Operation manual

Drip oiler with oiling according to operating hours

Code No. 99-97-0621 GB

Edition: 10/19

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1 Program version

The product described in this operation manual is computer-based and most of its functions are carried out by means of software.

This operation manual corresponds to:

Firmware version V2.2.2

Release in November 2019

Product and documentation update:

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Page 2 Program version

About this manual Page 3

2 About this manual

Observe the instructions in this manual to ensure correct and safe use of the system.

Keep this manual safe for future use.

All persons assembling, operating, cleaning and servicing this system must be familiar with the contents of this manual.

These persons must always have access to the manual. Keep this manual in the immediate vicinity of the system for this reason.

Observe the comprised safety instructions!

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Page 4 About this manual

2.1 Structure of the safety instructions

A DANGER!

This indicates risks that will lead to personal injury resulting in death or to serious injuries.

! WARNING!

This indicates risks that could lead to personal injury resulting in death or to serious injuries.

CAUTION!

This indicates risks or insecure procedures that could lead to moderate or minor injuries.

i NOTICE!

This indicates notes preventing property damage and leading to an effective, economic and environmentally-conscious handling of the system.

2.2 Supplier's documentation

The supplier's documentation includes all instructions for components that are supplied by **Big Dutchman** but not manufactured by **Big Dutchman**, for example motors. These instructions are usually supplied with the respective component. If this is not the case or if the language of the corresponding country is not included, please request this documentation from **Big Dutchman**.

It is essential to observe the instructions in the supplier's documentation!



3 Safety

3.1 General safety regulations

Only work with suitable tools and observe the local accident prevention regulations.

⚠ WARNING!

Live parts may be bare when performing different types of tasks. Touching live parts can lead to injuries caused by electric shock and short circuits.

- ▶ Set the main switch to "Off" before starting any repair or maintenance tasks.
- Secure the system against reactivation.
- ▶ Attach a fixed sign to indicate that maintenance and repair tasks are in process!
- ▶ Never touch bare electrical components.
- ▶ Equipment with bare electrical components must not be used by the operating staff.

Check safety and function control devices to ensure safe and accurate operation after carrying out any tasks.

Observe the regulations of local water distribution and power supply companies.

⚠ WARNING!

Defective or disassembled safety devices can lead to serious injuries or to death!

- ▶ It is strictly forbidden to remove or put out of operation any safety device.
- ▶ If safety devices are damaged, immediately put the system out of operation. Lock the main switch in zero position and eliminate any damage.
- ► Make sure that all safety devices are properly mounted and function after work on the system has been completed and before putting the system into operation (again).



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⚠ WARNING!

► Parts lying about on the system and in its vicinity can cause persons to stumble and / or fall and thus risk injuring themselves by contact with system components.

- ▶ Parts lying about in or on the components can lead to serious damage of the system.
- Never deposit objects (e.g. spare parts, replaced parts, tools, cleaning tools etc.) in the accessible areas of the system or in the surrounding areas after having worked on the system!
- ▶ Before putting the system into operation again, assure yourself that all loose or replaced parts have been removed from the system components!

A DANGER!

Persons may be electrocuted or suffer serious electrical injuries if water from leaking hoses, seals and pipes reaches live parts.

- Disconnect the main power supply.
- Interrupt the main water supply.
- Only now may you enter the part of the house where large quantities of water have escaped.

i NOTICE!

Leaking hoses, seals and pipes can cause structural damage or destroy electrical systems by short circuits.

Check regularly whether large quantities of water are escaping and eliminate the leaks as soon as possible.

⚠ WARNING!

Children must not access the system. The safety distances for the system are not designed for children. A risk of injury cannot be excluded, even for supervised children.



3.2 Operator's responsibility

The operator is subject to the legal obligations regarding occupational safety and is responsible for the staff's safety. All safety, accident prevention and environmental protection regulations applicable for the area of use of the system must be observed. The following is especially important:

The operator must clearly specify responsibilities for operation, maintenance and cleaning.

The operator must provide the staff with the necessary personal protective equipment.

The operator is responsible for

- using the system in compliance with the designated use;
- ensuring that the system is only operated in an excellent state from the technical point of view and that maintenance intervals are observed;
- ensuring that his staff is trained to use the system;
- ensuring that operation instructions are prepared for the system.

