

LAMPIRAN 1
BIODATA PENULIS

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Hobi : *Ngaji Agomo, Ngaji Ndunyo, Menggawe*
Motto : “شُبَّانُ الْيَوْمِ رَجَالُ الْغَدِ”
: “Pemuda hari ini adalah pemimpin masa depan”

Riwayat Pendidikan

Sekolah	Jurusan	Periode
MI Islamiyah 01 Margasari	-	2009-2015
MTs Ell Firdaus 01 Sidareja	-	2015-2018
SMAN 1 Kedungreja	Mipa	2018-2020
Politeknik Negeri Cilacap	D III Teknik Mesin	2020-2024

Penulis telah mengikuti seminar hasil Tugas Akhir pada tanggal 05 Februari 2024, sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A.Md)

LAMPIRAN 2
TABEL DATA PERANCANGAN

LAMPIRAN 2

Data Perancangan

Tabel 1 Baja karbon untuk konstruksi mesin dan baja batang yang difinis dingin untuk poros (Sularso dan Suga, 2008)

Standard	Lambang	Perlakuan Panas	Kekuatan tarik (Kg/mm ²)	Keterangan
Baja Karbon konstruksi mesin (JIS G 4501)	S30C	Penormalan	48	
	S35C		52	
	S40C		55	
	S45C		58	
	S50C		62	
	S55C		66	
Batang Baja yang difinis dingin	S35C-D	-	53	Ditarik dingin, digerinda, dibubut atau gabungan antara hal - hal tersebut.
	S45C-D	-	60	
	S55C-D	-	72	
Baja Khrom nikel (JIS G 4102)	SNC 2	Pengerasan Kulit	85	
	SNC 3		95	
	SNC 21		80	
	SNC 22		100	
Baja Khrom nikel molibden (JIS G 4103)	SNM 1	Pengerasan Kulit	85	
	SNM 2		95	
	SNM 7		100	
	SNM 8		105	
	SNM22		90	
	SNM23		100	
Baja Khrom (JIS G 4104)	SCr 3	Pengerasan Kulit	90	
	SCr 4		95	
	SCr 5		100	
	SCr21		80	
	SCr22		85	
Baja Khrom Molibden (JIS G 4105)	SCM 2	Pengerasan Kulit	85	
	SCM 3		95	
	SCM 4		100	
	SCM 5		105	
	SCM21		85	
	SCM22		95	
SCM23	100			

Tabel 3 Faktor koreksi k_t (torsi) dan k_m (momen) (Khurmi dan 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 4 Faktor layanan (Mott, 2009)

Jenis beban	Jenis penggerak		
	Transmisi hidrolik	Motor listrik atau turbin	Motor bakar dengan penggerak mekanis
Transmisi halus (pengaduk, kipas angin, lampu, konveyor dengan beban merata)	1.0	1.0	1.2
Kejutatan sedang (mesin perkakas, kran, konveyor tugas berat, pengaduk makanan dan gerinda)	1.2	1.3	1.4
Kejutatan berat (mesin pres tumbuk, konveyor dengan putaran mampu balik, transmisi mesin giling rol)	1.4	1.5	1.7

Tabel 5 Faktor V, X, Y dan X₀, Y₀ (Sularso dan Suga, 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	
			X	Y	X	Y	X	Y						
Bantalan bola alur dalam	1	1,2	0,56	2,30				2,30	0,19					
				1,99				1,90	0,22					
				1,71				1,71	0,26					
				1,55				1,55	0,28					
				1,45	1	0	0,56	1,45	0,30	0,6	0,5	0,6	0,5	
				1,31				1,31	0,34					
				1,15				1,15	0,38					
1,04				1,04	0,42									
1,00				1,00	0,44									
Bantalan bola sudut	1	1,2	0,43	1,00	1,09	0,70	1,63	0,57		0,42	0,84			
				0,41	0,87	0,92	0,67	1,41	0,68	0,38	0,76			
				0,39	0,76	1	0,78	0,63	1,24	0,80	0,5	0,33	1	0,66
				0,37	0,66	0,66	0,60	1,07	0,95	0,29	0,58			
				0,35	0,57	0,55	0,57	0,93	1,14	0,26	0,52			

