ETNA®

EN12845 / NFPA 20 Compliant ETNA EDP Panel and Diesel Engine Fire-Fighting Booster User Manual

1. Product Information

The ETNA EDP diesel panels are designed to control pump groups driven by internal combustion engines installed in fire-fighting systems. The ETNA EDP electric panel and software is developed specifically for this purpose and provide a comprehensive and user-friendly control panel. Ensures flawless control of the system together with the mechanical and electronic devices in the diesel engine pump set. All system data can be monitored via the LCD display and status LEDs, and necessary settings can be easily made using the buttons. Internal battery charging rectifiers keep the batteries in the diesel engine fire-fighting system continuously charged, ensuring the system is always ready for operation.

The ETNA EDP diesel panels pressurize and control the system by starting the diesel engine in cases where pressure loss occurs in the fire-fighting system and the diesel engine-driven main pump needs to be activated.

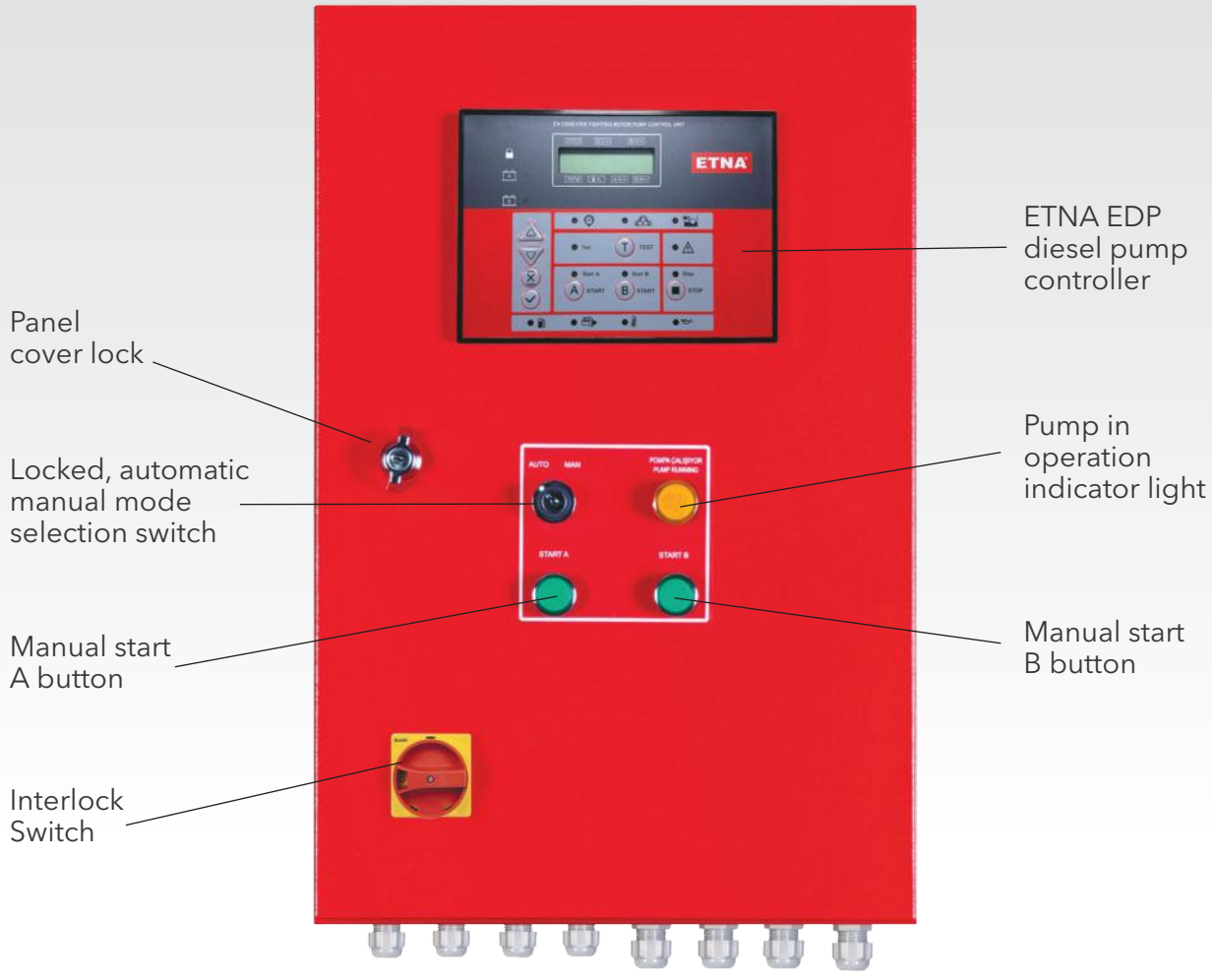


Figure 1. ETNA EDP diesel panel exterior view

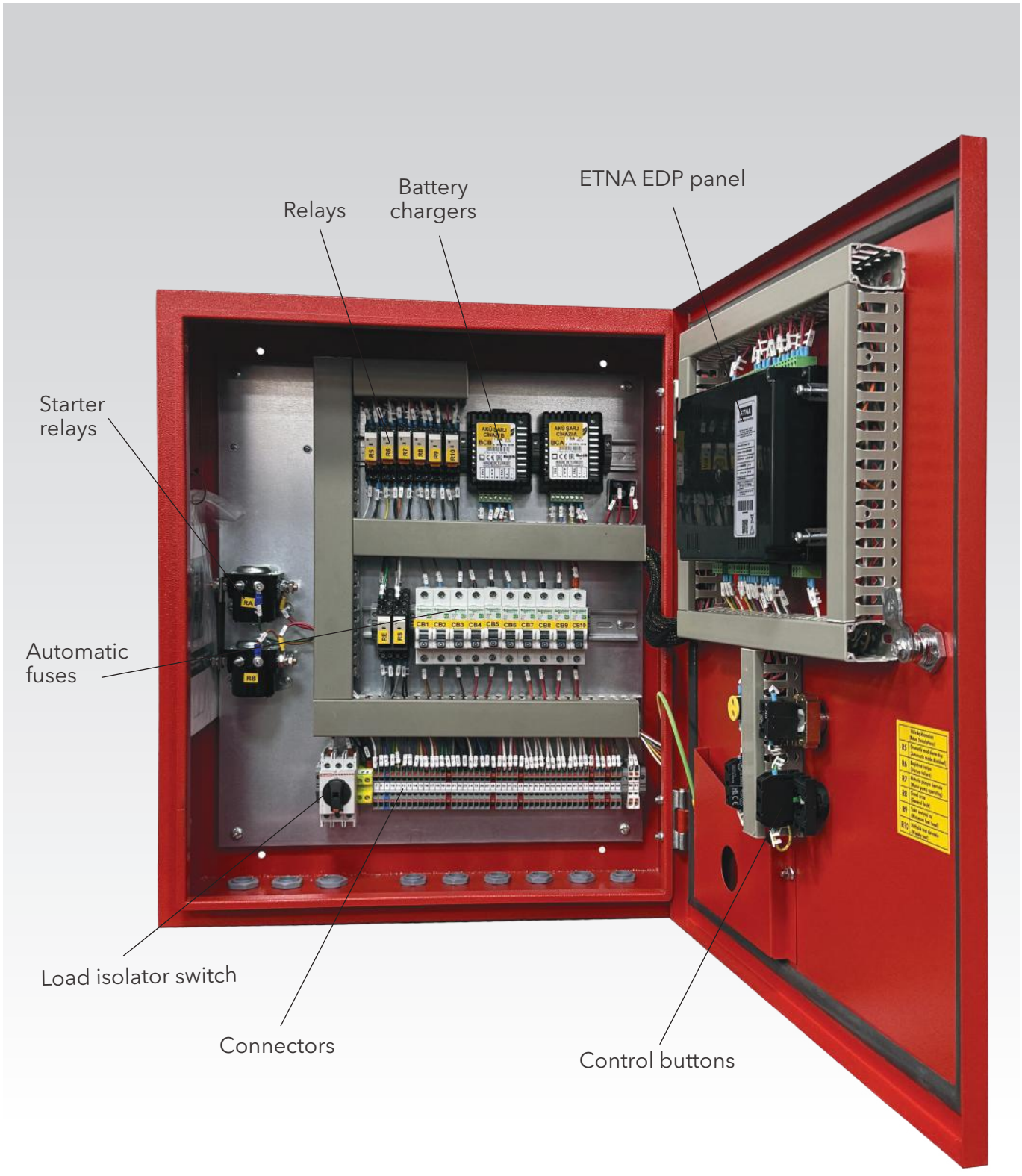


Figure 2. ETNA EDP diesel panel interior view

1.1 Panel Specifications

- Epoxy-coated DKP sheet metal panel
- Automatic manual mode selector locked button on panel front cover
- Manual start buttons and indicator lights on the front panel cover
- Protection class IP 65
- Operating with 2 battery groups at 12V or 24V DC supply voltage
- 2 internal battery charging rectifiers for 2-battery systems
- Operating voltage of 180-280VAC, operating frequency of 50/60Hz for battery charging rectifiers
- Battery voltmeter and charging current ammeter
- Battery and charging system status LEDs
- Automatic start-up with pressure switches or feed tank float
- Pressure control function
- Automatic start-up with a total of 6 cycles using 2 batteries
- 2x16 character LCD with white screen
- Monitoring all statuses from the LCD display
- Monitoring diesel engine speed with a tachometer
- Water temperature gauge
- Oil temperature and pressure gauge
- Fuel level gauge
- Extra manual operation buttons on the EDP panel
- Test commissioning button
- Manual stop button
- Monitoring via Modbus RTU with RS485 protocol
- Viewing total, manual, test operation times and number of switchgear
- Adjustable activation and deactivation delay times
- Periodic maintenance deadline reminder
- Turkish and English language options
- Can keep 500 past event logs in memory
- Real-time date and time
- Ability to perform automatic weekly test on set date, hour and time
- Password protected menu prevents unauthorized access
- Changeable menu password
- Remote operation through dry-contact
- Operating, general fault, low fuel level, start-up error, relay dry contact outputs for weekly test information
- Siren relay output for siren connection
- Running the engine at idle for a set period of time using the throttle actuator output

