Easyzon D 100/250 – 200/500 g/h

On-site Chlorine Dioxide Generation

Installation, Operation & Maintenance Instructions
EN

(Original Instructions) V1.0 02/20

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Contents

1 Notes for the Reader

1.1 Introduction

This operating manual provides significant assistance in the successful and smooth running of the Easyzon D systems, also referred to, in short, as 'system' in the following instructional text.

The operating manual for the Easyzon must always be available where the system is located and must be read and used by every person who is assigned to working on the system. This includes amongst other things:

- The installation
- The servicing and repair work
- The maintenance (maintenance, care, repair)
- The transport

1.2 Explanation of the Signal Words

Different signal words in combination with warning signs are used in this operating manual. Signal words illustrate the gravity of possible injuries if the risk is ignored.

Signal Word	Meaning
DANGER!	Refers to imminent danger. Ignoring this sign may lead to death or the most serious injuries.
WARNING!	Refers to a potentially hazardous situation. Failure to follow this instruction may lead to death or severe injuries.
CAUTION!	Refers to a potentially hazardous situation. Failure to follow this instruction may lead to minor injury or damage to property.
Note	Refers to a danger which, if ignored, may lead to risk to the machine and its function.

1.3 Explanation of the Warning Signs

Symbol	Meaning
	Potential danger zone
	Danger of electric shock
	Danger of explosion
	Danger to health - irritant
	Danger of damage to machine or functional influences

1.4 Identification of Warnings

Warnings are intended to help personnel recognise risks and avoid negative consequences.

Warnings are displayed in boxes throughout the manual as shown below:

Symbol	**SIGNAL WORD**
Description of danger/hazard/risk Consequences if ignored • Bullet points signal a safety precaution to be taken to eliminate the danger	

1.5 Instruction for Action Identification

This is how pre-conditions for action are identified:

✓ Pre-condition for action which must be met before acting.

This is how instructions for action are identified:

- Separate step with no follow-up action.

1. First step in a series of steps.
2. Second step in a series of steps.

✓ ***Action completed, aim achieved***

1.6 References to Intellectual Property Rights

This operating manual must be treated confidentially. Only authorised persons should have access to it. It may only be given to third parties with the written consent of Lutz Jesco GB Ltd.

All documents are protected in the sense of the copyright law. It is forbidden to forward on and copy the documents, even in part, as well as to use and communicate their contents, insofar as this is not expressly conceded in writing. Violations are punishable and incur an obligatory payment of damages. Lutz Jesco GB Ltd reserves all the rights for the practice of industrial property rights.

1.7 Details for the Operator

The operating manual is a significant component of the Easyzon D system. The operator must ensure that the service personnel learn these guidelines.

The operating manual is to be supplemented by the operator regarding the operating instructions; national regulations for Health and Safety at Work and Environmental Protection, including information on the responsibilities of supervision and the observance of operational specifics, e.g. concerning labour organisations, operational sequences and appointed personnel.

Besides the operating manual and the obligatory regulations for Health and Safety at Work applicable in the country of use, as well as in the place of use, the recognised specialist technical regulations for safe and professional work must also be observed.

The operator of the Easyzon D system may not make any changes, attach fittings or make alterations to the construction of the system that may impair security, without the written consent of Lutz Jesco GB Ltd. This also applies to the installation and setup of safety devices.

Any replacement parts to be used have to correspond to the technical requirements specified by Lutz Jesco GB Ltd. This is always guaranteed in the case of original spare parts. Only appoint trained or instructed personnel. Clearly specify the responsibilities of the personnel for operating, servicing and repairing the system.

1.8 Instruction & Training Course Assistance

As a contractor/operator you are obligated to inform and/or instruct the operating personnel about existing provisions of law and accident prevention regulations, as well as existing safety regulations at the plant. In doing so, the different technical qualifications must be considered. The operating personnel must have understood the training and it must be ensured that the training is adhered to.

Only in this way can you ensure that your personnel work in a safety conscious and risk aware manner. This should be controlled on a regular basis. As the contractor/operator you should therefore obtain confirmation of each of the employee's attendance in writing.

On the following pages, you will find examples of the training course topics, as well as a main form to copy for the confirmation of attendance.

If the operating personnel still require further training after the system has been delivered to the operator, please contact Lutz Jesco GB Ltd.

1.9 Example of Training Course Topics

For safety:

- COSHH
- Accident prevention regulations
- General safety precautions
- Action to be taken in an emergency
- Safety precautions for operating
- Safety devices
- Definition of symbols and signs

For device operation:

- How to operate the controls
- Elimination of operational disturbances
- Interpretation of fault indications

For maintenance and service instructions:

- Inspection/testing of the system
- Cleaning the system and exchange of replacement parts

1.9.1 Confirmation of the Training Instruction

Topic of the training instruction: _____

Date: _____

Training instructor: _____

Training instructor's signature: _____

No.	Surname	First Name	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

2 Safety

The following warnings are intended to help you to eliminate the dangers that can arise while handling the device. Risk prevention measures always apply regardless of any specific action.

Safety instructions warning against risks arising from specific activities or situations can be found in the respective sub-chapters.

DANGER!

Mortal danger from electric shock!

Live parts can inflict fatal injuries.

- Disconnect from the electricity supply before working on any equipment.
- Secure all devices to prevent it from being switched on again.

DANGER!

Risk of explosion due to ClO_2 gas!

The two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$) almost instantly form large quantities of toxic ClO_2 gas, which can also decompose in an explosive manner.

- NEVER mix the two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$), except within the Easyzon D process.

WARNING!

Risk of contact with toxic ClO_2 solution!

If system leaks occur, toxic ClO_2 solution can escape.

- Under no circumstance must the dosing pump maximum permissible pressure be exceeded.
- Entire installation must remain leak free in operation.

CAUTION!

Risk of equipment starting automatically!

Remember the unit and the dosing pump(s) are two separate pieces of equipment with respect to the chlorine dioxide treatment/process on site.

- The Easyzon D system operates automatically when the batch tank is running low.
- The dosing pump(s) will automatically respond to the treatment/process conditions on site, e.g. water meter signal input and/or analyser signal input.

CAUTION!

Damage to the system due to incorrect maintenance!

Irreversible damage to equipment and treatment process.

- Adhere to planned maintenance frequency to system equipment.

2.1 Hazards Due to Non-compliance

Failure to follow the safety instructions leads to:

- Failure of important functions of the device and of the corresponding system.
- Failure of required maintenance and repair methods.
- Danger to personnel.
- Danger to the environment .

2.2 Working in a Safety-conscious Manner

Safety rules and regulations not specified in this manual, which must be adhered to:

- Accident prevention regulations
- Safety and operating provisions
- Environmental protection provisions
- Applicable standards and legislation

2.3 Personal Protective Equipment

Based on the dosing medium and precursor chemicals involved in the Easyzon D process, appropriate protective equipment must be used to minimise risk of injury to personnel.

Protective equipment recommended when performing tasks described in the manual:

- Start Up and Commissioning (see section 7)
- Working on pressurised dosing devices
- Shutdown (see section 9.3)
- Maintenance (see section 10)
- Disposal (see section 9.3.5)

2.3.1 Recommended Protective Equipment

Safety Sign	Protection Type	Item Description
	General protection	Chemical safety overalls/PVC apron
	Hand protection	PVC/Nitrile disposable gloves
	Foot protection	PVC safety boots
	Eye protection	Safety goggles

2.4 Personnel Qualification

The device must not be operated by any persons under the age of 18. Any personnel who work on the device require certain special knowledge and skills, to ensure safe and correct operation.

Personnel requirements:

- Attendance of all the training courses offered by the owner
- Suitability for the respective activity
- Sufficient qualification for the respective activity
- Training in handling of the device
- Knowledge of safety equipment and the way this equipment functions
- Knowledge of these operating instructions, particularly of safety instructions and sections relevant for the activity
- Knowledge of fundamental regulations regarding health and safety and accident prevention

Minimum qualifications for all personnel:

- Training as specialists for unsupervised work on the device
- Sufficient training for working on the device under the supervision and guidance of a trained specialist

These operating instructions differentiate between these user groups:

2.4.1 Specialist Staff

Specialist staff are able, thanks to their professional training, knowledge and experience as well as knowledge of the respective provisions, to do the job allocated to them and recognise and/or eliminate any possible dangers by themselves.

2.4.2 Trained Electricians

Due to their professional training, knowledge and experience as well as knowledge of specific standards and provisions, trained electricians are able to do the electrical work assigned to them and to recognise and avoid any potential dangers by themselves.

They are specially trained for their specific working environment and are familiar with relevant standards and provisions.

They must comply with the legally binding regulations on accident prevention.

2.4.3 Trained Persons

Trained persons have received training from the operator about the tasks they are to perform and about the dangers stemming from improper behaviour.

Trained persons have attended all trainings offered by the operator.

2.4.4 Personnel Tasks

In the table below, you can check what personnel qualifications are the pre-condition for the respective tasks. Only people with appropriate qualifications are allowed to perform these tasks!

Personnel Group	Qualification Group
Specialist Staff Technician	• Installation • Hydraulic installations • Commissioning • Taking out of operation • Fault rectification • Maintenance • Repairs • Disposal
Trained Electricians	• Electrical installation • Rectifying electrical faults • Electrical repairs
Trained Persons	• Control • Storage • Transportation

3 Technical Data

3.1 System ID

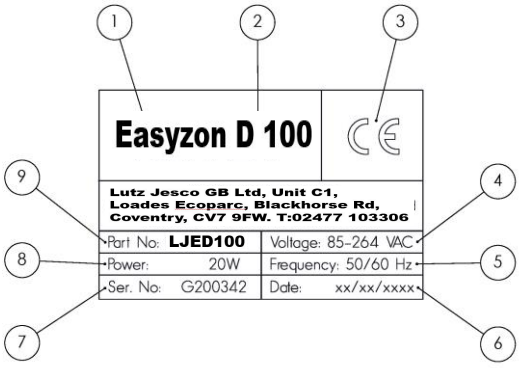
3.1.1 Match-code System Build Information

Generator capacity					
	LJED100g/h chlorine dioxide generator at 2000mg/l ClO_2 solution				
	LJED200g/h chlorine dioxide generator at 2000mg/l ClO_2 solution				
	LJED250g/h chlorine dioxide generator at 2000mg/l ClO_2 solution				
	LJED500g/h chlorine dioxide generator at 2000mg/l ClO_2 solution				
	Cover				
	C0	Grey cover hood			
		Power Supply			
		V1	100-240Vac 50/60Hz		
			Communication Interface		
			R0	Without comms	
			R1	RS485 Modbus RTU	
	C0	**V1**	**R0**		**Match code order example**

3.1.2 Rating Plate

The rating plate contains information on the safety and functional method of the product. The rating plate must be kept legible for the duration of the service life of the product.

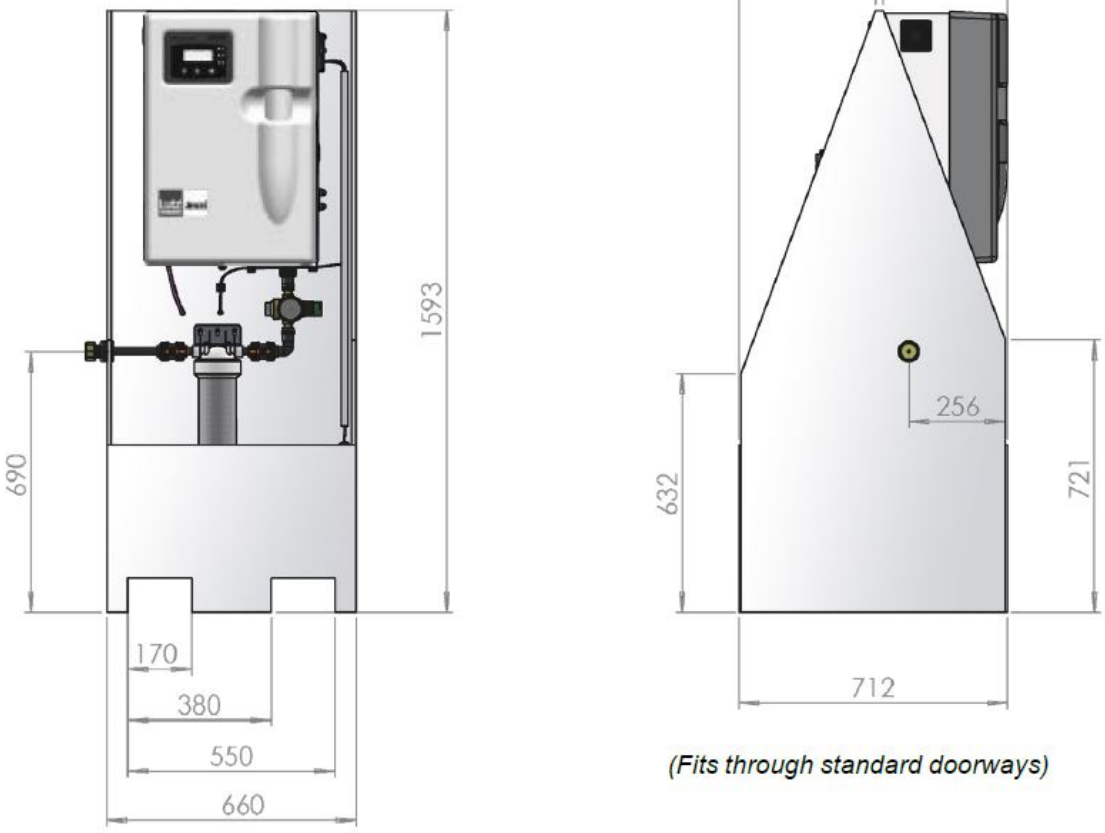
No.	Description
1	Product name
2	Nominal size (g/hr)
3	Label showing conformity with European directives
4	Supply Voltage
5	AC Frequency
6	Date of manufacture
7	Serial Number
8	Power consumption
9	System part number



