USER'S MANUAL
RIONED

profiJET

TIER4 / STAGE III B ENGINE

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Rioned

This manual is to be used only for this machine.

For extra information on adjustments, maintenance and repair, please contact the technical department of your dealer.

Foreword

This user's manual is a manual for the professional user.
This user's manual has the purpose to control the machine in a safety manner and must be saved with the machine.
The photos and drawings help you understand the text easier.
First the user's manual gives you an overview of the most important safety aspects.
Then we explain how the machine is built up and the global working of the machine.
Chapter "Technical specifications" gives you information about the working characteristics, performance under normal use and construction specifications.
"Control" is the next chapter. This chapter explains how to use the machine systematically.
In the chapter "Maintenance", the user can do small maintenance on the machine.
Chapter "Trouble shooting" has the purpose to solve simple defects.
With the "Exploded views" you can order original spare parts, are also useful for mounting, and disassemble the machine.
Finally gives the chapter "Appendix" information about electrical and/or hydraulic connections.

Table of Contents

1 INTRODUCTION

RIONED wishes to thank you for your purchase of the RIONED drain and sewer-clearing machine. We recommend that you read this manual thoroughly and see that the machine is handled and maintained in the proper manner. If your machine should give trouble and need servicing, when you want to order parts, or if you have any questions, contact your RIONED dealer.

The machine is built by:

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The Rioned high-pressure device has been especially designed and manufactured for cleaning drains, walls, floors and terraces with cold or hot water. For cleaning drains, special nozzles are included in the delivery; for all other purposes, the spray-gun which is also included, can be used.

This manual contains all the necessary information concerning control and maintenance. If the device is positioned correctly, properly controlled, and regularly maintained, a warranty will be given according to the general conditions of delivery. However, should it arise that the control and maintenance procedures are not diligently followed, the warranty will become invalid.

The machine may only be used by authorized personnel.

The machine can not be used in an explosive environment.

In this manual you will find all necessary information concerning operations and maintaining your machine. If handled properly, your machine is guaranteed according the general delivery conditions.

1.1 Use

The integrated engine drives the high-pressure pump via a V-belt. This pump receives water from the water tank via the water filter and pressurizes it. The pressure can be continuously adjusted. The pressurized water leaves the machine via the high-pressure hose on the reel.

2 SECURITY

Be responsible for other people when you are working with this machine.

This manual contains instructions for fundamental conditions that must be followed by use and maintenance of this machine.

That is why it is necessary that authorised and qualified personnel must read the user's manual and the user's manual must always be available with the machine. Near the general regulations in this chapter, you must also follow the security regulations in the other chapters.

2.1 Instruction indications in this manual

The in this manual containing security instructions, which are dangerous if they are not obeyed, are marked with general security signs.

Security sign DIN 4844-W9.

2.2 Descriptions security measures

- Emergency stop
  This machine is equipped with an emergency stop. By operating the emergency stop, the machine will stop immediately. Do not use this button for normal stopping. Only use it when dangerous situations occur. After use, remove the danger and pull the emergency stop in order to be able to start up again. Make sure the emergency stop can always be reached.
- Pressure regulator
  The pressure regulator looks to it that the working pressure never gets to high. It functions like a security valve.
- Security covers
  This machine is equipped with several security covers over parts that are rotating. It is forbidden to remove these security covers during operating this machine. You can only remove them if there is maintenance on the machine. Stop the machine.

2.3 Personnel protection outfit

- Protection looking glasses
- Ear protector
- Gloves (Recommended)
- Work clothing (Recommended)

2.4 Personnel qualification and education

Personnel that use, maintain and inspect the machine must have the right qualifications for this job.

Responsibility and authorisation of the personnel and the supervision on the personnel must be embedded. If the knowledge is not present, the user must provide for the necessarily education.

2.5 Danger that can occur if the security regulations aren't observed

If the security regulations are not observed, danger can occur for personnel and for the environment.

No amends are given if the regulations are not observed.

If the regulations are not observed, this can results in:

- Failure of important functions of the machine.
- Failure of prescribes methods for maintenance.
- Exposure of persons to dangers of electrical or mechanical failures

2.6 Working safely

The in this manual named security prescriptions, the national prescriptions to prevent accidents and the internal labour, company and security prescriptions must be followed by the user.

2.7 Security regulations for the user and technical service

- Protections of moving parts (for example couplings) may not be removed if the machine is working.
- Leakage of dangerous mediums must disposed in a manner that there is no danger for the personnel and environment. Statutory regulations must be followed.
- Danger caused by electricity must be excluded.

2.8 Security regulations for maintenance, inspection and mounting activities

- The user sees to it that qualified technicians do all maintenance, inspection and mounting activities. They must study the manual thoroughly.
- Maintenance may only be done when the machine is not functioning.
- The in the user's manual mentioned handling to stop the machine must be notified.
- Directly after maintenance of the machine, all the security and protection facilities must be functionally.
- Before starting the machine again, you must follow the instructions correctly.

2.9 Making changes and fabricate spare parts

Changes to the machine are only permitted if Rioned has given written authorisation. The use of original spare parts and accessories are for the safety necessary. Rioned is not responsible for injuries or damages if other spare parts are used.

2.10 Improper use

The security during working with the machine is only guaranteed if the use of the machine is conform the user's manual. The limits that are written in chapter "Technical Specifications" and "Appendix" may never be overstepped.

If the machine does not work or give troubles, it is forbidden to work further with the machine. Telephone your dealer or the technical department of your dealer.

This manual contains all the necessary information concerning control and maintenance. If the device is positioned correctly, properly controlled, and regularly maintained, a warranty will be given according to the general conditions of delivery. However, should it arise that the control and maintenance procedures are not diligently followed, the warranty will become invalid.

3 TECHNICAL SPECIFICATIONS

3.1 General

Description *(symbol)*		Unit
Dimensions	:	*see chapter 14.3 Dimensions 2 x 300l water tank page: 73*
Quantity standard water tank	:	300 l a piece
Fill medium	:	Water *(H_2O)*
Maximum temperature medium	:	55 °C *(333,15 K)*
Total length high-pressure hose / diameter	:	160 m / ½" (NW13)
Total length supply hose / diameter	:	35 m / ¾" (NW19)
Quantity oil tank	:	4,5 l
Oil hydraulic	:	HESTIA 46 **Important!**:Replace once a year!
Max. temperature	:	80 °C
Pressure regulator	:	ULH 262-2H
Year of construction	:	See type plate on frame

3.2 Engine

Description *(symbol)*		Technical unit *(SI unit)*
Type	:	Kubota V2403-CR-TE4B
Power *(P)*	:	48,6 kW (65,2 HP)
Fuel	:	**Ultra Low Sulfur Diesel (ULSD)** **Less than 15 ppm**
Quantity fuel tank	:	30 L
Cooling	:	Water cooled
Quantity cooling liquid	:	7 L
Weight *(m)*	:	233 kg
Battery *(U,I)*	:	12 V, 63 A
Oil	:	10W30 API/SF-CC or better
Quantity engine oil	:	9,5 L

Normal coolant engine is protected to -28 °C

Special coolant engine is protected to -38 °C

For more information concerning the engine you can find it in the book delivered with this machine.

3.3 Pump

Description *(symbol)*		Technical unit
Type	:	Speck P55
Maximum pressure *(p)*	:	See type plate on frame
Maximum output	:	See type plate on frame
Weight *(m)*	:	81
Maximum water temperature *(T)*	:	55 °C / 131 °F *(328,15 K)*
Oil	:	GX 80W90
Quantity pump oil	:	4,6 L

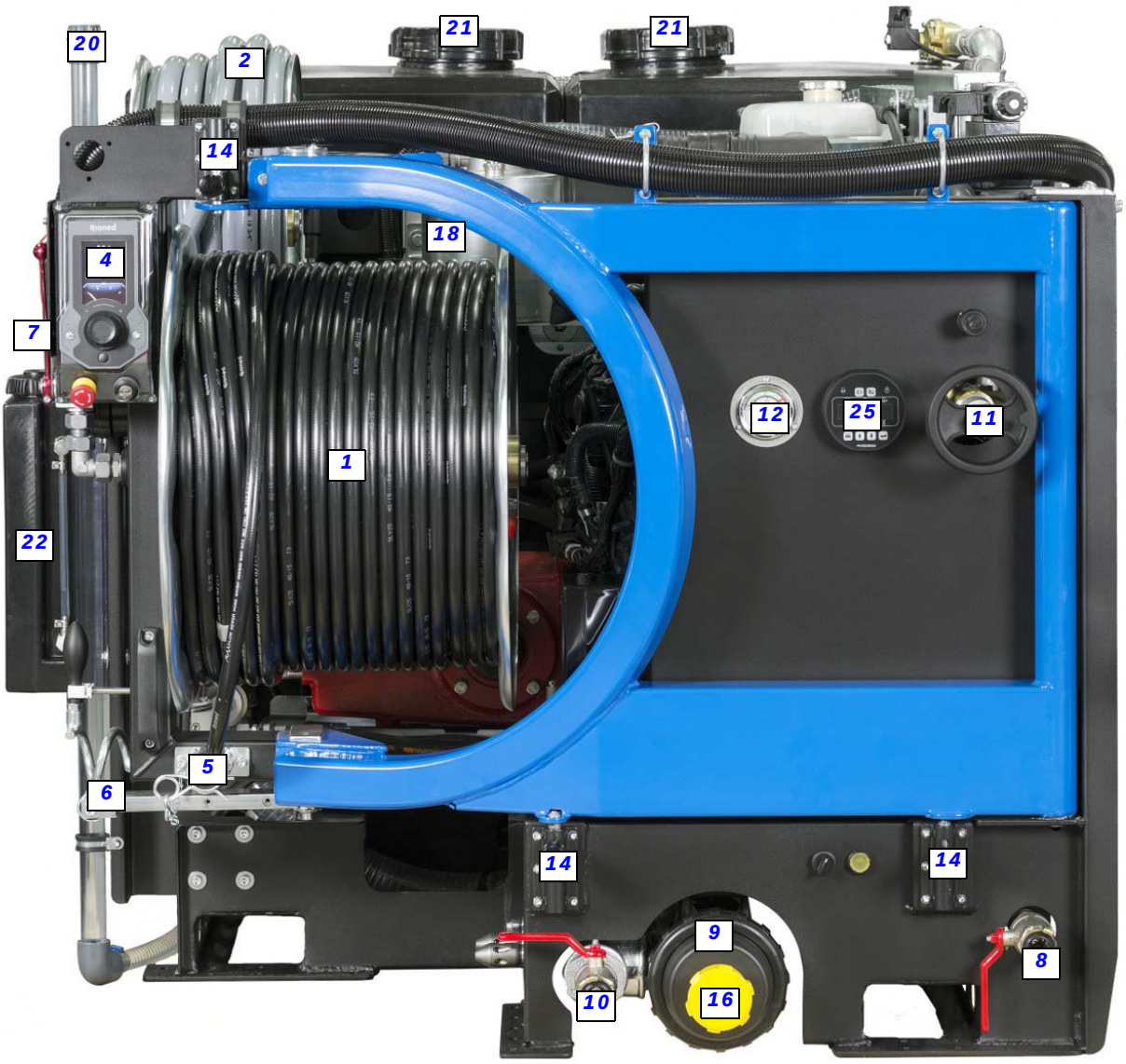
For more information concerning the pump, you can find it in the pump appendix delivered with this machine.

4 CONSTRUCTION

The high-pressure machine contains the following main parts:

1. High-pressure hose on reel
2. Supply hose on real
3. Valve supply hose
4. Control box
5. Hose holder
6. Hose guide
7. High-pressure (HP) valve
8. Supply pipe
9. Water filter
10. Drain valve
11. Pressure regulator
12. Pressure gauge
13. Hydraulic reel control
14. Swivel locking device (3x)
15. Reel locking device
16. Valve water filter
17. Pump
18. Oil reservoir
19. Connection supply hose
20. Level indication water tank
21. Water tank
22. Fuel tank
23. Engine
24. Battery
25. ECM (Engine Control Module)

