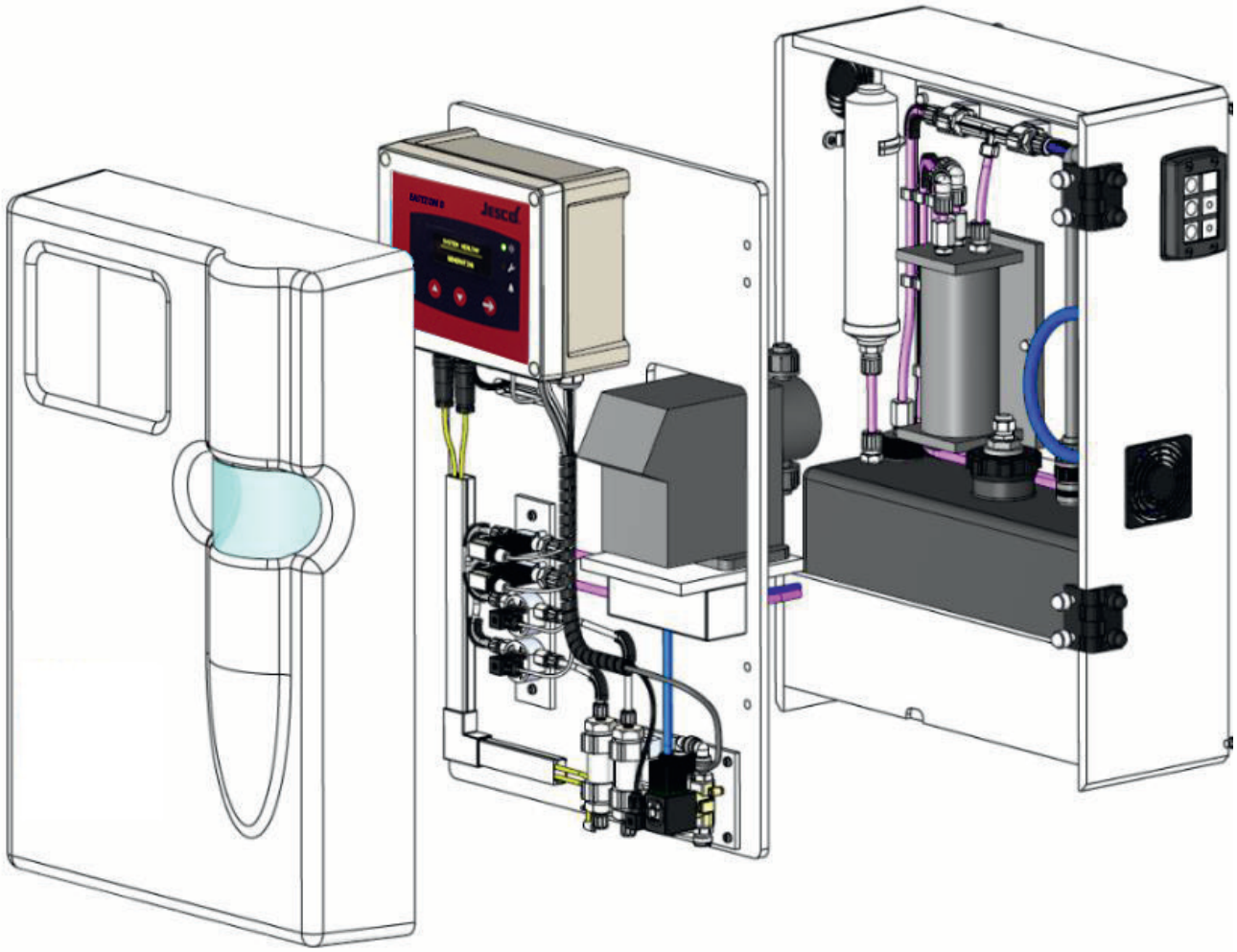
EASYZON D

5/10/20/40

On-site Chlorine Dioxide Generation



Installation, Operation & Maintenance Instructions
EN

(Original Instructions) V1.0 12/17

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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 D 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 and 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 taking action.

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.

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 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. 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. 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. 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.

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.
- Only use correct 9% concentration (by weight) of hydrochloric acid chemical precursor
- Only use correct 7.5% concentration (by weight) of sodium chlorite chemical precursor

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 Easyxon D and the dosing pump(s) are two separate pieces of equipment with 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 8.1 & 8.2)
- Working on pressurised dosing devices
- Shutdown (see section 10.3)
- Remedial and Routine Maintenance (see section 11 .2)
- Disposal (see section 10.3.5)

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

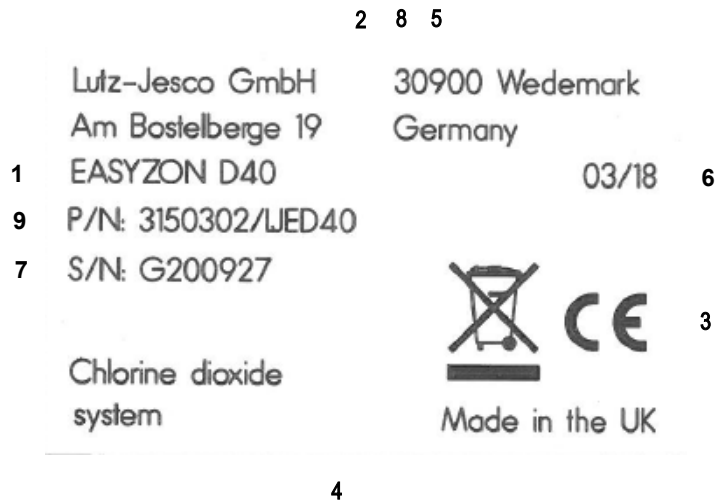
3.1.1 Match-code System Build Information

Generator capacity					
LJED5	5g/h chlorine dioxide generator at 500mg/l ClO_2 solution				
LJED10	10g/h chlorine dioxide generator at 1000mg/l ClO_2 solution				
LJED20	20g/h chlorine dioxide generator at 1500mg/l ClO_2 solution				
LJED40	40g/h chlorine dioxide generator at 1500mg/l ClO_2 solution				
	Cover				
	White cover hood default				
	Pump Configuration				
		Default Without pump fitted			
	P1	Optional With pump fitted			
		Power Supply			
		110	110Vac 50/60Hz		
		230	230Vac 50/60Hz		
			Communication Interface		
				Default Without comms	
			R1	Optional RS485 ModbusASCII	
LJED5			**230**		**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

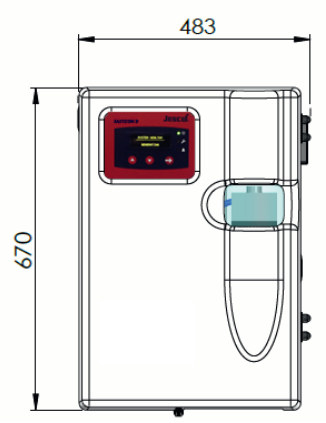


3.2 Dimensions

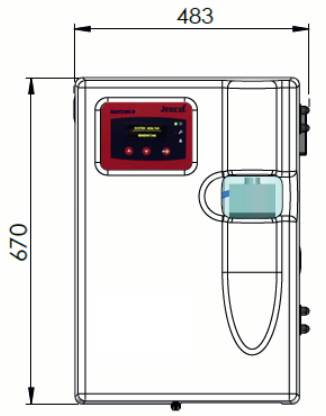
3.2.1 Easyzon D

Outside dimensions including protective cover:

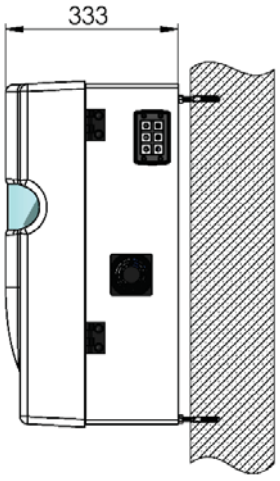
Easyzon D dimensions (mm):



Easyzon D cover dimensions (mm):

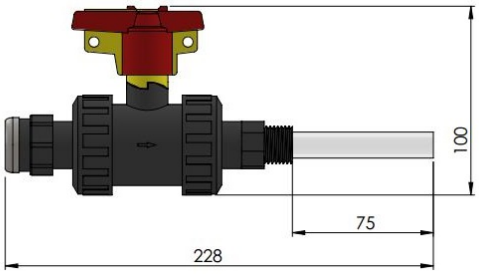


depth (mm):



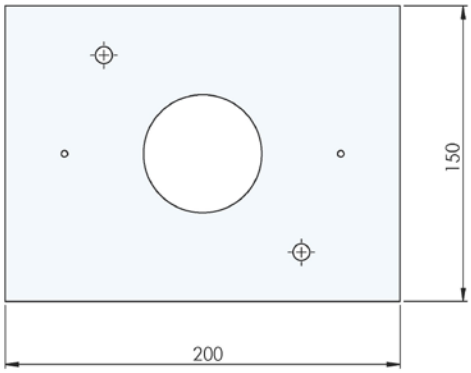
3.2.2 Injection Point Assembly

Dimensions (mm):



3.2.3 Water Supply Module Board

Dimensions (mm):



3.3 Connections

3.3.1 Hydraulic

Connection	Description
Cold water dilution	G½" BSP female
Chemical precursors	4mmID x 6mmOD tube compression
ClO2 dosing pump suction line	6mmID x 12mmOD tube compression

3.3.2 ClO_2 Injection Assembly

Connection	Description (mmID/mmOD)
R1/2"m x R1/2"f	4/6, 6/9, 6/12, 9/12

3.3.3 Electrical

Connection	Description
Mains power input	M20 cable gland
Signal input/output	M12/16 cable gland
Chemical empty switch input	M12 4pin male bulkhead

3.4 Output Data

Model:	5	10	20	40
g/h ClO_2 generation capacity	5	10	20	40
l/h ClO_2 batch solution production	9.9	9.9	13.3	26.6
mg/l ClO_2 batch solution concentration	500	1000	1500	1500
Batch solution tank volume (l)	8.5			
Combined peak dosing pump output to process (l/h)	15			30

3.5 Electrical Specification

Description [all models]	
Power supply	1Ø, 220-240Vac (110-115Vac)*
Power rating	Max. 20VA, excluding auxiliary equipment
Enclosure class of electronic panel	IP65
General system protection class	IP54

3.6 Operating Conditions and Limits

Model:	5	10	20	40
Nominal water consumption (l/h)	9.7	9.4	12.3	24..6
Precursor concentration by weight	9% HCl / 7.5% $NaClO_2$			
Precursor consumption ratio	1:1			
Precursor consumption, each (ml/h)	125	250	500	1000
Dilution water inlet pressure (bar)	0.6-0.7 (Min-Max)			
Water supply module inlet pressure (bar)	2-10 (Min-Max)			
Dilution water temperature (°C)	10-30			
Precursor temperature (°C)	10-35			
Ambient temperature (°C)	5-35			
Dilution Water Quality	Potable			

3.7 Materials in Contact with Media

3.7.1 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

3.7.2 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

3.7.3 Dilution Water (Generated Solution)

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

3.7.4 Dosing Pump(s) Connected to Easyzon

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

3.7.5 Precursor Suction Lance Assembly

Any chemical drum/tank suction line assembly connected to the relevant 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

3.8 Dosing Pump(s) Output

The dosing capacity output of any dosing pump or any combination of dosing pumps connected to the batch tank system must not exceed the maximum batch solution production rate. (see section 3.4).

3.9 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).

Description	Concentration, by weight
Hydrochloric acid (HCl) (conforming to EN939)	9.0 %*
Sodium chlorite ($NaClO_2$) (conforming to EN938)	7.5 %*

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

3.10 Other data

Description	All models
Empty weight (kg)	23kg

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 <0.15% diluted chlorine dioxide solution using sodium chlorite (7.5%), hydrochloric acid (9%) and cool water. The resulting solution can be used as a disinfection agent for a wide range of application, primarily for drinking water and industrial processes.

