



SpeedyLight / SpeedyLight+

User Manual

© SEWERTRONICS S.L.
Doc: SLUM_Eng_01 Rev 01, 2018-09-30
September 2018



Table of contents (1/2)

1. Introduction.....	01
1.1 Directives and Standards	
1.2 About This User mManual	
1.3 Revision History No.	
1.4 Language Version	
1.5 Specified Use	
1.6 Identification Type Plates	
1.7 Warnings and Symbols	
2. Equipment Description	04
2.1 Possible Uses and Overview	
3. Warnings, Safety Measures & care	05
3.1 Before First Use	
3.2 Organizational Measures	
3.3 Safety of Persons	
3.4 Equipment Care	
3.5 Technical Support	
4. SpeedyLight® Overview	10
4.1 Note for Hardware Elements Other than SpeedyLight®	
4.2 Working Protocol: an Overview	
4.3 SpeedyLight® at a Glance	
4.4 Control Unit	
4.5 Main Display Screen	
4.6 Y-shaped Unit	
5. Operating SpeedyLight®	15
5.1 Connecting External Air Compressor Unit	
5.2 Connecting Inversion Drum to Y-shaped Unit	
5.3 Connecting Pipe Adaptor to Y-shaped Unit	
5.4 Inverting Liner Inside the Pipe	
5.5 Switching On SpeedyLight®	
5.6 Choosing Working LED Head	
5.7 Inserting Pulling Motor Unit and LED Head into Y-shaped Unit	
5.8 Entering Working Parameters into Control Unit	
5.9 Introducing LED Head into the Pipe – Preliminary Inspection of Liner	
5.10 Controlling Compressed Air Level	
5.11 Turning On LED Head – Curing Starts	
5.12 Unexpected Danger: the Emergency STOP Button	
5.13 Switching Off LED Head	
5.14 Removing Pulling Motor Unit from Y-shaped Unit	
5.15 Storing LED Head in Pulling Motor Unit	
5.16 Removing Water from Water Trap	

Table of contents (2/2)

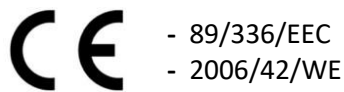
6. Installation of LED Head	27
7. Using Centering Skids.....	28
8. Using Pulling Hook	30
9. Transportation of SpeedyLight®	31
10. Device Return at End of Service Life	31
11. Spare Parts	32
12. Curing Speed Tables	33
13. EC Declaration of Conformity and Warranty Declaration.....	34
13.1 Declaration of Conformity	
13.2 Scope of the Warranty	
13.3 Warranty Conditions	

1. Introduction

This introductory chapter includes an overview of basic instructions for the use of the **SpeedyLight**® LED pipe rehabilitation system. In this section you will also find information about the structure of this manual as well as the symbols used in this document.

1.1 Directives and Standards

The **SpeedyLight**® rehabilitation system has been produced according to the following directives and standards:



1.2 About This User Manual

On the following pages you will read how the LED pipe rehabilitation system **SpeedyLight**® is operated and maintained professionally in your working environment. This user manual is considered to be a part of the **SpeedyLight**® system and must be supplied together with the unit.

SEWERTRONICS™ highlights the importance of using **SpeedyLight**® in a safe and professional manner in order to obtain maximum efficiency from the use of the system. We recommend completing a comprehensive reading and obtaining a thorough understanding of this manual before starting to use the **SpeedyLight**® system.

This manual contains important information about operational, cleaning and maintenance procedures for the safe and effective use of the **SpeedyLight**® which will help you to avoid the risk of misuse and increase the reliability and working life of the system and its associated peripheral devices. This manual should therefore be available and easily accessible to all personnel directly or indirectly involved in its use.

Read the section on Warnings & Care in this manual for your own safety. Please observe all the indications provided in order to avoid risks to users of the system as well as to personnel participating directly or indirectly in the rehabilitation job.

Should you have any questions on the handling of **SpeedyLight**® after reading this manual carefully, please contact our technical staff.

Serious personal injury and damage to property may occur in the event of failing to observe all the indications given in this manual. This manual also refers to special care and safety measures to be observed even when the system is not in use.

SEWERTRONICS™ is not liable for injuries to people or animals or for damage to objects or to the machine itself arising from improper unauthorized use of the system or from ignoring the safety instructions contained in this manual or from any modification of the machine or the use of spare parts other than original spare parts supplied by **SEWERTRONICS**™ or its certified distributors.

Merely reading and understanding the contents of this manual is not sufficient to use the system appropriately. A complementary training course will be provided by **SEWERTRONICS™** or its authorized distributor. This training course will include a thorough review of the contents of this manual as well as first on-site use of the system. This manual will subsequently serve as a valid and practical support for new users in the future.

1.3 Revision History No.

UM_SP_END_1808.

This manual will be updated in the event that modifications are made that affect the safety of the equipment. Users are required to replace old versions of this manual with new versions issued by **SEWERTRONICS™** and duly forwarded to all owners and/or users of the **SpeedyLight®** system. Old versions of this manual will be considered obsolete and should therefore be discarded by users.

1.4 Language Version

English

1.5 Specified Use

SpeedyLight® is intended for the rehabilitation of virtually any sewer pipe within the specified pipe diameter range. Use for any other purposes, excessive use or misuse of the system will be considered to be not in conformity with the system specifications. **SpeedyLight®** should never be used for purposes other than pipe rehabilitation. **SpeedyLight®** is suitable for rehabilitation in horizontal and vertical pipelines.

The system should not be used in pipelines subject to explosion hazard. The system should not be in operation during thunderstorms due to potential electrical shocks. When surrounded by high-voltage electrical fields, restrictions in operating quality may occur, thus affecting adequate performance of the system's electronic components (please consult **SEWERTRONICS™** or its authorized distributors).

SEWERTRONICS™ will not be liable for injuries to people or animals, or damage to property or to the system itself arising from improper/unauthorized use or due to ignoring the safety indications contained in these installation instructions or as a result of any modification of the machine or the use of unsuitable spare parts.

SEWERTRONICS™ will not be liable for the consequences of damage or breakdown of **SpeedyLight®** in the following cases:

- If components, spare parts, tools, additional hardware elements other than those recommended or approved by **SEWERTRONICS™** are used.
- If the system is modified or repaired by any person other than a qualified, certified **SEWERTRONICS™** dealer or technical service centre.
- If the safety indications given in this manual are not observed during the preparation, operation and/or maintenance of the system.



1.6 Identification Type Plates

You can find type plates and indications of the respective serial number on the individual system components: one on the side of the cable reel, one on each of the curing heads and one on the control unit. You will be required to provide this information when seeking assistance from **SEWERTRONICS™** customer service and when ordering new accessories or spare parts. You can write down the serial number (S/N) for each component in the table on the inside of the first cover page (system set-up), so that they are always at hand and easy to consult.

Serial number (S/N)


You will be required to provide this information when seeking assistance from **SEWERTRONICS™ Customer Service**


➔


 SEWERTRONICS™ applied robotic engineering		
SEWERTRONICS™ Avda. de Monteclaro s/n. 28223 Pozuelo de Alarcón. Madrid. Spain.		
MODEL	UV LED 400/800	
SERIAL NUMBER	002	
DATE OF PRODUCTION	11. 12. 2017	
Phone: +34 91 459 41 11 https://www.sewertronics.com sales@sewertronics.com MADE IN EU		


1.7 Warnings and Symbols


The following symbols are used in this user manual:


- 

DANGER! This danger warning describes hazardous situations in which death or serious injury can occur.
- 

WARNING! This safety warning describes hazardous situations in which failure to observe certain steps might lead to danger.
- 

ATTENTION! This caution notice indicates hazardous situations in which damage to the rehabilitation system or to other property may occur.
- 

NOTE! This symbol identifies instructions that are important for economical use of the system and that facilitate its use.
- 

This symbol indicates proper and prescribed disposal of the system and its components. The owner of the system is responsible for proper disposal. See the note in this manual concerning return of the device at the end of its service life.
- 

This symbol indicates instructions that explain how to properly clean and maintain the system to prevent defects and major repairs. The service life of your system can be significantly extended through proper care.

2. Equipment Description

2.1 Possible Uses

The **SpeedyLight**® LED pipe rehabilitation system is suitable for pipeline rehabilitation by means of a set of electronic (control software, safety controls, light control, etc.) and mechanical (coiler, control unit, feeding hose, LED heads, etc.) components acting together for this purpose.

SpeedyLight® is not an inspection system, and therefore users should use adequate inspection means to inspect pipes to be rehabilitated, before and after using the system. Inspection and cleaning indications before and/or after using **SpeedyLight**® do not fall within the scope of this manual and users should ask for assistance from experts on this matter.

Thanks to a comprehensive range of accessories and auxiliary equipment, the **SpeedyLight**® pipe rehabilitation system can be used in pipelines with nominal widths of DN100 up to DN300 mm (please consult your authorized dealer for liner types to be used with this equipment). The use of **SpeedyLight**® for diameters below or above this diameter range should not be attempted without prior consultation with **SEWERTRONICS**™ or its authorized dealer. Training on the use of the equipment will include an assessment of diameter ranges, liners to be used and other operational issues.

The entire system is made of high-quality materials and therefore offers great robustness in use in the rough conditions of pipeline rehabilitation. You have purchased high-quality pipeline renovation equipment with your choice of a **SEWERTRONICS**™ system providing excellent functions and state-of-the-art technology.

The equipment requires a number of peripheral components that will be indicated to you by **SEWERTRONICS**™ or the authorized dealer. Users should not attempt to use peripheral components with technical specifications other than those indicated by **SEWERTRONICS**™ or the authorized dealer. As described further in this manual, the performance of the equipment could be seriously affected if the user does not observe these indications strictly.

3. Warnings, Safety Measures & Care

Please read the safety measures closely and observe them. They are for your own safety, the safety of co-workers as well as the prevention of damage to the **SpeedyLight**® rehabilitation system and its peripheral components.



NOTE!

The automatic functions available for the system do not release the operator from his duty of care. Any damage caused by negligence is therefore the sole liability of the operator.

3.1 Before First Use

Please take note of the following sources of risk of serious or fatal injuries:



DANGER!

Risk of fatal injuries from electric current!