see chapter 11.5 Engine Control Module page: 59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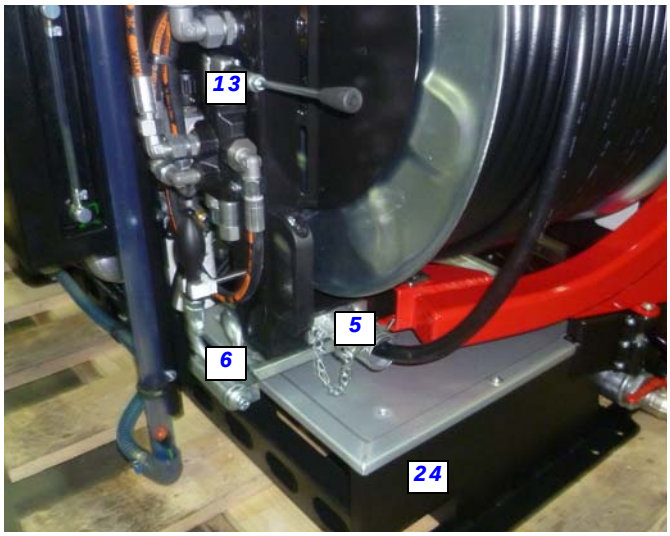
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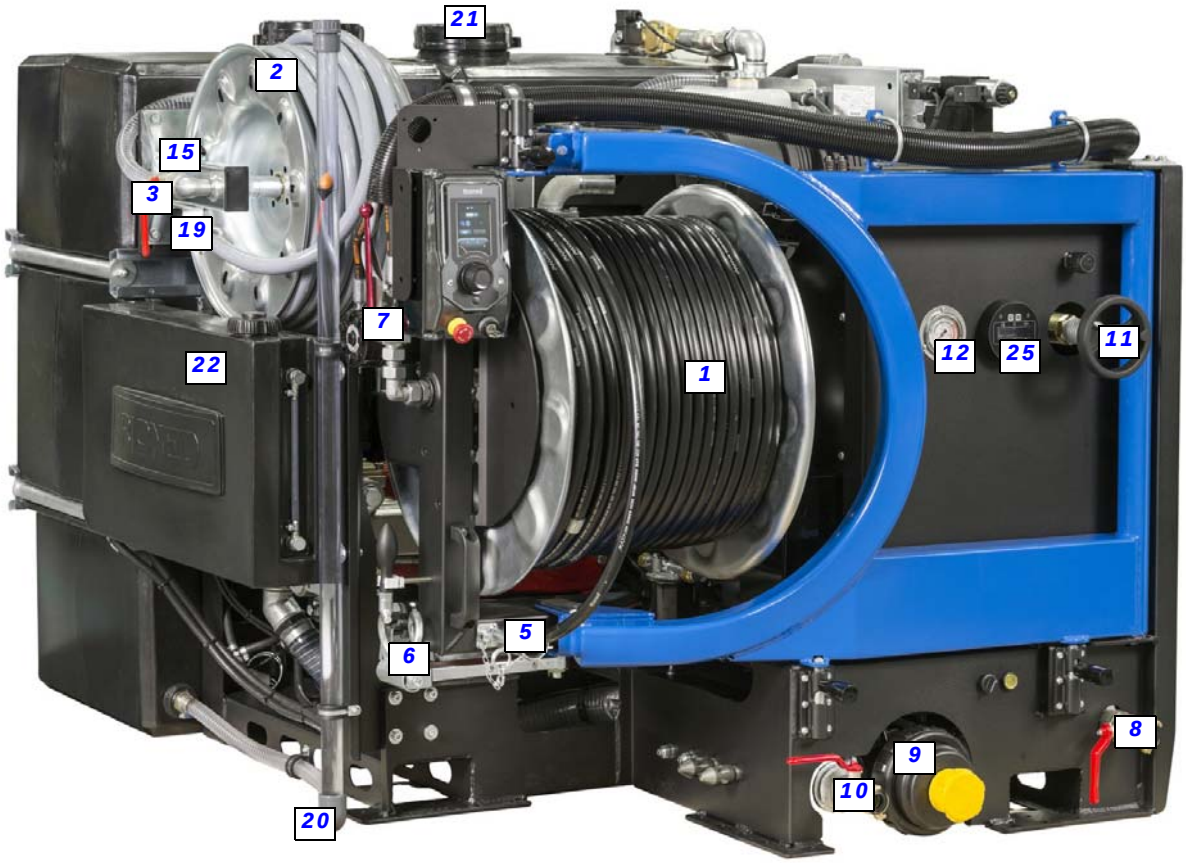
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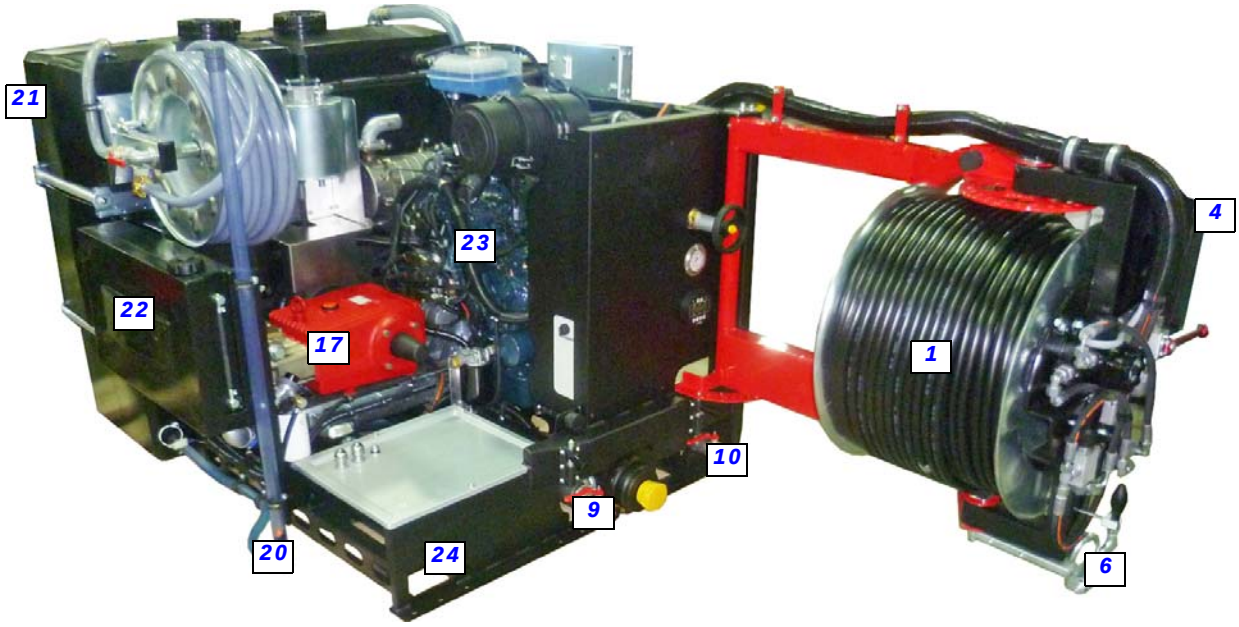
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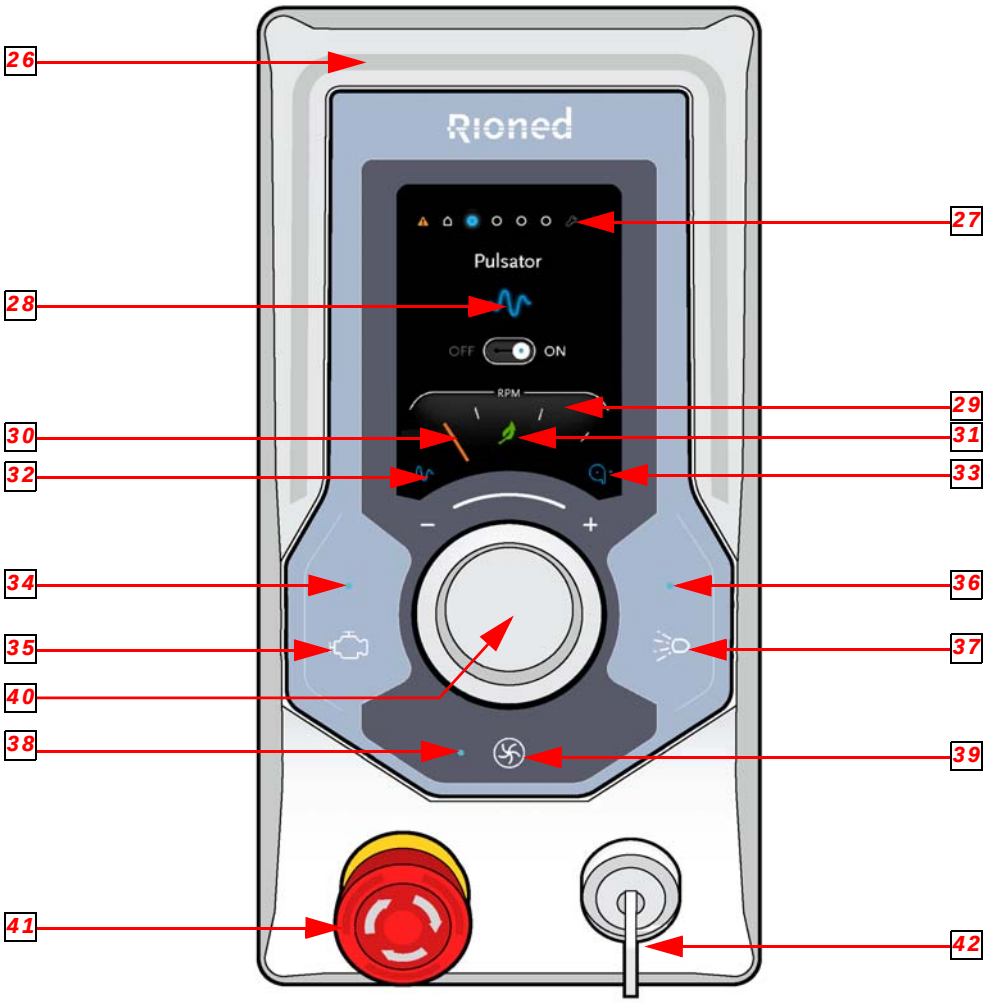
5 eControlPlus

5.1 Control box:

26. Corona
27. Navigation bullets
28. Function
29. Tachometer
30. Pointer
31. ECO Mode
32. Icons Left
33. Icons Right
34. Engine LED
35. Engine symbol
36. High Pressure LED
37. High Pressure symbol
38. Vacuum LED
39. Vacuum symbol
40. Navigator
41. Emergency Stop
42. Key (Off-Manual-Riomote)

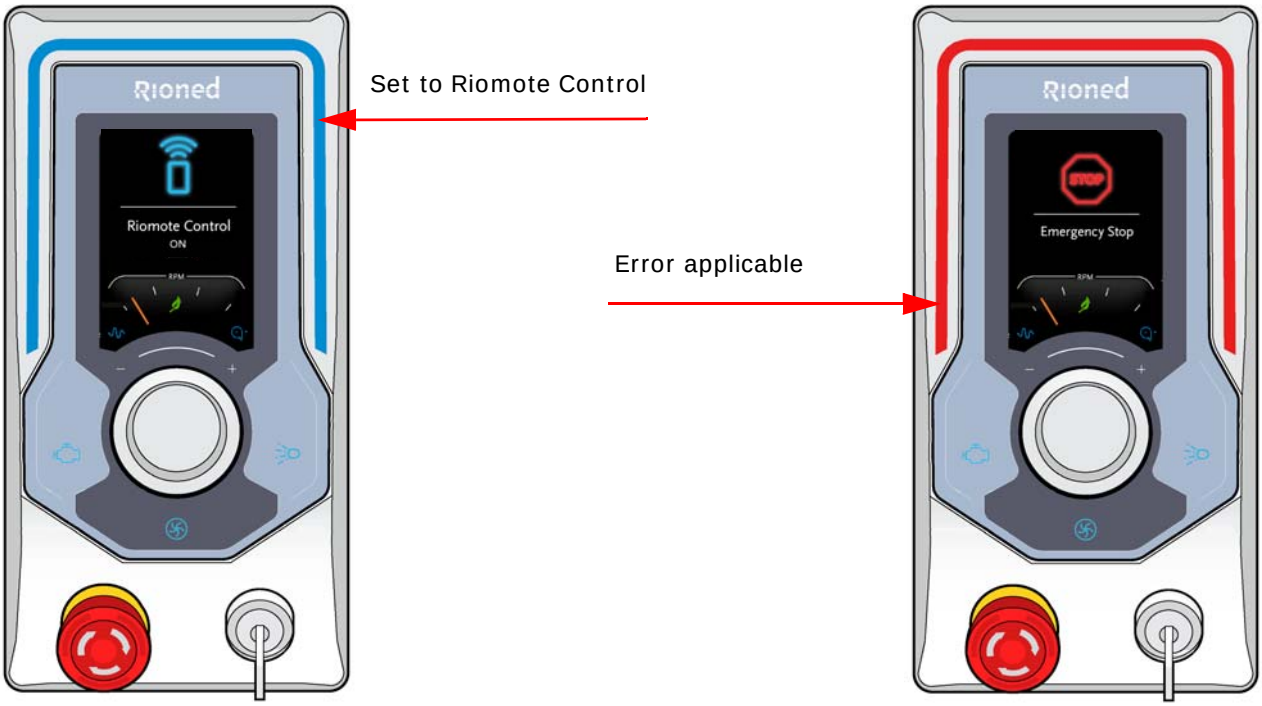


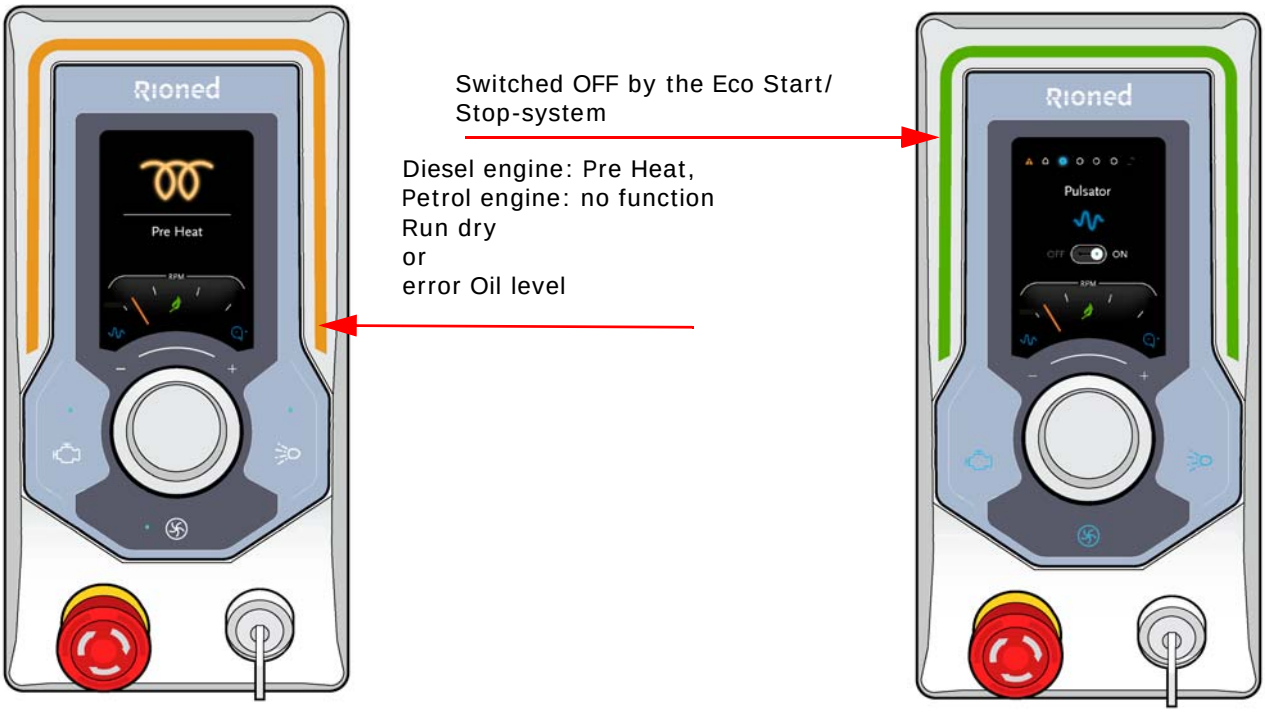
6 Explanation Graphics (only eControlPlus)

6.1 Corona

The Corona is OFF (grey) unless:

- The Control Unit is:





6.2 Push buttons

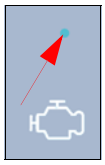
When system is switched ON with the key (***42***),  and  are lighted.

 is lighted on machines featuring a vacuum functionality.

 are lighted when the corresponding functionality is active, regardless Manual Control or Riomote Control.

In case of “Run Dry”,  is blinking with 1 ON/OFF cycle per second.

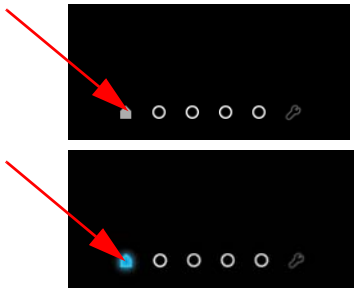
(*see chapter 15.10 "Run Dry" page.: 81*)

Engine LED symbol  starts blinking when engine stops in ECO mode.

6.3 Navigation bullets

The navigation bullet (*27*) has two general states:

- Passive (Grey)
- Active (Blue)



Depending on the user's location in the menu, one of them is on display or, in case of a pop-up, all navigation bullets disappear.

Features in navigation bullets are in specified order, if applicable:

- Error
- Home
- Pulsator
- Hose Reel
- Spray Bar
- Eco Mode
- Management

The Error-navigation-icon is only visible and can only be navigated to when an error is applicable, otherwise the icon is hidden.

- Error passive (Grey)
- Error active (Blue)

The first icon, representing Home , is always visible and can always be navigated to.

The next four bullets, representing:

- Pulsator
- Hose Reel
- Spray Bar
- Eco Mode

are only visible when the corresponding feature is available on the machine.

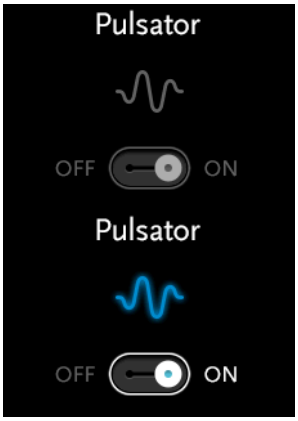
When a feature is not available on the machine, its bullet does not show, and the user navigates to the next item in line.

The last item, the Management-navigation-icon, is always visible and can always be navigated to.

6.4 Function

A function (***28***) has two general states:

- Passive (Grey)
- Active (Blue)



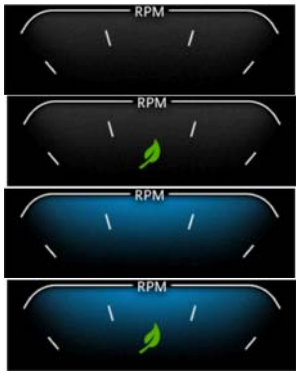
Depending on the user's location in the menu, one of them is on display or, in case of a pop-up, all navigation bullets disappear.

Regardless if a function is active, possible settings on display should always indicate its current status. (***32***, ***33***).

6.5 Tachometer

The tachometer (***29***) has two general states:

- Passive (default)
- Passive (eco)
- Active (default)
- Active (eco)



Depending on the user's location in the menu, one of them is on display.

The pointer which indicates the engine's RPM should always display the current RPM.

If the machine features Eco Mode the current status is always visible by having the Eco-icon on display.

Push button shortly to go back to Tachometer from all menu's.

Throttle control is also accessible via the home button.

6.6 Icons

The icons always display the current status of the corresponding feature, regardless “Manual Control” or “Riomote Control”.

Since the “Hose Reel” and “Spray Bar” are never used simultaneously, they share the same designated area on screen.

- Pulsator on
- Reel down
- Reel up
- Spray bar on

7 CONTROL

If you control, maintain or inspect the machine, you must have the right qualifications for this job. If you do not have the necessarily knowledge, you may not use the machine. Further, you must convince yourself that you understand this manual thoroughly.

7.1 Check before departure

Before you drive away with the vehicle, check the following:

1. Is the high-pressure hose been inserted into the hose holder and secured with the securing pin?
2. Is the high-pressure hose reel locked?
3. Is the supply hose been connected to the GK coupling?
4. Is the supply hose reel locked by means of the reel lock?
5. Are the tyre tensions of the vehicle enough?
6. At temperatures below the freezing point: has the water tank been emptied and the piping system drained and flushed with antifreeze?

The vehicle is now ready for departure.

7.2 Place

1. Put the vehicle at the desired place and pull the hand brake.
2. Block, by use on a hill, the wheels of the vehicle with a wedge.
3. Mark the working area according to the local concerning rules.

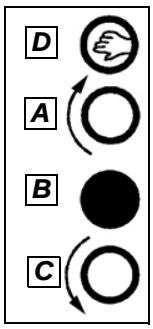
7.3 Hydraulic reel control

By means of pushing the control lever upwards or downwards the high-pressure hose can be unrolled or rolled up. Due to the proportional functioning of this valve you can also control the speed of the reel. By putting the lever into the position you can unroll the hose manually.