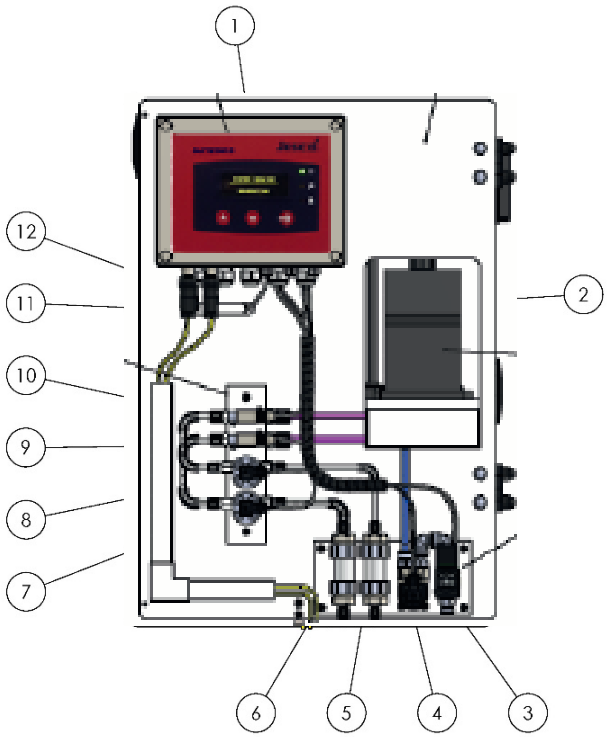
4.2 Design and Function

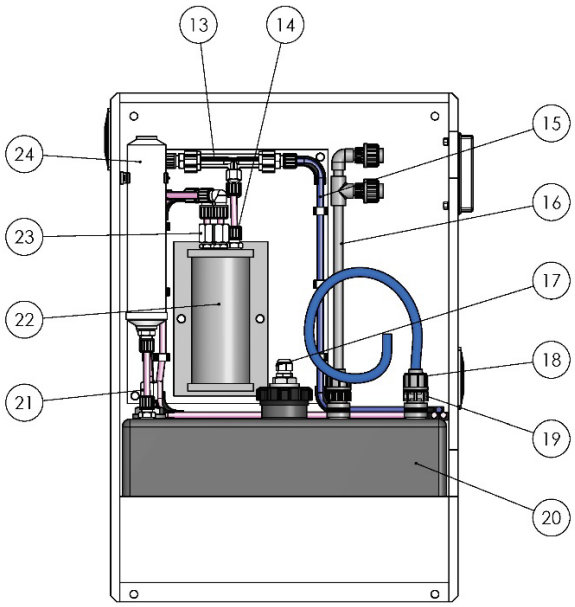
The unit is a fully automated batch system for the preparation of a diluted chlorine dioxide solution, ranging from 5g/hr up to 40g/hr.

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

Chemical precursors are safely drawn into a reaction vessel **[22]** at a 1:1 ratio from a drum/tank by the means of a vacuum created by a venturi **[13]**. Each reactant is precisely measured and controlled via individual flowmeters **[7 & 8]** and solenoid valves **[9 & 10]**, which allow the reaction to produce a ≈2% by weight ClO_2 solution. Each batch produces ≈0.2g or ≈0.4g of ClO_2, depending on the reactor vessel size. 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 batch tank **[20]**, which can have up to three output connections **[16 & 18]** for one internal and two external dosing pumps if necessary. Any excess gas created in the reaction process passes through the carbon filter **[24]** and into the atmosphere. This process continues until the 'Batch 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	Internal dosing pump
3	Dilution water solenoid
4	Dilution water flow meter
5	Inline strainer - chlorite (4x6mmOD Connection)
6	Inline strainer - acid (4x6mmOD Connection)
7	Acid flowmeter
8	Chlorite flow meter
9	Acid solenoid valve
10	Chlorite solenoid valve
11	Chlorite drum/tank empty connection
12	Acid drum/tank empty connection
13	Venturi
14	Reactor – Product outlet
15	Dilution water line
16	Optional dual dosing pump suction manifold
17	Batch tank triple level switch
18	Dosing pump suction connection
19	Non-return valve
20	Batch tank
21	Batch tank inlet
22	Reaction vessel
23	Reactor – Chemical inlet
24	Activated carbon filter – Air scrubber





5 Delivery

CAUTION!

Damage can occur during incorrect transportation and delivery procedures

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

- Seek assistance whilst lifting the unit to reduce risk of damage to the system and also injury to personnel.

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 5-40g/hr	25	L x W x H
wall mounting kit		
PRV wall mounting kit		
Cold water tubing		
Tube adapter kit		
Chemical suction line (x2)		
6x12mmOD connection kit		
Injector assembly		
Installation & Operation Manual		
Cable gland insert kit		
Water purge suction kit		
Pump 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)
- Seek assistance when lifting unit for wall mounting.
- 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 system that are required to be installed are as follows:

- Easyzon D
- Injection point assembly (6.4.2)
- Water supply module (6.4.1)
- Chemical suction lines

6.2 Location

6.2.1 Requirements

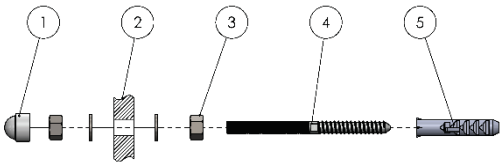
Certain location conditions are to be met prior to installation, to ensure safe and optimal operation of the system.

Location conditions:

- ✓ *Mounting walls are concrete and meet the required minimum depth*
- ✓ *There is access to a potable mains water supply for a permanent connection to the* unit.
- ✓ *There is access to the main water line for product injection*
- ✓ *Temperature, humidity and water quality are under the specified limits (see section 3.6)*
- ✓ *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 can be positioned so suction lines are <5m*
- ✓ *Water supply module can be mounted within 1m of the unit*

6.2.2 Wall Mounting Easyzon D

The unit is supplied with a mounting kit which comprises of the necessary fixings to secure the system onto a wall.



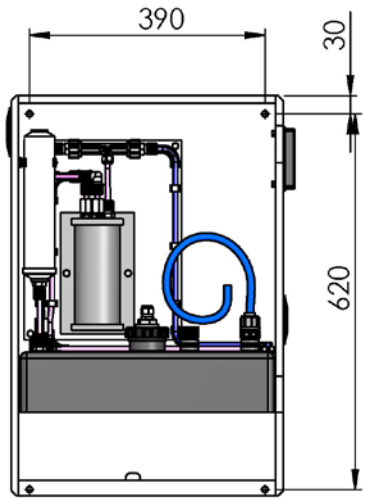
	Description
1	Protective cap
2	Cabinet Backboard
3	M8 Hexagon backnut
4	M8 fixing bolt
5	Wall fixing plug Ø12mm

Installation Steps:

1. Fit plugs **[5]** and fixing bolts **[4]** into smooth and vertical concrete wall, using the dimensions defined below. Top edge of system should be <1700mm above ground/floor (see section 6.2.4).
2. Lift unit onto fixing bolts **[4]** in front of the hexagon nuts **[3]** and washers.
3. Secure the unit with the remaining hexagon nuts **[3]** and washers.
4. The nuts can be screwed along the fixing bolt to make the unit vertical.
5. Fit protective caps and confirm level with spirit level.

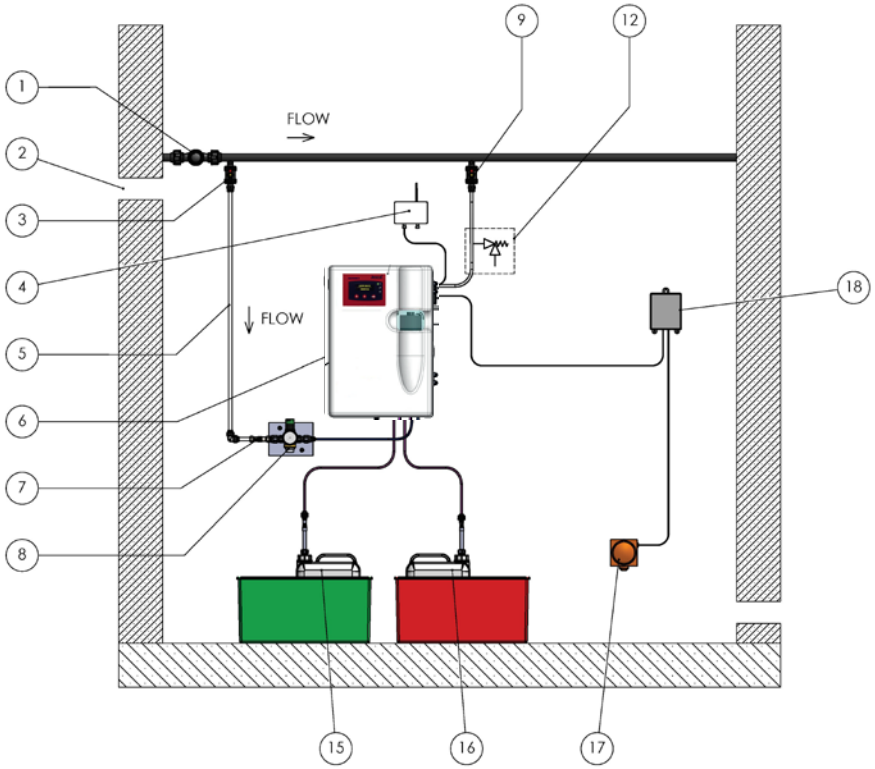
Note:

- ***Ensure that the cabinet door can swing fully open so servicing can be easily performed.***



6.2.3 Installation Example 1

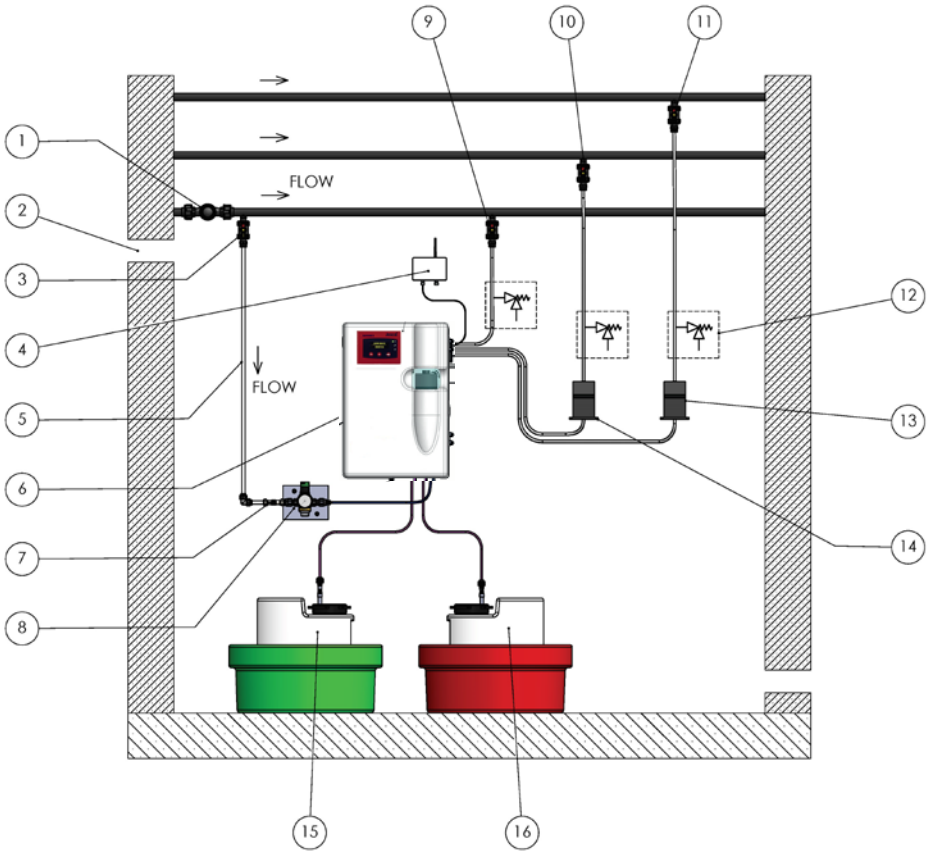
Standard installation with one injection point, see 6.2.1 for environment requirements.



