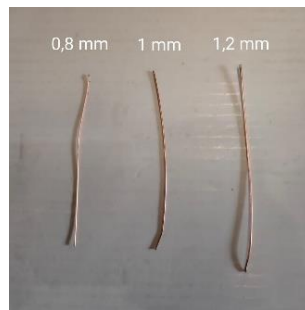


LAMPIRAN

Persiapan Material ST 37



Persiapan Alat – alat Pengelasan



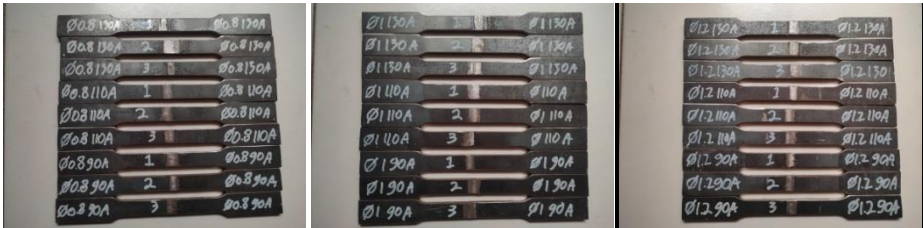
Proses Pengujian Penetrant



Hasil Pengujian Penetrant



Pembuatan Spesimen Uji Tarik

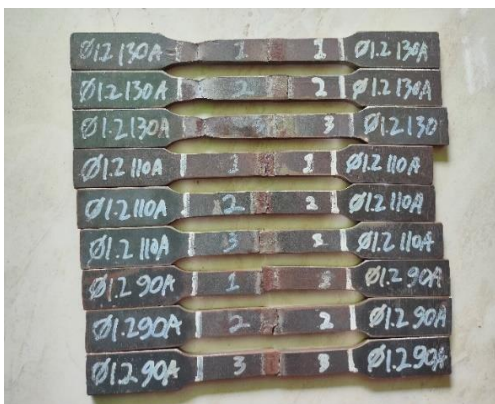


Pengujian Uji Tarik





Hasil Pengujian Tarik





KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET, DAN TEKNOLOGI
POLITEKNIK NEGERI MALANG
JURUSAN TEKNIK MESIN

Jl. Soekarno Hatta No.9 Jatimulyo, Lowokwaru, Malang, 65141
Telp. (0341) 404424 – 404425, Fax (0341) 404420,
<http://www.polinema.ac.id>

SURAT KETERANGAN
NOMOR : 19/LAB.TM/2023

Yang bertanda tangan dibawah ini :

Nama : Rafik Djoenaidi,ST
N I P : 19780125 200112 1 002
Jabatan : Pranata Laboratorium Pendidikan
Politeknik Negeri Malang

Menerangkan dengan sesungguhnya bahwa mahasiswa :

Nama : M. Wakhid zainur Anwar
Nim/NPM : 1421900038
Prodi : S-1 Teknik Mesin
Instansi : Universitas 17 Agustus 1945 Surabaya

Benar benar telah melaksanakan pengambilan data di Jurusan Teknik Mesin Politeknik Negeri Malang, guna keperluan penyusunan skripsi.

Demikian surat keterangan ini dibuat untuk dipergunakan sebagaimana mestinya.

Malang, 19 Mei 2023
Pranata Laboratorium Pendidikan
Politeknik Negeri Malang



Rafik Djoenaidi, ST
19780125 200112 1 002



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET, DAN TEKNOLOGI
POLITEKNIK NEGERI MALANG
JURUSAN TEKNIK MESIN

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SURAT KETERANGAN
NOMOR : 20/LAB.TM/2023

Yang bertanda tangan dibawah ini :

Nama : Rafik Djoenaidi,ST
N I P : 19780125 200112 1 002
Jabatan : Pranata Laboratorium Pendidikan
Politeknik Negeri Malang

Menerangkan dengan sesungguhnya bahwa mahasiswa :

Nama : Irzad Nurdaffa
Nim/NPM : 1421900036
Prodi : S-1 Teknik Mesin
Instansi : Universitas 17 Agustus 1945 Surabaya

Benar benar telah melaksanakan pengambilan data di Jurusan Teknik Mesin Politeknik Negeri Malang, guna keperluan penyusunan skripsi.

Demikian surat keterangan ini dibuat untuk dipergunakan sebagaimana mestinya.


Malang, 19 Mei 2023
Pranata Laboratorium Pendidikan
Politeknik Negeri Malang

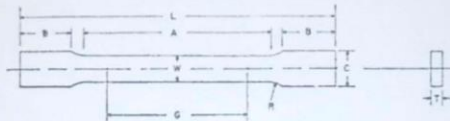
Rafik Djoenaidi,STNG
19780125 200112 1 002

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : RAW Material (1)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		Thickness of material 12.5 [0.500]	6 [0.250]
R—Radius of fillet, min (Note 6)	25 [1]	200 [8]	100 [4]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	57 [2.25]	32 [1.25]
A—Length of reduced section, min	225 [9]	75 [3]	30 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	20 [0.750]	10 [0.375]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]		

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	217,95
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	99,95
7	Pertambahan Panjang ΔL (mm)	17,95
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2419,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3180,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2395,40