3.2 Dimensions

3.2.1 Easyzon D

Skid dimensions:



(Fits through standard doorways)

3.3 Connections

3.3.1 Hydraulic

Connection	Description
Cold water dilution	½" BSPf
Precursor chemical	4mmID x 6mmOD tube compression

3.3.2 Electrical

Connection	Description
Mains power input	M20 cable gland
Signal input/output	M12/16 cable gland
Chemical empty switch input	M12 connector - A code

3.4 Electrical Specification

Description [all models]	
Power supply	1Ø, 100-240VAC
Power rating	20W (excluding auxiliary equipment)
Aux output	1Ø, 100-240VAC, 5A
Enclosure class of electronic panel	IP64
General system protection class	IP64

3.5 Consumption Data

	Low strength		High strength	
Model:	**100**	**200**	**250**	**500**
Nominal water consumption (l/h)	45	90	120	240
Precursor consumption ratio	1:1			
Precursor consumption, each (L/h)	2.5	5	2.5	5

3.6 Output Data

	Low strength		High strength	
Model:	**100**	**200**	**250**	**500**
Generation capacity (g/h ClO_2)	100	200	250	500
Generation capacity (L/h)	50	100	125	250
Solution concentration (mg/L ClO_2)	2000			
Product tank volume (L)	80			

3.7 Precursor Chemical Specification

In accordance with the Biocidal Products Regulation (BPR), Regulation (EU) 528/2012, the member states of the European Union may only use precursors for the generation of biocidal active substances produced "in situ" which are authorised under Article 95 of the regulation. These precursors must be sourced from a manufacturer or supplier listed in accordance with Article 95 of the BPR. Please ask your supplier to confirm conformity with the biocide ordinance (certificate or Letter of Access).

Model:	100	200	250	500
9.0% HCl (EN939)	✓	✓		
7.5% $NaClO_2$ (EN938)	✓	✓		
≈15.0% HCl (EN939)			✓	✓
≈14.0% $NaClO_2$ (EN938)			✓	✓

Note:

- ***Output data is determined by the precursor quality & concentration. Tolerance is permissible up to ±10%, however this may affect the performance specified.***

3.8 Operating Conditions and Limits

Model:	100	250	200	500
Water supply inlet pressure (MPa)	0.2-1.6 (Min-Max)			
Reduced pressure value (MPa)	0.05 – 0.1			
Dilution water temperature (ºC)	5-20			
Precursor temperature (ºC)	10-35			
Ambient temperature (ºC)	5-35			
Dilution Water Quality	Potable			

3.9 Materials in Contact with Media

3.9.1 Cold Water Feed

Description	Material
Pressure regulator	Brass/NBR/SS
Solenoid valve	Brass/FPM/SS
Flow sensor	PVDF
Tubing	LDPE (blue)
Push-fit fittings	PP/SS/EPDM

3.9.2 Chemical Precursor Feed

Description	Material
In-line strainer	PP
Flow sensor	PVDF
Solenoid valve	PVDF/FPM
Reactor vessel	PVC
Tubing	PTFE (opaque/violet)
Tube compression fittings	PVDF/FPM

3.9.3 Dilution Water (Generated Solution)

Description	Material
Reactor vessel	PVDF
Venturi device	PVDF
Batch tank	MDPE
Tubing	PTFE (violet)
Tube compression fittings	PVDF/FPM
Tank level switch	PVDF

3.9.4 Dosing Pump(s) Connected to Easyzon D

Dosing pump liquid end assembly material specification must be chemically resistant to a ClO_2 solution concentration ≥2000mg/l.

See below table for a suitable pump liquid end specification. Consult your equipment supplier for further guidance.

Description	Material
Pump head	PVC / PVDF
Diaphragm (membrane)	PTFE
Suction/discharge valve housing	PVC / PVDF
Suction/discharge valve ball	Ceramic / PTFE
Suction/discharge valve seat	PVDF / FPM / PTFE / Ceramic
Suction/discharge valve housing outer seal/gasket	FPM / PTFE

3.9.5 Precursor Suction Lance Assembly

Any chemical drum/tank suction line assembly connected to the relevant Easyzon D chemical precursor tube connection, must be chemically resistant to the precursor as detailed in section 3.9.

See below table for a suitable suction line assembly specification. Consult your equipment supplier for further guidance.

Description	Material
Foot valve housing	PVC / PVDF
Foot valve ball	Ceramic / PTFE
Foot valve seat	PVDF / FPM / PTFE / Ceramic
Foot valve outer seal/gasket	FPM / PTFE

3.10 Other data

Description	All models
Empty weight (kg)	

4 Product Description

4.1 Intended Use

The Easyzon D on-site chlorine dioxide generation system is intended for the following purpose: Automatic generation of a <0.2% diluted chlorine dioxide solution using sodium chlorite, hydrochloric acid and cool water. The resulting solution can be used as a disinfection agent for a wide range of applications.

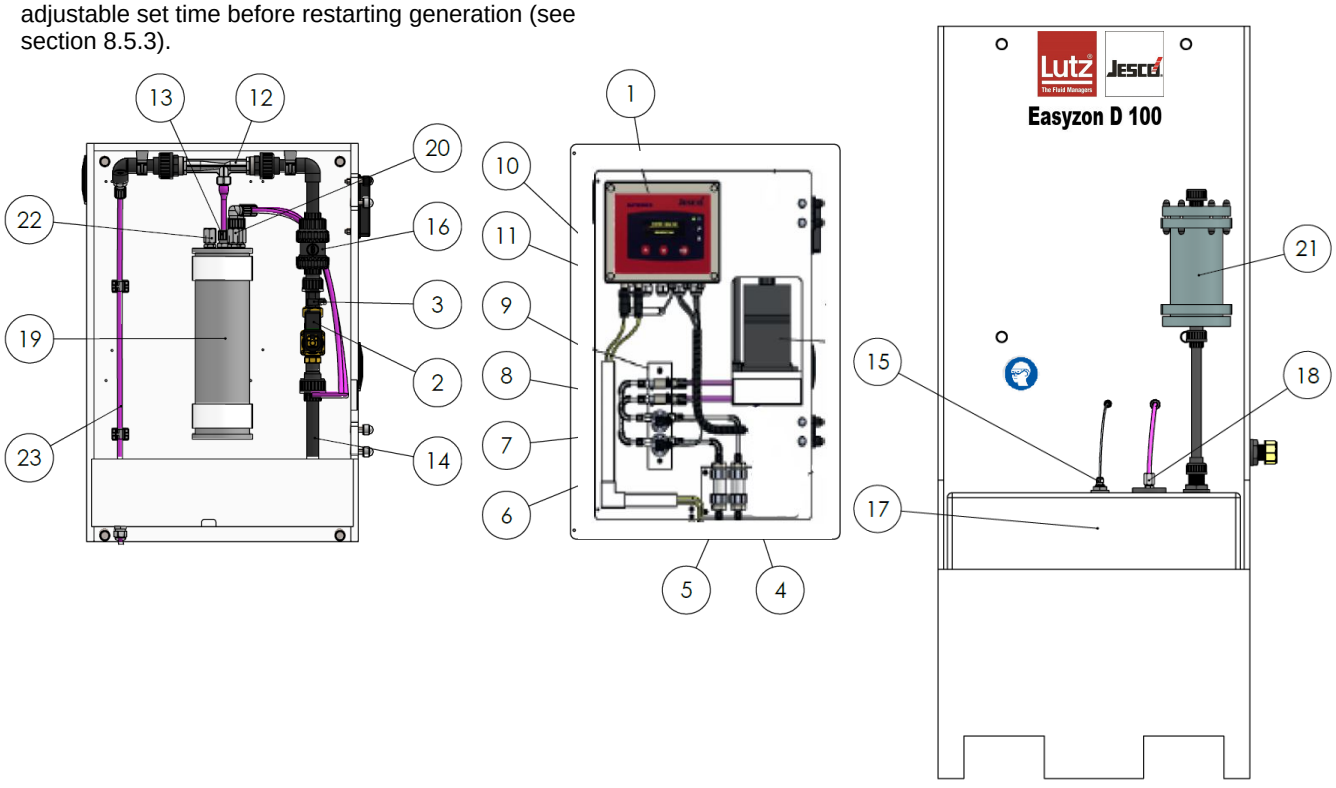
4.2 Design and Function

The Easyzon D is a fully automated batch skid system, with the output ranging from 100 to 500g/hr of ClO_2. The system can be configured with a standalone reaction vessel to produce 100g/hr, or two vessels in series to produce 200g/hr. Higher concentration precursors can be used to gain 250g/hr and 500g/hr respectively.

The system uses a plastic cabinet to mount its instrumentation and house its reaction vessel/'s, these are protected by a cover which can be secured shut by a padlock on a toggle latch.

Chemical precursors are safely drawn into the reaction vessel/'s **[19]** at a 1:1 ratio from a drum/tank by the means of a vacuum created by a venturi **[12]**. Each reactant is precisely measured and controlled via individual flowmeters **[6 & 7]** and solenoid valves **[8 & 9]**, which allow the reaction to produce a ≈2 wt% ClO_2 solution (Or ≈5 wt% ClO_2 with higher strength precursors) . A predefined cycle time enables the system to batch the necessary number of times to generate the desired g/hr. After a reaction time of 15 minutes the product enters a level-controlled product tank **[17]**. Any excess gas created in the reaction process passes through the carbon filter **[21]** and into the atmosphere. This process continues until the 'Tank Full' level is reached, where the system waits for an adjustable set time before restarting generation (see section 8.5.3).

	Description
1	Control panel
2	Dilution water solenoid
3	Dilution water flow meter
4	Inline strainer - chlorite (4x6mmOD Connection)
5	Inline strainer - acid (4x6mmOD Connection)
6	Acid flowmeter
7	Chlorite flow meter
8	Acid solenoid valve
9	Chlorite solenoid valve
10	Chlorite drum/tank empty connection
11	Acid drum/tank empty connection
12	Venturi
13	Reactor – Product outlet
14	Dilution water line
15	Product tank level switch
16	Non-return valve
17	Product tank
18	Product tank inlet
19	Reaction vessel
20	Reactor – Chemical inlet
21	Activated carbon filter – Gas scrubber
22	Temperature sensor
23	Diluted chlorine line



5 Delivery

CAUTION!

Damage can occur during incorrect transportation and delivery procedures

Irreversible damage can occur to the system and warranty may be affected.

- Use pallet truck cut outs on the Easyzon D to move it into position.

5.1 Transport & Packaging

Please inspect packaging for damage upon delivery. Unpack with care and check that all standard contents from the list below are present.

Standard Contents	Net Weight (kg)	Package Dimensions (mm)
Easyzon D		
Installation & Operation Manual		
Cable gland insert kit		
Water purge suction kit		

5.2 Damages

If your package has incurred damages due to improper transportation and handling, inform your supplier and follow returns procedure.

6 Installation

DANGER

Incorrect installation can compromise safety!

This can expose personnel and the surrounding environment to hazards.

- Adhere to safety precautions and instructions for correct installation in this manual.
- Only trained/specialist personnel may perform installation work/maintenance (see section 2.4)
- It is recommended that stickers/labels/tags are to be used to notify users of any potential hazards.

