E-CHTM

User Manual

TOPFIBRA

EFFECTIVE FILAMENT WINDING® PIONEERS

E-CHTM

USER MANUAL

TABLE OF CONTENTS

1. INTRODUCTION

1.1. Purpose of this document

The operating instructions are intended for all users of the Coupling testing machine. They provide the necessary information for the easy, safe, and smooth operation of the system. The individual screen images of the operator panel, the methods of system management, and the described procedures in case of errors or congestion are also explained.

Any person working with the system should read the operating instructions. Instructions for use must always be available to users in the main cabinet.

1.2. Definitions and abbreviations

In this document, the following definitions and abbreviations are used:

PLC - Programmable logic controller

HMI - Human Machine Interface, operating panel

1.3. General

The Coupling testing machinery may only be operated and maintained by persons designated by the investor and qualified to work on such a system. In addition to the instructions for use and the accident prevention regulations applicable in this area, it must also comply with the technical rules for the safe and appropriate operation of the system.

The instructions provide basic information to be observed during operation and maintenance. It is therefore essential that operators, maintenance staff, and anyone else working with the line read them before starting work and that they are always available at the point of use.

In addition to the safety instructions in the "Safety" section, all safety instructions in the field of occupational safety must be observed.

To ensure a trouble-free operation of the system, the following must be met:

- The system must be properly set up and maintained.
- Work and maintenance personnel must be properly selected and trained.
- Operators must be well-informed about the functions, capabilities, and limitations of the equipment.
- Operators must read and follow the instructions for the use and maintenance of the equipment.
- An adequate set of spare parts must be provided.

1.4. Machine conversion

Modifications, additions, or modifications to the system are not permitted without the consent of the manufacturer. Written permission from the manufacturer is required for all recovery operations. Parts of the system that are not in perfect condition must be replaced immediately! Use only original spare parts!

1.5. Extinguishing the fire

When extinguishing a fire, be sure to turn off the main switch of the machine, otherwise, the effective extinguishing of electrically conditioned fires is not possible!

Read the instructions carefully before using the device and save them for future reference.

Be sure to switch off and lock the main switch before carrying out maintenance work on the system.

The person in charge of maintenance work is responsible for safety during maintenance work. The Manufacturer is not responsible for irregularities in case of improper use, unqualified and unauthorized persons, various modifications inconsistent with the rules, or the use of non-original parts. The operator is responsible for the proper operation and regular inspection of the surroundings of the transport system. Lifting, transport, installation, and maintenance must be carried out by a qualified person.

Inspect the system regularly for damage or malfunctions.

Only an authorized and qualified person may interfere with the main cabinet and other electrical cabinets. Study the wiring diagrams before the procedure.

Before intervening on any part of the equipment, exclude the possibility of accidental activation. Observe the principles of safe work and safety regulations.

It is not allowed to interfere with the PLC, as it may cause the program to be deleted or affect the security functions of the system. Prolonged power outages may cause the program and/or settings to be deleted.

In the case of manual or service mode, the operator who manages the system is responsible for the operation, safety, and consequences.

Never leave a working system unattended.

The Coupling testing machine is not intended to be used by persons with a lack of experience and knowledge unless they are supervised or advised by the person responsible for their safety.

When finished, turn off and lock the main switch.

2. DESIGN OF COUPLING TESTING MACHINERY

2.1. General

The Coupling testing machinery is designed as an auxiliary device in the production of pipes. It is intended for hydro-testing of pipe Couplings from size DN 12 to DN 120.

Figure 1: Coupling testing machinery

The device consists of the following important components:

- Welded and painted steel construction with eight moving arms;
- Mold;
- Hydraulic system;

- High-pressure water system;
- Electrical system.

The arms of the device are movable. They move manually along the rails and must be adjusted according to the diameter of the Coupling. Testing of small Coupling diameters is done with four arms, while larger Coupling diameters are squeezed and disassembled with the jaws of all eight arms. There is also a bracket on the movable arms to adjust the height of the support of the inserted mould.

2.2. The basic principle of operation of the device

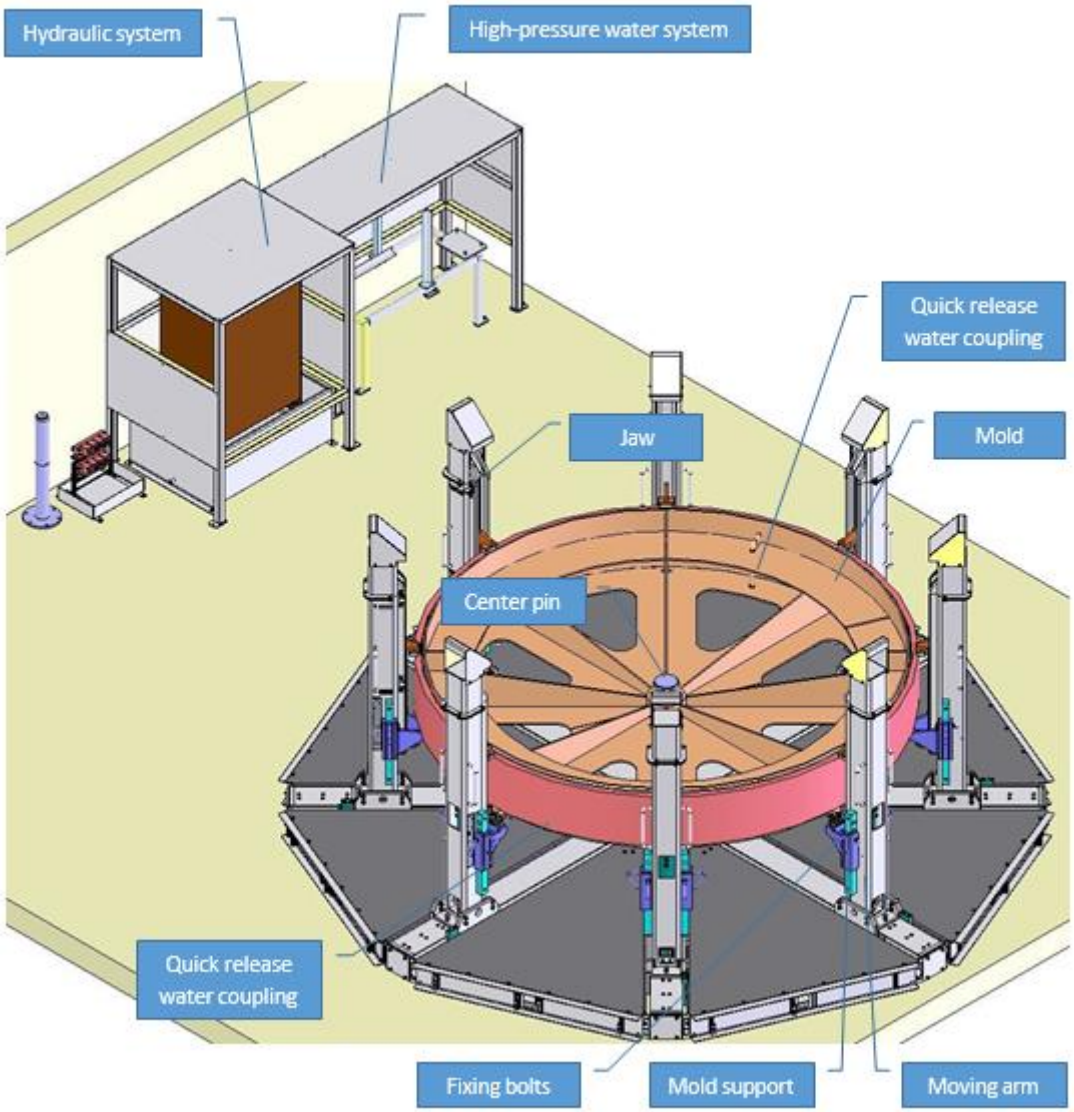

Figure 2

The Couplings are tested using a high-pressure water system. A lifting device (bridge crane or hoist) is used to install the mould and Coupling on the device. Putting and removing the Coupling on the mould is done with the help of hydraulic jaws on the moving arms of the device.

