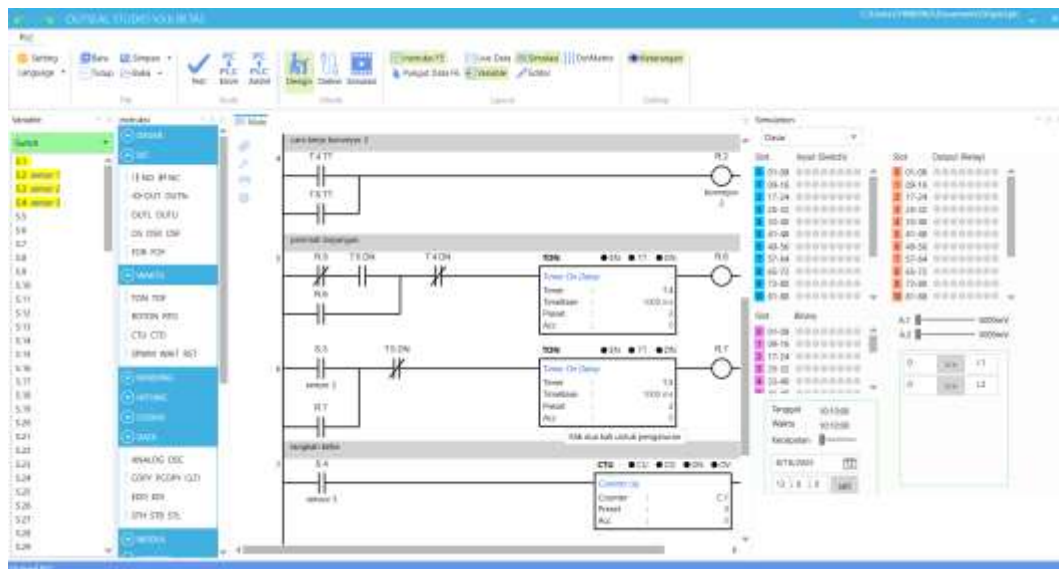
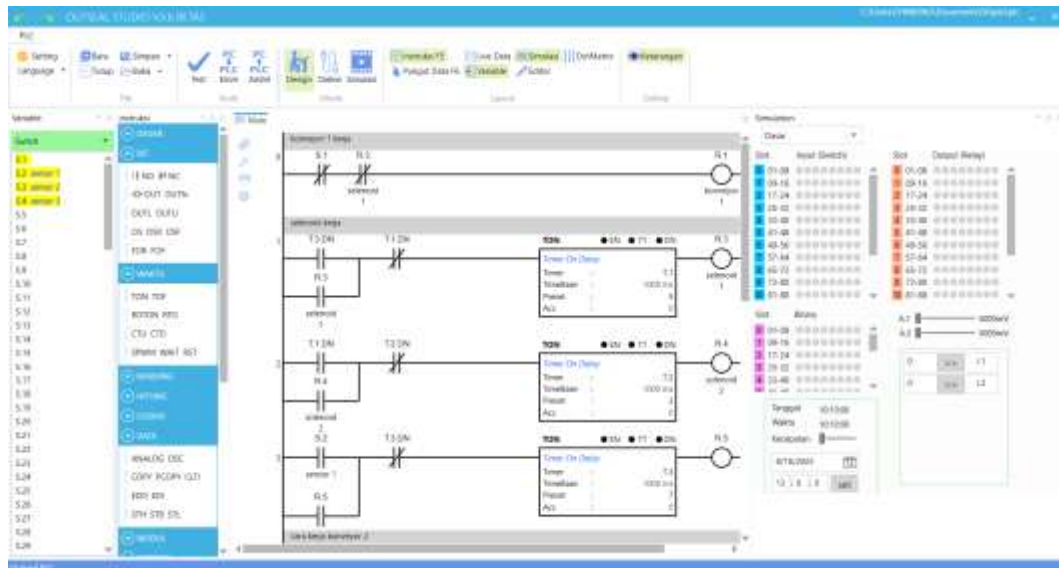