6.1 Components

The standard components supplied with the Eayzon D system that are required to be installed are as follows:

- Easyzon D Skid

6.2 Location

6.2.1 Requirements

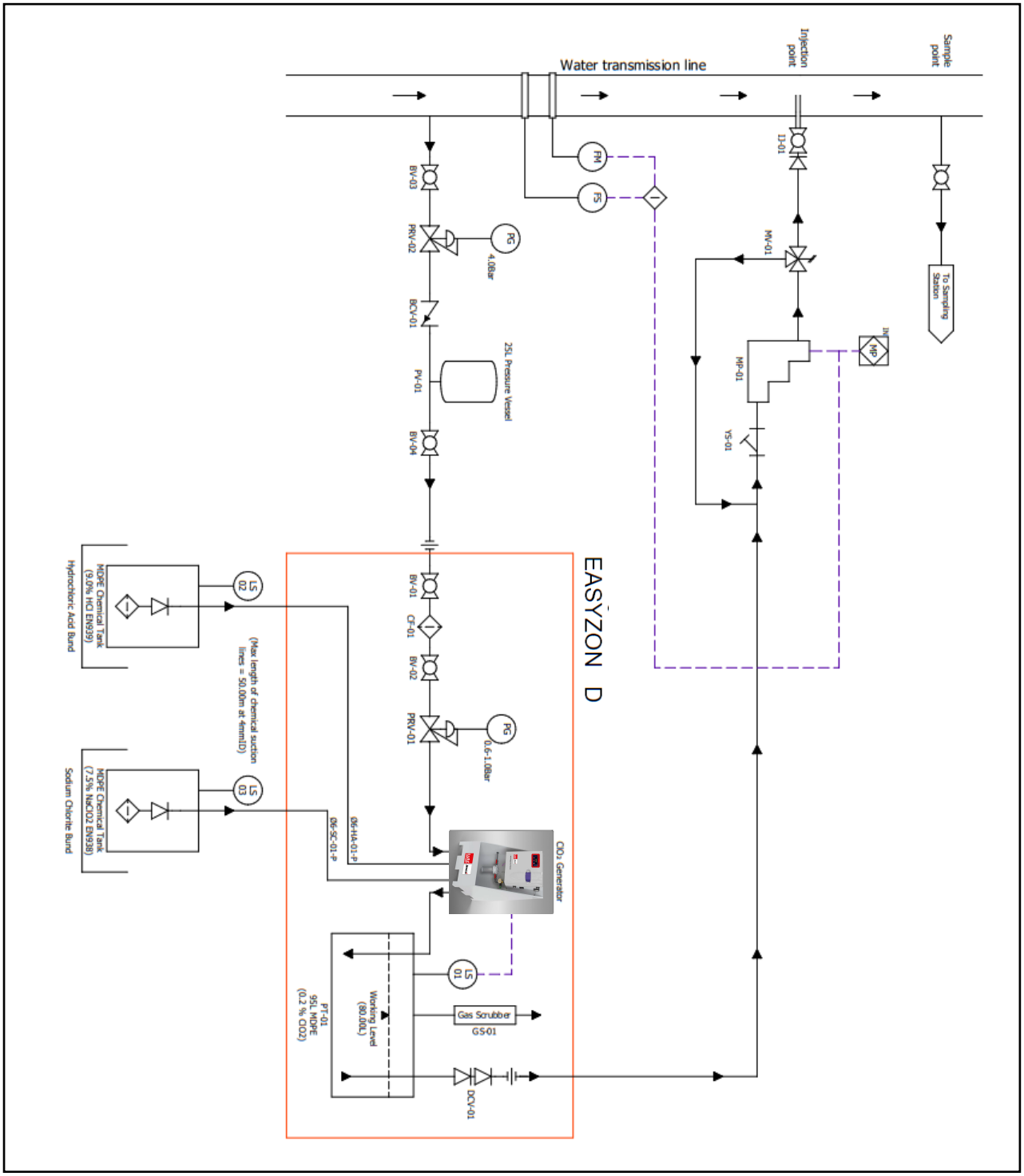
Certain location conditions are to be met prior to installation, to ensure safe and optimal operation of the system.

Location conditions:

- ✓ *There is access to a permanent water supply for connection to the Easyzon D*
- ✓ *The water supply is of a constant pressure of 2 bar or above with minimal fluctuations*
- ✓ *There is access to the main water line for product injection*
- ✓ *Temperature, humidity and water quality are under the specified limits (see section 3.8)*
- ✓ *There is access to a power supply*
- ✓ *There is a floor drain for flushing away of chemicals if spillage was to occur*
- ✓ *There is adequate ventilation and lighting*
- ✓ *It is safe from unauthorised access*
- ✓ *It meets all local regulations including fire safety and accident prevention laws.*
- ✓ *The floor is made of concrete and is level*
- ✓ *There is sufficient protection from frost*
- ✓ *Storage of chemicals has been approved and there are adequate facilities to do so.*
- ✓ *Chemical tanks are positioned so suction lines are <50m.*

6.2.2 Installation Example 1

Standard installation, see 6.2.1 for environment requirements.



(P&ID legend is on the next page)

Installation notes:

- Max length of chemical suction line: 50.00m at 4mmID
- A steady permanent pressure is required for the unit to operate most efficiently, if there isn't one it is recommended that a booster set, or pressure vessel is installed.
- PRV on the skid should always be set between 0.6 – 1.0 bar (when the Easyzon D is batching)

SYMBOLS - DESCRIPTION


- BALL VALVE (N.O)

- SOLENOID VALVE

- MAGNETIC FLOW METER


- PRESSURE REDUCING VALVE

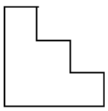

- Y-STRAINER

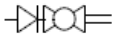

- EDUCTOR


- CONCENTRIC REDUCER


- CHECK VALVE


- MULTIFUNCTION VALVE


- METERING PUMP


- CHEMICAL INJECTOR


- STRAINER

INSTRUMENT SYMBOLS - DESCRIPTION


- LOCALLY MOUNTED


- MAIN SHARED DISPLAY FUNCTION


- MAIN PLC FUNCTION

EQUIPMENT IDENTIFICATION

MP - 01

EQUIPMENT
MP - METERING PUMP
IS - INLINE STRAINER
MV - MULTIFUNCTION VALVE
IJ - CHEMICAL INJECTOR
E - EDUCTOR
GS - GAS SCRUBBER
BT - BUFFER TANK
E - EDUCTOR
RV - REACTION VESSEL
YS - Y-STRAINER

I.D NUMBER

PIPING IDENTIFICATION

Ø8 - PW - 01 - L

PIPE DIA. (mmOD)

I.D NUMBER

FLOWING MEDIA
PW - POTABLE WATER
HA - HYDROCHLORIC ACID
SC - SODIUM CHLORITE
CC - CONCENTRATED CHLORINE
DC - DILUTED CHLORINE

MATERIAL
L - LDPE
M - MDPE
H - HDPE
P - PVC
PE - POLYETHYLENE
PT - PTFE

VALVE IDENTIFICATION

Ø1/4" - BV - 01

VALVE SIZE

I.D NUMBER

VALVE TYPE
BV - BALVE VALVE
CV - CHECK VALVE
DCV - DOUBLE CHECK VALVE
MV - MULTIFUNCTION VALVE
PRV - PRESSURE REDUCING VALVE

LINE SYMBOLS - DESCRIPTION


- PROCESS LINE
- ELECTRICAL SIGNAL
- SOFTWARE SIGNAL

ABBREVIATIONS

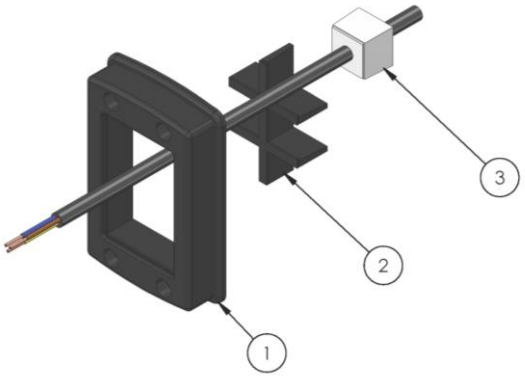
HL - HIGH LEVEL ALARM
LL - LOW LEVEL ALARM
LF - LOW FLOW
HF - HIGH FLOW
AL - ALARM
IN - INHIBIT (NO ALARM)

LS - LEVEL SWITCH
FM - FLOW METER
PG - PRESSURE GAUGE
SV - SOLENOID VALVE
EI - EXTERNAL INPUT
ES - EMERGENCY STOP

MP - METERING PUMP
IS - INLINE STRAINER
MV - MULTIFUNCTION VALVE
IJ - CHEMICAL INJECTOR
E - EDUCTOR
GS - GAS SCRUBBER
BT - BUFFER TANK
E - EDUCTOR
RV - REACTION VESSEL
YS - Y-STRAINER

6.3 Cable & Tube Entry System

The Easyzon D uses an entry system located on the right-hand side of the cabinet for routing cables into the control panel.



	Description
1	Entry frame
2	6 – way frame inlay
3	Seal insert

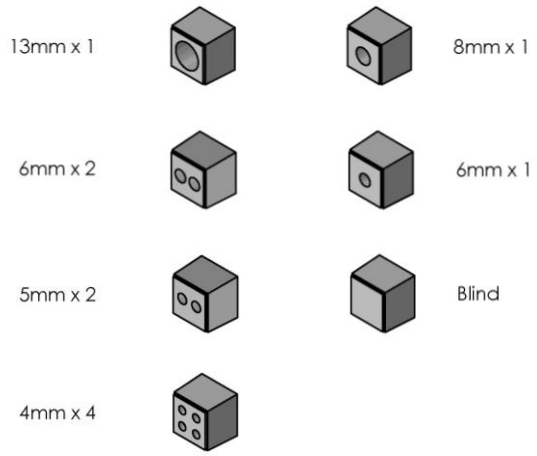
New cable routing steps:

1. Insert the cable(s) through the preferred inlay section **[2]** of the entry system that is fitted inside the frame **[1].**
2. Remove trunking covers and route cable/s through each section and hole in the cabinet door.
3. Choose a suitable gland on the control panel to run the cable/s through, use the electrical diagram to wire in to the correct terminals on the Easyzon D PCB.
4. Select a seal insert from the kit provided with the correct number of holes and diameter for the cable/s (see section 6.3.1). Spread open the insert **[3]** and place it around the cable/s on the inside of the cabinet, close to the entry system.
5. Push the seal insert all the way into the inlay section.

✓ ***Cable routing complete***

6.3.1 Seal Insert Selection

An array of varying diameter seal inserts is supplied with the Easyzon D, ready to be used with a range of tubes and cables. Additional inserts can be purchased if required, see section 11.4 for spares.



6.4 Hydraulic

6.4.1 Water Supply

If the water supplied to the device is not of a constant pressure of at least 2.0 bar then it is advised that a break tank and booster set is installed. This prevents any possible fault situations from occurring with the Easyzon D due to low mains/supply water pressure.

When connected to a UK mains water supply the Easyzon D must be fitted with a fluid category 3 back-flow prevention device (Type EC or ED) which conforms to local water supply regulations and plumbing codes. ***Installation Steps:***

1. Connect your water supply to the ½"BSPf connection which is provided on the left-hand side of the Easyzon D skid.

Note:

- ***The Pressure regulating valve should be set between 0.6-1.0 bar when the unit is batching (see commissioning section 7), this is vital to the workings of the system.***

6.4.2 Dosing Pumps

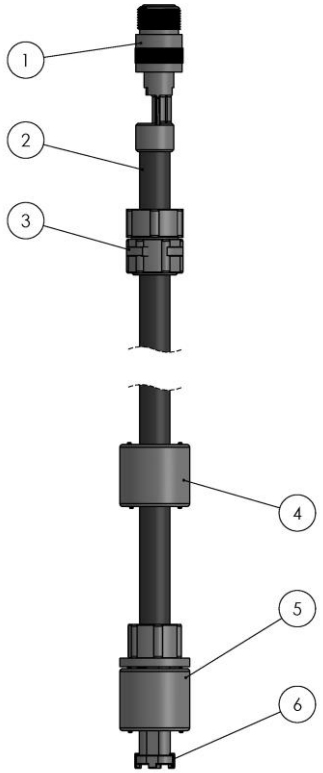
Any pump which is suitable for your application and also for dosing 0.2%wt ClO_2 solution can be used.

Installation steps:

1.Fit your pumps suction set into the Easyzon product tank making sure there is an airtight seal.

- ✓ ***Dosing pump installation complete***

6.4.3 Suction Lances



	Description
1	G3/8"BSPf to G5/8"BSPm Adapter
2	Adjustable rigid suction lance
3	Tank connection
4	Pre-empty level switch - not active
5	Empty level switch (N.C)
6	Strainer

Installation Steps:

1. Refer to the suction lances manual for installation guidance.
2. Check empty level switch **[5]** is into the N.C orientation (N.C symbol is on the top face of the float).

6.5 Electrical

DANGER!

Mortal danger from electric shock!
Live parts can inflict fatal injuries.

- Disconnect from the electricity supply before working on any equipment.
- Secure all devices to prevent it from being switched on again.
- Perform mains connection in accordance with local regulations.

CAUTION!

Damage to the system can occur if wired incorrectly.

- Isolate power to the Easyzon D before performing any electrical work.
- Study the electrical diagrams and instructions provided before beginning work.
- Only trained/specialist personnel may perform electrical work/maintenance (see section 2.4).