1.2 Panel dimensions

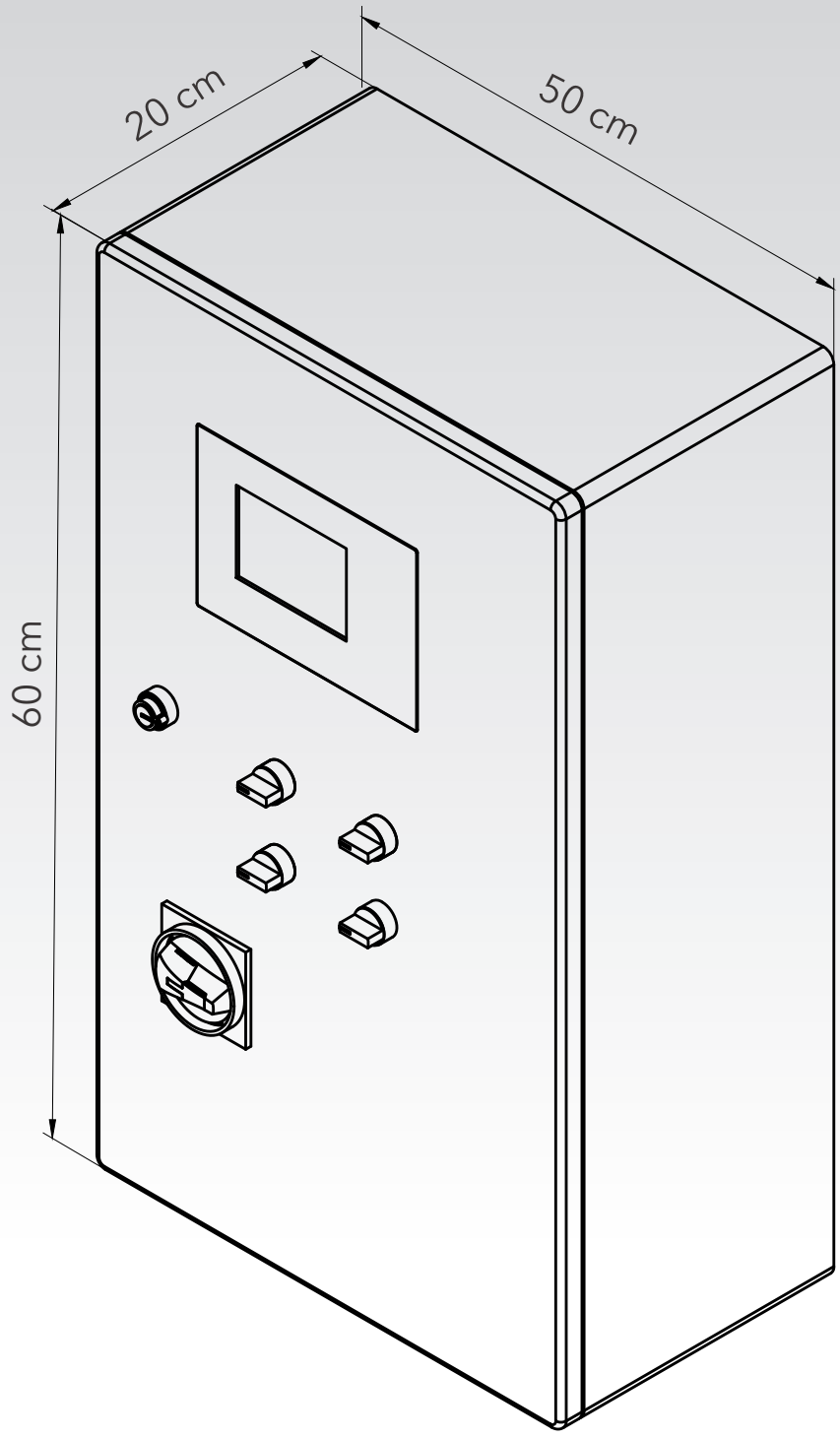


Figure 2.1 Panel dimensions

2. Pump Controller

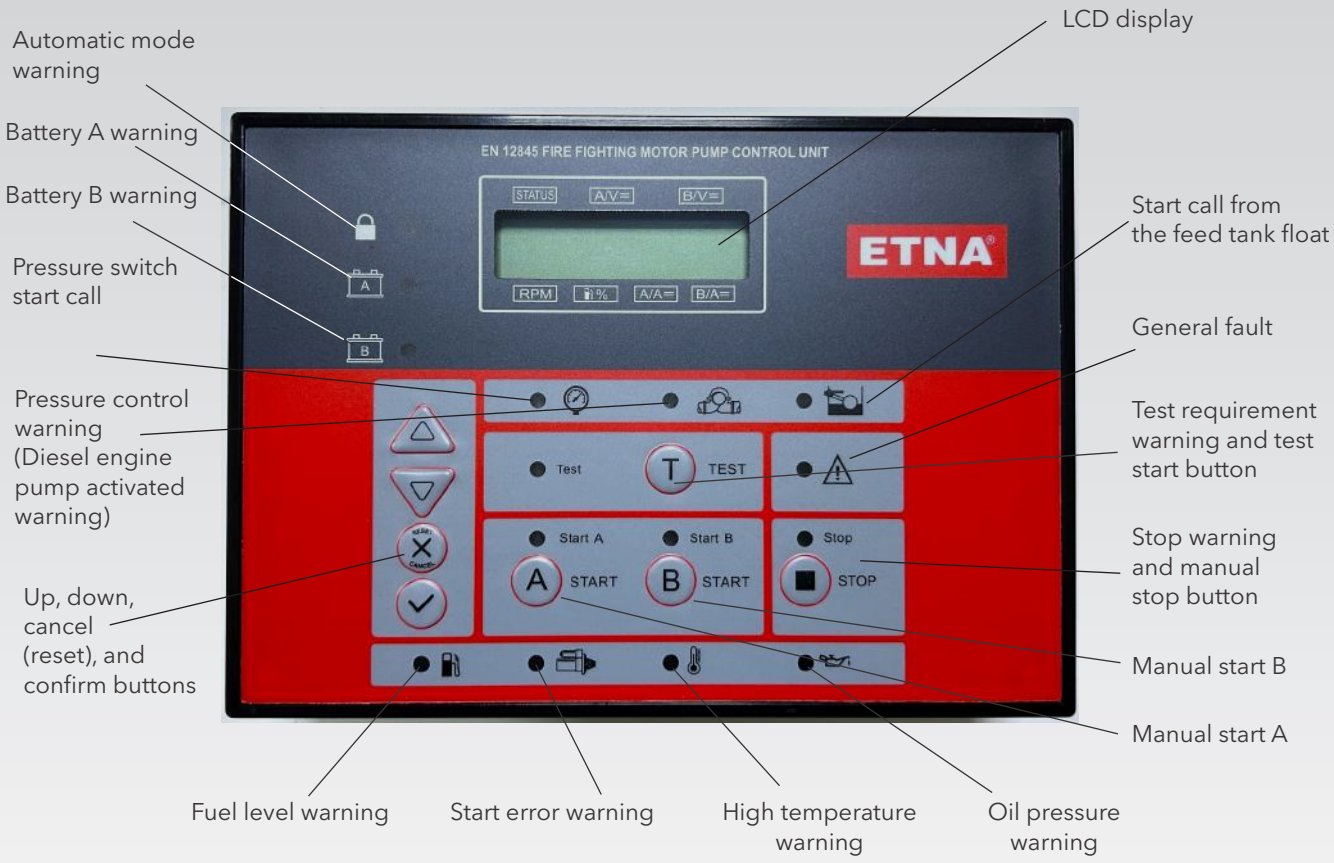


Figure 3. Pump Controller

2.1 Front Panel Descriptions

Auto mode status warning: When the auto-man switch on the front panel cover is locked and auto (automatic) is selected, this LED lights up green and the system is ready to operate. When Auto is selected, no GND signal is received at terminal 59 (auto mode cancel) of the EDP panel, and in this case, the panel waits ready to operate in auto mode with the LED lit green. If the locked auto-man switch on the front cover of the panel is turned to the man (manual), a GND signal is sent to terminal 59, and automatic mode is canceled, putting the panel into manual mode. When automatic mode is canceled, this LED flashes red. The system will not operate even if needed. Therefore, except during malfunction or maintenance, Auto must always be selected and this LED must be green.

Battery A status warning: A Battery A status LED: When the battery group A is connected to the system and the battery charging system is working properly, this LED will light up green. If the battery group A is not connected to the system, the battery charger is not connected to the system, the battery group A is not charging, or error information is received from terminal 43 of the charger A, this LED will light up red to indicate a fault. This LED must be green to indicate that the system is ready for operation.

Battery B status warning: When the battery group B is connected to the system and the battery charging system is working properly, this LED will light up green. If the battery group B is not connected to the system, the battery charger is not connected to the system, the battery group B is not charging, or error information is received from terminal 44 of the A charger, this LED will light up red to indicate a fault. This LED must be green to indicate that the system is ready for operation.

Up button: Used to navigate within the menu or to increase the set value. If the Up button is pressed and held for 3 seconds, the LED test function starts and all LEDs on the panel light up, allowing you to check for any faulty LEDs.

Down button: Used to navigate within the menu or to decrease the set value. In addition, if the up and down buttons are pressed and held simultaneously for 5 seconds, a beep will sound and the service test will begin. To cancel the service test, press and hold the stop button for 2 seconds.

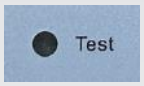
Cancel and reset button: The cancel and reset buttons have multiple functions. When this button is pressed once while in the menu, the screen will return to the previous menu. When on the main screen and there is an audible panel alarm due to a fault, pressing this button once will silence the panel alarm. After the audible alarm is silenced, the fault reset procedure is performed by pressing and releasing this button once more if there is a fault that can be reset. Additionally, if this button is pressed and held for 3 seconds while on the main screen, the software will reset and restart. Software reset must not be performed repeatedly or except when necessary.

Confirm button: Used to enter the menu and save the settings. After the setting is made in the menu, the setting must be saved by pressing the confirm button.

Pressure switch call: When the line pressure drops to the pressure at which the pump will be activated, the run command is received from the pressure switches connected in series and this LED lights up. When the run command is received from the pressure switches, the GND signal does not reach the terminal 55 of pressure switch on the panel, and the pressure switch LED lights up. That is, if the GND signal is received at the pressure switch terminal 55, the pressure switch LED will not light up and the pump will not be activated; if the GND signal is not received, the pressure switch LED will light up and a pump operation request will be generated. If the panel is in automatic mode (the automatic mode status LED is green), the delay countdown for activation starts when the pressure switch LED lights up, and the diesel engine pump is activated. The pressure switches used in the system must be of the closed contact type under pressure. The pressure switch settings must be made in practice according to the system operating point.

Pressure control warning (Diesel engine pump activated warning): This LED indicates whether pressure is building up in the pump set's discharge collector. When the pump starts up and pressure builds up in the line, the GND signal received by the pressure control sensor (euroswitch) located on the pressure collector is transmitted to the panel's pressure control terminal 60, and this LED lights up. If the diesel engine has started but pressure has not built up in the discharge collector, this LED will flash to indicate a mechanical fault that must be checked. Additionally, if there is pressure in the pressure collector but the diesel engine is not running, this LED will flash.

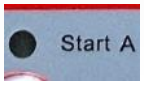
Feed (reserve) tank float warning: When the water level in the feed tank drops, a command to run is sent from the float inside, and this LED lights up. When the run command is received from the feed tank float, the GND signal is transmitted to the terminal 58 of pressure switch on the panel, and the feed tank float LED lights up. When the feed tank float light turns on, the delay time countdown begins and the diesel engine pump starts. When the water level in the feed tank rises and the run command from the float is interrupted, the deactivation period counts down, and at the end, the stop relay is activated and the diesel engine pump is deactivated. The feed tank must always be full to prevent air pockets forming in the fire-fighting system pump and to ensure it is ready to run any time. A decrease in the water level in the tank is a warning that the suction check valve is leaking.



Test requirement warning: When the system needs to be tested, the test LED begins to flash intermittently. The test LED flashes intermittently when the diesel engine should activate but fails to do so after starting attempts, or when it activates via the pressure switch. In cases where this LED flashes intermittently, the entire system must be checked, and then the diesel engine must be activated by pressing and holding the test button. After the diesel engine runs, the test LED automatically turns off. After the diesel engine is activated and the entire system is tested to ensure it is working properly, the system must be stopped by pressing and holding the stop button.

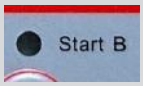
Test button: The test button is only active when the test LED is flashing. It is used to activate the diesel engine for testing. If the test LED flashes intermittently, the diesel engine fire-fighting system must be thoroughly checked. After the necessary checks, the diesel engine must be started by pressing and holding the test button. Once the tests are complete, the diesel engine must be stopped by pressing and holding the stop button, the test LED should turn off, and the system must be kept ready for operation.

General fault warning: The general fault LED lights up in the event of any fault. When a fault or error occurs, the details are displayed on the main screen and this LED lights up. When the fault clears automatically or when resettable faults are reset by pressing the reset button, this LED turns off.



Start A warning: Start A LED lights up when the starter relay A is activated. When the starter relay A is activated, the starter relay connected to the battery group A engages and energy is supplied from the battery group A to the starter motor, starting the diesel engine.

Manual A Start button: Start button A is used when the engine needs to be started manually from the battery A. While the start button A is pressed and held, the starter relay A remains engaged and the diesel engine can be started by cranking from the battery group A. The Start button A must never be pressed while the diesel engine is running. If the Start button A is pressed while the diesel engine is running, the starter motor will engage and the diesel engine will be damaged; this is considered out of warranty.



Manual Start B warning: Start B LED lights up when the starter relay B is activated. When the B starter relay is activated, the starter relay connected to the battery group B engages and energy is supplied from the battery group B to the starter motor, starting the diesel engine.

Manual B Start button: B start button is used when the engine needs to be started manually from the battery B. While the B start button is pressed and held, the A starter relay remains engaged and the diesel engine can be started by cranking from the battery group B. The B Start button must never be pressed while the diesel engine is running. If the B Start button is pressed while the diesel engine is running, the starter motor will engage and the diesel engine will be damaged; this is considered out of warranty.

Stop engaged warning: The stop LED lights up when the stop solenoid relay is activated.

Manual Stop button: The manual stop button is used when the diesel engine needs to be stopped manually. When the stop button is pressed and held, the stop solenoid engages and the diesel engine is stopped. When the stop button is pressed during a fire, a warning stating that the system cannot be stopped during a fire is displayed on the main screen. If there is no real fire and the diesel engine needs to be stopped, the selector switch on the front cover of the panel must be switched to manual and then the stop button must be pressed and held. The stop button must not be pressed for more than 30 seconds. Mechanical stop solenoids may malfunction when energized for extended periods, and this is considered out of warranty.

Fuel level warning: This LED lights up when the fuel level in the fuel tank is low. It can light up intermittently or continuously depending on the fuel level. If this light is on, the fuel tank must be refilled. When the fuel level is full, this LED will automatically turn off. It is only a warning. The diesel engine does not stop due to a decrease in fuel level and a fuel level warning.

Start error warning: The start error LED lights up when the diesel engine cannot be started. If the diesel engine fails to start after the starting attempts, the start error LED lights up and a start error warning is displayed on the screen. If this LED lights up during weekly tests, the system must be checked. The condition preventing the diesel engine from running must be eliminated, the error must be reset, and the diesel engine must be activated for testing and observed to be running properly.

High temperature (heat) error warning: This LED lights up when the diesel engine overheats. If the high temperature error LED lights up, the cooling system must be checked. It is only a warning, the engine will not stop.

Oil pressure error warning: This LED lights up when the oil pressure is too low or too high. If an oil pressure error occurs, the system must be thoroughly checked. It is only a warning, the engine will not stop.

2.2. Diesel Pump Group Operation

2.2.1. Automatic mode preparation

When the locked mode selection switch on the front panel cover is set to AUTO, automatic mode is activated and the automatic mode indicator on the ETNA EDP panel turns green. The automatic mode must always be selected on the diesel control panel, and the system must be ready to operate. When automatic mode is selected, the key on the locked mode selection switch must be removed and stored under the control of an authorized person. When the key is removed, the locked mode selection switch cannot be turned to the MAN position, and therefore the system cannot be disabled by unauthorized persons. During scheduled maintenance, when authorized service insert the key into the mode selection switch and turn it to the MAN, the automatic mode warning flashes red and an audible warning sounds on the panel. After the scheduled maintenance is completed, the mode selection switch must be turned to the AUTO position and the key must be removed and stored.