Grafik Uji Tarik



Uji Tarik (Raw Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	3,80	0,05
2	5,60	0,09
3	7,20	0,14
4	17,80	0,19
5	42,80	0,24
6	67,20	0,28
7	96,20	0,33
8	127,00	0,38
9	157,40	0,42
10	194,40	0,47
11	232,40	0,52
12	271,60	0,56
13	312,60	0,61
14	354,40	0,66
15	398,40	0,71
16	442,60	0,75
17	488,20	0,80
18	534,80	0,85
19	582,20	0,89
20	629,60	0,94

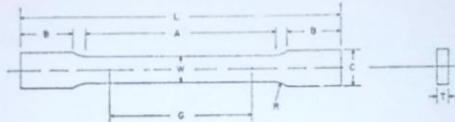
PENGUJIAN & PERLAKUAN
BIMAH
L. B. BAHAN TEKNIK MESIN
POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 90 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8

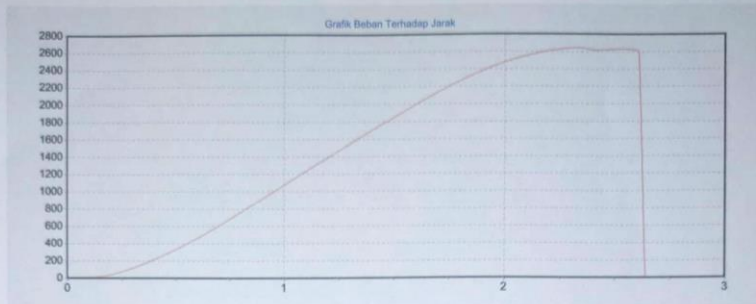
 E8/E8M - 09



	Dimensions		
	Standard Specimens	Sheet-Type	Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	80.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, 0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	87 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	202,61
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	84,61
7	Pertambahan Panjang ΔL (mm)	2,61
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2360,20
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	2644,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2606,40

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 90 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

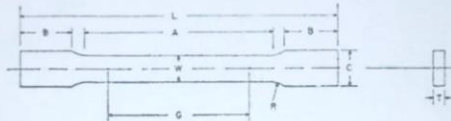
No.	Beban (Kg)	Jarak (mm)
1	6,00	0,03
2	7,20	0,07
3	8,20	0,10
4	11,40	0,13
5	22,20	0,17
6	39,80	0,20
7	62,40	0,23
8	88,00	0,26
9	115,60	0,30
10	146,40	0,33
11	178,80	0,36
12	213,00	0,40
13	249,20	0,43
14	287,60	0,46
15	327,60	0,50
16	368,80	0,53
17	411,40	0,56
18	456,00	0,59
19	502,20	0,63
20	549,40	0,66

PENGUJIAN & PERLAKUAN
BAHAN
 LABORATORIUM TEKNIK MESIN
 FAKULTAS TEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 90 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
F—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 8)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	214,12
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	96,12
7	Pertambahan Panjang ΔL (mm)	14,12
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2685,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3255,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2473,20

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 90 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

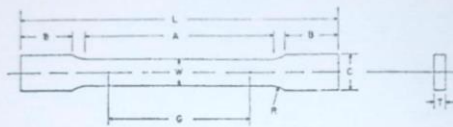
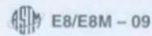
No.	Beban (Kg)	Jarak (mm)
1	6,20	0,04
2	7,40	0,09
3	8,20	0,13
4	12,80	0,18
5	31,80	0,22
6	59,40	0,26
7	88,80	0,31
8	121,20	0,35
9	155,20	0,40
10	191,20	0,44
11	228,00	0,48
12	266,20	0,53
13	305,80	0,57
14	346,00	0,62
15	387,20	0,66
16	429,40	0,70
17	472,20	0,75
18	516,00	0,79
19	560,00	0,84
20	604,00	0,88

PENGUJIAN & PERLAKUAN
 BAHAN
 B. B. HAN TEKNIK MESIN
 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 90 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]		
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)	thickness of material		
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	325 [13]	97 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	207,97
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	89,97
7	Pertambahan Panjang ΔL (mm)	7,97
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2504,80
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3123
10	Beban Putus (<i>Fracture</i>) (Kg)	3049,80

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 90 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

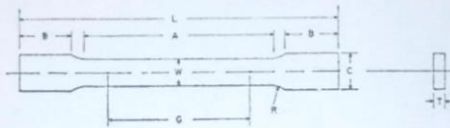
No.	Beban (Kg)	Jarak (mm)
1	7,00	0,05
2	13,00	0,09
3	28,00	0,14
4	47,40	0,19
5	76,60	0,23
6	109,80	0,28
7	145,60	0,33
8	184,60	0,38
9	226,00	0,42
10	269,60	0,47
11	314,40	0,52
12	361,60	0,56
13	409,40	0,61
14	458,20	0,66
15	507,80	0,70
16	557,60	0,75
17	608,40	0,80
18	659,00	0,84
19	710,40	0,89
20	762,00	0,94

PENGUJIAN & PERLAKUAN
BAHAN
L. B. BAHAN TEKNIK MESIN
POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 110 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type: 40 mm [1.500 in.] Wide	Sheet-Type: 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.006]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		Thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	215,40
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	97,40
7	Pertambahan Panjang ΔL (mm)	15,40
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2700
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3297,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2473,40