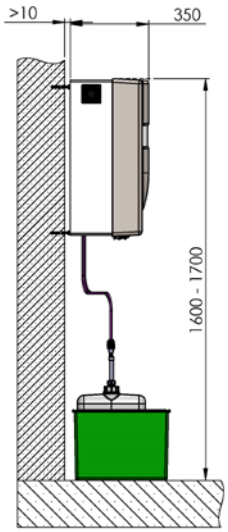
	Description
1	Site flow meter (optional)
2	Natural ventilation
3	Dilution water take-off
4	Comms device (optional)
5	Permanent water supply line
6	Easyzon D System
7	Check valve (optional)
8	Water supply module
9	Injection point 1
10	Injection point 2
11	Injection point 3
12	Pressure relief valve (optional)
13	Secondary dosing pump
14	Tertiary dosing pump
15	Acid tank with bund
16	Chlorite tank with bund
17	Gas sensor (optional)
18	Gas Alarm Panel (optional)

6.2.4 Installation Example 2

Installation with 50L tanks and multiple injection points.

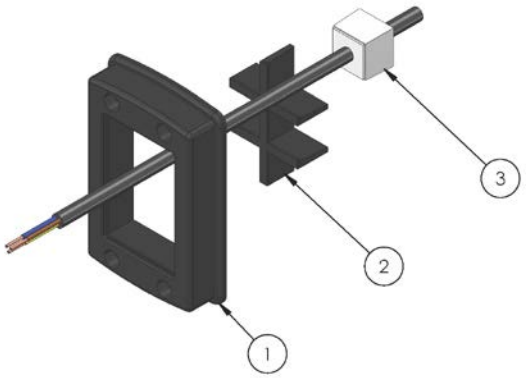


Recommended installation height:



6.3 Cable & Tube Entry System

The unit uses an entry system located on the right-hand side of the cabinet, for routing cables into the control panel and tubes onto tank suction points.



	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***

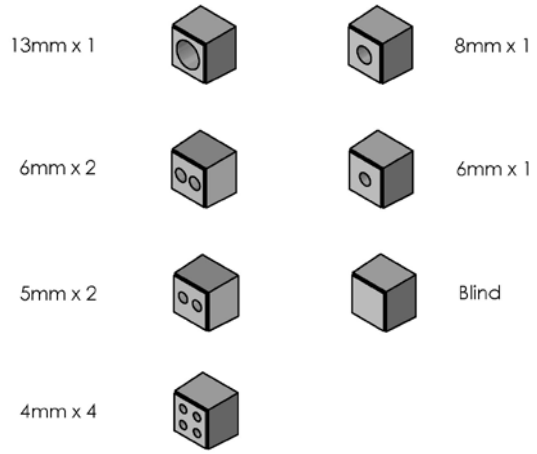
New dosing suction tube routing steps:

1. Insert the tube(s) through the preferred inlay section **[2]** of the entry system that is fitted inside the frame **[1]**. If the connection kit is already fitted to the tube the whole inlay can be clicked out of its frame, as shown in the diagram.
2. Fit tube/s to the suction points of the tank with the appropriate connection kit.
3. Select a seal insert from the kit provided with the correct number of holes and diameter for the tube/s (see section 6.3.1). Spread open the insert **[3]** and place it around the tube/s on the inside of the cabinet, close to the entry system.
4. Push the seal insert all the way into the inlay section.

✓ ***Tube routing complete***

6.3.1 Seal Insert Selection

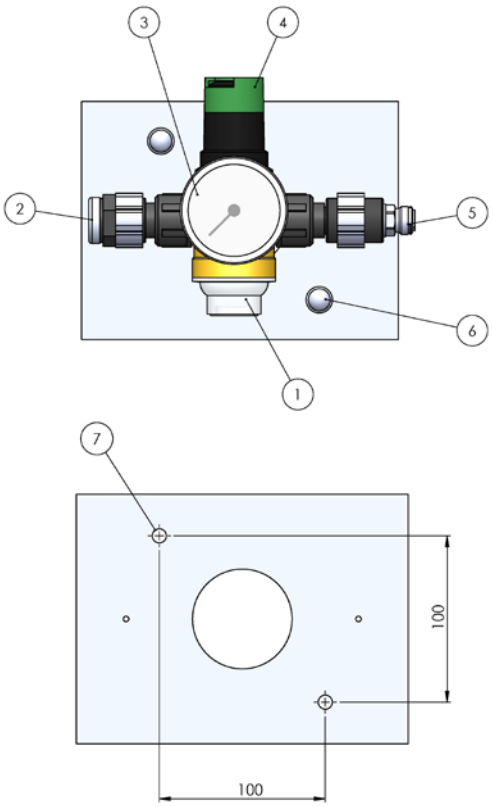
An array of varying diameter seal inserts is supplied with the system, ready to be used with a range of tubes and cables. Additional inserts can be bought if required, see section 11.4 for spares.



6.4 Hydraulic

6.4.1 Water Supply Module

The water supply connected to the unit must be fitted with a back-flow prevention device which conforms to local water supply regulations and plumbing codes, this should be installed upstream from the 'Water supply module'.



	Description
1	Strainer housing
2	½"BSPf connection for dilution water inlet
3	Pressure monitoring gauge
4	Pressure adjustment knob
5	8mm O.D connection for dilution water outlet
6	Wall mount installation kit - fixing bolts
7	9mm OD hole for wall mounting

Installation Steps:

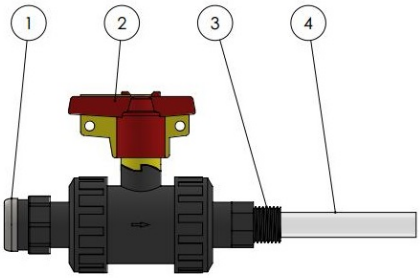
1. Remove PRV assembly from clips to reveal the mounting holes **[6].**
2. Mount backboard to wall in orientation shown, using fixing kit provided.
3. Fit PRV assembly back into the pipe clips.
4. Connect the permanent dilution water supply line to the ½"BSPf connection provided **[2].**
5. Connect the module outlet **[5]** to dilution water solenoid inlet. See **[3]** in section 4.2.

✓ ***Water supply module installation complete***

Note:

- ***The installation of this module is compulsory for the correct operation of the system.***
- ***The Pressure regulating valve should be set between 0.6-0.7 bar (see commissioning section 7.2), this is vital to the workings of the system.***

6.4.2 Injection Point



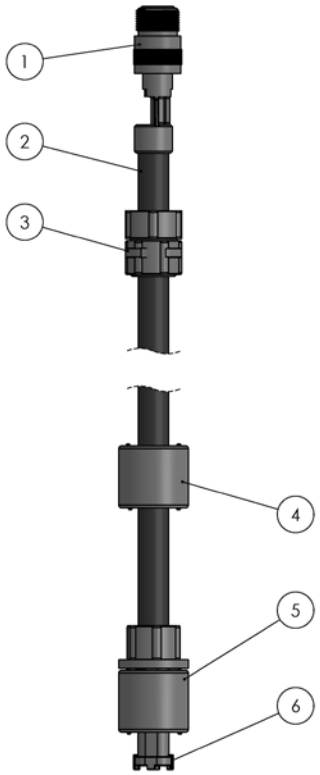
	Description
1	1/2"BSPf connection
2	½" Ball valve with safety handle
3	R½" BSPm connection
4	Injection quill

Installation Steps:

1. Ensure site has prepared injection point with pipe boss or ½" tapped hole.
2. Trim injection quill **[4]** so outlet is positioned in the center of the pipe.
3. Screw the ½" connection **[3]** into the tapped hole/pipe boss.
4. Connect a check valve to the ½"BSPf connection provided **[1]**
5. Connect dosing line from pump to the check valve on the injector assembly, using a suitable coupling kit for the dosing tube diameter.
6. Attach any identification tag to the injector if permitted to do so.

✓ ***Injector 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 in to the N.C orientation (⊙—⊙ N.C symbol is on the top face of the float).
3. For guidance on electrical installation see section 6.5.3.

6.4.4 Internal Dosing Pump

A dosing pump can be internally fitted to the unit to save wall space and keep the system compact.

Installation steps:

1. Place dosing pump on platform with the head facing towards the back of the unit.
2. Check the cover fits over the dosing pump, and that the cabinet door can close without obstruction.
3. Drill clearance holes in the platform and bolt the dosing pump to it using suitably sized bolts
4. Connect the suction side of the pump to the right hand side outlet of the batch tank (5/8”BSPm non-return valve), making sure there is enough tube length available for the door to fully open without putting strain on the pump connections.
5. Select the correct sized tube entry seal insert for the dosing line from the kit provided and route the tube through the entry system (see section 6.3 for entry system guidance).
6. Connect the pressure side of the pump to the dosing line and injection point assembly.

✓ ***Internal dosing pump installation complete***

6.4.5 External Dosing Pumps

Two external and one internal dosing pump can be connected to the Easyzon D simultaneously.

One external pump:

1. Replace the cap on the left-hand side batch tank suction outlet with the $^{5}/_{8}$”m non-return valve provided with the system. Take note of flow direction arrows on the body of the valve.
2. Select the correct sized tube entry seal insert for the suction line from the kit provided and route the tube through the entry system (see section 6.3 for entry system guidance).
3. Connect the suction side of the external pump to the non-return valve with a coupling kit.

✓ ***External dosing pump installation complete***

Two external pumps:

1. Replace the cap on the left-hand side batch tank suction outlet with the 5/8”m non-return valve provided with the system. Take note of flow direction arrows on the body of the valve.
2. Connect the dual dosing pump suction assembly to the 5/8”m non-return valve. Make sure the dual connections are pointing towards the cable/tube entry system.
3. Select the correct sized seal insert for the dosing line from the kit provided and route the tubes through the entry system (see section 6.3 for entry system guidance).
4. Connect the suction sides of the external pumps to the dual connection assembly using the correct coupling kits.

✓ ***Dual external dosing pump installation complete***

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 unit 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).