Untuk bantalan baris tunggal, bila $F_a/VF_r \leq e$, $X = 1$, $Y = 0$

LAMPIRAN 3
CATALOG PART

LAMPIRAN 3

Catalog Part

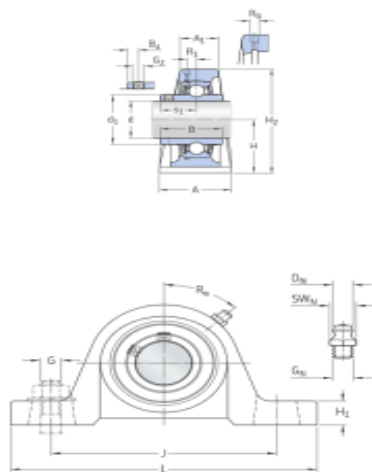
Gambar 1 katalog motor bakar bensin 5,5 HP

SPECIFICATION	REVIEWS	PRODUCT QUESTIONS	BLOG POSTS
<p>Honda GX 160 T2 (THAI) 5.5Hp merupakan mesin penggerak serbaguna yang digunakan untuk menggerakkan sebuah alat. Memiliki tenaga yang kuat namun tingkat kebisingan yang rendah dan getaran rendah serta emisi yang rendah dan ramah lingkungan tanpa mengorbankan daya output/kinerja.</p>			
Tipe Vendor	:	GX 160 T2 (Thai)	
Merk	:	Honda	
Start Mesin	:	Recoil	
Tenaga Mesin	:	5.5 HP	
Rpm Mesin	:	3600 RPM	
Torsi Maksimum Mesin	:	10.3 Nm/2500 RPM	
Diameter X Langkah Piston	:	68 x 45 mm	
Tipe Oli	:	SAE 10W-30	
Kapasitas Mesin	:	163 cc	
Sistem Pengapian Mesin	:	Transistorized Magneto Ignition	
Perbandingan Kompresi Pembakaran	:	9	
Langkah Mesin	:	4 Langkah	
Jumlah Silinder Mesin	:	1	
Saringan Udara Mesin	:	Semi Dry	
Kapasitas Tanki Bahan Bakar	:	3.1 L	
Kapasitas Oli	:	0.6 L	
Sistem Governor Mesin	:	Mechanical	
Posisi As Mesin	:	Horizontal	
Putaran As Mesin	:	Counterclockwise Dari Pto	
Dimensi (PxLxt)	:	312 x 362 x 346	
Berat Bersih	:	15 Kg	

Gambar 2 katalog bearing SKF

Technical Specification

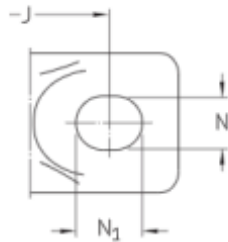
Compliance with standard	JIS
Purpose specific	For material handling applications
Material, housing	Cast iron
Sealing, bearing	Seal and flinger on both sides
Sealing type, bearing	Contact, standard
Sealing, unit	Without
Coating	Without



Dimensions

d	25 mm	Bore diameter
d ₁	33.7 mm	Shoulder diameter of inner ring
A	38 mm	Base width
A ₂	23 mm	Top width
B	34 mm	Width of inner ring
B ₄	5.5 mm	Distance from locking device side face to thread centre
H	36.5 mm	Height of spherical seat centre
H ₁	16 mm	Foot height
H ₂	70.5 mm	Overall height
J	105 mm	Distance between attachment bolts
J	max. 110 mm	Distance between attachment bolts
J	min. 100 mm	Distance between attachment bolts
L	139.5 mm	Overall length
N	13 mm	Diameter of attachment bolt hole
N ₁	18 mm	Length of attachment bolt hole
s ₁	19.7 mm	Distance from locking device side face to raceway centre