LAMPIRAN

Lampiran 1 program ladder diagram



Lampiran 2 dokumentasi pembuatan alat



Lampiran 3 form pembimbing

Lampiran 3
Form Rincian Bimbingan TA

FORM BIMBINGAN
TUGAS AKHIR

NAMA Chusna Marigh

NIM 25010010

JUDUL TA Implementasi PLC otomatis pada
Dongkrakan dan penarikan Teror Air
penarikan pengematan

Pembimbing II

No	Tgl Bimbingan	Isi Bimbingan	Tanda Tangan
	20/3 2025	perluant perges-lahan sementara untuk masalah tipe dan manfaat	
	15/3 2025	perbaikan skema form mengikuti bab 3	
	18/4 2025	revisi dasar dan flowchart	
	5/5 2025	perbaikan pengantar, perbaikan bab 1-3	
	8/5 2025	Act. siap kelayak	

48

Dipindai dengan CamScanner

**FORM BIMBINGAN
TUGAS AKHIR**

NAMA : CHUSNUL MARIAH
 NIM : 22010010
 JUDUL LAPORAN : implementasi plc outdoor pada petakuban
 dan pengemasan telur /fin

Pembimbing 2

No	Hari / tanggal	Uraian	Tanda tangan
	20 Juli 2023	- Revisi sistem kerja - ladder diagram + - lampir pengujian	
	9 Agustus 23	Acc Laporan T/A	

Lampiran 4 surat kesediaan pembimbing

SURAT KESEDIAAN MEMBIMBING TUGAS AKHIR

Yang bertanda tangan di bawah ini :

Nama : Qirom, S.Pd, M.T
 NIPY : 09.015.281
 Jabatan Struktural : -
 Jabatan Fungsional : Lektor

Dengan ini menyatakan bersedia menjadi Pembimbing 1 pada Tugas Akhir Mahasiswa berikut :

Nama : Chusnul Mariah
 NIM : 22010010
 Program Studi : DIII Teknik Elektronika
 Judul Laporan Tugas : **IMPLEMENTASI PLC OUTSEAL PADA PELABELAN
 DAN PENGEMASAN TELUR ASIN**

Demikian Pernyataan ini dibuat agar dilaksanakan sebagaimana mestinya.

Tegal, 20 Maret 2025

Mengetahui,
 Ka. Prodi DIII Teknik Elektronika


Rony Darpono, M.T
 NIPY. 09.015.282

Calon Dosen Pembimbing 1,


Qirom, S.Pd, M.T
 NIPY. 09.015.281

SURAT KESEDIAAN MEMBIMBING TUGAS AKHIR

Yang bertanda tangan di bawah ini :

Nama : Dany Sucipto, M.T
NIPY : 09.015.278
Jabatan Fungsional : Dosen Tetap Prodi DIII Teknik Elektronika

Dengan ini menyatakan bersedia menjadi Pembimbing 2 pada Tugas Akhir Mahasiswa berikut :

Nama : Chusanul Mariah
NIM : 22010010
Program Studi : DIII Teknik Elektronika
Judul Laporan Tugas : **IMPLEMENTASI PLC OUTSEAL PADA PELABELAN
DAN PENGEMASAN TELUR ASIN**

Demikian Pernyataan ini dibuat agar dilaksanakan sebagaimana mestinya.

Tegal, 20 Maret 2025

Mengetahui,

Ka. Prodi DIII Teknik
Elektronika



Ronv Darpono, M.T
NIPY. 09.015.282

Calon Dosen Pembimbing 2,



Dany Sucipto, M.T
NIPY. 09.015.278

Lampiran 5 penilaian bimbingan

PENILAIAN BIMBINGAN TUGAS AKHIR INDIVIDU

Judul : IMPLEMENTASI PLC OUTSEAL PADA PELABELAN DAN PENGEMASAN TELUR ASIN
 Nama : Chusnul Mariah
 NIM : 22010010
 Kelas : 6A / D3 Teknik Elektronika