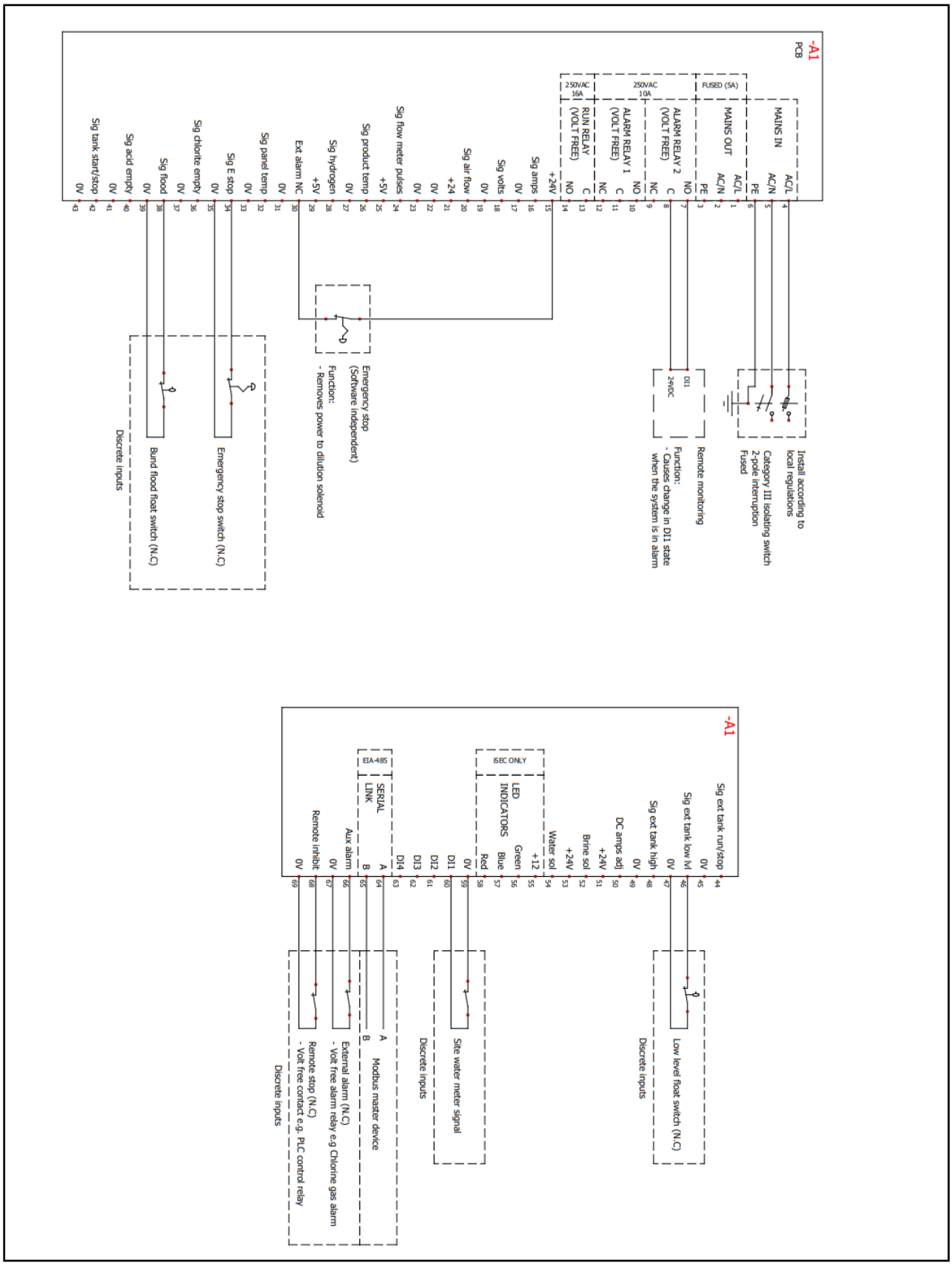
6.5.1 PCB Terminal Connections

Connections refer to electrical schematics, section 6.5.2

Terminal I.D.		Terminal Description	
1	L	Mains Out	100-240VAC
2	N		
3	E		
4	L	Mains In	
5	N		
6	E		
7	N.C	Alarm 2 Relay	Volt Free Alarm Outputs (10A max)
8	C		
9	N.O		
10	N.O	Alarm 1 Relay	
11	C		
12	N.C		
13	C	Solenoid Run Relay	Dilution Water Solenoid
14	N.O		
15	+	+24Vdc	DC Output for external alarm (Terminal 30)
16	+	Not active	Not Active
17	-	0V	
18	+	Not active	
19	-	0V	
20	+	Not active	
21	+	+24Vdc Output	
22	-	0V	
23	-	0V	Dilution Water Flow Meter
24	+	FM Pulse Signal	
25	+	+5Vdc Output	
26	+	Not active	Not Active
27	-	0V	
28	+	Not active	
29	+	+5VDC Output	
30	N.C	Ext Alarm N/C	N.C Ext Alarm
31	-	0V	Digital Inputs
32	+	Site Flowmeter	
33	-	0V	
34	+	Emergency Stop	
35	-	0V	
36	+	Chlorite Drum Empty	
37	-	0V	
38	+	Chemical Bund Switch	
39	-	0V	
40	+	Acid Drum Empty	
41	-	0V	
42	+	Batch Tank Run/Stop	
43	-	0V	
44	+	Not Active	
45	-	0V	Digital Inputs
46	+	Batch Tank Low	
47	-	0V	
48	+	Batch Tank High	
49	-	0V	
50	*	Spare	
51	+	+24Vdc - Acid	Chemical Solenoids - Control Output
52	-	0V	
53	+	+24Vdc - Chlorite	
54	-	0V	
55	+	+12VDC	LED Supply
56	+	Green	
57	+	Blue	
58	+	Red	
59	-	0V	
60	+	Chlorite Flowmeter	Signal Inputs
61	+	Acid Flowmeter	
62	+	Not Active	Not Active
63	+	Not Active	
64	A	TIA-485	Communication connection
65	B		
66	+	Auxiliary Alarm	Digital Inputs
67	-	0V	
68	+	Remote Inhibit	
69	-	0V	

6.5.2 Field Wiring Diagram

Easyzon D PCB Iss.4 electrical diagram.

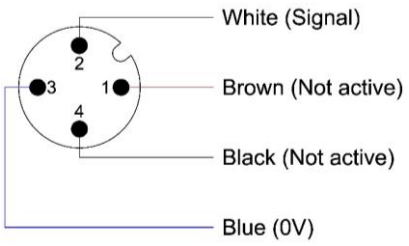


6.5.3 Chemical Level Switches

The Easyzon D has two empty level switch inputs located on its control panel, see **[10]** & **[11]** on diagrams in section 4.2. They are male 4-pin M12 Code A connections, see diagram below for pin configuration. ***Installation steps:***

1. Check that the pins allocated for the empty level switch on the lances match up with the pins on the Easyzon D switch inputs (Diagram below).
2. Plug the M12 connector from your acid suction switch into the left-hand side receptacle on the control panel.
3. Plug the M12 connector from your chlorite suction switch into the right-hand side receptacle on the control panel.
4. Enable the Acid Empty and Chlorite Empty alarms in the Easyzon software (program 10 & 11 respectively).

✓ ***Suction level switch installation complete***



Note:

- ***This switch is a N.C contact, take note of float positions on lances (see section 6.4.3).***
- ***For assistance in software navigation see section 8.***

6.5.4 Site Water Meter

A water meter can be connected to the Easyzon D system to enable local readings through the control panel display, and remote readings via the communications box (Optional accessory).

Installation Steps:

1. Isolate power to the system.
2. Select a suitable size cable entry insert from the kit provided (see section 6.3).
3. Run the cable from the meter through the Easyzon D cable entry system.
4. Wire the meter into the Easyzon D control panel using the electrical diagram (see section 6.5.2).
5. Set up K factor and current water meter reading (see section 8.4.3).

✓ ***Site water meter electrical installation complete.***

6.5.5 Auxiliary Alarm Input

Apparatus with a normally closed volt free alarm output can be connected into the Easyzon D PCB, to halt the systems operation in the event of an external alarm state. E.g. A chlorine dioxide gas sensor reaching its upper limit and activating a relay output.

Installation Steps:

1. Isolate power to the system.
2. Select a suitable size cable entry insert from the kit provided (see section 6.3).
3. Run the cable from the N.C external alarm contact through the Easyzon cable entry system.
4. Wire into the Easyzon D control panel using the electrical diagram (see section 6.5.2).
5. Enable the auxiliary alarm option at Program 13 in the Easyzon D software.

✓ ***Auxiliary alarm installation complete.***

Note:

- ***For assistance in software navigation see section 8.***
- ***Damage may occur if an external voltage is applied to the PCB terminals.***

6.5.6 Remote Inhibit

The operation of the REasyzon D can be inhibited via external switching if a control process requires it. A volt free contact is used and is normally closed in healthy operation.

Installation Steps:

1. Isolate power to the Easyzon D.
2. Select a suitable size cable entry insert from the kit provided (see section 6.3).
3. Run the cable from the external switch through the Easyzon D cable entry system.
4. Wire into the Easyzon D control panel using the electrical diagram (see section 6.5.2).
5. Enable the Remote Inhibit option at Program 14 in the Easyzon D software.

✓ ***Remote Inhibit feature installation complete***

Note:

- ***For assistance in software navigation see section 8.***
- ***Damage may occur if an external voltage is applied to the PCB terminals.***

6.5.7 Gas Sensor

A gas warning device is recommended for use with the Easyzon D see your device manual for instructions. If you wish to use your gas sensing apparatus to inhibit the Easyzon D when an alarm state occurs, see section 6.5.5.

6.5.8 Emergency Stop

A double pole normally closed external emergency stop switch may be used to immediately stop the operation of the Easyzon D.

Installation Steps:

1. Isolate power to the Easyzon D.
2. Select a suitable size cable entry insert from the kit provided (see section 6.3).
3. Run the cable from the N.C contact of the switch through the cable entry system of the cabinet.
4. Wire into the Easyzon D control panel using the electrical diagram (see section 6.5.2). Connect the first switch to terminals 33 and 34 (soft stop).
5. Connect the second switch to terminals 15 and 30 (hard stop).

✓ ***Emergency stop switch installation complete.***

Note:

- ***Damage may occur if an external voltage is applied to the PCB terminals.***

6.5.9 Connecting to the Mains Supply

The Easyzon D is intended for use as a fixed appliance and as such is pre-fitted with a 3-core flexible cable. This must be connected to the electrical supply via a fused 2-pole isolating switch. This appliance must be earthed. ***Installation steps:***

1. Check mains voltage matches with that of the Easyzon D rating plate(100-240VAC)
2. Position switch as close as reasonably possible to the Easyzon D system.
3. Route the power supply cable to the main switch and connect the cable cores in accordance to local wiring codes to the correct terminals of the switch.

   Power supply cable core colours:
   - Brown = Live/Hot
   - Blue = Neutral
   - Yellow/Green = Earth

✓ ***Mains supply connection complete.***

Note:

- ***The Easyzon D should only be turned on when the commissioning procedure is beginning (see section 7.1).***

6.5.10 Dosing Pump(s)

Power Supply: Dosing pumps need to be individually isolated, fused and labelled according to process. Isolation is also required for maintenance.

6.5.11 Auxiliary Mains Output

A power output connection is provided on the Easyzon D PCB at terminals 1-3, which is protected by a 5A fuse (F1). The voltage output is identical to the mains power supplied to the system.

This output can be used in conjunction with the alarm relays provided on the Easyzon D PCB, to sound alarms and activate beacons for example.

Note:

- ***Terminal 1 is permanently live whist the system is in operation, always isolate power to the Easyzon D before performing any work.***

7 Commissioning

CAUTION!

Risk of equipment failure and injury to personnel and property!

Irreversible damage to equipment and treatment process.

- Ensure the Pre-Start Up Check List is complete and all instructions and installation criteria adhered to prior to commissioning and start-up of the Easyzon D system to avoid any immediate or ensuing risk.
- Only trained/specialist personnel may perform electrical work/maintenance (see section 2.4).

7.1 Safety Checks

Check No.	Safety Check	Checked (✓)
1	Correct chemical precursors have been supplied.	
2	Chemical precursors contained within a suitable spill containment bund tank.	
3	The Easyzon D room has natural ventilation.	
4	Safety signs and labels are fixed and located to all chemicals and apparatus as appropriate to the installation and application.	
5	Water supply is isolated.	
6	Electrical power supply to Easyzon D can be isolated.	
7	Electrical power supply to dosing pump(s) can be isolated.	
8	Correct personal protective clothing and equipment for technician and site operator personnel.	

Check No.	Pre-start Check Up	Checked (✓)
1	Minimum pressure of 2 Bar upstream from the Easyzon	
2	Easyzon system has correct electrical power and fuse protection suitable for use in respect to Easyzon rating	
3	Chemical precursor 4mmID x 6mmOD suction lines do not extend more than 50m in length each.	