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3.3 Staff qualifications

Staff must consist of qualified persons who can be expected to perform their tasks reliably. Persons whose ability to respond is impaired, e.g. by alcohol, drugs or medication, must not work on the system. The operator is responsible for which persons he employs. **Big Dutchman** does not assume any liability for personal injury and property damage caused by insufficiently qualified staff.

3.4 Personal protective equipment

! WARNING!

The following instructions apply to any task carried out on the system.

- ► Wear close-fitting protective clothing and protective footwear.
- ▶ Use **protective gloves** where there is a risk of hand injuries and **safety goggles** where there is a risk of eye injuries.
- ▶ Do not wear **any rings**, **necklaces**, **watches**, **scarves**, **ties or other items** which could get caught in parts of the system.
- ▶ Make sure that **long hair is always tied back**. Hair can get caught in driven or rotating working units or parts of the system, resulting in serious injuries.
- ▶ When working underneath the system always wear a hard hat!

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3.5 Designated use

The **Big Dutchman** system may only be used for the purpose for which it is designated.

Any deviating use is considered non-designated use. The manufacturer shall not be liable for any damage resulting from such non-designated use. The user alone bears the risk. The designated use also includes the exact compliance with operating, maintenance and assembly requirements of the manufacturer.

3.6 Ordering of spare parts

CAUTION!

For you own safety, use original **Big Dutchman** spare parts only. For third-party products that have not been released or recommended and for modifications (e.g. software, control units), judging whether there is a safety risk in connection with **Big Dutchman** systems is not possible.

i NOTICE!

The exact description of the spare parts to be ordered can be found by means of the position number in the spare parts list.

Indicate the following when ordering spare parts:

- the code number and description of the spare part;
- the customer number or order number;
- the current supply, e.g. 230 / 400 V 3 Ph 50 / 60 Hz.

3.7 Safety instructions when operating electrical appliances

i NOTICE!

Only persons qualified according to electro-technical regulations (e.g. EN 60204, DIN VDE 0100/0113/0160) may install and work on electric parts / assembly groups.

! WARNING!

If an electric part is open, dangerous electric tensions are bare. Be aware of the danger and keep staff of other professions away from the danger zone.

i NOTICE!

Do not install control devices directly in the house but in the service room to prevent corrosion caused by e.g. ammonia gas.

3.7.1 Protective-equipotential bonding (earthing) of the system

The system must be earthed professionally by the operator or a company commissioned by him at suitable points and according to the valid local guidelines and standards (e.g. IEC 60364-7-705 mod. 2006 / DIN VDE 0100-705: Low-voltage electrical installations – part 7-705: Requirements for special installations or locations – Agricultural and horticultural premises) for protective-equipotential bonding.

The earthing points must be connected with the foundation earth electrode.

Recommended earthing points:

1 x per system row near the foundation earth electrode.

The material required for earthing is not included in the Big Dutchman delivery.

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3.8 System-specific safety regulations

The system is designed according to the state of technology and meets current safety requirements. Nevertheless, there are residual risks, which can be prevented as follows.

↑ WARNING!

Danger of drawing-in due to rollers, chains, gear wheels and belts!

- ▶ Disconnect the system from the power supply before starting any work on the system, because the system may turn on unexpectedly when operated automatically.
- Secure the system against reactivation.
- ▶ Prevent contact with rotating and driven system parts in general!
- Assure yourself that all safety devices have been attached correctly.

3.8.1 Safety symbols on the system

i NOTICE!

Safety symbols and instructions on the system must always be easily visible and undamaged.

- Clean safety symbols in case they are dirty, e.g. due to dust, animal excrement, feed remains, oil or grease.
- ▶ Immediately replace damaged, lost or illegible safety symbols.
- ▶ If a safety symbol or instruction is fixed to a part to be replaced, ensure that it will be fixed to the new part as well.



Code no. 00-00-1240

General note!

Read the manual.



Danger of crushing due to rotating machine parts!

Always lock and secure safety devices before putting the system into operation. Only authorised persons may open protection devices, and only when the system is idle.