2.2.2. Automatic mode operation

When the pressure drops in the discharge collector of the fire-fighting booster, a start call is received from the pressure switches located on the discharge collector, and the pressure switch call indicator on the EDP panel turns red. When the start signal is received, the delay time countdown begins and at the end of the delay, the starter relay energizes the starter motor and the diesel engine is started.

To assist in starting the diesel engine, starting attempts are made automatically and sequentially from Battery Group A and Battery Group B. Each of these start-up attempts is factory-set to last a total of 15 seconds (5 seconds of operation, 10 seconds of waiting). These times can be changed from the menu, but changing the factory settings is not recommended. Automatic start-up can also be triggered by the feed tank floater call. If the water level in the feed (reserve) tank decreases due to a malfunction or other issue, the diesel engine is started by a start signal from the floater. When the water level is complete, the call from the floater will stop and the diesel engine will automatically shut down.

2.2.3. Manual operation

Manual operation can be performed in three ways.

- Using the emergency start buttons (START A and START B) located on the front cover of the panel
- Using the START A and START B buttons on the ETNA EDP panel
- Using the test button with the test required warning light on

Manual start must not be performed by pressing the START buttons except in necessary and emergency situations. Unauthorized intervention may cause malfunctions, and these are not covered by the warranty.

In an emergency, the diesel engine can be started by holding down the START A or START B buttons until the diesel engine is activated. The START buttons must not be pressed for more than 5 seconds. The START button must be released as soon as the diesel engine is activated. Failure to release the START button despite the diesel engine activated, or pressing the START button while the diesel engine is running will cause malfunction and will be considered out of warranty. After manual operation, the STOP button must be pressed and held until the diesel engine stops.

The test required warning light will flash intermittently when the system needs to be tested. The test LED flashes intermittently when the diesel engine should activate (e.g. during weekly test) but fails to do so after starting attempts, or when it activates via the pressure switch call. In cases where this LED flashes intermittently, the entire system must be checked, and then the diesel engine must be activated by pressing and holding the test button. After the diesel engine runs, the test LED automatically turns off. After the diesel engine is activated and the entire system is tested to ensure it is working properly, the system must be stopped by pressing and holding the stop button.

2.2.4. Sensing the operation of the diesel engine

Sensing the operation of the diesel engine is performed via the flywheel sensor (magnetic pick-up sensor/RPM sensor). After the diesel engine starts, this is sensed and the starter motor is automatically disabled.

2.2.5. Stopping the diesel engine

If automatic start-up was performed with a pressure switch call and the pressure switch call is still active, the engine must not be stopped. Even if the STOP button is pressed while the pressure switch call is active, a cannot be stopped during fire warning is displayed on the screen.
After ensuring that the fire situation has ended, if the diesel engine is to be stopped, the mode selector locked button must be turned to the MAN position and the STOP button must be pressed and held until the diesel engine stops. If the diesel engine must be stopped when there is no pressure switch call, press the STOP button to stop the engine. If the automatic stop feature is activated in the menu, the diesel engine, which starts with the pressure switch call, can be automatically stopped at the end of the shutdown delay time starting with the interruption of the pressure switch call. The user is responsible for this situation.

2.3. Main Screen

When the panel is powered on, the panel name and version number are displayed on the LCD screen. Then the main screen is displayed. On the main screen, you can alternate between screens using the up and down buttons. The main screen displays diesel engine status, diesel engine RPM, fuel level, battery voltage, and charging current. Press the down button to proceed to the next screen, which displays water and oil temperature and oil pressure information. Pressing the down button again displays the screen showing the date, time, and day. You can return to the main screen by pressing the cancel button, or it will automatically be displayed after a certain period of time.

Figure 4. Main Screen

2.3.1. Main screen descriptions

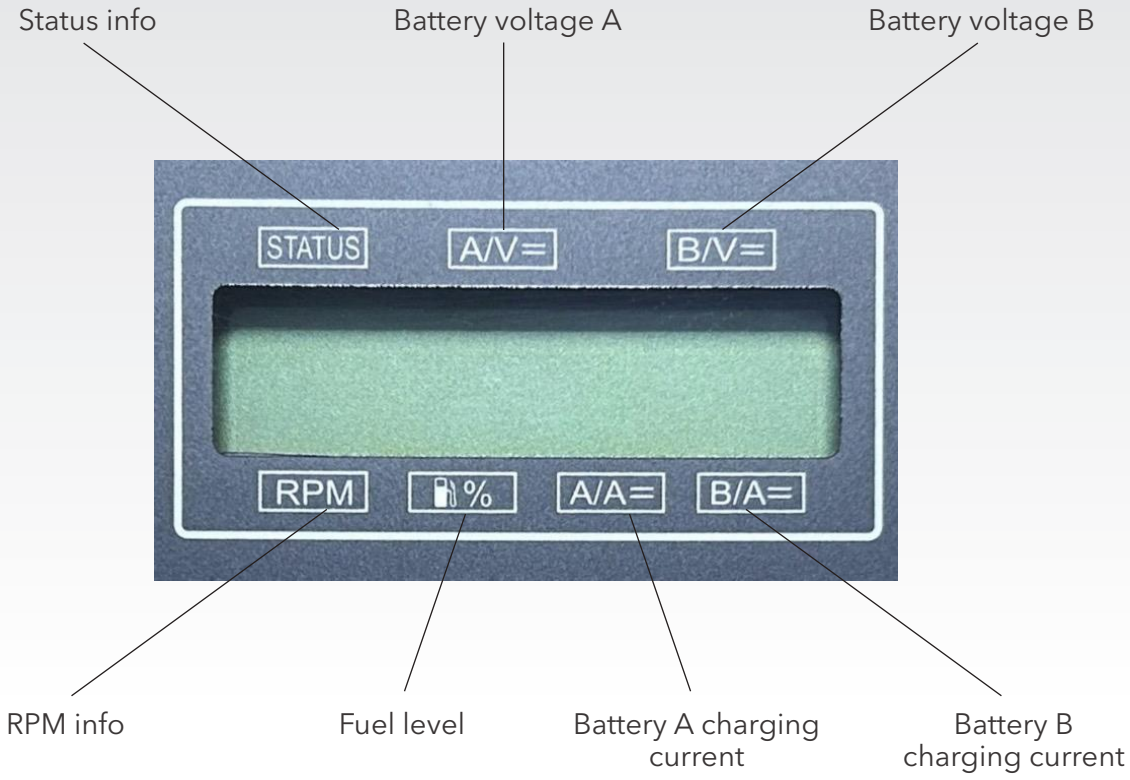


Figure 5. Main screen sections

2.3.2. Status info display

	Idle (Low RPM)	High RPM
No pressure		
Pressure present		

Table 1. Status info display

2.3.2.1 Example status info display

Figure 6. *The diesel engine is not running*

Figure 7. *The diesel engine is running, no pressure in the pressure collector (no GND signal is sent from the pressure control sensor to the pressure control terminal 60), the idle process continues (the diesel engine is running at low speed)*

Figure 8. *The diesel engine is running, no pressure in the pressure collector (no GND signal is coming from the pressure control sensor to the pressure control terminal 60), the idle process ended (the diesel engine is running at high speed)*

Figure 9. *The diesel engine is running, there is pressure in the pressure collector (GND signal is coming from the pressure control sensor to the pressure control terminal 60), the idle process continues (the diesel engine is running at low speed)*

Figure 10. *The diesel engine is running, there is pressure in the pressure collector (GND signal is sent from the pressure control sensor to the pressure control terminal 60), the idle process ended (the diesel engine is running at high speed)*

2.3.2.2 Sample main screen description

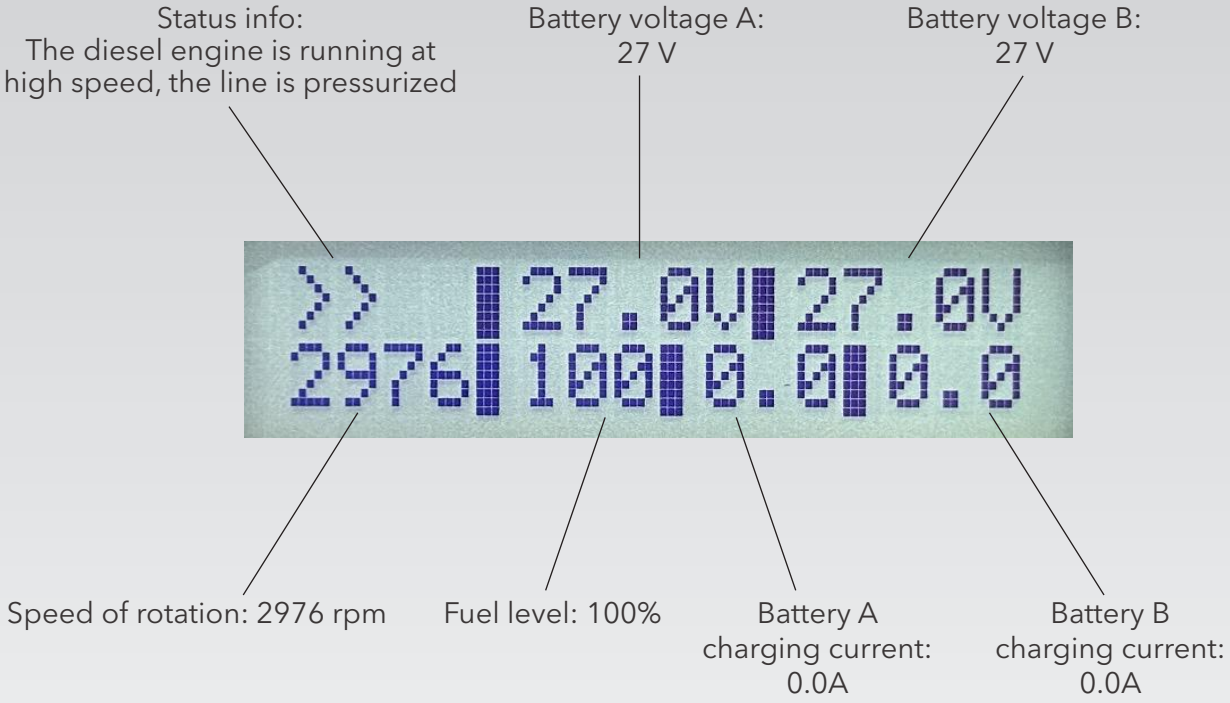


Figure 11. Sample main screen description

3. Menus
3.1. Event logs

Figure 12. Event logs screens

The menu is displayed by pressing the confirmation button on the main screen. When the cursor on the left is on the event logs line, pressing the confirmation button again will display the event logs menu. The event logs menu displays 500 past entries, with date and time information. You can navigate using the up or down button. The most recent event is always moved to the top of the list.

3.2. Running times

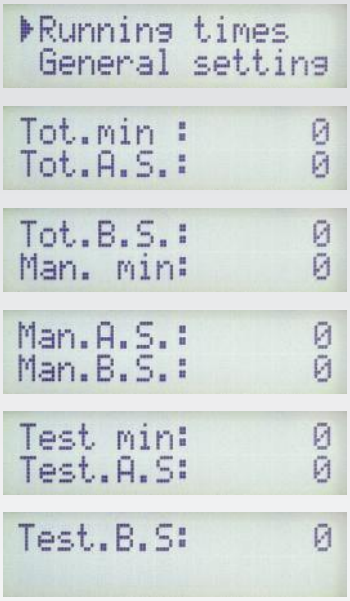


Figure 13. Operating times screens

The menu is displayed by pressing the confirmation button on the main screen. After the menu is displayed, pressing the down button moves the cursor to the running times. The menu showing the running times is displayed by pressing the confirmation button again. This menu displays the running times and number of starts for the engine. In the running times menu, you can switch between screens and view all values by pressing the down button. Tot.Min. (total minutes) section displays the total time the engine has run in minutes. Tot.A.S. (total a start) section displays how many times the diesel engine was started from battery group A. Tot.B.S. (total b start) section displays how many times the diesel engine was started from battery group B. Man.Min. (manual minutes) section displays the total time the diesel engine was started manually. Man.A.S. (manual a start) section displays how many times the diesel engine was started manually from battery group A. Man.B.S. (manual b start) section displays how many times the diesel engine was started manually from battery group B. Test.Min. (test minutes) section displays the total number of minutes the diesel engine has run during weekly testing. Test A.S. (test a start) section displays how many times the diesel engine was started manually from battery group A for weekly test purposes. Test.B.S. (test b start) section displays how many times the diesel engine was started manually from battery group B for weekly test purposes.

3.3. General settings and password menu

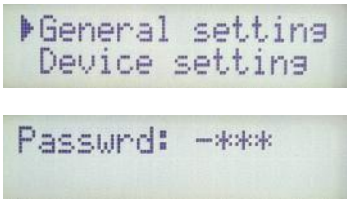


Figure 14. Password menu screen

A password is required to access the settings menus. The menu password is "1234". Use the up, down, and confirm buttons to enter the menu password and access the settings menu.