Attention!
Never block the lever and always control it with one hand while guiding the high-pressure hose by means of the hose guide with the other hand to the required place.

A Wind the hose

B Reel locked
C Unwind the hose
D Reel “out of gear”



7.4 Hose guide

Purpose:

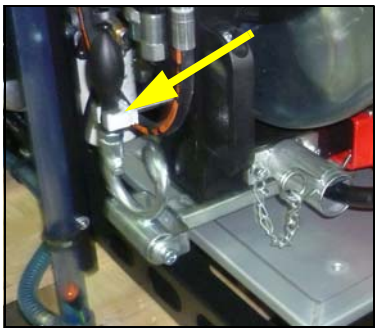
To guide the HP hose into the sewer.

To wind the HP hose on the reel drum.

To keep the hose clean.

Use:

- Put the end of the hose through the opening of the hose guide.
- By moving the hose guide to the right and left, you can wind the HP hose fluently on the reel drum.
- After use, put the hose guide to the left and vertical in the clip.



7.5 Before starting

1. Check the oil level in the engine (***23***), the oil reservoir (***18***) and high-pressure pump (***17***) using the dipsticks. Add oil, if necessary; (*see chapter 3 Technical Specifications page: 15*).
2. Check the level of the fuel in the fuel tank (***22***). Add fuel if necessary.
3. Check whether the water filter (***9***) is clean. Clean the filter, if necessary; see (*see chapter 11.1 Daily maintenance page: 57*).
4. Check whether the high-pressure valve (***7***) on the reel is closed.
5. Check whether the yellow valve (***16***) on the water filter has been opened.
6. Fill the water tank.
   This can be done in several ways:
   a Manually:
   The water tank can be filled with water trough the manhole on the water tank.

b By the supply hose.
Couple the supply hose (***2***) onto a water tap an open the water tap an the supply valve.

c Through the supply pipe (***8***).
Connect a supply hose to the supply pipe. Open the water tap and supply valve.

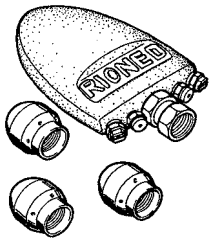
d Through a suction ventury (option). *see chapter 9.6 Suction Ventury page: 45*

The maximum water temperature is 55 °C (131 °F).

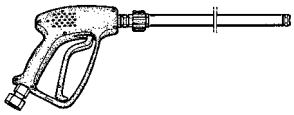
7. Turn the control wheel (***11***) of the pressure regulator counter clockwise.

8. Screw the appropriate attachment onto the high-pressure hose.

a Unclogging of a drain: jet nozzle



b Cleaning a wall, a terrace or floor: spray lance gun



7.6 Starting the engine

Emergency stop:
The machine is equipped with an emergency stop. By operating this stop the machine will stop immediately. Do not use the button for normal stopping. Only use is when dangerous situations occur or during maintenance. After use, turn the emergency stop in order to be able to start up again. Make sure the emergency stop can always be reached.

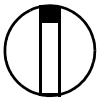
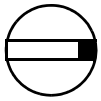
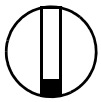
Put on protection looking glasses and ear protectors before starting the machine.

Start the machine.

Proceed as follows:

7.7 Starting the engine at the back of the unit:

Position key control box:

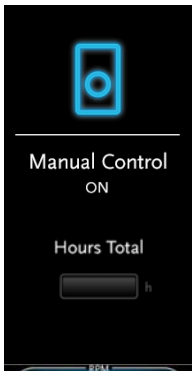
- Insert key: 
- Position 1 (manual control): 
- Position 2 (remote control): 

7.7.1 Start engine manually:

1. Put the key into the keyhole.
2. Turn the key to position **1** "*Manual Control ON*".

- "Work safe" is displayed for 2 seconds.

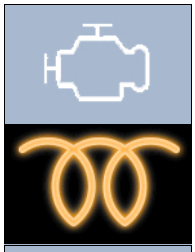
- Icon "*Manual control ON*" is displayed for 2 seconds.



- Then the main menu is displayed
- ECO mode is standard always active if option "ECO Start/ Stop" or "ECO Stop" is available.

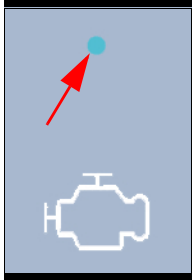
3. Check the error icon.
If the error icon is visible, then go to *see chapter 15 Errors eControl page: 77*.
Go further if the error icon is not visible.

4. Push the engine button (***35***) 2 seconds.

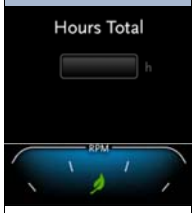


- "*Pre Heat*" and "*Corona-orange*" lightens for 5 seconds (By petrol engine has the "Pre heat" no function!)
- Engine starts

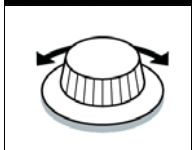
- When the engine runs the "*Engine LED*" (***34***) lightens blue
- "*Engine ON*" is displayed for 2 seconds.



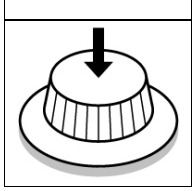
- Then the main menu is displayed



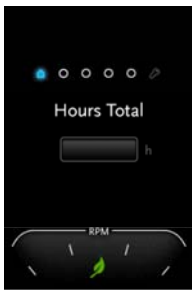
5. Increase (+ clockwise) or decrease (- counterclock-wise) RPM by turning the Navigator (***40***).



6. Push the Navigator (***40***) for "Navigation bullet" menu.



Let the engine warm up. After 3 minutes the machine is ready for use.



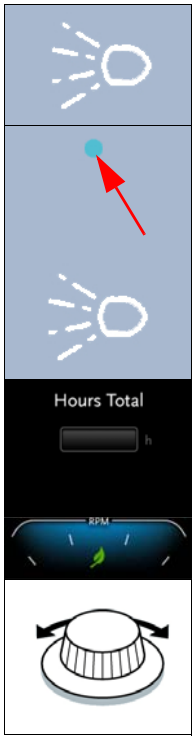
7.8 Unclogging a drain

1. Screw a suitable nozzle onto the high-pressure hose.
2. Put the hose through the hose guide (***6***) for safety manners.
3. Unwind the hose a little.
4. Put the nozzle into the drain that is to be cleaned.
5. Screw the pressure regulator (***11***) fully open (right).
6. Open the high-pressure valve (***7***).

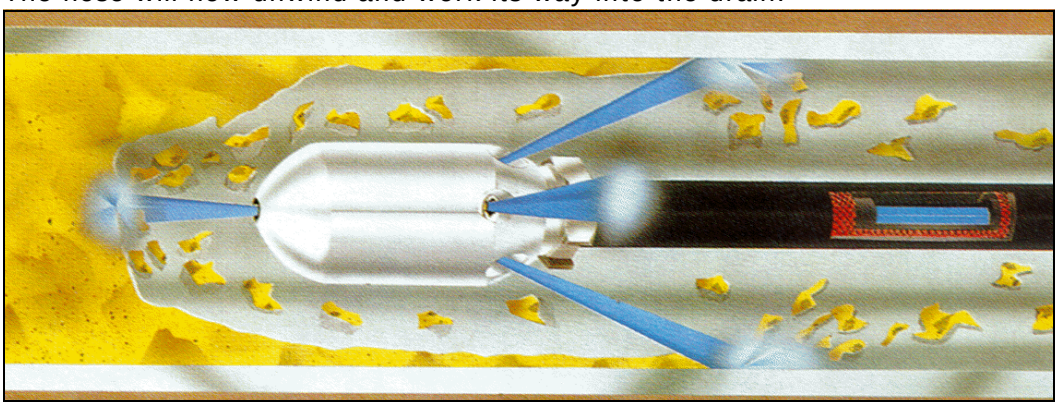
7.8.1 Start spraying:

By eControl:

1. Press button "*High Pressure ON*" (***37***)
   - Water sprays out of the nozzle at the end of the hose.
   - "*High Pressure LED*" (***36***) lightens blue.
   - "*High Pressure*" on display for 2 seconds.
   - Then the main menu is displayed after 5 seconds.
2. Increase or decrease RPM by turning the Navigator.



The hose will now unwind and work its way into the drain.



3. Check that the water drains away. When the blockage has been cleared, continue to flush for a while. At the same time wind the hose up slowly.

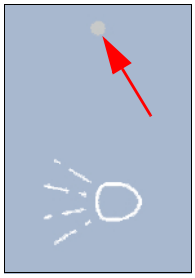
Important!
Rewind hose onto reel under pressure to avoid crushing.
If machine has run out of water, ensure hose is unwound before pressurizing.

7.8.2 Stop spraying:

By eControl:

1. Press button "*High Pressure OFF*" (***37***)

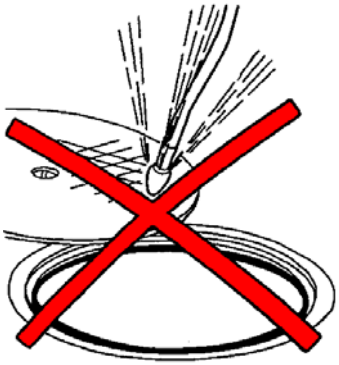
- "*High Pressure LED*" extinguishes.
- "*High Pressure OFF*" on display for 2 seconds.
- Water stops spraying out of the nozzle at the end of the hose.
- Engine RPM decreases.



Treat the high-pressure hose carefully:

- Always clean it after use.
- Ensure that no sharp objects are near the hose.
- Ensure that no traffic crosses the hose.
- If the hose has to be repaired, use only the special repair couplings.

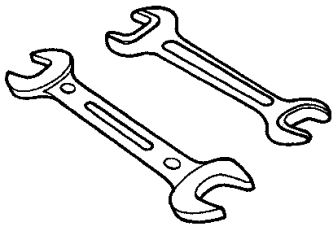
Attention!
Ensure that the spraying nozzle does not leave the drain! Water under high-pressure may cause severe injuries!



7.9 Cleaning a wall, terrace or floor.

Caution!
Before using a spray gun, you must always set the pressure below the maximum (±the half of the maximum pressure). You must do this before you start the machine. If the machine is running, the pressure can be increased by turning the control wheel to his working pressure. Never exceed the maximum pressure that is marked on the manometer when using the spray gun.

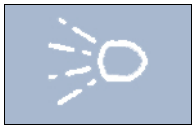
1. Screw the spray gun including in the delivery onto the high-pressure hose. Fasten it by using the two spanners provided.



2. COMPLETELY unroll the high-pressure hose.
3. Attach the spay lance gun. Secure the quick coupling tightly.
4. Open the HP valve (***7***).

Start spraying by eControl:

1. Press button "*High Pressure ON*" (***37***)



2. Throttle up via turning the Navigator (***40***) clockwise.
3. Screw the high-pressure regulator (***11***) wheel upward on the high-pressure regulator until the required working pressure is reached. The

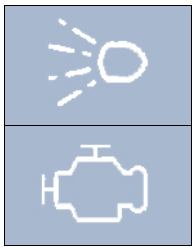
adjusted pressure can be read from the pressure gauge (***12***) on the machine when the spray gun is open.

4. Pull the trigger of the spray gun.

Stop spraying

Release the trigger of the spray gun.

7.10 Stop working



1. HP pump off and throttle down:
Press button "*Stop spraying*"

2. Close the HP valve (***7***) near the HP reel.

3. Stop the engine:
Push button "*Engine ON*" for more then 1 second

4. Check that the water drains away. When the blockage has been cleared, continue to flush for a while. At the same time wind the hose up slowly.

7.11 Using the device during periods of frost

Your machine may freeze up during a period of frost. A number of safety precautions must be taken.

Additional preparations before departure:

1. Drain (***10***) the water tank and unscrew the water filter cap (***9***).
2. Close the drain valve and mount the filter cap again.
3. Put 25 l. antifreeze into the water tank.
4. Open the supply valve (***16***) to the water filter.
5. Start the machine and let it idle.

Note: it is not necessary to attach a gun to the high-pressure control.

6. Open the high-pressure valve (***7***).
7. Let the high-pressure pump remove all the water, which is still in the high-pressure hose.
8. Close the high-pressure valve (***7***) when the antifreeze comes out of the hose.
9. Leave the engine running for some time: to allow all pipes to fill up with antifreeze.
10. Switch off the machine.

Now the machine is ready for departure!

7.12 Additional preparations when preparing for use:

1. Turn on the machine and let the high-pressure pump drain all anti-freeze into the anti-freeze tank. The antifreeze can be reused.

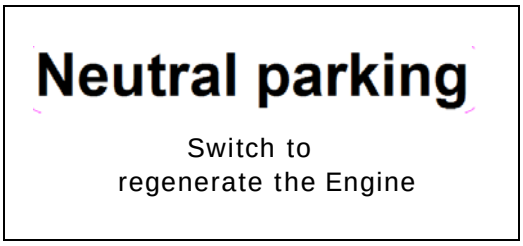
Ensure that no water is mixed with the antifreeze. If too much water gets into the antifreeze, it is not suitable for re-use. Dispose the used antifreeze properly, hand it into a local depot for disposal of industrial waste.

2. Stop the machine and prepare it for use.

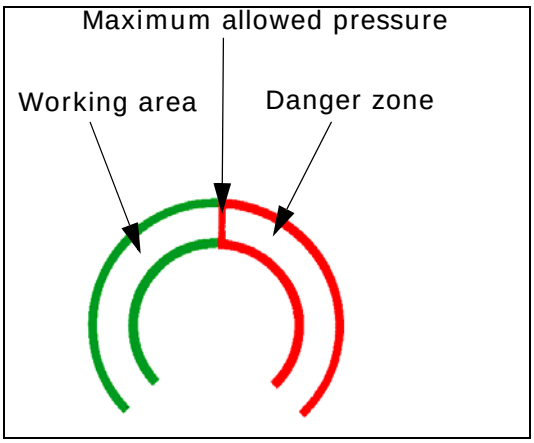
8 SYMBOLS

8.1 Fuel tank

8.2 Frame



8.3 Pressure gauge



8.4 Security sticker

1. Gehör- Kopf- und Augen Schutz tragen verpflichtet.
2. Sicherheitsschuhe mit extra Schutz verpflichtet.
3. Betriebsanleitung studieren verpflichtet.
4. Sicherheitshandschuhe mit Pulsschutz verpflichtet.
5. Schutzkleidung verpflichtet.
6. Kein Trinkwasser.
7. Gefahr für rutschen.
8. Pas auf für Handverletzung.
9. Drehende Maschine.
10. Achtung für automatische anlassende Maschine.

1. You must wear ear- head- and eye protection.
2. You must wear security shoes with extra protection.
3. Read the user's manual.
4. You must wear safety gloves with wrist protection.
5. You must wear protection cloth.
6. No drinking water.
7. Slip danger.
8. Look out for hand damage.
9. Turning machine.
10. Warning for automatically starting machine.

1. Gehoor- hoofd- en oogbescherming dragen verplicht.
2. Veiligheidsschoenen met extra bescherming verplicht.
3. Handleiding lezen verplicht.
4. Veiligheidshandschoenen met polsbescherming verplicht.
5. Beschermende werkkleding verplicht.
6. Geen drinkwater.
7. Gevaar voor uitglijden.
8. Pas op voor handletsel.
9. Draaiende machine.
10. Waarschuwing voor automatisch startende machine.

1. Protection obligataire des gueux, de l'ouïe et de la tête.
2. Protection obligataire des pieds.
3. Obligation de lire le manuel d'utilisation.
4. Protection obligataire des mains.
5. Protection obligataire du corps.
6. Eau non potable.
7. Attention Risque de sol glissant.
8. Attention Risque d'écrasement.
9. Attention Risque de dangers divers.
10. Attention Risque de démarrage automatique a tous moments.

9 OPTIONS

9.1 Second HP-hose

Purpose:

Most used in smaller sewers/pipes or with spray-gun.

Position:

The second hose reel can be mounted at the machine instead of the supply reel hose.

Total length 2e high-pressure hose can differ from, 50 m and higher.

9.2 Pulsator system

Purpose: With less water use, quicker to the stoppage.

Construction:

The high-pressure pump has three cylinders. By normal use the three cylinders follows each other continuously. This gives a fluent volume stream. To stop one stroke, you get a pulsating water stream.

Control:

To close or open the 3-way valve, you start or stop the pulsator.

- Handle to the left-Pulsator on
- Handle to the right-Pulsator off

Use:

Use the pulsator system only to get quicker to the stoppage. Stop the pulsator when you are to the stoppage.

Reel out with the hydraulic control and not touch the HP hose while the Riopulse is on!

Use the machine mentioned earlier in this user's manual.

9.3 Anti-freeze with anti freeze tank

Your high-pressure device may freeze up during a period of frost. A number of safety precautions must be taken.