7.2 Initial Start-Up

Detailed information on control and navigation of Easyzon D software is provided in section 8.

Precondition for action:

- ✓ The system has been installed in accordance with the guidance provided in section 6 'Installation'.
- ✓ Cold water feed isolated.
- ✓ Electrical power isolated.

7.2.1 Configure Eayzon D Control Panel

Configuration steps:

1. Switch on the electrical power to the Easyzon D control panel.
2. At the control panel depress the scroll DOWN key seven times to set up the language of choice, if not already done so.
3. At the control panel place the Easyzon D into Manual Inhibit by depressing the scroll UP key until the Manual Inhibit function is active/displayed.
4. Continue to configure the control features of choice as detailed in section 8.3 - 8.5.
5. On completing configuration, keep the Easyzon D in 'Manual Inhibit' mode.

✓ ***Control panel configuration complete***

7.2.2 Easyzon D System Water Purge

A purge is completed to check the integrity of the system with water, before commissioning with chemicals.

Precondition for action:

- ✓ Unit control configured and in Manual Inhibit mode.
- ✓ Plastic bucket with cold water available.
- ✓ Easyzon Service tool kit available

Purging steps:

1. Connect the water purge suction kit (see section 7.2.4) to the Easyzon D chemical precursor inlets and place the foot valve into a bucket of clean cold water.
2. At the control panel activate the Prime System mode by accessing 'Service Menu 1', Program 2. Check the prime system value matches the factory setting (see section 8.6) and press ENTER. The system will now start a water purge filling cycle.
3. Immediately whilst the Easyzon is in the 'prime' mode, adjust the cold-water pressure regulator valve (PRV) to read between **0.6 – 0.7Bar** on the PRV pressure gauge. It is critical that the 0.6Bar is set during water demand. Do not try to adjust when there is no flow of water.
4. After the prime mode, at the control panel reset any alarm condition to allow generation mode to commence.
5. Check all Easyzon D hydraulic components, tube fittings, tubing, reactor, etc. are leak free of any water for a period of not less than 15 minutes. Refill the bucket of cold water as necessary to maintain the water suction.

✓ ***Easyzon D system water purge complete.***

7.2.3 External Easyzon D System Device Checks

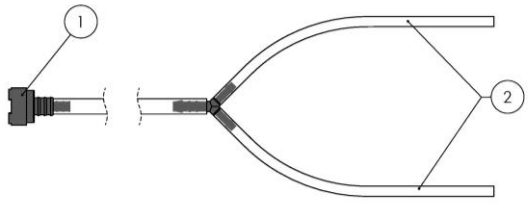
Continue with performing the following steps:

6. At this point test the function of any external alarm/ inhibit input signals that may have been connected to the Easyzon D control panel, for example chemical suction lance switches used to indicate drum/tank empty status.
7. Check the status and function of any external alarm output devices connected to the Easyzon D for example an alarm beacon, remote PLC status.
8. Check the status and function of any Modbus device that may be connected to the optional Easyzon D external communications panel.

✓ ***External device checks complete.***

7.2.4 Water Purge Kit

The water purge kit connects to the inlet of the inline strainers on the Easyzon D. It is used during commissioning and servicing procedures to purge the system with water.



	Description
1	Suction strainer
2	6mmOD x 4mmID tubes

7.3 Commissioning with Chemicals

DANGER!

Risk of explosion due to ClO_2 gas!

The two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$) almost instantly form large quantities of toxic ClO_2 gas, which can also decompose in an explosive manner.

- NEVER mix the two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$), except within the Easyzon D process.

WARNING!

Risk of toxic ClO_2 gas release!

When handling chemicals it is easy to make mistakes. Toxic ClO_2 gas will release from accidental mixing of chemicals and/or through careless spillages.

- Never pour chemicals from one canister drum into another canister drum.
- A chemical precursor day tank must be refilled with the same chemical precursor canister drum.

WARNING!

Risk of contact with toxic ClO_2 solution!

If system leaks occur, toxic ClO_2 solution can escape.

- Under no circumstance must the dosing pump maximum permissible pressure be exceeded.
- Entire installation must remain leak free in operation.

CAUTION!

Risk of equipment starting automatically!

NB: The Easyzon D & the dosing pump(s) are two separate pieces of equipment with respect to the chlorine dioxide treatment/process on site.

- The Easyzon system operates automatically when the batch tank is running low.
- The dosing pump(s) will automatically respond to the treatment/process conditions on site, e.g. water meter signal input and/or analyser signal input.

Precondition for action:

- ✓ Easyzon control configuration complete
- ✓ Unit & dosing water purge tests complete
- ✓ Easyzon unit in Manual Inhibit Mode

Chemical commissioning steps:

1. Connect each chemical precursor suction tube line to the Easyzon D. The following chemical configuration is compulsory:
    - Acid – left hand suction inlet
    - Chlorite – right hand suction inlet
2. At the control panel activate the Prime System mode by accessing 'Service Menu 1', Program 2. Set the Prime System value to '10' and press ENTER. The system will now start a purge filling cycle.
3. After the purge cycle has completed, at the control panel release the Manual Inhibit mode to allow the Easyzon D to commence Generation mode.
4. Allow the unit to generate until tank full status is indicated on the control display. This is to ensure the system safely stops the generation mode on reaching full batch tank level.
5. Proceed to operate the dosing pump(s) connected to the Easyzon D, ensuring that the corresponding dosing injection point valve is open.

✓ ***Chemical commissioning complete.***

8 Control

8.1 System Control Elements

8.1.1 Control Display

The operation of the system is performed via the universal Easyzon D control panel.

The system can be configured and operated via the control interface by the use of three buttons. The current system status is shown by an LCD display and is represented by three LED's.

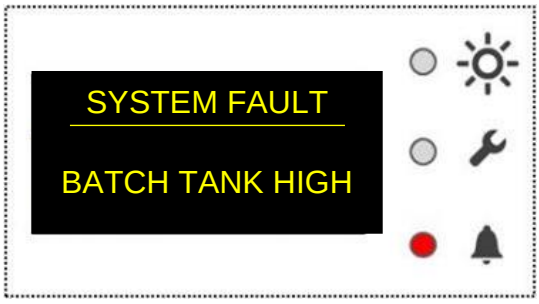
8.1.2 Button Functions

Symbol	Name	Functions
	**Up**	• Menu navigation – scroll up • Parameter editing – scroll up • Hold to enter the 'Manual Inhibit' status
	**Down**	• Menu navigation – scroll down • Parameter editing – scroll down
	**Enter**	• Menu Navigation – Enter into program title's sub menu • Parameter editing – Confirm/Enter, Yes/No • Accept/Reset a fault condition

8.1.3 LED & Symbol Description

LED	Symbol	Description
		• System Healthy
		• System Warning/Maintenance Action
		• System Fault

The display screen will always describe the current system status or fault condition in conjunction with the appropriate LED symbol representation.



E.g. In this example the system is in a fault status. The display screen shows the current fault and the red LED flashes. This continues until the system is reset by the ENTER button.

8.1.4 Access Codes

The Easyzon D has two menu's which give access to different settings for changing the operation of the system. Each menu is protected by its own code.

Name	Code	Information
Service Menu 1	2236	Gives access to basic settings for general user
Engineers Menu	Access code reserved for technician only	Gives access to digital input activations, Modbus settings and temperature settings

8.2 Manual Inhibit

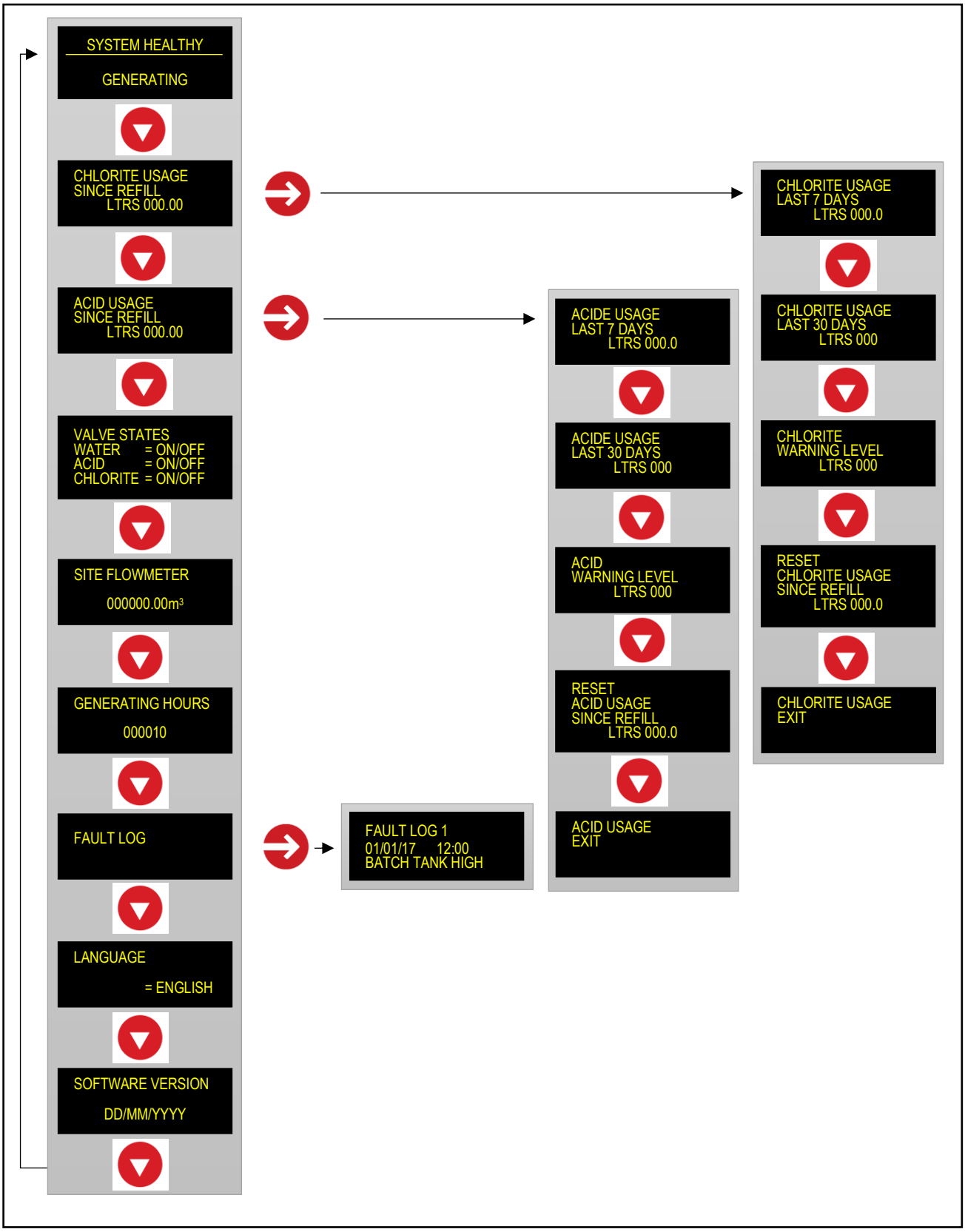
The operation of the Easyzon can be manually inhibited to stop generation immediately if necessary. This is performed by holding the up arrow on the control display for 5 continuous seconds. To restart generation, hold the up arrow again for 5 continuous seconds.

8.3 Menu Navigation & Hierarchy

Three software menus are available on the Easyzon and are accessible to personnel, dependent on their level of training.

