VETRON

4000 » INSTRUCTION MANUAL

05/2022

VETRON

4000 » INSTRUCTION BOOK

05/2022

STANDARD:

» 4010
» 4020
» 4030

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ⓘ The documents for the machines can be accessed by logging on **https://www.vetrontypical.com/** downloaded for free.

CE marked after §7 Prod SG

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GENERAL SAFETY INSTRUCTIONS

This manual and the warning symbols on the machine should ensure the safe use of the machine, so that no accidents and injuries may occur to you and others. Please read this instruction and also the safety instructions of the motor manufacturer carefully.

- The machine must only be operated in accordance with its intended purpose (for example, sewing medium to heavy materials such as jeans, leather, etc. NO tin!) and with the associated protective equipment. The relevant country-specific safety regulations and technical data must also be observed.
- The machine should only be used in accordance with its intended purpose (eg sewing medium to heavy materials such as jeans, leather, etc.) and with the associated protective equipment. The relevant country-specific safety regulations and the technical data must also be observed.
- The machine should only be set up and operated in dry and well-kept rooms.
- Do not place the machines outdoors, next to radiators or heat source. The ambient temperature should not be lower or higher than between 0° C to 45° C.
- The machine must only be commissioned after the relevant operating instructions have been taken into consideration and by appropriately instructed operators.
- These instructions are to be stored at hand.
- The connection cable must be provided with a country-specific approved mains plug. The mains plug must only be connected to grounded sockets. Here a qualified specialist is necessary.
- The machine must always have a grounding. Only over this is a normal operation of the machine to ensure.
- The danger and safety instructions attached to the machine must be followed.
- When replacing sewing tools such as needle, sewing foot, stitch plate, feed dog or bobbin, when threading, when leaving the workplace and during maintenance, etc., the machine must be disconnected from the mains.
  → Press the main switch or pull out the mains plug.
- Machines with compressed air components must be disconnected from the compressed air supply and the residual pressure released before repair or maintenance work. Exceptions to this are performance tests or specific settings.
- Repairs and all maintenance work should only be carried out by qualified personnel or appropriately instructed persons.
- Work on electrical equipment must only be carried out by qualified specialists.
  → If errors are detected, stop the machine immediately.
- Work on parts and equipment that are live is not permitted. The machine must be disconnected from the mains.
- Modifications or modifications to the machine must be carried out in compliance with all relevant safety regulations. The manufacturer assumes no responsibility for damage caused by changes or modifications.
- For repairs, only spare parts approved by VETRON may be used. In case of infringement the guarantee expires.
- The machines are to be used only for the purpose intended.
- If oils, greases, etc., used for the machines and accessories, get in your eyes or on your skin, or should you swallow any of these fluids, wash them immediately and thoroughly, or seek medical attention immediately.
- Commissioning of the machine is prohibited until it has been determined that the entire sewing unit complies with the provisions of the EC directive and the declaration of conformity has been created.

ADVICE TO THE OWNER

» As part of the machine, this operating manual must be available to operating personnel at all times. Before using the machine for the first time, the operator must read this operating manual.
» The operator has to ensure that the machine is only operated in perfect condition.
» The operator must ensure that no safety devices are removed or disabled.
» The operator must ensure that only authorized or properly instructed persons work on the machine.
» The operator must therefore ensure that the workstations according to ASR lux. 4 are adequately illuminated (min. 750 lux).

OPERATORS AND TECHNICAL STAFF

» The operating personnel are responsible for setting up, operating and cleaning the machine and responsible for the elimination of faults.
» Qualified personnel include people with specialist training in electrical / electronics, pneumatics and mechanics.
→ Lubrication, maintenance, repair and adjustment are your responsibilities.
» The operator must refrain from any operation that impaires the safety on the machine.
1. Jewelry, chains and rings - must not be worn.
2. The clothes should be tight
3. Only authorized persons may enter the danger area.
» If changes occur to the machine that affect safety, they must be reported immediately to the operator.
» The specialist personnel - persons with training in electrical / electronics and mechanics - are responsible for the lubrication, maintenance, repair and adjustment of the machine.
» Before starting adjustment and repair work, the main switch must be switched off and secured against reclosing.
» Work on parts that are under tension should be avoided. Exceptions are regulated by EN 50110. After maintenance and repair work, the protective covers must be replaced.
» Operating and specialist personnel are obliged to observe the safety instructions given in the instructions for use during all work.