Before installing the mould on the centre pin, move all the arms of the machine to the outer position. Also, adjust the mould support on the moving arms according to the type of Coupling selected for testing.

Using a lifting device, lower the mould onto the centre pin so that the centre hole of the mould rests on the centre pin. The weight of the mould is still carried by the lifting device. Then position the arms of the machine so that the mould can be lowered onto them. Also, adjust and attach the mould support on all arms.

Once the arm and support of the mould are installed and attached, you can lower the mould and then separate it from the lifting device.

Then install a high-pressure water system with quick-release water couplings.

Open the jaws of your hands using the buttons on the control panel. Using a lifting device, place the Coupling on the mould so that it sits on the outside of the rim of the mould. Use the buttons on the control panel to push the Coupling onto the mould to the end position. The Coupling is now ready for testing. Using the buttons on the control panel, first, fill water into the Coupling and then press the button to start the testing process. When the test is complete, empty the water from the system and remove the Coupling. Repeat the above procedure to test the next Coupling.

2.3. Software

The SIEMENS ET200SP distributed system with a PROFINET bus is used to control the system, which, in addition to a more transparent design of connecting electrical elements, also enables easy system upgrades and communication from remote desktops.

The system is operated via buttons on the main control panel and via a touch-sensitive HMI.

The system management application enables:

- display the operation of system elements;
- change settings;
- editing Coupling data;
- display alarms.

2.4. Electrical equipment

Electrical equipment consists of various components, ranging from simple keys, signal lamps, and sensors to frequency regulators and safety components. Among them is also a series of devices for the management, control, and protection of the transport system. Fuses and motor protection switches provide overload control and short-circuit protection for various parts of the system. A rectifier is used to provide a lower voltage constant. Soft starters enable motor soft start. The PLC and distributed input-output components make up the central control part of the system. They respond to various input signals and control the output signals accordingly.

For the safety of workers, safety components are installed in appropriate places to shut down the system in the event of an emergency. All safety components are connected to the safety modules of the safety controller.

2.4.1. Marking of electrical equipment

To facilitate the identification of electrical elements and the diagnosis of operating and alarm conditions, the elements of the device are marked accordingly.

Sensors, circuit breakers, drives, and other electrical equipment are marked according to the page in the project documentation. For example, a sensor that detects the presence of water pressure is marked with = 00-S30.1. = 00 means that it is mounted outside the main cabinet, S means that it is a sensor and 30.1 means that it is shown in the wiring diagram on page 30. The same applies to all other sensors, signals, and keys.

3. SAFETY

3.1. General

The operating instructions contain basic information to be observed when operating and maintaining the Coupling testing device. For this reason, it is essential that they are read in full and that they are always available at the place of use.

Regulations and measures to ensure the safety of workers were taken into account when designing the system. In addition to safety devices, hazard warning labels are also affixed to potentially hazardous locations. The system of safety devices is designed to ensure the safe operation of the device.

Operators and maintainers must be familiar with all elements of device management and control. During operation, the Coupling testing machine must be monitored and appropriate action taken concerning the condition of the system and the status of warnings and alarms. Emergency procedures should be performed regularly.

In the event of a warning or alarm, the following must be done:

- Analyse a warning or alarm;
- If necessary, carry out emergency operations (e.g. shutdown of the drive, …);
- Inform the responsible supervisor and equipment maintainer.

Safety devices installed on the device are intended to protect workers working with or maintaining the system. As a result, they should in no way be removed or disabled. It is also not allowed to remove security labels.

Operators or system maintainers must ensure that safety devices function properly. They must also ensure that the safety labels are legible.

If the safety element does not work properly, working with the Coupling testing machine is not permitted.

Be sure to turn off the main switch before performing maintenance.

When working with electrical assemblies, always obtain the permission of the responsible person. Switch off the power supply before repair or maintenance work. During maintenance work, take care not to damage the wiring.

Do not touch the areas of moving parts as they can cause serious injury or even death. Wear suitable protective equipment when working near moving parts.

After completing maintenance work, always test the device in manual mode.

3.1.1.General safety instructions

DANGER!
The operator may only use the machine in accordance with its intended use in a safe and technically perfect condition!

DANGER!
Competent personnel must ensure that unauthorized persons avoid dangerous areas!

DANGER!
The electrical equipment of the machine must be tested regularly. Defective cable insulation, loose connections, and burnt cables must be removed immediately. The main electrical cabinet must always be locked. Only authorized personnel are allowed access.

DANGER!
Work on the electrical system may only be carried out by competent and authorized workers! There is a risk of electric shock, which can range from severe burns to heart failure!

WARNING!
Observe all safety and accident prevention regulations!

WARNING!
When carrying out hazardous work, the main switch must be switched off and secured against being switched on again!

WARNING!
When installing the machine, the relevant safety rules must be observed and accidents must be avoided by prudent handling! This mainly concerns the use of safe means of transport and lifting devices! In addition, all dangerous places created, even if only temporary, must be adequately insured!

3.2. Safety functions

The Coupling testing machinery contains the following safety features:

- Emergency stop (function to switch off the system in case of activation of the STOP button, broken light curtains, or broken safety net);
- Control of switching on the main contactors;
- Confirmation of reconnection of safety functions.

If the safety function is activated, the alarm must be confirmed and the failed safety element must be reactivated.

3.2.1. Emergency STOP button

The emergency stop button is located on the main electrical cabinet. Activating the key stops the device.

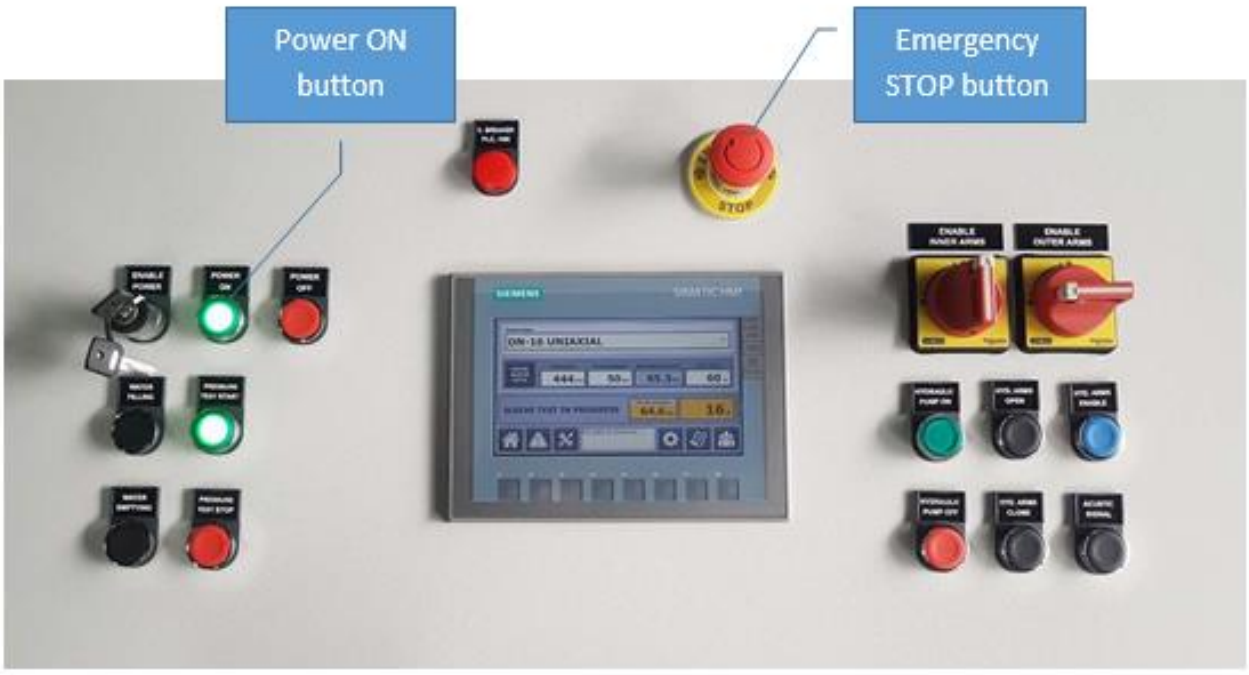

Figure 3

Procedure for reactivating the security module:

- Ensure safe operation of the device;
- Turn the activated key clockwise to return to the working position;

- Reset the security alarm on the HMI;
- Switch on the safety circuit with the »POWER ON« button on the main electrical cabinet.