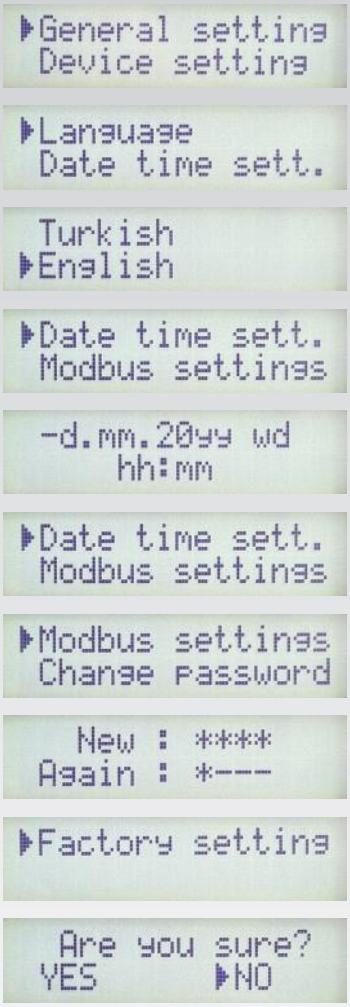


Figure 15. General settings screens

The general settings menu includes language selection, time settings, Modbus settings, password change, and factory settings menus.

a. Language selection: The language options are Turkish and English.

b. Time settings: Use time settings menu to set the date (day, month, year), day of the week (Mon, Tue, Wed...), and time (hour, minute), respectively.

c. Modbus settings: Use the Modbus settings menu to set the Modbus ID, communication speed, and parity bit settings. The stop bit setting cannot be changed and is fixed at 0. The modbus register table is given on the following pages.

d. Changing password: Use the password change menu to change the menu password. On the password change menu, enter the new password and press confirm. Enter the new password again, press confirm and save. If the menu password is changed, do not forget the new password. If forgotten, the authorized service must be called.

e. Factory settings: The panel can be reset to factory settings from the factory settings menu. It is not recommended to change the settings except by authorized personnel.

3.4. Operation settings menu

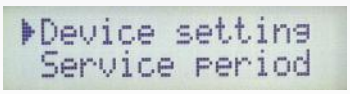


Figure 16. Operation settings screen

The operation settings menu includes battery settings, engine settings, warning limits, weekly test, sensor configuration, and sensor status settings sub-menus.

3.4.1. Battery settings

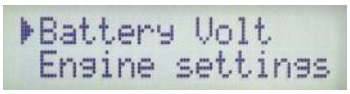


Figure 17. Battery settings screen

This menu allows you to make settings related to the battery system.

3.4.1.1 Battery voltage

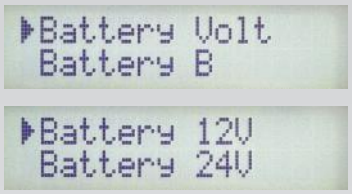


Figure 18. Battery voltage screen

The supply voltage for the diesel engine is selected from the battery voltage menu. The battery voltage can be selected as 12V or 24V from this menu. The appropriate voltage value must be selected for the diesel engine and battery system.

3.4.1.2 Battery B status

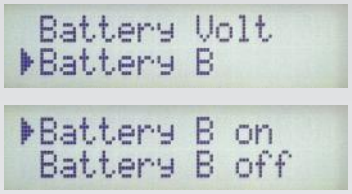


Figure 19. Battery B status screen

Use the Battery B status menu to select if the battery B is present or not. If there is a battery B group in the diesel engine system, the selection indicating that there is a battery B group must not be changed. If there is no battery B group in the system, the no battery B option can be selected to prevent the panel from generating a warning. If the no battery B option is selected, the starter relay will not engage. It is not recommended to change the factory settings.

3.4.2. Engine settings

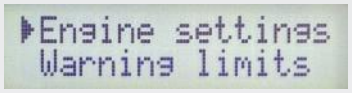


Figure 20. Engine settings screen

The engine settings menu allows you to adjust settings related to the diesel engine's operation system.

3.4.2.1 Automatic stop

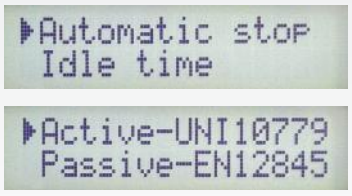


Figure 21. Automatic stop screens

You can select whether to automatically stop the diesel engine in the automatic stop menu. When selected as active, the diesel engine, which is activated by the run command from the pressure switch, automatically stops at the end of the deactivation delay time that begins when the run command from the pressure switch is interrupted. When the automatic stop is selected as passive, the diesel engine, which is activated by the run command from the pressure switch, can only be stopped by the operator pressing and holding the manual stop button. The diesel engine must not be stopped while a run command is coming from the pressure switch (the pressure switch LED is on). Even if the stop button is pressed while a run command is coming from the pressure switch in automatic mode, a "cannot be stopped during fire" warning will be displayed on the screen. If it is confirmed that the fire has been extinguished, the automatic mode must be canceled using the selector button on the front panel cover to stop the diesel engine, the manual mode must be selected, and then the diesel engine must be stopped by pressing and holding the stop button. Then, the entire system should be checked, automatic mode must be selected again, and the system must be ready for operation. It must be passively selected according to EN12845 requirements.

3.4.2.2 Idle time

Figure 22. Idle time screens

The idle time menu is intended to prevent the engine from engaging at high speed and malfunctioning. An electric actuator connected to the throttle of the diesel engine engages at the end of the time set in this menu, allowing the engine to accelerate from idle to maximum speed. This way, once the diesel engine has reached sufficient lubrication and temperature, it will continue to run smoothly as it accelerates.

On the Idle time menu, the duration the engine will run at low speed can be set. It is recommended not to set it to less than 15 seconds. To prevent delays in pump reaching maximum capacity during a fire, it must not be set to more than 30 seconds.

When the engine starts, the countdown set in this menu begins, and during this period the engine runs at low speed. At the end of the period, the status of the actuator relay changes, the throttle actuator is moved, and the engine automatically shifts to high speed and continues to run.

3.4.2.3 Activation delay

Figure 23. Activation delay time screens

The activation delay time can be set from this menu. After the run command is received, the countdown set in this menu on the main screen begins, and the diesel engine is started at the end of the countdown.

3.4.2.4 Deactivation delay

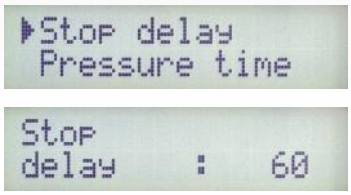


Figure 24. Deactivation delay time screens

The deactivation delay time can be set from this menu. After the run command is interrupted, the countdown set in this menu on the main screen begins, and the diesel engine is stopped at the end of the countdown.

3.4.2.5 Pressure time

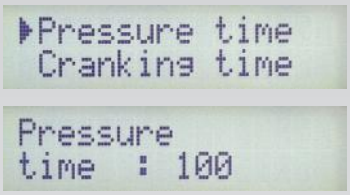


Figure 25. Pressure time screens

Motor devreye girdikten sonra, basma hattında basıncın oluşup oluşmadığının kontrol edileceği gecikme süresinin ayarlandığı parametredir. Bu parametrede ayarlanan süre içerisinde eğer basma hattında basınç oluşmaz ve buna bağlı olarak basınç kontrol switch girişine gnd sinyali gelmez ise basınç yok hatası verilir. Basınç kontrol süresi içerisinde eğer basma hattında basınç oluşur ise basınç kontrol ledi sabit olarak yanar ve basınç yok hatası verilmez.

3.4.2.6 Cranking time

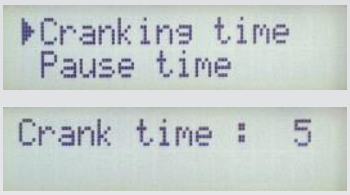


Figure 26. Cranking time screens

The duration of the cranking can be set in seconds from the cranking duration menu. When the run command is received and the automatic cranking scenario begins, the starter relay remains engaged for the duration set in this menu, then releases at the end of the time period, and cranking ends. It is not recommended to change the factory-set time.

3.4.2.7 Cranking interval

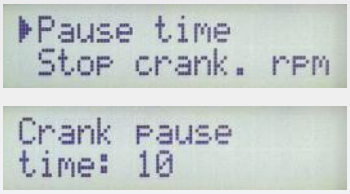


Figure 27. Cranking interval screens

The delay time between crank attempts can be set in the cranking interval menu. When the run command is received and the automatic cranking scenario begins, the starter motor engages for the duration set in the cranking time menu, and if the engine does not run, the starter motor disengages at the end of the period. Once the starter motor disengages, the cranking interval countdown starts, and the system waits for this period to elapse. At the end of the cranking interval, the next crank attempt begins.

3.4.2.8 Crank cut-off speed

Figure 28. Crank cut-off speed screens

This is the menu where the crank cut-off speed is set. After the starter motor engages, the diesel engine runs and if the engine's speed reaches the value set in this menu, the starter motor will automatically disengage. It is not recommended to change the factory-set value.

3.4.2.9 Throttle motor

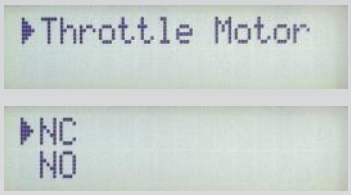


Figure 29. Throttle motor screens

In diesel engines equipped with a throttle actuator, the type of throttle actuator can be selected from this menu. While the diesel engine is stopped, the throttle actuator should hold the throttle in the low speed position, and the diesel engine should start at idle speed. At the end of the idle time, the status of the actuator relay should change, moving the throttle actuator and shifting to high speed. If NC is selected in this menu, the actuator relay is activated while the diesel engine is stopped. If NO is selected in this menu, the actuator relay is not activated while the diesel engine is stopped.

3.4.3. Warning limits

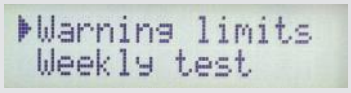


Figure 30. Warning limits screens

Warning limits can be set from this menu. Fuel level, heat, battery voltage, oil pressure, oil temperature, and engine speed limits can be set.

3.4.3.1 Fuel level settings

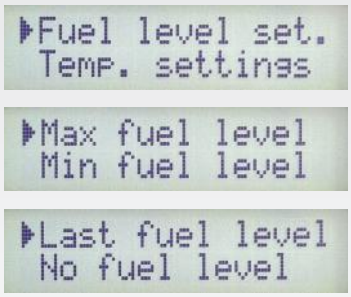


Figure 31. Fuel level settings screens

This is the menu where the limits for fuel level warnings are set. 4 different limits can be set for fuel level: maximum fuel (95%), minimum fuel (25%), last fuel (10%), and no fuel (1%). When a fuel warning is displayed, the fuel tank must be filled to at least the maximum fuel level (95%) for the warning to disappear. These values are factory-set and must not be changed.

3.4.3.2 Heat settings

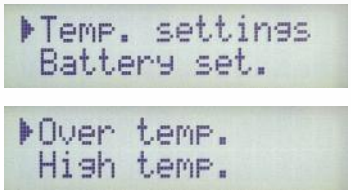


Figure 32. Heat settings screens

Water temperature limits are set from the heat settings menu. Extreme heat (100°C) and high heat (95°C) limit values can be set. These settings have been factory-set and changing these is not recommended except for special applications. Warnings are displayed when the engine coolant temperature exceeds these limits.

3.4.3.3 Battery voltage settings

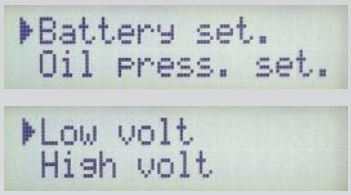


Figure 33. Battery voltage settings screens

The low voltage and high voltage limit values can be set from the battery voltage limits menu. These values automatically change based on the value selected in the battery voltage menu (12V/24V). The values are made in the factory and changing them is not recommended.

3.4.3.4 Oil pressure settings

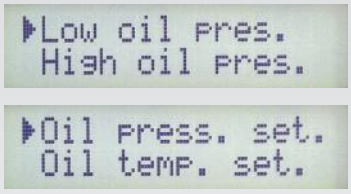


Figure 34. Oil pressure settings screens

From the oil pressure settings menu, the low oil pressure (0.5 bar) and high oil pressure (6 bar) limit values can be adjusted. When the value measured by the oil pressure sensor on the diesel engine exceeds the values set in this menu, the relevant warnings are displayed. The values are made in the factory and changing them is not recommended.

3.4.3.5 Oil temperature settings

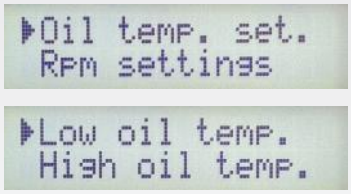


Figure 35. Oil temperature settings screens

The low oil temperature and high oil temperature limit values can be set from the oil temperature settings menu. The values are made in the factory and changing them is not recommended.

3.4.3.6 RPM settings

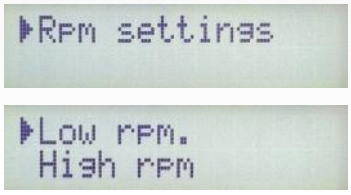


Figure 36. RPM settings screens

From the RPM settings menu, the limit values for low (2750 rpm) and high (3250 rpm) speeds can be set.
The values are made in the factory and changing them is not recommended.

