ecomizerpro

ECOMIZER-PRO
USER MANUAL

HIGH QUALITY MOBILE PUMP CONTROLLERS

impulse®
Dewatering Technologies

V03-00

Introduction

Congratulations on your purchase of an Impulse Pump unit with ECOMIZER-PRO control technology.

The ECOMIZER-PRO is an emissions-reducing and fuel-saving mobile pump and engine controller that can automatically handle the unit's performance based on the changing conditions in a pump pit. Adjusting the revolution cycles depends directly on the amount of supplied medium that needs to be pumped.

Pump units equipped with the ECOMIZER-PRO offer the best of both worlds - the mobility of a self-operating diesel pump set with the full flexibility of a frequency-controlled electric fixed installation. With the ECOMIZER-PRO control technology, both diesel and electric driven mobile pumps can achieve significant emissions reductions and fuel savings of up to 55% when compared to similar equipment without this technology.

The ECOMIZER-PRO achieves full automation with comprehensive log data on the pump's use, such as operating hours, production days, hours until the next service, and/or time-related warnings or alarms when exceeding adjustable limits. The user can choose some limits and/or parameters attuned to their own operations.
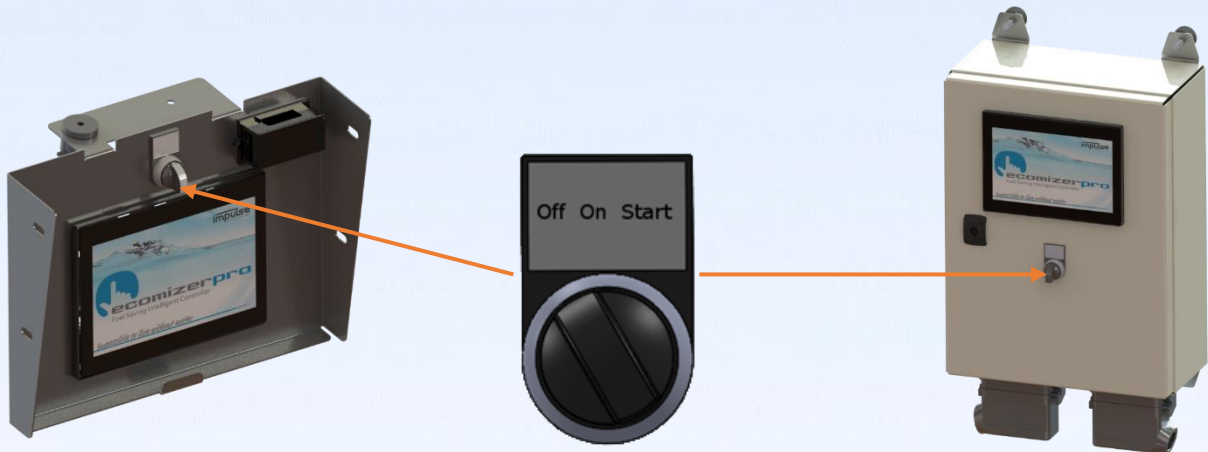
The ECOMIZER-PRO, with optional internet connection, allows you to remotely monitor and even operate the pump set from any computer with internet connection.

Impossible to live without water

1. Screen Activation

All Impulse Pumps equipped with ECOMIZER-PRO are operated using only a single switch. To activate the display, keep the switch in the "Start" position until the display lights up (approximately 5 seconds). Once it has lit up, you can release the switch, which will return to the "On" position. In the "On" position, the unit is active for remote operation.

Please be aware that the pump is in Stand-By mode as soon as the switch is in "On" position. Maintenance, repair, and/or transportation should never be done with the switch in "On" position.

1. To start the ECOMIZER-PRO: Hold the "Off-On-Start" switch on the control box in the "Start" position and wait until the Touch Screen display appears.

2. After these 3 seconds the switch can be released, and it return to its "on" position. When no further actions are made during the shutdown delay (standard on 2 minutes) the ECOMIZER-PRO will switch itself into Stand-By. To reactivate the ECOMIZER-PRO the user has to turn the switch on "start" again, or when applied (optional), the pump can be started by Remote Control.

3. The "Off" position will shut down the Pump Unit completely. This position can be used as emergency stop. Make sure the ECOMIZER-PRO is on "Off" while maintaining, repairing, transporting or being stored.

Switching to "Off" Position has the same working as an emergency stop

2. Starting Screen

Depending on the purchased software version there are three possible starting screens available:

Manual Control (Only)

The pump will automatically shut down in Stand-By mode as soon as there are no further interactions with the display for more than 120 seconds.
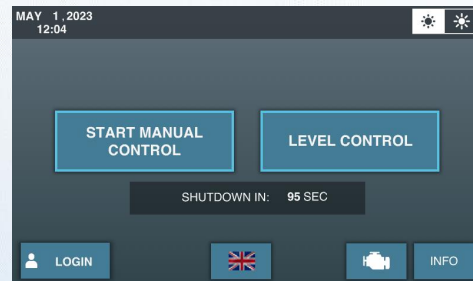
The **Manual Control (Only)** software option is mostly used on smaller pump sets which are generally operated on site. See Manual Control section to discover all advantages.

Level Control (Only)

The **Level Control (Only)** software option is mostly used for larger pump sets for which Ecomizer-Pro can help reduce mistakes caused by human error.
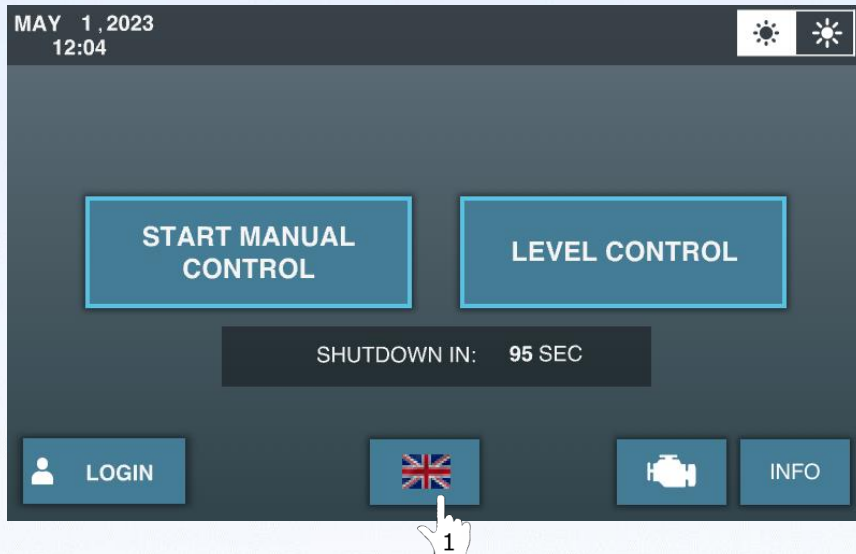
Ecomizer-Pro

The **Ecomizer-Pro** software option gives the user the choice of using either manual control or level control.

3. Ecomizer-Pro Explanation

From this point on the manual is based on the Ecomizer-Pro software version. The **Manual Control Only** and **Level Control Only** are both explained separately.

① To change the Touch Screen language, press the [Language] button.

② Select the preferred language by pressing the flag on the pop-up.

Note:

USA flag uses the Imperial system (PSI, Inch, Ft, and Gallons/h).
All other flags use the Metric system (Bar, Metre, Litre, m3/h).

4. Manual Control

In manual control you can activate the pump unit and set the RPM value according to your preferences.

1 Activate Manual Control by pressing START MANUAL CONTROL

MAY 1, 2023
12:04

START MANUAL CONTROL

LEVEL CONTROL

1

SHUTDOWN IN: **95** SEC

LOGIN

INFO
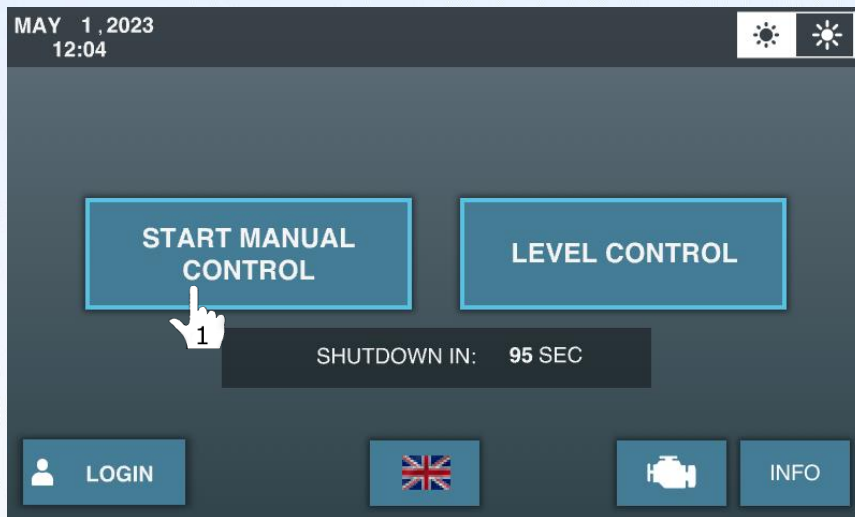
Be aware that RPM adjustment is only possible as soon as the system has been primed (full of water). As long as there is no water present, the REV UP and REV DOWN buttons are not being displayed on the screen.

As soon as "START MANUAL CONTROL" has been selected the following screen appears:

ACTUAL START CYCLE: 0

PUMP STARTS IN 3   SECONDS

■ **STOP**

LOGIN

INFO
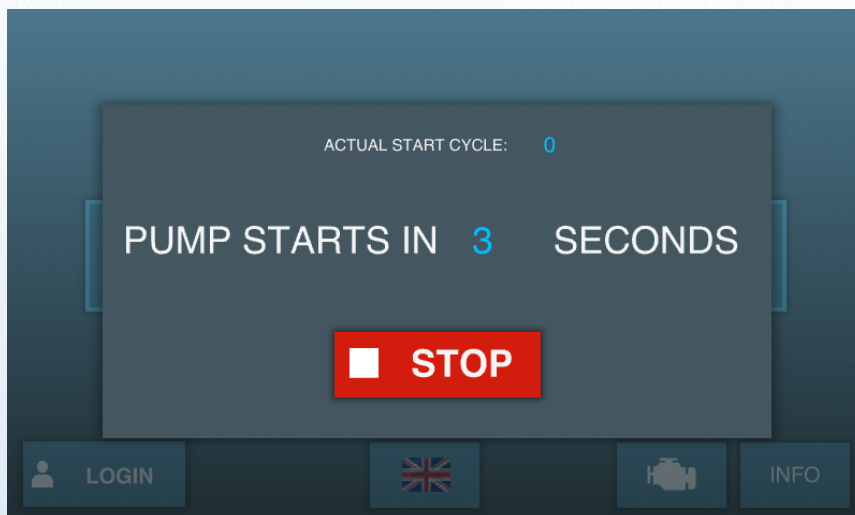
The pump starts up after 5 seconds and a warning beep is given. You can stop the start-up procedure at any time by pressing the red "STOP" button.

As soon as the pump has started the following screen appears:

General Data

Air in system

Vacuum pump is active.

Air in suction hose is displayed by "AIR DETECTED" and a blue dot.

As soon as the pump has been primed "REV UP" and "REV DOWN" buttons appear.