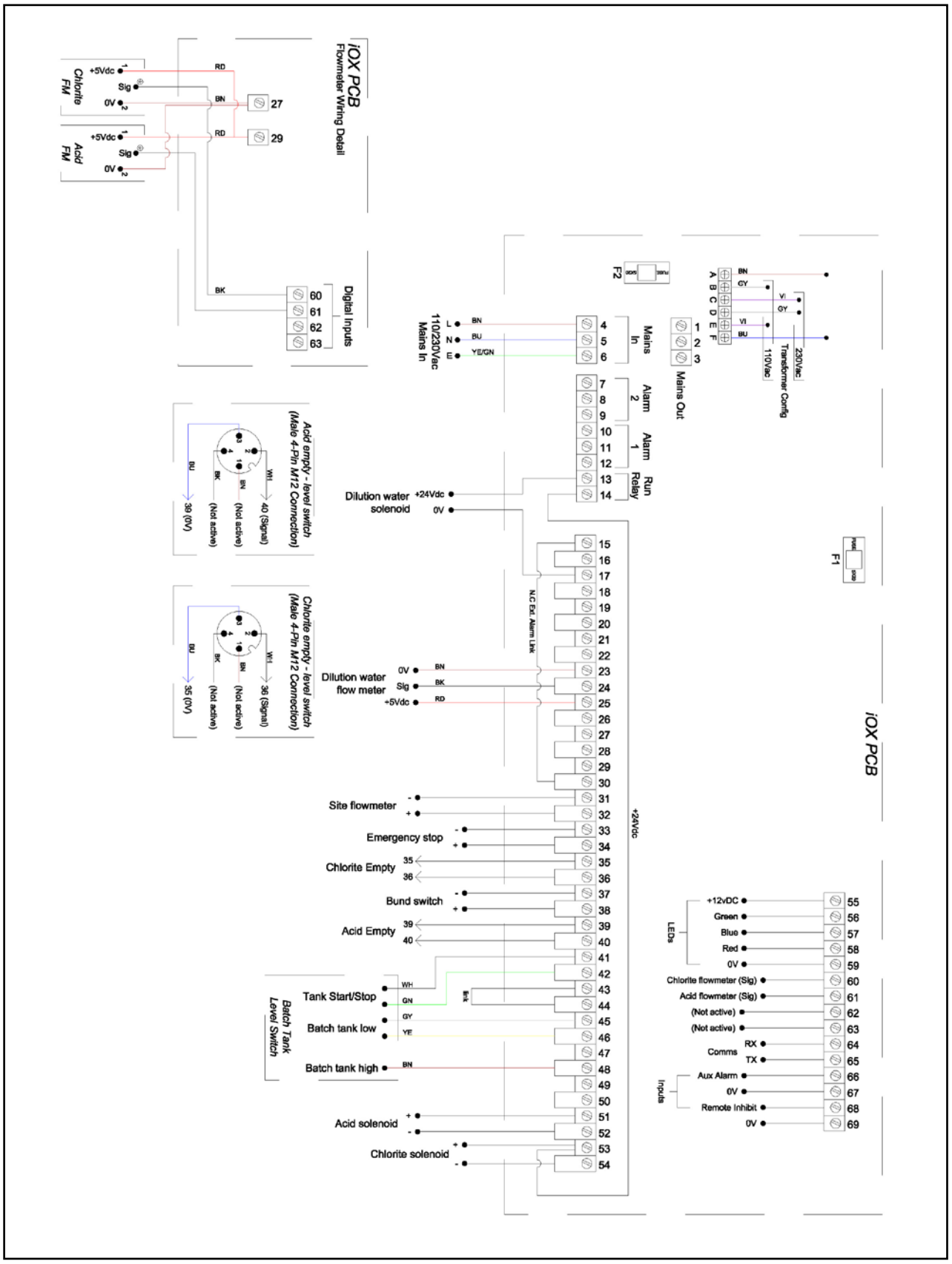
6.5.1 PCB Terminal Connections

Connections refer to electrical schematics, section 6.5.2

Terminal I.D.		Terminal Description	
1	L	Mains Out	110-115/220-230Vac
2	N		
3	E		
4	L	Mains In	
5	N		
6	E		
7	N.C	Alarm 2 Relay	Volt Free Alarm Outputs (10A, 250Vac)
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
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	RX	Receive	Telemetry option
65	TX	Transmit	
66	+	Auxiliary Alarm	Digital Inputs
67	-	0V	
68	+	Remote Inhibit	
69	-	0V	

6.5.2 Electrical Diagram

Easyzon D PCB Iss. 9 electrical diagram, showing details of mains connection and signal inputs/outputs.



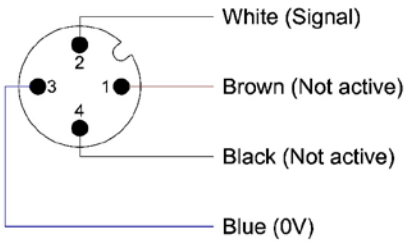
6.5.3 Chemical Level Switches

The unit has two levels switch inputs located on its control panel, see **[11]** & **[12]** on diagrams in section 4.2. They are male 4-pin M12 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 unit switch inputs (Diagram below). If there is a different pin arrangement use the electrical diagram to rewire (see section 6.5.2).
2. Connect the 4-pin plug from your acid suction lance into the correct connector **[12]** located on the control panel, route the cable through the trunking on the front of the cabinet door.
3. Connect the 4-pin plug from your chlorite suction lance into the correct connector **[11]** located on the control panel, route the cable through the trunking on the front of the cabinet door.
4. Enable the Acid Empty and Chlorite Empty alarms in the Easyzon D software (program 10 & 11 respectively).

✓ ***Suction lance 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 Flowmeter

A site flow meter can be connected to the unit 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 flow meter through the Easyzon D cable entry system and trunking on the inside panel door.
4. Wire the flow meter into the Easyzon D control panel using the Electrical Diagram (see section 6.5.2).
5. Set up K factor and current site flow meter reading (see section 8.4.3).

✓ ***Site flowmeter 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 unit cable entry system and trunking on the inside of the panel door.
4. Wire into the unit 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 Easyzon 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 and trunking on the inside of the panel door.
4. Wire into the unit 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 normally closed external emergency stop switch may be used to immediately stop the operation of the Unit. ***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 entry system of the cabinet and trunking on the inside of the panel door.
4. Wire into the Easyzon control panel using the 'Electrical Diagram' (see section 6.5.2).

✓ ***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

For ease of installation the system comes pre-fitted with a 3-core power supply cable. This must be connected to a category III isolating switch which has 2-pole interruption, or an equivalent switched fused spur.

Installation steps:

1. Check mains voltage matches with that of the system rating plate(110-115Vac/220-240Vac)
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 rules to the correct terminals of the switch.

   Power supply cable core colours:
   - Live = Brown
   - 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).***
- ***The main PCB is protected by a 2A fuse, detailed as F2 in the electrical drawing (see section 6.5.2).***

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. Use the cable entry system to route the power supply cable for an internal dosing pump.

External Stop: If the dosing pump in operation has an external stop feature, its operation can be inhibited in case of a system alarm state e.g. 'Low Batch Tank'.

1. Refer to pumps manual for correct external stop input and pin arrangement.
2. Use a pump signal cable with a 4-pin male plug and route it through the trunking of the cabinet door and into the Easyzon D control panel.
3. Use the 'Electrical Diagram' and 'PCB Terminal Connections' (see section 6.5.2 & 6.5.1) to connect to the Alarm Relay, making sure the external stop pins of the pump match with the wires used for connecting to the Easyzon D.
4. Connect the 4-pin connector to the dosing pump external stop input.

✓ ***Dosing pump electrical installation complete***

Note:

- ***Refer to the pumps manual for additional information on installation.***
- ***Refer to section 7.2.3 for pump commissioning and start-up procedures.***

6.5.11 Auxiliary Mains Output

A power output connection is provided on the Easyzon D PCB at terminals 1-3, which is fused at 5A by F2 as shown on the electrical diagram (see section 6.5.2). 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 constantly live whist the system is in operation, always isolate power to the unit 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 unit mechanical 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 2 Bar cold water feed pressure available upstream to the unit water pressure regulation valve.	
2	System has correct electrical power and fuse protection suitable for use in respect to unit rating plate.	
3	Chemical precursor 4mmID x 6mmOD suction lines do not extend more than 2m in length each.	

7.2 Initial Start-Up

Detailed information on control and navigation of the 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 Easyzon D Control Panel

Configuration steps:

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

Purging steps:

1. Connect the water purge suction kit (see section 7.2.5) 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 unit 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 system 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 Dsystem water purge complete.***

7.2.3 Dosing Pump(s) Water Purge

A purge is completed to check the integrity of the dosing pump(s) and injector(s) with water, before commissioning with chemicals.

Continue with performing the following steps:

6. Open the dosing pump injection valve assembly at the process injection point.
7. Switch on the corresponding dosing pump.
8. Check for any leaks on the dosing pump equipment and test/verify any pressure relief valve apparatus in line with the specific manufacturer instructions.
9. Proceed to operate with dosing pump & system functioning for at least 15 minutes to observe leak free operation (Make sure that dosing pump output doesn't exceed system prod'n output; see section 3.4 for Easyzon Output
10. Data). Repeat steps 6 to 9 for any subsequent dosing pump connected to the Easyzon D.
11. Switch off dosing pump and allow unit to fill batch tank to confirm internal tank batch level switch operates and indicates 'Batch Tank Full' on the Easyzon D control display.
12. Place the Easyzon D in to Manual Inhibit mode.
13. Switch dosing pump(s) on to drain down the batch tank and check that the tank internal low-level switch operates correctly indicating 'Batch Tank Low' low level alarm on the control display. The low-level alarm warning status continues to display up to 30 minutes at which point the shutdown alarm state is activated.
14. Switch dosing pump(s) off.

✓ ***Dosing pump(s) water purge complete.***

Note:

- ***The Easyzon D batch takes 15-50 minutes to fill completely. See 'Output Data' (Section 3.4) to observe system liquid production capacity, in relation to the capacity output of the dosing pump.***
- ***See section 9.2 for additional information on alarm states.***

7.2.4 External Easyzon D System Device Checks

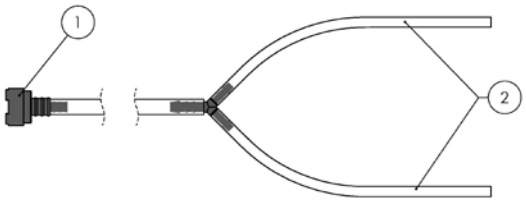
Continue with performing the following steps:

15. 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.
16. Check the status and function of any external alarm output devices connected to the unit for example an alarm beacon, remote PLC status.
17. 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.***

7.2.5 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 process.
- Only use correct 9% concentration (by weight) of hydrochloric acid chemical precursor.
- Only use correct 7.5% concentration (by weight) of sodium chlorite chemical precursor.

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!

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

- The Easyzon D unit 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 D control configuration complete
- ✓ Easyzon D & dosing water purge tests complete
- ✓ Easyzon D 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 system to begin Generation mode.
4. Allow system 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 system 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 Easyzon D system is performed via the universal Jesco 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.

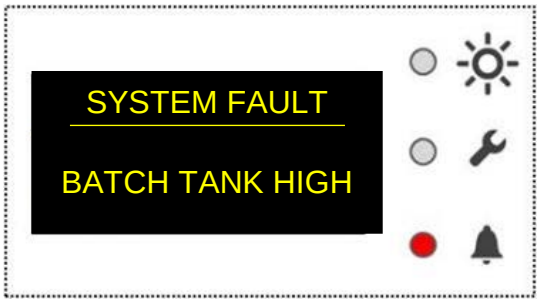
8.1.2 Button Functions

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

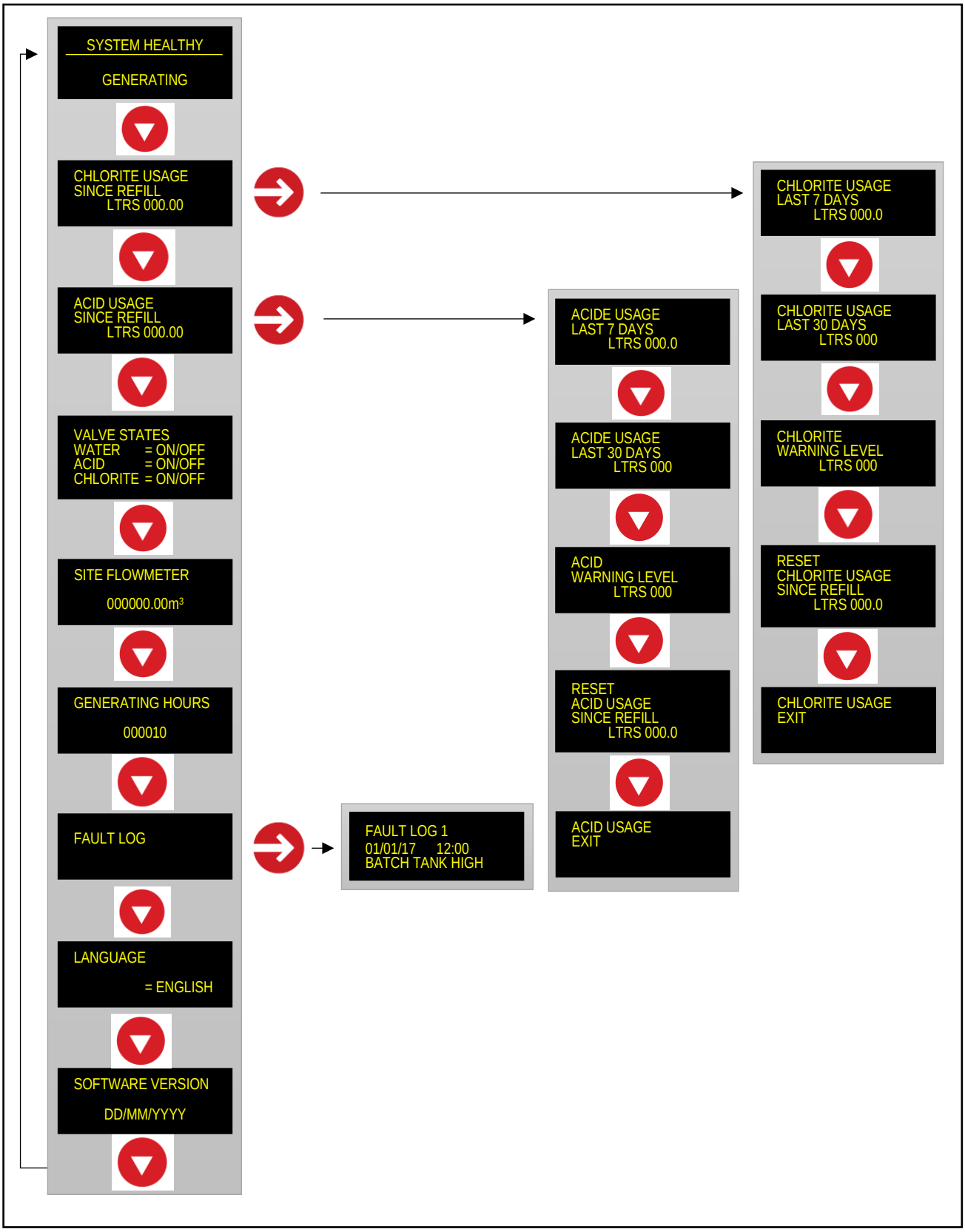
8.2 Manual Inhibit

The operation of the Easyzon D 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