I. Nilai Bimbingan Tugas Akhir (Pembimbing I)

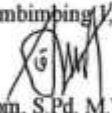
No	Unsur Yang Dinilai	Nilai
1	Kedisiplinan dalam bimbingan	80
2	Kreativitas pemecahan dalam bimbingan	80
3	Penguasaan materi tugas akhir	80
4	Kelengkapan dan referensi tugas akhir	80
Total Nilai = (Jumlah Nilai / 4)		80

II. Nilai Bimbingan Tugas Akhir (Pembimbing II)

No	Unsur Yang Dinilai	Nilai
1	Kedisiplinan dalam bimbingan	85
2	Kreativitas pemecahan dalam bimbingan	85
3	Penguasaan materi tugas akhir	85
4	Kelengkapan dan referensi tugas akhir	85
Total Nilai = (Jumlah Nilai / 4)		85

$$\begin{aligned}\text{Nilai Bimbingan} &= \frac{\text{TotalNilaiPembimbing1} + \text{TotalNilaiPembimbing2}}{2} \\ &= 82,5\end{aligned}$$

Pembimbing 1,


 Qirom, S.Pd, M.T
 NIPY. 09.015.281

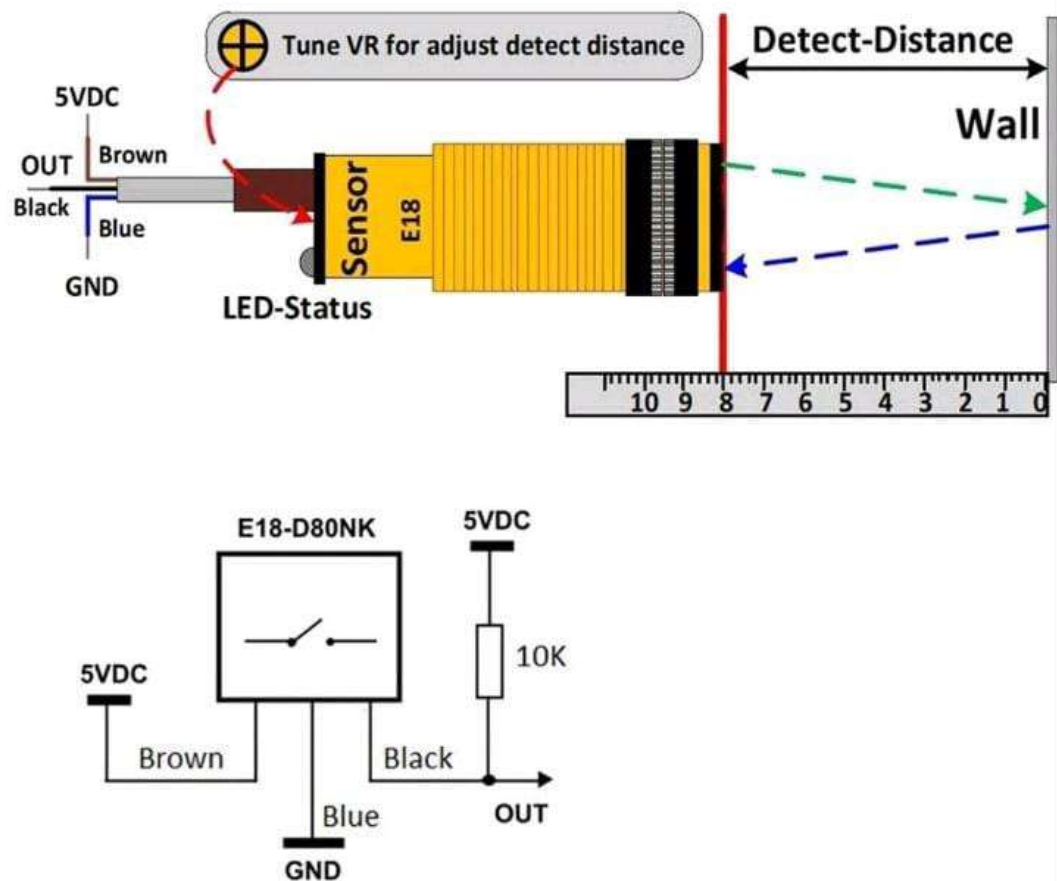
Tegal, 8 Agustus 2025
 Mengetahui,

Pembimbing 2,


 Dany Sucipto, M.T
 NIPY. 09.015.278

Lampiran 6 Datasheet komponen

1). Datasheet Sensor Proximity



Parameter	Npn (Sinking)	Pnp (Sourcing)
Tipe Output	Output ke ground (0V)	Output ke +V (positif)
Arah Arus	Beban → Sensor → Ground	Sensor → Beban → Ground
Kondisi Aktif	Output = LOW (0V) saat objek terdeteksi	Output = HIGH (+V) saat objek terdeteksi

3). Datasheet solenoid valve

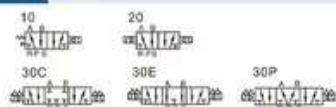
Solenoid valve(5/2 way,5/3 way)

AIRTAC

4V400 Series



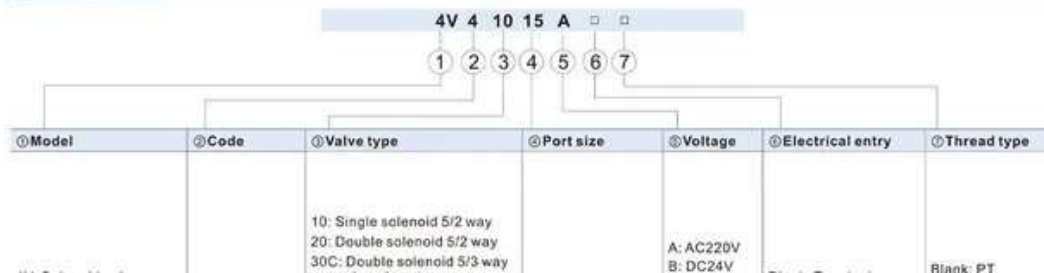
Symbol



Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

Ordering code



Specification

Model	4V410-15	4V420-15	4V430C-15	4V430E-15	4V430P-15
Fluid	Air(to be filtered by 40μm filter element)				
Acting	Internal pilot or external pilot				