Slide show:
- Fuel Level
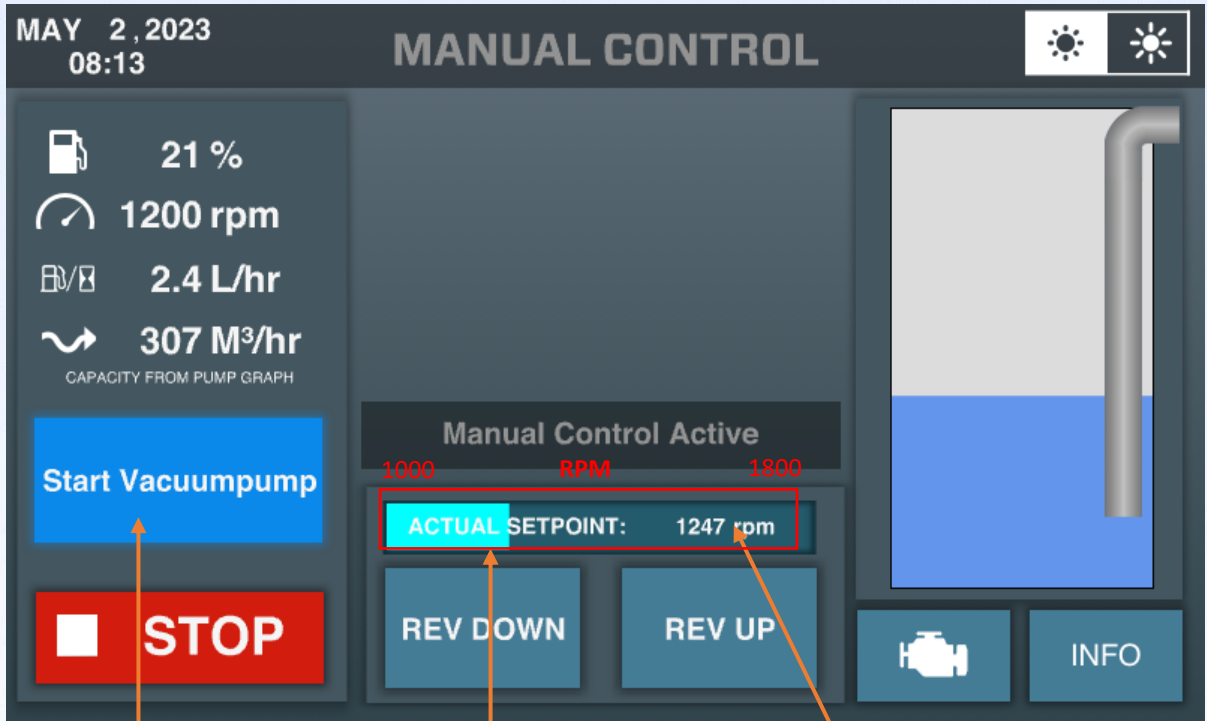- DEF Level

Slide show:
- Flow rate
- Pressure
- Vacuum

System primed

Vacuum pump is active and will turn off when the pump is primed (full of fluid) for more than 20s.

REV UP and REV DOWN buttons together with setpoint.

4.1 Main screen during operation (Manual Control)

MAY 2, 2023
08:13

MANUAL CONTROL

🔋 21 %

⌾ 1200 rpm

🗄/🗄 2.4 L/hr

〰 307 M³/hr

CAPACITY FROM PUMP GRAPH

Start Vacuumpump

■ **STOP**

Manual Control Active

1000   **RPM**   1800

ACTUAL SETPOINT: 1247 rpm

REV DOWN   **REV UP**

INFO

Vacuum pump is not active (system is fully primed)

RPM bar. In this unit from 1000 RPM to 1800 RPM.

Manual set setpoint (RPM)

4.2 Air Snoring in Manual Control

In manual control the pump will keep on running even when air is detected. The automatic shut-down of the unit after 900s of priming air is ONLY in this mode not activated. As air is detected the unit will rev down to its minimum engine speed, vacuum pump will be activated, and the pump will keep on priming/snoring.

4.3 Intelligent Manual Control by ECOMIZER-PRO

If air is detected and the pump starts snoring/slobbering the RPM will automatically ramp down to idle RPM (in this case 1000 RPM). The setpoint is still in memory and as soon as the system is fully primed again, the unit will automatically rev up to its setpoint.

Remarkable Advantages:
- Fuel Reduction
- Emission Reduction
- Noise Reduction
- Wear Reduction
- Extended Lifetime

4.4 Stop Manual Control
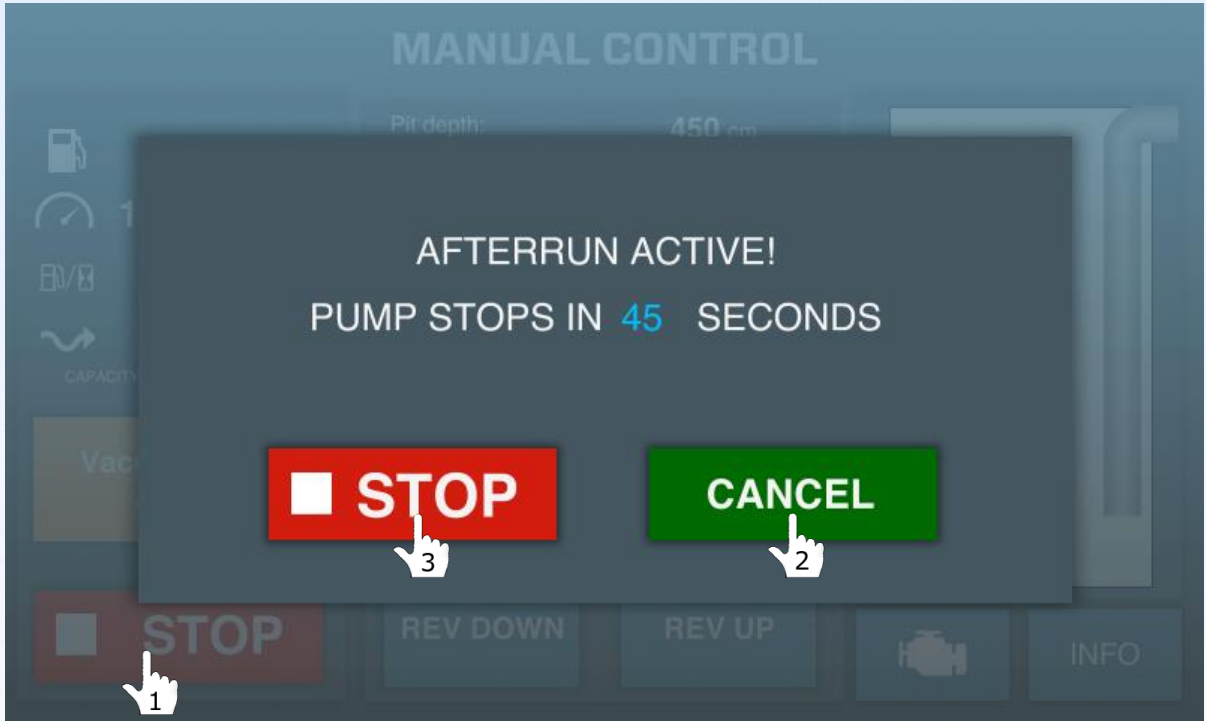
Activate the stop procedure by pressing STOP in the left lower corner. After the stop procedure has been initiated the afterrun screen appears. The pump automatically ramps down to idle RPM and will run for 60 seconds to cool down before showing the Home screen.

In certain conditions it is possible to cancel the stop procedure and continue running in manual control. The pump automatically continues running with the previous RPM setpoint.

By pressing STOP in the afterrun screen the pump will shutdown immediately and should only be done in emergency situations! Impulse always recommends to finish the complete stop procedure and wait for the afterrun timer.

5. Level Control

Level Control provides the advantage that the pump performance is automatically adjusted to the available amount of medium (flow). The units come equipped with a hydrostatic pressure sensor and/or a ball float switch. The two connectors for the sensors have different connection points (4 pins or 5 pins), eliminating the possibility of connection mistakes. This needs to be connected in the pump set.

1 Activate Level Control
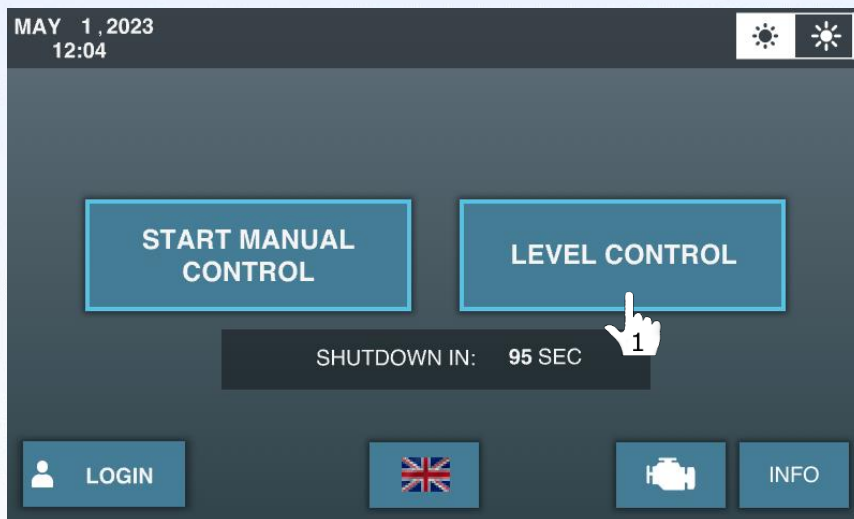
If there are no sensors connected the following screen appears indicating that the level sensor needs to be connected.
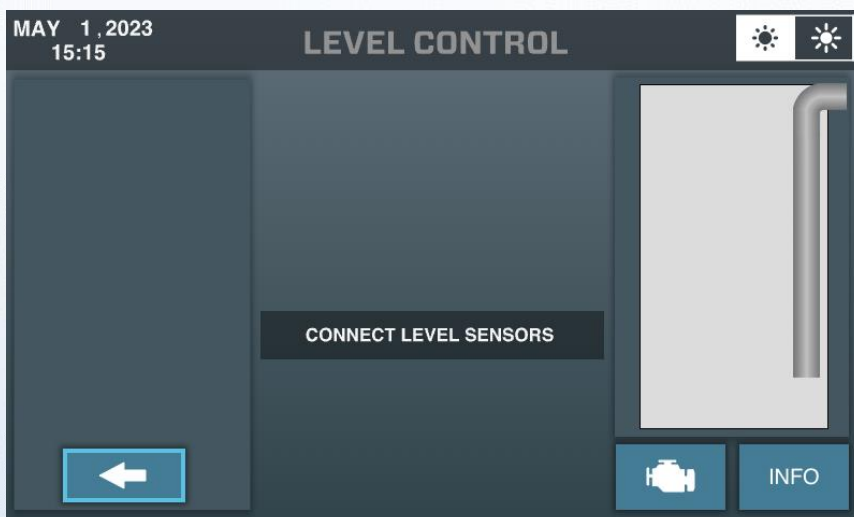
There are three possible ways of connecting the level sensors. Every sensor is creating its own distinct display.

5.1 Installing/positioning of the Ball Float Switch

1. Put a tube (longer than total pit depth) inside the well. Now mark the level at which the pump needs to start pumping. This is the position at which the ball float should be mounted.

The ball float switch will float (up) as soon as the water level rises above this point. As soon as the float stays up the pump will be activated.

> Please make sure the Ball Float Switch is secured in such a way that the float can not interfere anywhere.

2. Secure the Ball Float Switch using a tie-wrap or tape on a (sinking) tube as shown below.

Keep distance between float and tie-wrap small to avoid getting tangled.