DANGER!
This symbol in combination with the word **DANGER**, indicates an imminent danger that may result in serious injury or death.

WARNING!
This symbol in combination with the word **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death

ATTENTION!
This symbol in combination with the word **ATTENTION** may indicate a potentially hazardous situation that could result in minor personal injury.

DANGER OF CUTS!
This symbol indicates that there is an increased risk of cuts here.

CRUSHING!
This symbol indicates that there is a heightened risk of crushing

RISK OF BURNS!
This symbol indicates that there is an increased risk of burning here.

MAGNET!
This symbol indicates that there is a magnet field.

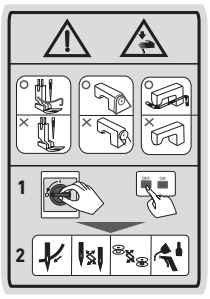
INFORMATION!
This symbol displays information.

ADVICE!
This symbol indicates important information.

HARMFUL TO HEALTH!
May damage certain organs. Can lead to immediate and long-term massive impairment of health, cause cancer, damage genetic material, fertility or development. May be fatal if infiltrated into the respiratory tract.

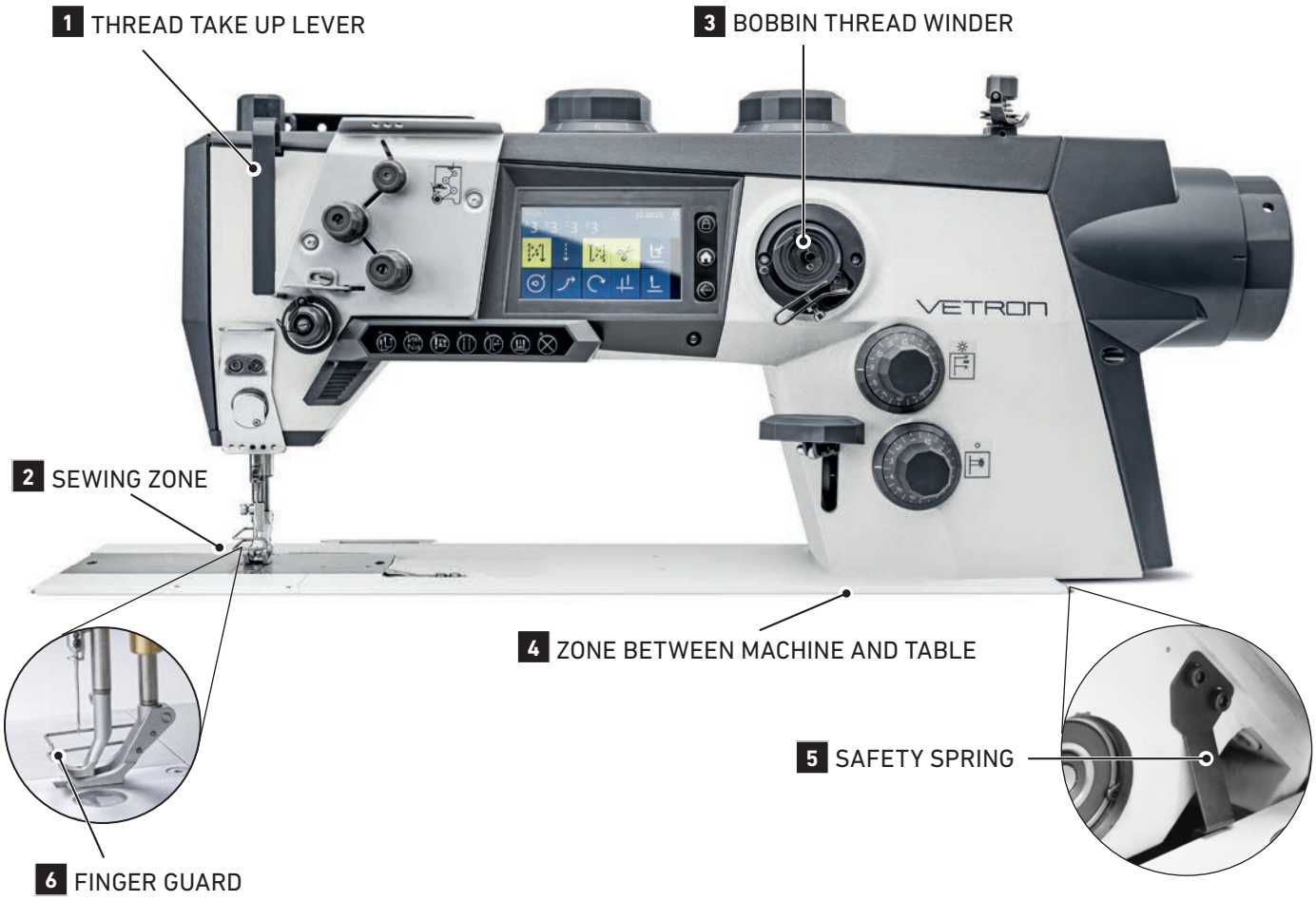
HAZARD TO WATERS!
May cause acute or long-term damage to aquatic organisms such as fish, aquatic insects and aquatic plants in low concentrations.