3.2.2. Safety reset in case of safety module passivation

The safety reset function is necessary in the following cases:

- Before starting the device for the first time after switching on the main switch;
- After deactivation of safety elements (STOP keys, safety switches, …);
- After the time has elapsed to control the channel discrepancy of the safety function;
- After the reintegration of safety modules.

4. OPERATING MODES

4.1. General

The Coupling testing machine can operate in the following operating modes:

- Manual mode;
- Service mode.

Switching the operating mode is performed on the operator panel (HMI). The device should operate in manual mode most of the time (under normal conditions). In this case, the individual functions of the device are performed by pressing the appropriate buttons.

The service mode is intended for service interventions and the elimination of more complex problems and malfunctions, where the system (according to the instructions of the equipment manufacturer) is operated by an experienced service technician. It differs from the manual mode mainly in that some technological security functions are excluded.

The service mode is intended for a service intervention. Unauthorized and unqualified persons are strictly prohibited from working in the service mode. Only qualified persons who operate individual drives with full control can operate in this mode.

4.2. Manual Mode

In manual mode, the devices are switched on and off using the buttons on the main electrical cabinet. The same applies to the movement of the hydraulic arms. The movement of the arms lasts as long as the button is pressed (and the safety conditions are met).

To move the hydraulic arms, the »move« and »enable« buttons must be pressed at the same time. If the difference is too large, the movement is not performed.

4.3. Service Mode

The service mode is intended for system startup and service interventions. Operation in this mode is similar to a manual. The main difference is in ignoring some errors that prevent the devices from turning on in manual mode.

Some safety features are disabled in service mode, so only an authorized and qualified person can work in this mode.

Procedure for activating the service mode:

- Press the "SERVICE MODE" key on the operator panel (HMI);
- Log in with the appropriate username and password;

- Press the "YES" key on the confirmation page.

You operate the devices in the same way as in manual mode.

4.3.1. Confirmation of entry into service mode

The service mode is intended for service interventions and the elimination of more complex faults in the operation of the device. For this reason, additional confirmation that we are aware of the operational hazard is required to enter the regime. Enter the service mode by pressing the YES key and cancel with the NO key.

5. CONTROL AND SIGNAL ELEMENTS

5.1. Main electrical enclosure = GS5

The main switch allows safe operating and maintenance conditions of the Coupling testing machine. There is an urgent need to use all the safety and lockout procedures. The main switch can be locked with a padlock. After installing the padlock it shall be marked that the maintenance work is in progress.

The auxiliary voltage switch is intended for switching on and off the transformer for cabinet lighting and the socket for external devices.

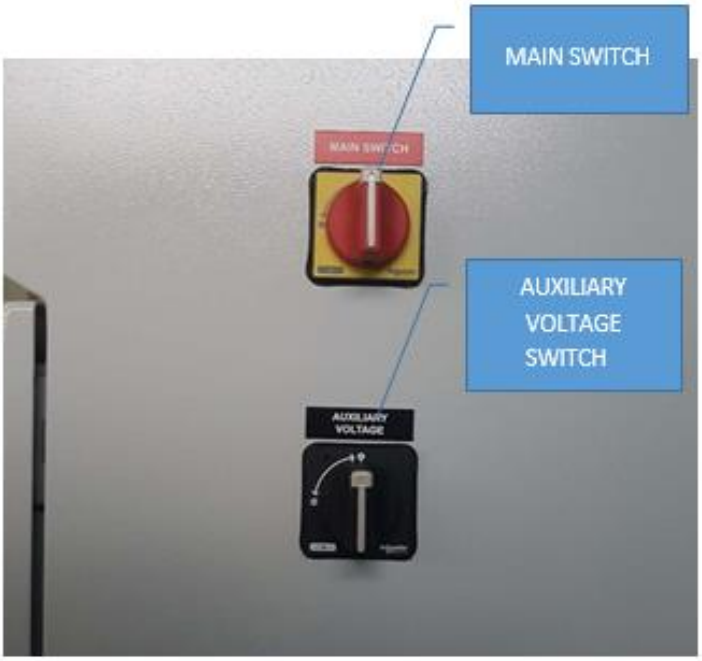

Figure 4

An operator panel is also installed on the main electrical cabinet. It also has control and signal elements for the main functions of the system.

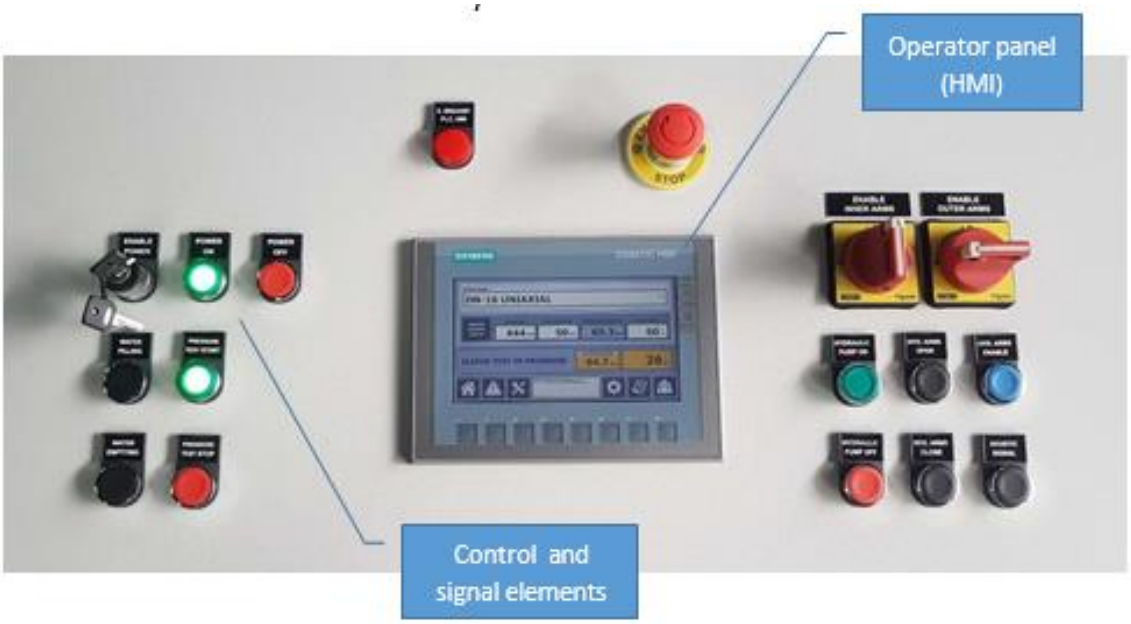

Figure 5

Description of control and signal elements on the main control cabinet:

BUTTON	FUNCTION	DESCRIPTION
	SWITCH DISCONNECTOR	Coupling testing machine power on switch.
	SIGNAL LIGHT	PLC or HMI circuit breaker tripping. Signal states of the LED: **ON** - Circuit breaker tripped **OFF** - Circuit breaker OK
	KEY SWITCH SELECTOR	Enable Coupling testing machinery power supply.  **In case of maintenance, switch off the switch and remove the key.**

BUTTON	FUNCTION	DESCRIPTION
	ILLUMINATED PUSH BUTTON	Coupling testing machinery power supply ON. Signal states of the LED: **OFF** – activated safety element (power condition not met) **FLASHING** – the conditions for switching on the power are met (no activation of the safety element) **ON** – the safety circuit is switched on (power supply is ON)
	PUSH-BUTTON	Interrupt or stop the Coupling testing process. **In normal operation, the testing process stops automatically. Stop the process with the key only in emergencies.**
	ILLUMINATED PUSH BUTTON	Turn on the water filling in the Coupling. **Filling with water takes only as long as the button is pressed.**

BUTTON	FUNCTION	DESCRIPTION
	PUSH-BUTTON	Turn on the emptying of water from the Coupling. **The water is only emptying as long as the button is pressed.**
	ILLUMINATED PUSH BUTTON	Start the Coupling testing process. Signal states of the LED: **OFF** – The pressure test process is not running. **FLASHING** – The pressure test process has begun, but the water pressure has not yet reached the value for testing. **ON** – Test pressure is reached. Testing time is running.
	PUSH-BUTTON	Interrupt or stop the Coupling testing process. **In normal operation, the testing process stops automatically. Stop the process with the key only in emergencies.**

BUTTON	FUNCTION	DESCRIPTION
	ILLUMINATED PUSH BUTTON	Switching on the hydraulic pump. Signal states of the LED: **OFF** – The hydraulic pump is switched off **FLASHING** – The hydraulic pump is switched on but is still in the start-up process **ON** – The hydraulic pump is switched on
	PUSH-BUTTON	Switch off the hydraulic pump.  **If the hydraulic arms are not moved for a long time, the pump stops automatically.**
	PUSH-BUTTON	Permission to move hydraulic arms.  **The button works in combination with the button for opening or closing the hydraulic arms. The principle of operation is the same as for two-hand operations.**
	PUSH-BUTTON	Move the hydraulic jaws on the arms in a downward direction.