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 110 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm


No.	Beban (Kg)	Jarak (mm)
1	8,80	0,06
2	10,20	0,11
3	13,20	0,17
4	27,40	0,22
5	48,00	0,28
6	73,40	0,34
7	105,60	0,39
8	141,60	0,45
9	181,40	0,50
10	224,20	0,56
11	270,20	0,62
12	313,80	0,67
13	348,40	0,73
14	407,00	0,78
15	449,40	0,84
16	511,00	0,90
17	567,40	0,95
18	616,80	1,01
19	677,80	1,06
20	735,60	1,12

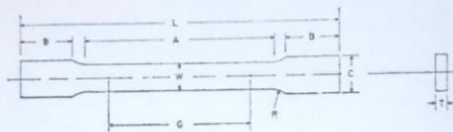
PENGUJIAN & PERLAKUAN
BAHAN
 LAB. BAHAN TEKNIK MESIN
 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 110 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.006]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)	thickness of material		
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	208,46
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	90,46
7	Pertambahan Panjang ΔL (mm)	8,46
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2545
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3211,40
10	Beban Putus (<i>Fracture</i>) (Kg)	2775,20

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 110 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	5,60	0,05
2	6,20	0,09
3	6,00	0,14
4	10,60	0,18
5	30,20	0,23
6	55,00	0,28
7	85,00	0,32
8	117,40	0,37
9	153,00	0,41
10	191,40	0,46
11	232,20	0,51
12	275,80	0,55
13	321,40	0,60
14	369,00	0,64
15	418,20	0,69
16	458,80	0,74
17	478,20	0,78
18	547,60	0,83
19	606,00	0,87
20	663,60	0,92

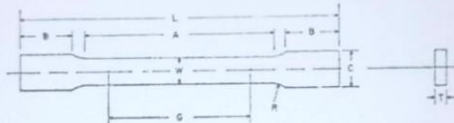
**PENGUJIAN & PERLAKUAN
BAHAN**

LAB. BAHAN TEKNIK MESIN
POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 110 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8



Dimensions	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		Thickness of material 12.5 [0.500]	6 [0.250]
R—Radius of fillet, min (Note 6)	25 [1]	200 [8]	100 [4]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	57 [2.25]	32 [1.25]
A—Length of reduced section, min	225 [9]	75 [3]	30 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	10 [0.375]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	217,23
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	99,23
7	Pertambahan Panjang ΔL (mm)	17,23
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2403,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3074,80
10	Beban Putus (<i>Fracture</i>) (Kg)	2114

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 110 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	6,40	0,06
2	8,00	0,12
3	10,00	0,17
4	20,00	0,23
5	35,60	0,29
6	55,80	0,35
7	81,80	0,41
8	111,60	0,46
9	143,80	0,52
10	179,40	0,58
11	218,00	0,64
12	258,60	0,70
13	300,40	0,75
14	344,40	0,81
15	391,00	0,87
16	439,40	0,93
17	489,20	0,99
18	540,40	1,04
19	593,00	1,10
20	644,00	1,16

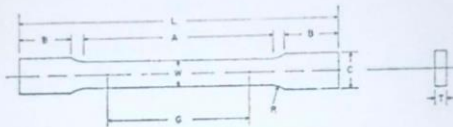
PENGUJIAN & PERLAKUAN
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 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 130 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.008]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	60 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	212,31
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	94,31
7	Pertambahan Panjang ΔL (mm)	12,31
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2602,80
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3224,40
10	Beban Putus (<i>Fracture</i>) (Kg)	3204,40

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 130 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

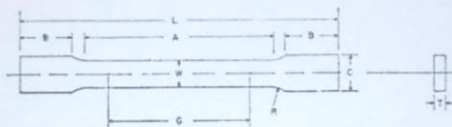
No.	Beban (Kg)	Jarak (mm)
1	7,60	0,05
2	9,80	0,09
3	12,40	0,14
4	26,80	0,19
5	44,20	0,24
6	68,80	0,28
7	100,80	0,33
8	136,40	0,38
9	174,60	0,42
10	214,40	0,47
11	256,00	0,52
12	300,00	0,56
13	344,20	0,61
14	388,60	0,66
15	437,20	0,71
16	483,20	0,75
17	533,40	0,80
18	578,20	0,85
19	630,40	0,89
20	678,80	0,94

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POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 130 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)	Thickness of material		
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	214,24
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	96,24
7	Pertambahan Panjang ΔL (mm)	14,24
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2905,80
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3228,20
10	Beban Putus (<i>Fracture</i>) (Kg)	2446,60

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 130 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

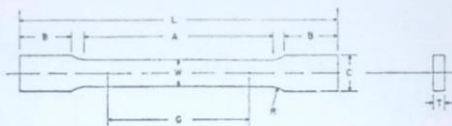
No.	Beban (Kg)	Jarak (mm)
1	4,20	0,05
2	4,40	0,09
3	9,80	0,14
4	25,00	0,19
5	43,20	0,24
6	71,40	0,28
7	104,20	0,33
8	138,60	0,38
9	172,20	0,42
10	213,60	0,47
11	255,20	0,52
12	293,80	0,56
13	342,80	0,61
14	384,40	0,66
15	434,80	0,71
16	479,60	0,75
17	531,40	0,80
18	578,00	0,85
19	631,80	0,89
20	677,80	0,94