PROTECTIVE EARTHING!
Earthing one or more points of a network, installation or equipment for the purpose of electrical safety.



DANGER LABEL
Do not work the machine without finger guard and safety covers! Before threading, changing the needle, adjusting, changing the bobbin, cleaning, maintenance, etc. switch off the main switch on the control.

01.03. DANGER NOTES



CRUSHING
Crushing and bruising through the thread take up lever **1**
Make sure thread take up lever guard is mounted.
Risk of injury due to movement of the lever.

CRUSHING
Crushing and bruising through the needle and sewing feet **2**
Make sure finger guard is mounted.
Risk of injury through needle and feet movement.

DANGER OF CUTS
Cuts through rotation **3**
Keep distance from bobbin winder while winding.
Risk of injury due to rotation.

CRUSHING
Crushing and bruising due to tilting the machine **4**
Make sure safety spring **5** is mounted.
Risk of injury when machine is tilted back.

SAFETY PRECAUTIONS!
The finger guard **6** must not be removed!

1-NEEDLE LOCKSTITCH SEWING MACHINE WITH DIRECT DRIVE AND TRIPLE FEED

The VETRON 4000 series has been designed as a modern, fully equipped, mechanical industrial sewing machine for use in medium to heavy-duty applications and complements the portfolio with a classic industrial sewing machine in addition to the VETRON 5000 series.
With an exceptionally high stitch quality, it is perfectly suited for topstitching work in the visible area, as well as for assembling seams for use in automotive and upholstery production.

Equipped with a thread trimmer, thread clamp for a clean seam beginning, integrated second tension, stitch length and top feed stroke, integrated button bar for access to functions, integrated LED sewing light and an integrated modern touch control panel in the machine arm, the VETRON 4000 series offers all the features of a modern, classic industrial sewing machine. Other features include are a powerful main drive and low-noise, low-vibration operation due to aluminum arm and head covers.

Typical applications:


Automotive


Upholstery


Bags


Tents


Technical textiles

INTENDED USE

Any use not approved by the manufacturer is considered improper!
Proper use also includes compliance with the prescribed operating, adjustment, maintenance and repair measures. **Damage due to non-intended use is not covered by the manufacturer's liability!**

The **VETRON 4000** is a 1-/ 2- needle lockstitch sewing machine with direct drive and triple feed. Use the machines only according to their technical data and for medium to heavy materials such as jeans, leather, etc.. No tin! The machine is only intended for processing dry material and must not contain any hard objects. In this respect, the seam must be made with a thread whose requirement profile corresponds to the application purpose.

The machine is designed for industrial use.

The operator is obliged to carry out a risk assessment in accordance with the Work Protection Act (ArbSchG).

CE-CONFORMITY DECLARATION

All VETRON sewing machines comply with the applicable European regulations of relevant basic health and safety requirements, which are specified in the declaration of conformity and manufacturer.