Ball Float Down. On screen:

Ball Float Up (activated). On screen:

5.2 Connecting Ball Float Switch Only
The following screen appears:

Ball Float
Switch
Connected
(Down)

In this mode ensure that the ball float is positioned (floating) at the desired level at which you want the pump to start. After installing the ball float, activate the pump by pressing the START button.
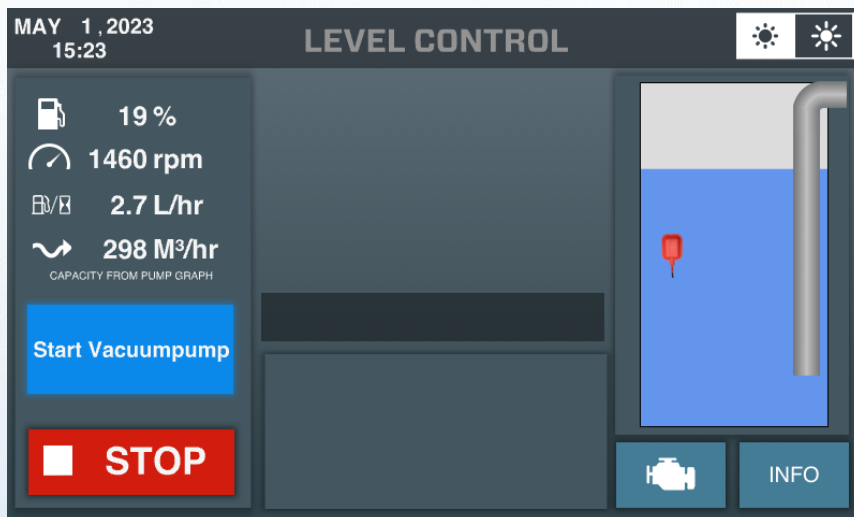
Active pump unit on ball float switch waiting for fluid (ball float switch down).
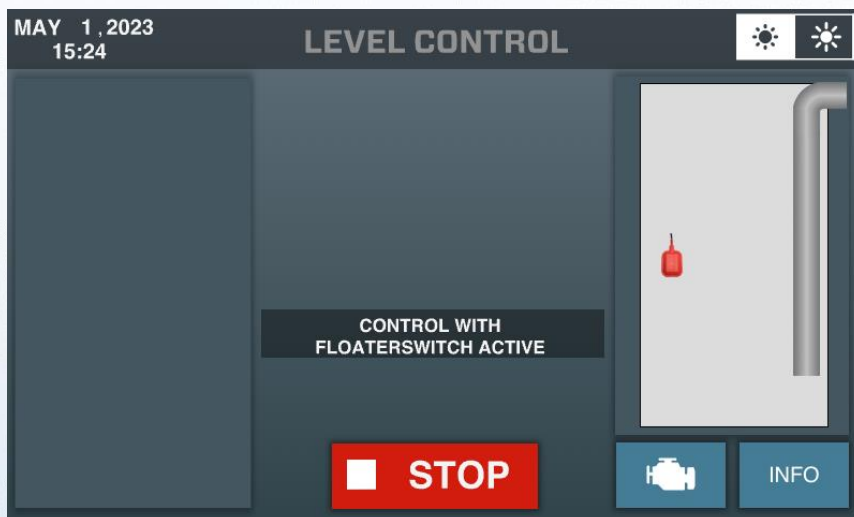
As soon as the water level will activate the pump by lifting the float switch up, the following screen appears:
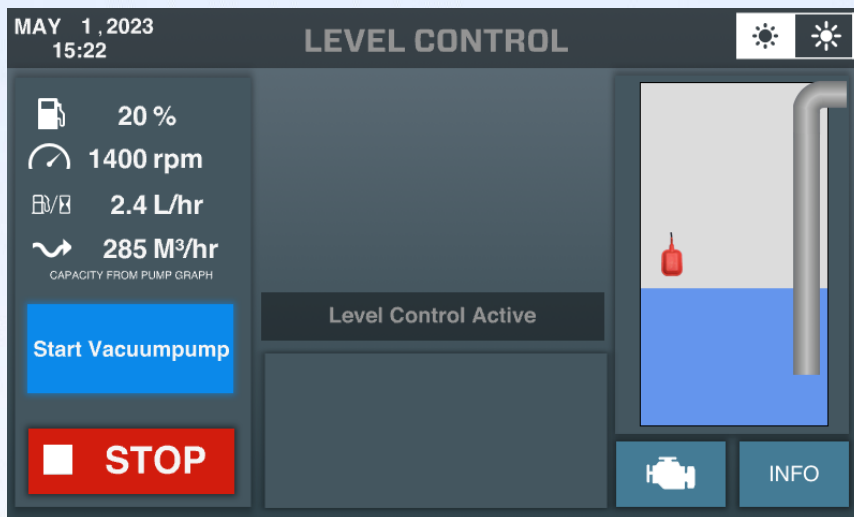

Ball Float
Switch
Connected
(Up)

The vacuum pump is active and will prime the system. After full activation the following screen appears:

As long as the float switch is up the engine will slowly rev up to maximum RPM.

If the water level comes down and the float switch will be down the unit will slowly rev down to a minimum of 1400 RPM.

As soon as the water level comes up to a level that the float switch will come up again the pump will rev up again.
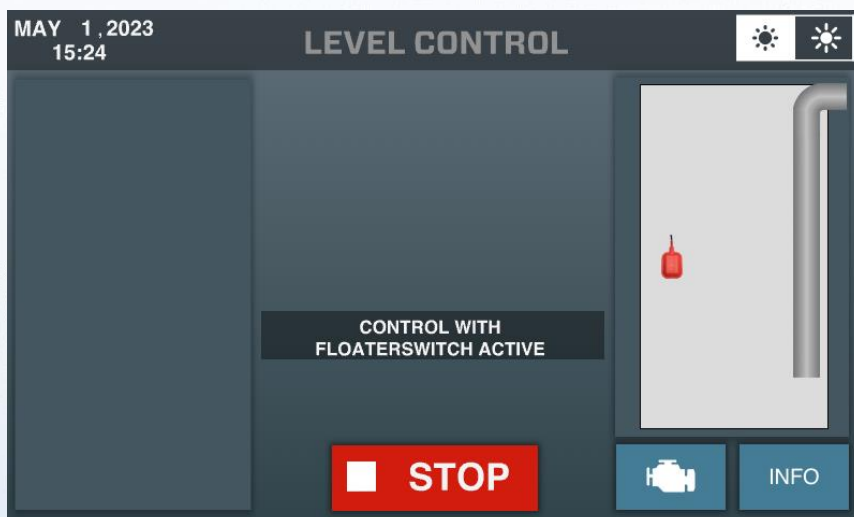
As soon as air enters the suction line the pump will shut itself off (stops) and will be waiting until the time the float switch will be up again.

5.3 Installing/positioning of the Hydrostatic Pressure Sensor (HPS)

1. Put a filter/well point tube with end cap (longer than total pit depth) inside the well.
2. Place the HPS inside the filter well point tube and sink it completely to the bottom.

Hydrostatic Pressure Sensor (HPS)

Filter/well-point tube. Placed at the bottom of the pit.

TIP:

If you expect a lot of sludge at the bottom of the pit then place the HPS a little bit higher to avoid clogging of the holes of the sensor. The HPS cable has a small air line inside and **may never kink**. However, it is important to check and maintain the HPS regularly and put it back at the same position after maintenance.

Do not over-clamp the tie-wrap in a way that the inside air tube could be blocked.

Inspect the camp for clogged holes on a regular basis.
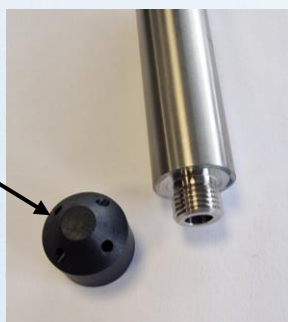
## 5.4 Connecting Hydrostatic Pressure Sensor Only
The following screen appears:

The HPS sensor should be positioned at the bottom or just above the bottom (to avoid sludge) of the pump pit. Make sure that the sensor is always leveled below the suction hose/strainer of the pump. The best way is to install the HSP inside a well point (filter tube) and as far away as possible from suction inlet/strainer.

After the HPS has been installed in the pit, the column of fluid above the sensor is given on the screen in the green highlighted "Actual level" bar. This value given is the vertical distance from the bottom of sensor up till the water surface level above the sensor.

Knowing this value already, all parameters needed to let the pump unit work fully automatically and independently have to be set.
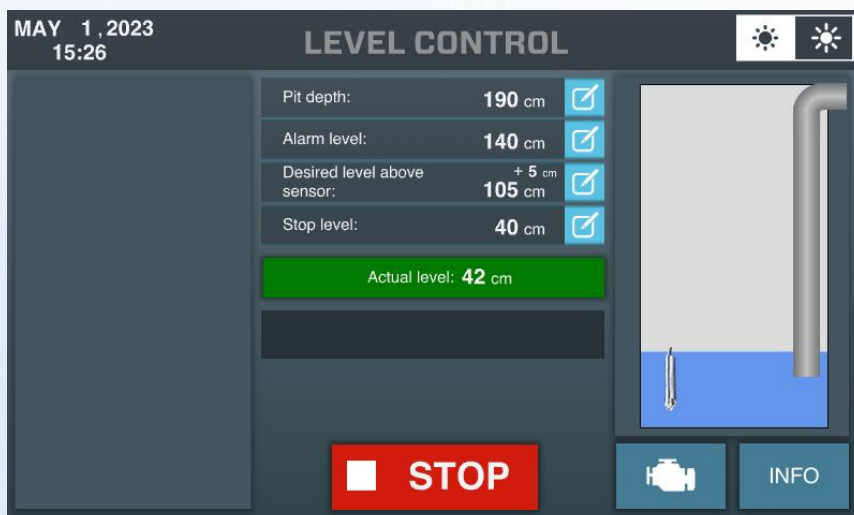
5.5 Level Control Settings (HPS Connected):

1. Pit depth:
The pit depth value is only needed to obtain a properly scaled view of the pit on the right side of the screen. You need to measure the distance from the fluid level in the pit to the upper surface of the pit (ground level) or estimate it. The pit depth is the sum of the distance from the fluid level to the ground level and the actual level, which is shown in the green bar.

2. Alarm Level:
The alarm level is the level at which fault code will be registered in the controller's list. When the alarm level is reached, the blue color of the fluid in the schematic pit view on the screen will change to red.

3. Desired level above sensor:
The desired level above the sensor is the level that needs to be maintained in the pit. It's important to use as much of the (sewer) pipelines' volume as possible for optimal efficiency in over pumping. Always try to set a significant distance between the desired level above the sensor and the set stop level. A minimum difference of 45cm is obligated between the desired level and the stop level. This to prevent unnecessary start/stop cycles.

4. Stop Level: **(READ THIS SECTION CAREFULLY, MOST ISSUES ARISE HERE!!!)**

- The stop level should preferably be 5 times the inner diameter (ID) of the suction hose/pipe **above the inlet of the suction hose/strainer**.
- If the stop level is set too low, it can create a "Suction Vortex," causing air to be sucked into the system, and the vacuum pump to activate continuously.
- If the vacuum pump operates continuously **in level mode for more than 900 seconds** because it cannot reach the stop level due to air, it will activate an alarm and directly shut off the pump unit (hard stop).
- Even if the fluid level rises above the desired level above the sensor later on, the pump **will not start** automatically anymore but remain in an alarm state until a complete reset is performed (set switch to "0" and restart the pump unit).
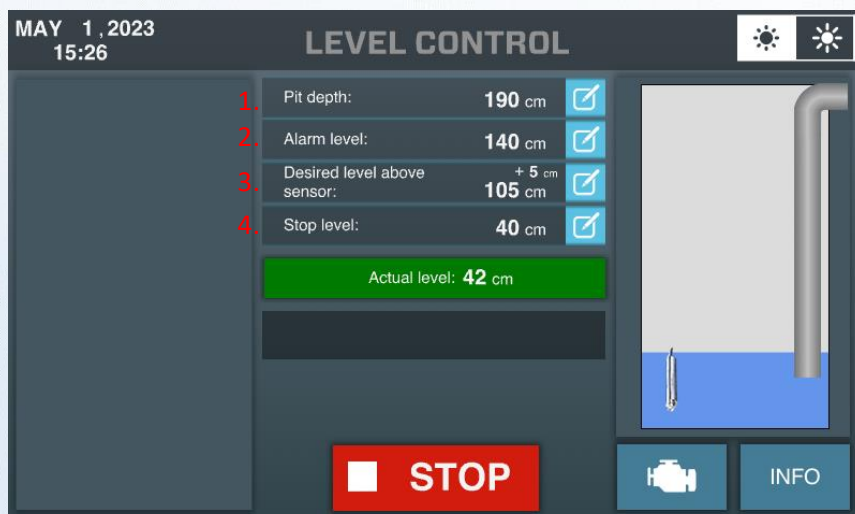
The parameters for level control can be set by pressing the blue activation box for the level that needs to be changed/adjusted.