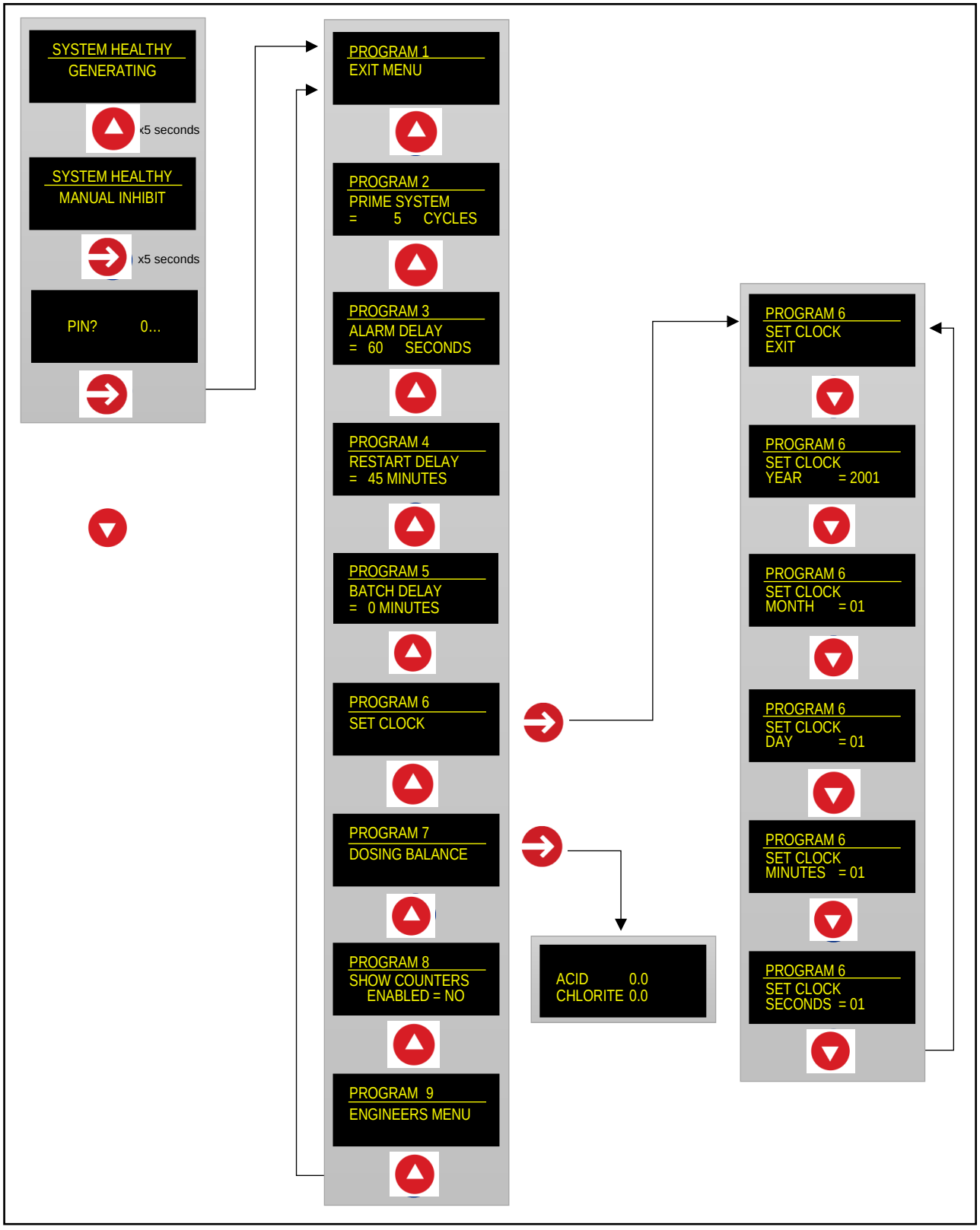
3 software menus are available on the Easyzon D and are accessible to personnel, dependent on their level of training. **8.3.1 Display Menu**

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



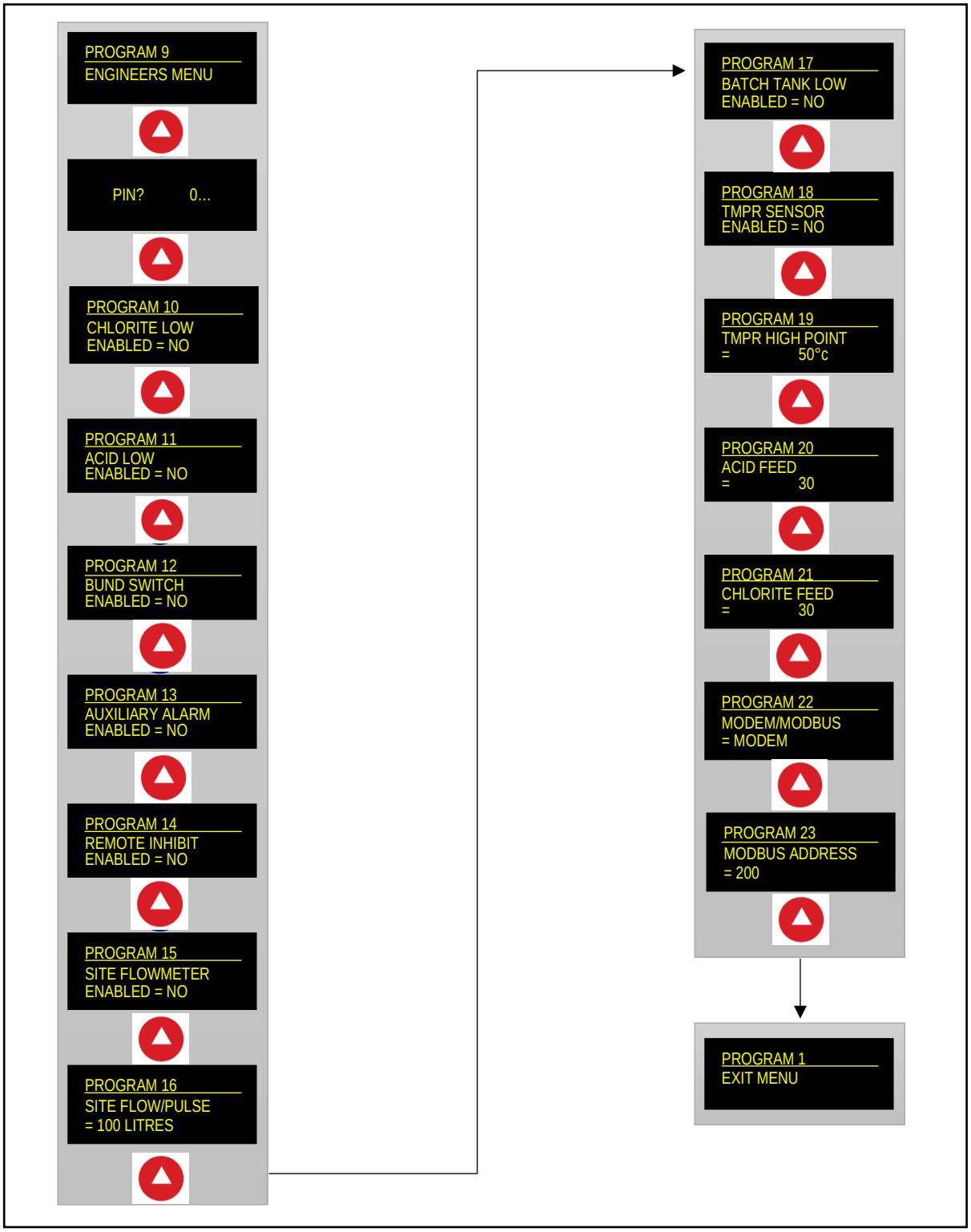
8.3.2 Service Menu 1

- 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 D 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 unit. 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.

8.5 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 unit will generate for after the Batch Delay contact has been made by an external source (Not active in Easyzon D). It is imperative that this setting stays at '0 minutes' for the Easyzon D to function correctly and safely.	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 D 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). This feature is non-standard in the Easyzon D I models.	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 I Model			
			5g/h (at 0.5%)	10g/h (at 1%)	20g/h (at 1.5%)	40g/h (at 1.5%)
1	Exit Menu					
2	Prime System	Cycles	10	15	15	30
3	Alarm Delay	(Secs)	60	60	60	60
4	Restart Delay	(Mins)	15	15	15	7
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	100	100	100	100
17	Batch Tank Low	-	Yes	Yes	Yes	Yes
18	TMPR Sensor	-	No	No	No	No
19	TMPR High Point	ºC	50	50	50	50
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 I system.