01.05. TECHNICAL DATA

VETRON 4000	
Stitch type 301	1-/2- needle lockstitch with triple transport
Needle system	134 - 35
Needle size 90-140	for sewing middle heavy materials
Needle size 140-180	for sewing heavy materials
Thread size	10/3 (depending on version)
Max. Stitches/minutes	VETRON 4000 / 4020 (26mm hook): 4000 S/min VETRON 4010 / 4030 (32mm hook): 3400 S/min
Max. Stitch length	12mm
Max. clearance under the sewing feet	20mm
Max. top-feed-stroke	9mm
Thread cutter for threads up to	10/3
Clearance space	355 x 130mm
Table plate size	605 x 210mm
Netto weight	55 kg
Gross weight	70kg
Operating voltage	AC 220-240V / 50-60Hz
Rated power	1200W
Noise indication	80dB(A)

Versions and subclasses can be found under:
www.VETRONtypical.com

01.06. TRANSPORT - PACKAGING - DISPOSAL - STORAGE / FIRST COMMISSIONING / DECOMMISSIONING

TRANSPORT - PACKAGING - DISPOSAL - STORAGE

01. **Transport of the machine**
    All machines are delivered packed.
    The product must be checked for shipping damage after delivery. For subsequent damage within the customer's operation, the manufacturer assumes no liability.
    Make sure that the products are transported safely and with the utmost care at your facility.

    Moving machines with EHS (electrically height adjustable) with wheels:
    » Turn off the machine
    » Make sure that the sewing machine head is not tilted back
    » Put the table in the lowest position
    » Pull power and pneumatic connections
    » Release wheel brakes
    » Grab the table top and push the entire machine to the new location
    » Reconnect the electricity and pneumatics and tighten roller brakes

02. **Packaging**
    The packaging material must be disposed of in accordance with local environmental protection regulations.
03. **Disposal**
    The customer is responsible for the proper disposal. Disposal should comply with local environmental regulations.

    NOTE!
    Parts contaminated with lubricants or oils must be disposed of separately.

04. **Storage**
    When not in use for a long time, the machines must be protected against dirt, moisture and corrosion (e.g.: by an oil film).

FIRST COMMISSIONING

01. Before operating the machine, clean the machine thoroughly.
02. Check whether the machine or electrical cables are damaged.
03. Have specialists confirm that you are allowed to operate the machine with the mains voltage and that it is correctly connected.
04. **MACHINES WITH PNEUMATIC CONNECTIONS:**
    Connect the machine to the compressed air system. The operating pressure at the filter valve is 6 bar.
05. All covers must be mounted.

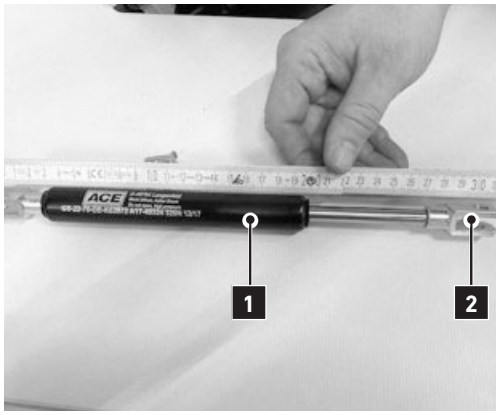
NOTE!
1.) Should deviations occur, do not operate the machine!
2.) Only connect the machine to a grounded power outlet!

DECOMMISSIONING

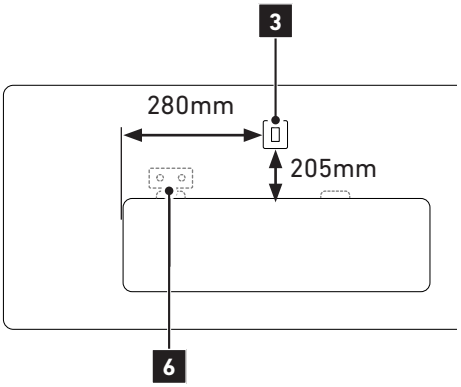
01. Switch off the machine at the control.
02. Pull out the mains plug.
03. Disconnect the machine from the compressed air supply, if available.
04. Clean the machine if necessary.
05. If possible, cover the machine to avoid soiling.