3.4.4. Weekly test menu

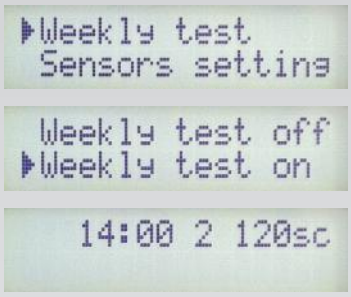


Figure 37. Weekly test menu screens

In the weekly test menu, the time at which the diesel engine will be automatically started and stopped for testing purposes each week can be determined. In the weekly test menu, the weekly test can be set to on or off. On the screen displayed after the weekly test is set to on, the time, day (1: Monday, 2: Tuesday, 3: Wednesday, etc.), and duration in seconds for the weekly test should be set respectively. If it is set to 2:00 PM, 2, 120 seconds, the diesel engine will automatically start and stop for 120 seconds every Tuesday at 2:00 PM. After the weekly test, ensure that no warnings or errors have occurred and if an error occurs, investigate the cause and perform the necessary repairs. Contact customer service in such cases. The weekly test setting is configured as on at the factory, and the weekly test must not be turned off. The user is responsible if the weekly test is turned off and any faults that may occur are not detected as a result. After the weekly test, the fuel level should be checked and if low, refilled to the maximum level.

3.4.5. Sensor configuration menu

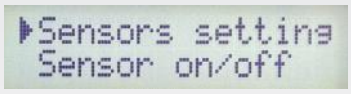


Figure 38. Sensor configuration menu screens

From the sensor configuration menu, the parameters for various sensors in the diesel engine system can be entered into the panel. The values for standard sensors are factory-set and do not require adjustment. If a sensor with different parameters from the standard sensors is used, its values must be entered into the panel through this menu to configure it.

3.4.5.1 Fuel float settings

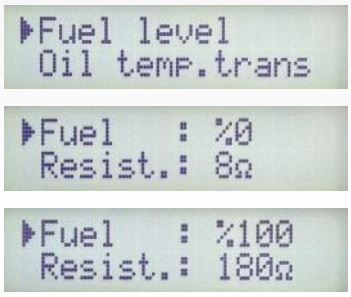


Figure 39. Fuel float menu screens

The resistance values of the fuel level sensor can be adjusted at various values from the fuel float menu. These values are set according to the standard sensor used and it is not recommended to change them.

3.4.5.2 Oil temperature transmitter settings

Figure 40. Oil temperature transmitter menu screens

The resistance values of the oil temperature sensor can be adjusted at various temperatures from the oil temperature transmitter menu. These values are set according to the standard sensor used and it is not recommended to change them.

3.4.5.3 Oil pressure transmitter settings

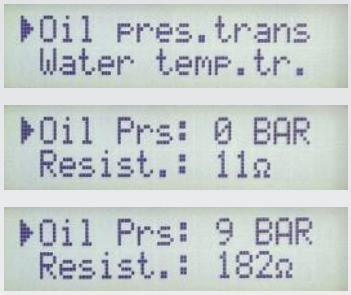


Figure 41. Oil pressure transmitter menu screens

The resistance values of the oil pressure sensor can be adjusted at various pressures from the oil pressure transmitter menu. These values are set according to the standard sensor used and it is not recommended to change them.

3.4.5.4 Coolant temperature transmitter settings

Figure 42. Coolant temperature transmitter menu screens

The resistance values of the coolant temperature sensor can be adjusted at various temperatures from the coolant temperature transmitter menu. These values are set according to the standard sensor used and it is not recommended to change them.

3.4.6. Sensor status menu

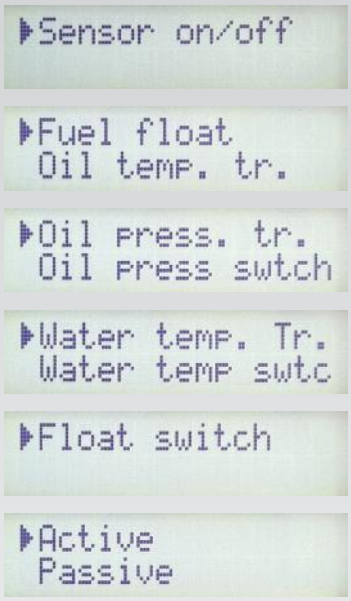


Figure 43. Sensor status menu screens

The sensor status menu is designed for full compatibility between the system and the panel. From this menu, the fuel float, oil temperature transmitter, oil pressure transmitter, oil pressure contact, coolant temperature transmitter, coolant temperature contact, and coolant level sensor can be enabled or disabled. If there is a sensor that is not present in the system, it can be disabled by accessing the sensor status menu and then entering the menu for the relevant sensor. No warning or fault is generated for the disabled sensor. Sensors that are present in the system and have critical functions must not be disabled under any circumstances. Any fault caused by improper intervention will be considered out of warranty.

3.4.7. Service period

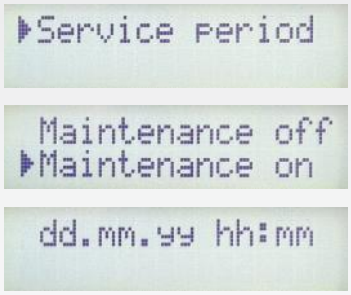


Figure 44. Service period menu screens

This is the menu for setting a maintenance reminder. Maintenance can be set to off or on. Set to on to enter the date and time for maintenance. The pump controller will give a warning when this date and time are reached. When the panel service time warning is displayed, contact an authorized service and have the system serviced. To turn off the warning, the maintenance status must be turned off in this menu. Afterward, set a new date and time for the next maintenance.

3.4.8. Special functions

3.4.8.1 LED test function

To start the LED test function, press and hold the up button for 3 seconds. When the up button is pressed and held for 3 seconds, the LED test function starts, causing all LEDs to turn on for a certain period of time and then turn off.

3.4.8.2 Service test function

The EDP panel has a special function for commissioning test. This function must not be used by anyone other than authorized services. The purpose of the service test function is to test that the diesel engine and all systems are operating properly during commissioning in the field. The service test verifies that a total of 6 starting attempts can be performed from battery groups A and B, that the test button is activated when the test LED turns on, and that the diesel engine can activate properly when the test button is pressed.

Before starting the service test, briefly press the stop button to ensure that the fuel line is closed by the stop actuator. Pressing and holding the stop button for a long time causes the stop actuator to retract to its end point and automatically open the fuel path when the stop button is released. Therefore, the stop button should be pressed briefly and released before the fuel line automatically reopens. This way, the fuel line will be kept closed by the stop actuator. After the fuel line is closed, the pressure valves must also be closed. Press and hold the start button A or B for about 5 seconds and check that the diesel engine does not activate. If the diesel engine is activated due to fuel remaining in the fuel line, the start button must be released and the diesel engine must be stopped by pressing the stop button. If an error message appears on the screen, press the reset button to reset the error.

To start the service test, press and hold the up and down buttons simultaneously until a beep sounds. When an audible alert sounds, release the up and down buttons. When the beep sounds, the service test message appears on the main screen. If the service test needs to be canceled, the stop button must be pressed and held for 2 seconds. When the service test begins, starting attempts are performed automatically from batteries A and B a total of 6 times in sequence. Since the fuel line is closed, the diesel engine will not be activated after the starting attempts, the error "engine did not start" will appear on the screen, and the test LED will start flashing. After the test LED starts flashing, press and release the reset button twice to reset the error message on the screen. The stop button should be pressed and held for a few seconds, then released to allow the stop actuator to automatically open the fuel line. Then the test button must be pressed and held until the diesel engine is activated. After the diesel engine is activated and confirmed to be running properly, the stop button must be pressed and held to shut down the diesel engine. The test light turns off after the diesel engine stops. After the test is completed, the pressure valve must be set to the open position. These steps complete the test, and the diesel engine is ready to operate when needed. If the test LED flashes, the event logs must be inspected, the entire system must be checked, and the test must be repeated. After the test, there must be no error messages on the panel display and all warning lights must be green.

3.5. Maintenance and Operation

- Panel must be grounded.
- Disconnect electrical power and wear the necessary protective equipment before performing any service or maintenance.
- The panel energy input should use a residual current relay and appropriately rated fuse. Check all terminal connections and functions during maintenance.
- Check that the electrical connections on the control panel are not loose and that the grounding wire is intact.
- Ensure there is no abrasion, puncture, or color change resulting from heating in the electrical cables.
- Always follow the pump and motor control instructions.
- You can view the product's history from the error history.
- All sub-controls on the diesel engine pump must be conducted while the engine is not running and the starter motor coil terminal (terminal no. 50) is disconnected.
- There must be adequate ventilation at the installation site. Do not install near heat sources.
- Never remove the battery terminals while the engine is running.
- Contact the authorized technical service for more detailed information.

3.5.1. Unsuitable Working Conditions

- Locations where the installation room temperature is outside +4 / +40 °C
- Areas with high condensation due to rapid changes in air temperature
- Places with high contamination, dust, moisture, water vapor, salt, corrosive, or radioactive effects
- Environments where rodents are present
- Environments with risk of explosion
- Areas with excessive vibration
- Unprotected areas exposed to sunlight and rain

3.5.2. Maintenance

The following maintenance operations should be performed weekly:

- Weekly test
- Warning lights test
- Battery and battery connections check
- Cable connection firmness and terminal state check.
- Fuel level check.

The following maintenance operations should be performed monthly:

- Radiator water level check
- Engine oil level check

The following maintenance operations should be performed yearly:

- Antifreeze must be added to the radiator water.
- The engine oil must be changed.
- The oil filter must be replaced.
- The air filter must be replaced.

3.6. EN 12845 / NFPA 20
Fire-Fighting Booster Inspection and Control Schedule

User inspection and control schedule

General These documents regarding the inspection and control operations of the system that have been installed should be handed to the user. The schedule contains the information regarding the actions required to be taken against damages, the special processes for manually starting the pumps in emergencies and the details of the weekly routine inspections, and the instructions regarding the operation of the system.

Weekly routine controls

Weekly routine controls should be conducted in periods that are no longer than 7 days.

Controls

Controls The following must be controlled and registered.

a) The readings of all water and air pressure indicators on installations, mains, and pressure tanks,

Not: The pressure inside the pipe systems of dry, variable, and pre-impact installations should not drop more than 1.0 bar in a week.

b) All water levels in raised special reservoirs, rivers, channels, lakes, water storage tanks (including pump activating water tanks and pressure tanks),

c) The correct positions of all main stop valves.

Water motor alarm test

Each water motor alarm should give an audio signal for a minimum of 30 seconds.

Automatic pump operation test

The following tests should be conducted for automatic pumps:

a) The fuel and machine lubrication oil levels must be checked in diesel machines,

b) The water pressure in the operating device should be decreased, and thus automatic operation conditions should be simulated,

c) The operation pressure must be checked and registered when the pump starts running,

d) The oil pressure should be checked in the diesel pumps as the cooling water flows from the open circuit cooling system is checked.

Diesel machine restart test

Right after the pump operation test, the diesel engines must be checked:

a) The machine should run as long as it is recommended by its supplier or for a 20 min. It should then be stopped by pressing the manual operation test button and restarted right away.

b) The water level at the first circuit of the closed-circuit cooling system must be checked. Oil pressure (if a gauge is installed), machine temperature and cooling flow should be monitored throughout the test. The oil hoses should be checked and a general inspection should be conducted for fuel, coolant, or exhaust gas leakage.

Line heating and partial heating systems

To ensure they are functioning properly, the heating systems that prevent freezing in the sprinkler system must be checked.

Monthly routine controls The electrolyte level and density of all lead acid cells (diesel engine starting batteries and their control panel power supplies) should be checked. If the density is low, the battery charging device should be checked and the batteries with low electrolyte densities should be replaced.

Service and maintenance schedule

A) General

1) Operations:

In addition to the schedule defined by this article, any process recommended by the component supplier should be performed.

2) Records:

The signed and dated inspection report should be submitted to the user and any issued or required document (i.e. the details of any external factors that may affect the results such as the climate conditions) should be added to the report.

B) Quarterly routine controls

1) General:

The following controls and inspections should be conducted in periods not longer than 13 weeks.

2) Reviewing the dangers

In order to make the required changes, the impact of any change in the installation design or the structure, housing state, storage style, and illumination of a building in a danger class or a device should be identified.

3) Sprinkler groups, multiple controls, and sprayers

The sprinkler group affected from residues (except paint), multiple controls, and sprayers should be cleaned thoroughly. The painted or the changed sprinkler heads, multiple controls, or sprinkler groups should be replaced.

The gel, which is a petroleum product, should be checked. The current gel should be removed if required and the sprinkler groups, multiple controls, or sprayers should be coated twice with a petroleum product gel (only in case of a glass sprinkler container on the sprinkler body and the bracket). In spraying sections where cleaning and/or protective measures are required, special attention to the sprinkler groups is required.

4) Pipe system and pipe supports

The pipe system and the suspended supports should be checked against corrosion and painted if required.

Including the suspension supports and galvanized pipe system's threaded ends, the tar-based paint on the pipe system should be renewed if required.

Note: Depending on the harshness of the conditions, the tar-based paint may required to be renewed in periods ranging from 1 to 5 years. The coated strip on the pipes should be repaired if required. The pipe system should be checked for electrical grounding connections. The sprinkler pipe system should not be used to ground electrical devices, and each ground connection should be disconnected and alternative arrangements should be made.

5) Water supplies and their alarms

Each water supply should be tested with each control valve set in the system.

The pump(s) should be started automatically if any and the supply pressure at the right flow rate should not be lower than the value set by the Article 10 that accepts any change required by Article 2. (See TS-EN 12845)

6) Electrical supplies

A second electrical supply from the diesel generators should be checked in terms of a satisfactory result.

7) Stop valves

All stop valves that control the water flow to the sprinkler groups should be arranged to work in order and set to operate in the right mode. This includes all stop valves on alarm valves in all water sources and all regional or other auxiliary stop valves.

8) Flow switches

Flow switches should be checked for proper operation.