- Ensure that no fluids penetrate the control unit housing. Should this occur, immediately disconnect the power supply, secure the connector box against reconnection and inform the appropriately trained specialist staff at **SEWERTRONICS**™ customer service.
- Ensure that all connection cables are intact and that they cannot be bent or crushed. If you find any damage, immediately disconnect the power supply, secure the connector box against reconnection and inform the appropriately trained specialist staff or **SEWERTRONICS**™ customer service.
- Any handling of electronics beyond the scope of this manual must be carried out by trained specialist staff. More extensive maintenance and repair work may only be carried out by **SEWERTRONICS**™ customer service or by an authorized distributor or appointed local technical service.



DANGER

Risk of serious injuries due to falling parts!

- When bringing the system into operation make sure that improper locking of all mechanical Storz and Camlock connections (Y connection to inversion drum, motor box connection to Y connection, etc.) is prevented. Improper securing of connections may result in parts falling to the ground or into the manhole, potentially causing injuries to personnel in the vicinity of the system or inside the manhole.



CAUTION!

Hazard of infection and contamination of fresh water!



- **SpeedyLight®** is intended for rehabilitation of sewer pipes. Do not use the system for rehabilitation of fresh (clean) water pipes under any circumstances. All chemical products used for pipeline rehabilitation are supplied by **SEWERTRONICS™** either directly or through its authorized dealers. The user must not attempt to use resins or other chemicals not approved by **SEWERTRONICS™**.
- All individuals employed in the use of this type of chemical products must be advised of the potential hazards involved and must be instructed on the specific safety measures involved with such chemical products and must observe the company's health and safety protocols. This instruction will be implemented by the user itself or by **SEWERTRONICS™** or an authorized dealer



CAUTION!

Explosion hazard!



- Do not use the rehabilitation system in pipelines which might contain explosive substances (gas, solvents, others). Contact **SEWERTRONICS™** for further assistance on this matter.



CAUTION!

Suffocation hazard!

- Before and during access to sewer line manholes, a clearance measurement with a certified gas detector must be performed. In case of doubt ask **SEWERTRONICS™** for an adequate gas detector.

3.2 Organizational Measures

The **SpeedyLight®** LED rehabilitation system has been built to comply with generally accepted safety rules. Nonetheless, risks for the user can arise in the event of misuse or improper use of the system.

The personnel assigned to tasks involving the rehabilitation system must have read and understood this user manual completely before the start of the rehabilitation work. This applies in particular to personnel who work with the system frequently and to personnel involved in the maintenance, repair or retrofit of the system.

The **SpeedyLight®** system operator is required to ensure a safe and hazard-free operating environment. The following measures are recommended (this is a descriptive, non-exhaustive list of measures; please consult your company's health and safety protocols):

- Keep this user manual available on the job site at all times
- Observe continuous training by experienced users of the system
- Conduct regular maintenance and care checks
- Implement continuous safety and hazard-conscious work reviews

3.3 Safety of Persons

Staff operating, maintaining and upgrading the system must be experienced users or be instructed by competent individuals on these matters.

Competent individuals have adequate know-how of **SpeedyLight**[®] system on the basis of their technical training and experience. They must be familiar with the relevant health and safety regulations and accident prevention protocols to an extent that they are capable of adequately advising on the proper use of the system.

Due to the interaction of chemical products during the rehabilitation process, emissions can occur which represent a residual risk for users. Therefore the use of personal protection equipment is required. The user should consult the internal personnel safety department about the prevention measures required for this type of potential hazard.

In the course of resin curing using **SpeedyLight**[®], vapours and gases may be produced that represent a residual risk for users. This depends on the characteristics of the sewer pipe and/or pipe coating as well as the type of resin used. Therefore the use of personal protection equipment is required. The user should consult the internal personnel safety department about the prevention measures required for this type of potential hazard.

The use of peripheral hardware elements (air compressor, power generator, others) not included in the scope of delivery of the **SpeedyLight**[®] system may cause discomfort or damage to hearing. The user should therefore consult the internal personnel safety department about the prevention measures required for this type of potential hazard.

The **SpeedyLight**[®] LED curing head produces UV light when turned on. Do not look directly at the UV light. UV light can cause eye and skin injuries. Special eye protection (UV safety glasses) must be used. The user should consult the internal personnel safety department about the prevention measures required for this type of potential hazard.



CAUTION!



Wear suitable gloves



Wear hearing protection



Wear protective clothing



Wear safety shoes



Wear UV-resistant eye protection with side cover



IMPORTANT!

Observe the relevant health and safety regulations and accident prevention rules. Seek instructions for handling of hazardous substances and ensure they conform to the safety information described in this user manual. Operators of **SpeedyLight®** are responsible for the following aspects:

- Using the system exclusively for the specified use described in this manual.
- Observing the pre-requisites for the use of this rehabilitation equipment as described in this operating manual
- Keeping the system clean and perfectly maintained. The cleaning and maintenance instructions for this purpose should be followed.

3.4 Equipment Care

For the longest possible useful life of the **SpeedyLight®** system, the devices and individual assembly groups should be properly maintained and kept clean through independent servicing. Moving parts can extend their useful life through continuous and professional maintenance after use.

The following is an overview of care and maintenance. Please notice that professional care ensures not only additional reliability of the system but also simplification and speed of jobs.

- Proceed with thorough cleaning of the system after every rehabilitation job.
- Wash down the parts of the system that have come into contact with moisture, and then dry them with a clean, dry cloth.
- Always keep all assembly groups dry and free from dirt.
- Keep all connectors and contacts free of grease and dirt and dry at all times.
- Keep the hose clean using a cloth after every rehabilitation job.
- Regularly grease all exposed O-rings in the system with O-ring lubricant.
- Only use suitable special display cleaners for cleaning of displays.
- Only use completely clean and dust-free cleaning towels and commercially available TFT-cleaners for the cleaning of displays.
- Use water for cleaning without adding any cleaning agents or solvents.
- For detailed instructions and descriptions for care and maintenance of individual parts, please read the comments in the descriptions for each module. The specific work steps are also explained.



NOTE!

The operator of the system is responsible for proper disposal. See information in this manual about the return of devices at the end of their useful life.



DANGER!

Risk of fatal injuries from electric current



Ensure that no fluids can get on the control panel or penetrate the cable reel housing. If this occurs, immediately disconnect the power supply, secure the connector box against reconnection and inform adequately trained specialist staff or **SEWERTRONICS™** customer service!



DANGER!

Hazard of fatal injuries caused by electric current



For all cleaning and maintenance work, disconnect the system from power supply.



CAUTION!

Do not under any circumstances use a high-pressure cleaner for cleaning. It can cause considerable damage to the motors, LED head and embedded camera and other components. Do not use any cleaning agents or solvents for cleaning, as this may damage the seals or housing. It is best to always use clean water only.

3.5 Technical Support

You will always receive detailed support from your **SEWERTRONICS™** dealer / authorized technical service partner for all questions. Please do not hesitate to contact them, even for minor matters.

4. SpeedyLight® Overview

Before presenting operational details of **SpeedyLight®**, we provide below an overview of the unit that will help you to become familiar with the hardware and software components.

4.1 Note for Hardware Elements Other than SpeedyLight®

Please note that **SpeedyLight®** by itself is not enough to complete adequate pipeline rehabilitation. The use of **SpeedyLight®** is preceded by a number of previous steps (i.e. processes) that are not included in the scope of the **SpeedyLight®** operational features. Impregnation tables, inversion drums, air compressors, power generators and other hardware peripheral elements are a relevant part of rehabilitation work. The use of adequate, quality hardware peripheral components will play a key role in the final result of the pipe rehabilitation.

Owners and users of **SpeedyLight®** must observe the indications from **SEWERTRONICS™** or authorized dealer to ensure that all hardware peripheral elements comply with technical requirements for compatibility with **SpeedyLight®**. Using unsuitable peripheral hardware elements with **SpeedyLight®** may result in inadequate performance of the system or even cause damage to the system that will result in malfunction and even fatal damage.

4.2 Working Protocol: an Overview

SpeedyLight® is only intended to be used for UV LED rehabilitation of sewer lines. The UV LED curing process is preceded by impregnation and inversion of a (felt) liner into the host pipe using pressurized air.

Although **SpeedyLight®** includes a camera, the equipment is not intended to be used as an inspection system. Any inspection other than as described here should be performed by a specific inspection system.

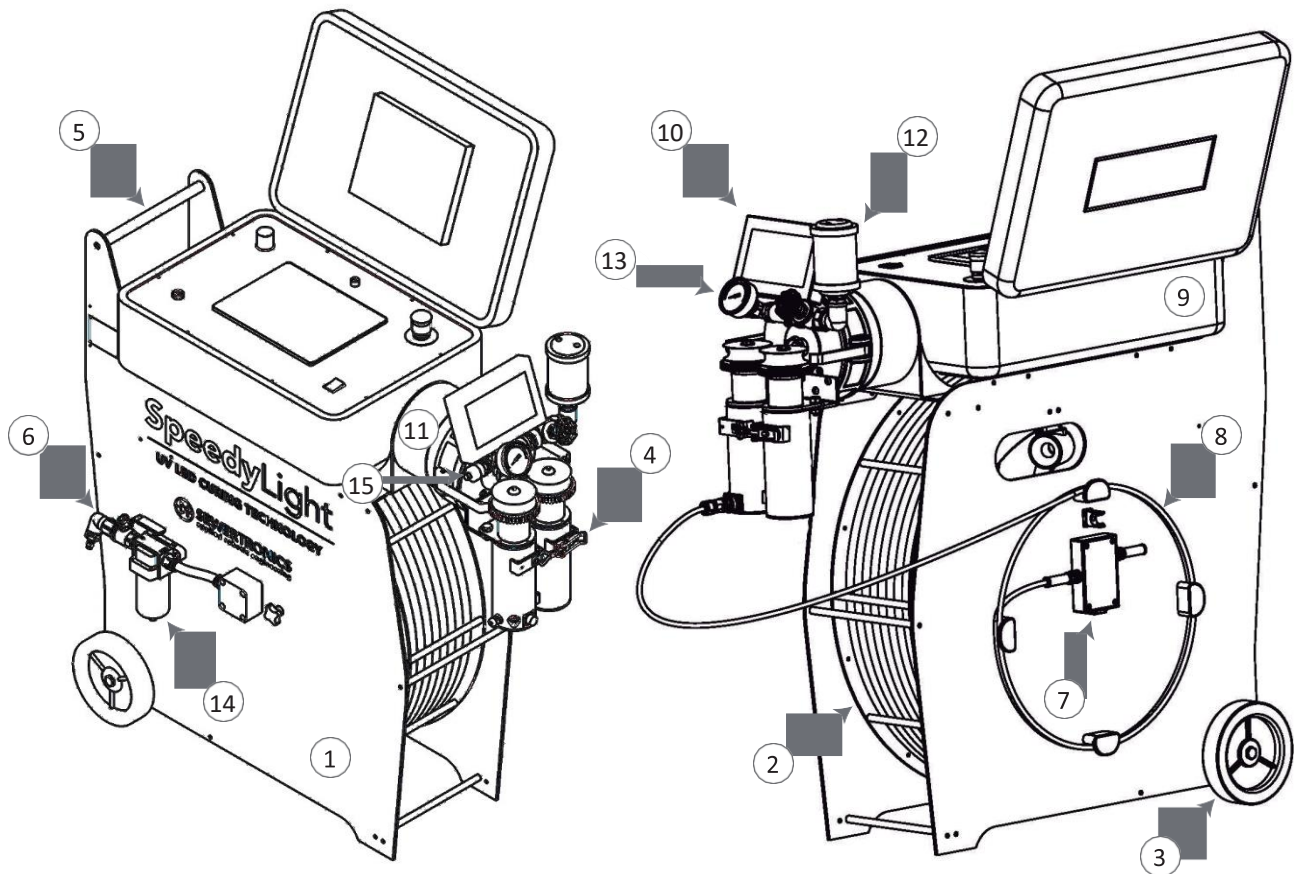
Always make sure that there are no problems with the host pipe before and after inverting liner. The LED head has to be pushed in and pulled out of the pipe without difficulty, for which it is critical to conduct a proper inspection of the pipe and a check of the inverted liner. The speed of the LED head pulling process will be determined by the diameter and thickness of the liner to be cured.