After the activation box for a required level has been selected the screen below appears. The required level can be set in the range as given.
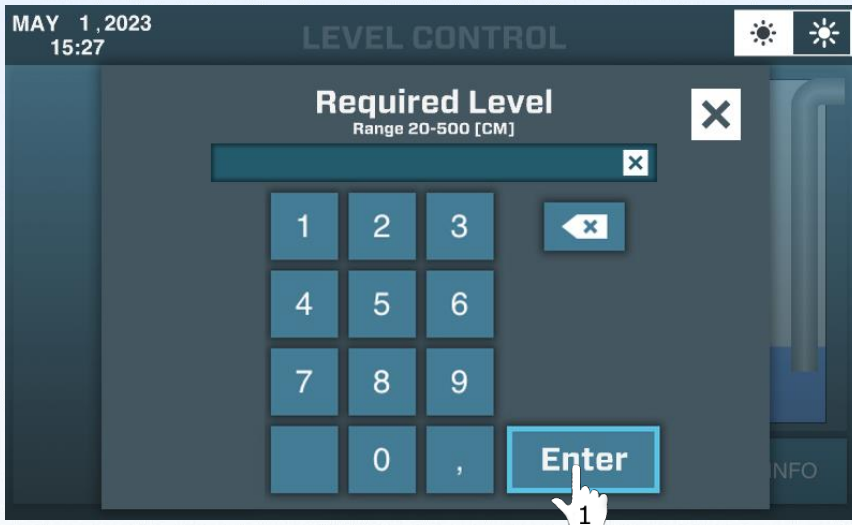
Every time the level is adjusted, activate this new level by pressing the enter button. When all levels have been set, the next screen appears showing the green start button:
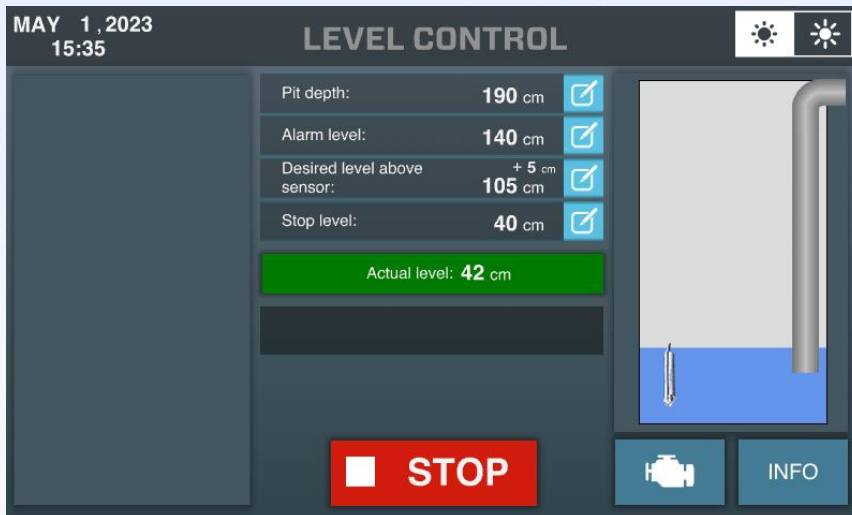

PLEASE BE AWARE THAT LEVEL CONTROL IS ONLY ACTIVATED AFTER PRESSING THE START BUTTON
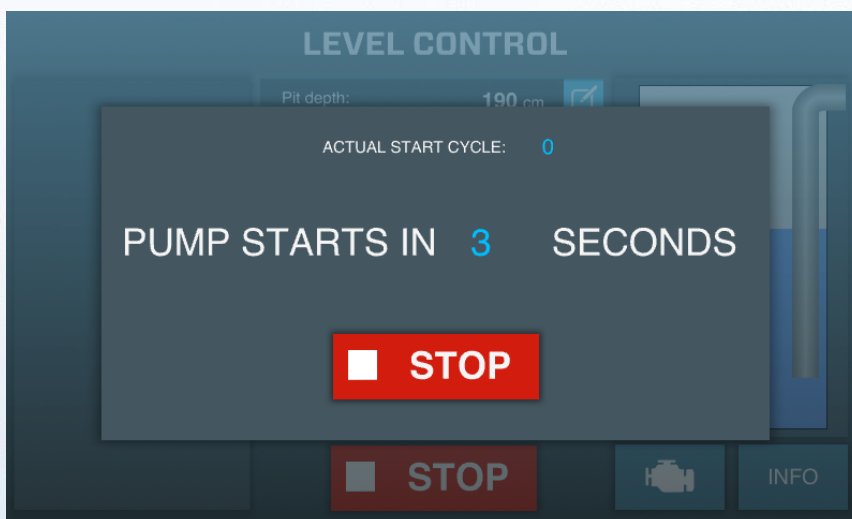
5.6 Screen of fully activated Level Control (waiting mode)

After pressing the START button the STOP button appears, indicating that the pump is active. Depending on the Desired Level Above Sensor in combination with the actual level the pump may not start directly. The Desired Level above Sensor is above the actual level.
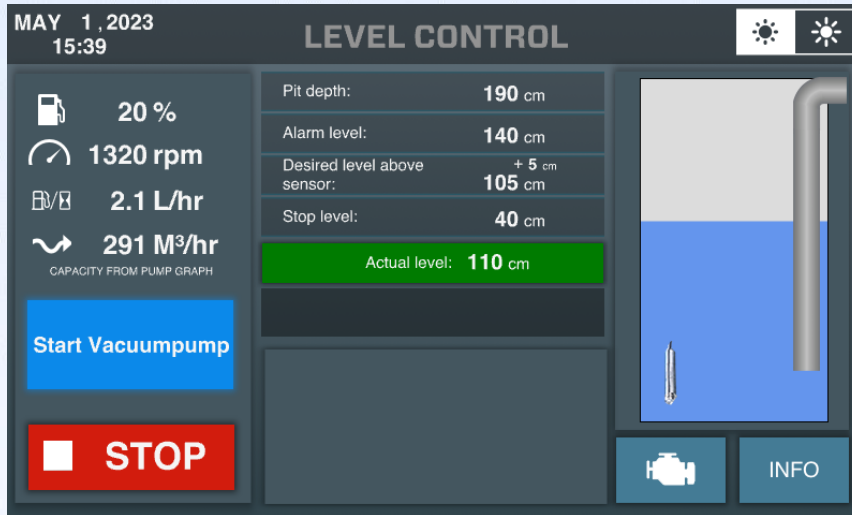

5.7 Screen of fully activated Level Control (start mode)

After pressing the START button the pump will start directly if the actual level is above the desired level. The following screen pops up:

5.8 Main screen of Level Control (pumping mode)

MAY 1, 2023
15:39

LEVEL CONTROL

Pit depth:	190 cm
Alarm level:	140 cm
Desired level above sensor:	+ 5 cm / 105 cm
Stop level:	40 cm

Actual level: 110 cm

20 %
1320 rpm
2.1 L/hr
291 M³/hr
CAPACITY FROM PUMP GRAPH

Start Vacuumpump

STOP

INFO

5.9 Connecting Hydrostatic Pressure Sensor (HPS) & Ball Float Switch Both
The following screen appears:

Ball Float Switch used as alarm switch (down).

HPS Connected

Installing both the HPS and all float switch together gives some extra security.

The HPS is an electronic and more sensitive sensor compared to the simpler ball float switch. The HPS needs to be inspected periodically to ensure reliable functioning.

If the maintenance of the HPS cannot be assured, the ECOMIZER-PRO controller can be executed by using two sensors at the same time. If the ball float switch will finally go "up", and pump unit is NOT running, the pump will start and go directly to Full Power Mode.

The ball float will at the same time create an alarm stamp in the faulty code list.
After activation by the ball float switch the pump will perform as per ball float switch operation.

6. Battery Charging Mode

An activated Ecomizer-Pro pump controller will always consume some power. To avoid empty batteries and failure of the system an automatic battery recharge procedure is built in. As soon as the battery voltage drops down below the set value (settings button after login) the unit will start recharging the battery. This can be seen on the screen displaying BATTERY CHARGING MODE with a battery charging timer.
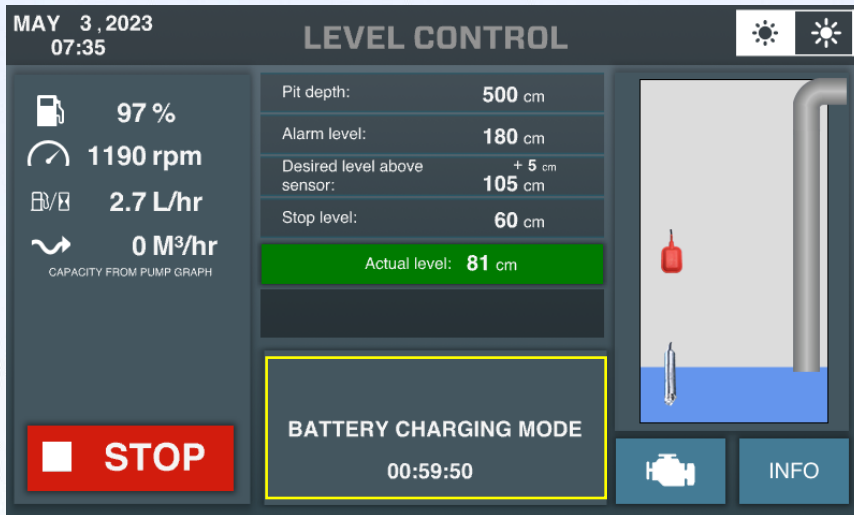
The Min. Battery Voltage can be adjusted in the settings menu which is visible after logging in. Login is explained in chapter 9 (Login User).

User Login Screen

Battery voltage at which battery rechar[ge] will be activated.

It is highly recommended that no external equipment is connected to the main battery of the unit (this drains the battery faster).

Battery recharging mode needs to be avoided as much as possible by proper installation of level control such that the unit will run as long as possible after each activation.

7. Fault Code List

Ecomizer-Pro pump controllers are unique in the way the fault codes are being displayed directly on the screen. The user of the pump can see the fault codes (mostly generated by the ECU of the engine) and in the same platform the fault codes of the pump, like fuel level low, alarm level reached, or maximum time of priming reached.

As soon as a fault code appears, it will be highlighted by a red pop-up bar at the top-center of the screen.

Only by pressing the red bar, the faulty code list will appear.

All fault codes are displayed with the following details:

1. **Description**:   Short description of the root cause applicable to this fault

2. **OC**:   Occurence Counter, shows how often the fault code was active

3. **SPN**:   Suspect Parameter Number, as per SAE J1939 CAN Protocol

4. **FMI**:   Failure Mode Identifier, detailed information about the root cause

For example, in the fault code SPN 3226 FMI 13, the SPN number 3226 tells you the problem is with the SCR outlet NOx sensor and FMI 13 tells you that the signal from the part is unavailable.

All SPN codes used in ECOMIZER-PRO Pump controllers are registered in the ECOMIZER-PRO Fault Code list.

This list is available at Impulse Pumps. Please send email to parts@impulsebv.com if you would like a copy of this list.

8. Info Screens

There are two info screens available in ECOMIZER-PRO which can always be opened on all screens. The INFO button ☜2 gives general data of the unit software version, etc. The engine button ☜1 gives real-time data of the unit. In this manual we show the info screens of a running unit.
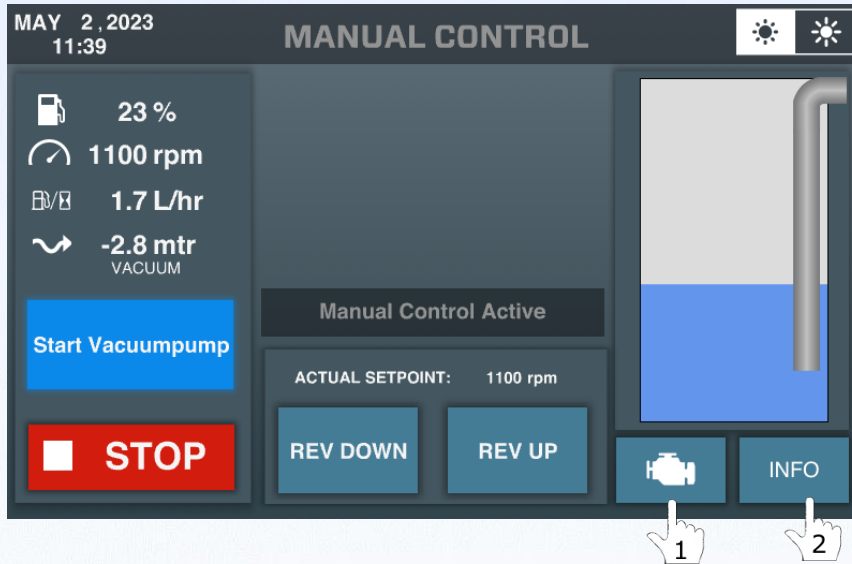
By clicking on INFO ☜2 the following screen appears:

Back to previous screen

By clicking on PUMP ACTIVITY ☜3 important historical information can be retrieved from pump start/stop sessions.

Click on a row in the activity list to show detailed information from individual pump session.

DIESEL PUMPS WILL SHOW THE PERCENTAGES OF LOAD REFERRED TO MAXIMUM ENGINE LOAD. A MINIMUM OF 40% ENGINE LOAD IS NEEDED FOR MODERN ENGINES TO KEEP THE EXHAUST AFTERTREATMENT SYSTEM IN ITS OPERATIONAL LIMITS. IF THE ENGINE LOAD IS TOO LOW A FAULT CODE WILL APPEAR!