Gambar 3 Katalog Bearing SKF



Threaded hole

R_{ζ} 1/4-28 UNF	Housing thread for the grease fitting
R_1 1.5 mm	Axial position of the housing thread
R_a 45 °	Angular position of the housing thread

Grease fitting

D_f 6.6 mm	Diameter of head sphere of grease fitting
S_k 7.94 mm	Hexagonal key size for the grease fitting
G_f 1/4-28 UNF	Thread of grease fitting

Calculation data

Basic dynamic load rating	C	14 kN
Basic static load rating	C_0	7.8 kN
Fatigue load limit	P_u	0.335 kN
Limiting speed		5 850 r/min
		Limiting speed with shaft tolerance h6

Mass

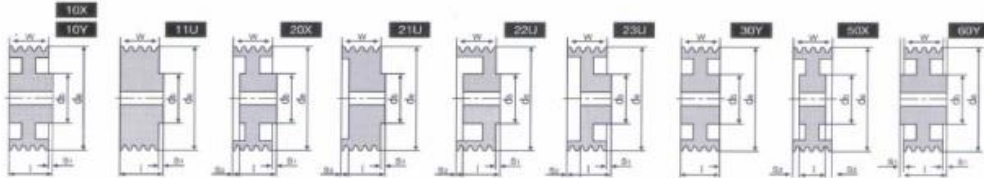
Mass bearing unit	0.76 kg
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Mounting information

Set screw	G_2	M6x1
Hexagonal key size for set screw		3.05 mm
Recommended tightening torque for set screw		4 N-m
Recommended diameter for attachment bolts, mm	G	10 mm
Recommended diameter for attachment bolts, inch	G	0.375 in

Gambar 4 Katalog Pada Puli

NBK® STANDARD V-PULLEY



A-1

w = 20

unit : mm

Catalog Number	dp	de	Type	Hub				Max Bore	Mass (Kg)	
				db	l	S1	S2			
2	A1	41.8	50.8	11U	37	33	13	-	14	0.3
2 1/2	A1	54.5	63.5	11U	41	36	16	-	21	0.5
3	A1	67.2	76.2	21U	44	24	17	13	25	0.6
3 1/2	A1	79.9	88.9	21U	44	24	19	15	25	0.7
4	A1	92.6	101.6	21U	48	28	19	11	25	0.9
4 1/2	A1	105.3	114.3	23U	50	28	15	7	28	1.0
5	A1	118.0	127.0	23U	50	30	17	7	28	1.2
5 1/2	A1	130.7	139.7	23U	50	30	17	7	28	1.4
6	A1	143.4	152.4	20X	50	30	12	2	28	1.3
6 1/2	A1	156.1	165.1	20X	52	30	12	2	28	1.4
7	A1	168.8	177.8	20X	55	30	12	2	30	1.6
8	A1	194.2	203.2	20X	55	30	12	2	30	1.9
9	A1	219.6	228.6	20X	55	30	12	2	30	2.1
10	A1	245.0	254.0	10X	61	32	12	-	32	2.5
11	A1	270.4	279.4	10X	61	32	12	-	32	2.7
12	A1	295.8	304.8	10X	61	32	12	-	32	3.0
13	A1	321.2	330.2	10X	61	35	15	-	32	3.4
14	A1	346.6	355.6	10X	68	35	15	-	38	3.8
15	A1	372.0	381.0	10X	68	37	17	-	38	4.1
16	A1	397.4	406.4	10X	70	37	17	-	38	4.5
18	A1	448.2	457.2	10X	76	37	17	-	42	5.2
20	A1	499.0	508.0	10X	76	37	17	-	42	5.9
22	A1	549.8	558.8	10Y	76	43	23	-	42	7.9
24	A1	600.6	609.6	10Y	76	45	25	-	42	9.6