The system can be transported and operated by a minimum of 2 operators. One operator will stand at the control unit entering the working parameters and controlling security alerts and one operator will assist with pulling back the hose to help introduce the coiler correctly as the LED head is pulled back inside the pipe.

**CAUTION!**

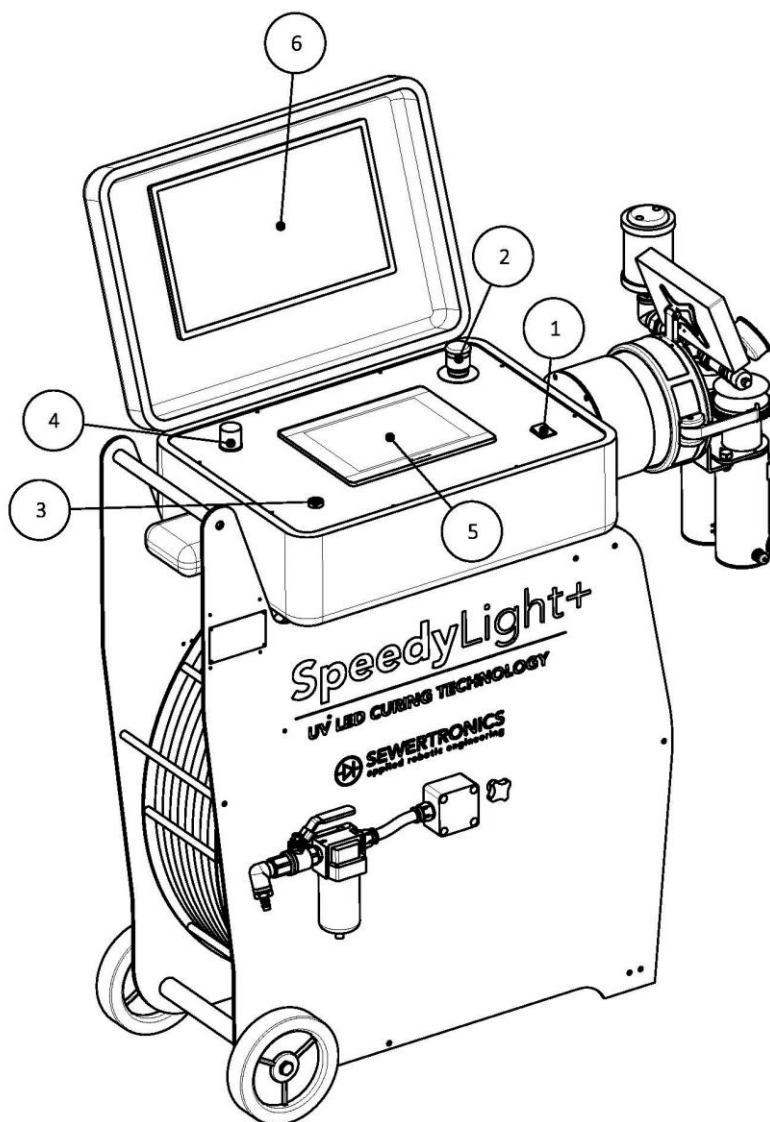
SpeedyLight® is a heavy object. At least two operators are needed to load and unload the system onto a vehicle and to set it up at the specified location for initiating the curing process. Users must observe all heavy weight handling instructions given by their internal safety department.

4.3 SpeedyLight® at a Glance



- | | | | |
|----|----------------------------|-----|--------------------------|
| 1. | Coiler | 9. | Control unit |
| 2. | Push rod hose | 10. | Auxiliary display screen |
| 3. | Transport wheels | 11. | LED head storage |
| 4. | Pulling motors | 12. | Silencer |
| 5. | Transport handle | 13. | Air pressure gauge |
| 6. | Air valve | 14. | Water filter |
| 7. | Power socket | 15. | Pressure gauge sensor |
| 8. | Pulling motors power cable | | |

4.4 Control Unit



- | | |
|--------------------|---------------------------------|
| 1. On / off button | 4. Internet connection port |
| 2. Emergency stop | 5. Working control display |
| 3. USB port | 6. TFT monitor (camera display) |

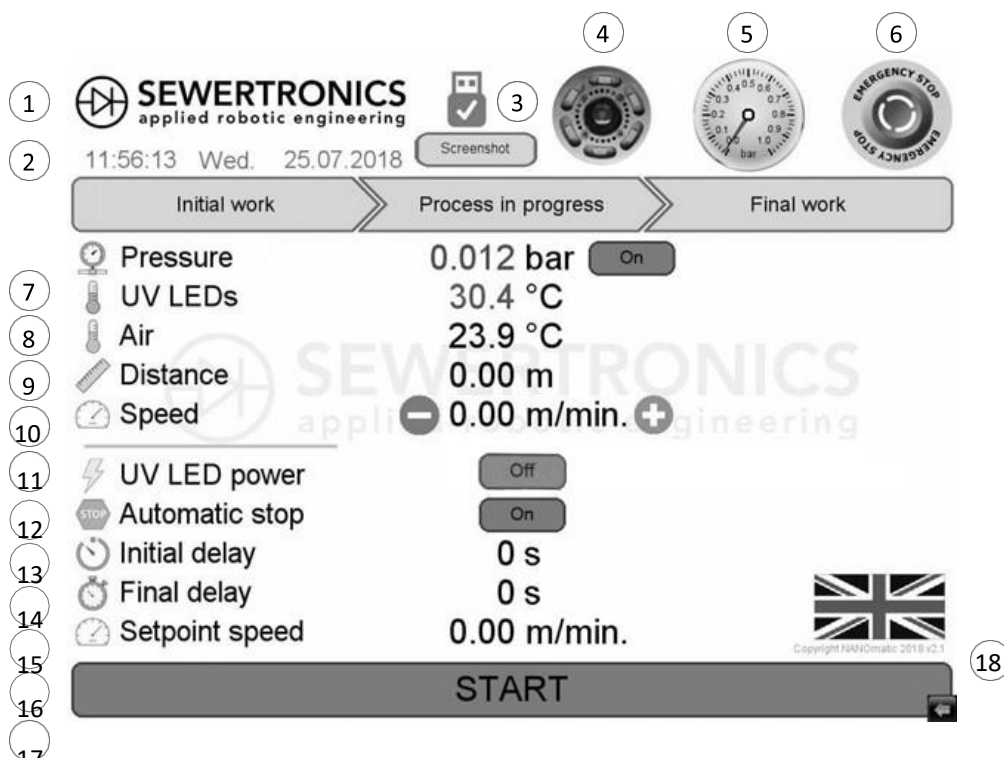


NOTE!

The **Emergency Stop** device is used to stop the equipment immediately in a hazardous situation. All machine movements and functions will stop instantly. Push this button when a serious danger exists or is anticipated. See further information below in this manual.

4.5 Main Display Screen

SpeedyLight® incorporates a full display of all working parameters that have a direct or indirect role in the adequate functioning of the system, thus guaranteeing a correct curing result.



- | | |
|---|--|
| 1. Client logo - customizable | 10. Cured distance indicator |
| 2. Time and date | 11. Pulling motors speed |
| 3. Screen shot | 12. LED power indicator |
| 4. LED head switch - on/off | 13. Automatic stop on/off |
| 5. Air pressure indicator | 14. Initial delay indicator |
| 6. Emergency stop activation - deactivation | 15. Final delay indicator |
| 7. Inside liner air pressure indicator | 16. Set point speed (predefined speed of pulling motors) |
| 8. LED diodes temperature | 17. Start button |
| 9. Incoming air temperature | 18. Language settings |

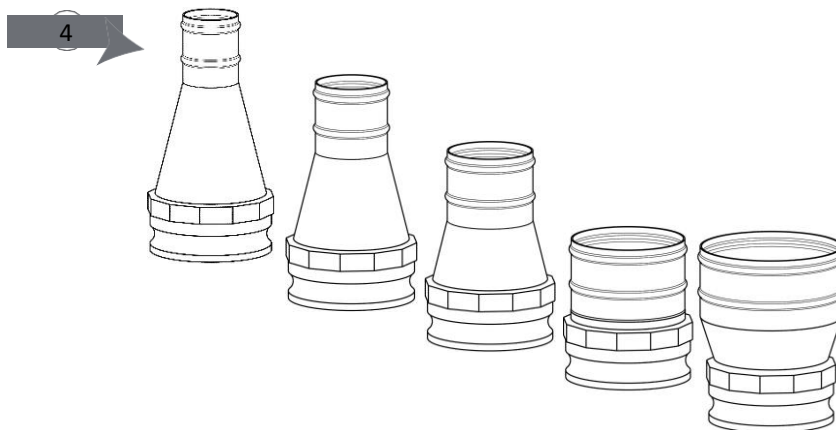
4.6 Y-shaped Unit

SpeedyLight® has been designed to integrate with different conventional rehabilitation hardware elements. Since an inverted liner needs to be in place inside the pipeline before the curing process starts, a special Y-shaped unit has been designed to connect the system easily to a conventional inversion drum with a diameter of 6" (8" on request)

The Y-shaped unit incorporates 3 open ends and a set of adaptors:



- ① Camlock 6" male connection to connect Y with inversion drum
- ② Camlock 6" male connection for pulling motors and introducing the LED head
- ③ Camlock 6" female connection for removal of the inverted liner and for connecting adaptors
- ④ Set of different connectors for different pipe diameters



5. Operating SpeedyLight®

In this section the user will find all the necessary information to operate **SpeedyLight®**. The user will also find a sequence of all steps that need to be taken to obtain optimum LED curing results.