BUTTON	FUNCTION	DESCRIPTION
	PUSH-BUTTON	Move the hydraulic jaws on the arms upwards.
	PUSH-BUTTON	Turn on audible signalling. The horn works as long as we press the button.
	SWITCH DISCONNECTOR	Turn off the movement of the inner arms. **If you do not use your inner arms, turn off the switch to prevent the jaw from moving.**
	SWITCH DISCONNECTOR	Turn off the movement of the outer arms. **If you do not use your outer arms, turn off the switch to prevent the jaw from moving.**

BUTTON	FUNCTION	DESCRIPTION
	EMERGENCY STOP PUSH BUTTON	Switch off the main safety circuit in case of an emergency.

5.2. Light and Sound Signalling

Light and sound signals are used to report various warnings, faults, or transport conditions. The light signals on the control components are described in the previous section.

The audible signal has the following messages:

SOUND	———	The push button to activate the audible warning is pressed.
	— —	The Coupling pressure test passed.
	— —	The Coupling pressure test was not passed.

6. HUMAN-MACHINE INTERFACE

6.1. General

The touch-sensitive operator panel of the Coupling testing machinery offers high functionality and a user-friendly interface. They are designed for the easy and safe operation of the device. The status of the device and its elements can be monitored via screens, errors can be diagnosed.

The panel detects only one keystroke. Pressing two keys at the same time will not perform the desired function.

Note:

when the power supply is switched on, communication is established between the panel and the programmable logic controller, so wait until the main page is displayed.

6.1.1. Enter Parameter Values

The new values of the variables are entered via the dial, which is displayed on the screen when the field of the desired variable is pressed.

The value is entered by pressing the corresponding numbers and confirmed by pressing the "ENTER" key.

If the newly entered value needs to be corrected, press the "Del" key to reset the value to 0.0, or "←" to delete the last dialled number. When confirming the entry with the "ENTER" key, the dial is closed and the newly entered value is displayed in the selected field.

Figure 6

You can also close the dial by pressing the X key in the upper right corner of the screen. In this case, the value of the variable remains unchanged and the value change can also be cancelled.

6.2. Screen Navigation

At the bottom of the screen is a navigation field that allows you to navigate between the various screens of the operator panel. It also shows the name of the screen you are currently on or the currently active alarms.

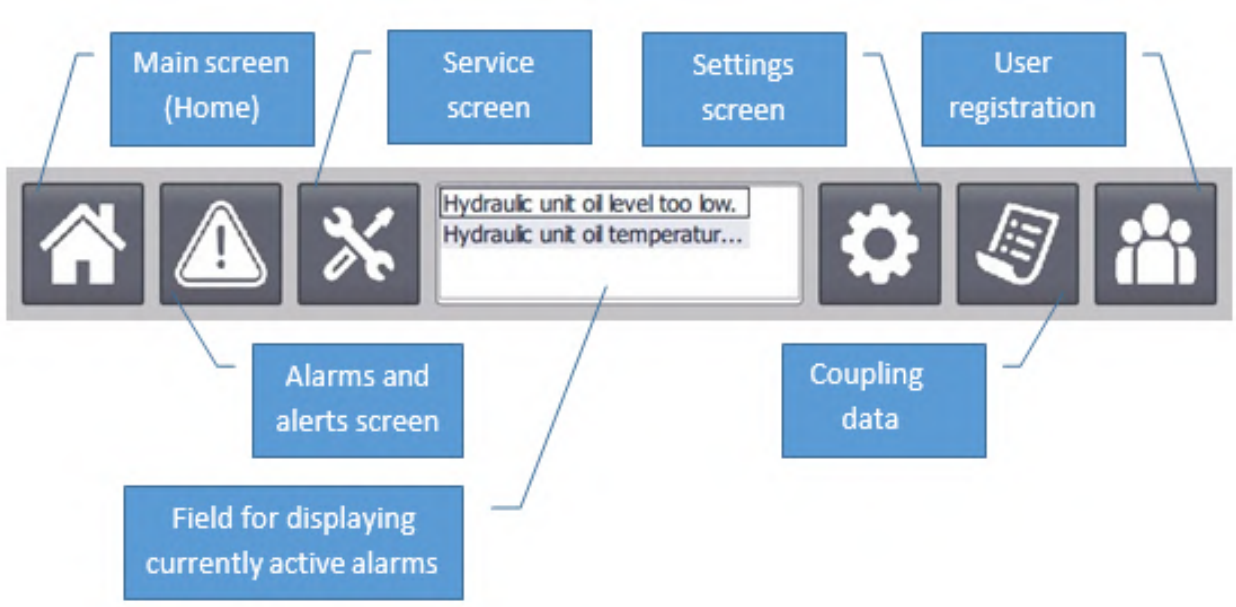

Figure 7

6.3. Main Screen

In the presence of the control voltage, the main screen is displayed on the operator's panel. You can also access it at any time by pressing the "Home" button in the screen navigation. This is the most important screen of the application for working with coupling testing machinery. On this screen, you can select the type of Coupling to be tested, enter the testing time and starting pressure, and monitor the current condition and test result.

