	12.2-15.2	15-20	4.6-6.1
ALUMINUM AND ITS ALLOYS	200-300	61.0-91.4	50-60	15.2-18.3
ORDINARY BRASS AND BRONZE	100-200	30.5-61.0	40-50	12.2-15.2
HIGH-TENSILE BRONZE	40-60	12.2-18.3	20-25	6.1-7.6
CAST IRON	50-80	15.2-24.4	20-25	6.1-7.6
COPPER	60-80	18.3-24.4	20-25	6.1-7.6

NOTE: Speeds for carbide-tipped bits can be 2 to 3 times the speed recommended for high-speed steel

Tabel 3 Gerak Makan Pada Mesin Bubut dan Kecepatan Spindel

LONGITUDINAL FEED		M				
		D	E	F	G	
5	1	0.044	0.088	0.176	0.352	1
4	2	0.050	0.099	0.198	0.396	2
1/2	3	0.052	0.105	0.210	0.420	3
1	4	0.055	0.110	0.220	0.440	4
1	5	0.060	0.121	0.242	0.484	5
1/2	6	0.063	0.127	0.254	0.508	6
1	7	0.066	0.132	0.264	0.528	7
1	8	0.072	0.144	0.287	0.574	8
2	9	0.075	0.149	0.298	0.596	9
1	10	0.077	0.154	0.308	0.616	10
1	11	0.083	0.166	0.331	0.662	11

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

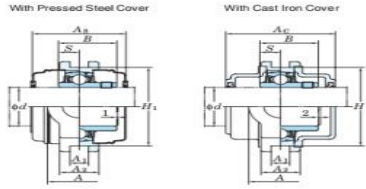
Tabel 4 Kecepatan Potong Untuk Proses Frais Untuk Pasangan Benda Kerja dan Pisau HSS (Widarto, 2008)

MATERIAL	CUTTING SPEED (sfpm) :			
	PLAIN MILLING CUTTERS		END MILLING CUTTERS	
	Roughing	Finishing	Roughing	Finishing
Aluminum.....	400 to 1,000	400 to 1,000	400 to 1,000	400 to 1,000
Brass, composition.....	125 to 200	90 to 200	90 to 150	90 to 150
Brass, yellow.....	150 to 200	100 to 250	100 to 200	100 to 200
Bronze, phosphor and manganese.....	30 to 80	25 to 100	30 to 80	30 to 80
Cast iron (hard).....	25 to 40	10 to 30	25 to 40	20 to 45
Cast iron (soft and medium).....	40 to 75	25 to 80	35 to 65	30 to 80
Monel metal.....	50 to 75	50 to 75	40 to 80	40 to 80
Steel, hard.....	25 to 50	25 to 70	25 to 50	25 to 70
Steel, soft.....	80 to 120	45 to 110	50 to 85	45 to 100

LAMPIRAN 4

(Catalogue)

Table 1 Bearing catalogue



Variations of tolerance of groove width (ΔW), variations of tolerance of distance between both grooves (ΔW_1), and tolerance of symmetry of both groove sides (X)

Housing No.	ΔW	ΔW_1	X
T204-T210	+0.2	0	0.5
T211-T217	+0.3	0	0.6
T218-T224	+0.3	0	0.7
T225-T231	+0.3	0	0.8

Form and dimensions of L_1 of T204JE3 and T205JE3 (housing with cast iron cover) are shown below.