5.1 Connecting External Air Compressor Unit

SpeedyLight® has an air connector for compressed air. The main hose from the external air compressor unit must be split into two different hoses. One of them is connected to the inversion drum and the other one is connected to the air connector on the **SpeedyLight®**.

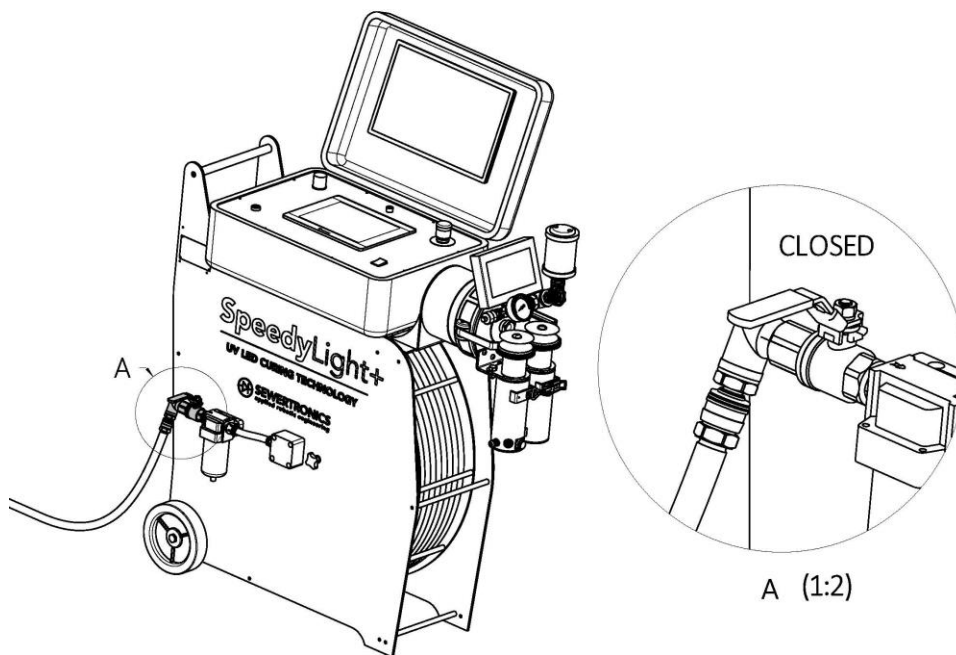
The hose connected to the **SpeedyLight®** air connector will ensure that, once the air flow is open, the LED head is adequately cooled and the liner's inner pressure is maintained during the curing process.



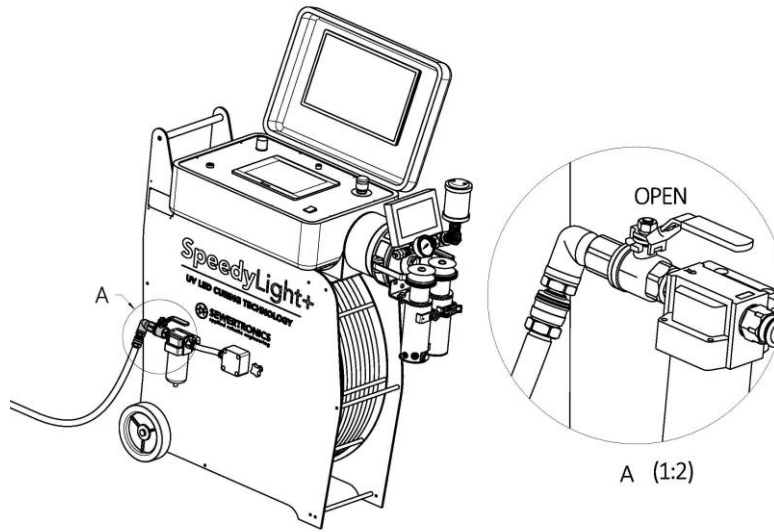
IMPORTANT!

Before operating the unit, check that the air valve is in the 'Closed' position (see below for Open and Closed positions):

Air valve in 'Closed' position



Air valve in 'Open' position



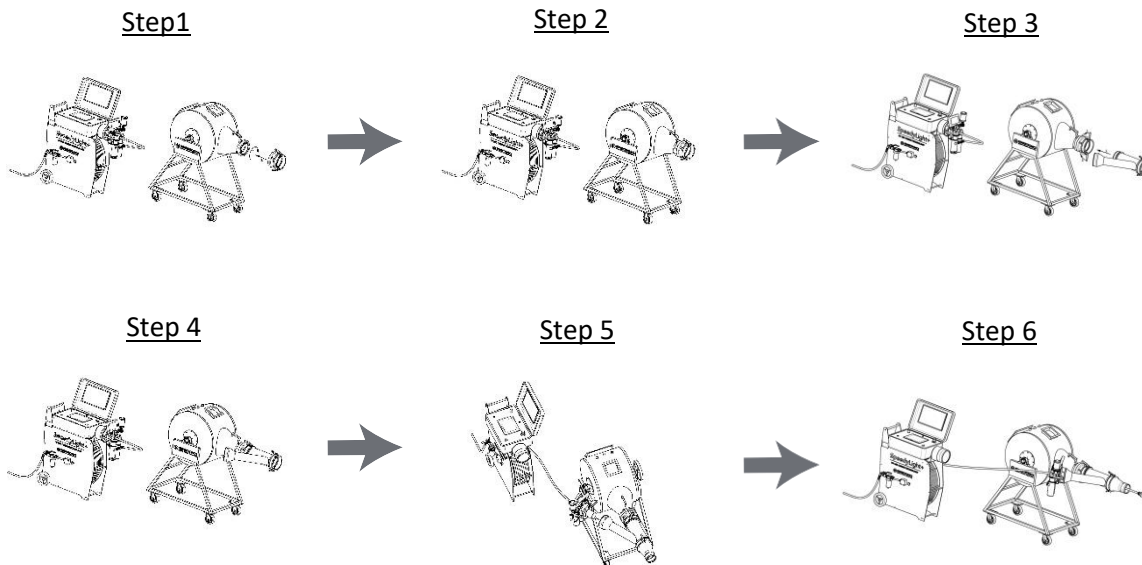
NOTE!

The air valve on the **SpeedyLight®** must remain closed until further indications are given in this manual.

5.2 Connecting Inversion Drum with Y-shaped Unit

Once the liner has been impregnated and introduced inside the inversion drum, the Y-shaped unit has to be connected to the Storz connection on the inversion drum. This is done simply by inserting the Y-shaped unit Camlock connection into the inversion drum's Storz connection, then applying a 15° twist to secure the connection.

Connecting Y-shaped unit to inversion drum and pulling motor unit to Y-shape unit





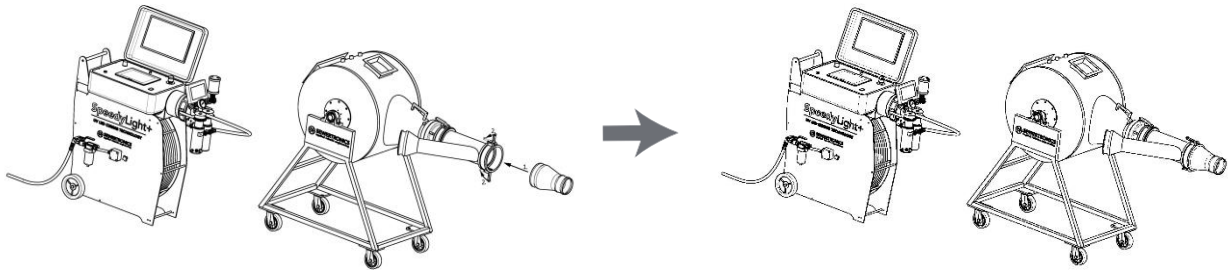
CAUTION!

The Y-shape unit has to be handled carefully when connecting to the inversion drum. Risk of falling heavy object.

5.3 Connecting Pipe Adaptor to Y-shaped Unit

Depending on the diameter of the pipe to be rehabilitated, a different type of adaptor needs to be connected to the Y-shape unit. **SpeedyLight®** comes with different adaptors for pipe diameters 100 mm – 250 mm (300 mm on request)

Once the correct adaptor has been chosen, a simple connection to the Y-shaped unit is required: insert the adaptor into the Y-shaped unit and close the two lateral clamps to secure the connection.



CAUTION!

The Y-shape unit and adaptors need to be handled carefully when connecting to the inversion drum. Risk of falling heavy object.

5.4 Inverting Liner inside the Pipe

Once the inversion drum with impregnated liner is connected to the Y-shaped unit and the correct pipe adaptor has been connected, the liner inversion process can take place. Normal operation of the inversion drum is applicable (the scope of this manual does not include proper, professional use of peripheral hardware elements such as an impregnation table or an inversion drum).

The air compressor unit used for cooling the **SpeedyLight®** LED head inside the pipe is also used for inverting the liner inside the pipeline. The inversion process begins and the **SpeedyLight®** is, at this point, not yet connected to a power source (whether mains line or a power generator). The blue pulling hose remains inside the coiler and the pulling motor unit together with the LED head are still in a 'non-operational' position connected to the **SpeedyLight®** LED head storage.

Once the inversion process has finished, it is time to turn on the **SpeedyLight®** system and proceed to enter the operational parameters into the display unit.