01.07. MOUNTING SAFETY DEVICES FOR TILTING

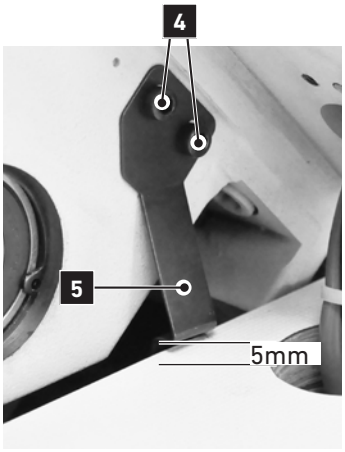
WARNING!
Work on safety devices must only be carried out by trained personnel!



Picture 1



Picture 2



Picture 3

SAFETY CYLINDER 1 AND SPRING 5 :

» The safety cylinder 1 should be approx. 304mm to 310mm long.

INFO:
If the cylinder is longer (max 310mm), the machine is moved further back.
That means the machine is safer and more stable in this position.

» If the machine is tilted back, the safety spring 5 must be locked securely. The distance between the table top and the spring must be at least 5mm (Picture 3).

» The distance can be adjusted on the cylinder by turning the fork head 2 in or out. If this is not enough, the cylinder carrier 3 must be readjusted. (Picture 2)

HOW TO MOUNT THE SAFETY CYLINDER 1 :

» Screw the cylinder carrier 3 under the table.
The distance between the edge of the machine cutout and the cylinder carrier 3 is 205mm (minimum 203mm).
The distance between the cylinder carrier 3 and the edge of the machine cutout is 280mm.

HOW TO MOUNT THE SAFETY SPRING 5 :

» Mount the safety spring 5 on the machine housing with the screws 4

NOTE:

» The position of the safety cylinder and spring is important for the stability of the machine.

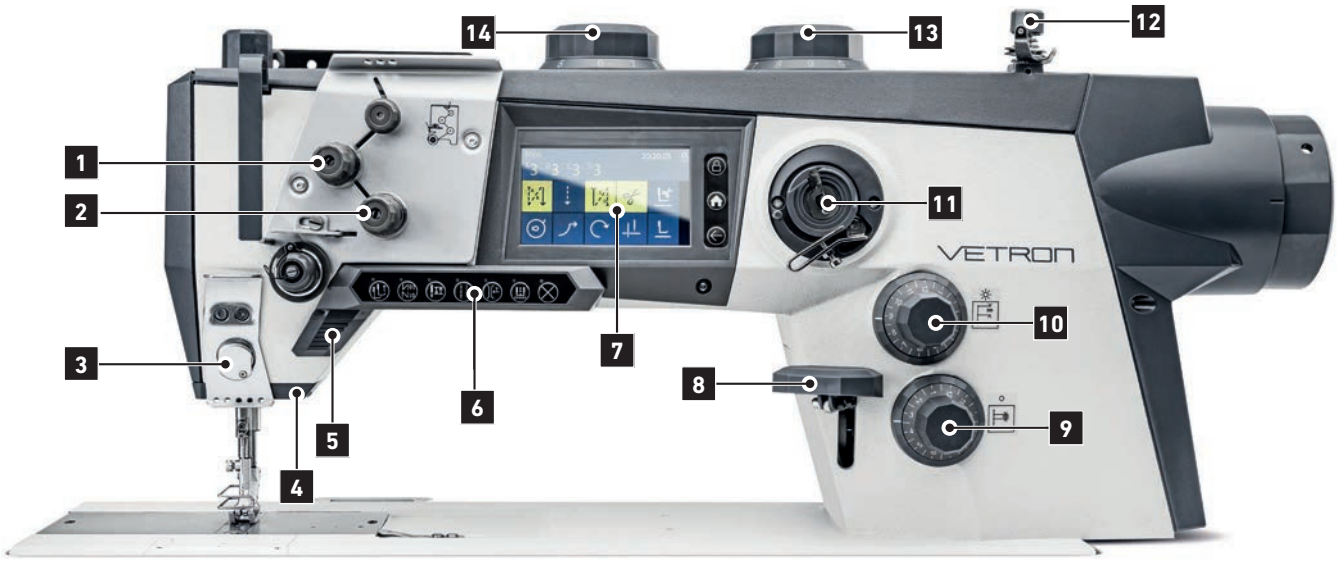
» The safety hinge 6 prevents the sewing machine from being levered out when the sewing machine is returned to its starting position and the safety bar has not been pressed.