Port size [Note1]	In/Out/Exhaust=1/2"				
Orifice size(Cv)	4V410-15,4V420-15:48.0mm ³ (Cv=2.82)				
[Note4]	4V430C-15:40.0mm ³ (Cv=2.35)				
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	0.15~0.8MPa(21~114psi)				
Proof pressure	1.2MPa(175psi)				
Temperature	-20~70°C				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	590	720		770	

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency is in the no-load state.

[Note4] Equivalent orifice S and Cv are all calculated from the flow rate data.

Coil specification

Item	Specification				
Standard voltage	AC220V	AC110V	AC24V	DC24V	DC12V
Scope of voltage	AC: ±15% DC: ±10%				
Power consumption	4.5VA	4.5VA	5.0VA	3.0W	2.5W
Protection	IP65(DIN40050)				
Temperature classification	B Class				
Electrical entry	Terminal, Grommet				
Activating time	0.05 sec and below				

4) Datasheet Relay 4 channel 5v

Rajguru Electronics

www.rajguruelectronics.com

Relay Board 4 Channel 5v



Description:

Relays are the Hulks (tm -DC Comics) of the electronics world. Often dumb and simple, but DANG they can control lots of power. These are ideal in situations where you need to comfortably control AC or DC power levels. Transistors and FETs can do the same job, but often not with the convenience and reliability of a good old relay.

Use this 4 Channel Relay Module board to interface any Microcontroller with Electrical Appliances/Loads. Can also be used in driving high power motors. 4-channel relay output modules, relay output contacts 250A 10A. Input IN1, IN2, IN3, IN4, the signal line LOW effective. VCC, GND power input, can relay a separate power supply relay power input of JD-VCC.