9 Operation

9.1 Control Function Sequences

Diagram 1: ClO_2 Production process

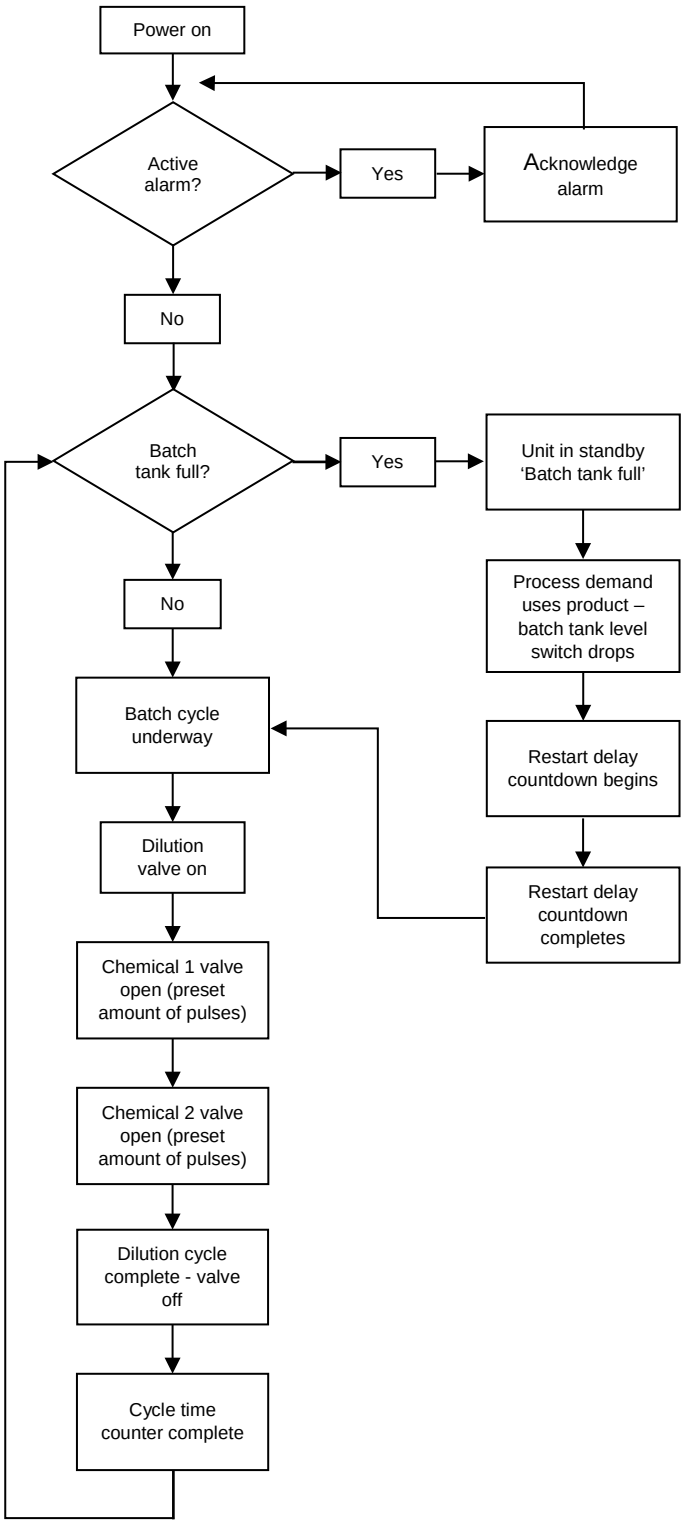


Diagram 2: Alarm/Fault state sequence

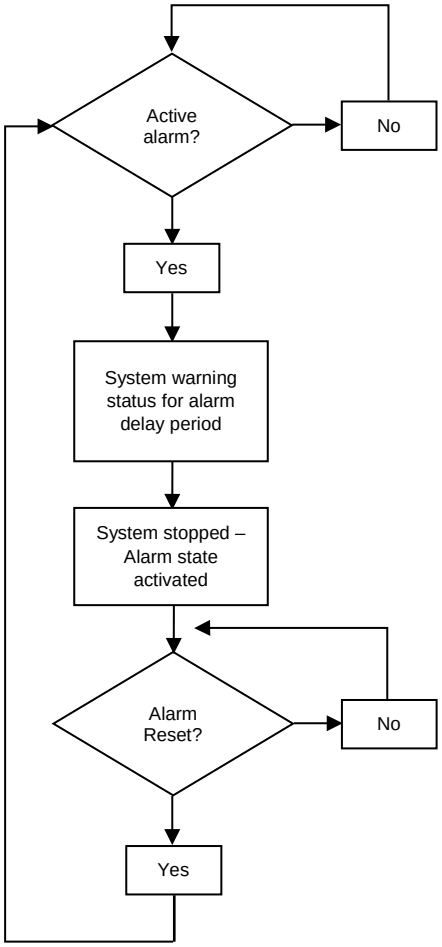
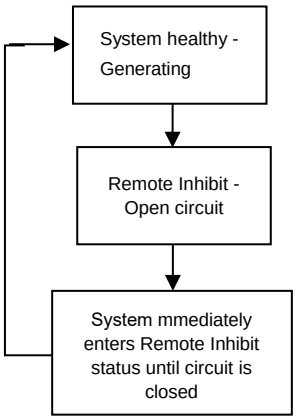


Diagram 3: Remote Inhibit sequence



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
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
		• 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 (9.2.3)
		• 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
Service Required	Yearly service interval prompt has occurred	• Check/Organize dates for routine service	• Service system (see section 10.4)
Reactor change	Triennial reactor change required	• Check/Organize dates for triennial service	• Replace reactor (see section 10.5)

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.
- Only use correct 9% concentration (by weight) of hydrochloric acid chemical precursor.
- Only use correct 7.5% concentration (by weight) of sodium chlorite chemical precursor.

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 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.
✓ E D service apparatus is available to carry out correct procedure.

Easyzon D Shutdown steps:

1. Place the unit 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 unit 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 system.

Dosing pump water purge:

1. Switch off the electrical power to the dosing pump.
2. Carefully disconnect the dosing pump suction line at the pump suction valve taking care to allow any ClO_2 chemical solution to drain safely back to the unit batch tank. Make sure the open end of the tube is not allowed to drip on to any equipment.
3. Connect the open end of the dosing pump water purge kit to the suction valve of the dosing pump (see section 10.6.3)
4. Place the foot valve of the purge kit into a bucket of clean cold water.
5. Switch on the dosing pump and place into operation in order to flush the pump head all the way through to the dosing injection point with clean water. It is assumed that the treatment process will not be adversely affected as a result of adding diluted ClO_2 solution during this activity. It may be necessary to disconnect the dosing pump injection point and carefully allow the diluted solution to run into a clean empty plastic container.
6. Switch off the dosing pump when flushing of the dosing line and injection point is complete.
7. Remove the dosing pump water purge kit and refit the chemical dosing pump suction.
8. Repeat steps 1 to 7 for any other dosing pump connected to the Easyzon D.
9. Safely dispose of any residual dilute chemical solution according to site owner instruction.

✓ ***Short-term shutdown complete***

9.3.2 Long-term Shutdown

Precondition for action:

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

Shutdown Steps:

1. Place the unit into Manual Inhibit mode 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. At this point the pump may stop automatically if interlinked with the system low level signal. Switch off the pump in any case.
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) and repeat the prime system cycles process repeatedly until the batch tank is full as a result of consuming the cold water from the bucket. Replenish the bucket with cold water as necessary.
7. Place the unit into Manual Inhibit mode at the control panel.
8. Carefully relieve the pressure in the dosing pump discharge line(s) by using a bleed valve where fitted to the pump or by slowly releasing the tube connection at the injection point. Disconnect the dosing pump tube carefully at the injection point and take care to quickly allow chemical solution to drain into a clean empty plastic bucket.
9. With the injection tube remaining in the plastic bucket, switch on the dosing pump(s) to consume the diluted volume of ClO_2 solution in the system batch tank. At this point the pump may stop automatically if interlinked with the unit tank empty signal. Switch off the pump in any case.
10. Repeat steps 6 to 9 once again to further dilute and flush the Easyzon D and dosing pump system.
11. If any further dosing pumps are connected to the unit and have not been purged with clean water, then these dosing pumps should be flushed with clean water in accordance with section 7.2.3.
12. Switch off the electrical power supply to the Easyzon D and ensure all dosing pumps are electrically isolated.
13. Reconnect all dosing suction lines and injection lines, leave the suction lances remaining each in their own bucket of clean water.
14. 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 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.
- Only use correct 9% concentration (by weight) of hydrochloric acid chemical precursor.
- Only use correct 7.5% concentration (by weight) of sodium chlorite chemical precursor.

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 D & 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.

10.1 Maintenance Intervals

The system requires regular maintenance to prevent errors, poor performance and even failure.
The system 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 3 years from the date the system was first tested – Press enter key to acknowledge.

Interval	Level	Maintenance
On demand	Remedial: Trained Person	Exchange/replenish chemical precursor drum/tank.
On demand	Remedial: Trained Person	Clean/replace chemical precursor in-line strainer screen(s)
End year 1	Routine: Technician	Minor Service
End year 2	Routine: Technician	Minor Service
End year 3	Routine: Technician	Major Service, including reactor replacement

- **Service kits and spare parts** are available for the above maintenance schedules (see section 11)
- **Remedial maintenance** is expected to be carried out by trained site personnel as part of the day to day operation of the system.
- **Routine maintenance** is expected to be carried out by a trained technician as part of a planned preventative maintenance program.
- **Routine maintenance** is required to maintain a safe and efficient system. After 'End year 3' service, the routine maintenance program repeats as per start of 'End year 1' and so on.

10.2 Remedial Maintenance

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.

10.2.1 Chemical Precursor Replenishment

During normal operation, the chemical precursor(s) are consumed and require replenishment.

10.2.2 20L-35L Drum canister replenishment

Canister replenishment steps:

1. Place the system into Manual Inhibit mode on the control panel.
2. Carefully remove each suction lance out of its chemical drum. Ensure the lance remains vertical.
3. Place each suction lance in its own bucket of clean cold water. This will prevent the lance from allowing air into the suction line and dilute any residual chemical safely.
4. Remove the empty drum and replace with the correct precursor chemical drum. Use the lid of the new drum to screw on to the empty drum.
5. Dispose of the empty drum safely as per site owner instruction.
6. Return each suction lance carefully back into the correct chemical precursor drum and securely screw on to the lid opening of the drum.
7. At the control panel, release the Manual Inhibit function so that normal operation is resumed.
8. At the control panel, reset the chemical precursor 'Volume Usage' values accordingly (see section 8.4.1).

✓ ***Drum chemical replenishment complete***

10.2.3 Day Tank Replenishment

Precondition for action:

- ✓ Easyzon D in normal operation.
- ✓ Individual apparatus available for safe transfer of each chemical precursor from drum to tank.

Day tank replenishments steps:

1. Place Easyzon D unit into Manual Inhibit mode on the control panel.
2. Carefully transfer the correct chemical precursor into the correct chemical precursor day tank.
3. Do not use the same transfer device/apparatus for both chemical precursors.
4. Do not leave any automatic chemical transfer devices unattended during operation in case of over filling and risk of spillages.
5. Safely flush each transfer device with clean cold water after transfer of chemical precursors is complete.
6. At the control panel, release the Manual Inhibit function so that normal operation is resumed.
7. At the control panel, reset the chemical precursor "Volume Usage" values accordingly (see 8.4.1).

✓ ***Day tank chemical replenishment complete***

10.2.4 Chemical Strainer Cleaning

During normal operation the in-line chemical precursor strainer screen may become blocked and require cleaning.

Note:

- ***Refer to service diagram (see section 10.6.1) to observe and compare with instruction step sequence below.***

Precondition for action:

- ✓ Easyzon D in normal operation.
- ✓ Bucket of clean cold water available.
- ✓ Water purge suction line service kit available.

Strainer cleaning steps:

1. At the unit control panel place the system into Manual Inhibit mode.
2. Carefully disconnect the chemical precursor suction lines from the system suction inlets **[A]** and place the open end of each of these suction lines safely back to their corresponding chemical drum/tank. Leaving the suction tube on the floor could cause syphoning of chemical from the drum/tank. This could result in a serious mixing of chemicals and release of toxic ClO_2 gas.
3. Connect the water purge suction kit to the unit chemical precursor inlets and place the foot valve into a bucket of clean cold water (see section 7.2.5).
4. At the control panel activate the Prime System mode by accessing Service Menu-1, Program 2. Set the Prime System value to '**5'** and press ENTER. If the batch tank isn't full the system will now start a water purge filling cycle.
5. At the end of the water purge cycle remove the water purge kit from the Easyzon D suction inlets.
6. Unscrew the bottom adaptor port of each strainer **[B]** and carefully remove and clean the screen in

warm water (or replace if broken). Fit the screen carefully back into the strainer housing and screw the bottom adaptor (ensure the adaptor is also clean) back into place hand tight only.
7. Carefully reconnect each chemical precursor suction line to the correct Easyzon D suction inlet securing the tube nuts hand tight only.
8. At the control panel activate the Prime System mode by accessing Service Menu-1, Program-2. Set the Prime System value to "**5**" and press ENTER. The system will now start a chemical prime cycle.
9. After the prime cycle has completed at the control panel release the Easyzon D from Manual Inhibit.
10. The Easyzon D unit will now operate as normal and generate on demand.

✓ ***Strainer screen cleaning complete***

10.3 Preparing for Routine Service

Prior to carrying out any routine maintenance work, it is strongly recommended that the Easyzon D & associated dosing equipment is purged with clean cold water to reduce the risk of chemical exposure and contamination to personnel and equipment.