Bearing No.	Mass kg	Basic Load Ratings kN		Factor f_0	With Pressed Steel Cover			Mass kg	With Cast Iron Cover			Mass kg		
		C_r	C_{0r}		Unit No.	Dimension mm	inch		Open Type	One Side Closed Type	Dimension mm		inch	
UC201	0.81	12.8	6.65	13.2	UCT201C	UCT201CD	44	1 9/32	0.81	-	-	-	-	
UC201-8	0.81				-	-	-	-	-	-	-	-	-	-
UC202	0.79				-	-	-	-	-	-	-	-	-	-
UC202-10	0.79				-	-	-	-	-	-	-	-	-	-
UC203	0.78				-	-	-	-	-	-	-	-	-	-
UC204-12	0.78	14.0	7.85	13.9	UCT203C	UCT203CD	44	1 9/32	0.78	-	-	-	-	
UC204	0.76				UCT204C	UCT204CD	44	1 9/32	0.76	UCT204FC	UCT204FCD	62	2 7/16	1.1
UC205-14	0.84				-	-	-	-	-	-	-	-	-	-
UC205-15	0.84				-	-	-	-	-	-	-	-	-	-
UC205	0.84				UCT205C	UCT205CD	48	1 7/8	0.84	UCT205FC	UCT205FCD	66	2 11/32	1.2
UC205-16	0.84	19.5	11.3	13.9	UCTX05C	UCTX05CD	52	2 1/16	1.4	-	-	-	-	
UCX05	1.4				-	-	-	-	-	-	-	-	-	-
UCX05-16	1.4				-	-	-	-	-	-	-	-	-	-
UC305	1.4				UCT305C	UCT305CD	76	3	2.0	-	-	-	-	-
UC305-16	1.4				-	-	-	-	-	-	-	-	-	-
UC206-18	1.3	19.5	11.3	13.9	UCT206C	UCT206CD	52	2 1/16	1.3	UCT206FC	UCT206FCD	70	2 9/16	1.8
UC206	1.3				-	-	-	-	-	-	-	-	-	-
UC206-19	1.3				-	-	-	-	-	-	-	-	-	-
UC206-20	1.3				-	-	-	-	-	-	-	-	-	-
UCX06	1.7				UCTX06C	UCTX06CD	59	2 9/16	1.7	-	-	-	-	-
UCX06-19	1.7	25.7	15.4	13.9	-	-	-	-	-	-	-	-	-	
UCX06-20	1.7				-	-	-	-	-	-	-	-	-	-
UC306	1.8				UCT306C	UCT306CD	82	3 1/32	2.4	-	-	-	-	-
UC207-20	1.6				-	-	-	-	-	-	-	-	-	-
UC207-21	1.6				25.7	15.4	13.9	-	-	-	-	-	-	-
UC207-22	1.6	-	-	-				-	-	-	-	-	-	
UC207	1.6	UCT207C	UCT207CD	59				2 9/16	1.6	UCT207FC	UCT207FCD	78	3 1/16	2.3
UC207-23	1.6	-	-	-				-	-	-	-	-	-	-
UCX07-22	2.7	-	-	-				-	-	-	-	-	-	-
UCX07	2.7	29.1	17.8	14.0	UCTX07C	UCTX07CD	68	2 11/16	2.7	-	-	-	-	
UCX07-23	2.7				-	-	-	-	-	-	-	-	-	-
UC307	2.3				UCT307C	UCT307CD	88	3 11/32	3.1	-	-	-	-	-
UC208-24	2.5				-	-	-	-	-	-	-	-	-	-
UC208-25	2.5				29.1	17.8	14.0	UCT208C	UCT208CD	68	2 11/16	2.5	UCT208FC	UCT208FCD
UC208	2.5	-	-	-				-	-	-	-	-	-	-
UCX08-24	2.6	UCTX08C	UCTX08CD	68				2 11/16	2.6	-	-	-	-	-
UCX08	2.6	-	-	-				-	-	-	-	-	-	-
UC308-24	3.0	UCT308C	UCT308CD	96				3 29/32	4.0	-	-	-	-	-
UC308	3.0	34.1	21.3	14.0	-	-	-	-	-	-	-	-		
UC209-26	2.4				-	-	-	-	-	-	-	-	-	
UC209-27	2.4				-	-	-	-	-	-	-	-	-	
UC209-28	2.4				-	-	-	-	-	-	-	-	-	
UC209	2.4				UCT209C	UCT209CD	68	2 11/16	2.4	UCT209FC	UCT209FCD	88	3 11/32	3.2
UCX09-28	2.9	35.1	23.3	14.4	-	-	-	-	-	-	-	-		
UCX09	2.9				UCTX09C	UCTX09CD	73	2 7/8	2.9	-	-	-	-	

3. As for the triple seal type product (from 201 to 205 are the double seal type products), accessory code L3 (L2) follows the Part No. of unit or bearing. (Example of Part No.: UCT206JL3, UC206L3)