Product Summary:

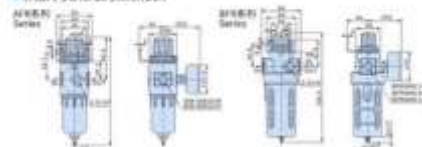
- Module can be controlled directly by Microcontroller (Raspberry Pi, Arduino, 8051, AVR, PIC, DSP, ARM, ARM, MSP430, TTL logic)
- Easy to install and fix
- Optically Isolated relays to protect your microcontroller from damage if the equipment being controlled fails
- Four screw holes, hole diameter 3.1mm
- Relay status indicator light, release status LED is off
- Relay Maximum output: DC 30V/10A, AC 250V/10A
- Size: 75mm (l) x 55mm (b) x 19.3mm (h)
- Weight: 58 gm
- PCB Color: Blue

6). *Datasheet* air service unit

* 规格 Specification

系列名称	AFR2000	AFR3000	AFR4000	AFR5000
额定流量 (Operating Flow)				
额定压力 (Nominal Pressure)	10MPa	10MPa	10MPa	10MPa
最大工作压力 (Max. Working Pressure)	10MPa	10MPa	10MPa	10MPa
最大流量 (Max. Flow Rate)	1.0MPa	1.0MPa	1.0MPa	1.0MPa
额定流量 (Operating Flow)	1.0MPa	1.0MPa	1.0MPa	1.0MPa
额定流量 (Operating Flow)	1.0MPa	1.0MPa	1.0MPa	1.0MPa
额定流量 (Operating Flow)	1.0MPa	1.0MPa	1.0MPa	1.0MPa
额定流量 (Operating Flow)	1.0MPa	1.0MPa	1.0MPa	1.0MPa
额定流量 (Operating Flow)	1.0MPa	1.0MPa	1.0MPa	1.0MPa
额定流量 (Operating Flow)	1.0MPa	1.0MPa	1.0MPa	1.0MPa

* 外形尺寸 Overall Dimension



Ordering Code AL Series Lubricator

AL	30	00 - 03
AL Series Lubricator	10:1000 Body Size 20:2000 Body Size 30:3000 Body Size 40:4000 Body Size 50:5000 Body Size	M5:M5 01:1/8" 02:1/4" 03:3/8" 04:1/2" 06:3/4" 10:1"



Specifications

Guaranteed pressure resistance	1.5MPa
Max. working pressure	1.0MPa
Working temperature	5~60°C
Recommended oil	Turbine No1 Oil ISOVG32
Bowl material	Polycarbonate
Bowl guard	AL1000~2000 (None) AL3000~5000 (Available)
Valve type	With overflow