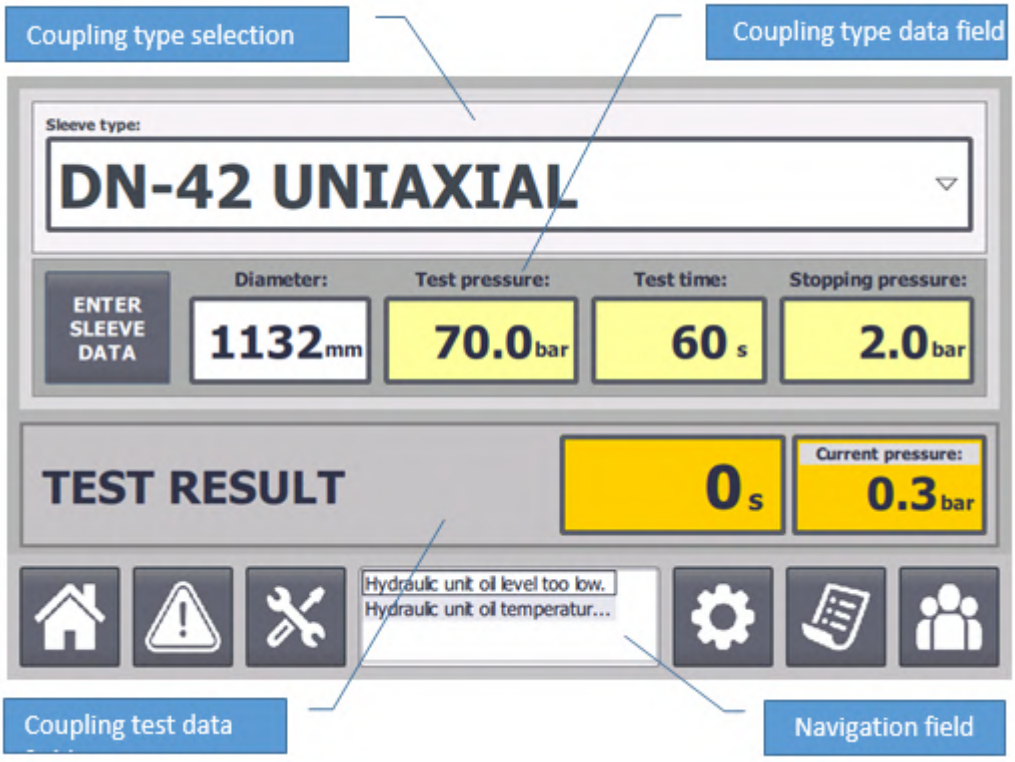

Figure 8

6.3.1.Coupling type selection field

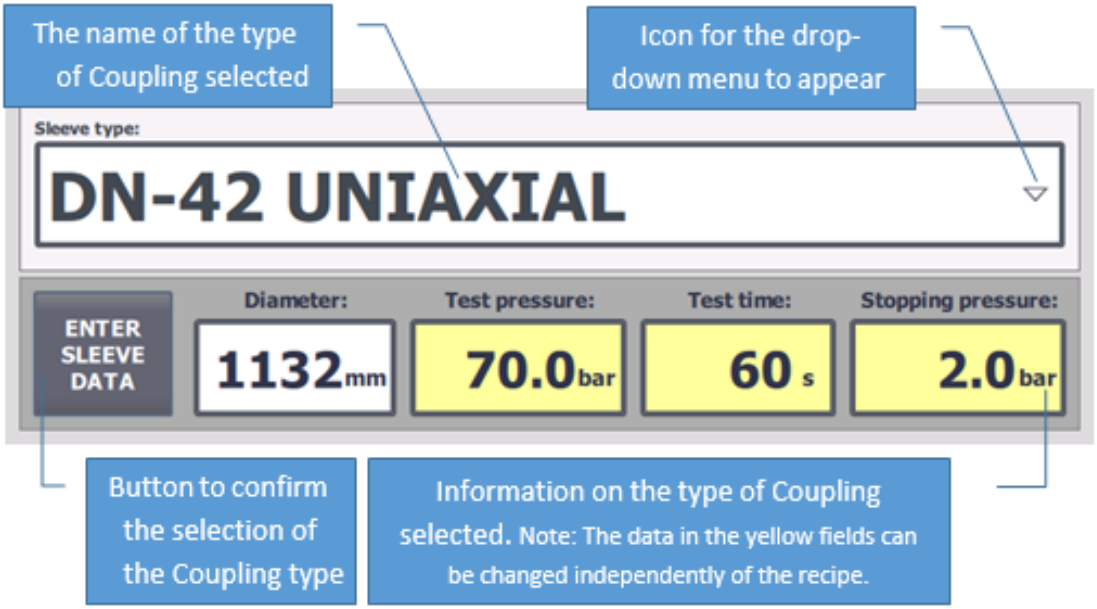

Figure 9

6.3.2.Coupling test data

Once the Coupling type is selected and the data is transferred to the plc by pressing the »ENTER COUPLING DATA« button we can start testing. The data in the yellow fields can also be changed as desired, regardless of the stored values. It is only important to do this before starting testing.

The testing process goes through the following steps:

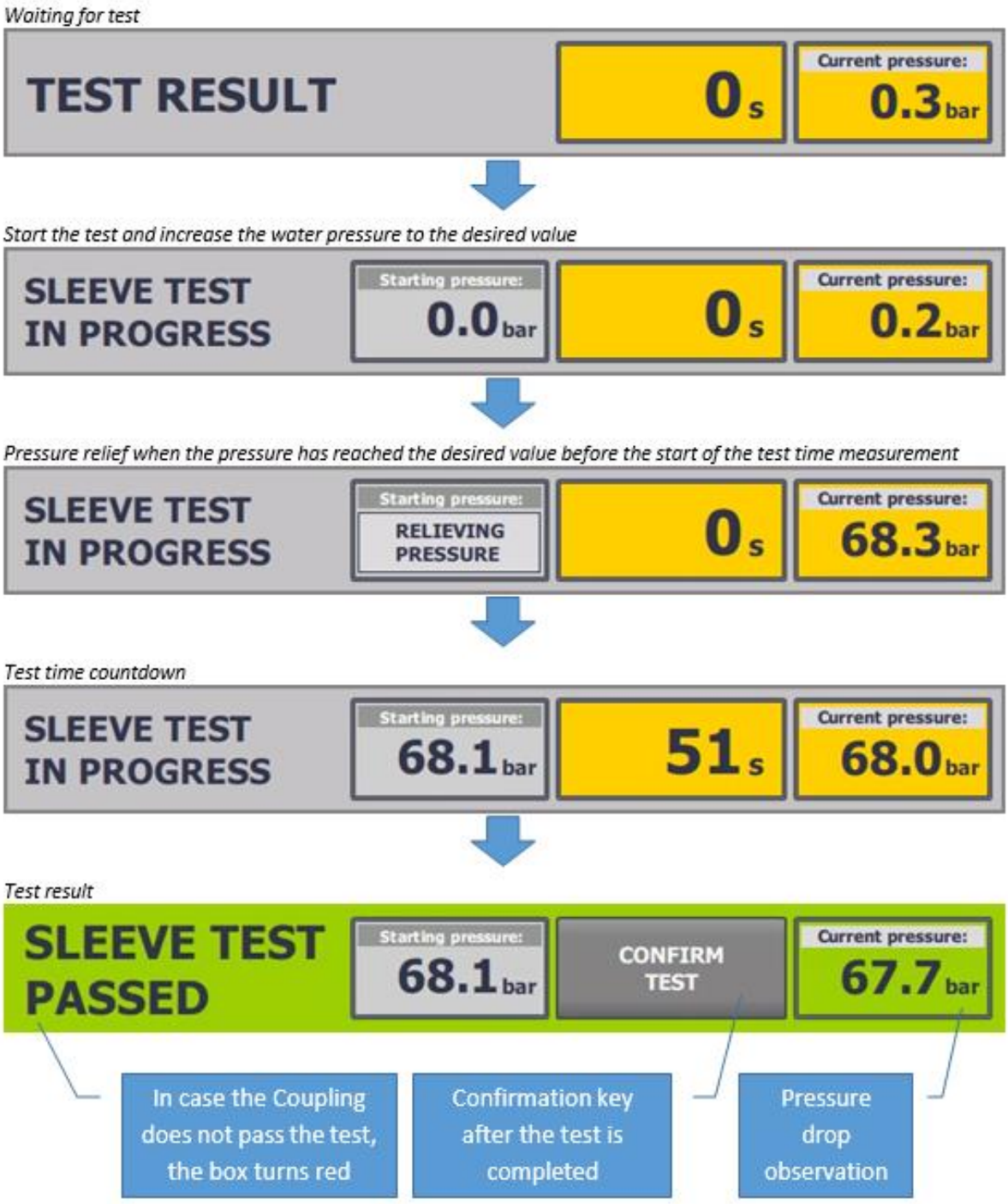

Figure 10

6.4. Alarms and warnings screen

Alarms and abnormal conditions may occur during the operation of the Coupling testing machinery.

You can view active alarms or alerts at any time on the "ALARMS" screen.

After correcting the cause of the alarm activation, the alarm must be reset by pressing the corresponding key in the navigation.