4. As for the dimensions and forms of applicable bearings, see the dimensional tables of ball bearing for unit.

5. Housings of nodular graphite cast iron are also available.

Tabel 2 Sprocket Catalogue RS40

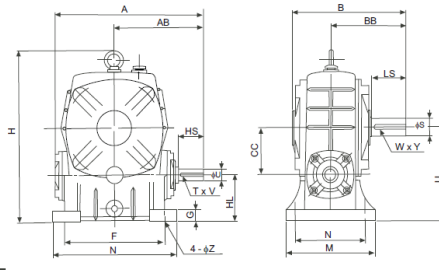
Standard Roller Chains															
RS40 Sprocket															
		7.3-2mm		7.3-3mm		21.5		7.1-2mm		21.5		7.1-2mm		7.3-2mm	
		Mechanically machined 1B type		Welded construction 1C type		Mechanically machined 2B type		Welded construction 2B type		Welded construction 2C type					
Number of teeth	Pitch (mm)	Bore Diameter (d)		Hub Diameter (D _h)		Pitch Length (L)		Hub Diameter (d)		Pitch Length (L)		Hub Diameter (d)		Pitch Length (L)	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Approx. Mass (kg)	Material	1B type		1C type		2B type		2B type		2C type		1A type		1A type	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
9	37.13	43	9.5	15	28	22	0.10								
10	41.10	47	9.5	16.5	32	22	0.13								
11	45.08	51	9.5	20	37	22	0.17								
12	49.07	55	9.5	22	40	22	0.21								
13	53.07	59	9.5	20	37	22	0.22								
14	57.07	63	9.5	24	42	22	0.28								
15	61.08	67	9.5	28.5	46	22	0.33								
16	65.10	71	12.7	30	50	22	0.37								
17	69.12	76	12.7	32	54	22	0.44								
18	73.14	80	12.7	35	57	22	0.49								
19	77.16	84	12.7	39.5	62	22	0.57								
20	81.18	88	12.7	45.5	67	25	0.73								
21	85.21	92	12.7	45.5	71	25	0.82								
22	89.24	96	12.7	50	75	25	0.91								
23	93.27	100	12.7	50	77	25	0.98								
24	97.30	104	12.7	42	63	25	0.80								
25	101.33	108	12.7	42	63	25	0.83								
26	105.36	112	12.7	42	63	25	0.87								
27	109.40	116	12.7	42	63	25	0.91								
28	113.43	120	12.7	42	63	25	0.95								
30	121.50	128	12.7	42	63	25	1.0								
32	129.57	137	16	45	68	28	1.3								
34	137.64	145	16	45	68	28	1.4								
35	141.68	149	16	45	68	28	1.4								
36	145.72	153	16	45	68	28	1.5								
38	153.79	161	16	45	68	28	1.6								
40	161.87	169	16	45	68	28	1.7								
42	169.94	177	18	48	73	32	2.0								
45	182.06	189	18	48	73	32	2.2								
48	194.18	201	18	48	73	32	2.4								
50	202.26	209	18	48	73	32	2.5								
54	218.42	226	18	48	73	32	2.8								
60	242.66	250	18	48	73	32	3.3								
65	262.87	270	23	55	83	32	4.0								
70	283.07	290	23	55	83	32	4.5								
75	303.28	311	23	55	83	32	5.0								

Tabel 3 Chain catalogue RS40

Standard Roller Chains RS Roller Chain														
RS40														
		Single strand		Double strand		Triple strand								
TSUBAKI Chain Number	Number of Strands	Pin Length L ₁ +L ₂		Dimensions L ₁		Dimensions L ₂		Offset Pin Length L		Transverse Pitch C		Pin Type		
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
		ANSI Standard Min. Tensile Strength kN(kgf)		Tsubaki Minimum Tensile Strength kN(kgf)		Tsubaki Average Tensile Strength kN(kgf)		Maximum Allowable Load kN(kgf)		Approximate Mass kg/m				
R540-1	1	18.2	8.25	9.95	18.2					15.2 (1550)	17.7 (1800)	19.1 (1950)	3.63 (370)	0.64
R540-2	2	32.6	15.45	17.15	33.5					30.4 (3100)	35.3 (3600)	38.2 (3900)	6.18 (630)	1.27
R540-3	3	46.8	22.65	24.15	47.9					45.6 (4650)	53.0 (5400)	57.4 (5850)	9.12 (930)	1.90
R540-4	4	61.2	29.9	31.3	62.3					-	70.6 (7200)	76.5 (7800)	12.0 (1220)	2.53
R540-5	5	75.7	37.1	38.6	76.8					-	88.3 (9000)	95.6 (9750)	14.1 (1440)	3.16
R540-6	6	90.1	44.3	45.8	91.2					-	106 (10800)	115 (11700)	16.7 (1700)	3.79