9) Replacement

The amounts and the states of the replacement parts that are stored as back-ups should be checked.

C) Six-monthly routine controls

1) General:

The following controls and inspections should be conducted in periods not longer than 6 months.

2) Dry alarm valves:

The moving parts of the dry piping and the dry alarm valves on additional extensions and each accelerator and suction setup should be operated as instructed by the supplier.

NOTE: It is not required to test the alternative installations like this because these are tested two times year as a result of transition from wet to dry and return.

3) The electric wiring of the fire-fighting team and remote control central station alarm must be checked.

D) Yearly routine controls

1) General:

The following controls and inspections should be conducted in periods not longer than 12 months.

2) Automatic pump flow test:

Each water supply pump in the installation should be tested under full load (pump, with the test line connected to the pump distributing the output of the non-return valve on the water flow direction) and the pressure / flow rate values on the nameplate should be obtained. The pressure losses in the supply pipe and valves between the supply and each control valve set should be compensated properly.

3) Diesel machine operation status test:

The operation status alarm must be tested as defined in Article 10.
(See TS- EN 12845) Right after this test, the machine should be restarted using the manual operation system.

4) Floating valves on water storage valves:

The floating valves on water storage valves should be checked for proper operation.

5) Pump suction chambers and filters

Pump suction filters, the settling chamber, and the grid should be inspected at least once a year and cleaned if required.

E) Routine controls once every three years

1) General: The following controls and inspections should be conducted in periods not longer than 3 years.

2) Storage and pressure tanks: The external surfaces of all tanks should be inspected for possible corrosion. The tanks should be discharged, cleaned, and internally inspected for corrosion. Large tanks should be repainted and/or corrosion preventing substances should be applied, if required.

3) Water supply stop valves, the alarm, and non-return valve

All water supply stop valves, the alarm, and non-return valves should be replaced and repaired if required.

F) Routine controls once every ten years

All storage tanks should be cleaned in periods no longer than 10 years, internally inspected, and maintenance operations should be performed if required.

3.7. Installation

Caution!
Use the correct lifting equipment.
Do not work alone.
Use protective materials.

When the engine and its parts will be operated in a closed and restricted space like a container, a free space should be left around the engine for easy disassembly and assembly of the parts as well as the routine maintenance operations.

- Cylinder covers
- Recirculation pump
- Oil pan
- Adjusting gear box
- Starter motor and charger
- Flexible connections

The parts checked during the routine maintenance operations:

- Oil filters
- Air filters
- Fuel filters
- Block ventilation
- Oil dipstick
- Radiator filler hole and filling distance

Installation Instructions

1. Avoid using plastic or any other inappropriate materials including galvanized materials in fuel pipes and connections.
2. Keep the fuel pipes away from the exhaust system as much as possible.
3. Ensure thermal insulation by wrapping the section following the bracket terminal of the exhaust system with the right materials or using thermal shields and place this section away from the wooden sections (if any) as much as possible. Note: No heat insulation is made in the exhaust manifold or turbocharger.
4. There should be a fire extinguisher in the engine room.
5. The batteries should be placed at an area that is well ventilated and allows easy maintenance (if possible), and the battery cable lengths should be as short as possible.
6. A setup in line with the oil pan should be provided for oil drainage and a drip tray should be placed under the oil pan.
7. The rooms should be large enough to allow comfortable entry and exit of the machine.
8. The room should be well illuminated and have a sufficient number of plugs.
9. A lifting beam is suggested to be installed on the ceiling for ease of maintenance.
10. Preparations should be made for cooling liquid drainage.
11. All rotating parts should be protected for safe operation.

Considerations When Designing a Machine Room

1. The room should be large enough to place the machine and the ceiling should be able to handle the loads created by the weight of the machine.
2. The ventilation system should allow entry of cooling and suction air.
3. Cooling liquid and fuel supply should be considered.
4. The exhaust gas should be discharged within the limits of the allowable exhaust back-pressure values.
5. Air filters and exhaust silencers being outside of the room may cause a loss of power in the engine, thus the engine room should be designed as large enough to include this equipment as well.
6. If an already existing room will be used, it is required for the construction work conducted for air suction and discharge louvers not to affect the structural tension of the building.
7. The noise should be considered for the machines that will run in residential areas and methods to reduce this noise should be found.

Engine Room Ventilation (Radiator Motors)

The main principle in ventilation is to discharge the hot air away from the room and to suck the outside air into the room with minimum circulation. Figure 45 displays the room walls and the best position for the machine. The goals here are to suck air from a point as low as possible and to discharge the air from a radiator matrix.

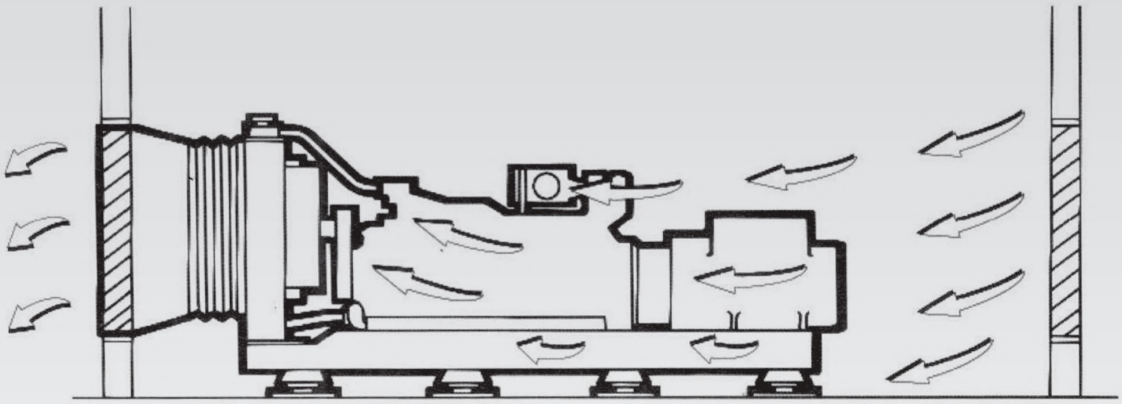


Figure 45. Example Diesel Engine - ambient air flow circulation

It is not sufficient to draw up the radiator to the air discharge wall. In such a case, the air escaping from the area between the radiator and the wall comes back to the radiator fan. This causes inadequate cooling and a problem of overheating in the engine. The air discharge area on the wall in front of the radiator should be in the same rectangular shape as the radiator and 25% larger than the radiator matrix area.

The radiator flange should be connected flexibly to the louver frame with a hood made of metal or canvas. If the machine is installed on rubber pads, flexible connection is especially important. Similarly, the air inlet dimensions should be 25% larger than the radiator matrix. For example, the air inlet and outlet louvers of an engine with a 1.44 m2 radiator matrix area should be 1.80 m2. If it is a louvered grill, this area should be enlarged 25% more and be 2.25 m2. (See Figure 46;)

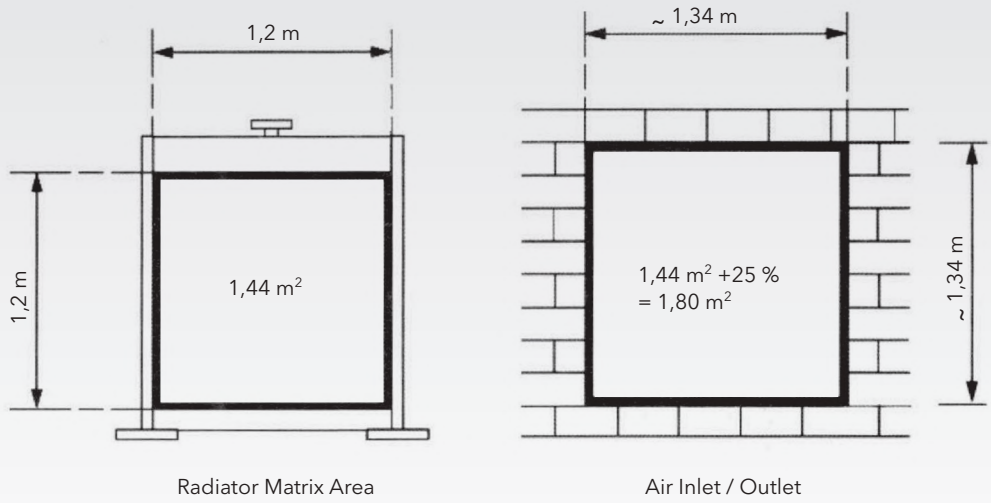


Figure 46. Example Radiator matrix area - ventilation inlet calculation

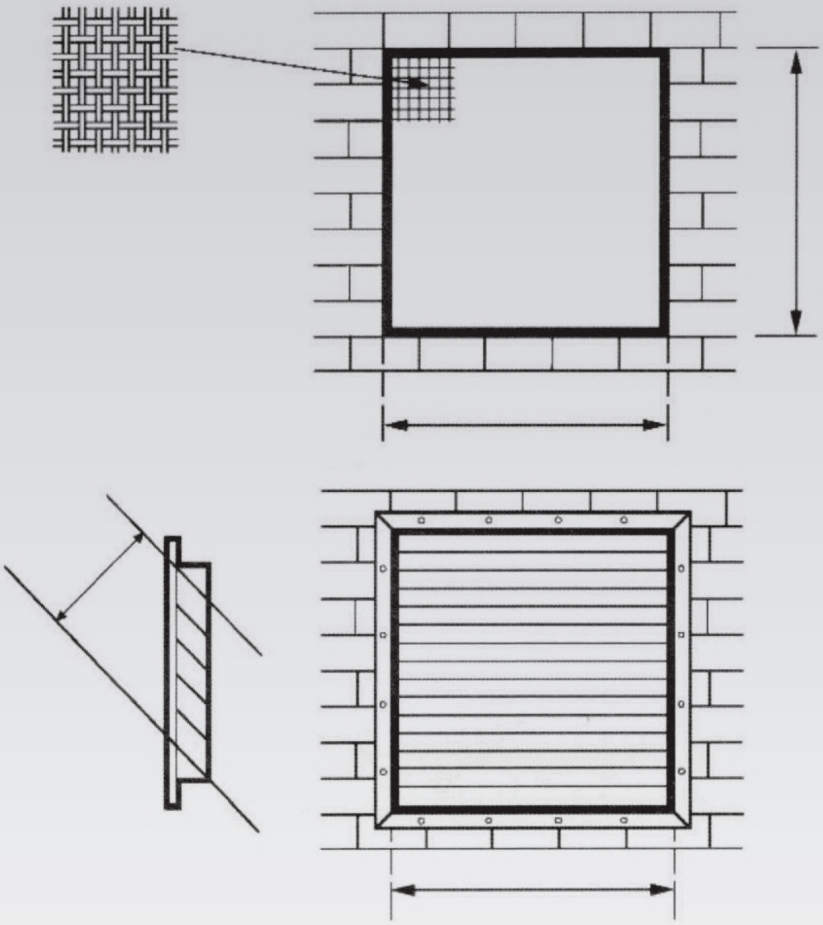


Figure 47. Sample radiator vent drawing

There should not be anything blocking the radiator.

There may be cases where the air suction should be towards the upper sections of the wall.
In such cases, a hood guiding the air suction downward should be used. This hood may also bring the advantage of preventing the inlet of the hot air accumulated in the ceiling. (See Figure 48;)

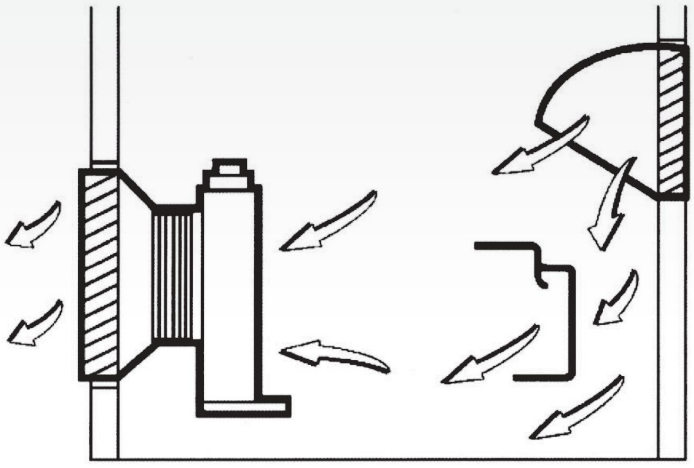


Figure 48. Example ventilation system - hood installation drawing

Air Discharge Hood

While designing the air discharge hood, the magnitude and the direction of the wind must be considered. The wind towards the louver may create additional resistance in front of the fan and decrease the cooling air. In such environments, the following methods can be applied:

1. 90° hood can be installed as shown in Figure 49. In such a case, air discharge louvers can be mounted to the outlet of the hood. This method requires additional measures against weather conditions such as rain.
2. Guiding panels may be used as shown in Figure 50.