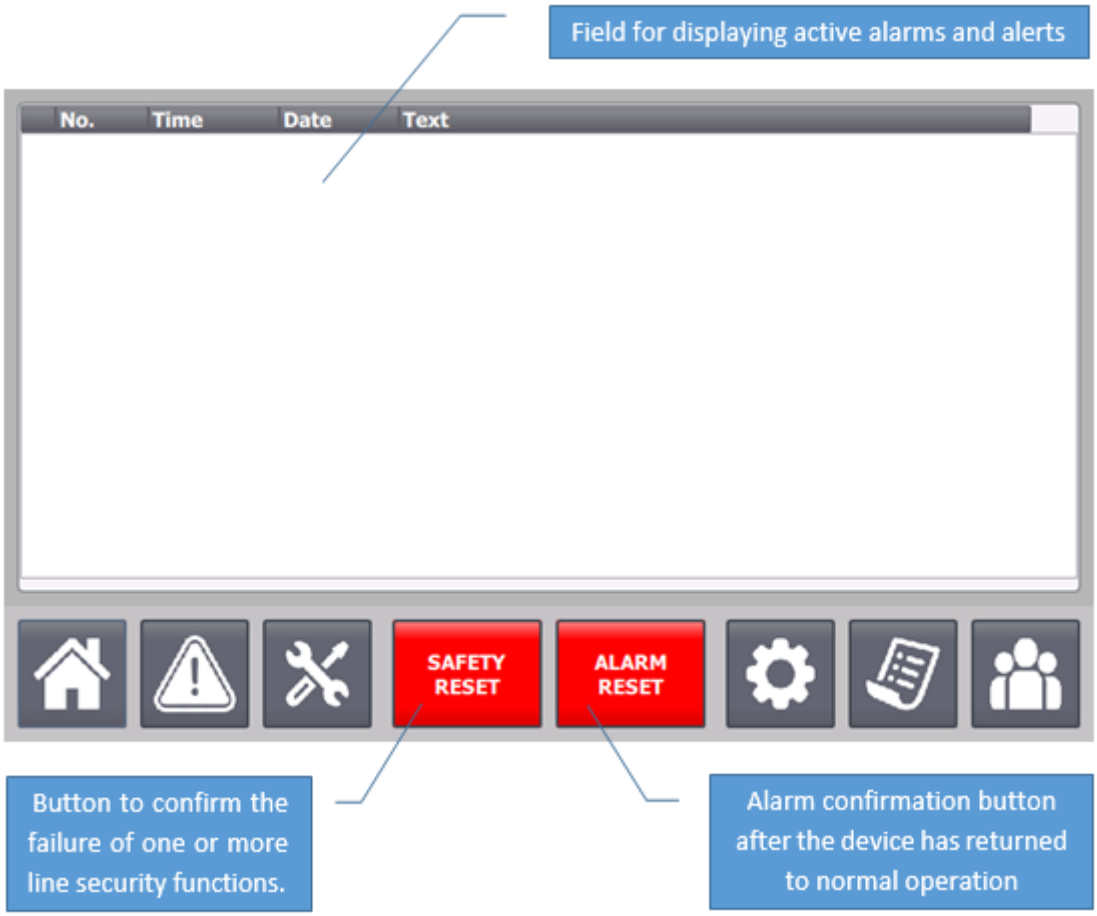

Figure 11

Before resetting the alarms, it is essential to repair all the causes that triggered the alarm and the consequences caused by the alarm and to ensure the safe switching on of the device.

6.4.1.List of alarms

C. BREAKER PLC, HMI (signal light on main control cabinet).	• Check the condition of the circuit breaker; • check the power supply.
Activated safety STOP button on main switch cabinet = GS1.	• Check which key is activated; • eliminate the causes and consequences of activation; • deactivate the key; • reset safety on HMI; • turn on the power.
Failure of the safety module for switching on the device. Press the safety reset button.	• Press the safety reset button.
XX circuit breaker failure.	• Check the condition of the circuit breakers; • check auxiliary switches of the circuit breakers; • check the possibility of a short circuit; • turn on the circuit breaker again.

XX motor circuit breaker failure.	• Check for mechanical failure; • check for the possibility of a drive failure; • check for motor overload; • turn the switch on again; • if it fails again, call a maintenance or equipment supplier; • reset the alarm on HMI.
XX soft starter error.	• Check for mechanical failure; • check for the possibility of a drive failure; • check for motor overload; • check the error reported by soft start; • push the reset button on the soft starter; • reset the alarm on HMI; • if the error occurs again, call the equipment maintainer.
The hydraulic unit oil temperature is too high.	• Check the oil temperature in the hydraulic reservoir; • check the operation of the oil; • temperature switch;

	• eliminate the causes and consequences of the alarm; • reset the alarm on HMI.
The hydraulic unit oil level is too low.	• Check the oil level in the hydraulic reservoir; • check the operation of the oil level switch; • eliminate the causes and consequences of the alarm; • reset the alarm on HMI.
The coupling type is not selected (diameter or testing pressure is zero). Testing is not possible.	• Select the type of tested Coupling; • enter the value of water pressure and diameter.
There is no pressure at the inlet of the plumbing system.	• Check the water supply; • check the water pressure in the inlet; • reset the alarm on HMI.
Water pressure gauge error.	• Check the condition of the pressure gauge sensor; • turns the power off and on again; • reset the alarm on HMI; • if the alarm is not cleared, call the equipment maintainer.

The soft starter of the XX does not bypass the required time.	• Check for mechanical failure; • check for the possibility of a drive failure; • check for motor overload; • check the correct bypass time setting; • reset the alarm on HMI.
The enable button must be pressed to move the hydraulic arms.	• Reset the alarm on HMI; • use two-handed switching to move the jaw of the hands.
The Coupling diameter is less than 1000 mm. We suggest that you switch the switch to enable "outer arms" to the "0" position.	• Turn off the enable outer arms switch.

6.4.2.List of warnings

Main cabinet cooling circuit breaker failure (-F5.1).	• Check the condition of the circuit breakers; • check auxiliary switches of the circuit breakers; • check the possibility of a short circuit; • turn on the circuit breaker again.
The "Enable power" switch (-S32.1) is in the "0" position.	• Check that switching on the power of the device is safe and possible;

	• turn the switch to position "1".
The switch for allowing the movement of the inner arms (-S25.1) is in the "0" position.	• Check if you need to move the hydraulic jaws on the inner arms; • turn on the switch to enable the operation of the inner arms.
The switch for allowing the movement of the outer arms (-S25.1) is in the "0" position.	• Check if you need to move the hydraulic jaws on the outer arms; • turn on the switch to enable the operation of the outer arms.

6.5. Service screen

On the service screen, it is possible to switch on an individual drive by pressing the corresponding button. Switch states are also visible.