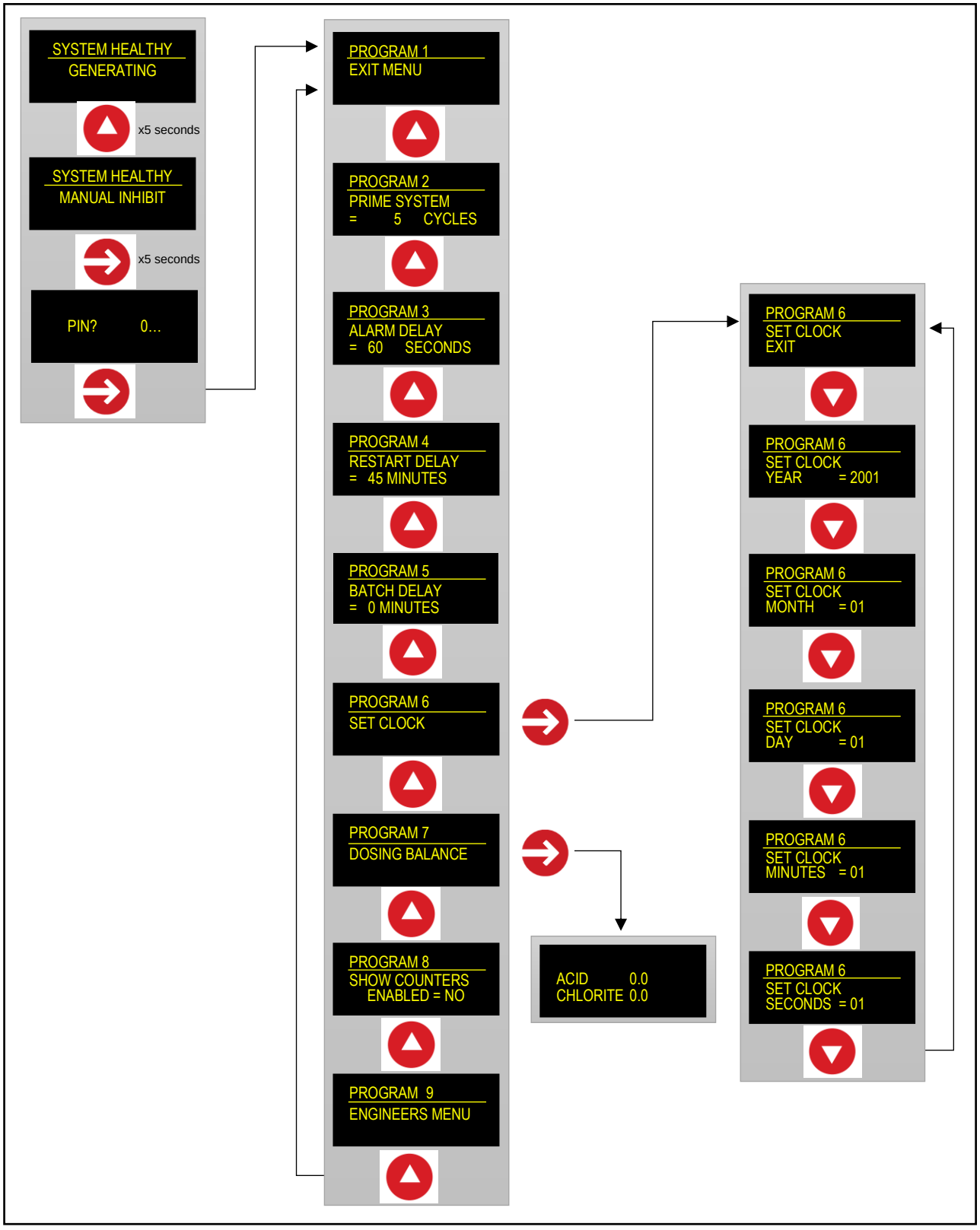
8.3.1 Display Menu

- For the general user, no pin required for access.
- Displays useful values for the system operator.



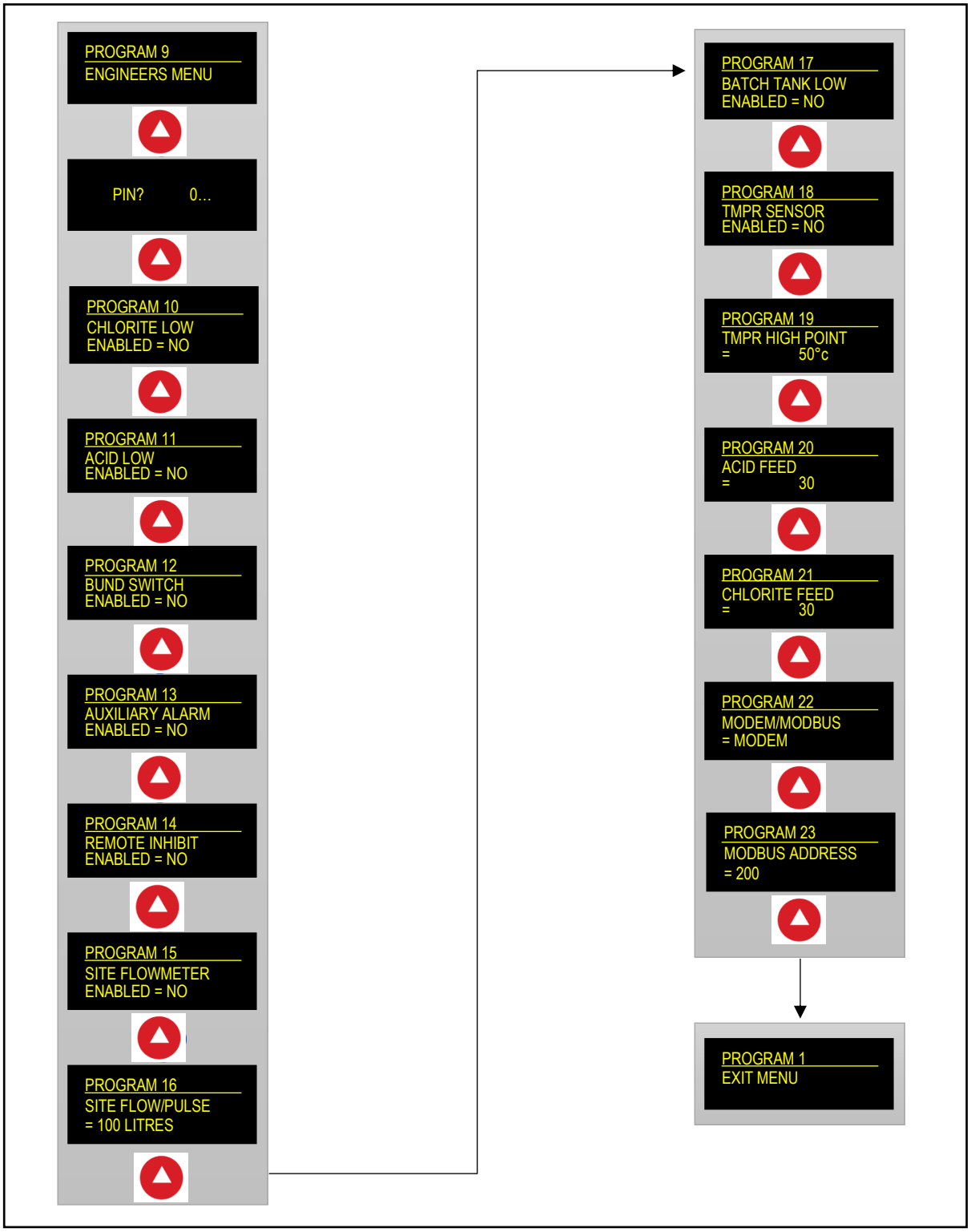
8.3.2 Service Menu 1

- For the general user & technician, pin required for access (see section 8.1.4)
- Enables access to and editing of basic settings, functions and parameters.



8.3.3 Engineers Menu

- For technician and authorized personnel, pin required for access
- Accessed via program 9 on Service Menu 1
- Allows access to enabling of features required when additional non-standard hardware is installed.



8.4 Display Menu Features & Settings

8.4.1 Chlorite Usage Counters

Since refill: Displays the volume of chlorite in litres used by the Easyzon D since the counter was reset.

Last 7 days: Displays the volume of chlorite in litres used by the Easyzon D in the last 7 days.

Last 30 days: Displays the volume of chlorite in litres used by the Easyzon D in the last 30 days.

Warning Level: Set a warning level of chlorite used in litres. Hold the enter key to enable parameter editing and input the warning level required.

This feature displays an amber warning when the set volume has been used, based upon the volumetric measuring completed by the flowmeters. This replaces and improves upon the function of a standard pre-empty level switch on a suction lance.

When the unit is being used in conjunction with a communications device, it is possible for the relevant personnel to be notified when the chemical reaches the warning level, so tanks/carboys can be refilled/replaced.

Reset chlorite usage since refill: Allows the chlorite usage since last refill counter to be reset to zero, by pressing the enter key down for five continuous seconds.

8.4.2 Acid Usage Counters

Since refill: Displays the volume of acid in litres used by the Easyzon D since the counter was reset.

Last 7 days: Displays the volume of acid in litres used by the Easyzon D in the last 7 days.

Last 30 days: Displays the volume of acid in litres used by the Easyzon D in the last 30 days.

Warning Level: Set a warning level of acid used in litres. Hold the enter key to enable parameter editing and input the warning level required.

This feature displays an amber warning when the set volume has been used, based upon the volumetric measuring completed by the flowmeters. This replaces and improves upon the function of a standard pre-empty level switch on a suction lance.

When the unit is being used in conjunction with a communications device, it is possible for the relevant personnel to be notified when the chemical reaches the warning level, so tanks/carboys can be refilled/replaced.

Reset acid usage since refill: Allows the acid usage since last refill counter to be reset to zero, by pressing the enter key down for five continuous seconds.

8.4.3 Site Flowmeter

This replicates the reading of the site flowmeter in m^3 to allow quick viewing of water usage either directly at the control panel, or remotely when the Easyzon D communications device is in use.

To input the current site flowmeter reading:

1. Check water meter cable has been installed (see section 6.5.4 for installation procedure).
2. Enable the site flow meter option at Program 15 in the Easyzon D software.
3. Enter the K factor of the water meter at Program 16 in the Easyzon software.
4. Set the current value of the water meter in the general display menu: Press and hold the enter button on the 'Site Flowmeter' display window, to enable parameter editing.
5. Use the up/down arrows to input the value in m^3 from the site flowmeter.
6. Press enter to confirm settings.

Note:

- ***For help with software navigation see section 8.3.***

8.4.4 Valve States

This feature displays when each solenoid valve is energized in real time, used for technical support and diagnosing faults.

8.4.5 Generating Hours

Shows how many hours the Easyzon D has been in the generating state for. This value can be reset by inputting the code '2363' into the Engineers Menu pin request screen.

8.4.6 Fault Log

Press the enter button on this screen to access the log of faults that has occurred on the Easyzon D This feature is useful for technicians and service engineers to observe any reoccurring problems with the system.

8.4.7 Language Selection

Press the enter button on this screen to change the language the Easyzon D displays its information in.

8.4.8 Temperature Reading

Displays the current temperature reading inside the reaction vessel.

8.5 Service Menu Settings

Settings should only be modified by authorised and suitably qualified personnel (see section 2.4).

Program Title	Description	Program Number	Menu Title
8.5.1 Prime Cycle	• Initiates a user set number of consecutive batches • Used during maintenance/commission work to flush the system with water (see section 7.2).	2	Service Menu 1
8.5.2 Alarm Delay	• Time taken for the system to enter an alarm state after initial fault has occurred.	3	Service Menu 1
8.5.3 Restart Delay	• The period that the system waits, before restarting generation, after the 'Batch Tank Full' float switch drops below the full level	4	Service Menu 1
8.5.4 Batch Delay	• The period the Easyzon will generate for after the Batch Delay contact has been made by an external source. It is imperative that this setting stays at '0 minutes' if not in use.	5	Service Menu 1
8.5.5 Set Clock	• Allows user to set the current time/date.	6	Service Menu 1
8.5.6 Dosing Balance	• Used for fine tuning the volume of each chemical used during a batch, via offset of pulses, to obtain equal draw down of chemical whilst maintaining identical total batch size. • An adjustment of +/-1 pulses equates to a difference in volume drawn between the chemicals, of approximately 225mls per 25L.	7	Service Menu 1
8.5.7 Show Counters	• Shows true value of pulses each chemical flow meter has counted, displayed after each batch on the main screen. • Show number of batches completed since the counters were enabled. This function is used during testing only and should be disabled in normal operation.	8	Service Menu 1
8.5.8 Chlorite Empty	• Activates an alarm state if the level of chlorite in the drum/tank drops below the empty level switch (If installed).	10	Engineers Menu
8.5.9 Acid Empty	• Activates an alarm state if the level of acid in the drum/tank drops below the empty level switch (If installed).	11	Engineers Menu
8.5.10 Bund switch	• Activates an alarm state if the level in the bund tank lifts the bund level switch (If installed).	12	Engineers Menu
8.5.11 Auxiliary Alarm	• Activates an alarm state if the auxiliary alarm circuit is opened via an external switch.	13	Engineers Menu
8.5.12 Remote Inhibit	• Inhibits the system remotely by an external switch opening. The unit continues normal operation after the switch is closed again.	14	Engineers Menu
8.5.13 Site Flowmeter	• Replicates the site water meter reading for direct viewing on the Easyzon screen, and remote viewing when using a communications device.	15	Engineers Menu
8.5.14 Site Flow/ Pulse	• Selects the K factor of the site water meter.	16	Engineers Menu
8.5.15 Batch Tank Low	• Activates alarm when; Low level switch has been open for over 30 minutes, and when low level switch has opened and closed 3 times within 30 minutes. • This alarm protects the dosing pumps from losing prime and can also warn operators of dosing rates exceeding intended output (see section 4.4).	17	Engineers Menu
8.5.16 TMPR Sensor	• Activates an alarm state when the temperature inside the reactor reaches the 'High Point' (see section 9.3.21).	18	Engineers Menu
8.5.17 TMPR High Point	• Alarm is activated when the temperature (°C) inside the reactor reaches this set value.	19	Engineers Menu
8.5.18 Modem/ Modbus	• Selects Modem/Modbus output when using a remote management platform (Modbus RTU).	20	Engineers Menu
8.5.19 Modbus Address	• Selects the slave address used to communicate when a remote management platform is in use.	21	Engineers Menu

Note:

- ***For help with software navigation see section 8.3.***
- ***For standard factory settings see section 8.6.***
- ***For alarm/fault states see section 9.2.***

8.6 Factory Settings

The Easyzon D is delivered pre-programmed with the settings shown in the table below. Some settings are adjusted/ enabled on site depending upon the install and application. For help with software navigation see section 8.1 and 8.3.