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POLITEKNIK NESERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 0,8 Arus 130 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.008]	25.0 ± 0.1 [1.000 ± 0.008]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	216,12
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	98,12
7	Pertambahan Panjang ΔL (mm)	16,12
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2858
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3267,20
10	Beban Putus (<i>Fracture</i>) (Kg)	2460,20

Grafik Uji Tarik



Uji Tarik (Diameter 0,8 Arus 130 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	7,80	0,05
2	8,60	0,10
3	9,80	0,15
4	11,80	0,20
5	22,00	0,25
6	40,80	0,29
7	68,00	0,34
8	101,60	0,39
9	137,80	0,44
10	175,60	0,49
11	214,80	0,54
12	254,80	0,59
13	296,20	0,64
14	335,80	0,69
15	375,00	0,74
16	419,60	0,78
17	472,40	0,83
18	516,20	0,88
19	568,20	0,93
20	617,20	0,98

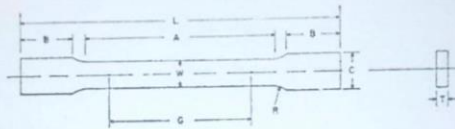
PENGUJIAN & PERLAKUAN
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LAB. BAHAN TEKNIK MESIN
POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 90 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens	Standard Specimens	Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125 - 0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)	25 [1]	thickness of material 12.5 [0.500]	6 [0.250]
R—Radius of fillet, min (Note 6)	450 [18]	200 [8]	100 [4]
L—Overall length, min (Note 2, Note 7, and Note 8)	225 [9]	57 [2.25]	32 [1.25]
A—Length of reduced section, min	75 [3]	50 [2]	30 [1.25]
B—Length of grip section, min (Note 9)	50 [2]	20 [0.750]	10 [0.375]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]		

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	216,53
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	98,53
7	Pertambahan Panjang ΔL (mm)	16,53
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2650,20
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3186,80
10	Beban Putus (<i>Fracture</i>) (Kg)	2366,20

Grafik Uji Tarik



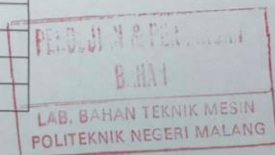
Uji Tarik (Diameter 1 Arus 90 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	7,80	0,05
2	9,40	0,09
3	10,40	0,14
4	11,60	0,19
5	14,40	0,23
6	32,40	0,28
7	53,40	0,33
8	81,00	0,37
9	115,00	0,42
10	151,40	0,47
11	190,60	0,51
12	230,40	0,56
13	272,20	0,61
14	316,00	0,65
15	361,60	0,70
16	408,40	0,75
17	455,20	0,79
18	503,40	0,84
19	536,20	0,89
20	526,80	0,93



DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 90 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type: 40 mm [1.500 in.] Wide	Sheet-Type: 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material 12.5 [0.500]	
R—Radius of fillet, min (Note 6)	25 [1]	200 [8]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	100 [4]	
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	204,07
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	86,07
7	Pertambahan Panjang ΔL (mm)	4,07
8	Beban Luluh (<i>Yield Point</i>) (Kg)	1362
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	2573,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2556,20

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 90 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

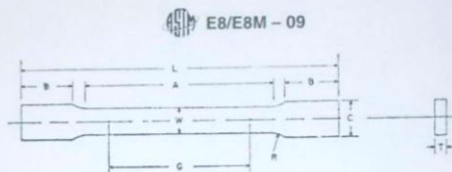
No.	Beban (Kg)	Jarak (mm)
1	0,80	0,04
2	3,40	0,08
3	7,00	0,11
4	11,00	0,15
5	13,80	0,19
6	17,20	0,23
7	25,00	0,26
8	37,80	0,30
9	54,60	0,34
10	75,40	0,38
11	110,20	0,41
12	150,40	0,45
13	193,40	0,49
14	238,40	0,53
15	284,60	0,57
16	332,40	0,60
17	381,40	0,64
18	430,60	0,68
19	480,60	0,72
20	531,00	0,75

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DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 90 (Spesimen 3)

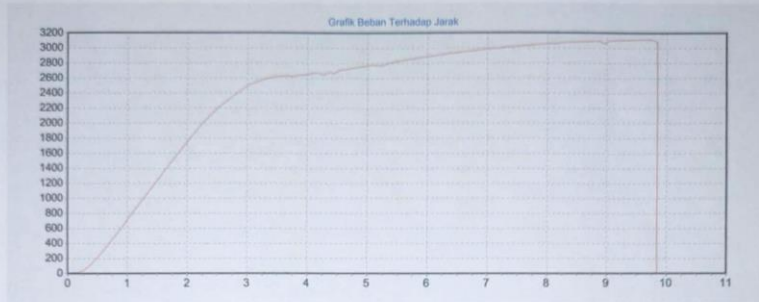
Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	209,84
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	91,84
7	Pertambahan Panjang ΔL (mm)	9,84
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2553,40
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3115,80
10	Beban Putus (<i>Fracture</i>) (Kg)	3080,60