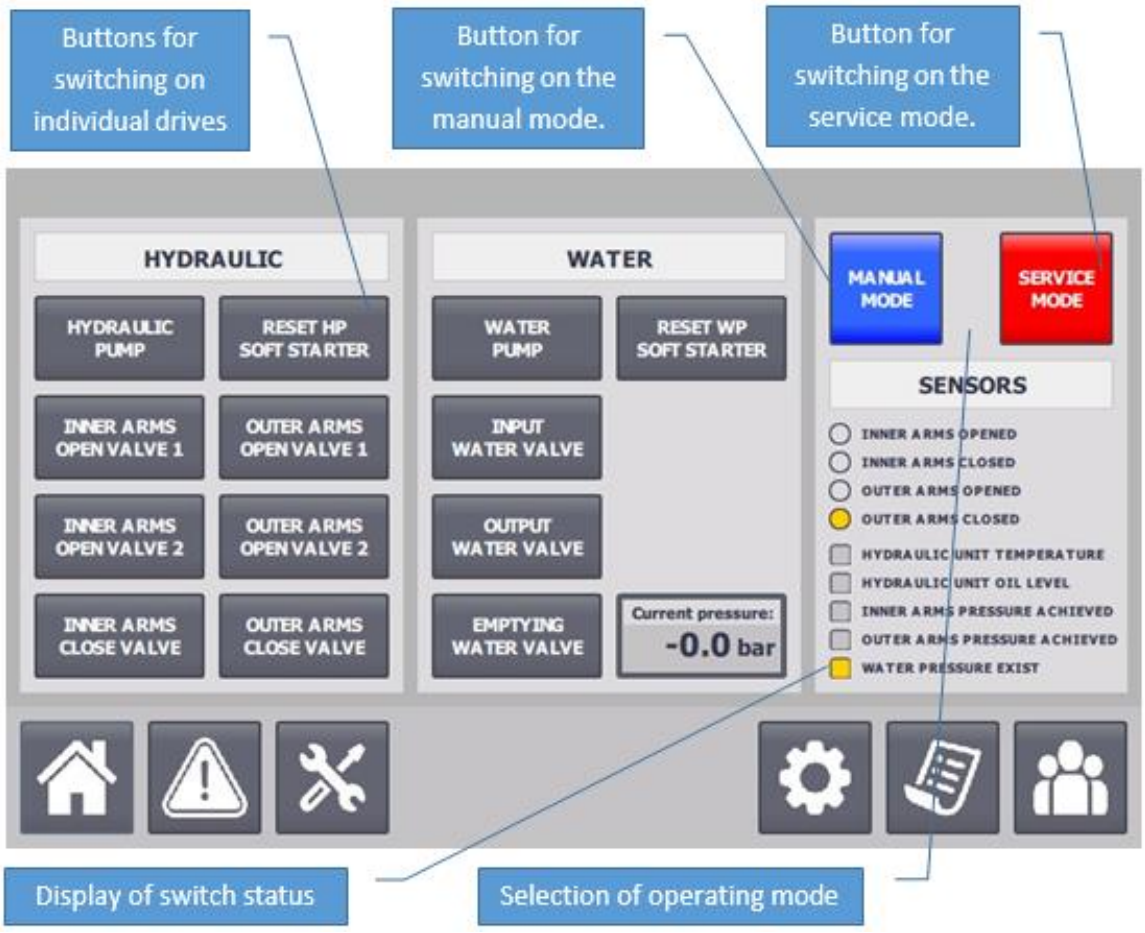

Figure 12

In case of congestion or malfunctions in the system, we can switch to service mode. Because some alarm situations are turned off in this mode, only an authorized person can work in this mode. For this purpose, a security warning and a user login window appear before switching the mode. Entering the service mode is only possible after a successful login.

The user and password are entered via the keyboard, which appears on the panel when you press the desired input field.

Login information:

User: User

Password: user

Switching on the service mode can only be performed by a qualified person who knows all safety procedures and measures. The manufacturer is not liable for any consequences in the event of line operation in service mode.

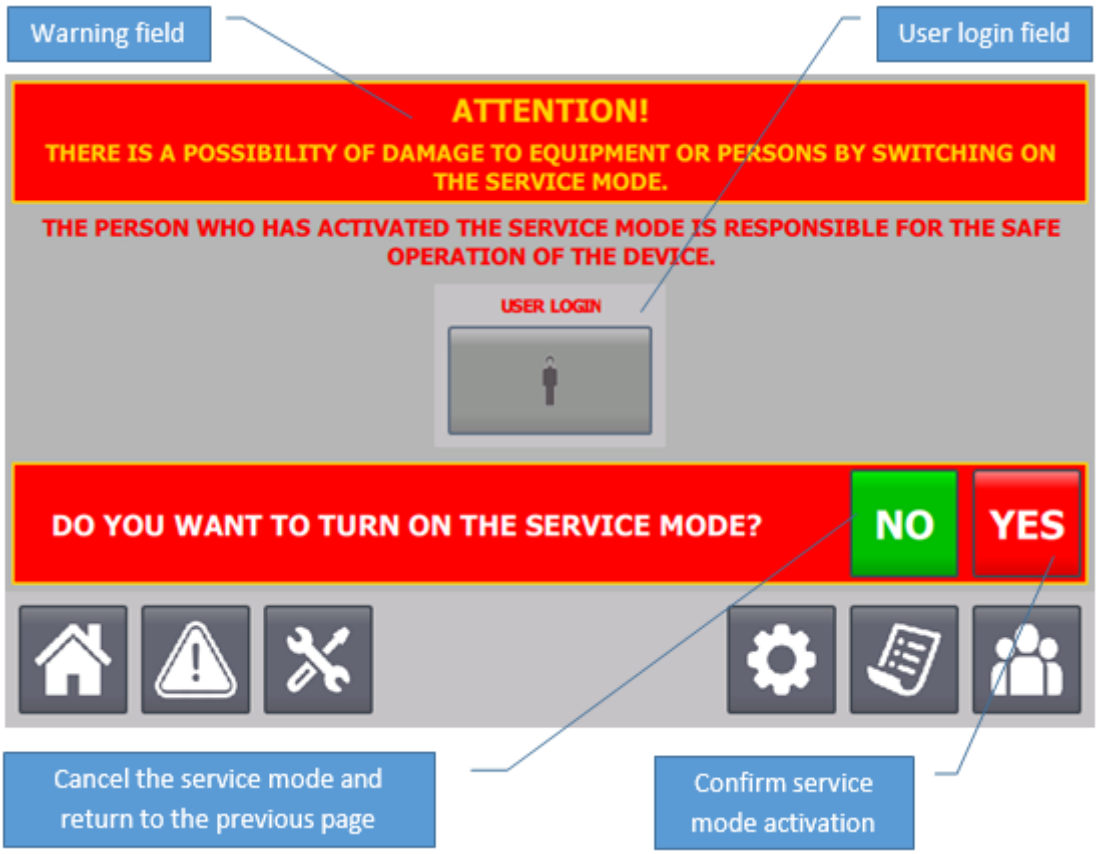

Figure 13

The meaning of device status:

The device is in service mode

Meaning of sensor colours:

The switch is activated.

The switch is inactive.

6.6. Settings screen

The settings are used to change the operating parameters of the Coupling testing machinery. By setting the parameters correctly, we optimize the operation and ensure operation with as little downtime as possible.

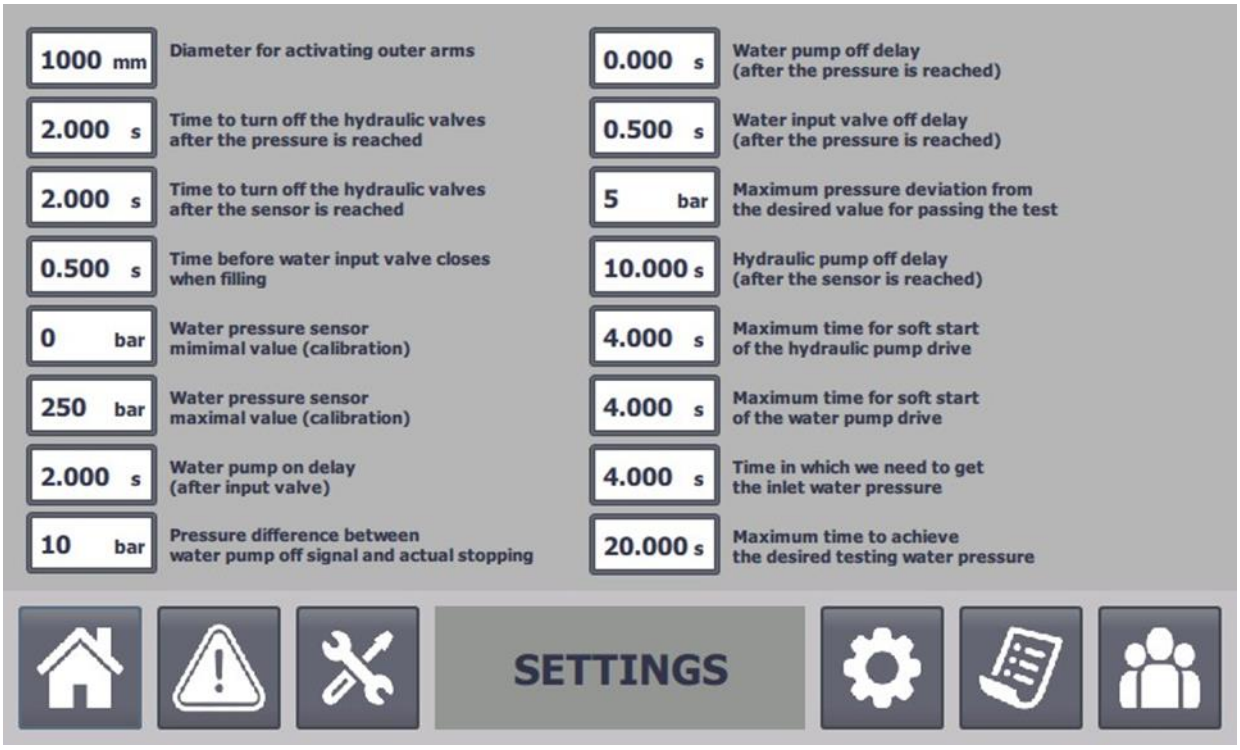

Figure 14

To change the desired value, click on the field of the value you want to change. The keyboard is displayed, through which you enter a new value, which must be between the specified minimum and maximum values. Confirm the value by pressing the ENTER key.