A-2

w = 36

unit : mm

Catalog Number	dp	de	Type	Hub				Max Bore	Mass (Kg)	
				db	l	S1	S2			
2	A2	41.8	50.8	11U	37	58	22	-	14	0.5
2 1/2	A2	54.5	63.5	11U	43	55	19	-	21	0.8
3	A2	67.2	76.2	21U	44	30	19	25	24	0.8
3 1/2	A2	79.9	88.9	21U	47	30	19	25	25	1.0
4	A2	92.6	101.6	21U	50	30	19	25	28	1.3
4 1/2	A2	105.3	114.3	21U	57	30	19	25	32	1.6
5	A2	118.0	127.0	22U	57	30	19	25	32	1.7
5 1/2	A2	130.7	139.7	22U	63	30	19	25	35	2.0
6	A2	143.4	152.4	22U	63	30	19	25	35	2.2
6 1/2	A2	156.1	165.1	22U	63	30	19	25	35	2.4
7	A2	168.8	177.8	20X	69	38	10	8	38	2.7
8	A2	194.2	203.2	20X	69	38	10	8	38	3.1
9	A2	219.6	228.6	20X	69	38	8	6	38	3.5
10	A2	245.0	254.0	20X	69	38	8	6	38	3.8
11	A2	270.4	279.4	20X	75	38	8	6	42	4.3
12	A2	295.8	304.8	20X	75	36	6	6	42	4.6
13	A2	321.2	330.2	20X	74	36	6	6	40	5.1
14	A2	346.6	355.6	50X	77	35	-	0.5	42	5.5
15	A2	372.0	381.0	50X	80	35	-	0.5	42	6.0
16	A2	397.4	406.4	50X	80	35	-	0.5	42	6.4
18	A2	448.2	457.2	30Y	80	36	-	-	42	8.0
20	A2	499.0	508.0	30Y	80	36	-	-	42	9.1
22	A2	549.8	558.8	30Y	80	36	-	-	42	10.2
24	A2	600.6	609.6	60Y	84	39	1.5	-	45	11.6

Gambar 5 Katalog Pada Sabuk V

Classical V-Belt/ Red label V-Belt

This type is most commonly used as a means for power transmission. Therefore, it is economic and available in the market. Also, it is easily replaced.

- Our "SET FREE" system for multiple belt usage is very effective to reduce dimensional differences of each belt.
- Red label V-Belt is a heavy-duty power transmission belt, which has heat, oil and flex resistance as well as a high antistatic property

Product Code **A-50**

Belt Type
Belt Code (inch)

● Belt code indicates effective pitch length of the belt in inches. (For M type, length is outer circumference)

Cross-Sectional Dimensions

(Note) Above dimensions are nominal values.

Part No.	Outside Length (inches)	Metric No.	Wt. (lbs.)	Stock/ Non-Stock	Std. Pack	Pack Weight (lbs.)
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A/4L Section

Recommended Pulleys: QD Type (BQ)

A19	21.3	13R535	0.1	N	5	0.5
A20	22.3	13R560	0.1	N	5	0.5
A21	23.3	13C585	0.1	S	5	0.5
A22	24.3	13C610	0.1	S	5	0.5
A23	25.3	13C635	0.2	N	5	1.0
A24	26.3	13C665	0.2	S	5	1.0
A25	27.3	—	0.2	N	5	1
A26	28.3	13C710	0.2	S	5	1.0
A27	29.3	13C750	0.2	N	5	1.0
A28	30.3	13C765	0.2	S	5	1.0
A29	31.3	13C800	0.2	S	5	1.0
A30	32.3	13C815	0.2	S	5	1.0
A31	33.3	13C850	0.2	S	5	1.0
A32	34.3	13C865	0.2	S	5	1.0
A33	35.3	13C900	0.2	S	5	1.0
A34	36.3	13C915	0.2	S	5	1.0
A35	37.3	13C950	0.2	S	5	1.0
A36	38.3	13C965	0.2	S	5	1.0
A37	39.3	13C1000	0.2	S	5	1.0
A38	40.3	13C1020	0.2	S	5	1.0
A39	41.3	13C1045	0.3	S	5	1.5
A40	42.3	13C1075	0.3	S	5	1.5
A41	43.3	13C1095	0.3	S	5	1.5
A42	44.3	13C1120	0.3	S	5	1.5
A43	45.3	13C1150	0.3	S	5	1.5
A44	46.3	13C1170	0.3	S	5	1.5
A45	47.3	13C1195	0.3	S	5	1.5
A46	48.3	13C1230	0.3	S	5	1.5
A47	49.3	13C1245	0.3	S	5	1.5
A48	50.3	13C1270	0.3	S	5	1.5
A49	51.3	13C1300	0.3	S	5	1.5
A50	52.3	13C1325	0.3	S	5	1.5
A51	53.3	13C1350	0.3	S	5	1.5
A52	54.3	13C1375	0.3	N	5	1.5
A53	55.3	13C1400	0.3	S	5	1.5