ELECTRIC PUMPS SHOW THE PERCENTAGES IN RPM RANGE.

By clicking on the engine button 👆① the following screen with information appears:

MAY 3, 2023 07:37	PARAMETERS	☀ ☀
Engine Running Hours:		441:15 Hr
Engine Running Hours in Manual Control:		1:47 Hr
Hours To Next Service Interval:		65:02 Hr
Tripcounter Hours:		434:57 Hr
Running Hours Vacuumpump:		12:26 Hr
Clutch Activation Counter:		739 X
Battery Voltage:		14.1 V
Fuel Level:		97 %
Fuel Consumption:		1.5 L/hr
←	PAGE 1 PAGE 2 PAGE 3	

Not always given

By clicking on PAGE 2, the next screen with engine information appears.

MAY 3, 2023 07:37	PARAMETERS	☀ ☀
Oil Temperature:		27.2 C
Oil Pressure:		3.5 bar
Coolant Liquid Temperature:		33 C
Engine Torque At Current Speed:		26.1 %
Actual Engine Power:		13.2 kW
Engine Speed:		1200 rpm
Setpoint Engine Speed:		1200 rpm
Fuel Low Pressure:		4.0 bar
←	PAGE 1 PAGE 2 PAGE 3	

Depending on the engine, there might also be a third page (PAGE 3) with emission and regeneration data (StageV Engines with or without DEF).

| MAY 3, 2023 07:38	PARAMETERS	☀ ☀
DPF Differential Pressure:	6 mBar	
DOC Intake Temperature:	104 C	
DPF Intake Temperature:	94 C	
Physical Torque:	9 Nm	REGEN INFORMATION
SOOT Load:	8 %	
Exhaust Gas Temperature:	94 C	
Remaining Time till Torque Reduction Level 1:	0 min	
Remaining Time till Torque Reduction Level 1:	0 min	
←	PAGE 1 PAGE 2 PAGE 3	

9. Regeneration / StageV Features

9.1 Manual / Passive Regeneration:
By pressing on the REGEN INFORMATION button the following screen can appear depending if manual regeneration is allowed by the engine manufacturer:
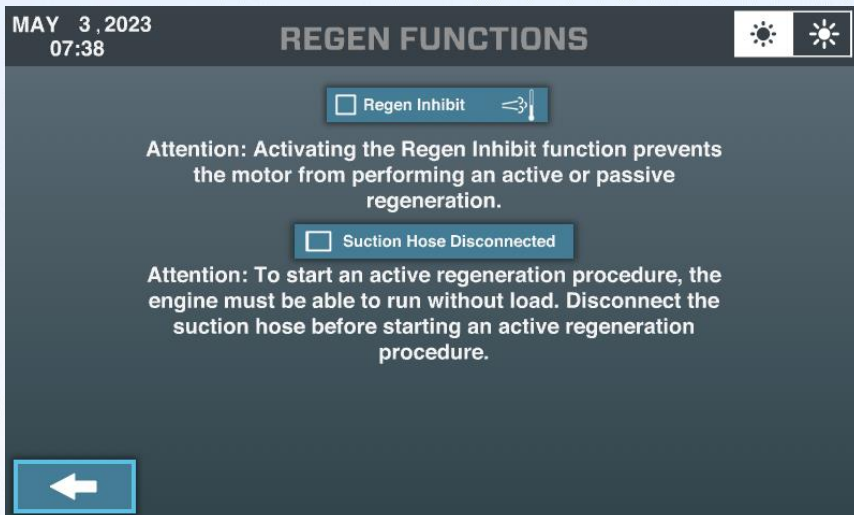
For Hatz engines a manual regeneration need to be performed without load. Therefore, the suction hose must be disconnected so the motor could operate without load. Confirm that suction hose is disconnected to run without load. After the Regen Inhibit has been unchecked and the suction hose disconnected has been checked the engine can be started for a manual regeneration and the following screen appears:


PLEASE BE AWARE THAT REGENERATION IS NOT POSSIBLE WITH THE REGEN INHIBIT CHECKBOX CHECKED!

9.2 DEF Level Monitoring

Engines supplied with DEF to fulfill the latest environmental requirements have additional features in the control system to prevent early engine malfunctions. One of the features is an early shutdown of the engine at low DEF levels. If the engine continuous operation without DEF the ECU will lock the engine and only certified technicians from the engine manufacturer could unlock the engine.

As soon as the DEF level is below 15% the first warning pop-up will appear. The engine could continue operation without limitation, but the pop-up will be shown every 30 seconds as long as the DEF level is below 15%.
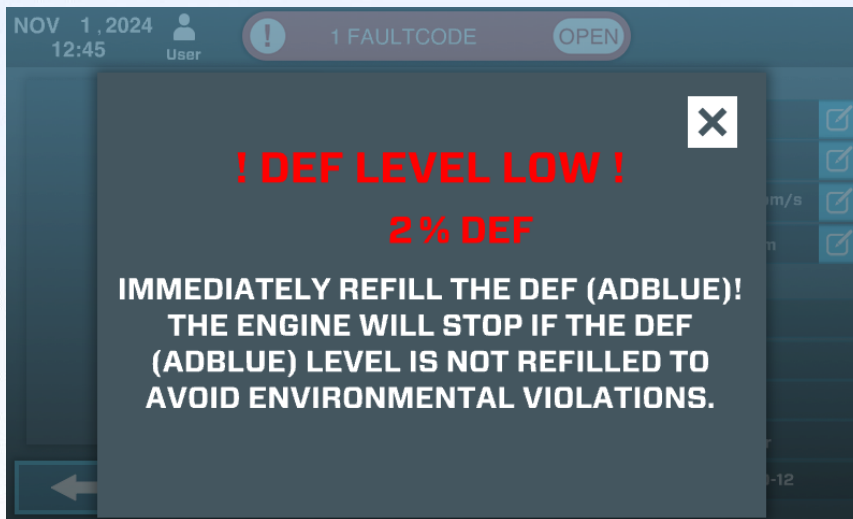
If DEF refuelling will be neglected the ECOMIZER-PRO will shutdown the whole system as soon as the DEF level is below 6% for at least 2 minutes. The follow shutdown timer is visible in the DEF level low pop-up:
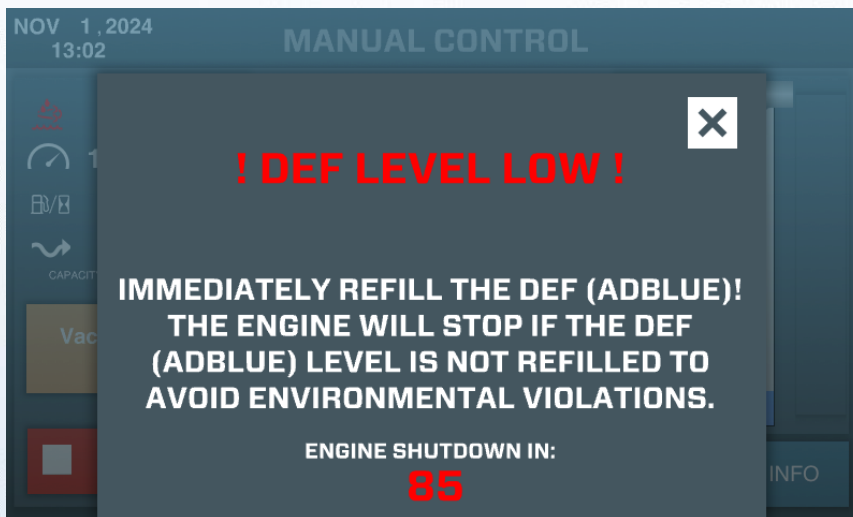
Once the DEF level low shutdown timer is finished the engine will be stopped and a fault code is added to the fault code list. Also, a notification pop-up will be shown that the engine has been stopped due to the neglected refueling of DEF.
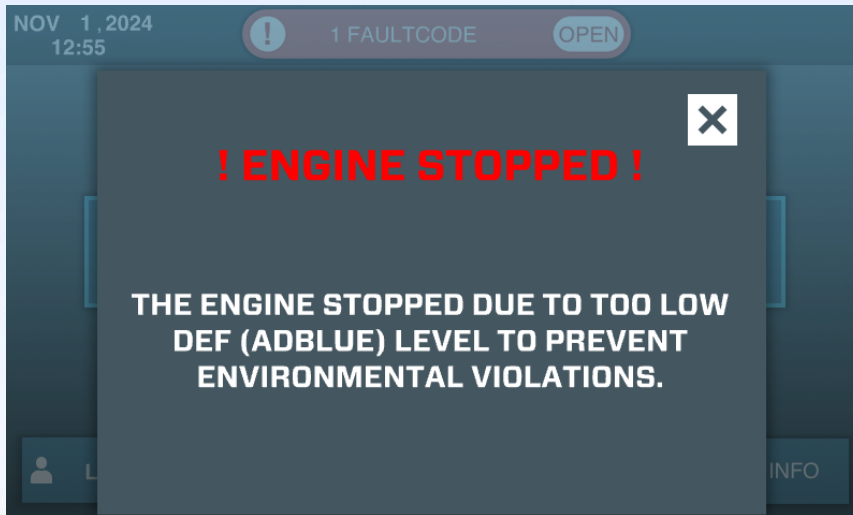

As long as there is no DEF added the engine can be started to show correct behavior of the control system but will always trigger the shutdown procedure after 2 minutes. Only after at least 25% DEF level has been noted the shutdown procedures won't be triggered.

PLEASE BE AWARE THAT BATTERY CHARGING MODE IS DEACTIVATED IF THE DEF LEVELS ARE TOO LOW!