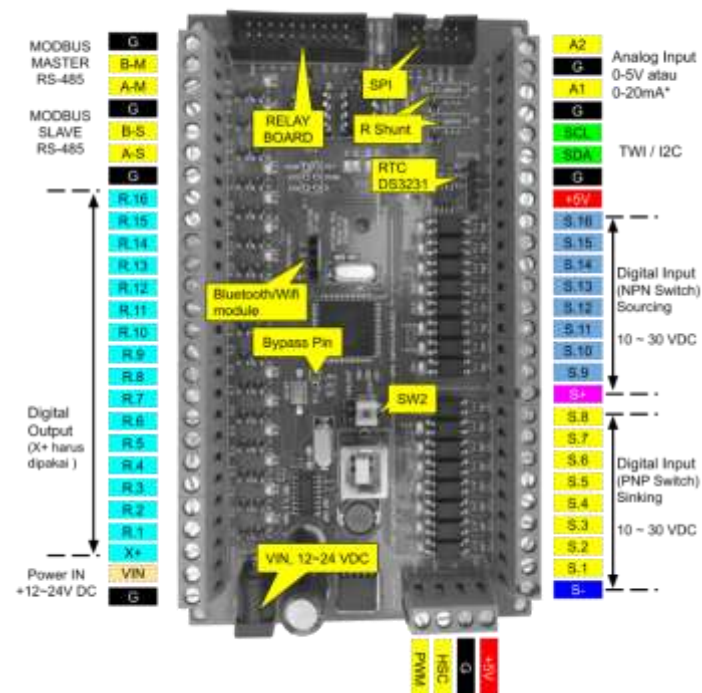


7). Datasheet PLC Outseal Mega V3 Standar

Mega V.3 Standar	
Outseal PLC mega V.3 Standar mempunyai spesifikasi:	
Digital Input:	
• Jumlah, 16	
• Jenis, Sinking / Sourcing	
• International Standard IEC 61131-2	
• Filter, Analog + Digital by software	
• Voltage, 10-24V DC	
Digital Output:	
• Jumlah, 16	
• Jenis, NPN open collector (Relay Driver)	
• Max Current, 100mA / Channel	
• Short Protection, Current limiter	
• Spike Protection, Diode	
Filter:	
• Analog Input, 2 jalur (0-5V / 0-20mA)	
• High-Speed Counter (HSC), ~30KHz	
• Pulse Width Modulation (PWM), ~10KHz	
• Nonvolatile memory EEPROM, FRAM	
• Komunikasi:	
• MODBUS RTU protocol	
• Onboard RS485, 2 jalur	
• Bluetooth, external module HC05/HC06	
• WiFi, external module DT06	
• I2C	
• SPI	

<http://www.outseal.com>

OUTSEAL PLC MEGA V.3 STANDAR PN



8). Datasheet silinder



Table for standard stroke

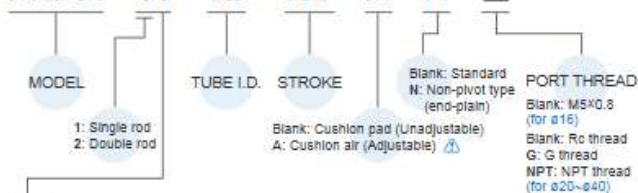
	Tube I.D.	Stroke (mm)
Single acting	ø16	15,25,50,75,100
	ø20, 25, 32	15,25,50,75,100,125,150
Double acting	ø16	15,25,50,75,100,125,150,200,250,300,350,400,450,500
	ø20, 25, 32, 40	15,25,50,75,100,125,150,200,250,300,350,400,450,500

• Available with double action type cylinder with stroke more than 500 mm. Sub-piston increases the total length of cylinder by 10 mm and provides further stability.

• Please consult us if stroke out of specification.

Order example

MCMA-11-32-100-A-N-□



STYLE

Code	Symbol	Description
1 1		Double acting / Male thread
1 3		Single acting / Normally extended male thread
1 5		Single acting / Normally returned male thread
2 1		Double rod / Male thread
2 3		Single acting / Double rod male thread
2 7		Double rod / Adjustable male thread Please mark "adjustable distance(mm)" at order list.

* Order example for special specification, refer to page 0-7.

Features

■ Non lubrication

- Special housing and bushing enables self lubrication of piston rod.

■ High quality long service life

- Hard anodised stainless steel cylinder tubes offer a high resistance to corrosion and low internal friction.
- Cylinder mountings, available with a comprehensive range of accessories for rigid or flexible mounting.
- Operation, with the exception of MCMA-11, single and doubling type available MCMA-13 / 15.

■ Magnetic as standard

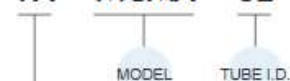
Specification

Model	MCMA				
Tube I.D.	16	20	25	32	40
Port size	M5×0.8 Rc1/8				
Medium	Air				
Max. operating pressure	0.7 MPa				
Min. operating pressure	Double: 0.06 MPa ; Single: 0.15 MPa				
Proof pressure	1 MPa				
Lubricator	Not required				
Ambient temperature	-5~+60°C (No freezing)				
Available speed range	50~750 mm/sec				
Max. allowable kinetic energy (J)	Cushion pad	0.16	0.27	0.4	0.65
	Cushion air	0.32	0.54	0.78	1.27
Sensor switch	RCM (Please refer to page 8-15)				
Sensor switch (band)	BM16	BM20	BM25	BM32	BM40

* For precautions, please refer to page 3-2.