Figure 49. Example ventilation system - hood installation drawing

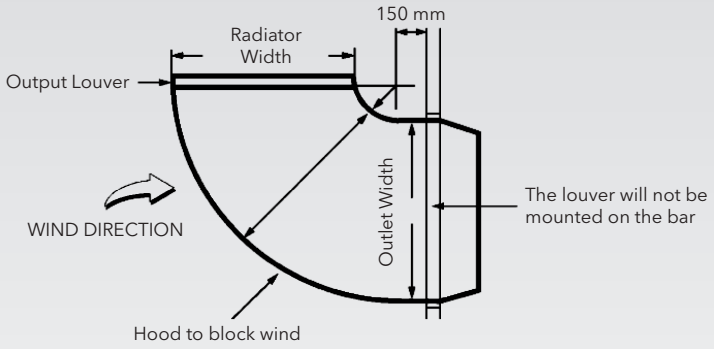
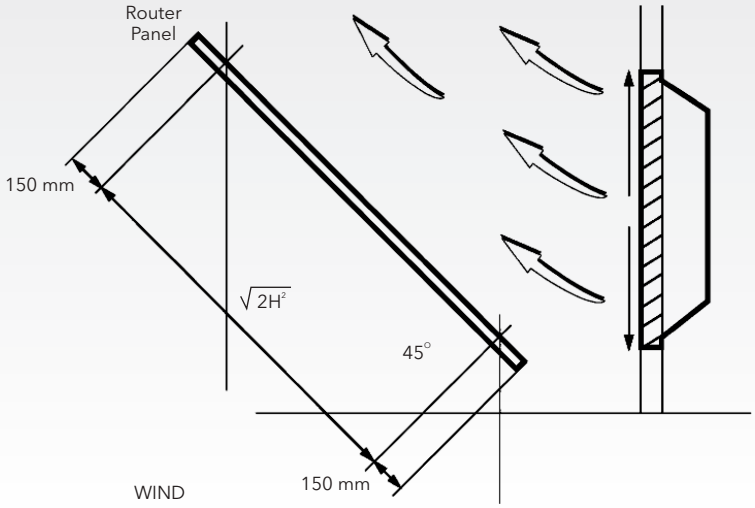


Figure 50.



Exhaust System

In cases that require a long exhaust line, the back pressure value on the exhaust system should be monitored. This value should be lower than the value forecasted by the engine manufacturer. As a practical approach, the pipe dimension should be increased 1" every 5 meters assuming that each bracket will stretch 1 meter.

3.8. Diagnostics and Troubleshooting

EVENT LIST	CAUSE	SOLUTION
PUMP PRESSURE FAULT	• No pressure in the discharge collector. • No GND signal is coming to terminal 60 on the EDP panel.	• When the diesel engine and pump are activated, pressure must build up in the pressure collector and consequently, a GND signal must be sent to terminal 60 of the EDP panel via the pressure control sensor (euroswitch) located in the pressure collector, indicating that pressure is built up in the line. • Check whether there is water pressure in the pressure collector. • If water pressure has not built up, visually check the water level in the tank, that the valves are open, and that the pump system is working properly. • If there is water pressure, press the reset button to reset the fault. If the no pressure error recurs, the pressure control sensor and related system must be checked.
PRESS. OK RPM NOK (Pressure ok rpm not ok)	• There is pressure in the pressure collector when the diesel engine is not running.	• When the diesel engine and pump are not in operation, a GND signal is received at terminal 60 of the EDP panel. • Check whether there is water pressure in the pressure collector. • If a pressure signal is received even though there is no water pressure, the pressure control sensor and related system must be checked.
STARTUP FAILURE	• The diesel engine failed to start after starting attempts.	• Reset the fault. • Close the discharge valve and start the diesel engine by pressing the manual start button. Verify that the diesel engine is working properly. Then press and hold the stop button to turn off the diesel engine. Open the discharge valve again and confirm that the entire system is ready for operation. • If the diesel engine does not activate when the manual button is pressed and held, the entire system must be checked. • Battery group, panel and charging system, diesel engine, and the entire system must be checked. • Contact an authorized service.
SUDDEN RUN	• The diesel engine was activated even though the EDP panel did not give the start command.	• The Start buttons on the front panel cover were pressed. • The Start buttons should not be pressed except in emergency and necessary situations. • It must be ensured that the system is working properly. • Contact an authorized service.
THROTTLE FAULT	• The diesel engine was started by pressing the manual start buttons on the front panel cover. • After the diesel engine is activated at idle speed, it should accelerate when the throttle lever actuator pulls the throttle lever at the end of the idle time set in the menu. • The diesel engine did not accelerate at the end of the idle period.	• The diesel engine was started by pressing the manual start buttons on the front panel cover. • In diesel engine systems, a throttle lever actuator is present to prevent malfunctions. The diesel engine is activated at idle speed when first started and runs at idle speed for the duration set in the idle time menu. • At the end of the idle period, the EDP panel sends a signal from terminal 37 to the throttle level actuator, which engages to accelerate the diesel engine. • The throttle lever actuator and related control signals must be checked to ensure they are functioning properly. • Cables and connectors must be checked. • Contact an authorized service.

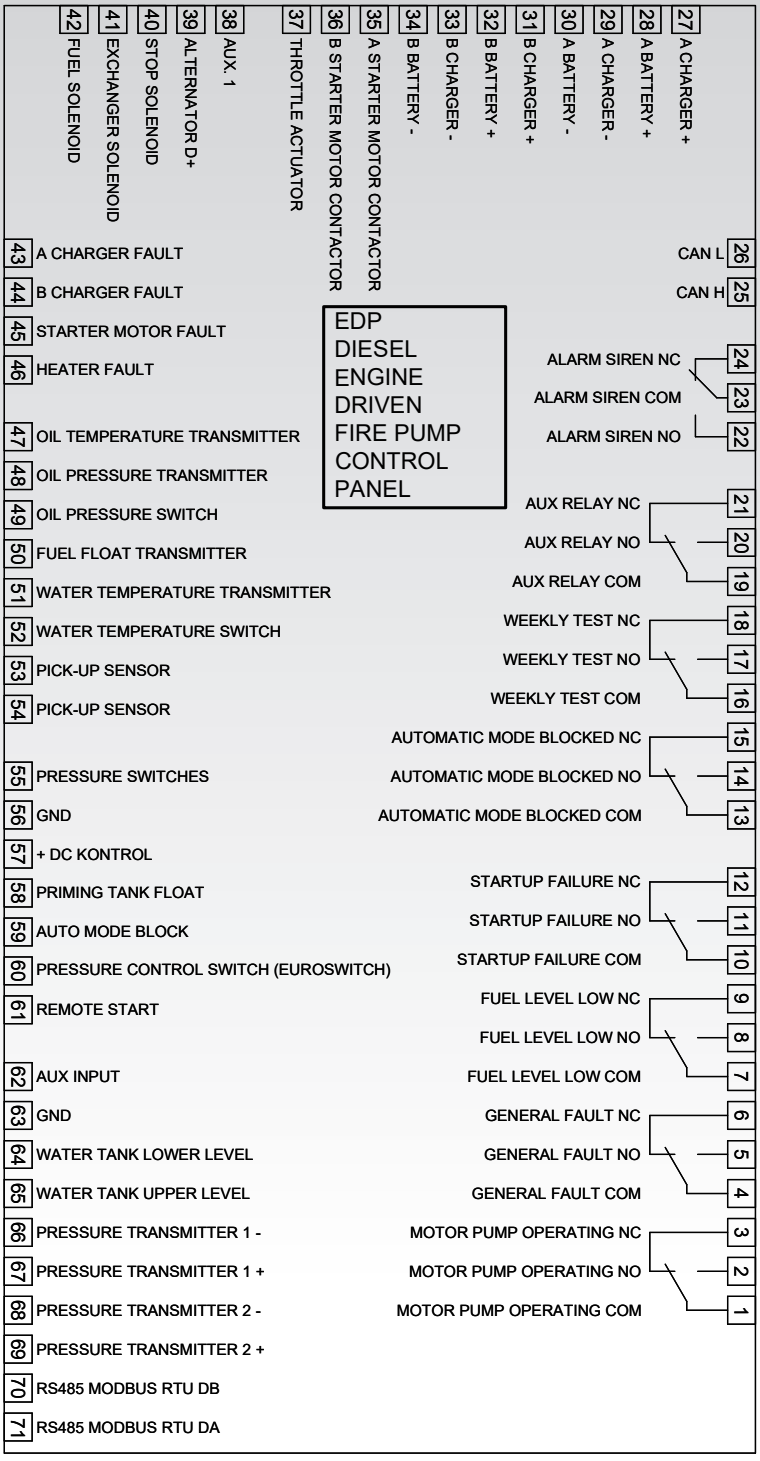
EVENT LIST	CAUSE	SOLUTION
PICK UP ANORMAL	• The diesel engine stopped while running even though the stop signal was not received, or the RPM sensor is not providing RPM information.	• After the diesel engine starts, the stop signal must be sent to the stop actuator, causing the diesel engine to stop. • This fault occurs if the diesel engine has stopped before the stop signal is received, or if the RPM information from the RPM sensor is interrupted. • Check whether the diesel engine is running. • If the pickup abnormal error is displayed while the diesel engine is running, the fault must be reset. If the fault recurs, the RPM sensor or its connection may be defective. The RPM measurement system must be checked. • If the diesel engine stops on its own while running, the diesel engine and the entire system must be checked. • The fuel level and whether there is air in the fuel line must be checked. • Contact an authorized service.
TEMP. CONTACT (Temperature contact)	• The diesel engine overheated.	• The diesel engine temperature must be checked. • The diesel engine coolant level and condition of the antifreeze must be checked. • If the diesel engine is overheated, check that the cooling system (radiator or heat exchanger) is working properly. • The fan belt connections must be checked to see if there is a problem with the radiator. • The cold water inlet to the heat exchanger line must be checked. If there is a clogging in the dirt traps or valves, they must be cleaned. • Cable connections must be checked. • Contact an authorized service.
OIL PRES CONTACT (Oil pressure contact)	• The oil pressure is low when the diesel engine is running.	• This fault occurs when the oil pressure is insufficient while the diesel engine is running. • The oil level must be checked using the dipstick. • Cable connections must be checked. • Contact an authorized service.
STARTER MOTOR FAULT	• Starter motor may be defective.	• Starter motor may be defective. • Contact an authorized service.
HIGH OIL TEMPERATURE	• The oil temperature is higher than the maximum oil temperature limit set in the menu.	• While the diesel engine is running, the oil temperature must remain within the values set in the menu. • After starting the diesel engine, check the oil temperature. • The oil temperature sensor and its connections must be checked. • The cooling system must work properly while the diesel engine is running. • The cooling system, dirt traps, and valves must be checked. • If the problem persists, contact an authorized service.
LOW OIL TEMPERATURE	• The oil temperature is lower than the minimum oil temperature limit set in the menu.	• While the diesel engine is running, the oil temperature must remain within the values set in the menu. • After starting the diesel engine, check that the oil temperature rises. • The oil temperature sensor and its connections must be checked. • Contact an authorized service.

EVENT LIST	CAUSE	SOLUTION
LOW OIL PRESSURE	• The oil pressure is low when the diesel engine is running.	• This fault occurs when the oil pressure is insufficient while the diesel engine is running. • The oil level must be checked using the dipstick. • Cable connections must be checked. • Contact an authorized service.
HIGH OIL PRESSURE	• The oil pressure is high when the diesel engine is running.	• This fault occurs when the oil pressure exceeds the maximum pressure set in the menu while the diesel engine is running. • The oil level must be checked using the dipstick. • Cable connections must be checked. • Contact an authorized service.
OVER TEMPERATURE	• The diesel engine overheated.	• The diesel engine temperature must be checked. • The diesel engine coolant level and condition of the antifreeze must be checked. • If the diesel engine is overheated, check that the cooling system (radiator or heat exchanger) is working properly. • The fan belt connections must be checked to see if there is a problem with the radiator. • The cold water inlet to the heat exchanger line must be checked. If there is a clogging in the dirt traps or valves, they must be cleaned. • Cable connections must be checked. • Contact an authorized service.
AUTO MOD DISABLE	• the locked automatic manual mode selector switch on the front cover of the panel was set to manual.	• The automatic manual mode selector switch must always be in the automatic mode. • Authorized personnel may switch to manual mode in cases such as maintenance, and the system must be returned to automatic after the operation is complete. • When automatic mode is selected, the GND signal does not reach terminal 59 on the EDP panel. The device is in manual mode if the GND signal reaches terminal 59. • If this error persists even though automatic mode is selected, contact an authorized service.
MAINTENANCE TIME	• It's time for authorized service maintenance.	• Contact an authorized service and have the periodic maintenance of the system performed. • The authorized service performs maintenance and sets the date for the next maintenance from the service maintenance menu.
W.TEMP.TRANS.SC (Water temperature transmitter short circuit)	• The water temperature sensor is defective.	• This error occurs when the water temperature sensor is short-circuited to GND. • Check the water temperature sensor connections. • Press the reset button to reset the fault. If the fault recurs, replace the water temperature sensor.
W.TEMP.TRANS.OC (Water temperature transmitter open circuit)	• The water temperature sensor is defective or the cable connections are broken.	• This fault occurs when the water temperature sensor connection is lost. • Check the water temperature sensor cable connections. • Press the reset button to reset the fault. If the fault recurs, replace the water temperature sensor.
O.TEMP.TRANS.SC (Oil temperature transmitter short circuit)	• The oil temperature sensor is defective.	• This error occurs when the oil temperature sensor is short-circuited to GND. • Check the oil temperature sensor connections. • Press the reset button to reset the fault. If the fault recurs, replace the oil temperature sensor.