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 90 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	7,60	0,05
2	9,80	0,10
3	13,20	0,15
4	24,20	0,20
5	40,00	0,26
6	65,80	0,31
7	101,20	0,36
8	140,40	0,41
9	181,80	0,46
10	225,80	0,51
11	271,80	0,56
12	319,80	0,61
13	369,20	0,66
14	420,20	0,71
15	471,40	0,77
16	524,20	0,82
17	576,60	0,87
18	629,60	0,92
19	683,00	0,97
20	736,80	1,02

PENGUJIAN & PERLAKUAN
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POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 110 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban <i>i</i> (mm)	12,5
2	Tebal Beban <i>t</i> (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	219,03
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	101,03
7	Pertambahan Panjang ΔL (mm)	19,03
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2700,80
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3322,40
10	Beban Putus (<i>Fracture</i>) (Kg)	2471,40

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 110 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

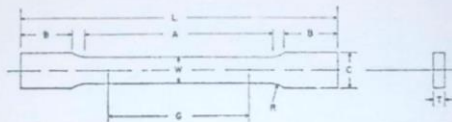
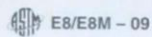
No.	Beban (Kg)	Jarak (mm)
1	8,40	0,06
2	9,80	0,11
3	10,80	0,17
4	20,60	0,22
5	38,40	0,28
6	63,00	0,33
7	93,40	0,39
8	127,20	0,44
9	165,00	0,50
10	205,40	0,55
11	249,00	0,61
12	294,80	0,66
13	343,80	0,72
14	394,20	0,77
15	445,60	0,83
16	499,00	0,88
17	553,60	0,94
18	608,60	0,99
19	664,00	1,05
20	720,20	1,10

PENGUJIAN & PERLAKUAN
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 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 110 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban <i>i</i> (mm)	12,5
2	Tebal Beban <i>t</i> (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	215,26
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	97,26
7	Pertambahan Panjang ΔL (mm)	15,26
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2513,20
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3084,20
10	Beban Putus (<i>Fracture</i>) (Kg)	2271,20

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 110 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	8,20	0,05
2	8,80	0,11
3	10,20	0,16
4	16,40	0,21
5	33,00	0,27
6	55,60	0,32
7	85,20	0,37
8	118,40	0,42
9	154,40	0,48
10	188,60	0,53
11	234,40	0,58
12	280,20	0,64
13	325,00	0,69
14	373,00	0,74
15	422,40	0,80
16	472,20	0,85
17	523,60	0,90
18	573,20	0,95
19	626,40	1,01
20	680,60	1,06

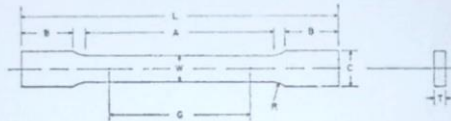
PENGUJIAN & PERALOKAN
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POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 110 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



Dimensions	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	80 [2]	29 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	217,38
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	99,38
7	Pertambahan Panjang ΔL (mm)	17,38
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2601,40
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3158,20
10	Beban Putus (<i>Fracture</i>) (Kg)	2352,60

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 110 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

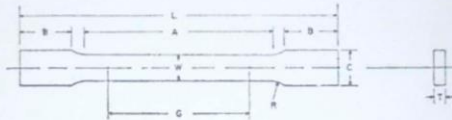
No.	Beban (Kg)	Jarak (mm)
1	5,40	0,06
2	16,00	0,11
3	39,60	0,17
4	66,80	0,22
5	101,80	0,28
6	141,20	0,33
7	183,20	0,39
8	226,80	0,45
9	273,00	0,50
10	320,60	0,56
11	370,20	0,61
12	420,80	0,67
13	472,20	0,72
14	523,80	0,78
15	576,40	0,84
16	629,60	0,89
17	682,80	0,95
18	736,40	1,00
19	790,20	1,06
20	843,80	1,11

PENGUJIAN & PERLAKUAN
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POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 130 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens	Sheet-Type	Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.006]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125 - 0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		Thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	87 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban <i>i</i> (mm)	12,5
2	Tebal Beban <i>t</i> (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	215,69
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	97,69
7	Pertambahan Panjang ΔL (mm)	15,69
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2571,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3170,40
10	Beban Putus (<i>Fracture</i>) (Kg)	2371,80

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 130 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm


No.	Beban (Kg)	Jarak (mm)
1	5,00	0,05
2	10,00	0,11
3	29,00	0,16
4	55,40	0,21
5	90,20	0,27
6	169,20	0,32
7	211,80	0,37
8	256,40	0,42
9	302,60	0,48
10	350,20	0,53
11	400,20	0,58
12	450,80	0,64
13	502,80	0,69
14	557,00	0,74
15	611,00	0,80
16	665,20	0,85
17	721,40	0,90
18	776,80	0,95
19	832,40	1,01
20	890,40	1,06

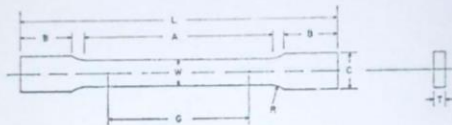
PENGUJIAN & PERALATAN
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 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 130 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material 12.5 [0.500]	6 [0.250]
R—Radius of fillet, min (Note 6)	25 [1]	200 [8]	100 [4]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	215,53
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	97,53
7	Pertambahan Panjang ΔL (mm)	15,53
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2594,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3140,40
10	Beban Putus (<i>Fracture</i>) (Kg)	2365,20