Code no. 00-00-1187



Code no. 00-00-1188

Danger of drawing-in due to operating auger, chain or rope sheaves!

Never reach or climb into the feed hopper, the feed column, the feed pipes or the feed trough while the motor is running!

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4 General information

4.1 Description of the control unit for drip-oiler

The controller of the drip oiler can be used for automatic lubrication of a conveyor chain, e.g. egg cross belt. For this purpose, an operating time is chosen for the egg cross belt after which the chain of the egg cross belt shall be lubricated for a freely selectable lubrication time. One controller can control up to 4 drip oilers.

4.1.1 Manual start of lubrication

For each drip oiler, the lubrication of a chain can be activated via an input.

Please note the following:

• If the lubrication of a drip oiler is started manually, the idle time of the cross belt is reset to "100%" (e.g. 100h) and the oiling time counts again from the beginning.



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4.1.2 Automatic start of lubrication

The controller for drip oiler records the operation of the egg cross belt. After a freely selectable operating time of the egg cross belt, the lubrication of the chain starts automatically. The duration of the chain lubrication can be freely selected, however, should be oriented to the following table. See chapter 4.1.3 "Lubricating intervals for drip-oiler"

The process of the automatic lubrication is as follows:

- The operation of the egg cross belt is recorded via an input of EASY-E4. The internal idle time counter now starts to record the operating time of the egg cross belt accurately to the second. If there is a pause during the operation of the egg cross belt, the idle time counter does not continue to count during the pause. Only the actual operating time of the egg cross belt is recorded.
- If the pre-set idle time of the egg cross belt has expired, an output of the EASY-E4 is switched for a freely selectable time. The solenoid valve of the drip oiler which is connected to the output is controlled curing this time and the lubrication process of the chain is started. If there is a pause during the operation of the egg cross belt during the lubrication of the chain, the automatic lubrication stops and continues with the remaining lubrication time when the egg belt is restarted.
- Additionally, the total running time of the egg cross belt is recorded. The recording
 of the total operating time serves only for information about the complete operating
 time of the conveying system.



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4.1.3 Lubricating intervals for drip-oiler

We recommend to lubricate the complete conveying system every 100 operating hours.

Example:

For each lubrication, the chain should circulate 2 times. The oil drips have to be adjusted via the knurled screws so that one drop falls every 5 seconds.

The following lubricating times result from a conveying speed of 6.5 m/min.

Example:

System length	Lubrication time
10 m	6 min
30 m	18 min
50 m	30 min
100 m	62 min

Sample calculation:

System length x 4 (double chain length and 2 circuits)	= lubrication time
6.5 (conveying speed)	- Iubrication time



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4.2 Overview of devices of the EASY control unit

4.2.1 Display and control unit

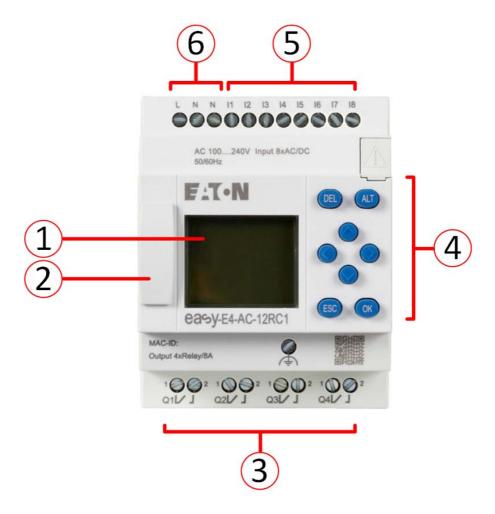


Figure 4-1:

- 1. Display
- 2. Memory card micro SD
- 3. Connection relay outputs
- 4. Input keys
- 5. Connections input
- 6. Connection power supply

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4.3 Configuration of inputs and outputs

EASY-E4-AC-12RC1

Inputs:

l1	Operation egg cross belt 1
12	Operation egg cross belt 2
13	Operation egg cross belt 3
14	Operation egg cross belt 4
15	Manual start of drip oiler 1
16	Manual start of drip oiler 2
17	Manual start of drip oiler 3
18	Manual start of drip oiler 4

Outputs:

Q1	Valve drip oiler 1
Q2	Valve drip oiler 2
Q3	Valve drip oiler 3
Q4	Valve drip oiler 4

Software description Page 19

5 Software description

5.1 General description

EASY-E4 includes a software for the control of the drip oiler.