Maintenance preparation steps:
1. Carry out the "Long-term Shutdown" procedure as detailed in 10.3.2.
2. Depending on site rules, place a suitable warning sign on the system to indicate equipment is undergoing maintenance.

✓ ***System safely prepared for maintenance***

10.4 Minor Service

The Easyzon D system requires a Minor Service at the End of Year 1 from the date of commissioning and subsequently at the End of Year 2. A Major Service is carried out at the End of Year 3 (see section 10.5).

The Minor Service consists of two main activities.
- Service Easyzon D ClO2 generator.
- Service chemical dosing equipment.

Precondition for action:
✓ System safely prepared for service as detailed in section 10.3.

Note:
- ***Refer to service diagrams (See 11.6) to observe and compare with instruction step sequence below.***
- ***Letters '[A]' relate to said diagrams service diagram labels.***

Service steps:
1. Disconnect each of the chemical precursor 6mmOD suction lines **[A]** from directly under the in-line strainer assemblies.
2. Replace the two in-line chemical strainer screens **[B]**. The inlet collar fitting of the strainer is unscrewed counter clockwise to remove/replace the screen. Be sure to thoroughly clean the clear filter housing and the tube adapters. Secure strainer assemblies hand tight.
3. Fit new 6mmOD clear flexible PVC chemical suction lines and take care to connect each suction line back up to the correct corresponding chemical in-line strainer **[A].**
4. Replace the tank level switch gasket **[C]** by carefully unscrewing the central tank lid and remove/replace the gasket. Screw the tank lid and switch assembly switch back into position hand tight only.
5. Replace the carbon air filter **[D]**. First loosen the underside tube compression nut. Lift the main filter body upward to release the tube fitting from the tank vent tube. Pull the filter out of the mounting clip by pulling in a forward direction. Remove the tank vent adaptor and replace the adaptor O-ring. Refit the vent adaptor hand tight only. At this point the tank dilution inlet gasket can be easily changed – see step 6. When ready, fit the new carbon filter assembly in reverse sequence.
6. Replace the tank dilution inlet assembly gasket and tube adaptor O-ring **[E]** by unscrewing counter clockwise the main tank nut and withdraw the whole assembly from the tank. Fit the new gasket and tube adaptor O-ring, refit the adaptor to 4Nm and secure the assembly back into position hand tight only.
7. Remove the dosing pump chemical suction tube **[F]**. Dispose of the flexible tube but retain the tube connection sets to fit to the new suction tube.
8. Unscrew and remove each of the two-dosing pump tank suction quill assemblies to replace the O-ring at the tank interface position **[G]**.
9. Unscrew the cartridge valve out of the tank suction quill and replace with a new valve assembly **[H]**. Ensure the directional arrow on the valve body is pointing in an upward flow direction. Secure hand tight only. A further second valve assembly will be required if the unit has multiple dosing pumps fitted. This part can be additionally ordered.
10. Refit each of the pump tank suction quills now fitted with a new suction valve where appropriate. Secure back into place on the tank top hand tight only.
11. Loosen the three tube connection nuts of the venturi and remove the venturi from the dilution tubing and reactor circuit. Unscrew the tube adaptors **[J]** in turn counter clockwise to remove the tube fittings. Carefully use a small electrical terminal driver to remove the O-ring from its recess taking care not to damage the adaptor fitting. Fit a new O-ring to each adaptor and ensure it is repositioned securely back on to the venturi. Tighten the adaptors to 4Nm torque.
12. With tubes remaining in place, unscrew the three reactor assembly tube adaptors **[K]**. Replace each of the adaptor O-rings and refit adaptors to the correct position and tighten as detailed in step 10 above.
13. Refit the venturi into place above the reactor making sure to observe flow arrow on the venturi body from right to left and secure all tube compression nuts hand tight.

10.4.1 Dosing Pump & Injection Point Service

Service steps:

14. Carry out service and maintenance procedure to each dosing pump in use with the unit (having already previously been purged with clean water). As a minimum, the dosing pump head (liquid end assembly) should have suction and discharge valves and diaphragm (membrane) replaced at every annual service or in strict accordance with the dosing pump manufacturers recommendation in respect to application and operational duty conditions.
15. Fit the new pump suction dosing tube **[F]** to the pump and tank suction valves as first detailed (and removed) in step 6. Ensure the tube is correctly fitted to the tube cone and sleeve pulled down securely and refitted back into place hand tight only.
16. Service the injector following the recommended procedures given by the dosing pump manufacturer e.g. replace cartridge valve/sprung check valves
17. Repeat from step 14 if multiple dosing pumps are fitted to the Easyzon D unit.
18. Return to section 7.2 for guidance on how to place the unit & dosing equipment back into operation.

✓ ***Minor Service complete***

10.5 Major Service

WARNING!

Risk of toxic ClO_2 gas release!
Risk of contact with toxic ClO_2 solution!

Harm to your health and irreversible damage to the equipment may result if all procedures are not closely followed.

- Never remove the reactor assembly unless trained to do so and all correct personal protective clothing and equipment is in use.
- Never remove the reactor assembly unless all water purging service preparation steps have been completed.

The system requires a Major Service after 36 months from the time of commissioning (End of Year 3). The Major Service consists of three main activities.

- Carry out Easyzon D Minor Service.
- Carry out additional Easyzon D service steps to complete Major Service.
- Service chemical dosing equipment.

10.5.1 Easyzon D Major Service

Procedure ***Precondition for action:***

✓ System safely prepared for service as detailed in section 11.3.
✓ Carry out the Minor Service sequence steps 1 to 11 as detailed above in section 10.4.

Note:

✓ ***Refer to service diagrams (see section 10.6) to observe and compare with instruction step sequence below.***

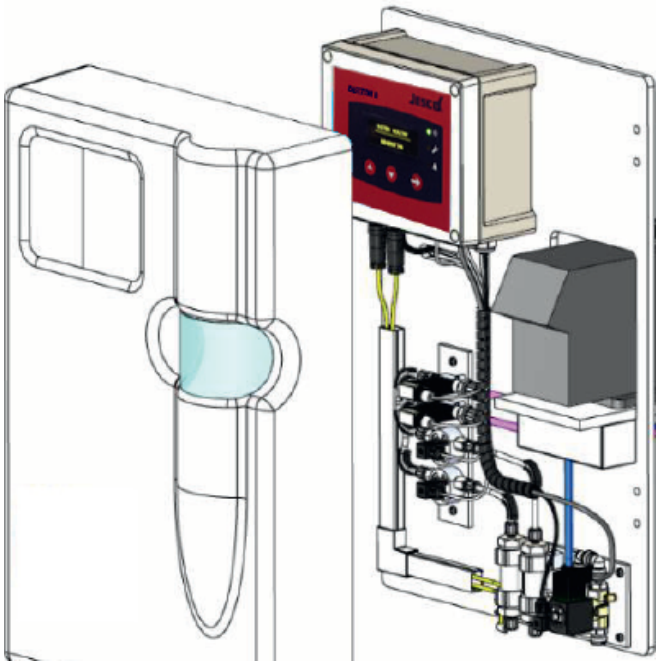
Additional Steps:

1. Remove the reactor assembly **[M]** by disconnecting the three tube compression nuts and unscrewing the two back plate M5 fixings. Place the reactor into a plastic bucket of clean cold water to assist in safely diluting any residual chlorine dioxide solution contained in the reactor body. Fit the new reactor into place taking care to refit all tube compression nuts securely in place, hand tight.
2. Replace the O-rings of the chemical precursor solenoid valves **[N]**. Loosen the tube connection nuts each side of the valve assembly to allow access to unscrew the tube adaptors counter clockwise. Carefully exchange the O-rings and refit the adaptors in place firmly to 2Nm torque. Refit tube connections hand tight only.
3. Continue to step 13 in section 10.4.
4. Return to section 7.2 for guidance on how to place the unit & dosing equipment back into operation.

✓ ***Major Service complete***

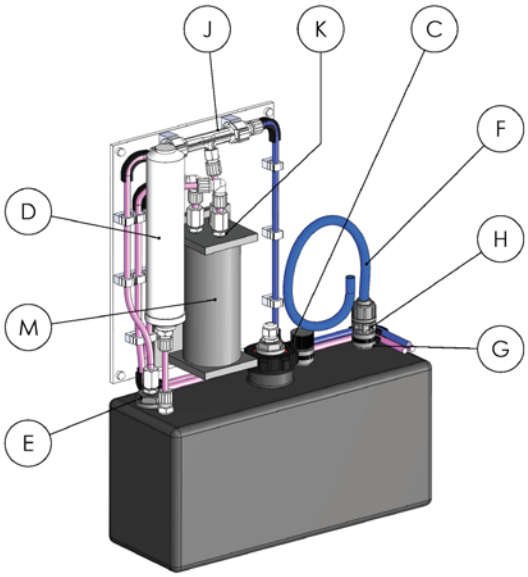
10.6 Service Diagrams

10.6.1 Front Equipment



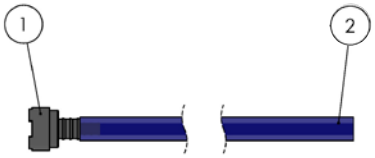
	Description
A	Suction line connection
B	In-line chemical strainer screens
C	Tank lid gasket
D	Carbon air filter
E	Tank dilution inlet O-ring
F	Dosing pump chemical suction tube
G	Dosing pump tank suction quill assembly O-ring
H	Cartridge valve
J	8mm tube adapter O-ring (Venturi)
K	8mm tube adapter O-ring (Reactor)

10.6.2 Rear Equipment

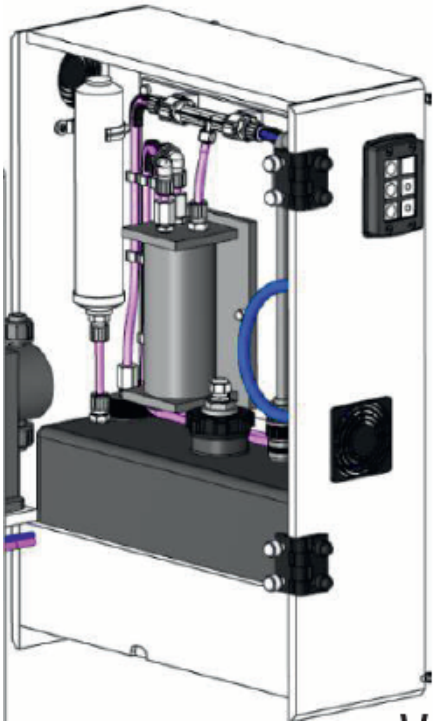


10.6.3 Pump Purge Kit

The pump purge kit connects to valve on the suction side of the dosing pump. It is used during servicing and maintenance procedures to purge the pump and dosing lines with water.