5.5 Switching On SpeedyLight®



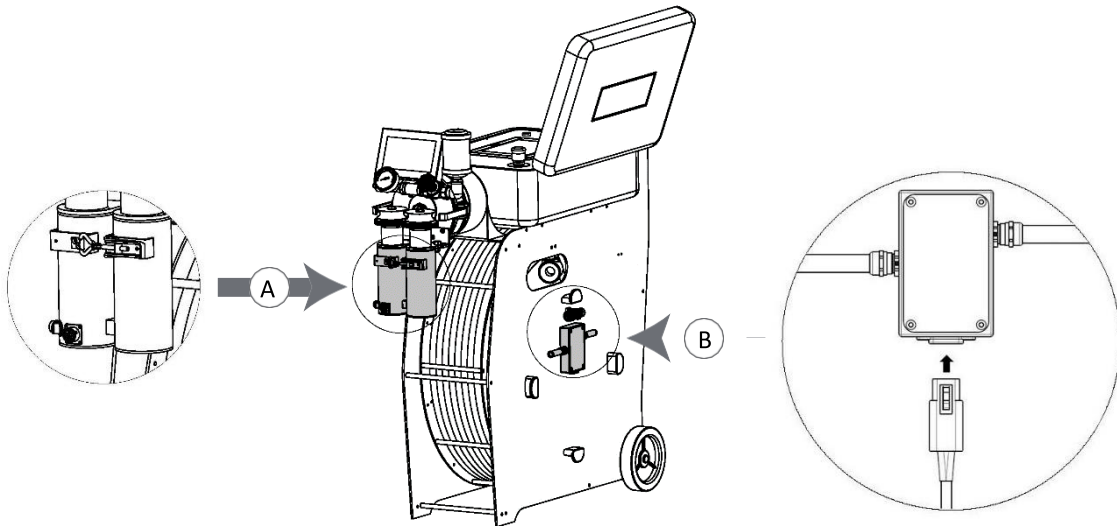
DANGER!

Risk of fatal injuries from electric current

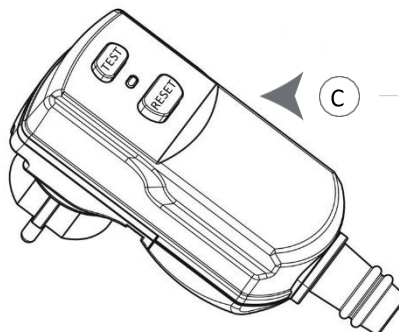


Ensure that no fluids can get onto the control panel or penetrate electronic parts. If this happens, immediately disconnect the power supply, secure the connector box against reconnection and inform adequately trained specialist staff or the **SEWERTRONICS™** customer service!

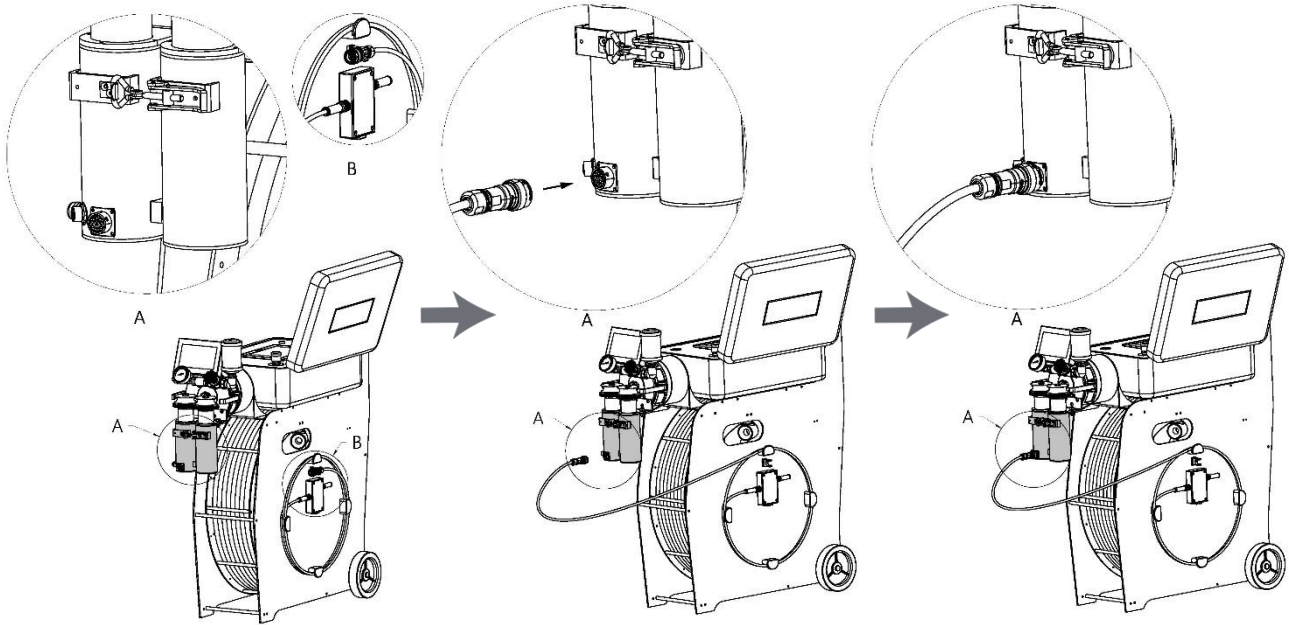
- 1.- Before connecting to the power mainline or power generator, connect the black power plug into the **SpeedyLight®** socket (**B**) located on one of the sides of the coiler.



- 2.- Connect the orange plug supplied with **SpeedyLight®** to mainline power or the power generator inlet, then press the reset button (**C**) until the red light comes on.



- 3.- To connect the pulling motor unit to power, insert the yellow power cable connector (B) to the socket at the bottom of the left rotor on the pulling motor unit (A)



5.6 Choosing Working LED Head

<i>Choosing working LED head</i>		
Curing head type	From	Up to
Small head	DN100	DN250
Large head	DN100	DN300

SpeedyLight® automatically detects which LED head is being used.

For instructions on how to mount and dismount LED heads onto **SpeedyLight®** please refer to Mounting and Dismounting LED Heads below in this manual.

Now press the on/off button on the control unit and wait for the control unit display to show the control parameters.

5.7 Inserting Pulling Motor Unit and LED Head into Y-shaped Unit

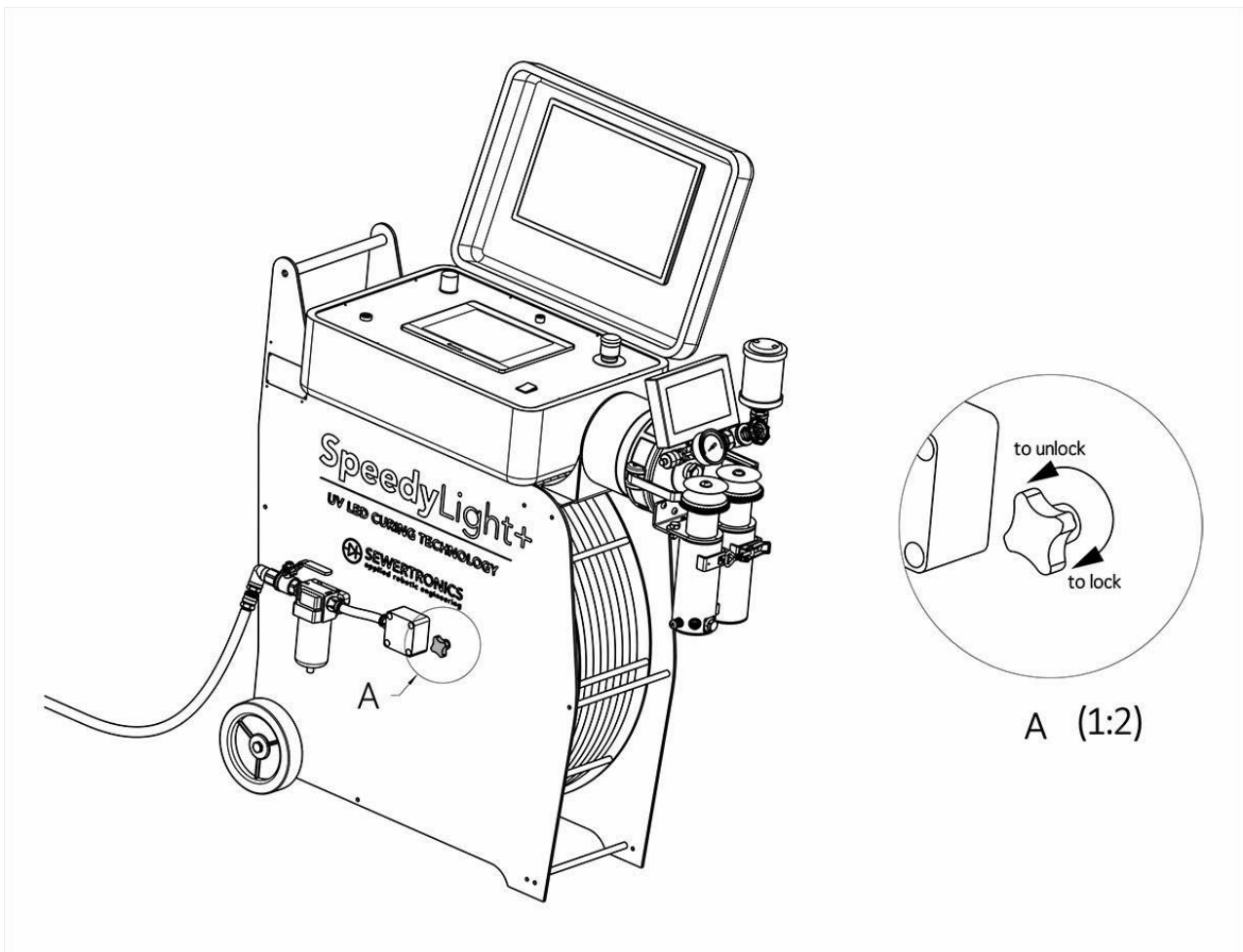
The liner is now inverted inside the pipeline, protected from UV radiation and with enough pressurized air inside the pipe to ensure it stays suitably placed inside. The LED head has already been selected and connected to the blue hose and the system power is on. Now insert the LED head into the Y-shaped unit.