Gambar 6 Katalog Pada Sabuk-V

A/4L Section
Recommended Pulleys: QD Type (BQ)

A54	56.3	13C1425	0.3	S	5	1.5
A55	57.3	13C1450	0.4	S	5	2.0
A56	58.3	13C1475	0.4	S	5	2.0
A57	59.3	13C1500	0.4	N	5	2.0
A58	60.3	13C1525	0.4	S	5	2.0
A59	61.3	13C1550	0.4	N	5	2.0
A60	62.3	13C1585	0.4	S	5	2.0
A61	63.3	13C1600	0.4	N	5	2.0
A62	64.3	13C1630	0.4	S	5	2.0
A63	65.3	13C1655	0.4	N	5	2.0
A64	66.3	13C1680	0.4	S	5	2.0
A65	67.3	13C1710	0.4	N	5	2.0
A66	68.3	13C1730	0.4	S	5	2.0
A67	69.3	13C1755	0.4	N	5	2.0
A68	70.3	13C1790	0.4	S	5	2.0
A69	71.3	13C1805	0.4	—	5	2.0
A70	72.3	13C1830	0.4	N	5	2.0
A71	73.3	13C1865	0.4	N	5	2.0
A72	74.3	13C1880	0.5	N	5	2.5
A73	75.3	13C1905	0.5	—	5	2.5
A74	76.3	13C1935	0.5	—	5	2.5
A75	77.3	13C1965	0.5	S	5	2.5
A76	78.3	13C1985	0.5	N	5	2.5
A77	79.3	13C2010	0.5	—	5	2.5
A78	80.3	13C2030	0.5	S	5	2.5
A79	81.3	13C2060	0.5		5	2.5
A80	82.3	13C2080	0.5	S	5	2.5
A81	83.3	13C2121	0.5	—	5	2.5

LAMPIRAN 4
DESAIN RINCI MESIN PEMOTONG DAN
PENGARAH BATANG PADI UNTUK
MEMANEN PADI

LAMPIRAN 5
DOKUMENTASI

LAMPIRAN 5

Gambar 1 Perencanaan dan Pemilihan Material



Gambar 2 Pembelian Material



Gambar 3 Pengukuran Material



Gambar 4 Proses Pemotongan Material



Gambar 5 Proses Pemotongan Material



Gambar 6 Hasil Pemotongan Material



Gambar 7 Proses Pembubutan Material



Gambar 8 Proses Pengeboran Material



Gambar 9 Proses Pengelasan Kerangka



Gambar 10 Proses Pengelasan Stang



Gambar 11 Proses Pemotongan Besi Plat



Gambar 12 Proses Pembengkokan Besi Plat



Gambar 13 Proses Pembengkokan Besi Behel



Gambar 14 Proses Pembuatan Roda



Gambar 15 Proses Pengelasan Dudukan Roda



Gambar 16 Proses Pembuatan Kerangka Pemotong



Gambar 17 Proses Pembuatan Pisau Pemotong



Gambar 18 Proses Perakitan Mesin



Gambar 19 Proses Uji Mesin



Gambar 20 Finishing Pengecatan



Gambar 21 Finishing Pengecatan



Gambar 22 *Assembling*



Gambar 23 *Finishing dan Uji Coba*



Gambar 24 *Finishing*



LAMPIRAN 6
HASIL WAWANCARA