Additional preparations before departure:

1. Drain the water tank by opening the drain valve.
2. When all water has been removed/drained, you remove the water filter.
3. Clean the filter and mount it in opposite order.
4. Close the drain valve.
5. Fill the anti-freeze tank with antifreeze.
6. Remove the nozzle/gun from the HP hose.

7. Open the antifreeze valve.
8. Press the overrun button and start the engine.
9. Check if the HP-valve on the machine is open.
10. Push button HP ON on the control box.
11. Let the high-pressure pump remove all the water, which is still in the high-pressure hose and pump.
12. Close the high-pressure valve or push button HP OFF, when anti freeze flows out of the HP hose (watch the colour of the water).
13. Connect the HP-hose (with special connection) to the supply hose.
14. Open the supply valve.
15. Close the HP valve, when anti freeze flows out of the supply hose (watch the colour of the water).
16. Next you connect the hose onto the anti-freeze tank (top).
17. Open the HP-valve again an let the pump sends all anti freeze to the anti-freeze tank.
18. Close the high-pressure valve.
19. Switch off the machine.
20. Disconnect the hose and the special coupling an clean up.

Make sure that the HP and the supply hose are locked and tightened. Now the machine is ready for departure!

Antifreeze can be recycled.

Ensure that not too much water is mixed with the antifreeze. If too much water gets into the antifreeze, it is not suitable for re-use. Dispose the used antifreeze properly, hand it into a local depot for disposal of industrial waste.

9.4 Water level control

Purpose: Continuously working with the machine

Functioning:
A floating switch is build in the water tank. This switch controls the solenoid at the supply pipe. Is the water level to high, the solenoid closes. Is the water level to low, the solenoid opens. You are always sure of water during working with the machine.

Installation:

- Couple a supply hose on to the coupling of the supply pipe or use the supply hose.
- Open the water tap.
- Switch on the level control 

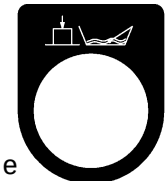
.

Now the water tank gets filled with water.

Stop filling the water tank:

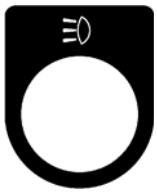
- Close the water tap.
- Switch off the level control 

.

- Depressurize the supply pipe. Press the  button.
- Uncouple the supply hose.

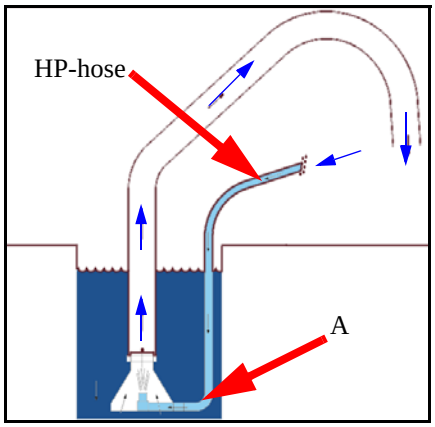
9.5 Working lamp

Control:

By means of switch  you can turn the working lamp ON and OFF.

9.6 Suction Ventury

Use:
The suction ventury takes care that you can pump dirt and/or liquid out of reservoirs.



Preparations:

You must always check if there is enough water in the water tank.

Use:

- Connect the HP hose onto the coupling of the suction ventury (*see illustration A*).
- Place the suction ventury in a reservoir.
- Place the transparent hose there where the dirt must come.
- Check if the HP valve (**7**) to the HP hose is closed.
- Start the machine.

- Switch on the high-pressure pump, if necessary.
- Open the HP valve (**7**).

Stop suction:

- Close the handle of the high-pressure valve.
- Stop the machine.

Uncouple the HP hose.

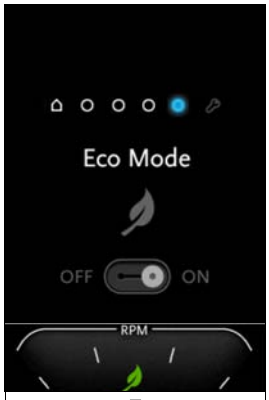
10 Options eControl

10.1 ECO mode OFF

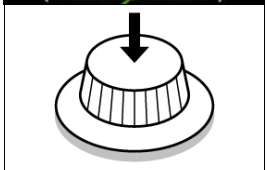
To change the ECO mode, the engine must run!

ECO mode is standard always ON if function is available on machine.

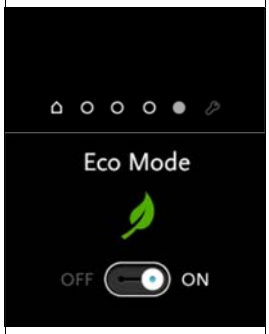
1. Turn the Navigator (***40***) clockwise and set the navigation bullet to position 5 “*Eco Mode*”.



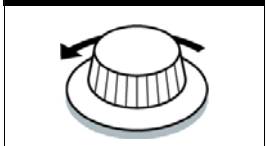
2. Push the Navigator to activate the function.



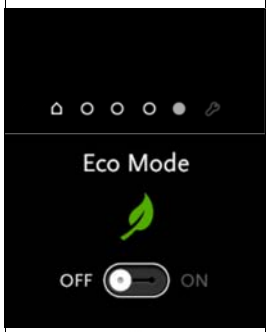
- Navigation bullet extinguishes.
- Eco Mode icon lightens green.



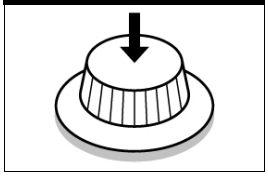
3. Turn the Navigator counterclockwise.



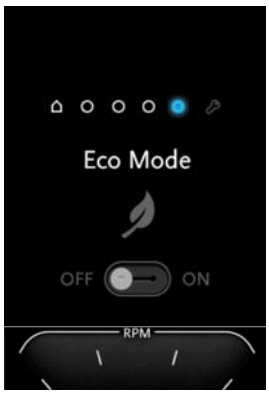
- Eco Mode is “OFF”.



4. Push the Navigator to deactivate the function.



- “Eco Mode” icon extinguishes
- Navigation bullet lightens blue



- “Eco Mode” icon  disappears

5. Wait 2 seconds!

- “Hours Total” is displayed.

10.2 ECO versions

The ECO mode has two versions:

1. ECO Start/Stop
2. ECO Stop

10.2.1 ECO Start/Stop behaviour:

Stop:

- Press “High pressure OFF”:
  a Water stops spraying
  b RPM engine decreases.
  c Engine stops after 30 seconds if no activity takes place.

Start:

- Press “High pressure ON”:
  a Engine starts, if necessary.
  b Water comes out of the HP hose.
- Increase RPM for more pressure and water.

or

- Press “Engine Start”.
- Press “High pressure ON”
  a Water comes out of the HP hose.
- Increase RPM for more pressure and water.

10.2.2 ECO Stop behaviour:

Stop:

- Press “High pressure OFF”:
  a Water stops spraying
  b RPM engine decreases.
  c Engine stops after 30 seconds if no activity takes place.

Start:

- Press “Engine Start”.
- Press “High pressure ON”
  a Water comes out of the HP hose.
- Increase RPM for more pressure and water.

10.3 Riomote Control

Purpose: To operate the high-pressure machine from a distance.

10.3.1 Emergency stop test

Check before working with the Riomote Control if the emergency stop works well. Proceed as follows:

1. Put the key into the keyhole.
2. Turn the key to position **2** "*Radio Control ON*".

- "Work safe" is displayed for 2 seconds.

- Icon "*Riomote control ON*" displayed continuously.

- Corona is coloured blue and is blinking.
  (*see chapter 6.1 "Corona" page.: 24*)
- Switch the Riomote Control on  .
- Press until corona stops blinking.
- Corona is coloured blue continuously when the Riomote control has contact with the receiver.

- Start the engine[1.] by means of button “**START**” 

.

- Push the “**STOP**” button 

.

The machine has to cut off now.

If this is **not** the case it is **not** allowed to work with the Riomote Control. Contact your supplier.

10.3.2 Battery

If the indication 

on the Riomote Control starts burning it's indicates that the battery must be changed with a new fully loaded battery.

If the battery isn't changed the Riomote Control switches off in a short time.

Reload empty batteries.

The function buttons on the transmitter can be different as shown in the next paragraphs!
Look at the symbols on the transmitter for the actual functions!

1. not with 5 channel Riomote

10.3.3 Functions 5 channel Riomote Control:

1. Throttle down
2. Throttle up
3. Stop spraying
4. Start spraying
5. Emergency stop

10.3.4 Functions 7 channel Riomote Control:

1. Throttle down
2. Throttle up
3. Stop spraying
4. Start spraying
5. Stop the engine
6. Start the engine
7. Emergency stop

10.3.5 Functions 9 channel Riomote Control:

1. Throttle down
2. Throttle up
3. Stop spraying
4. Start spraying
5. Stop the engine
6. Start the engine

7. Wind the HP hose
8. Unwind the HP hose

9. Emergency stop

10.3.6 Functions 11 channel Riomote Control:

1. Throttle down
2. Throttle up
3. Stop spraying
4. Start spraying
5. Stop the engine
6. Start the engine

7. Wind the HP hose
8. Unwind the HP hose

9. Emergency stop

10. Pulsator on
11. Pulsator off

10.3.7 Functions 13 channel Riomote Control:

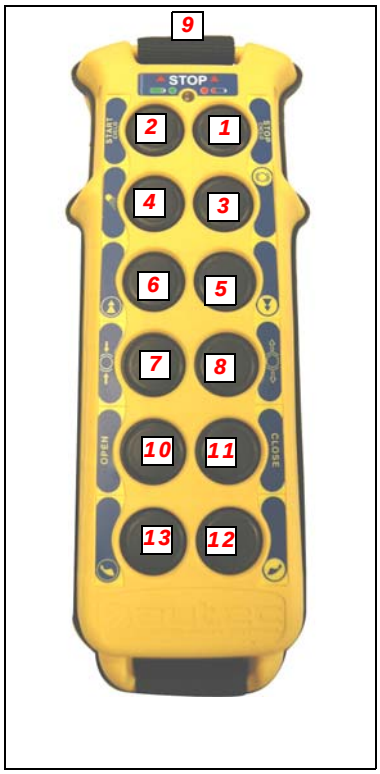
1. Throttle down
2. Throttle up
3. Stop spraying
4. Start spraying
5. Stop the engine
6. Start the engine

7. Wind the HP hose
8. Unwind the HP hose

9. Emergency stop

10. Pulsator off
11. Pulsator on

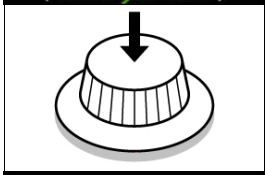
12. Vacuum Off
13. Vacuum On



10.4 Management

1. Turn the Navigator (***40***) clockwise and set the navigation bullet to position 6 “*Management*”.

2. Push the Navigator to activate the function.



- Navigation bullet extinguishes.
- Management underline lightens.

1. Software version.
- Press Navigator shows actual software settings
- Press again Navigator to leave this menu. (Scroll down)

2. Service interval
- Press Navigator shows actual:
  a days till service.
  b hours till service.
- Press Navigator again to leave this menu.

Scroll to “Back” and press on Navigator to go back to the navigation bullets.

11 MAINTENANCE

Attention!
Always stop the engine first and depressurize the system before serving or repairing the machine.
To depressurize the system, you open the HP valve. If the spray lance gun is attached you must also pull the trigger.

11.1 Daily maintenance

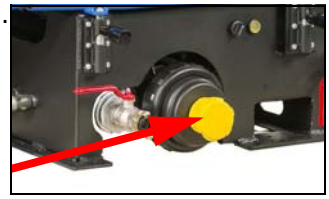
1. Oil level

Check all oil levels once a week. Add oil, if necessary.
If an oil level has dropped, this implies a leak in the system. In which case, check all gaskets, couplings, and (hydraulic) pipes in the system. Immediately repair damage and fill the system with the correct oil.

Mark!
During the settling-in period, the oil consumption can be more than usually.

2. Cleaning water filter:

a Close the yellow valve on the water filter.
b Unscrew cap from the filter piece.
c Clean the filter and concerning parts.
see chapter 13.4 Water filter page: 69
d After cleaning, assemble the parts in opposite order.
e Open the yellow valve.
f Check for leakage.



11.2 Weekly maintenance

1. Cleaning:
Clean the carriage weekly.

11.3 Minor servicing

Minor servicing must be carried out EVERY 250 WORKING HOURS (or at least once every 6 months) and includes the following parts of the machine:

1. Drive

• Servicing the engine

a Change the oil in the engine (Super 15W40 SF CC or equivalent).
b Renew the oil filter, if fitted.
c Clean the air filter.
d Renew the fuel filter.
e Check the tension of the V-belt; increase tension, if necessary.

f Check the condition of the battery.
g Check the torque of the attachment bolts for the engine; tighten them, if necessary.

For more information concerning the engine, you can find it in the book delivered with this machine.

2. Carriage:
Lubricate all mechanical moving parts in the system. Check that all nuts and bolts have been correctly tightened.

3. Pump system

- Cleaning the high-pressure control:
When the high-pressure valve has been closed, the pressure gauge should not indicate any pressure. Similarly, if the spray gun is connected and closed, the pressure gauge should not indicate any pressure. If the pressure gauge does indicate a pressure, this implies a leakage in the system or that the one-way valve may be dirty or damaged. In which case stop the machine, unscrew the hose coupling and clean or replace the one-way valve. Also, check the condition of the O-ring and gasket.
Regularly clean the high-pressure control. Carefully remove all dirt! Proper maintenance will increase the service life of this part.
- Changing the pump oil:
Change the pump oil in the high-pressure pump after every 250 working hours (or at least once a year).

For more information concerning the pump, you can find it in the enclosure delivered with this machine.

11.4 Hydraulic system

Renew oil hydraulic reel steering

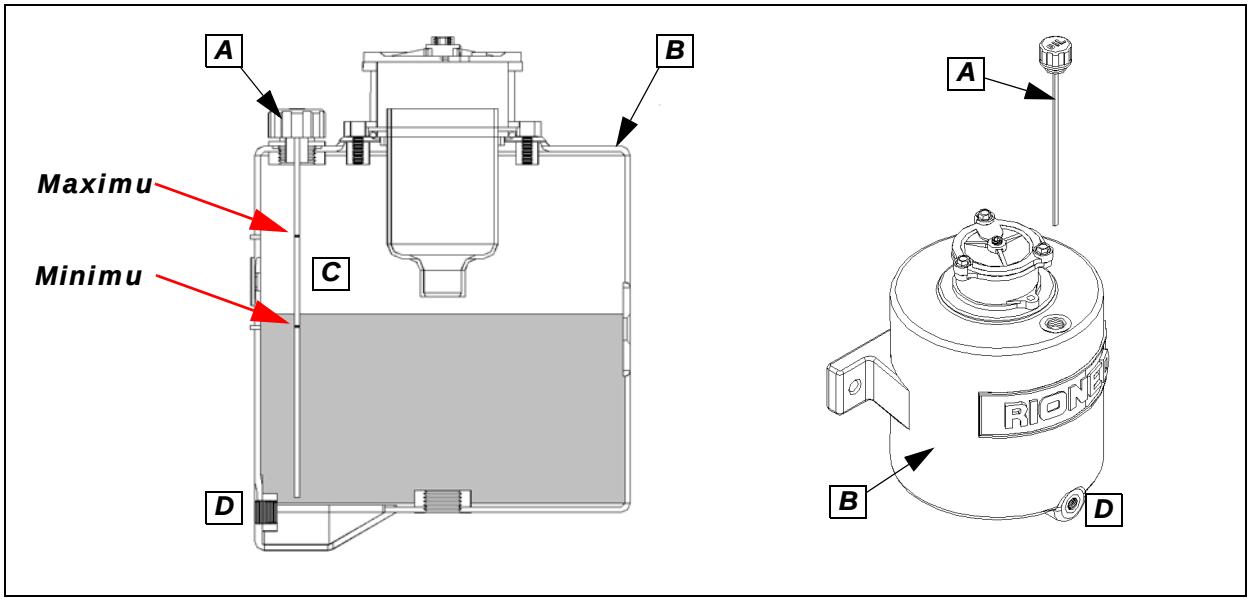
Important!
You have to renew the hydraulic oil at least ones a year!

Only use oil HESTIA 46.
Order number Rioned 71-003-500-046
Check, every time before use, if the level of the oil is sufficient.

Proceed as follows:

1. Stop the machine.
2. Be aware that the machine is standing horizontal.
3. Take the dipstick (A) out of the oil tank (B).
4. Clean the dipstick with a tissue.
5. Put the dipstick into the oil tank.
6. Take the dipstick back and watch at the dipstick if the oil is between maximum a minimum (C).
7. Fill oil, if necessary.
8. Fasten the dipstick onto the oil tank.
9. Start the engine and let it turn for about 5 minutes.