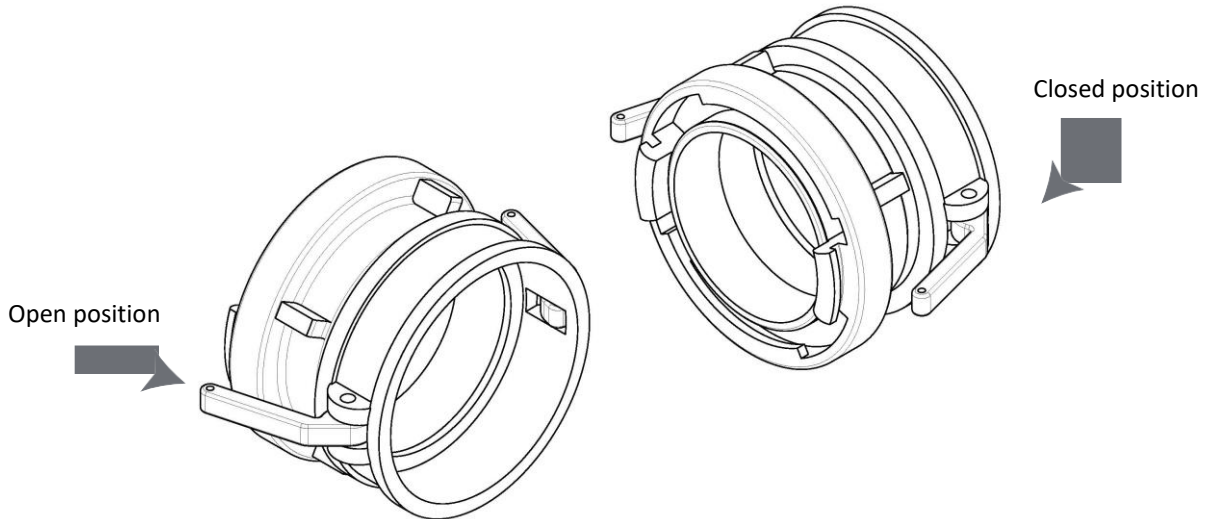
CAUTION!

The pulling motors unit is a heavy device. Risk of falling heavy object!

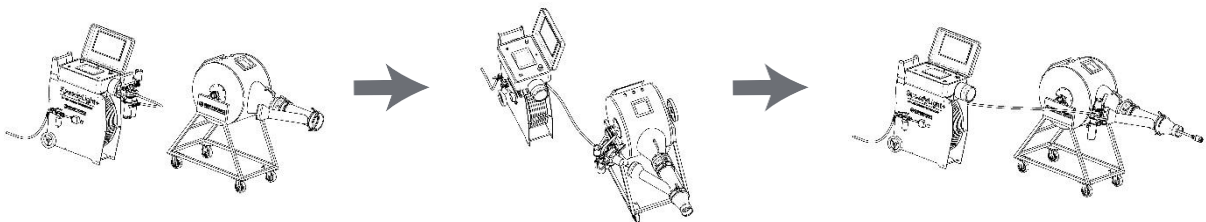
- a) Unleash the safety lock of the blue hose in the coiler as shown below.



- b) Release the security clamps from the pulling motor unit attached to the coiler so the pulling motor unit can be extracted from its transport position.



- c) Now the blue hose is loose after being released from the coiler and the pulling motor unit has been extracted from its transport position. Next, carefully place the pulling motor unit into the Camlock connection of the Y-shaped unit while manually helping the hose to unwind out of the coiler. The Camlock connection of both the pulling motor unit and the Y-shape connection will be securely connected by inserting it into the Y-shaped unit and applying a 15° twist to secure it. Then move the security clamps to the locked position to prevent the pulling motor unit from falling.



5.8 Entering Working Parameters into Control Unit

Everything is now ready to enter the working parameters into the control display.

Proceed as follows (*)

- Check that the correct date and time are shown on the control display.
- Enter Setpoint Speed using the speed tables provided by **SEWERTRONICS™**.
- Place Automatic Stop to on/off as required.
- Check that the adequate power of the inserted LED head is correctly displayed.
- Enter initial delay if required.
- Enter final delay if required.

(*) SEWERTRONICS™ or its authorized dealer will train users on the meaning and purpose of each of the parameters that need to be entered in the control display before operating the unit.

5.9 Introducing LED Head into the Pipe – Preliminary Inspection of Liner

Now proceed to pull the LED head through the Y-shaped unit and inside the pipe. To do so, carefully keep manually unwinding the blue rod hose and push it inside the Y-shaped unit, minimizing impacts of the LED head against the walls of the Y-shaped unit on its way inside the inverted liner. The LED head is robustly built and is capable of resisting accidental impacts, but nonetheless careful handling is strongly recommended.

The camera embedded in the LED head is now sending images to the TFT monitor in the control unit case. The operator can see if any deformation of the liner has occurred during the inversion process and also any other abnormal situation that might recommend removing the liner or applying some type of adjustments to the air pressure. In short, this is a good opportunity for the operator to determine that the liner inversion process has been completed suitably.

The auxiliary monitor mounted on the pulling motor unit is designed to provide a close view of the curing process when the coiler is at a certain distance from the manhole or from the location of the Y-shaped unit. The images received on the auxiliary screen and the main screen on the control unit are exactly the same.

5.10 Controlling compressed air level

SpeedyLight® has two pressure gauges to check the pressure of air flowing inside the liner. One gauge is digital and is shown on the touch screen of the control unit. The other one is analogue and is located on the pulling motor unit. Both gauges should show the same air pressure. If any differences are detected, please contact **SEWERTRONICS™** or its authorized technical centre.

The air flowing into the system can be regulated by activating the air valve handle on the unit coiler. Pressure inside the liner must always be above 0.2 bar. If the pressure falls below this value, the user should open the air valve on the coiler to increase the incoming airflow into the blue hose.

5.11 Turning On LED Head – Curing Starts

Once the embedded camera shows that the LED head has reached the opposite side of the liner, everything is ready to start the curing process. In order to do so, proceed as follows.

- Check Pressure indicator on the control unit display to ensure it is at least 0.2 bar
- Check Air Temperature (air temperature should not exceed 35°)
- Press the Start button on the control display
- Press the 'YES' confirmation touch button

The curing process has now started. At this point the LED head is emitting UV radiation (light becomes blue as seen on the TFT monitor) and the pulling motors are mechanically pulling the LED head back towards the starting point at the speed entered by the user.

The resin is being radiated by LED light and, consequently, the curing process has started. The polymerization of the resin will create an exothermal reaction that, in turn, will increase the temperature inside the pipe.

The LED head temperature indicator on the control display starts to rise as the LED diodes are on. The temperature of the LED head will vary depending on variations in the temperature of the compressed air, the temperature from the external compressed air unit and the exothermal reaction taking place inside the liner.

The Distance value on the control display shows the distance that the LED head has completed on its way back to the starting point.

The control display also shows the temperature of the air ('Air' field) blown by the external air compressor unit. The user will typically observe a LED head temperature value of around 20°-30° above the temperature of the compressed air flowing from the external compressor unit into the liner through the air connector in the curing unit.



IMPORTANT!

The safety software inside the control unit permanently observes the temperature of the LED head. Should this temperature reach 68° the system will automatically lower the power of the LED head and subsequently modify the retreat hose speed (thus the speed of the LED head), ensuring that curing continues at a suitable pace once the LED power has been decreased. Lowering the LED head power prevents the LED diodes from burning out. The user can observe the 'UV LED Power' field value decreasing as a result of the activation of this safety mechanism. The user can also see that the curing speed has also decreased in order to maintain the curing process, now using a lower power in the LED head.

**CAUTION!**

1. All steel / metal components close to a lit LED source reach high temperatures. Users should observe all security and safety precautions to avoid serious burning.
2. UV light can provoke serious damage to vision if looked at it without adequate UV filtering glasses. Users should observe all security and safety precautions to avoid serious damage.
3. The control unit display alerts of any system malfunction. Do not leave the control unit unattended at any time during the curing process.

5.12 Unexpected Danger: the Emergency STOP Button

The Emergency Stop button stops **SpeedyLight®** immediately when there is a hazardous situation. All machine movements and functions stop instantly, thus preventing the consequences of the hazardous situation from developing further.

When there is a risk of serious danger to people or to the machine, push the Emergency Stop button as quickly as possible. Learn the position of the Emergency Stop device and how to use it.

To re-start the system after an emergency stop, gently slide the Emergency Stop button to the right side. The button will go back to its original position and the system will restart. All parameters entered prior to the emergency stop are saved in the control unit and the control display will show them just as they were before the system was stopped.

5.13 Switching Off LED Head

Once the LED head has completed its trajectory along the entire pipe distance, it will reach the adaptor installed at the end of the Y-shaped unit. The LED head switches off in two different modes:

a) Automatic Stop On (*)

If the user has set the 'Automatic Stop' field in the control display to the 'On' value, the LED head will automatically switch off once it hits the metal body of the pipe adaptor. This will conclude the curing process and the LED head is now ready to be pulled back from inside the Y-shaped unit.

**CAUTION!**

(it is recommended to observe a cooling down time of the LED head until the temperature indicator shows a value below 30°)

b) Automatic Stop Off (*)

If the user has set the 'Automatic Stop' field in the control display to the 'Off' value, the LED head must be switched off manually by the user by simply pressing the 'Start' button on the control display. This will conclude the curing process and the LED head is now ready to be pulled back from inside the Y-shaped unit.



CAUTION!

(it is recommended to observe a cooling down time of the LED head until the temperature indicator shows a value below 30°)

(*) SEWERTRONICS™ or its authorized dealer will train users on the meaning and purpose of each of the parameters that has to be entered in the control display before operating the unit

5.14 Removing Pulling Motor Unit from Y-shaped Unit

Once the LED head has been switched off (either automatically or manually) it is time to carefully start pulling back the blue rod (and therefore the LED head) out of the Y-shaped unit. Users should observe safety measures in order to avoid touching the LED head during the following steps due to the high temperature of the head after the curing process (observe the cooling down indications above).

Pulling the blue rod will bring the LED head to the insertion point of the pulling motor unit and the Y-shaped connection. The user should now unlock the clamps on the pulling motor unit and carefully pull back with both hands to remove the Camlock connection.

The Power button of the control box can now be pressed to switch the system off.



IMPORTANT!