9.3 DEF Refuelling with External DEF Tank

The DEF usage can be up to 15% of the fuel usage and therefore the internal DEF tank will be empty in certain situations in less then 10 hours of operation. To extend the operation without human service the "EXTERNAL DEF TANK" feature can be activated. This will trigger a DEF pump to refill the internal DEF tank as soon as there is less then 30% of DEF available. An active DEF refuelling sequence is shown on the screen.
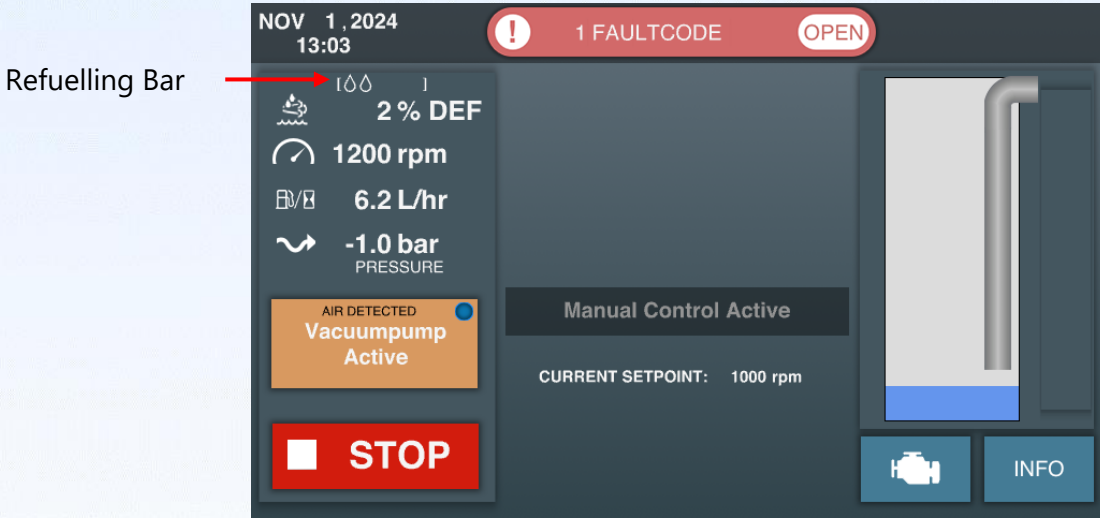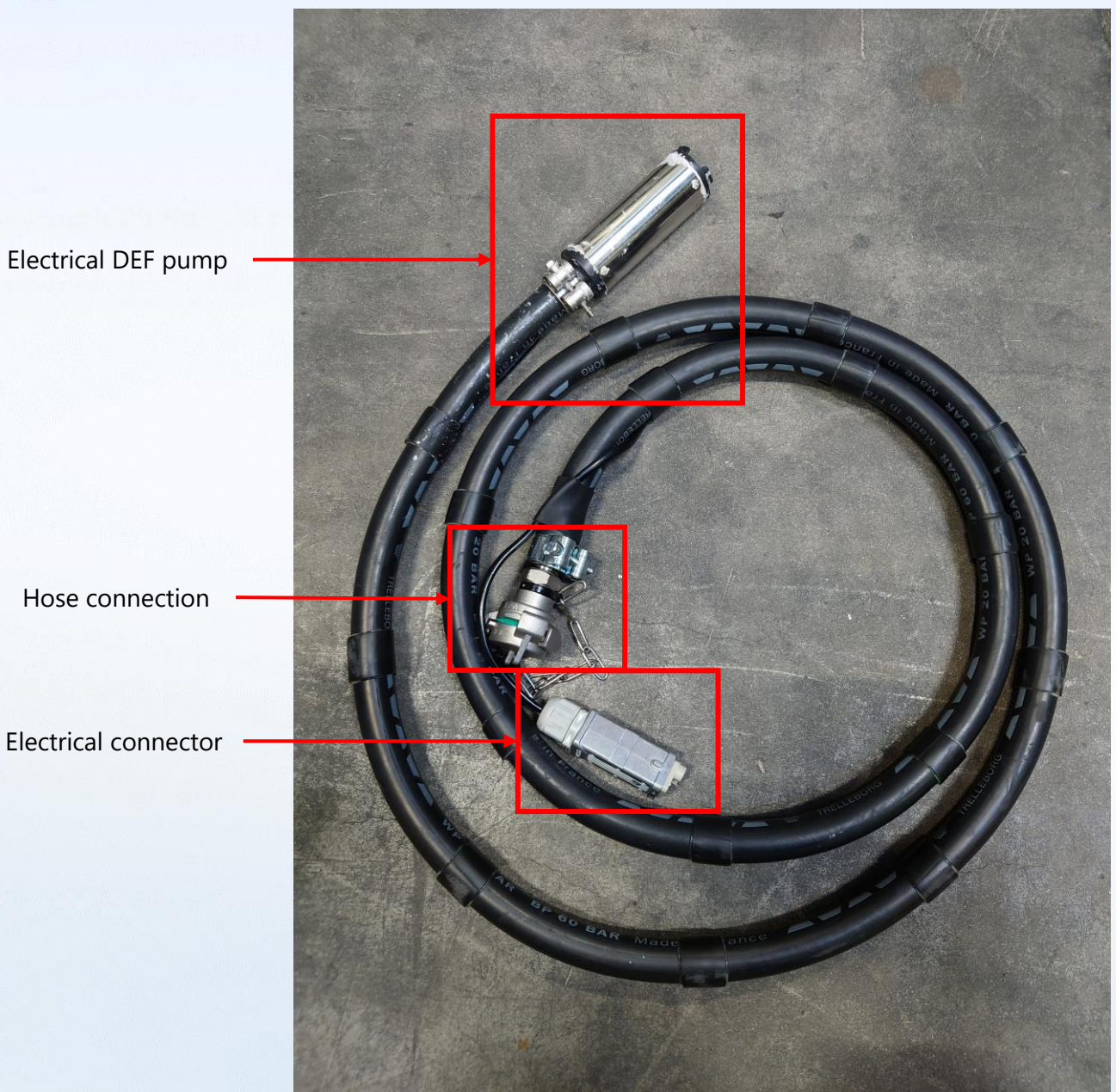
Refuelling Bar →

Automated DEF refuelling via an external DEF tank can be enabled by the Owner of the machine and selecting the EXTERNAL DEF TANK checkbox
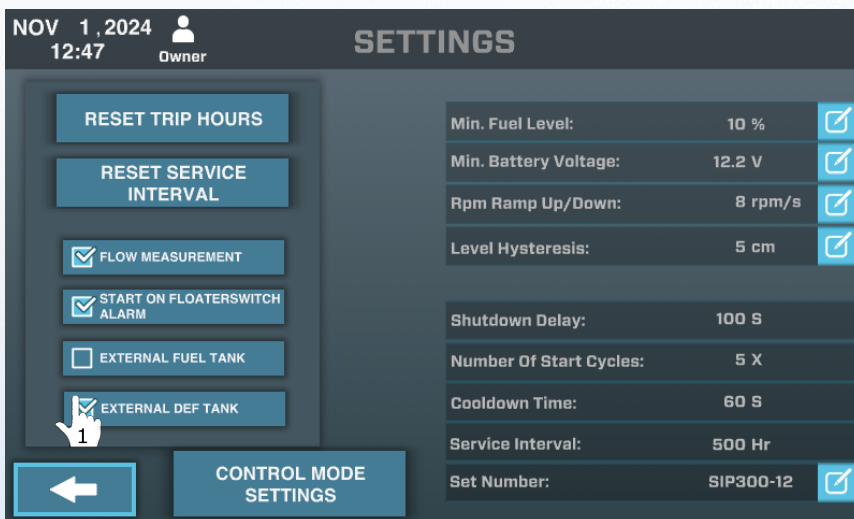
### 9.4 External DEF tank installation instruction
In the pictures below the kit for the DEF refuelling hose and the electrical pump are shown. This kit can be ordered at Impulse as spare part.

Impulse article number of the DEF pump kit as shown below:
35254

Electrical DEF pump

Hose connection

Electrical connector

In the pictures below the connections for the DEF refuelling hose and the electrical pump are shown.

> PLEASE BE AWARE THAT THE DEF REFUELLING TIME IS ADJUSTED WITH THE SPECIFICATIONS OF THE STANDARD IMPULSE DEF PUMP. DO NOT INSTALL A DEF PUMP WITH HIGHER FLOW CAPACITY!
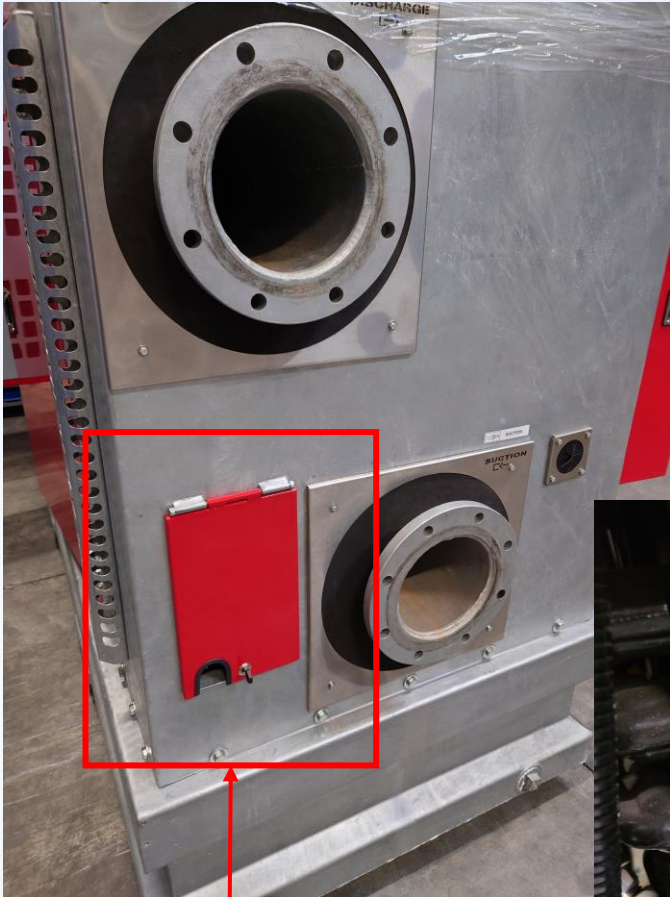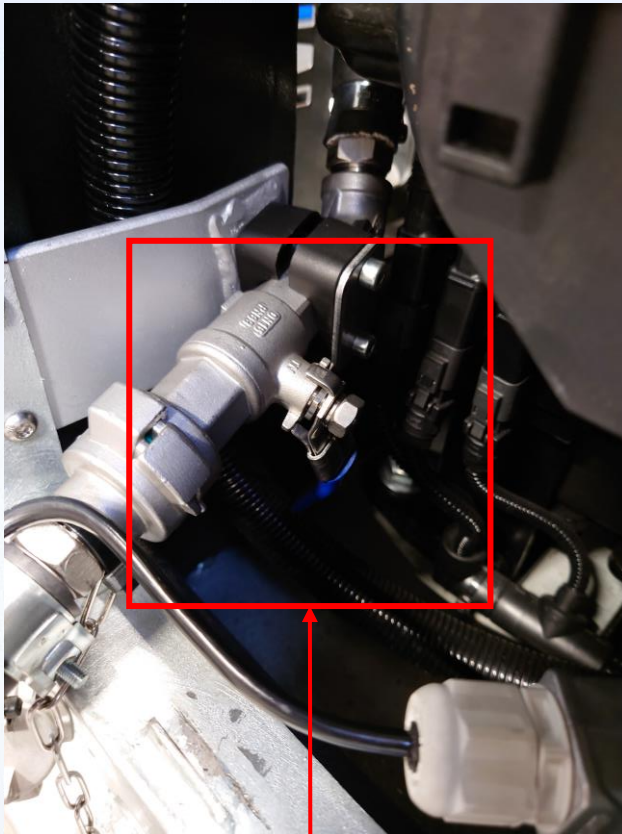

External DEF tank hatch
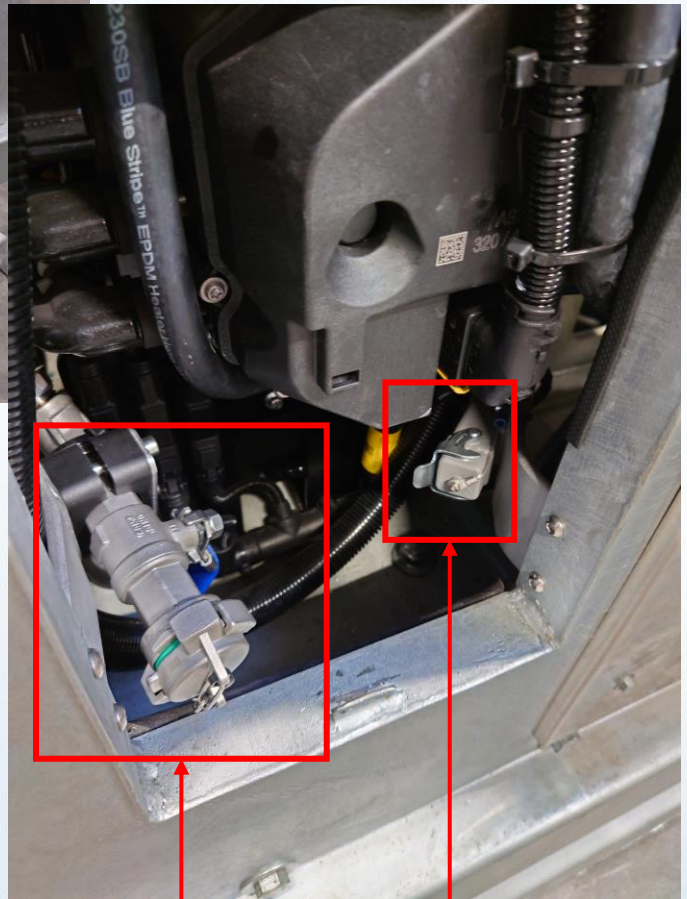

DEF refuelling hose adapter

DEF pump electrical connector

After connection of the external pump the external DEF valve must be opened manually to allow refuelling of the fluids. In the pictures below the correct position of the external DEF valve will be shown for succesfull automated refuelling.

> MAKE SURE THAT THE EXTERNAL DEF VALVE IS CLOSED AS SOON AS THE EXTERNAL DEF REFUELLING SYSTEM WILL BE DISCONNECTED. THIS TO PREVENT LEAKAGE OF THE INTERNAL DEF TANK!