6.7. Coupling data management screen

Coupling data is the basis for proper testing. They contain data on diameter, test time, and water pressure during testing.

The program already contains a basic database of Couplings, which can always be changed, added, and removed.

Enter the Coupling type editing subpage by pressing the recipe button in the navigation field.

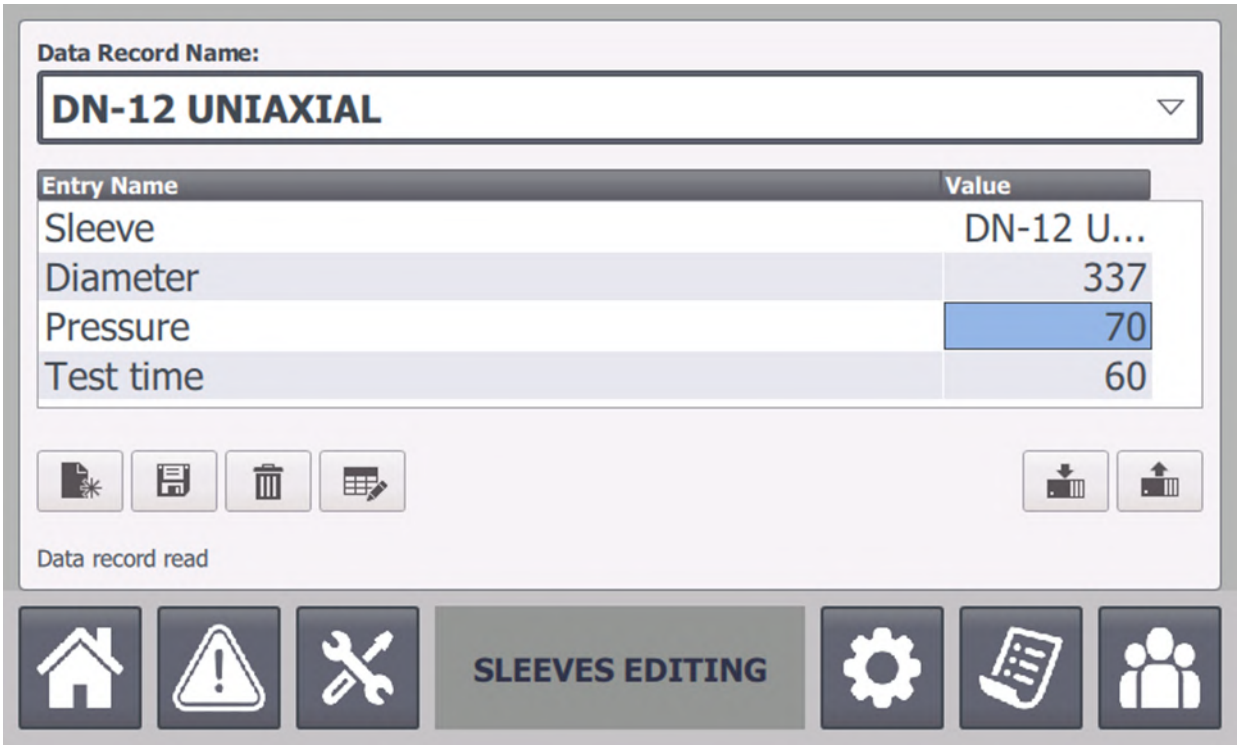

Figure 15

Meaning of buttons:

Figure 16

6.7.1. Coupling recipe selection

You select a recipe by clicking on the recipe name. An extended menu is displayed through which we select any of the saved recipes. By clicking on the desired recipe, the data from the database is transferred to the table. To transfer data to the controller, press the ENTER COUPLING DATA button on the main screen. If the selected recipe does not suit you, you can change it or choose another one. After confirming the recipe and selecting the type of pallet, it is essential to check the adequacy of the data transferred to the PLC.

6.7.2. Changing the recipe

In the list of recipes, select the recipe you want to change. Press the value you want to change and enter the new value via the keypad. To save the change, press the Save Recipe button.

6.7.3. Enter a new recipe

The easiest way to enter a new recipe is to correct one of the old recipes and save it under a new name by pressing the »Save recipe as« button.

6.7.4. Delete recipe

In the recipe list, select the recipe you want to delete and press the Delete recipe button.

7. OPERATING THE COUPLING TESTING MACHINERY

The Coupling testing machinery may only be operated by professionally trained operators who, in addition to the operation of the system itself, must also be familiar with the regulations on occupational safety and fire protection.

7.1. Preparation before use

- Check the condition of the device and correct any possible irregularities;
- Check the condition of the STOP keys and deactivate them in case of activation, after previously repairing the causes and consequences of the error;
- Check that loading and unloading moulds and Coupling on the device is possible and safe.
- Check the condition of the hydraulic system.
- Check the water supply and the condition of the high-pressure water system.

7.2. Start-up procedure

- Turn on the main switch on the main electrical cabinet;
- Turn the key switch selector »ENABLE POWER« to the right;
- Check the status of alarms and warnings, eliminate them and reset them (with the previous remediation of the causes of the alarm);
- Establish conditions for safe work with the device;
- Press the "SAFETY RESET" button on the HMI;

- Press the "POWER ON" illuminated push button to switch on the safety circuits.

7.3. Working with the device

After the start-up procedure, the device is ready for operation. Manipulation of moulds and Couplings is performed with a bridge crane or hoist (hereinafter referred to as a lifting device).

Basic working principle:

1. On the operator panel, select and enter the type of Coupling to be tested;
2. If the diameter of the Coupling is less than 1000 mm, switch off the movement of the hydraulic jaws of the outer arms with the "ENABLE OUTER ARMS" switch;
3. Push all arms of the device manually into the outer position;
4. If necessary, open the jaws by pressing the "HYD. ARMS OPEN"* button;
5. Using a lifting device, place the mould on the centring pin;
6. Push the arms of the device into position so that the mould can be lowered onto them;
7. Adjust and attach the mould support on the arms;
8. Put the mould on the arms of the device;
9. Install the high-pressure hoses on both quick-release couplings on the mould;
10. Using a lifting device, place the Coupling on the mould in the position of pushing the Coupling onto the mould with the hydraulic jaws on the hands of the device;
11. Make sure there are no people around the device;
12. Switch on the hydraulic pump by pressing the "HYDRAULIC PUMP ON" button;
13. Move the hydraulic jaws downwards by pressing the "HYD. ARMS CLOSE"* button;
14. Make sure the Coupling fits tight on the mould;

15. Check the entered Coupling testing data and, if necessary, change it accordingly;
16. Fill the Coupling with water by pressing the "WATER FILLING" button. (When the water comes out, release the button);
17. Activate the testing process by pressing the "PRESSURE TEST START" button;
18. After the testing time has elapsed, check the test result and finally confirm it by pressing the "CONFIRM TEST" button on the HMI;
19. Drain the water from the Coupling by pressing the "WATER EMPTYING" button;
20. Using hydraulic jaws, remove the Coupling from the mould. This is done by pressing the "HYD. ARMS OPEN"* button;
21. Remove the Coupling with a lifting device;
22. If you continue to test the same type of Coupling, repeat the procedure only from step 10 onwards, and in case of changing the type of Coupling, repeat the entire procedure.

Note:

the "HYD. ARMS ENABLE" button must also be pressed at the same time to move the hydraulic jaws.

7.4. Shutdown procedure

At the end of the work, the Coupling testing machinery shall be switched off in the following order:

- Make sure the device is empty or in the home state;
- Make sure the drives are at a standstill;
- Switch off the control voltage by pressing the "POWER OFF" button;
- Turn the key switch selector »ENABLE POWER« to the left;
- Turn off the main switch on the main electrical cabinet;

- Lock the main switch in the off position.

For more information contact us at

support@topfibra.eu

or

visit our page

www.topfibra.eu

To learn more about EFW technology visit our blog

www.effectivefilamentwinding.com

www.facebook.com/effectivefilamentwinding

www.linkedin.com/company/topfibra-d-o-o-

www.twitter.com/topfibraefw