- Make sure there is no pressure in the liner or in the inversion drum.
- Wait until core temperature is 30° before closing the air valve in the curing unit.
- When removing the Camlock connection, and in order to avoid an accidental fall of the LED head, the pulling motor unit should be pulled back at an angle that prevents the blue hose from slipping downwards and subsequently causing damage to the LED head located at the end of the rod.
- When removing it from the Camlock connection, the user should also prevent the LED head from hitting the Y-shaped unit.
- Inspect the LED head, especially the LED protection shield, for burn contamination and grime, then wipe off the LED protection shield and the rest of the head with a dry cloth.



CAUTION!

1.- All steel / metal components close to a lit LED source reach high temperatures. Users must observe all security and safety precautions to avoid serious burning.

**CAUTION!**

2.- UV light can cause serious damage to vision if looked at without adequate UV filtering glasses. Users must observe all security and safety precautions to avoid serious damage.

5.15 Storing the LED Head in Pulling Motor Unit

To return the pulling motor unit to the **SpeedyLight®** coiler, (with clamps still open) proceed to fit the unit into the pulling motor unit housing at the front end of the coiler. Once the pulling motor unit has been inserted in the housing, close clamps to ensure safe locking.

**IMPORTANT!**

Make sure the pulling motor unit is safely inserted and the clamps are fully closed before removing your hands from the pulling motor unit. Inadequate insertion or incomplete closing of clamps might lead to the pulling motor unit falling and damaging sensitive parts of the unit (motors, pressure gauge, auxiliary display, LED head).

Before inserting the pulling motor unit into the housing, make sure the blue hose is fully stored inside the coiler. This will ease the insertion of the pulling motor unit into the housing.

5.16 Removing Water from Water Trap

After using **SpeedyLight®** please check and drain the water trap placed in the air filter. To drain the water, press the nut placed at the end of the vessel. If necessary, dismantle the vessel by turning the trap case left and pulling down the glass vessel for cleaning.

6. Installation of LED Head

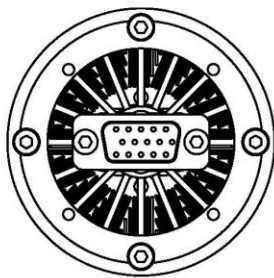
As described above, **SpeedyLight®** comes with 1 or 2 LED heads (depending on the model). Each size (with a different power) allows the user to cure resin in a given range of diameters (see diameters table in this manual).

As a general principle, once the rehabilitation process is complete, removing the LED head is recommended if no more jobs are to be performed for a certain time (and, especially, if the unit has to be moved and transported). Removing the LED head and storing it in its special case prevents the head from suffering damage in the event of accidental blows or falls of the system.

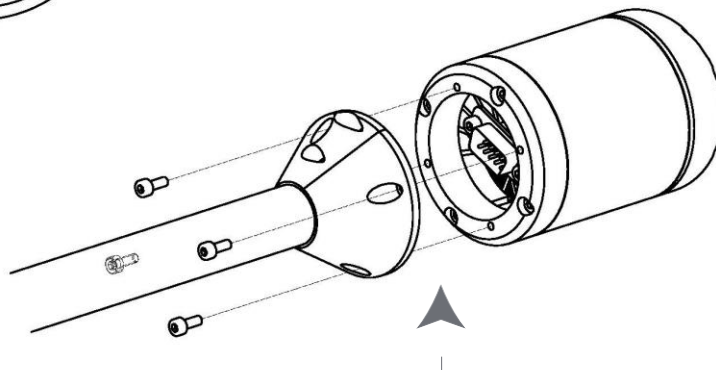
Installing and removing the LED heads is a simple process that involves the following steps:

Installing the LED head

- a) Make sure the control unit is switched off.
- b) Remove all 4 screws from the blue hose adaptor and keep them in a safe place.
- c) Hold the blue hose firmly and insert the LED head as shown in the diagram.
- d) Insert the LED head into the blue hose connector.
- e) Adjust all four screws to secure the connection between the blue hose and the LED head.



Please note that the connector is not symmetrical! Pay attention to correct alignment of the connector!



To install or remove the curing head you must screw or unscrew 4 bolts.



CAUTION!

Risk of falling!! During the connection and screwing process, hold the LED head firmly in the blue hose connector to avoid falling which might cause severe damage to the protective glass of the head.

Removing the LED head

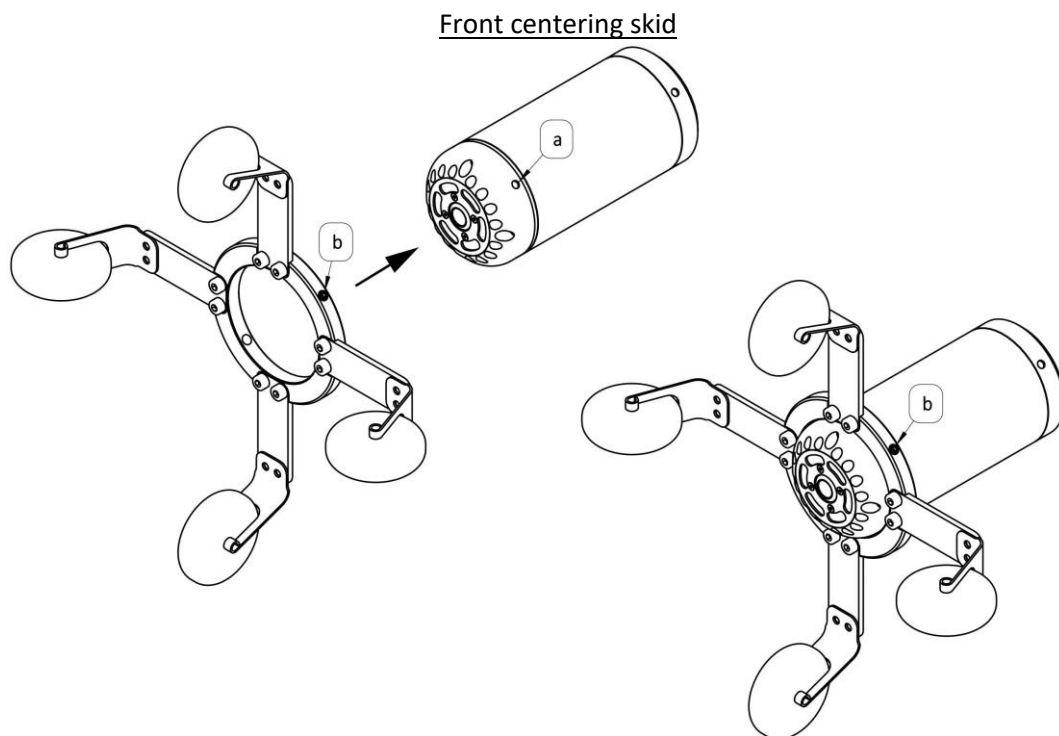
- a) Make sure the computer is switched off.
- b) Pull a couple of metres of the blue hose out of the coiler and hold the LED head firmly.
- c) Unscrew all 4 screws from the blue hose adaptor and keep them in a safe place.
- d) Remove the LED head from the blue hose connector.
- e) Screw all 4 screws back into the blue hose connector.
- f) Keep the LED head in its protective case.
- g) Push the blue hose back into the coiler and store it in the LED head storage compartment

7. Using Centering Skids

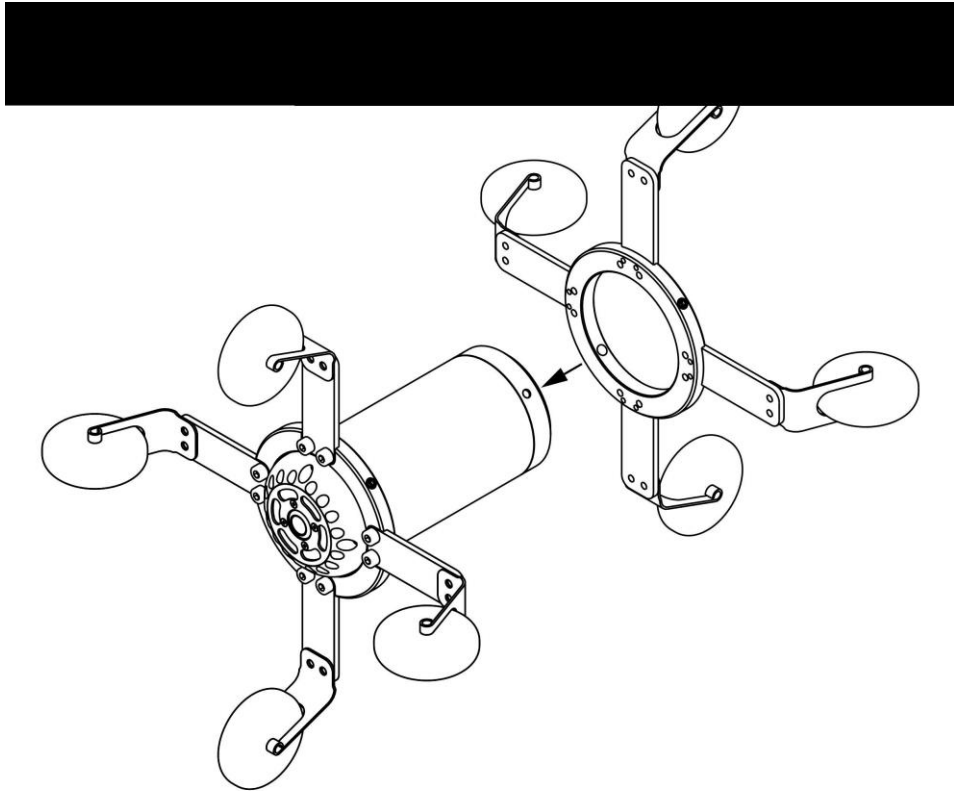
SpeedyLight® can be used for the rehabilitation of pipes up to or above 300 mm (depending on model). If your unit is prepared for jobs with diameters of 300 mm and above you will need to attach centering skids to the LED heads to guarantee a uniform radiation field along the entire circumference of the pipe, thus providing uniform curing to the resin load around the liner.

Centering skids are designed only for the large LED head (800 W or 1200 W depending on the model).