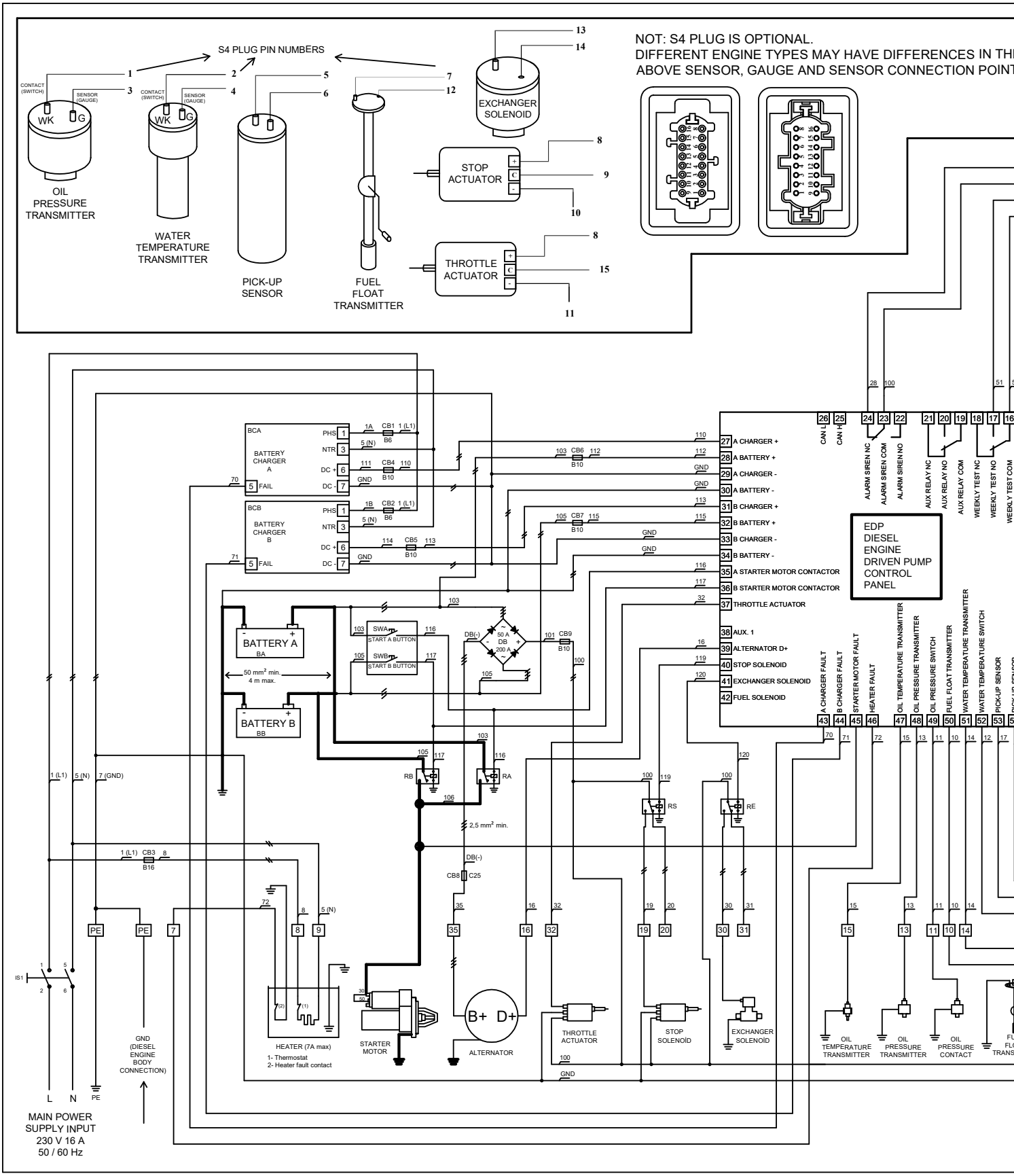
EVENT LIST	CAUSE	SOLUTION
O.TEMP.TRANS.OC (Oil temperature transmitter open circuit)	• The oil temperature sensor is defective or the cable connections are broken.	• This fault occurs when the oil temperature sensor connection is lost. • Check the oil temperature sensor cable connections. • Press the reset button to reset the fault. If the fault recurs, replace the oil temperature sensor.
O.PRESS.TRANS.OC (Oil pressure transmitter open circuit)	• The oil pressure sensor is defective or the cable connections are broken.	• This fault occurs when the oil pressure sensor connection is lost. • Check the oil pressure sensor cable connections. • Press the reset button to reset the fault. If the fault recurs, replace the oil pressure sensor.
FUEL LEVEL OC (Fuel level transmitter open circuit)	• The fuel level sensor is defective or the cable connections are broken.	• This fault occurs when the fuel level sensor connection is lost. • Check the fuel level sensor cable connections. • Press the reset button to reset the fault. If the fault recurs, replace the fuel level sensor.
LOW RPM	• The diesel engine has a low rpm.	• This error occurs when the diesel engine rpm is lower than the limit value set in the low rpm menu. • Observe the operation of the diesel engine. • Verify that the throttle level actuator is working properly. • The throttle lever setting must be checked. • If the diesel engine does not accelerate and the fault persists, contact an authorized service.
HIGH RPM	• The diesel engine has a high rpm.	• This error occurs when the diesel engine rpm is higher than the limit value set in the high rpm menu. • Observe the operation of the diesel engine. • Verify that the throttle level actuator is working properly. • The throttle lever setting must be checked. • If the fault persists, contact an authorized service.
WRONG START A	• The starter was engaged from the battery group A while the diesel engine was running.	• The start buttons must not be pressed while the diesel engine is running. This causes the diesel engine to malfunction. • Faults resulting from improper intervention are not covered by the warranty.
WRONG START B	• The starter was engaged from the battery group B while the diesel engine was running.	• The start buttons must not be pressed while the diesel engine is running. This causes the diesel engine to malfunction. • Faults resulting from improper intervention are not covered by the warranty.
AUTO MODE ENABLD (Auto mode enabled)	• The locked automatic manual mode selector switch on the front cover of the panel was set to automatic.	• Faults resulting from improper intervention are not covered by the warranty. • The automatic manual mode selector switch must always be in the automatic mode. • Authorized personnel may switch to manual mode in cases such as maintenance, and the system must be returned to automatic after the operation is complete. • When automatic mode is selected, the GND signal does not reach terminal 59 on the EDP panel. The device is in manual mode if the GND signal reaches terminal 59.

EVENT LIST	CAUSE	SOLUTION
HEATER FAULT	• Heater is defective.	• Check the heater. • When heater is defective, the GND signal reach terminal 46 on the EDP panel. • The heater must be replaced if it is defective. • Contact an authorized service.
LOW FUEL	• The fuel level is low.	• Fill the fuel tank to the maximum level.
LAST FUEL	• The fuel is about to be depleted.	• Fill the fuel tank to the maximum level.
NO FUEL	• The fuel is depleted.	•Fill the fuel tank to the maximum level.
BATTERY A/B LOW/HIGH VOLT	• The battery voltage has exceeded the values specified in the menu.	• The EDP panel battery voltage must be selected from the menu according to the system voltage (12V/24V). • The voltage values must be within the high and low voltage range set in the menu.
DC INPUT FAULT	• CB9 fuse blown	• +DC voltage must be supplied to terminal number 57 of the EDP panel from the CB9 fuse. • Check the CB9 fuse. • If the fault persists or the fuse blows contact an authorized service.
CHARGE A FAULT	• Battery group A cannot be charged.	• This fault occurs when the battery group cannot be charged. • Check that the mains power is connected using the appropriate measuring instruments. • Check the CB1 and CB4 fuses. • Check that the battery charging rectifier (BCA) for battery group A is in operation. • Check the battery group and terminal connections. • Check the cable connections. • If the fault persists, contact an authorized service.
CHARGE B FAULT	• Battery group B cannot be charged.	• This fault occurs when the battery group B cannot be charged. • Check that the mains power is connected using the appropriate measuring instruments. • Check the CB2 and CB5 fuses. • Check that the battery charging rectifier (BCB) for battery group B is in operation. • Check the battery group B and terminal connections. • Check the cable connections. • If the fault persists, contact an authorized service.

3.9. ETNA EDP Panel Terminal Description

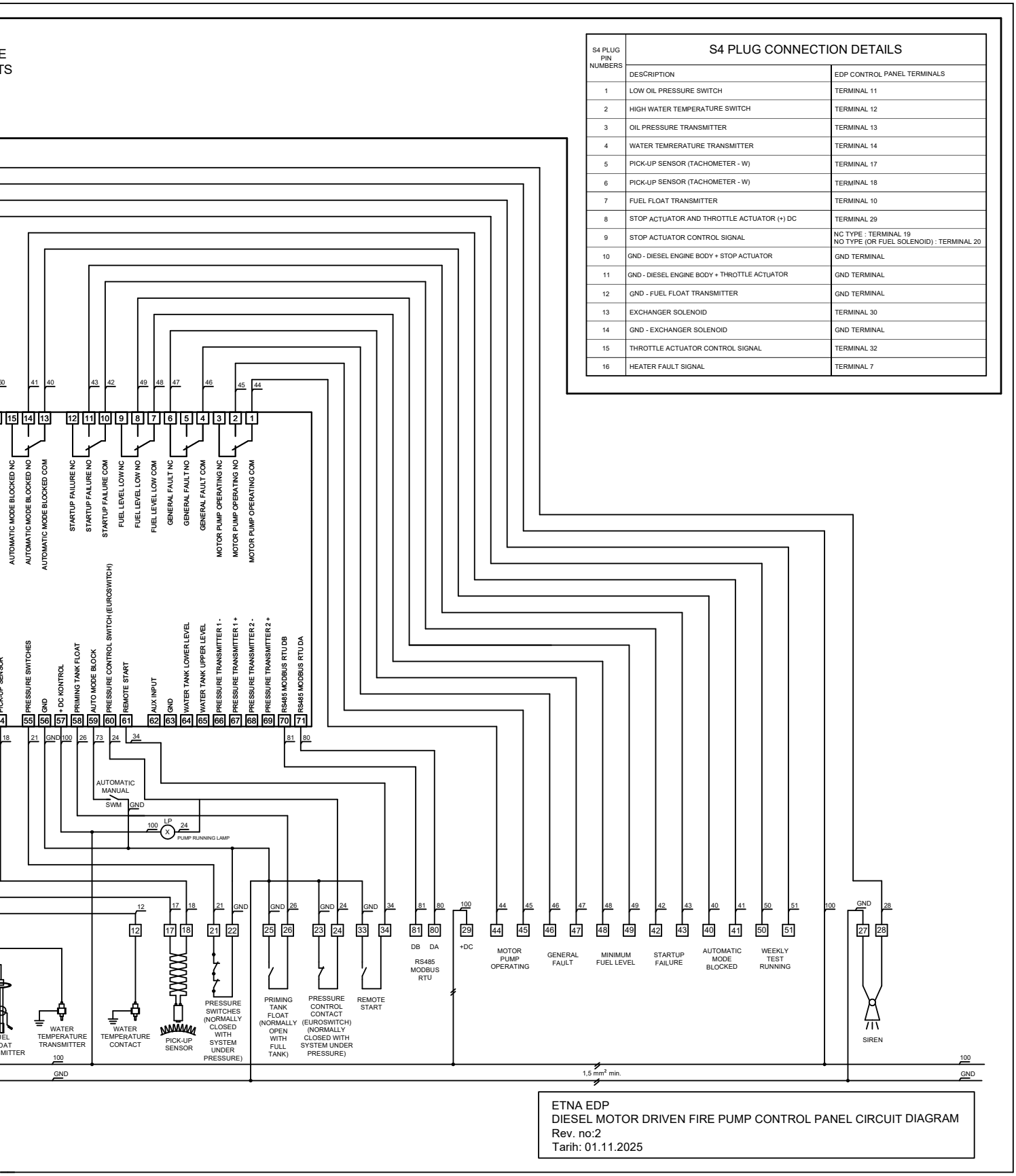


3.10. Circuit Diagram



E
TS

S4 PLUG PIN NUMBERS	S4 PLUG CONNECTION DETAILS	
	DESCRIPTION	EDP CONTROL PANEL TERMINALS
1	LOW OIL PRESSURE SWITCH	TERMINAL 11
2	HIGH WATER TEMPERATURE SWITCH	TERMINAL 12
3	OIL PRESSURE TRANSMITTER	TERMINAL 13
4	WATER TEMRERATURE TRANSMITTER	TERMINAL 14
5	PICK-UP SENSOR (TACHOMETER - W)	TERMINAL 17
6	PICK-UP SENSOR (TACHOMETER - W)	TERMINAL 18
7	FUEL FLOAT TRANSMITTER	TERMINAL 10
8	STOP ACTUATOR AND THROTTLE ACTUATOR (+) DC	TERMINAL 29
9	STOP ACTUATOR CONTROL SIGNAL	NC TYPE : TERMINAL 19 NO TYPE (OR FUEL SOLENOID) : TERMINAL 20
10	GND - DIESEL ENGINE BODY + STOP ACTUATOR	GND TERMINAL
11	GND - DIESEL ENGINE BODY + THROTTLE ACTUATOR	GND TERMINAL
12	GND - FUEL FLOAT TRANSMITTER	GND TERMINAL
13	EXCHANGER SOLENOID	TERMINAL 30
14	GND - EXCHANGER SOLENOID	GND TERMINAL
15	THROTTLE ACTUATOR CONTROL SIGNAL	TERMINAL 32
16	HEATER FAULT SIGNAL	TERMINAL 7



ETNA EDP
DIESEL MOTOR DRIVEN FIRE PUMP CONTROL PANEL CIRCUIT DIAGRAM
Rev. no:2
Tarih: 01.11.2025

Rev. 12/2025

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