Mounting accessories

FA-MCMA-32



MOUNTING TYPE

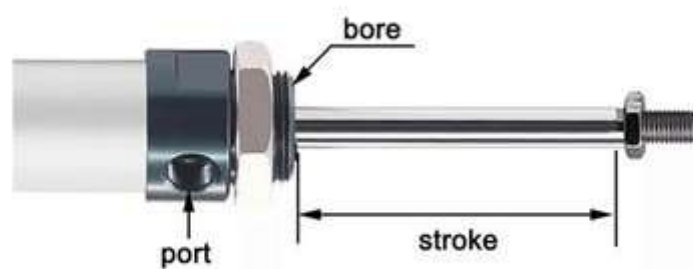
	LB
	FA
	FB
	SDB
	Y
	I
	YS (Y+Floating+PS)

Caution

For (A) Cushion air (Adjustable)

1. To adjust a cushion needle, please slowly turn the needle valve from the fully closed status to the required status whose turns need to be within 2.5 circles.
2. If the needle valve loosen excessively, the buffer can't take effect and the lifetime of cylinder can shorten.





Model	Bore(mm)		Stroke(mm)		Port Size thread	Pressure		thrust force		
	mm	in	mm	in		Mpa	Psi	kgf	lbf	N
16X25	16	0.63	25	1	M5	0.1-0.8	14.5-116	8	17	78
16X50	16	0.63	50	2	M5	0.1-0.8	14.5-116	8	17	78
16X100	16	0.63	100	4	M5	0.1-0.8	14.5-116	8	17	78
25X25	25	1.00	25	1	G1/8"	0.1-0.8	14.5-116	24	52	235
25X50	25	1.00	50	2	G1/8"	0.1-0.8	14.5-116	24	52	235
25X100	25	1.00	100	4	G1/8"	0.1-0.8	14.5-116	24	52	235
32X25	32	1.26	25	1	G1/8"	0.1-0.8	14.5-116	32	70	313
32X50	32	1.26	50	2	G1/8"	0.1-0.8	14.5-116	32	70	313
32X100	32	1.26	100	4	G1/8"	0.1-0.8	14.5-116	32	70	313

Lampiran 7 formulir revisi

FORMULIR REVISI

UJIAN TUGAS AKHIR

NAMA : CHUSNUL MARIAH

NIM : 22010010

JUDUL : IMPLEMENTASI PLC OUTSEAL PADA PENYETEMPELAN DAN
PENGEMASAN TELUR ASIN

KETUA PENGUJI

No	Hari/Tanggal	Uraian	Tanda Tangan
1.	Kamis, 4 / 09 / 2025	- Revisi kesimpulan (data hasil analisis)	
2.	Jumat, 5 / 09 / 2025		

Ketua Penguji


 Rony Darpono, M.T

FORMULIR REVISI

UJIAN TUGAS AKHIR

NAMA : CHUSNUL MARIAH

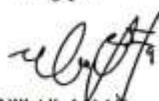
NIM : 22010010

JUDUL : IMPLEMENTASI PLC OUTSEAL PADA PENNYTEMPELAN DAN
PENGEMASAN TELUR ASIN

PENGUJI I

No	Hari/Tanggal	Uraian	Tanda Tangan
1	3 September 2025	Rent Laporan	
2.	4 September 2025	Ace Laporan & proyek	

Penguji I


 Ulii Albab, M.T.

FORMULIR REVISI

UJIAN TUGAS AKHIR

NAMA : CHUSNUL MARIAH

NIM : 22010010

JUDUL : IMPLEMENTASI PLC OUTSEAL PADA PENYETEMPELAN DAN PENGEMASAN TELUR ASIN

PENGUJI 2

No	Hari/Tanggal	Uraian	Tanda Tangan
1.	Rabu 29/8	Revisi minor	
2.	Jumat 29/8	ACC	

Penguji 2



Ratri Wikaningtyas, M.Pd

Lampiran 8 *originaly report by turnitin*