External DEF valve
CLOSED
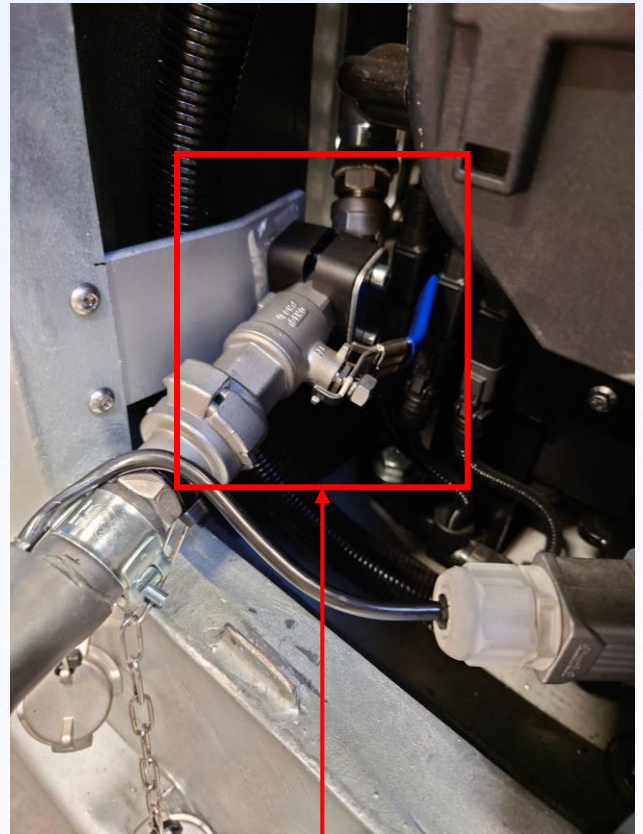
External DEF valve
OPEN

The size of the external DEF tank can be increased depending on the amount of time that the machine must operate without maintenance or refuelling intervals of the normal fuel tank. DEF consumption varies depending on the load of the machine and should be estimated by the owner.

IF THE ENGINE IS RUNNING AT MAXIMUM LOAD THE DEF CONSUMPTION CAN BE UP TO AT LEAST 10% OF THE FUEL CONSUMPTION.

FOR EXAMPLE:
DEF CONSUMPTION CAN BE APPROXIMATELY 2 L/HR WHEN THE ACTUAL FUEL CONSUMPTION INDICATES 18 L/HR AT FULL LOAD

Close the hatch after installation of the external DEF system and make sure that the hose is properly fixed to the external DEF tank. Vibrations of the machine must not lead to malfunctions of the refuelling process. Make sure that the external DEF tank is closed to prevent any contamination.

Additional notes:
- Make sure that the hose connections and the hose are cleaned before installation.
- Check the position of the external DEF valve before operation.
- Only use DEF from superior quality. Any contamination will cause system errors.
- Connect the dust/blind caps of the hose and electrical connection after disconnecting the external DEF tank.
- An automated refuelling cycle will be executed with running engine only.
- The refuelling cycle will start as soon as the DEF level is less then 30% for at least one minute.
- After a refuelling cycle a rest state of one (1) hour is implemented. Therefore, only one refuelling cycle per hour is possible to prevent overfilling of the internal DEF tank.
- There is a delay of the actual DEF level as shown on the HMI pages. As soon as a refuelling cycle has been completed it takes approximately 20-30 minutes before the actual DEF level is shown.
- If faultcode SPN 520206 FMI 2 "DEF REFUELLING FAILURE" is shown the refuelling cycle has not been succesfully completed. Proceed with the following checks for troubleshooting:

    1. Check if the hose and the DEF pump are connected properly.
    2. Check if the external DEF tank is filled up with DEF.
    3. Check if the position of the external DEF valve is in the "OPEN" position.
    4. Check if the DEF pump is not contaminated, clean the pump if needed.
    5. Check if the DEF pump is installed on the bottom of the external DEF tank.
    6. Check the floating fuses near the battery (see picture below).
    7. Check the floating relay near the battery. The relay is covered by wiring harness tape.
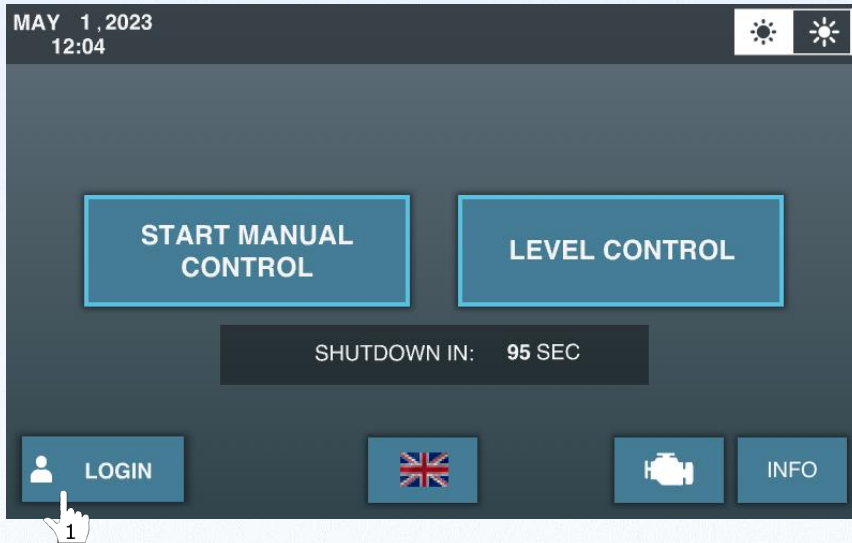

Floating relay for DEF Pump

Floating fuse for DEF Pump
(20A)

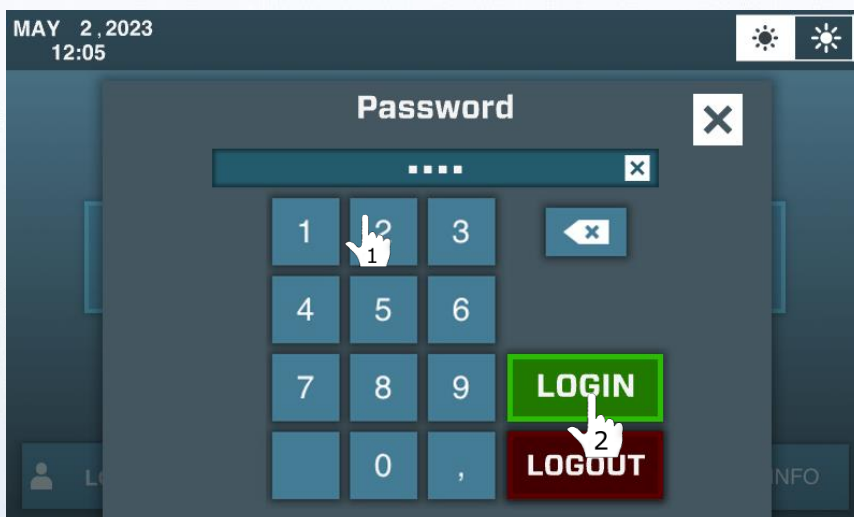Floating fuse for DEF Pump relay
(5A)

10. Login Screen

The login option in ECOMIZER-PRO enables different users to have various access levels. Only User and Owner logins are explained.

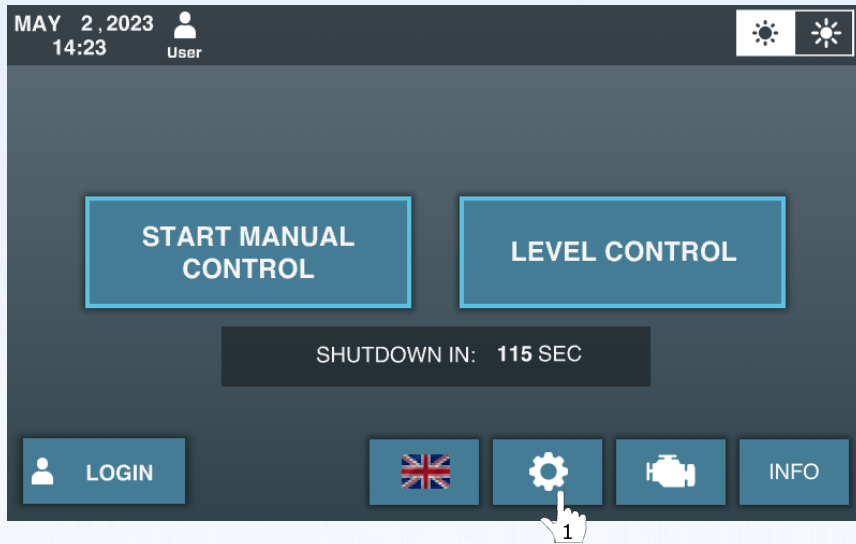Click on the LOGIN button in order to log-in.

The following screen will pop-up:

To login as User press 1234 and then LOGIN.

After logging in, a new settings button (gear wheel) appears on the home screen:

1   Click on the settings button (gear wheel) to open the login settings page.

When logged in as User the following screen appears:

Login Level
(User)

As User possibilities are given to shut down fuel tank levels (by running on an external fuel tank) and start on Ball Float Alarm Level (both sensors connected at the same time).

The User can also finetune the data on the right side of the screen (4 settings).

Min. Fuel Level: Percentage of fuel left at which a fault code will be generated.

Min. Battery Voltage: The value at which the pump starts battery recharge by engine.

RPM Ramp Up/Down: The rate of ramping RPM up or down (in this case 8 rpm/s).

Level Hysteresis: Distance above the required level before the pump starts.
                             (Hysteresis Level is important to avoid continuous adjustment.)

To login as Owner use the password given to the owner (buyer) of this unit. With this password timer settings can be changed and it is recommended that this password will not be shared with all common users.

When logged in as **Owner** the following screen appears:

Login Level
(Owner)
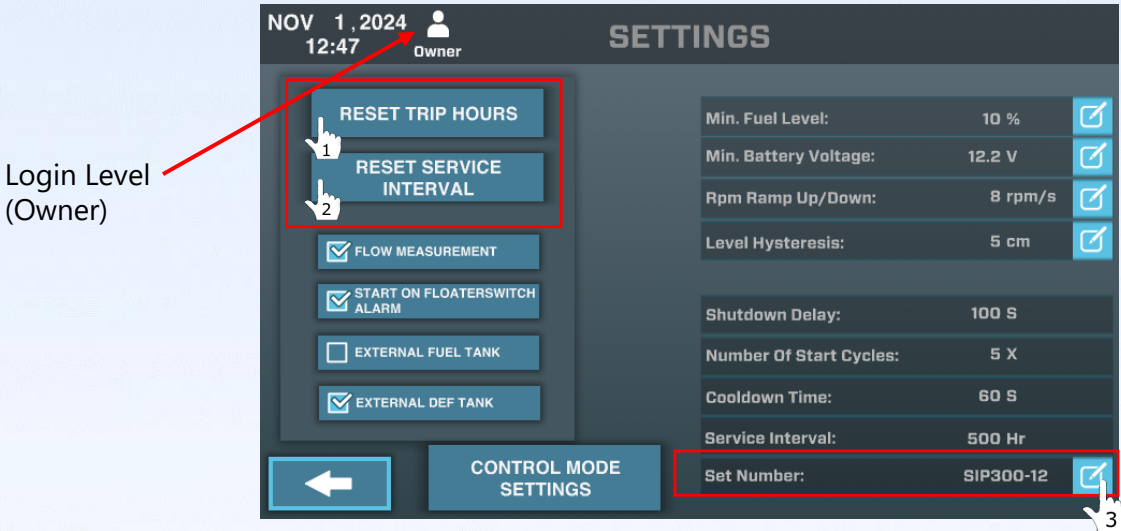
As Owner there are a couple of extra settings visible to be adjusted.

1️⃣ By pressing on RESET TRIP HOURS the hour counter can be adjusted to 000. For Owner of the pump unit, the total running hours on a project can be logged. Every new project requires a reset of the trip hours.

2️⃣ By pressing on RESET SERVICE INTERVAL the hours until service will be set back to 500 hours (default). After each and every oil change this counter needs to be reset.

3️⃣ By pressing the blue activation box, a keyboard pops-up to give the unit a name.

By selecting FLOW MEASUREMENT the Owner can decide if vacuum pressure and flow data on the screen should be visible.