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 130 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

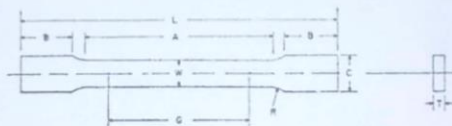
No.	Beban (Kg)	Jarak (mm)
1	6,20	0,05
2	14,00	0,11
3	20,20	0,16
4	37,20	0,21
5	61,20	0,27
6	96,00	0,32
7	135,20	0,37
8	176,20	0,42
9	219,80	0,48
10	264,20	0,53
11	310,80	0,58
12	359,40	0,64
13	409,80	0,69
14	461,80	0,74
15	515,00	0,80
16	569,00	0,85
17	623,80	0,90
18	675,40	0,95
19	731,80	1,01
20	788,60	1,06

PENGUJIAN & PERLAKUAN
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 LAB. BAHAN TEKNIK MESIN
 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1 Arus 130 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	8 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, 0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		Thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 8)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	216,54
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	98,54
7	Pertambahan Panjang ΔL (mm)	16,54
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2458,80
9	Beban Maksimum (<i>Ultimate Stength</i>) (Kg)	3056
10	Beban Putus (<i>Fracture</i>) (Kg)	1635,80

Grafik Uji Tarik



Uji Tarik (Diameter 1 Arus 130 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

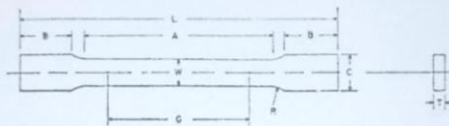
No.	Beban (Kg)	Jarak (mm)
1	5,20	0,05
2	10,40	0,11
3	27,00	0,16
4	40,60	0,21
5	54,80	0,27
6	77,40	0,32
7	108,00	0,37
8	142,40	0,42
9	179,20	0,48
10	217,00	0,53
11	260,80	0,58
12	306,20	0,64
13	352,60	0,69
14	400,80	0,74
15	450,00	0,80
16	499,60	0,85
17	557,60	0,90
18	609,20	0,95
19	659,00	1,01
20	716,40	1,06

PENGUJIAN & PERENCANAAN
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 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 90 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]		
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)	thickness of material		
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
E—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	210
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	92
7	Pertambahan Panjang ΔL (mm)	10
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2289,80
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3124,20
10	Beban Putus (<i>Fracture</i>) (Kg)	2819,60

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 90 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	6,40	0,05
2	7,80	0,10
3	11,60	0,15
4	26,20	0,20
5	48,40	0,26
6	79,40	0,31
7	118,00	0,36
8	159,60	0,41
9	202,40	0,46
10	247,60	0,51
11	294,20	0,56
12	342,20	0,61
13	391,40	0,66
14	441,80	0,71
15	494,20	0,77
16	547,60	0,82
17	600,40	0,87
18	653,80	0,92
19	706,00	0,97
20	756,80	1,02



DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 90 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	8.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	209,27
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	91,27
7	Pertambahan Panjang ΔL (mm)	9,27
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2716
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3398,20
10	Beban Putus (<i>Fracture</i>) (Kg)	3092,40

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 90 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

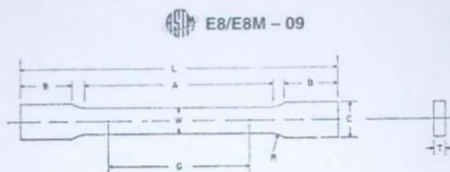
No.	Beban (Kg)	Jarak (mm)
1	7,20	0,05
2	8,40	0,09
3	16,20	0,14
4	30,20	0,18
5	46,60	0,23
6	74,80	0,27
7	105,40	0,32
8	137,80	0,36
9	172,40	0,41
10	209,00	0,45
11	247,40	0,50
12	287,80	0,54
13	318,00	0,59
14	367,80	0,63
15	407,60	0,68
16	454,00	0,72
17	506,60	0,77
18	554,20	0,81
19	599,20	0,86
20	652,00	0,90

PENGUJIAN & PERAKAAN
 B H A I
 LAB. BAHAN TEKNIK MESIN
 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 90 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [9.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)	thickness of material		
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	206
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	88
7	Pertambahan Panjang ΔL (mm)	6
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2540
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	2982,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2309

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 90 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

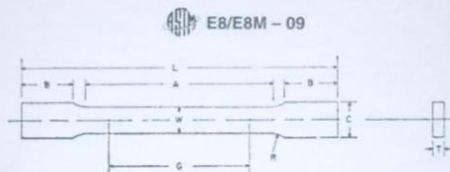
No.	Beban (Kg)	Jarak (mm)
1	8,40	0,04
2	10,00	0,08
3	14,80	0,11
4	27,20	0,15
5	46,60	0,19
6	73,60	0,23
7	106,80	0,27
8	142,20	0,30
9	179,60	0,34
10	213,20	0,38
11	256,80	0,42
12	301,40	0,46
13	352,80	0,49
14	396,00	0,53
15	447,60	0,57
16	493,60	0,61
17	548,60	0,65
18	588,80	0,68
19	647,40	0,72
20	692,00	0,76

PENGUJIAN & PERALATAN
 B H A I
 LAB. BAHAN TEKNIK MESIN
 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 110 (Spesimen 1)