Program Number	Display Title	Unit	Easyzon D - Model			
			100g/h	200g/h	250g/h	500g/h
1	Exit Menu					
2	Prime System	Cycles	40	80	40	80
3	Alarm Delay	(Secs)	60	60	60	60
4	Restart Delay	(Mins)	45	45	45	45
5	Batch Delay	(Mins)	0*	0*	0*	0*
6	Set Clock	-	-	-	-	-
7	Dosing Balance	Pulses	0	0	0	0
8	Show Counters	-	No	No	No	No
9	Engineers Menu	-	****	****	****	****
10	Chlorite Empty	-	No	No	No	No
11	Acid Empty	-	No	No	No	No
12	Bund Switch	-	No	No	No	No
13	Aux Alarm	-	No	No	No	No
14	Remote Inhibit	-	No	No	No	No
15	Site Flowmeter	-	No	No	No	No
16	Site Flow/Pulse	L/Pulse	10	10	10	10
17	Batch Tank Low	-	No	No	No	No
18	TMPR Sensor	-	Yes	Yes	Yes	Yes
19	TMPR High Point	ºC	45	45	45	45
20	Modem/Modbus	-	Modbus	Modbus	Modbus	Modbus
21	Modbus Address	-	201	201	201	201

*It is imperative that this setting is left at 0 minutes for the correct and safe operation of the Easyzon D system.

9 Operation

9.1 Control Function Sequences

Diagram 1: Clo_2 Production process

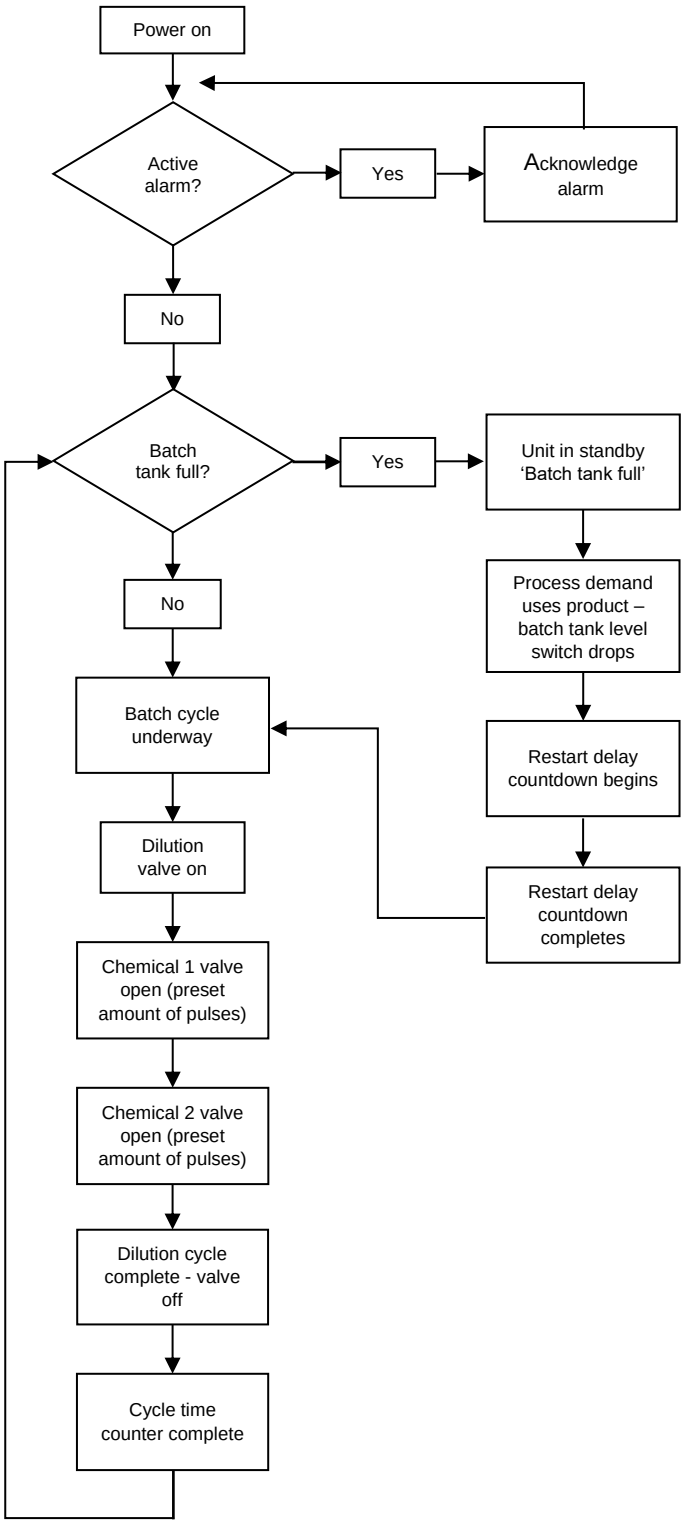


Diagram 2: Alarm/Fault state sequence

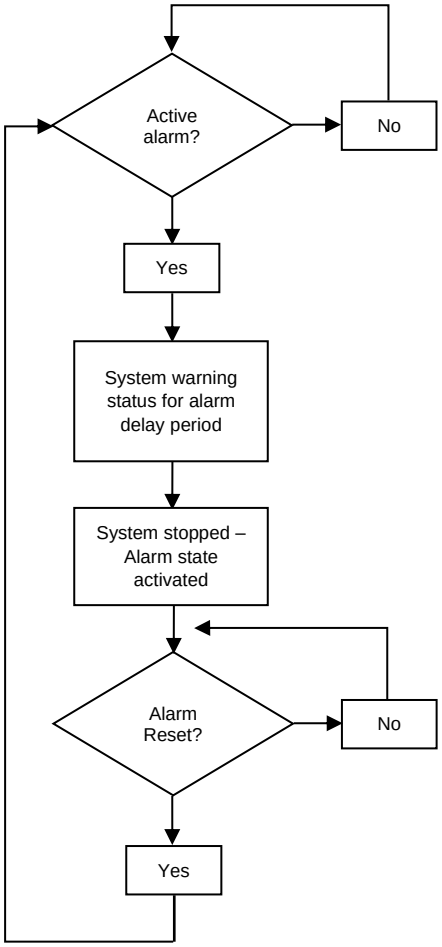
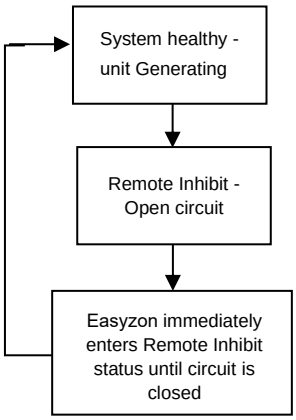


Diagram 3: Remote Inhibit sequence



Note:

- ***Diagrams shows simplified Easyzon D processes.***
- ***See section 9.2 for information on system fault/alarm states.***
- ***See section 8.3 for information on program settings for Remote Inhibit/Alarm Delay's.***

9.2 System Fault States

Alarm Type	Cause	Check	Remedy
Chemical Underfeed (Acid/Chlorite)	Chemical flow meter has seen insufficient amount of pulses	• Check for breakages in the wiring for solenoid/flow meter	• Replace cable or plug/rewire
		• Check foot valve for swarf	• Remove swarf
		• Check suction lines for kinks/blockages/leaks	• Remove kink/blockage or fix leak, replace tube if damaged
		• Check solenoid valve for blockages and faulty operation	• Clear blockage, replace valve if not opening
		• Check that the pressure gauge is reading between 0.6 and 0.7 bar when the system is batching.	• Adjust pressure to 0.6-0.7bar • Clean the pressure regulators filter screen
Chemical Overfeed (Acid/Chlorite)	Chemical flow meter has seen excessive amount of pulses	• Check solenoid valve for debris	• Remove debris
		• Check valve is closing properly	• Replace valve if not closing properly
Chemical Empty (Acid/Chlorite)	Chemical in the storage tank/drum has reached the empty level	• Check level of chemical in the drum/tank	• Refill/Replace chemical
		• Check plug is connected to control panel	• Connect plug from lance to correct input on panel
		• Check wiring in panel for breakages	• Fix wire/Replace M12 bulkhead
Low Water Flow	Dilution water flow meter has seen insufficient amount of pulses during its batch cycle	• Check needle on the inlet water pressure gauge is between 0.6 and 0.7 bar	• Adjust green knob so needle lies within the 0.6-0.7 bar range
			• Clean the pressure regulators filter screen
		• Check for leaks and closed valves upstream from the water take-off point	• Fix leaks, ask for permission before opening valves
		• Check solenoid plug is illuminated	• If not, look for wire breakage in panel or replace plug
		• Check for blockages in solenoid and flow meter	• Clear blockage
		• Check for breakages in the wiring for solenoid/flow meter	• Replace cable or plug/rewire
		• If none of the above:	• Replace solenoid
Bund Switch	Bund switch float has been raised	• Check if you have a bund switch installed	• If not, disable bund switch in software (see section 8.3)
		• Check if there is liquid in the bund	• Locate leak and fix
		• Check wiring for breakages	• Replace switch/cable
Auxiliary Alarm	Auxiliary alarm contact has opened	• Check why auxiliary unit has gone into alarm	• Reset alarm if safe to do so
		• Check if you have an auxiliary alarm installed	• If not, disable aux alarm in software (see section 8.3)
		• Check for breakages in wiring	• Fix wire/replace cable
Emergency Stop	Emergency stop button has been pressed	• Check why button has been pressed	• Reset alarm if safe to do so
		• Check wiring for breakages	• Fix wires/replace cable
Batch Tank Low	The level of product in the batch tank has reached the low level	• Check pump dosing volume isn't too high	• Set correct dosing volume for pump
		• Check for breakages in wiring	• Fix wire/replace level switch
Batch Tank High	The level of product in the batch tank has reached the high level	• Check start/stop switch Is working	• Replace level switch
		• Check dosing pump isn't backfilling the tank	• Replace check valve on the output of the batch tank
		• Check dilution water solenoid isn't passing	• Remove any debris from inside the valve/replace solenoid
Reactor change	Reactor change required	• Check/Organize dates for maintenance	• Replace reactor (see section 10)

9.3 Shutdown Procedures

DANGER!

Risk of explosion due ClO_2 gas!

The two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$) almost instantly form large quantities of toxic ClO_2 gas, which can also decompose in an explosive manner.

- NEVER mix the two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$), except within the Easyzon D process.

WARNING!

Risk of toxic ClO_2 gas release!

When handling chemicals it is easy to make mistakes. Toxic ClO_2 gas will release from accidental mixing of chemicals and/or through careless spillages.

- Never pour chemicals from one canister drum into another canister drum.
- A chemical precursor day tank must be refilled with the same chemical precursor canister drum.

Note:
The Easyzon D and the dosing pump(s) are two separate pieces of equipment with respect to the chlorine dioxide treatment/process on site.

- ***The Easyzon D system operates automatically only in response to when the batch tank is running low.***
- ***The dosing pump(s) will automatically respond only to the treatment/process conditions on site, e.g. water meter signal input and/or analyser signal input.***

9.3.1 Short-term Shutdown (<1 week)

Precondition for action:

- ✓ Easyzon D in normal operation.
- ✓ Easyzon D service apparatus is available to carry out correct procedure.

Easyzon D Shutdown steps:

1. Place the Easyzon D into Manual Inhibit at the control panel.
2. Allow the process dosing pump(s) to continue to operate long enough until the batch tank has reached signal low level. On small dosing applications 24 hours prior shutdown may be required. It is assumed that the treatment process is not critical, and the system is permitted to be shutdown annually for service.
3. Carefully remove each chemical precursor suction line from the inlet of the in-line strainers.
4. Ensure the open end of each suction line is immediately placed back into its drum or tank to avoid any chemical leakage on to the floor.
5. Connect the open tube ends of the chemical precursor water purge tubing kit to each in-line strainer and place the foot valve into a bucket of clean cold water.
6. At the control panel, release the Manual Inhibit function so that normal operation is resumed and allow the Easyzon D to operate until the batch tank is full.
7. Remove the suction purge kit and safely rinse away the remaining contents of the bucket of water.
8. Switch off the electrical power to the Easyzon D system.