Note: 1. Maximum allowable load when using a one-pitch offset link (OL) is 65% of the above. Two pitch offset links (2POL) can be used at 100% of the above values.
 2. Number of links per unit = 240

Tabel 4 Gearbox Catalogue WPA



Size	Ratio	A	AB	B	BB	CC	E	F	H	HL	LL	M	N	G	Z	Input Shaft			Output Shaft			kg	l
																HS	U	TXV	LS	S	WXY		
40		142	85	112	74	40	70	80	135	40	80	90	100	12	10	25	12	4 x 2.5	28	14	5 x 3	3.8	
50		175	105	145	95	50	95	110	180	50	100	120	140	15	11	30	12	4 x 2.5	40	17	5 x 3	7	0.17
60		195	120	165	110	60	105	120	210	60	120	130	150	20	11	40	15	5 x 3	50	22	7 x 4	10.5	0.23
70	1/10	234	140	195	130	70	115	150	243	70	140	150	190	20	15	40	18	5 x 3	60	28	7 x 4	14.5	0.5
80	1/20	264	160	210	140	80	135	180	273	80	160	170	220	20	15	50	22	7 x 4	65	32	10 x 4.5	22	0.7
100	1/30	322	190	260	170	100	155	220	340	100	200	190	270	25	15	50	25	7 x 4	75	38	10 x 4.5	36	1.6
120	1/40	385	230	290	190	120	180	260	405	120	240	230	320	30	18	65	30	7 x 4	85	45	12 x 4.5	63	3.0
135	1/50	435	260	320	210	135	200	290	455	135	270	250	350	30	18	75	35	10 x 4.5	95	55	15 x 5	80	3.5
155	1/60	507	302	387	252	155	220	320	490	135	290	280	390	38	20	85	40	10 x 4.5	110	60	15 x 5	114	3.6
175		550	325	407	262	175	250	350	565	160	335	310	430	40	20	85	45	12 x 4.5	110	65	18 x 6	150	4.5
200		670	350	480	305	200	290	390	625	175	375	360	480	42	22	95	50	12 x 4.5	125	70	20 x 7	218	6.4
250		810	420	560	360	250	380	480	730	200	450	460	560	42	27	110	60	15 x 5	155	90	24 x 8	363	8.5

Type WP Without Flange Input Power & Output Torque

Size	Ratio	(r/min)	1800	1500	1200	900
40	1/10	Input Shaft power (kw)	0.62	0.58	0.50	0.42
		Output Shaft Torque (N.m)	26	28	31	34
	1/20	Input Shaft power (kw)	0.29	0.26	0.23	0.20
		Output Shaft Torque (N.m)	21	23	25	28
	1/30	Input Shaft power (kw)	0.32	0.30	0.26	0.20
		Output Shaft Torque (N.m)	33	35	38	38
	1/40	Input Shaft power (kw)	0.20	0.18	0.16	0.14
		Output Shaft Torque (N.m)	25	26	28	31
1/50	Input Shaft power (kw)	0.19	0.17	0.15	0.13	
	Output Shaft Torque (N.m)	28	30	32	35	
1/60	Input Shaft power (kw)	0.15	0.14	0.12	0.11	
	Output Shaft Torque (N.m)	24	26	27	30	

50	1/5	Input Shaft power (kw)	1.62	1.47	1.30	1.00
		Output Shaft Torque (N.m)	31	32	35	36
	1/10	Input Shaft power (kw)	1.08	0.98	0.87	0.67
		Output Shaft Torque (N.m)	45	48	53	53
	1/15	Input Shaft power (kw)	0.80	0.73	0.62	0.47
		Output Shaft Torque (N.m)	47	51	53	53
	1/20	Input Shaft power (kw)	0.49	0.44	0.38	0.32
		Output Shaft Torque (N.m)	38	41	44	48
	1/30	Input Shaft power (kw)	0.51	0.44	0.36	0.28
		Output Shaft Torque (N.m)	53	53	53	53
	1/40	Input Shaft power (kw)	0.33	0.30	0.26	0.21
		Output Shaft Torque (N.m)	44	47	50	53
	1/50	Input Shaft power (kw)	0.29	0.26	0.23	0.18
		Output Shaft Torque (N.m)	45	48	51	53
	1/60	Input Shaft power (kw)	0.23	0.21	0.18	0.16
		Output Shaft Torque (N.m)	43	45	47	53

LAMPIRAN 5

(Studi Lapangan dan Dokumentasi)