10. Stop the machine and repeat point 2 until 8.



To let the oil out of the reservoir you unscrew plug D. Catch the oil in a bucket.

11.5 Engine Control Module

If the ECM (***25***) ask for “Regen Needed” proceed as follows:

1. Turn the switch to position “Parking”
2. Press Y at the ECM

For more information about the ECM see the product manual ECM delivered with this machine.

11.6 Extensive periodical maintenance

Have the high-pressure machine checked and maintained from time to time by the technical service of Rioned. In this way, long life and quality will be guaranteed.

11.7 Maintenance scheme

Interval		
Check oil levels	:	Every time before use
Cleaning water filter	:	Every time before use and with strong pollution.

Cleaning carriage	:	weekly or with strong pollution.
Service engine	:	Every 250 working hours or at least once every six month
Lubricate moving parts	:	Every 250 working hours or at least once every six month
Cleaning pressure regulator	:	Every 250 working hours or at least once every six month
Renew pump oil	:	Every 250 working hours or once a year
Renew oil hydraulic system	:	Once a year
Decalcify suction valves	:	Once a year
Decalcify pressure valves	:	Once a year
Puncture nozzle holes	:	Every 50 working hours

Replace all parts immediately if there is wastage or defect.

12 TROUBLESHOOTING

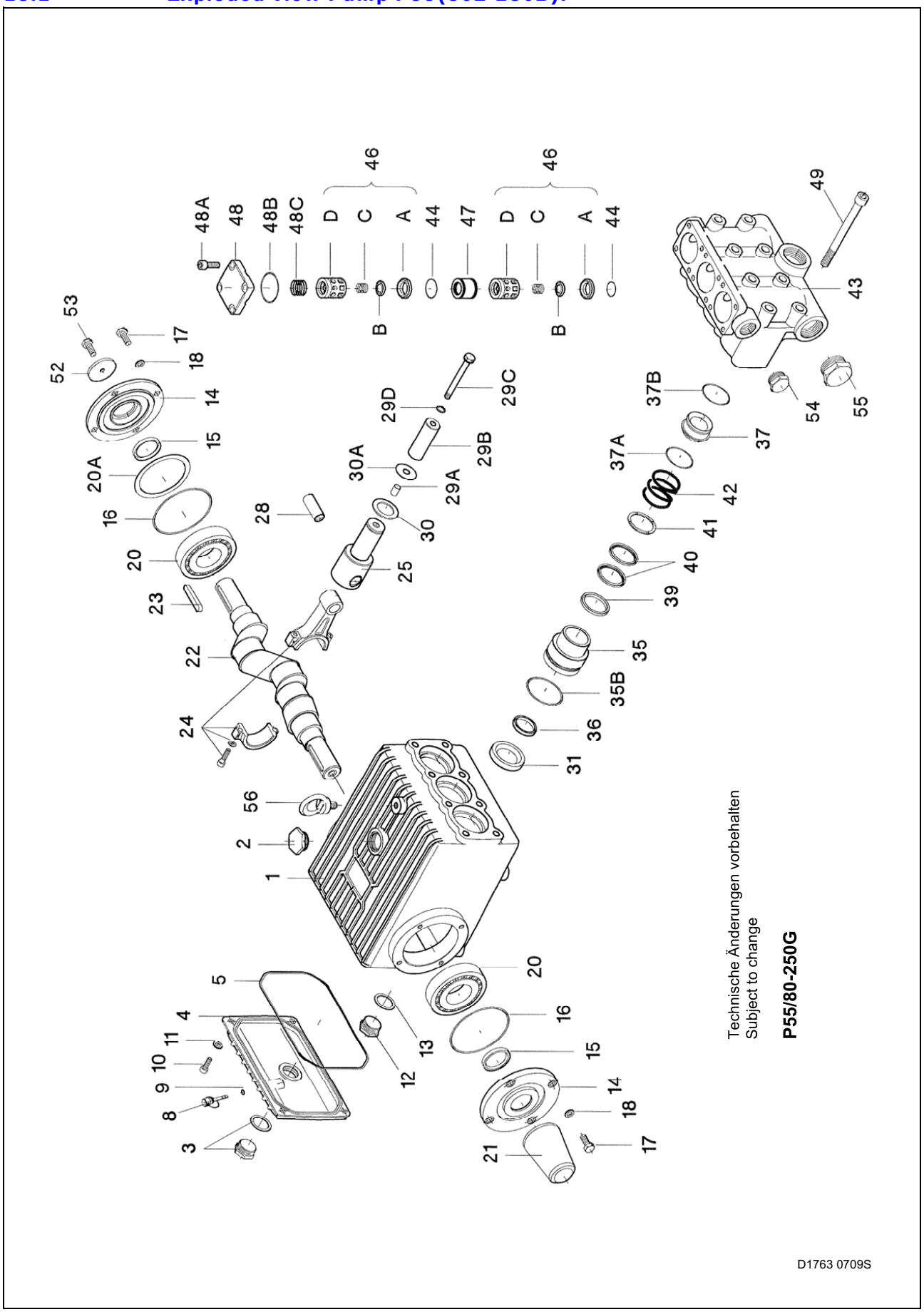
Failure	Reason	Solution
Engine does not start or stops abruptly.	Machine has run out of fuel	Add fuel
	Main or secondary fuse blown	Replace the defect fuse and restart engine. If problem repeats, contact your dealer
	Battery voltage too low.	Load or replace.
	Emergency stop activated	Turn the emergency stop in order to be able to start up again
	Too less water in water tank (for cooling system)	Fill the water tank and let the machine cool down. After that one can start the machine again.
	Cooling water-level too low	Fill the cooling system at the expansion tank until the right level.
	Temperature of cooling water too high	Let the machine cool down
The high-pressure pump does not produce the required pressure.	Water tank empty	Fill the water tank
	Supply valve to water filter closed.	Open the supply valve
	Water filter clogged.	Stop the machine and clean the water filter
	Air in high-pressure pump	Allow the machine to run a few minutes. The failure will normally disappear. If not, contact the service department of your dealer
	Suction valves blocked	Carefully loosen the valves and descale them, if necessary
	V-belt not sufficiently tightened	Tighten the V-belt; replace if necessary
	Suction valves worn out.	Contact the service department of your dealer.

Failure	Reason	Solution
Pressure varies.	Water level in tank too low	Stop the engine, refill the tank and restart engine
	Water supply valve not sufficiently opened	Open the supply valve completely
	Water filter clogged.	Stop the machine and clean the filter
	Pump sucks air	Stop the machine and check all hoses and couplings for leakage
	Nozzle clogged	Stop the machine and clean the nozzle (clean the nozzle holes)
	Pressure valves dirty or worn	Stop the machine. Check the condition of the pressure valves. Clean or replace them
	Pump gasket worn out	Stop the machine and replace gasket
	V-belts for the pump slip	Stop the machine and tighten the belts
	Ceramic plungers in the pump damaged	Contact your dealer
	Pressure control clogged or internally damaged.	Contact your dealer.
Hydraulic reel does not wind the hose	Handle not on right position	Put the handle into the right position
	Hydraulic tank almost empty	Refill the tank. Check the system on leakage
	Attachment bolt for control lever of hydraulic system loosened	fasten the bolt and put the lever into the correct position
	Working pressure set too low	Increase the working pressure, if possible
	Return filter hydraulic tank dirty	Switch off the machine and clean the return filter
	Hydraulic system damaged	Contact your dealer
No reaction by switching in transmitter	No current	Load battery
		Use new battery
		Control contact points on dirt and dust
		Check fuses
		Contact your supplier by repeating disturbances
	Transmitter is not on	Put transmitter on (sign in)
	Transmitter out of reach from receiver	Put the machines closer on. Put transmitter closer
Warning signal after short working time	Battery empty / defect	Load or replace
	Battery not loaded or defect	Change battery complete
		Check if the charging works well
		Check battery points / clean it
		Use other battery
Transmitter indications are good but functions are not executed	Emergency stop pushed in	Unlock emergency stop
	Receiver has no current	Check / replace fuses
	No radio connection	Check functions of control lights

Failure	Reason	Solution
Certain functions are not executed	Receiver is faulty	Contact your supplier
	Interruption in electric circuit	Check all plugs. Plug in and push. Check control lights if functions are indicated

13 EXPLODED VIEWS AND PART LISTS

13.1 Exploded view Pump P55(80L-280B).



13.2 Part list Pump P55(80L-280B).

Ersatzteilverzeichnis P55/80-250G **Best.-Nr.: 00.5935**
Spare Parts List **Code Nr.**

Lfd. Nr. Item No.	Stückzahl No. Off	Best.-Nr. Code No.	Benennung	Description
1	1	01.0709	Antriebsgehäuse	Crankcase
2	1	00.2914	Ölauffüllstopfen kpl.	Oil Filler Plug Assy
3	1	00.2416	Ölschauglas	Oil Sight Glas
4	1	03.0266	Getriebedeckel	Crankcase Cover
5	1	06.1224	O-Ring zu 4	O-Ring for 4
8	1	00.0520	Ölmeßstab kpl.	Oil Dipstick Assy
9	1	06.0053	O-Ring zu 8	O-Ring for 8
10	4	21.0388	Innensechskantschraube	Inner Hexagon Screw
11	4	07.3196	Federring	Spring Ring
12	1	07.1001	Stopfen G3/4	Plug G3/4
13	1	06.0350	Dichtung	Gasket
14	2	03.0269	Lagerdeckel	Bearing Cover
o15	2	06.0714	Radialwellendichtring	Radial Shaft Sea
o16	2	06.0605	O-Ring zu 14	O-Ring for 14
17	8	21.0394	Sechskantschraube	Hexagon Screw
18	8	07.3196	Federring	Spring Washer
20	2	05.0127	Kegelrollenlager	Taper Roller Bearing
20A	1-5	07.1998	Paßscheibe	Fitting Disc
21	1	07.3147	Wellenschutz	Shaft Protector
22	1	11.0646	Kurbelwelle	Crankshaft
23	1	07.2759	Paßfeder	Fitting Key
24	3	00.4227	Gleitlagerpleuel kpl.	Connecting Rod Assy
25	3	00.4228	Kreuzkopf kpl.	Crosshead / Plunger Assy
28	3	11.0648	Kreuzkopfbolzen	Crosshead Pin
29A	3	07.0745	Zentrierhülse	Centring Sleeve
29B	3	11.0245	Plungerrohr	Plunger Pipe
29C	3	07.0744	Spannschraube	Tensioning Screw
29D	3	06.0467	Cu-Dichtring	Copper Ring
30	3	07.3148	Ölabstreifer	Oil Scraper
30A	3	07.5056	Scheibe für Ölabstreifer	Disc for Oil Scraper
o31	3	06.1225	Radialwellendichtring	Radial Shaft Seal
35	3	07.4502	Dichtungshülse	Seal Sleeve
o35B	3	06.1177	O-Ring zu 35	O-Ring for 35
o36	3	06.1221	Nutring	Grooved Ring
37	3	07.3339	Dichtungskassette	Seal Case
o37A	3	06.0735	O-Ring	O-Ring
o37B	3	06.0582	O-Ring	O-Ring
39	3	07.0784	Druckring zu 40	Pressure Ring for 40
o40	6	06.0242	Manschette	Sleeve
41	3	07.0785	Stützring zu 40	Support Ring for 40
42	3	07.0791	Spannfeder	Tension Spring
43	1	01.0900	Ventilgehäuse	Valve Casing
44	6	06.0107	O-Ring	O-Ring
46	6	00.1868	Ventil kpl.	Valve Assy
•46A	6	07.2456	Ventilsitz	Valve Seat
•46B	6	07.2482	Ventilplatte	Valve Plate
•46C	6	07.2473	Ventilfeder	Valve Spring
•46D	6	07.2511	Abstandsrohr	Spacer Pipe
47	3	07.4501	Abstandsring	Spacer Ring
48	3	07.4500	Stopfen	Plug
48A	12	21.0388	Innensechskantschraube	Inner Hexagon Screw
•48B	3	06.0253	O-Ring	O-Ring
48C	3	07.3464	Druckfeder	Tension Spring
49	8	21.0395	Innensechskantschraube	Inner Hexagon Screw
52	1	07.3211	Scheibe für Kurbelwelle	Disc for Crankshaft
53	1	21.0394	Sechskantschraube	Hexagon Screw
54	1	07.3160	Stopfen G1	Plug G1
55	2	07.3162	Stopfen G1 1/2	Plug G1 1/2
56	1	07.1628	Ringschraube	Eye Bolt
	1	00.4395	Antrieb kpl. (1-29A/30/31/49/52/53/56)	Crankcase Assy (1-29A/30/31 /49/52/53/56)
	1	00.5936	Pumpenkopf kpl. (43-48C/54/55)	Pumphead Assy (43-48C/54/55)
	1	00.5937	Plungerwechselsatz (29B-D/35-42)	Plunger Replacement Kit (29B-D/35-42)
•	1	14.0744	Rep. Satz Ventile	Valve Repair Kit
o	1	14.0743	Rep. Satz Dichtungen	Seal Repair Kit

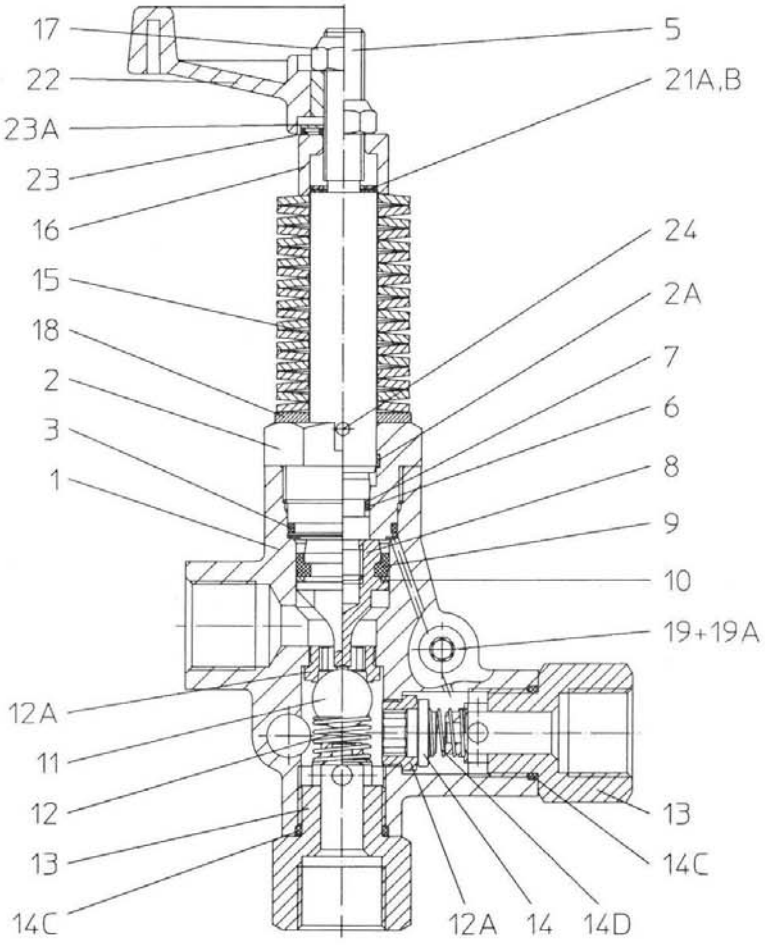
Bei Bestellung von Ersatzteilen bitte Bestell-Nr., Pumpen-Nr. und -type angeben
When ordering please state Code No., Pump Model and Pump Serial No.