» This must be checked when the machine is received!

» Safety devices must not be removed or modified!

CRUSHING
Crushing and bruising due to tilting the machine
For different adjustments, the safety cylinder should be unhooked.
Caution is advised, when returning the sewing machine to its original position.
After work, reattach the safety cylinder.

02. MACHINE DESCRIPTION
02.01. OVERVIEW



1 2nd Thread tension, switchable via function bar **6** (see chapter 02.05.)

2 Thread tension (see chapter 03.03.)

3 Thread clamp

4 Light with 2 power levels

5 Function button - assignable with the functions of the function bar **6** (see chapter 02.06.)

6 Functionbar (see chapter 02.05.)

7 Touch control panel (see chapter 02.07.)

8 Manual backtack lever (see chapter 03.07.)

9 Stitch length knob for smaller stitches (see chapter 03.05.)

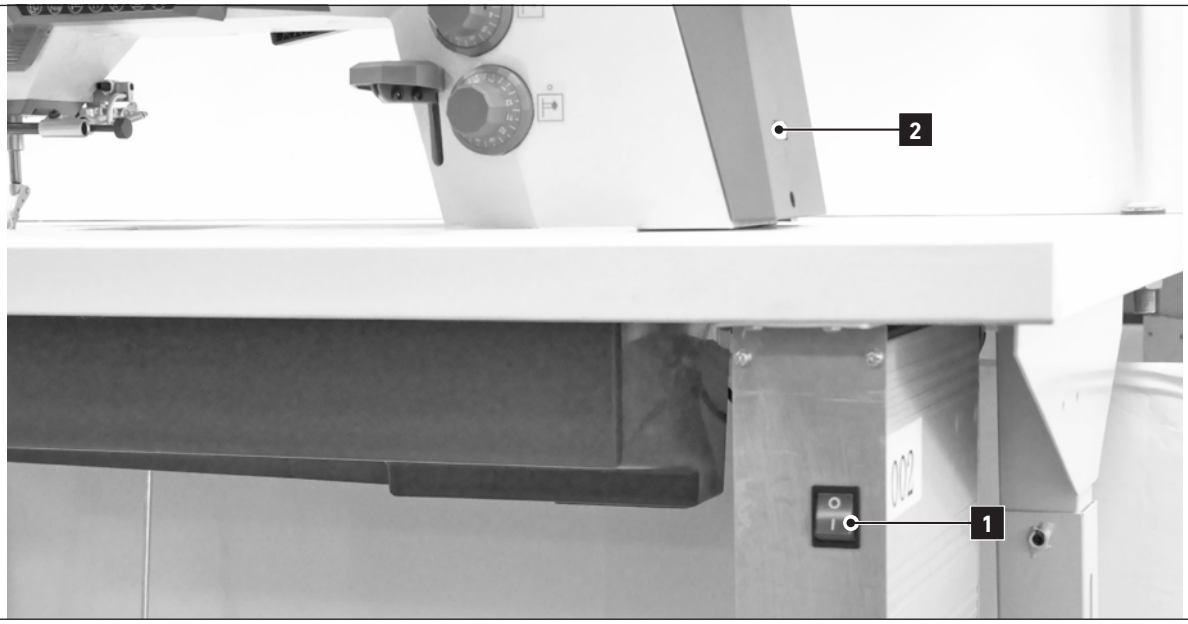
10 Stitch length knob for longer stitches. Switchable via function bar **6** (see chapter 02.05.)