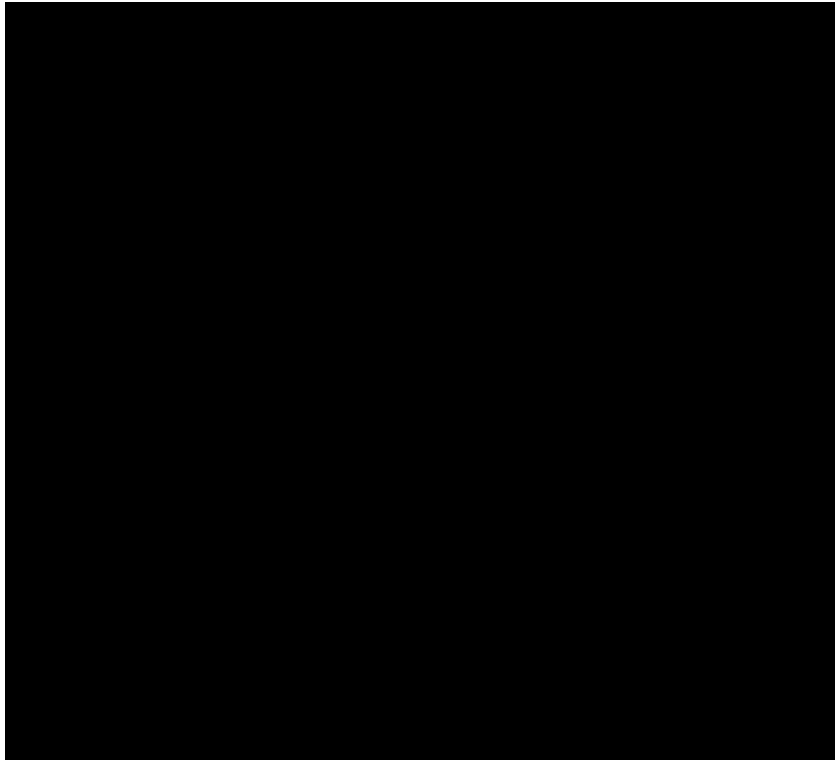
To install either a front or rear centering skid, align both the LED head and the outer centering skid insertion ring. Attach the LED head and centring skid and proceed to adjust all 4 screws (a-b) firmly.



Rear centering skid



Rear centering skid



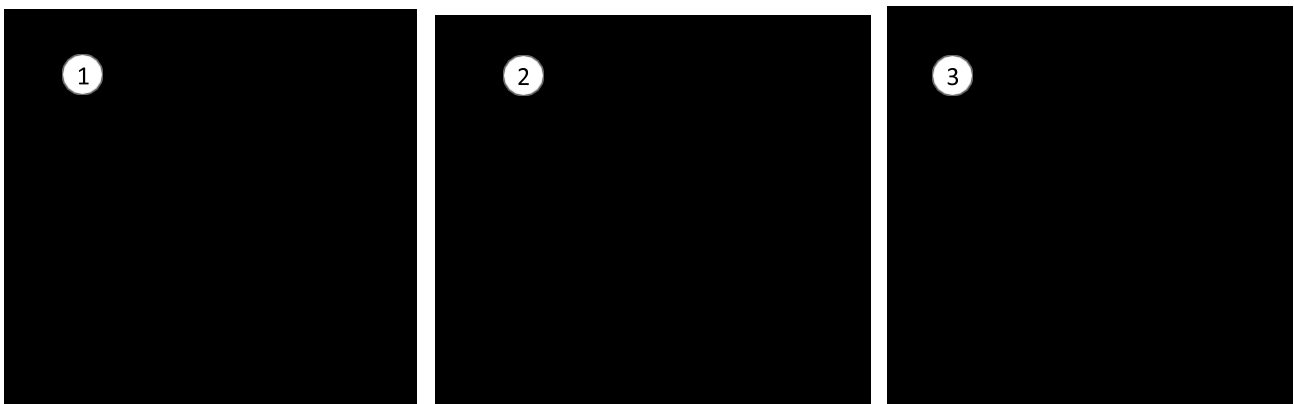
8. Using Pulling Hook

In certain circumstances (long distance rehabilitation, deep manholes, etc.), pushing the blue hose push rod (thus the LED head) presents certain difficulties because of the long distance or extreme bends which create difficulties when manoeuvring the rod.

To ensure that the LED head can travel to the opposite end of the pipe, **SpeedyLight®** incorporates a pulling hook specially designed for this purpose.

The pulling hook is comprised of 3 elements:

- 1) Hose clamp
- 2) Hook clamps
- 3) Carabiner



9. Transportation of SpeedyLight®

In transporting the **SpeedyLight®** to and from job sites, careful steps must be taken to avoid damage to the system and to surrounding persons and machines. Before moving the system, please observe the following instructions:

- Verify that the LED light-head is safely stored in its storage compartment.
- Make sure that the control unit case is securely closed.
- Lock the blue push rod on the coiler of the system to avoid involuntary unwinding of the hose.
- Check that the power cable is disconnected from the mains power line or power generator, and that the yellow cable is adequately wound.
- Check that the pulling motor unit has both levers in the 'closed' position.

For transportation, tilt the system onto its two wheels using the transportation handles and foot step. Transportation must always be carried out by 2 people to prevent situations where the leading transportation person loses control of the system.



CAUTION!

SpeedyLight® is a heavy object. To avoid muscle strain or back injury, use proper lifting techniques when transporting the unit.

10. Device Return at End of Service Life

The device delivered to you by **SEWERTRONICS™** is subject to the regulations specified in the European Directive 2002/96/EC and the appropriate instruments implementing it in the law of the EC member states. This means that you have the possibility of returning the device at the end of its service life for proper disposal and recycling.

The following regulations are stipulated in the event of disposal at the end of the device's service life.

- Do not allow the device to be disposed of in unsorted commercial waste.
- According to **WEEE** legislation the device is a "device for purely commercial use", and should not be taken to municipal collection points, as is the case for consumer devices (e.g. washing machines, video recorders, or standard PCs).
- For disposal, contact **SEWERTRONICS™** directly (or your local sales partner), to ask about the applicable return mode.



The **WEEE** symbol representing a crossed-out waste container indicates that the device is a **WEEE**-relevant device that must be disposed of in accordance with **WEEE** regulations. This symbol is not strictly required for devices designed for purely commercial use in EC countries, such as Germany, however it is used by **SEWERTRONICS™** uniformly throughout Europe. The symbol means that it is not possible to dispose of the device at municipal collection points!

11. System Parts Numbers

Here a list of component parts numbers of the system.

<i>System Parts Numbers</i>	
010-9300-00	SpeedyLight+ UV LED system curing portable control unit.
010-7000-00	UV LED short curing head for SpeedyLight+ system, with integrated CCD camera module and illumination. Working diameters DN100 – DN200 (*). Interchangeable design.
010-7000-01	UV LED long curing head for SpeedyLight+ system, with integrated CCD camera module and illumination. Working diameters DN100 – DN300. Interchangeable design.
010-9200-10	SpeedyLight cable reel with 50 m elastic hose
010-9200-11	SpeedyLight cable reel with 70 m elastic hose
010-9200-92	Motorized electric pulling unit
010-6000-18	Cover to camlock with manometer and valve (forms part of the cable reel)
010-6000-10	Y connector Storz 6" or Camlock 6" type
010-6000-11	Transition (adaptor) piece from 6" Storz to 6" Camlock (female)
010-6300-01	Set of reducing connectors (5 sizes). Camlock 6"
010-6100-05	Set of centering devices for SpeedyLight+ UV LED curing head OD70.
010-6300-00	Flying case for SpeedyLight+ System (euro palet size).
010-6400-00	LEDRIg UV chain for fibre-glass (GFP) curing

12. Curing Speed Tables

These speed guideline is the result of several curing testing by **SEWERTRONICS™** utilizing a specific dry polyester needled felt liner with thicknesses of 3,5 & 4,5 mm. Optimal curing speeds may vary depending on type of liner used, thickness, coating material and its surface density. For specific speeds in your particular case please contact **SEWERTRONICS™** for advice on speeds mentioning what liner you will use with your **SpeedyLight+®** unit. Reduction of 50% on those speeds may be applied to reach correct liner curing in worst case scenario.

All speeds were obtained in combination with **SEWERTRONICS™**' styrene free resin VE-1806.

<i>Curing speed tables</i>							
Liner type	Diameter (mm)	Thickness (mm)	Resin (kg/m)	PulsLight		SpinLight	
				600 W (m/min)	1200 W (m/min)	400 W (m/min)	800 W (m/min)
Felt	100	3,5	1,1	1,00	1,30	0,55	1,10
Felt	125	3,5	1,4	1,00	1,30	0,55	1,10
Felt	150	3,5	1,7	0,80	1,20	0,50	0,88
Felt	200	3,5	2,3	0,45	0,60	0,22	0,50
Felt	250	3,5	2,8	0,30	0,40	X	0,33
Felt	300	3,5	3,4	0,20	0,30	X	0,22
Felt	100	4,5	1,5	0,90	1,30	0,50	0,99
Felt	125	4,5	1,8	0,90	1,30	0,50	0,99
Felt	150	4,5	2,2	0,75	1,10	0,44	0,82
Felt	200	4,5	2,9	0,40	0,50	0,22	0,44
Felt	250	4,5	3,6	0,30	0,40	X	0,33
Felt	300	4,5	4,4	0,15	0,20	X	0,16

13. EC Declaration of Conformity and Warranty Declaration

13.1 Declaration of Conformity

13.2 Scope of the Warranty

For the product from **SEWERTRONICS, S.L.** that you have purchased and that has been manufactured and tested in accordance with our production and quality guidelines, we grant you a warranty of twelve months.

We will correct defects that occur verifiably due to material and/or manufacturing faults at no charge. In this regard we reserve the right, at our sole discretion, to repair the device, or to replace it completely, replace its defective parts, or refund the residual value to the customer, if repair or replacement is not possible.



13.3 Warranty Conditions

Any opening of the inspection system or the control electronics without the agreement of the manufacturer is prohibited. Failure to comply with this instruction will invalidate any claim under warranty.

The term of the warranty start on the day of delivery.

Damage due to improper use of the system, inadequate maintenance, normal wear, and force majeure (lightning, fire, freezing) is excluded from the warranty.

Moreover the warranty does not cover parts that are subject to wear, such as side LED glass, front camera window, lights, cables, etc., as well as damage that does not impair the serviceability of the system.

 SEWERTRONICS™ applied robotic engineering		
SEWERTRONICS™ Avda. de Monteclaro s/n. 28223 Pozuelo de Alarcón. Madrid. Spain.		
MODEL	UV LED 400/800	
SERIAL NUMBER	002	
DATE OF PRODUCTION	11. 12. 2017	
Phone: +34 91 459 41 11 https://www.sewertronics.com sales@sewertronics.com MADE IN EU		