Gambar survei lapangan di Warto Teknik, Kartika Las, dan Jaya Kencana



Gambar mesin *Roll Profile Plat Bergelombang*



HASIL STUDI LAPANGAN

INTERVIEW SINGKAT

Mesin Roll Pencetak Profil Plat Bergelombang

Berikut ini adalah interview singkat yang berkaitan tentang Mesin Roll Pencetak Profil Plat Bergelombang yang dilakukan oleh mahasiswa Politeknik Negeri Cilacap jurusan Teknik Mesin yang dilakukan di :

Nama Usaha : BENGKEL LAS JAYA KENCANA
Pemilik : DARSONO
Alamat : Jl. RAJIMAN .CILACAP

Identitas narasumber :

Nama : DARSONO
Jabatan : PEMILIK

Tanda tangan : 

No	Pertanyaan	Jawaban
1	Apakah disini sudah ada mesin rolling ?	- SUDAH ADA
2	Apa kegunaan/fungsi mesin roll anda ?	- Roll GALVALIS / PITA
3	Apakah kelebihan mesin roll anda dengan yang lain?	- Sudah menggunakan motor penggerak

4.	Apakah disini ada mesin roll pencetak profil bergelombang ?	-Belum ada .
5.	Jika ada mesin roll pencetak profil bergelombang, bagaimana tanggapan anda?	- Terbantuh
6.	Apakah disini membeli atau menjual seng/plat ?	- Toko Material Citacap

INTERVIEW SINGKAT

Mesin Roll Pencetak Profil Plat Bergelombang

Berikut ini adalah interview singkat yang berkaitan tentang Mesin Roll Pencetak Profil Plat Bergelombang yang dilakukan oleh mahasiswa Politeknik Negeri Cilacap jurusan Teknik Mesin yang dilakukan di :

Nama Usaha : WARTO TEKNIK
 Pemilik : WARTO
 Alamat : Jl. RAYA SRANDIL NO. 183 - 187 APICALA

Identitas narasumber :

Nama : WARTO

Jabatan : PEMELIK

Tanda tangan



No	Pertanyaan	Jawaban
1	Apakah disini sudah ada mesin rolling ?	SUDAH ADA
2.	Apa kegunaan/fungsi mesin roll anda ?	Untuk Roll plat 1 - 3 mm
3.	Apa kelebihan mesin roll anda dengan yang lain?	- Panjang 2m

4.	Apakah disini ada mesin roll pencetak profil bergelombang ?	- Belum
5.	Jika ada mesin roll pencetak profil bergelombang, bagaimana tanggapan anda?	- Sangat terbantu - Supaya dapat memproduksi sendiri
6.	Apakah disini membeli atau menjual seng/plat ?	- Suplai paku tempa / Aneka bgn kroya, Cilacap

INTERVIEW SINGKAT

Mesin Roll Pencetak Profil Plat Bergelombang

Berikut ini adalah interview singkat yang berkaitan tentang Mesin Roll Pencetak Profil Plat Bergelombang yang dilakukan oleh mahasiswa Politeknik Negeri Cilacap jurusan Teknik Mesin yang dilakukan di :

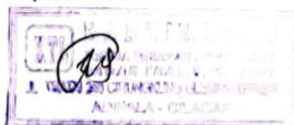
Nama Usaha : ~~KARTIKA~~ LAS
 Pemilik : KARSID
 Alamat : JCM TRATE RT 04/104. Cikunglung
 Blumpang - pasir Adipala.

Identitas narasumber :

Nama : KARSID

Jabatan : Pemilik

Tanda tangan :



No	Pertanyaan	Jawaban
1.	Apakah disini sudah ada mesin rolling ?	- Sudah ada
2.	Apa kegunaan/fungsi mesin roll anda ?	- Untuk Roll pipa (stankis, galvanis)
3.	Apa kelebihan mesin roll anda dengan yang lain?	- Mempercepat proses karena sudah menggunakan motor sebagai penggerak.

4.	Apakah disini ada mesin roll pencetak profil bergelombang ?	• Belum ada .
5.	Jika ada mesin roll pencetak profil bergelombang, bagaimana tanggapan anda?	- Lebih ekonomis , karena tidak beli ke Toko material - Ukuran juga bisa diukur sendiri
6.	Apakah disini membeli atau menjual seng/plat ?	- Toko Material kroyan .

DOKUMENTASI KEGIATAN





LAMPIRAN 6