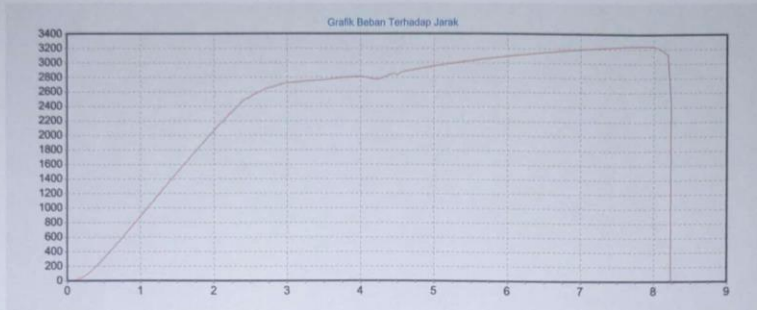
Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens	Sheet-Type	Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.008]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material 12.5 [0.500]	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 9)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 8)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	208,23
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	90,23
7	Pertambahan Panjang ΔL (mm)	8,23
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2421,20
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3240,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2459,60

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 110 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

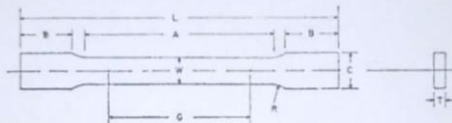
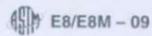
No.	Beban (Kg)	Jarak (mm)
1	4,00	0,05
2	4,80	0,09
3	16,80	0,14
4	37,80	0,18
5	61,40	0,23
6	90,40	0,27
7	129,60	0,32
8	170,80	0,36
9	213,60	0,41
10	259,20	0,45
11	306,20	0,50
12	356,00	0,54
13	405,60	0,59
14	455,00	0,63
15	506,80	0,68
16	557,40	0,72
17	611,20	0,77
18	666,60	0,81
19	719,20	0,86
20	770,00	0,90



DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 110 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens		Subsize Specimen
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 10)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	206,06
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	88,06
7	Pertambahan Panjang ΔL (mm)	6,06
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2441,40
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	2896
10	Beban Putus (<i>Fracture</i>) (Kg)	2317,40

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 110 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

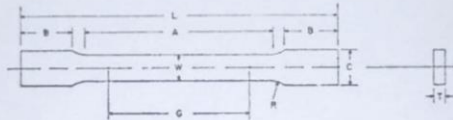
No.	Beban (Kg)	Jarak (mm)
1	4,80	0,04
2	17,40	0,09
3	30,60	0,13
4	51,20	0,17
5	79,80	0,22
6	109,40	0,26
7	150,40	0,30
8	190,80	0,34
9	237,20	0,39
10	283,20	0,43
11	331,60	0,47
12	383,00	0,52
13	433,60	0,56
14	483,40	0,60
15	536,60	0,65
16	590,20	0,69
17	645,00	0,73
18	700,20	0,77
19	753,20	0,82
20	804,00	0,86

PENGUJIAN & PERLAKUAN
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 LAB. BAHAN TEKNIK MESIN
 POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 110 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		Thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	30 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	208,65
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	90,65
7	Pertambahan Panjang ΔL (mm)	8,65
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2467,20
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3057,20
10	Beban Putus (<i>Fracture</i>) (Kg)	2660,60

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 110 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm


No.	Beban (Kg)	Jarak (mm)
1	2,80	0,05
2	4,00	0,09
3	5,20	0,14
4	10,60	0,18
5	31,80	0,23
6	62,20	0,28
7	98,80	0,32
8	138,20	0,37
9	180,80	0,41
10	224,20	0,46
11	271,40	0,51
12	319,00	0,55
13	367,20	0,60
14	417,60	0,64
15	467,20	0,69
16	518,80	0,74
17	574,60	0,78
18	629,00	0,83
19	676,60	0,87
20	736,80	0,92

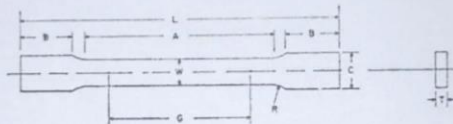
PENGUJIAN & PERLAKUAN
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DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 130 (Spesimen 1)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	216,92
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	98,92
7	Pertambahan Panjang ΔL (mm)	16,92
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2433,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3318,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2442,80

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 130 Spesimen 1)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm


No.	Beban (Kg)	Jarak (mm)
1	7,60	0,05
2	9,40	0,09
3	10,60	0,14
4	12,60	0,19
5	24,00	0,24
6	43,20	0,28
7	64,40	0,33
8	97,00	0,38
9	135,00	0,42
10	175,20	0,47
11	216,60	0,52
12	259,40	0,56
13	302,00	0,61
14	342,60	0,66
15	392,40	0,71
16	437,40	0,75
17	481,00	0,80
18	530,60	0,85
19	578,60	0,89
20	624,20	0,94

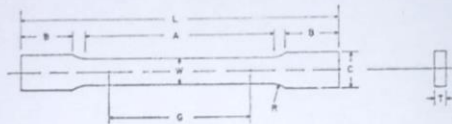
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POLITEKNIK NEGERI MALANG

DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 130 (Spesimen 2)