By selecting START ON FLOATERSWITCH ALARM the Owner can decide if the floaterswitch should act as a back-up together with the HPS.
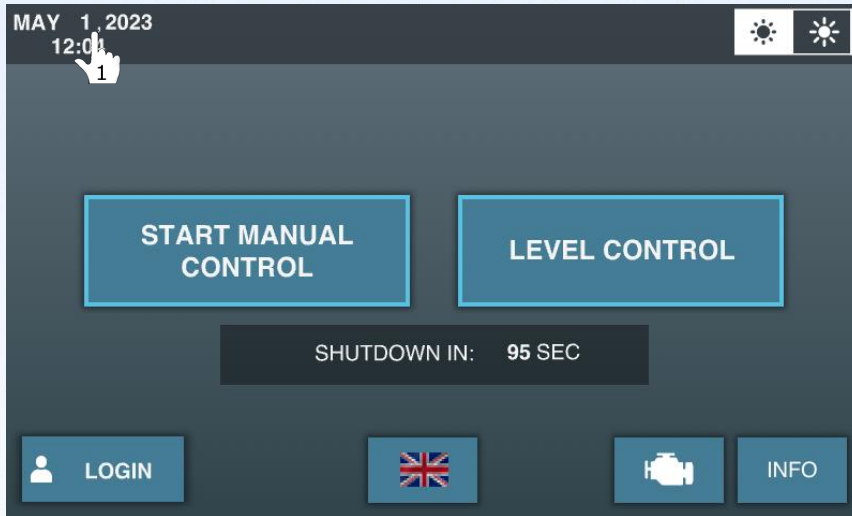
By selecting EXTERNAL FUEL TANK

Every counter reset will always ask for a second confirmation whether you are sure to reset the counter. The following screen appears:
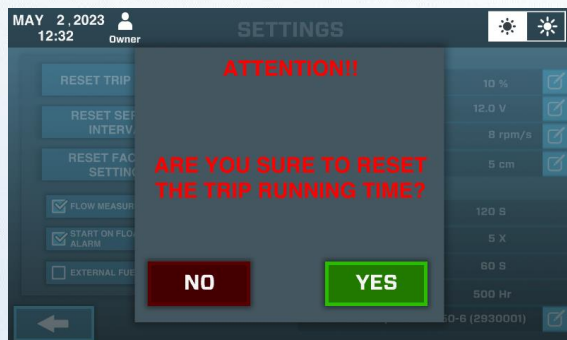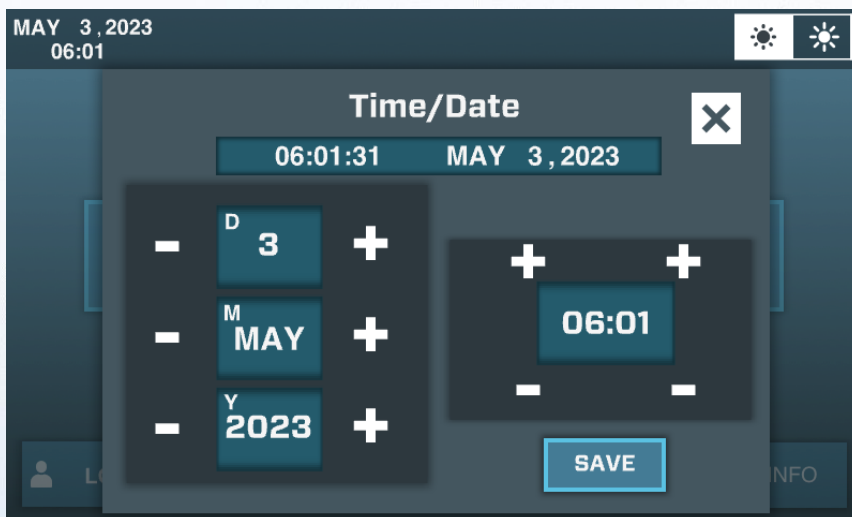
11. Time Settings

Time adjustments can be made on all screens.

[1] Click on the TIME-DATE block on the upper-left side of the screen.

The following screen will pop-up to adjust the time (login not needed):


By pressing on – and + the correct date and time can be set. Ecomizer-Pro does not account for summer and winter timings. This needs to be set manually.

12. Electric Pumps

Electric pumps equipped with Ecomizer-Pro behave identical to pumps equipped with a diesel engine. As the electric pumps are equipped with a variable frequency drive (VFD) minor differences between CAN/Diesel pumps and Electric pumps exists.

Electric pumps are equipped with batteries with a nominal voltage of 24V DC. Therefore, it is possible to activate the display without using grid supply. Please note that this is only meant to monitor settings, the batteries can't be used to pump water!
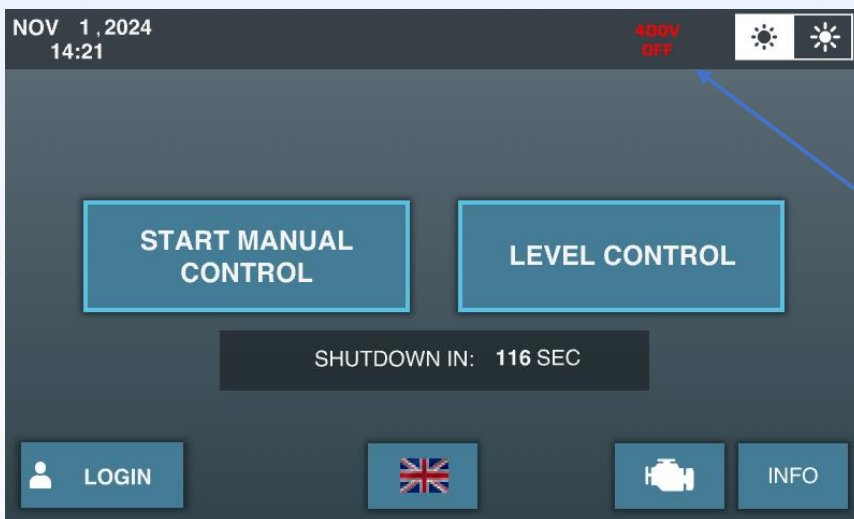
Indication if power is **not** applied to the system

12.1 Auto Generator Start
Electric pumps can also be powered via a generator. The pump could start the generator if needed to save fuel at the generator side. This feature can be enabled by logging in as an Owner.
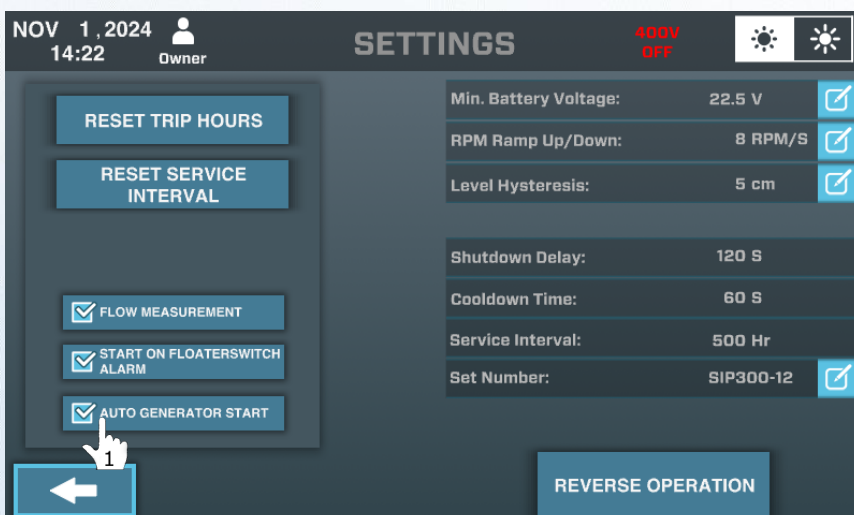
Click on the AUTO GENERATOR START to enable remote generator control.

The screen below shows an active session on the electric pumps. Please note that the "Fuel Level" has been replaced by the actual motor frequency and that the battery voltage is higher compared with diesel engines.

Actual motor frequency

Indication if generator is switched on via the pump

12.2 Reverse Operation

Due to the usage of a VFD the pump can be driven in opposite operation. The reverse operation is only possible at limited speed and for a limited time for diagnostic purposes!

Click on the REVERSE OPERATION button to enable rotation of the pump in opposite direction for a maximum of 30 seconds at limited speed.

12.3 Info Screens Electric Pumps

The screens below show all crucial information belonging to the e-propulsion. At the serial numbers screen the information from the variable frequency drive is shown.

NOV 1, 2024 14:27	SERIALNUMBERS	400V OFF		
Set Number:		SIP300-12		
Serialnumber Display:		9192931		
Software Version Display:		Impulse_SIP_Electric_V09-00		
Software Version PLC:		Impulse_CXM110_V03-00		
Serialnumber PLC:		500123456		
Serialnumber Motor:		1234567 (30kW) 1234567 (2,2kW)		
Serialnumber Pumpset:		1234567		
Serialnumber Frequency Drive:		V05.11 1234567		
Serialnumber Pump:		1234567		
Serialnumber Vacuumpump:		1234567		

Software Version of variable frequency drive

PUMP ACTIVITY

NOV 1, 2024 14:50	PARAMETERS	
Engine Running Hours:		0:00 Hr
Running Hours in Manual Control:		0:21 Hr
Hours To Next Service Interval:		492:10 Hr
Tripcounter Hours:		7:49 Hr
Running Hours Vacuumpump:		5:45 Hr
Vacuum Pump Activation Counter:		116 X
Battery Voltage:		11.9 V
Actual Electrical Power:		10.4 kW
Actual Shaft Power:		11.1 kW

PAGE 1   PAGE 2

NOV 1, 2024 15:39	! 1 FAULTCODE OPEN	
Frequency Drive Output Voltage:		266.0 V
Actual Current:		15.5 A
Frequency Drive Temperature:		51.8 C
Actual Motor Torque:		25.3 Nm
Motor Load:		20.0 %
Engine Speed:		996 RPM
Setpoint Engine Speed:		1000 RPM
Actual Frequency:		33 Hz

PAGE 1   PAGE 2

12.4 Battery protection features

If the pump is set to operate with AUTO GENERATOR START but there is no need to start the generator as there is no water an automated battery charging mode will be initiated. Even if the required water level is below the setpoints the pump tries to start the generator to activate an indirect battery charging mode. As soon as the battery voltage drops below the minimum a "System Check" notification will appear on the display as can be seen in the screen below.

If the generator fails in supplying power and the battery voltage will drop even further a battery disconnect device will physically disconnects the batteries from the system. This to prevent complete drained batteries. The battery disconnect device will automatically connect the batteries if the power supply has been restored.
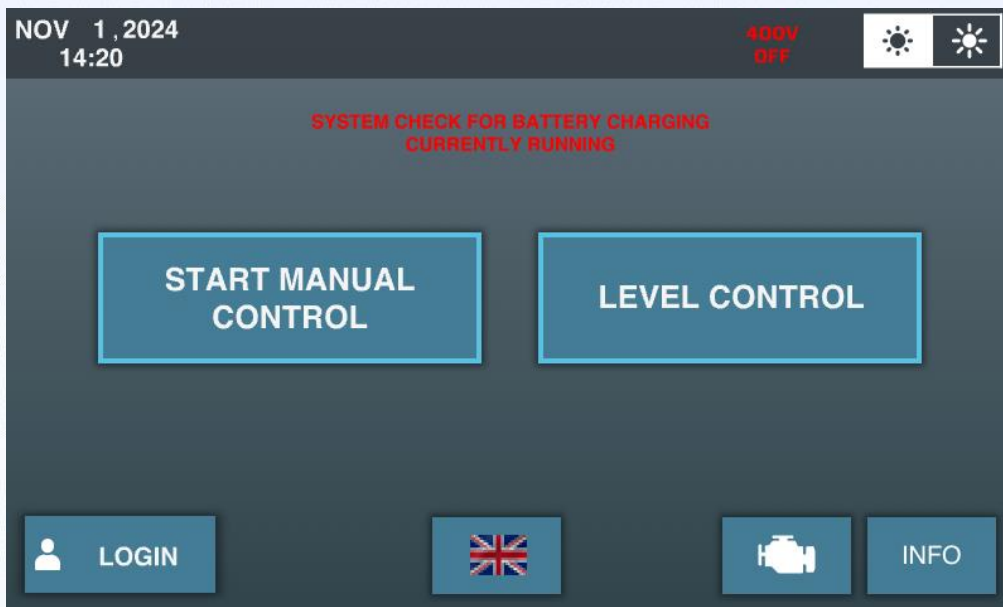
13. Storage Recommendations

If the pump is not being used for longer periods, e.g. four (4) weeks or longer, it is recommended to isolate the battery to prevent empty batteries. Loosen the bolt on the black, negative clamp and lift it away from the battery.

After storage, Impulse always recommends to charge the batteries with a trickle charger at least one day prior usage of the pump.

Notes

ECOMIZER-PRO pump technologies are designed for a better and greener planet

Impossible to live without water

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