D1763 0709S

13.3 Pressure regulator ULH 262-2H

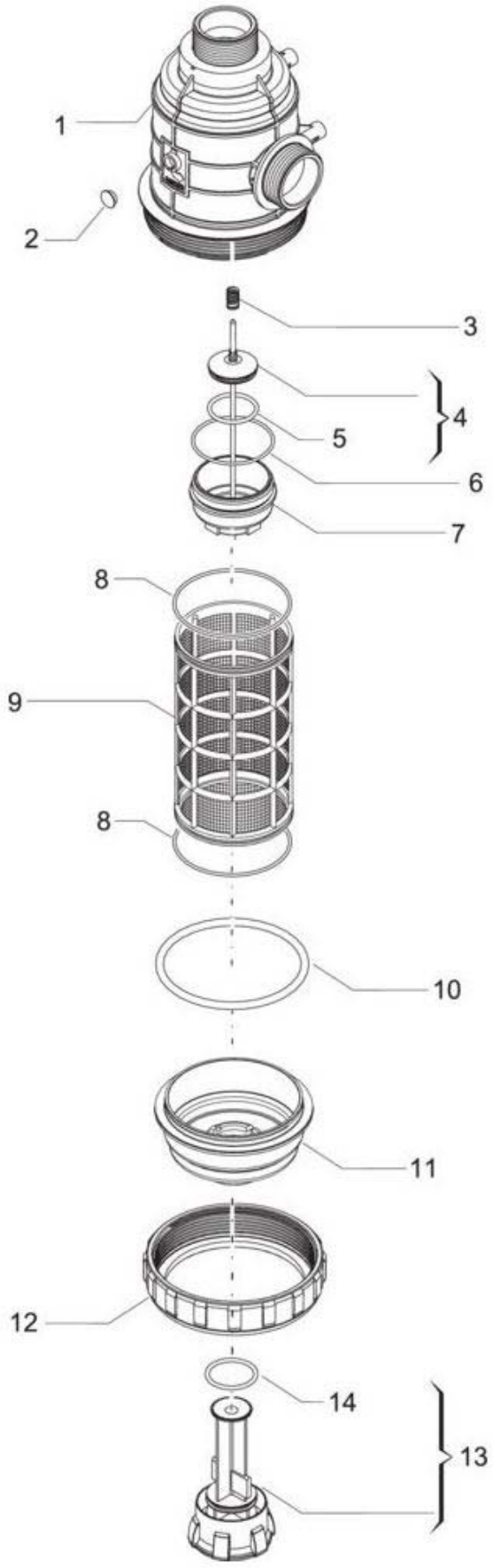
Ersatzteilverzeichnis UL 262
Spare Parts List ULH 262

Lfd. Nr. Item No.	Stückzahl No. Off	Best.-Nr. Code No.	Benennung	Description
1	1	01.0630	Gehäuse	Casing
2	1	07.2788	Führungsstopfen	Guide Plug
•2A	1	06.1131	Führungsring	Guide Ring
•3	1	06.0255	O-Ring	O-Ring
5	1	11.0477	Kolbenstange	Piston Rod
•6	1	06.1129	O-Ring zu 5	O-Ring for 5
•7	1	06.1130	Stützring zu 6	Support Ring for 6
8	1	07.1064	Kolbenkörper	Piston Body
•9	1	06.0071	Manschette	Sleeve
•10	1	07.0591	Manschettenstützring	Sleeve Support Ring
•11	1	07.1920	Kugel	Ball
•12	1	07.0637	Feder für Bypassventil	Spring for Bypass Valve
•12A	2	07.1061	Ventilkörper	Valve Body
13	2	07.3006	Ventilstopfen	Valve Plug
•14	1	07.3005	Ventilplatte	Valve Plate
•14C	2	06.0496	O-Ring	O-Ring
•14D	1	07.1941	Feder für Rückschlagventil	Spring for Kick-Back Valve
15	21	07.1662	Tellerfeder 120 bar	Spring Plate 120 bar
15	19	07.1523	Tellerfeder 280 bar	Spring Plate 280 bar
15	23	07.2899	Tellerfeder 40 bar	Spring Plate 40 bar
16	1	07.2167	Distanzhülse	Spacer Sleeve
17	1	07.2165	Sechskantmutter selbstsich.	Hexagon Nut Self Locking
18	1	07.1076	Scheibe	Disc
19	4	07.3809	Verschlußstopfen	Plug
•19A	4	06.0245	O-Ring zu 19	O-Ring for 19
21A		07.1792	Distanzscheibe 0,5mm	Spacer Disc 0,5mm
21B		07.1793	Distanzscheibe 1,0mm	Spacer Disc 1,0mm
22	1	07.2166	Handrad ULH	Spoked Hand Wheel ULH
23	1	05.0136	Axial-Nadelkranz ULH	Axial Needle Bearing ULH
23A	1	07.3432	Axialscheibe ULH	Disc ULH
24	1	07.2164	Knebelkerbstift	Serrated Pin
•	1	14.0554	Reparatursatz	Repair Kit



13.4 Water filter

Order number:
39450500688



14 APPENDIX

14.1 EC declaration Of Conformity For Machinery

RIOR B.V. / RIONED
Centaurusweg 45, Tilburg, The Netherlands,

Herewith declares that:

High pressure device RIONED ProfiJet,

Machine number:

- is in compliance with the Machinery Directive (2006/42/EC);
- is in conformity with the provisions of the following other EEC directives:
  2014/30/EG
- the following harmonized standards have been applied:

  NEN-EN-ISO 12100:2010, NEN-EN-ISO 13850:2015,
  NEN-EN-ISO 13857, NEN-EN-349, EN 60204-1

Tilburg, The Netherlands, Friday 12 August 2016

J.Pieters
Managing Director

14.2 Sales Managers

EXPORT

D.Maas
Centaurusweg
5015 TC Tilburg
Tel.: +31 13-547 91 00

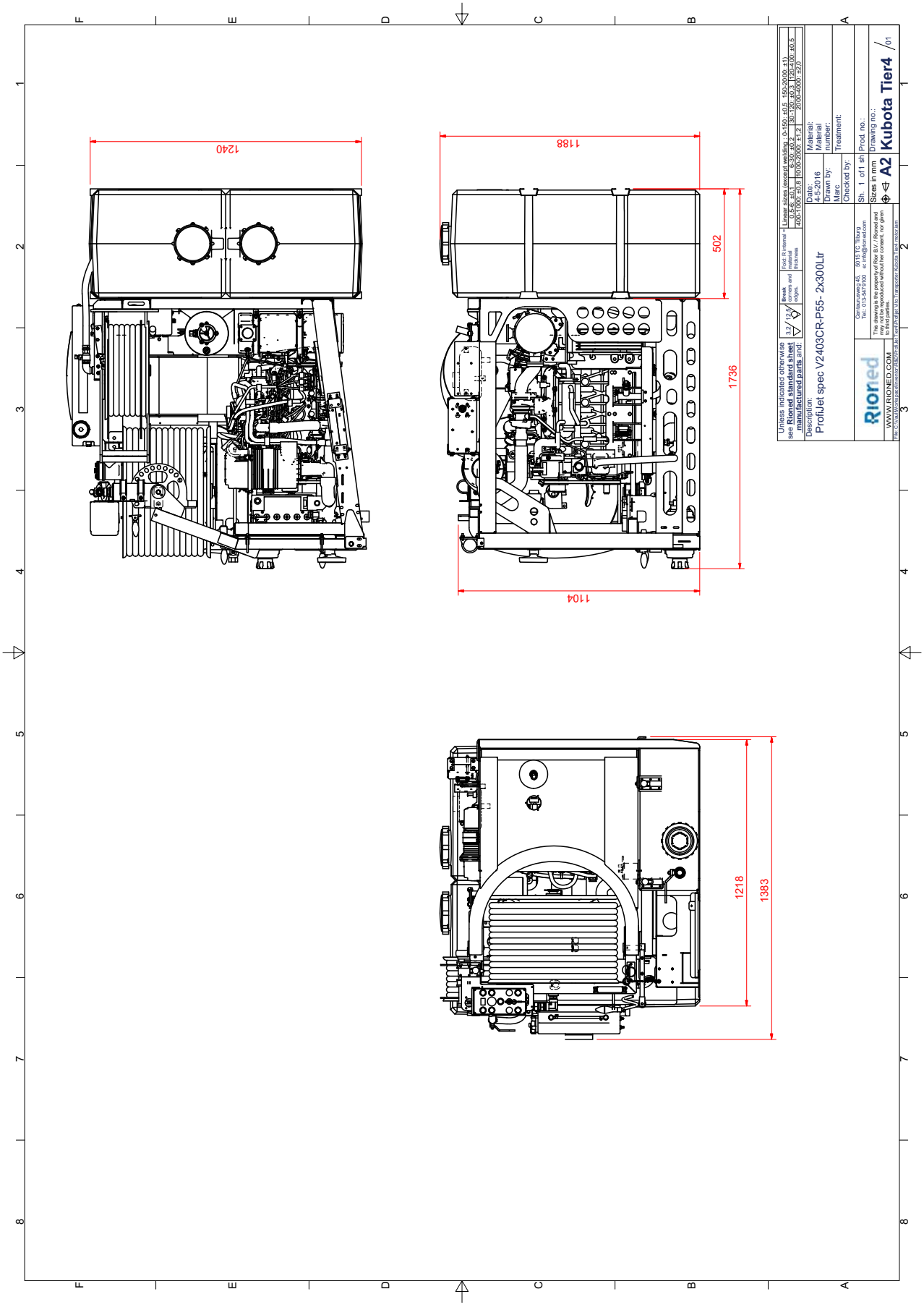
Hans de Laat
Tel. 06-54973081
Area Sales Manager
Centaurusweg 45
5015 TC Tilburg
Tel.: +31 13-547 91 00

REPAIR

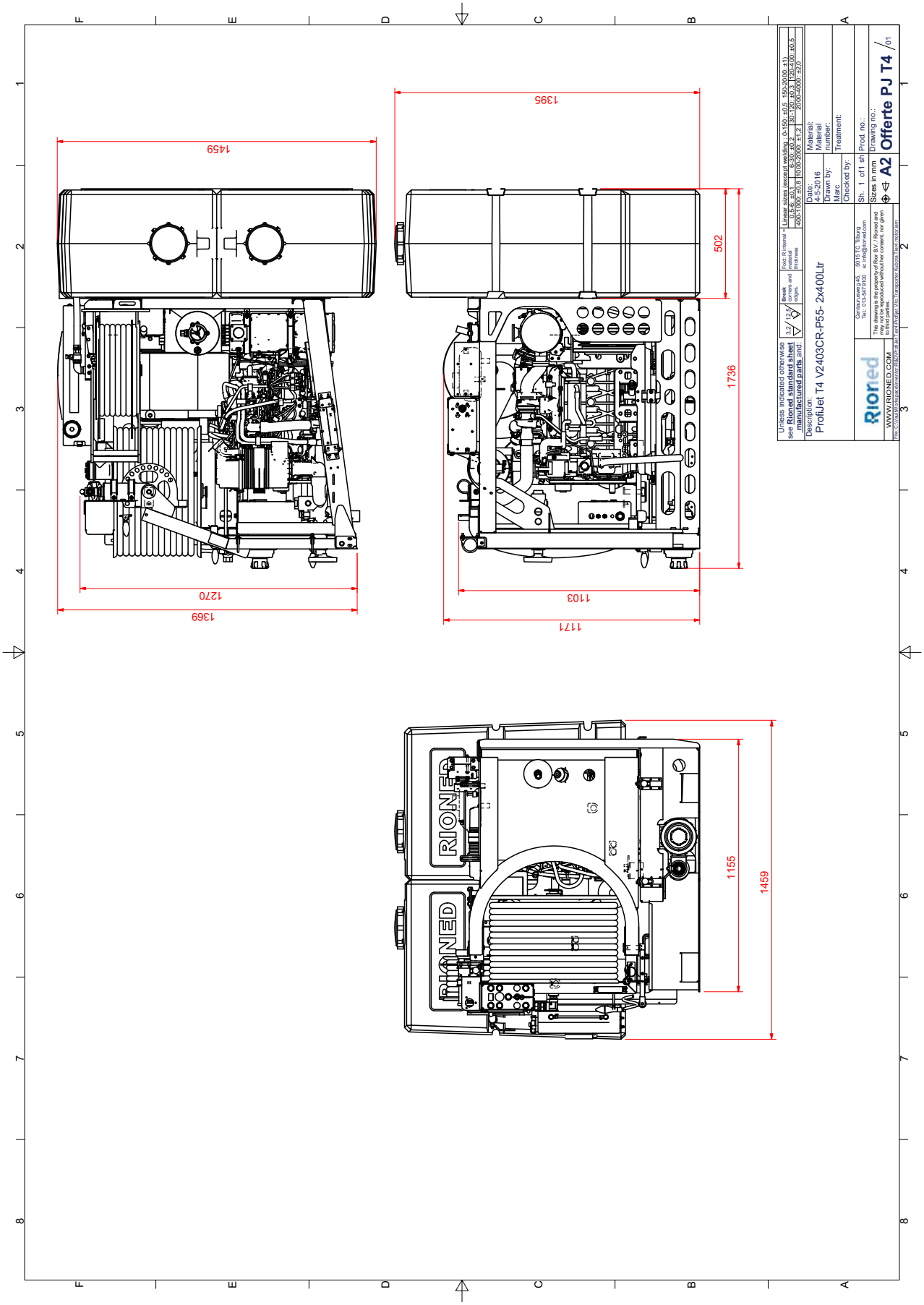
THE NETHERLANDS

Rioned
Centaurusweg 45
5015 TC Tilburg
Tel.: +31 13-547 91 00

14.3 Dimensions 2 x 300l water tank



14.4 Dimensions 2 x 400l water tank



15 Errors eControl

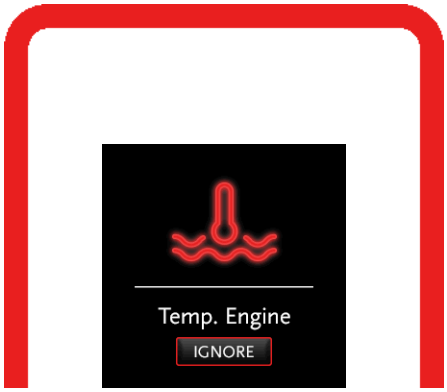
15.1 Emergency stop

A pop-up notifies the user that Emergency Stop is pushed.

Engine, High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF. Eco Mode is switched ON.

The user can only restart operation by releasing (rotate) the Emergency Stop.

15.2 Temperature engine



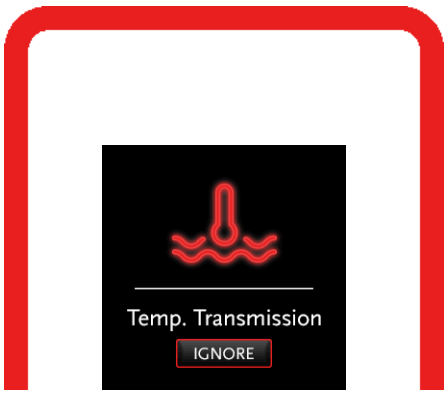
A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF. Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

The user can only restart operation by cooling down the respective element.

15.3 Temperature Transmission



A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF. Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

The user can only restart operation by cooling down the respective element.

15.4 Temperature Vacuum Pump

A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

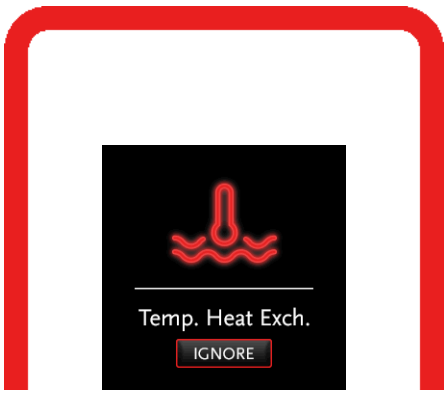
If running, Engine to stationary. High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF.

Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

The user can only restart operation by cooling down the respective element.

15.5 Temperature Heat Exchange



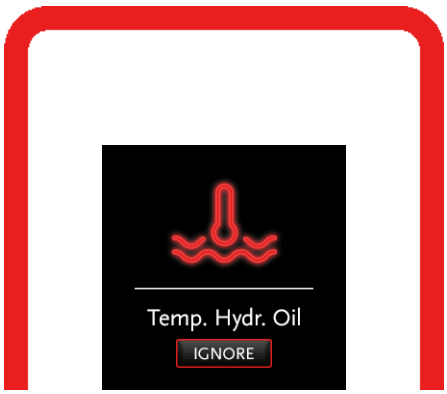
A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF. Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

The user can only restart operation by cooling down the respective element.

15.6 Temperature Hydraulic Oil



A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF. Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

The user can only restart operation by cooling down the respective element.

15.7 Oil level

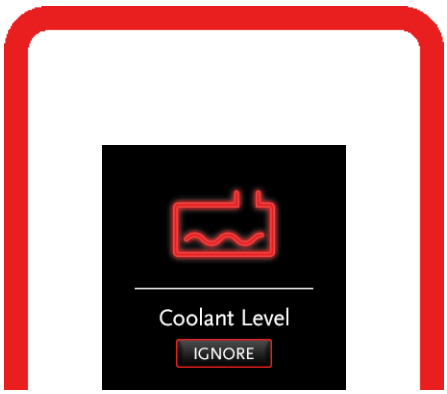
A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

If running, Engine to stationary. High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF.

Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

15.8 Coolant level



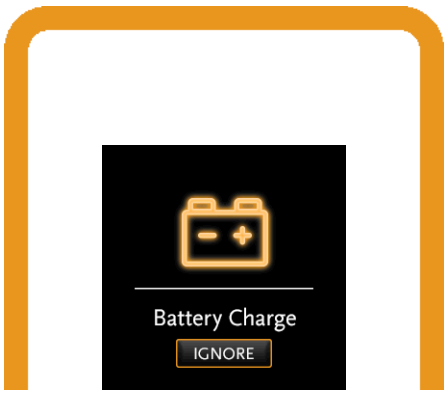
A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF. Eco Mode remains unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

The user can only restart operation by refilling the coolant.

15.9 Battery Charge



A pop-up notifies the user of the error. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel, Spray Bar and/or Eco Mode remain unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

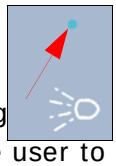
15.10 Run Dry

A pop-up notifies the user of the warning. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

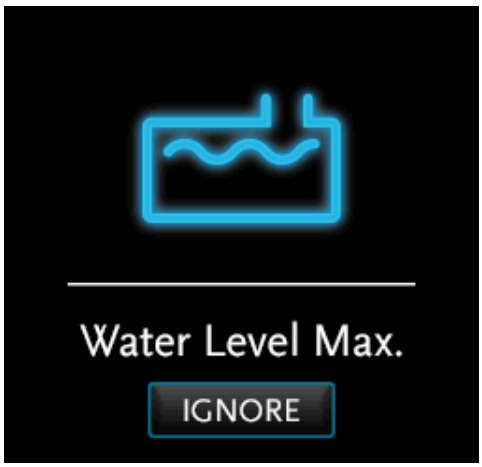
If running, Engine to stationary. High Pressure, Vacuum, Pulsator, Hose Reel and/or Spray Bar are switched OFF.

Eco Mode remains unchanged.

The user can only continue operation by pushing the Navigator in Manual Control.

High Pressure LED starts blinking  . Pressing and holding the related button in Manual Control allows the user to bypass Run Dry.

15.11 Water Level Maximum



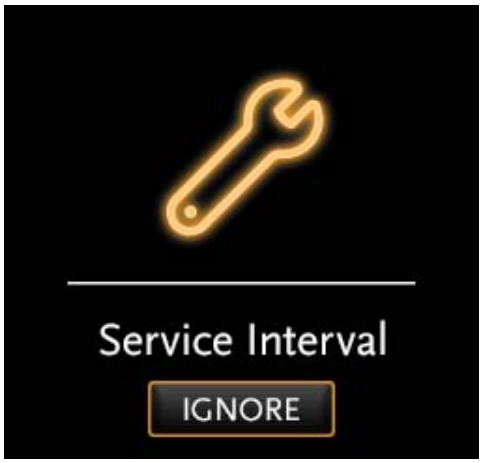
Only available if option “Electronic Water Level control” is mounted.

A pop-up notifies the user of the warning. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel, Spray Bar and/or Eco Mode remain unchanged.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

15.12 Service Interval



All eControlPlus machines are equipped with a service interval.

(with petrol eControl there is no screen, so no possibility to display it).

A pop-up notifies the user of the warning. Whilst applicable, the error is also listed under “Management” (*see chapter 10.4 "Management" page.: 55*).

Engine, High Pressure, Vacuum, Pulsator, Hose Reel, Spray Bar and/or Eco Mode remain unchanged.

The machine is standard delivered at 360 days or 250 hours.

After running 360 days or 250 working hours (whatever comes first), a message comes in that periodic maintenance is required.

The user can dismiss the pop-up by pushing the Navigator in Manual Control.

You can subsequently continue to work with the machine.

When starting the next time, the screen comes back on.

16 INDEX

Product Manual

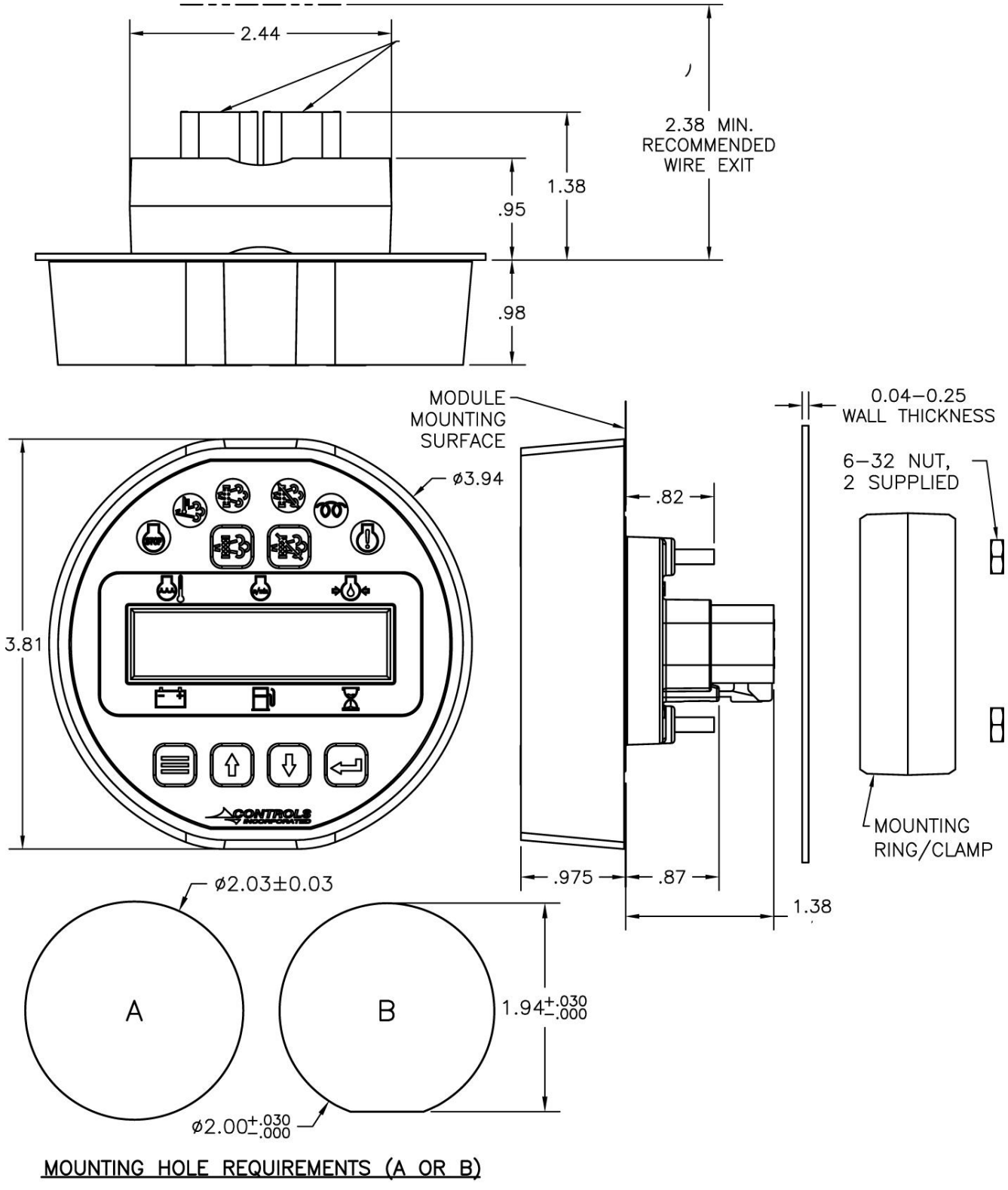
Engine Control Module

Kubota Diesel Engines

Part Number: MVP-235
Revision: 1.2
Engine Type: Kubota Diesel with DPF Emissions Control

TABLE OF CONTENTS

INSTALLATION INFORMATION



MOUNTING HOLE REQUIREMENTS (A OR B)

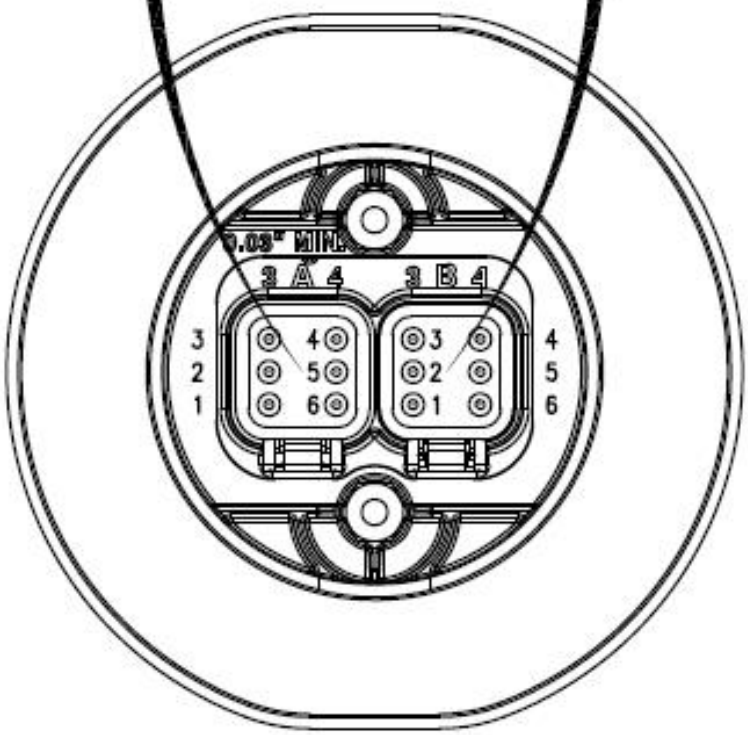
CONNECTOR INFORMATION

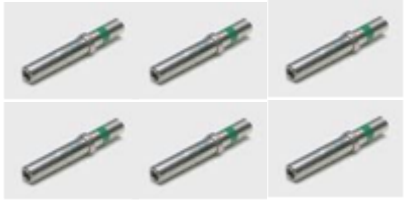
CONNECTOR A

FUNCTION	PIN
BATTERY +	1
CAN HIGH	2
CAN LOW	3
DIGITAL INPUT 1	4
FUEL LEVEL	5
BATTERY -	6

CONNECTOR B

FUNCTION	PIN
5VDC SUPPLY	1
NEUTRAL SWITCH	2
ANALOG APS 2	3
ANALOG APS 1	4
PARKING BRAKE SW	5
GROUND (B-)	6





Part# 3FK-108

Connector A Kit

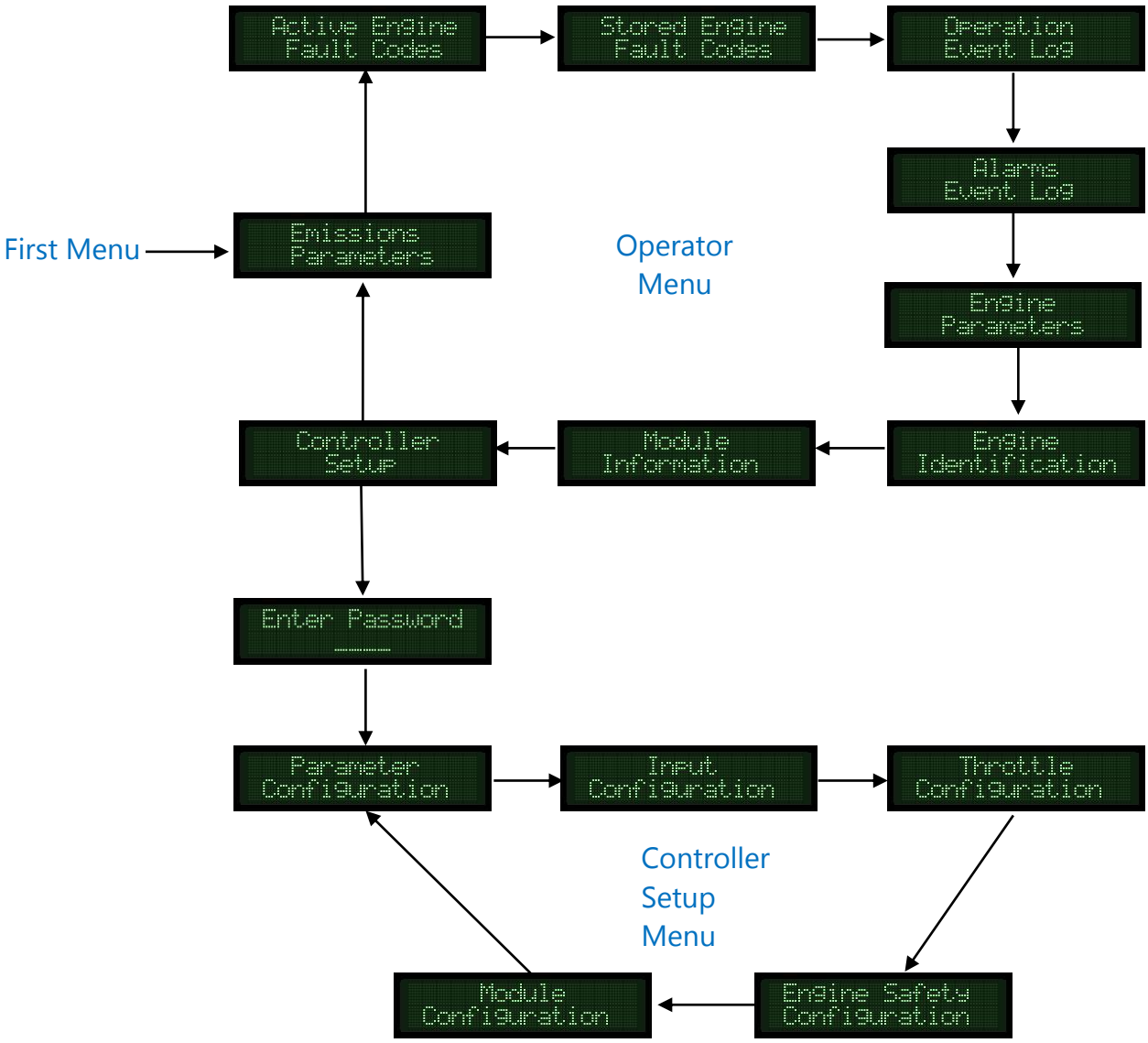
(1) Deutsch DT06-6S plug
with (6) 0462-209-10614 sockets

MENU NAVIGATION

To access the control module menu system, power the unit and press the Menu button. While pressing the menu button a message will appear to also press Enter to access.

Once you have accessed the menu system, the four key pad will be used for menu navigation and therefore not available for engine speed control if the engine is running. The menu system is broken into two main sections, the operator menu and the controller setup menu. The operator menu contains information about the engine and control panel. The topics will vary based on the engine type and control panel model. Pressing the Menu key will index the menu topic to the next item in the list. The index is circular so you will eventually wrap around to the beginning of the operator menu structure. Pressing the Enter key will index the topics backward. Once you have arrived at a menu topic that you would like to explore more, press the Up arrow key. The Up arrow key will index the screen each time it is pressed. Pressing the Down arrow key will index in the reverse order. Pressing the Menu key at any time while in a topic will return you to the main menu topic heading. To exit the menu, simply press the Menu and Enter keys simultaneously.

MENU SYSTEM


Active Engine Fault Codes
Stored Engine Fault Codes
Operation Event Log
Alarms Event Log
Engine Parameters
Engine Identification
Module Information
Controller Setup
Enter Password _____
Parameter Configuration
Input Configuration
Throttle Configuration
Engine Safety Configuration
Module Configuration
Emissions Parameters
First Menu
Operator Menu
Controller Setup Menu

OPERATOR MENU

Emissions Parameters

This menu allows for the viewing of the engine emissions data as broadcast by the ECU by pressing the up arrow button. This data includes:

- DOC Inlet Temperature
- DPF Inlet Temperature
- DPF Outlet Temperature
- Regen Options
- DPF Soot Load
- Time at Last Regeneration
- Active Regen Status
- Regen Inhibit Status
- DPF Differential Pressure

Active Fault Codes

This menu allows for the viewing of any Active Fault Codes as broadcast by the engine ECU by pressing the up arrow button.

Stored Fault Codes

This menu allows for the viewing of any Stored Fault Codes as broadcast by the engine ECU by pressing the up arrow button.

Operation Event Log

The operation log will record the engine start and stop events and tag them with the engine run time hours. The Alarm can be viewed in the Operator menu area and can be cleared in the Module Configuration section of the Controller Setup menu.

Alarm Event Log

Any monitored pre alarm or alarm will be recorded in the Operator menu section. The event will be tagged with the actual engine run time hours at which the event occurred. The log stores the last 32 events and can be cleared in the Module Configuration section on the Controller Setup menu.

Engine Parameters

This menu allows for the viewing of unique engine information broadcast by the ECU by pressing the up arrow buttons. This information includes:

- Total Hours
- Requested TSC
- Rated Speed
- Low Idle Speed
- Load at RPM
- Engine Torque
- Coolant Temperature
- Fuel Rate
- Manifold Temperature
- Potential Voltage

Engine Identification

This menu allows for the viewing on the engine model number and serial number.