9.3.2 Long-term Shutdown

Precondition for action:

- ✓ Easyzon D in normal operation
- ✓ Dosing pump(s) switched off

Shutdown Steps:

1. Place the Easyzon D unit into Manual Inhibit mode at the control panel.
2. Allow the process dosing pump(s) to continue to operate until the product tank is empty.
3. Carefully remove each chemical precursor suction lance out of its drum/tank. Ensure the lance remains vertical.
4. Place each suction lance into its own plastic bucket of clean cold water.
5. Ensure all drums/tanks have their corresponding lids securely fitted after removal of the suction lances.
6. At the control panel, enter the prime system program (see section 8.3 for software navigation guidance), let the Easyzon D go through its priming cycles to flush the chemical suction lines with water.
7. Place the Easyzon D unit into Manual Inhibit mode at the control panel.
8. Switch off the electrical power supply to the Easyzon D and ensure all dosing pumps are electrically isolated.
9. Reconnect all dosing suction lines and injection lines, leave the suction lances remaining each in their own bucket of clean water.
10. Safely dispose of any residual dilute chemical solution according to site owner instruction.

✓ ***Long term shutdown complete***

9.3.3 Storage

The 'Long-term shutdown' procedure should be followed prior to storage of the system (see section 9.3.2). Correct storage will extend the systems service life.

Storage conditions:

- A Cool, dry, generously ventilated, chemical and dust free environment.
- Temperatures should be between +5°C and 45°C
- <90% relative air humidity.
- Easyzon D should be protected via packaging where possible to reduce potential damage.

9.3.4 Transportation

The 'Long-term shutdown' procedure should be followed prior to transportation of the system (see section 9.3.2).

Transportation conditions:

- The system may only be transported when empty of all residual chemical solutions.
- Suitable lifting and transport equipment must be used when necessary.
- Temperatures must not be below 0°C. Danger of cold embrittlement of the plastics which it contains can cause cracks in welded seams, container walls and piping.

If the system is to be sent back to the supplier/manufacturer, please see 'Declaration of No Objection' (Section 13) and 'Warranty claim' (Section 14)

9.3.5 Disposal of Old Equipment

- The system must be disposed of responsibly and in accordance with applicable local laws and regulations. It should not be disposed of as domestic waste.
- As the disposal regulations differ from country to country, please consult your supplier if necessary.
- In Germany, the manufacturer must provide free-of-charge disposal, provided the system has been safely returned along with a Declaration of no objection (see section 13).

10 Maintenance

Products by Lutz Jesco GB Ltd are manufactured to the highest quality standards and have a long service life. However, some parts are subject to operational wear. This means that regular visual inspections are necessary to ensure a long service life. Regular maintenance will protect the system from operational interruptions and conform to warranty conditions.

CAUTION!

Damage to the system due to incorrect maintenance!

Irreversible damage to equipment and treatment process.

- Adhere to planned maintenance frequency to system equipment.

DANGER!

Mortal danger from electric shock!
Live parts can inflict fatal injuries.

- Disconnect from the electricity supply before working on any equipment.
- Secure all devices to prevent it from being switched on again.

DANGER!

Risk of explosion due to ClO_2 gas!

The two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$) almost instantly form large quantities of toxic ClO_2 gas, which can also decompose in an explosive manner.

- NEVER mix the two chemical precursors, hydrochloric acid (HCl) and sodium chlorite ($NaClO_2$), except within the Easyzon D process.

WARNING!

Risk of contact with toxic ClO_2 solution!

If system leaks occur, toxic ClO_2 solution can escape.

- Under no circumstance must the dosing pump maximum permissible pressure be exceeded.
- Entire installation must remain leak free in operation.

CAUTION!

Risk of equipment starting automatically!

Remember the Easyzon & the dosing pump(s) are 2 separate pieces of equipment with respect to the chlorine dioxide treatment/process on site.

- The Easyzon D system operates automatically when the batch tank is running low.
- The dosing pump(s) will automatically respond to the treatment/process conditions on site, e.g. water meter signal input and/or analyser signal input.

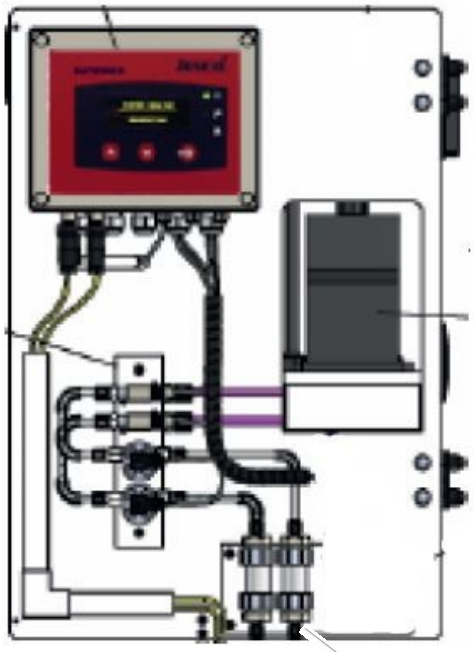
10.1 Maintenance Intervals

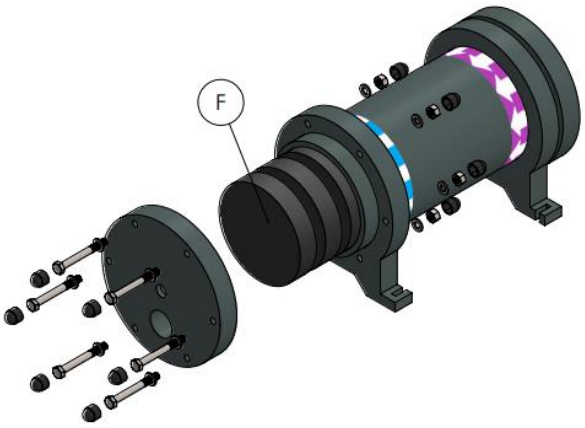
The system requires regular maintenance to prevent errors, poor performance and even failure.
The Easyzon D control panel displays prompts for service and maintenance action required in the form of a 'System Warning' status.
Service required: Displays yearly from the date the system was first tested - Press enter key to acknowledge.
Reactor change: Displays 6 years from the date the system was first tested – Press enter key to acknowledge.

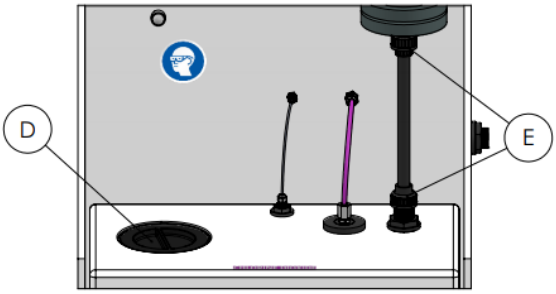
Please contact your service or installation provider to organise maintenance.

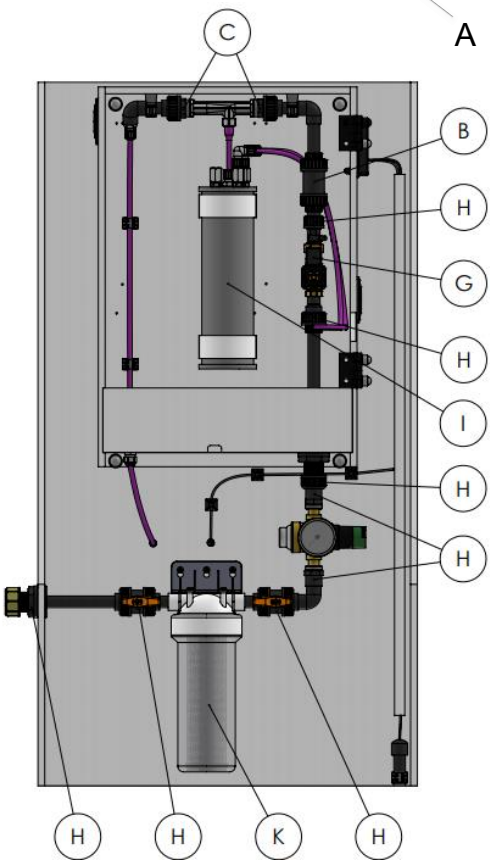
Interval	Maintenance Required
On demand	• Exchange/replenish chemical precursor drum/tank. • Clean/replace chemical strainer screen(s) • Replace carbon filter
Annual	Replace: • Chemical strainer screens • NRV • Venturi union O-rings • Tank lid gasket • Gas scrubber seals • Gas scrubber inserts
End year 2	• Replace water solenoid
End year 4	• Replace water solenoid
End year 6	• Replace all seals in contact with water • Replace the venturi assembly • Replace the reaction vessel

10.2 Maintenance Diagrams









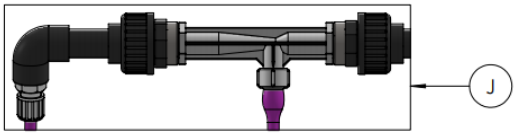


	Diagram Legend
A	Chemical strainer screens
B	NRV
C	Venturi union O-rings
D	Tank lid gasket
E	Gas scrubber seals
F	Gas scrubber carbon inserts
G	Dilution water solenoid
H	Water seals
J	Venuti assembly with discharge
K	Carbon filter

10.3 Maintenance Kits

Refer to the Maintenance section 10.1, for guidance on the use and frequency of spare parts.

Code	Description	Contents	Model
3052350	Annual	A, B, C, D, E, F	100 - 500
3052351	Year 2	G	
3052351	Year 4	G	
3052352	Year 6	H, J	

11 Spare Parts

11.1 Recommended Spare Parts

Code	Description	Contents (material)
3051300	Precursor chemical in-line strainer screen spares kit	4 x filter screen (PVC)
3051308	Pressure regulator valve (PRV) spares kit	1 x filter screen (Nylon) 1 x bowl (Brass) 1 x bowl O-ring (NBR)
3051101	Pressure gauge 0-4 Bar with indication line	1 x pressure gauge (Brass)
3051204	Chemical solenoid valve assembly	1 x chemical control valve assembly (PVDF/FPM)
3051205	Chemical flow sensor assembly	1 x chemical flow sensor assembly (PVDF/FPM)
-	Dilution water flow sensor	1 x water flow sensor assembly (PVDF)
-	Dilution water solenoid assembly	1 x water control valve assembly (Brass/FPM/SS/PP/EPDM/PVC)

12 EC Declaration of Conformity

EC – Declaration of Conformity according to;

Low Voltage Directive 2014/35/EU
Restriction of Hazardous Substances Directive 2011/65/EU
Electromagnetic Compatibility Directive 2014/30/EU

We, **Lutz Jesco GB Ltd**, located at **Unit C1 Loades Ecoparc, Blackhorse Road, Coventry, CV7 9FW, UK** declare in exclusive responsibility that the **Easyzon D 5/10/20/40** meets the essential health and safety requirements of the above mentioned directives.
To ensure presumption of conformity, the product has been assessed for compliance with the following directives and standards either in part or in full.

Directive	Requirements and / or Standards applied
Low Voltage Directive 2014/35/EU	EN 60335-1:2012
Restriction of Hazardous Substances Directive 2011/65/EU	EN 50581:2012 BS EN 62321: 2009
Electromagnetic Compatibility Directive 2014/30/EU	EN 55014-1:2006+A2:2011 EN 55014-2:1997+A2:2008

TCF reference no. : Easyzon D

Name: Tosh Singh

Title: Managing Director

Date: 02/05/2018

CE 17

Signature:

13 Declaration of No Objection

Please copy the declaration, stick it to the outside of the packaging and return it with the device.

We forward the following device for repairs:

Device and device type: _____
Part No.: _____
Reason for repair: _____
_____
_____

Dosing medium		
Description:		Irritating:
Properties		Corrosive:

We hereby certify, that the product has been cleaned thoroughly inside and outside before returning, that it is free from hazardous material (i.e. chemical, biological, toxic, flammable, and radioactive material) and that the lubricant has been drained.

If the manufacturer finds it necessary to carry out further cleaning work, we accept the charge will be made to us.

We assure that the aforementioned information is correct and complete, and that the unit is dispatched according to the legal requirements.

Company
Address: _____
Phone: _____
Fax: _____
Email: _____
Customer No.: _____
Contact person: _____

Date: _____ Signature: _____

14 Warranty Claim

If the device breaks down within the period of warranty, please return it in a cleaned condition with the complete warranty application filled out. Copy this page and send back with unit.

Sender

Company: _____
Phone: _____
Date: _____
Address: _____
Contact person: _____
Manufacturer order no: _____
Date of delivery: _____
Device type: _____
Serial number: _____
Nominal capacity: _____

Description of fault:

_____
_____
_____

Service and conditions of the device

Point of use / system designation:

_____
_____
_____

Accessories / Ancillaries used:

_____
_____
_____

Commissioning (date): _____

Duty period (approx. operating hours): _____

Please describe the specific installation and enclose a simple drawing or picture of the system installation, showing materials of construction, diameters, lengths and heights of interconnecting pipe work, ducting, devices, etc.

15 Index