Dimensi Ukuran Spesimen ASTM-E8

 E8/E8M - 09



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban <i>i</i> (mm)	12,5
2	Tebal Beban <i>t</i> (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	215,26
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	97,26
7	Pertambahan Panjang ΔL (mm)	15,26
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2653,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3261,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2484,60

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 130 Spesimen 2)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	7,80	0,05
2	8,80	0,11
3	11,00	0,16
4	20,80	0,21
5	37,00	0,27
6	60,20	0,32
7	93,00	0,37
8	136,00	0,42
9	181,00	0,48
10	228,80	0,53
11	276,00	0,58
12	324,60	0,64
13	376,20	0,69
14	428,20	0,74
15	479,00	0,80
16	529,80	0,85
17	581,80	0,90
18	637,00	0,95
19	696,20	1,01
20	750,60	1,06

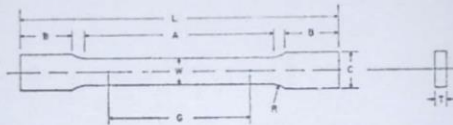
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DATA HASIL PENGUJIAN TARIK

Nama Peserta : Irzad Nurdaffa (1.42.1900036)
 M Wakhid Zainur Anwar (1.42.1900038)
 Material : Baja ST 37
 Tanggal Pengujian : 15 Mei 2023
 Perlakuan : Diameter 1,2 Arus 130 (Spesimen 3)

Dimensi Ukuran Spesimen ASTM-E8

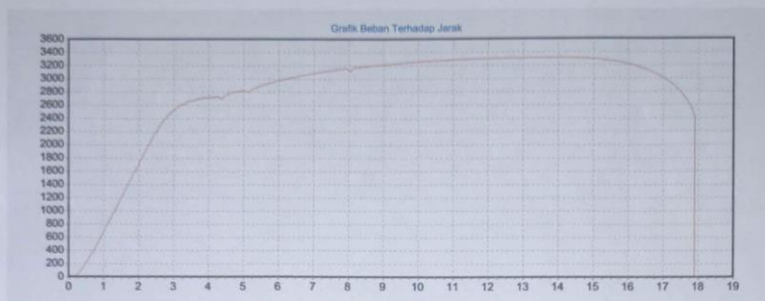
 E8/E8M - 09



	Dimensions		
	Standard Specimens	Subsize Specimen	
	Plate-Type, 40 mm [1.500 in.] Wide	Sheet-Type, 12.5 mm [0.500 in.] Wide	6 mm [0.250 in.] Wide
	mm [in.]	mm [in.]	mm [in.]
G—Gage length (Note 1 and Note 2)	200.0 ± 0.2 [8.00 ± 0.01]	50.0 ± 0.1 [2.000 ± 0.005]	25.0 ± 0.1 [1.000 ± 0.003]
W—Width (Note 3 and Note 4)	40.0 ± 2.0 [1.500 ± 0.125, -0.250]	12.5 ± 0.2 [0.500 ± 0.010]	6.0 ± 0.1 [0.250 ± 0.005]
T—Thickness (Note 5)		thickness of material	
R—Radius of fillet, min (Note 6)	25 [1]	12.5 [0.500]	6 [0.250]
L—Overall length, min (Note 2, Note 7, and Note 8)	450 [18]	200 [8]	100 [4]
A—Length of reduced section, min	225 [9]	57 [2.25]	32 [1.25]
B—Length of grip section, min (Note 9)	75 [3]	50 [2]	30 [1.25]
C—Width of grip section, approximate (Note 4 and Note 9)	50 [2]	20 [0.750]	10 [0.375]

No.	Spesimen	Keterangan
1	Lebar Beban i (mm)	12,5
2	Tebal Beban t (mm)	5
3	Panjang Spesimen Awal (mm)	200
4	Panjang Spesimen Akhir (mm)	217,89
5	Panjang Awal L_0 (mm)	82
6	Panjang Akhir L_f (mm)	99,89
7	Pertambahan Panjang ΔL (mm)	17,89
8	Beban Luluh (<i>Yield Point</i>) (Kg)	2612,60
9	Beban Maksimum (<i>Ultimate Stenght</i>) (Kg)	3315,60
10	Beban Putus (<i>Fracture</i>) (Kg)	2427,20

Grafik Uji Tarik



Uji Tarik (Diameter 1,2 Arus 130 Spesimen 3)

Jenis Beban : Plat

Lebar Beban : 12,5 mm

Tebal Beban : 5 mm

No.	Beban (Kg)	Jarak (mm)
1	7,40	0,05
2	8,60	0,10
3	9,40	0,16
4	21,20	0,21
5	39,00	0,26
6	70,60	0,31
7	107,80	0,36
8	147,40	0,42
9	189,60	0,47
10	232,60	0,52
11	277,80	0,57
12	322,80	0,62
13	371,20	0,68
14	420,20	0,73
15	469,60	0,78
16	521,00	0,83
17	573,80	0,88
18	626,60	0,94
19	677,40	0,99
20	726,40	1,04

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HASIL TURNITIN

ANALISA PENGELASAN MIG PADA BAJA KOMERSIAL DENGAN VARIASI DIAMETER WIRE DAN ARUS TERHADAP CACAT PERMUKAAN PENGELASAN DAN KEKUATAN TARIK

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