Module Information

This menu allows for the viewing of the Module Part number and Software Version.

Controller Setup

When navigating through the Operator menu, you will arrive at the Controller Setup screen. To configure the module to new settings, you can enter into this area by pressing the Up arrow key.

The next screen will ask for a password. (ask Rioned) If no password, or an incorrect password is used, navigation into the menu is still possible and permitted, however, the ability to make changes will be restricted. To enter the password, press the Enter key and brackets will appear. Use the Up and Down arrow keys to set each digit individually, pressing the Enter key to index to the next digit from left to right.

Once the last digit is entered, the brackets will disappear and the digits will be represented with asterisks. Pressing the Up arrow will index you to the Quick Setup menu and programming can continue.

Navigating the Controller Setup menu structure is done in the same manner as the Operator menu system. Menu will index to the next topic, The Up arrow will access the topic, etc. To make changes to the settings, you will need to locate the item you are looking to modify under the appropriate topic and then press the Enter key and the editing brackets will appear allowing you to make changes to the value or change the selection. Once you have made your selection or changed the value, simply press Enter again to accept it and the editing brackets will be removed.

CONTROLLER SETUP MENUS

PARAMETER CONFIGURATION

The Parameter Configuration menu allows you to configure each critical engine parameter to the source of the information. Sender type, scale and input channel to the module can be selected here. You will first select the parameter, then the properties associated with each one.

Heading	Default	Range
Parameter	Fuel Level	
	Voltage	
	Hour meter	
Fuel Level Sender	S-W	SW/VDO/0-90ohm
Fuel Channel	Plug A Pin 5	No Options
Voltage Source	Elect-J1939	Batt-J1939/Alt-J1939/Elect-J1939/Internal
Batt Volt Trim (100mV) (Internal Only)	0	
Hour meter	Engine ECU	Internal/Engine ECU
Hour meter (Internal Only)	0 Hours	

INPUT CONFIGURATION

The Input Configuration menu allows you to set up a discreet switch input that can be treated as Pre Alarm or Alarm. Common text messages for power unit applications are preloaded. A custom message can be assigned to the input.

Heading	Default	Range
Configure	Channels	Channels/Custom Message
Digital Input	A4	
Normally	Open	Open/Closed
Action	None	Pre Alarm/Alarm/
Message	Water in Fuel	*See List
Check	Off	Off/Always/Run
Configure	Custom Message	
Top Line Message	Alpha Numeric 14 Characters Max	
Bottom Line Message	Alpha Numeric 14 Characters Max	

THROTTLE CONFIGURATION

The Throttle Configuration menu allows you to design the appropriate speed control for your application. The most common throttle control is TSC Vernier. This option allows you to start the engine at the minimum speed and control the throttle up to the maximum speed with the ability to stop anywhere in between. The TSC Multistate throttle allows you to set up to four ascending discrete speeds. If you do not wish to use all four speeds, simply program the number of speeds you like and set the remaining speeds to a lesser value than your last desired speed. This will cause the control panel to ignore the undesired speeds.

Heading	Default	Range	
Throttle Type	TSC Vernier	TSC Vernier/TSC Multistate/TSC Hi-Lo	
TSC Max Speed	2900	800-2900 RPM	
TSC Bump Speed	100	1-2000 RPM	
TSC Ramp Rate	200	10-2000 RPM/SEC	
Throttle Curve	Linear	Linear/Exponential	
Multistate Speed 1	800	650-4000 RPM	
Multistate Speed 2	800	650-4000 RPM	
Multistate Speed 3	800	650-4000 RPM	
Multistate Speed 4	800	650-4000 RPM	
Governor Mode	Isochronous	Isochronous/Droop	

ENGINE SAFETY CONFIGURATION

The Engine Safety Configuration menu enables the user to set warnings for the critical engine parameters. Care should be taken when configuring to match the engine manufacturers recommended guidelines.

Heading	Default	Range	
Sender Check Bypass	0:10 Seconds	0:05 -1:00	
Oil Pressure Check	Run	Off/Always/Run	
Oil Pressure Alarm Action	Shutdown	Shutdown/Force to Idle/Speed Limit/ Torque Derate/Disabled	
Oil Pressure Alarm Delay	0:05	0:00-1:40	
Temperature Check	Run	Off/Always/Run	
Low Temperature Pre Alarm	0° F	0-300° F	
Low Temperature Alarm	0° F	0-300° F	
High Temperature Pre alarm @	240° F	150-300° F	
High Temperature Alarm @	240° F	150-300° F	
Coolant Temperature Alarm Action	Shutdown	Shutdown/Force to Idle/Speed Limit/ Torque Derate/Disabled	
Temperature Alarm Delay	0:05		
Speed Limit	1600 RPM	800-2900 RPM	
Torque Derate Limit	50%	0-125%	
Low Oil Pressure Pre Alarm	0 PSI	0-100 PSI	
Low Oil Pressure Alarm	2 PSI	0-100 PSI	

MODULE CONFIGURATION

The Module Configuration menu is available to change the behavior of the control and clear several of the log files.

Heading	Default	Range	
Pressure & Temperature Units	English	English/Metric	
Pre Alarms Displayed	3	0-3	
Clear Operation Log	No	Yes/No	
Clear Alarm Log	No	Yes/No	
Clear Number of Starts	No	Yes/No	
Engine Stopped <	50 RPM	1-400 RPM	
Engine Running >	400 RPM	50-10000+ RPM	

PANEL ENGINE SAFETY PROTECTIONS

PREALARMS AND ALARM

The primary engine protection in an engine equipped with an ECU is managed by the engine's ECU. The display will show lamp status and trouble code information based on the ECUs messaging to the display. The control panel does not create a trouble code; however, it will display it. In addition, the control panel will monitor the critical engine parameters of speed, coolant temperature and oil pressure. Pre Alarms are considered to be warnings that a parameter is nearing a point where engine damage may occur if not corrected. Alarms are considered to be the limit of the engine operating without causing damage. Therefore, alarm conditions may shut the engine down, or invoke other behavior as selected, while the pre alarms will allow the engine to continue to run. The control will log the condition and attempt to bring attention to it by illuminating a yellow LED lamp and flashing the affected parameter. The alarm condition will also be accompanied by a red LED lamp and a specific message of what parameter caused the engine to shut down.

SAFETY SHUTDOWNS

Once the engine is started, the engine's ECU has primary control over the operation of the engine under safe conditions. If the ECU detects that any of its critical parameters are out of tolerance, the ECU can take a variety of actions including derating of the engine horsepower or complete engine shut down. The display will illuminate the red or yellow LED as instructed by the ECU and display any trouble code as presented from the ECU. Some engine manufacturers have unique codes that the control panel will show in lieu of the J1939 DM1 messaging. Otherwise codes will be displayed as J1939 SPN (Suspect Parameter Number) and FMI (Failure Mode Identifier).

The control panel also has the ability to monitor the engine vitals if configured. The ability to set pre alarms and alarms in the panel is supported to back up the ECUs safeties in the event the ECU shutdowns were not enabled for some reason or a more conservative setting is desired. If the parameter falls outside of the normal operating range, the control panel will stop the engine by removing power to the fuel solenoid or ignition circuit. The display will indicate the reason for the shutdown and a red alarm lamp will be illuminated in the upper left corner of the module.

Indicator Lamps

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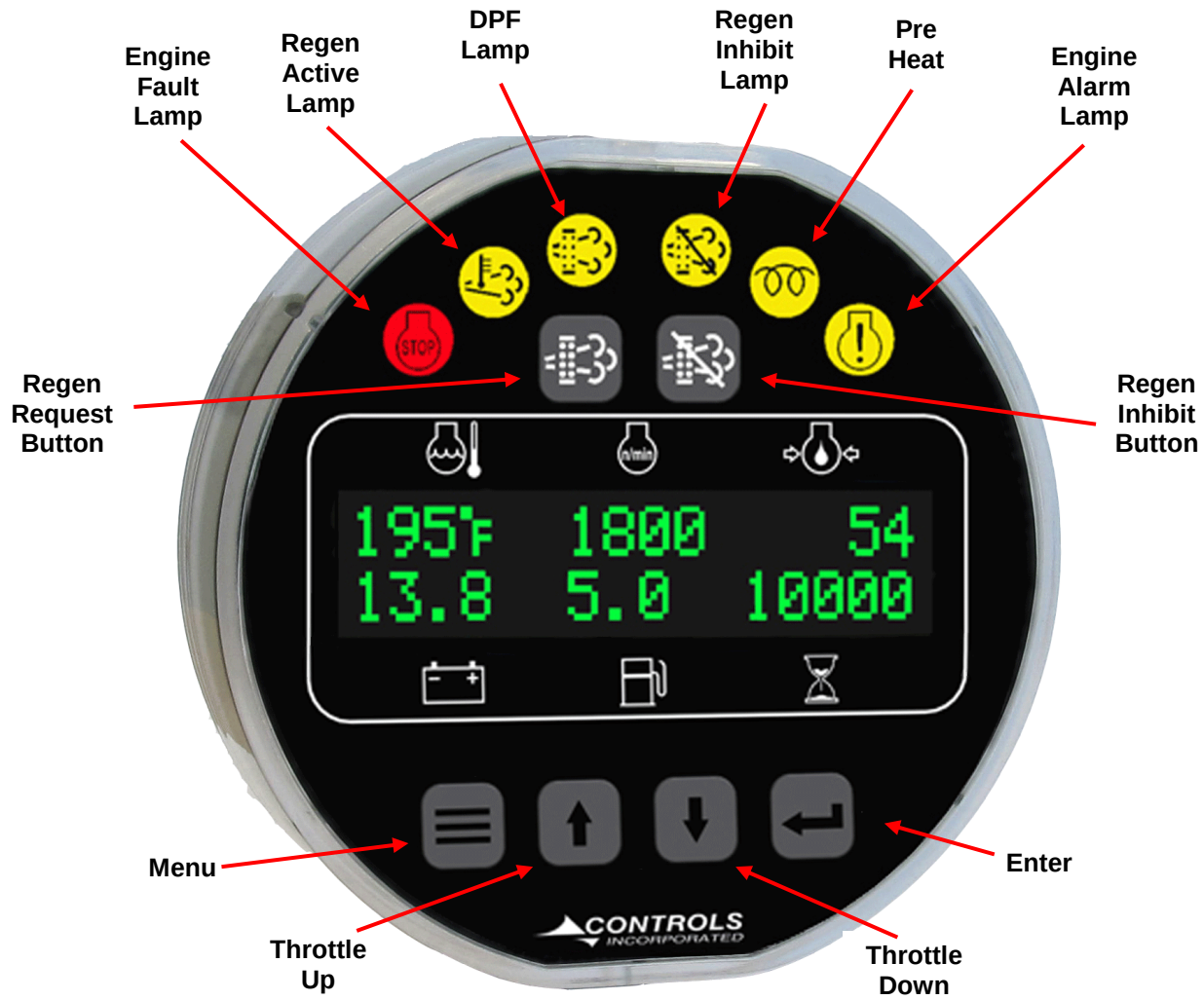


EMISSIONS MONITORING - REGENERATION

The engine ECU continuously monitors the engine's emissions parameters. When certain conditions are reached, the ECU will indicate that a regen is needed. This controller works in cooperation with the ECU to display this information as well as provide an interface between the operator and ECU. The information can be obtained by entering the Emissions Parameters menu (described above).

The regen status can be set to two different states, Auto or Regen Inhibit. When the unit is in Regen Inhibit, the ECU will not be able to initiate a regen. This state should be used sparingly and for a brief period of time. The default setting is Auto, which allows for the ECU to initiate a regen. Regeneration is initiated and controlled solely by the engine ECU.

Regeneration Levels

0 – Passive	this is the normal engine operation where the elimination of soot and ash is accomplished by the current engine speed and load.
1 – Auto	at this level, the ECU enables automatic active regeneration due to the current soot and ash load. There is no effect on engine performance or operation during automatic active regeneration. If the regen inhibit mode is activated, a "Disable Inhibit – Yes/No" prompt will appear. As the regen continues to be inhibited, an "Auto Regen Needed" screen will scroll with the standard screen.
2 – Auto/Parked	as the soot/ash levels increase, the ECU may continue as in level 1, or may send a Parked Regen request (DPF Lamp).
3 – Parked	the ECU will send prompts to the controller and light the DPF Lamp (see below).
4 – Service Regen	the Kubota Service Regen Required prompt will appear. At this stage, a service technician is required to perform a regen.
5 – Service Required	the engine requires service by an authorized dealer.

Module Regen Buttons

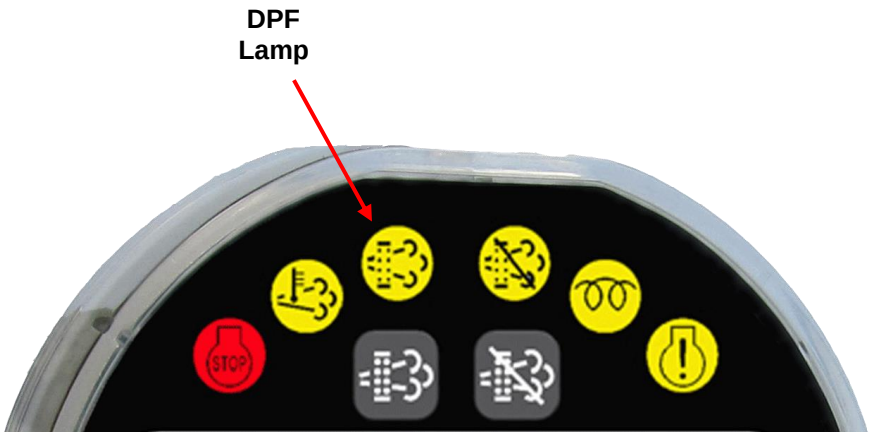
The MVP module has two regeneration function buttons, Regen Request and Regen Inhibit.

Regen Request – This button will operate when a required regen has been annunciated by the ECU and subsequently denied by the Operator. The module will repost the ECU regen request every 2 minutes, however, if at any time prior to the prompt, the operator wishes to reinstitute the regen prompt, it can be done by pressing this button for at least two seconds. If the operator presses this button at any time when the ECU does not require a regen, a message of No Regen Required will appear.

Regen Inhibit – Pressing this button for at least two seconds will alternate the module between the Regen Inhibit and Regen Auto Modes. If at any time the ECU indicates a regen is required and the unit is in Regen Inhibit mode, a prompt screen will appear asking if the operator wants to switch to auto.

Parked Regeneration Process

When a regen is required, the ECU sends a signal to the controller lighting the DPF Lamp. This lamp will remain on until a regen has been completed.



The display will annunciate several prompts for the Operator's acknowledgement. The controller will prompt the Operator that a regen is needed. To proceed, the operator will press the Enter button for yes.

If the operator chooses No, then the Parked Regen Needed will continue to scroll with the normal operating screen. The prompt will automatically reappear after two minutes.

If the Operator chooses Yes, the controller will alert the Operator that the engine RPM may increase. This is to allow for any application that may be affected by increased RPM. The Operator will press enter to acknowledge.

The next prompt alerts the Operator that the regeneration requires the engine to be set to the engine idle speed. The first screen is for the Operators acknowledgement of the process, the second screen is the acknowledgement of the actual speed.

The Min selection is set by the ECU. The speed selection is the actual speed of the engine. The down arrow key is utilized to lower the speed. Once the actual speed matches the min speed, the operator presses the Enter key.

To ensure that the engine load is removed, the regen process requires that the parking brake input (Pin B5 - closed to ground) and the Neutral Switch (Pin B2 – closed to ground) are applied***. It is not acceptable to initiate the parked regeneration when the engine load is applied.*** A prompt will appear for each state, with the operator pressing Enter to confirm.

After the operator acknowledges a final prompt screen, a regen request will be sent to the engine ECU. At this time, the ECU will activate the full regen process.

Regen Progress

During the parked regen, the message Regen Starting will appear followed by a progress status bar.

This bar will remain at a maximum of 10% until the engine achieves the desired temperature for soot and ash elimination.

At the end of the process, the controller will prompt the operator that the regeneration has been completed. The operator must acknowledge this by pressing the Enter button prior to resuming normal operation and loading the engine.

Regen Fail / Abort

The regen process will be aborted if either the Neutral Switch or the Parking Brake circuits open during the process. When this occurs, a message will appear requiring the operator's acknowledgement.

The condition causing the abort will need to be rectified and the regen process reinstated from the beginning.

There may be situations that cause a regen to fail or be aborted by the engine ECU. When this happens, the controller will post a message such as Regen Failed or Regen Aborted. Each of these screens will require the operator's acknowledgement. When these circumstances occur, the operator should contact a dealer for instructions.