	Description
1	Suction strainer
2	12mmOD x 6mmID tube

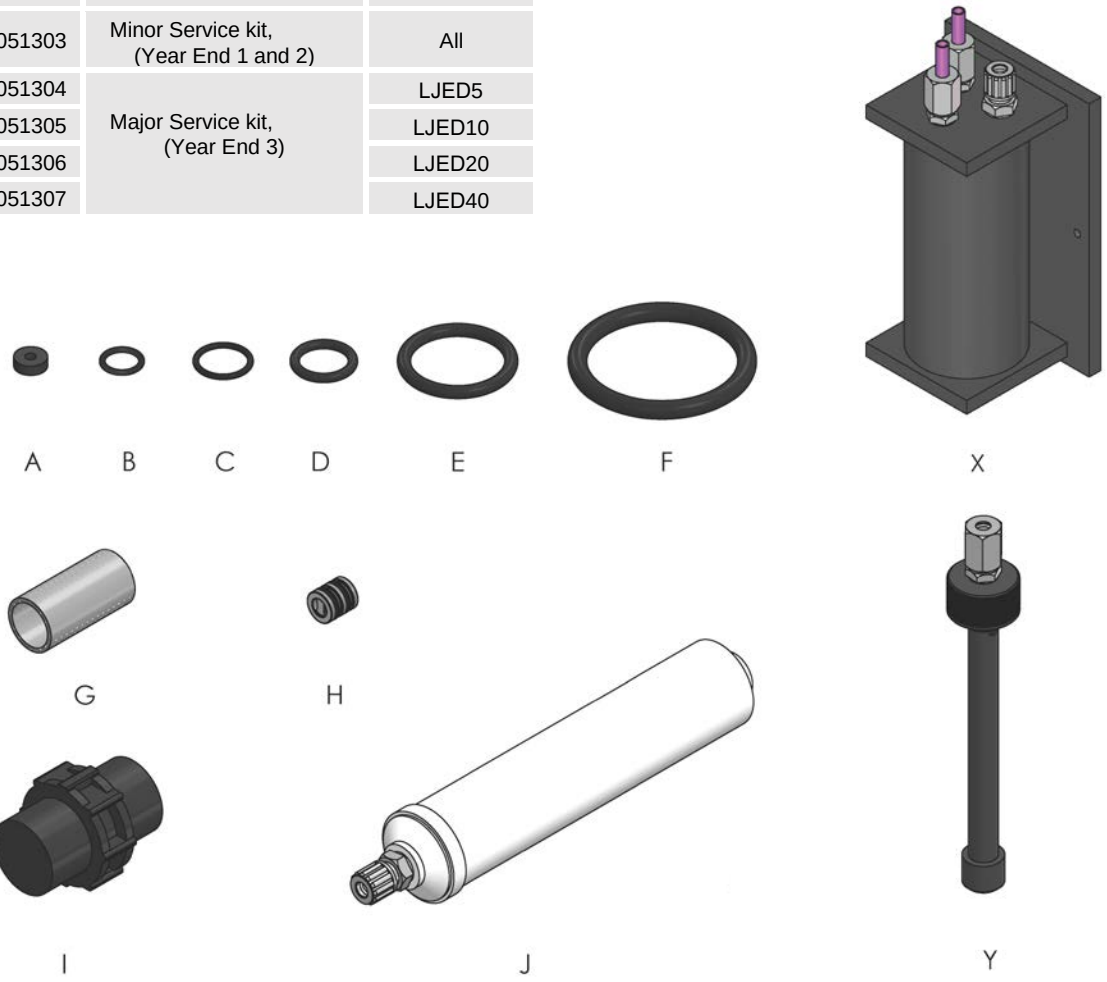


11 Spare Parts

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

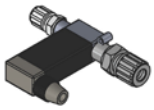
11.1 Maintenance Kits

Code	Description	Model
3051303	Minor Service kit, (Year End 1 and 2)	All
3051304	Major Service kit, (Year End 3)	LJED5
3051305		LJED10
3051306		LJED20
3051307		LJED40

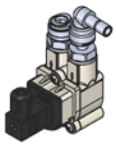


Kit Code	I.D.	Qty.	Description	Material	Minor Service	Major Service
3051303	-	1	6mmID x 12mmOD tube, dosing pump suction	RPVC	✓	✓
	-	2	4mmID x 6mmOD tube, chemical suction	Clear PVC	✓	✓
	A	1	O-ring, venturi side suction port, G1/4f	FPM	✓	✓
	B	4	O-ring, G1/8m tube adaptor	FPM		✓
	C	7	O-ring, G1/4m tube adaptor	FPM	✓	✓
	D	2	DN8 O-ring, dosing pump injection check valve	FPM	✓	✓
	E	2	O-ring, dosing pump tank suction quill assembly	FPM	✓	✓
	F	1	O-ring, tank lid/switch assembly	FPM	✓	✓
	G	2	In-line strainer screen, chemical suction	PVC	✓	✓
	H	1	Sprung check valve - flow sensor discharge	PVDF/Ti/FPM	✓	✓
	I	1	5/8” double check valve, dosing pump suction	PVC/FPM/Ceramic	✓	✓
	J	1	Carbon filter assembly with 8mmOD tube adaptor	PVC/PVDF/FPM/Carbon	✓	✓
3051304-7	X	1	Reactor assembly	PVC/PVDF/FPM/PTFE		✓
	Y	1	Batch tank product inlet quill assembly	PVC/PVDF		✓

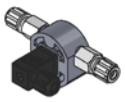
11.2 Recommended Spare Parts



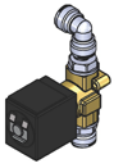
3051204



3051206



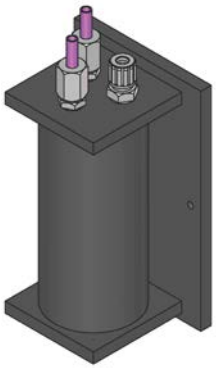
3051205



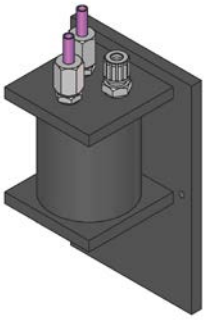
3051207

Code	Description	Contents (material)
3051300	Precursor chemical in-line strainer screen spares kit	4 x filter screen (PVC)
51-DN8CV	5/8” double check valve for tank pump suction	1 x DN8 DCV assembly (PVC/FPM/Ceramic)
529-001	6/12 tube coupling set including 5/8”nut, cone & sleeve	1 x coupling set (PVC)
3051308	Pressure regulator valve (PRV) spares kit	1 x filter screen (Nylon) 1 x clear bowl (PVC) 1 x bowl O-ring (NBR)
3051309	Internal sprung check valve for chlorine dioxide injection valve assembly including DN8 cartridge body O-rings	1 x sprung check valve (PVDF/Ti/FPM) 2 x DN8 O-ring (FPM)
3051101	Pressure gauge 0-4 Bar with 1.5 Bar indication line	1 x pressure gauge (Brass)
3051204	Control solenoid valve assembly for chemical precursor, including inlet & outlet tube adaptors	1 x chemical control valve assembly (PVDF/FPM)
3051205	Flow sensor for chemical precursor, including inlet & outlet tube adaptors	1 x chemical flow sensor assembly (PVDF/FPM)
3051206	Flow sensor for water dilution, including inlet tube adaptor & outlet tube adaptors with internal sprung check valve	1 x water flow sensor assembly (PVDF/PP/EPDM/FPM/Ti)
3051207	Control solenoid valve assembly for water dilution, including inlet & outlet tube adaptors	1 x water control valve assembly (Brass/FPM/SS/PP/EPDM)

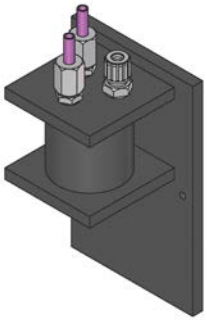
11.3 Reactor Assemblies



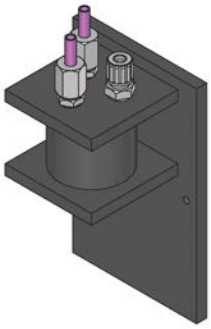
3051223



3051222



3051221



3051220

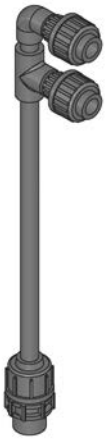
Code	Description	Contents (material)
3051220	5 g/h reactor assembly & top tube fittings & 8mmOD chemical insertion lines	1 x 5g/h reactor (PVC) 3 x tube fittings (PVDF/FPM) 2 x insertion line (PTFE)
3051221	10 g/h reactor assembly & top tube fittings & 8mmOD chemical insertion lines	1 x 10g/h reactor assembly (PVC) 3 x tube fittings (PVDF/FPM) 2 x insertion line (PTFE)
3051222	20 g/h reactor assembly & top tube fittings & 8mmOD chemical insertion lines	1 x 20g/h reactor assembly (PVC) 3 x tube fittings (PVDF/FPM) 2 x insertion line (PTFE)
3051223	40 g/h reactor assembly & top tube fittings & 8mmOD chemical insertion lines	1 x 40g/h reactor assembly (PVC) 3 x tube fittings (PVDF/FPM) 2 x insertion line (PTFE)

General Component Spares

3051200

3051201

3051202



3051208

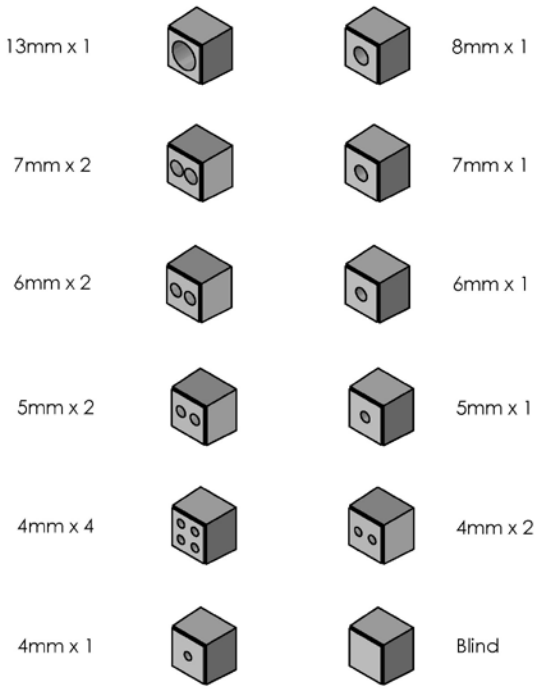
3051203

3051209

3051000

Code	Description	Contents (material)
3051000	½in.BSP chlorine dioxide injection point valve assembly	1 x ClO_2 injection point assembly (PVC/PVDF/Ti/FPM)
3051200	½" water pressure reducing valve (PRV) assembly with custom gauge	1 x PRV assembly (Brass/NBR/Nylon/ PVC)
3051201	Batch tank level switch assembly including cable and gasket	1 x level switch assembly (PVDF/PVC/FPM)
3051202	Venturi feed assembly including tube adaptors	1 x venturi assembly 3 x tube fittings (PVDF/FPM)
3051203	Chemical in-line assembly with 4/6 tube fittings (filter screen not included)	1 x strainer assembly (PP)
3051208	Dual pump suction pipe manifold only	1 x dual suction manifold (PVC/FPM)
3051301	Carbon air filter complete with inlet tube adaptor	1 x carbon filter (PP) 1 x inlet tube fitting (PVDF/FPM)
3051302	Tubing for chemical precursor suctions	2 x clear suction tube (PVC)
305130	PCB fuses spares kit (F1 and F2) 20mm cartridge anti-surge	2 x 2A fuse, 2 x 5A fuse (glass/nickel)
3051250	Front cover grey metallic with Easyzon logo livery	1 x front cover assembly (PVC)
3051110	Easyzon D main PCB without terminal plug sets	1 x PCB (Composite)

Code	Description	Quantity
3051122	(12 - 13mm) x 1 seal insert, grey	x1
3051121	(7 - 8mm) x 1 seal insert, grey	
3051120	(6 - 7mm) x 2 seal insert, grey	
3051119	(6 - 7mm) x 1 seal insert, grey	
3051118	(5 - 6mm) x 2 seal insert, grey	
3051117	(5 - 6mm) x 1 seal insert, grey	
3051116	(4 - 5mm) x 4 seal insert, grey	
3051115	(4 - 5mm) x 2 seal insert, grey	
3051114	(4 - 5mm) x 1 seal insert, grey	
3051113	(3 - 4mm) x 4 seal insert, grey	
3051112	(3 - 4mm) x 2 seal insert, grey	
3051111	(3 - 4mm) x 1 seal insert, grey	
3051123	Blind inserts, grey	



12 EC Declaration of Conformity

We hereby certify that the device described in the following complies with the relevant fundamental safety and sanitary requirements and the listed EC regulations due to the concept and design of the version sold by us.
If the device is modified without our consent, this declaration loses its validity.

Description of the unit:	On-site chlorine dioxide generation system
Type:	Easyzon D
EC directives	
Authorised person for documentation:	Lutz Jesco GB Ltd

Tosh Singh Director

Lutz Jesco GB Ltd
U.K. 06.07.2017

Lutz Jesco GB Ltd
Unit 13A
Gateway Estate
Birmingham
B26 3QD
U.K.

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