Requirements:

Used firmware version: V1.10 or later

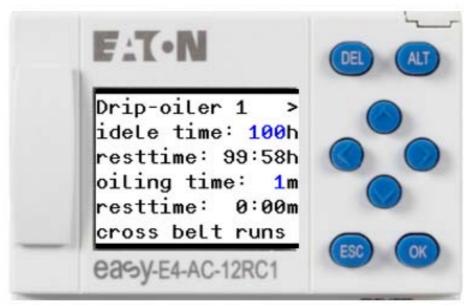
Used software version: Drip oiler V2.2.2 or later

Page 20 Software description

5.2 Software set-ups

5.2.1 General

After switching on the control unit, the following is displayed:



If several drip oilers have been selected, the desired drip oiler can be selected with the arrow keys up down.

5.2.2 Language

The appliance is supplied with 2 languages. With the DEL key, the language can be changed from German to English and reset again.

5.2.3 Changing the operating data

To change data in a menu, press the ALT key once. Now the fields which can be changed are displayed inverted. The changeable number flashes. Each number must be set individually. Press the cursor keys up and down to change the value of the flashing number. Use the cursor keys left and right to select the number you want to change. After all numbers have been entered, confirm the input by pressing the OK key. If you leave the menu with the ESC key, the changes are not saved.

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5.2.4 Input number of drip oilers



Figure 5-1: Input of number of drip oilers

Press the "arrow key left" to access the drip oiler menu. Here you can change the number of drip oilers to be controlled. You can select 4 drip oilers maximally. Press the ESC key or OK key to return to the main menu. Here e.g. V 2.2.1.

5.2.5 Main menu drip oiler

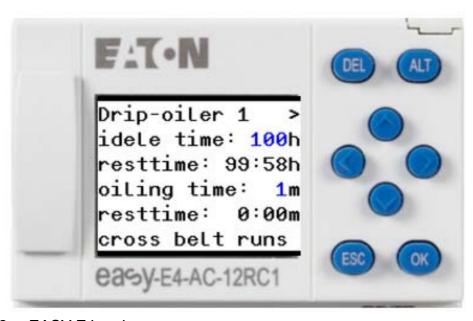


Figure 5-2: EASY E4 main menu

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In this menu, the following information are shown per drip oiler.

Drip oiler 1

Press the arrow keys up / down to change between the drip oilers.

Idle time

The idle time is the time the egg cross belt has to run until the next lubrication starts. This value is pre-set with 100 hours. This value should normally not be changed. Max. input value: 150 hours

Remaining time under idle time

The time is displayed until the next oiling of the cross egg belt starts.

Oiling time

The oiling time is the time the drip oiler must run to oil the egg cross belt 2 times along the entire length. The time to be set has to be determined and entered as described below. Max. input value 300 minutes.

· Rest time under oiling time

The time is displayed during which the current oiling of the egg cross belt is still active.

Cross belt

Here you can see whether the egg cross belt runs.



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5.2.6 Display of total running time of egg cross belts

Pressing the arrow key right leads you to the display of the operating hour counter for the entire running time of the egg cross belt. The menu is displayed as long as you press the arrow key right.

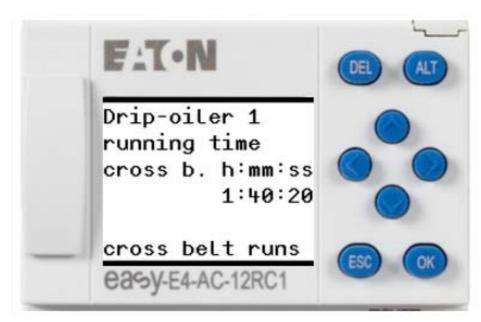


Figure 5-3: Total running time of the drip oiler

This operating hour counter only serves for information about the total operating time of the conveying system. This counter cannot be reset. The max. running time is 500,000 hours.

Page 24 Menu structure

6 Menu structure