11 Bobbin thread winder (see chapter 03.08.)

12 Thread tension for bobbin thread

13 Top feed stroke knob for higher stroke. Switchable via function bar **6** (see chapter 02.05.)

14 Top feed stroke knob (see chapter 03.06.)



1 **MACHINE MAIN SWITCH**
Switches the machine ON / OFF

2 **USB-DONGLE**
Updates and programs can be transferred to/from a USB dongle

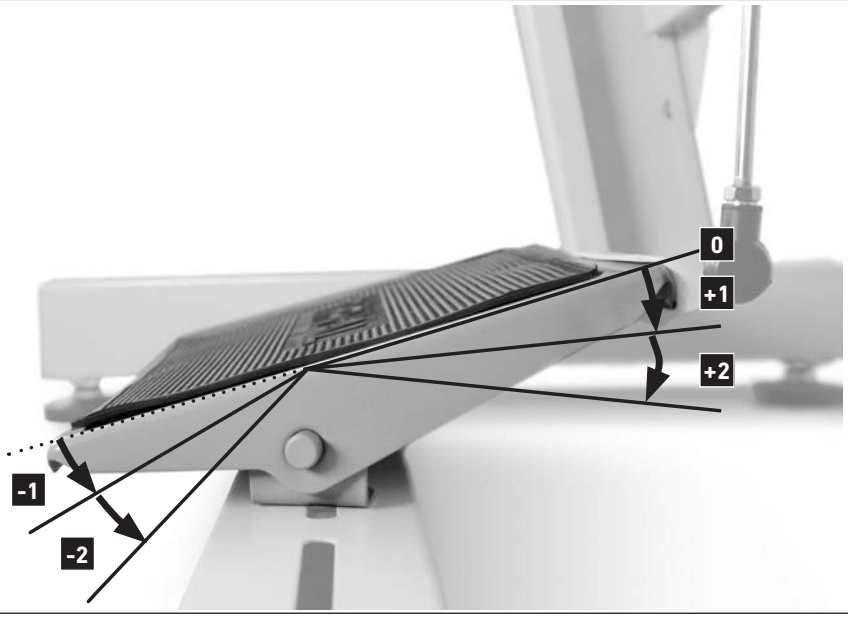
02.03. KNEE SWITCH (OPTIONAL)

The knee switch can be ordered as an option.

It is possible to assign various functions to the knee switch such as the 2nd top feed stroke, the 2nd stitch length and the 2nd thread tension.

NOTE:
See enclosed operating instruction book YSC -90A0 Servo System.

02.04. PEDAL



0 Idle position

+1 Constant sewing speed (adjustable via parameter M502)

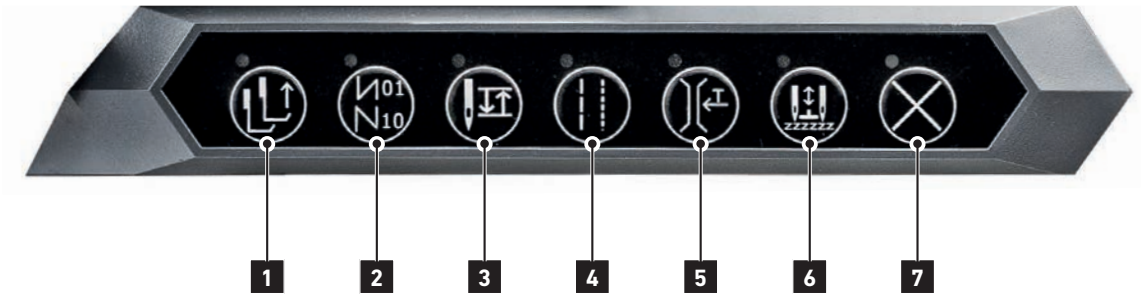
+2 Variable sewing speed from 0-100% of the chosen maximum speed (depending on sewing program)

-1 Sewing feet lift

-2 Seam end procedure activation (depending on sewing program)

02.05. FUNCTION BAR

NOTE:
Various functions can be activated with the function bar.
These are set via the parameters and should only be carried out by a service technician.
See YSC-90A0 Servo System Instruction Manual.



1 Switching between lower and higher feed stroke
2 Back tack suppression
3 Change of needle position
4 Switching between small and large stitch length
5 Activation of the 2nd thread tension
6 For 2-needle center seam guide
7 Lock button

02.06. FUNCTION KEY

Function key **1** is assigned to the back tack function. This is factory set.

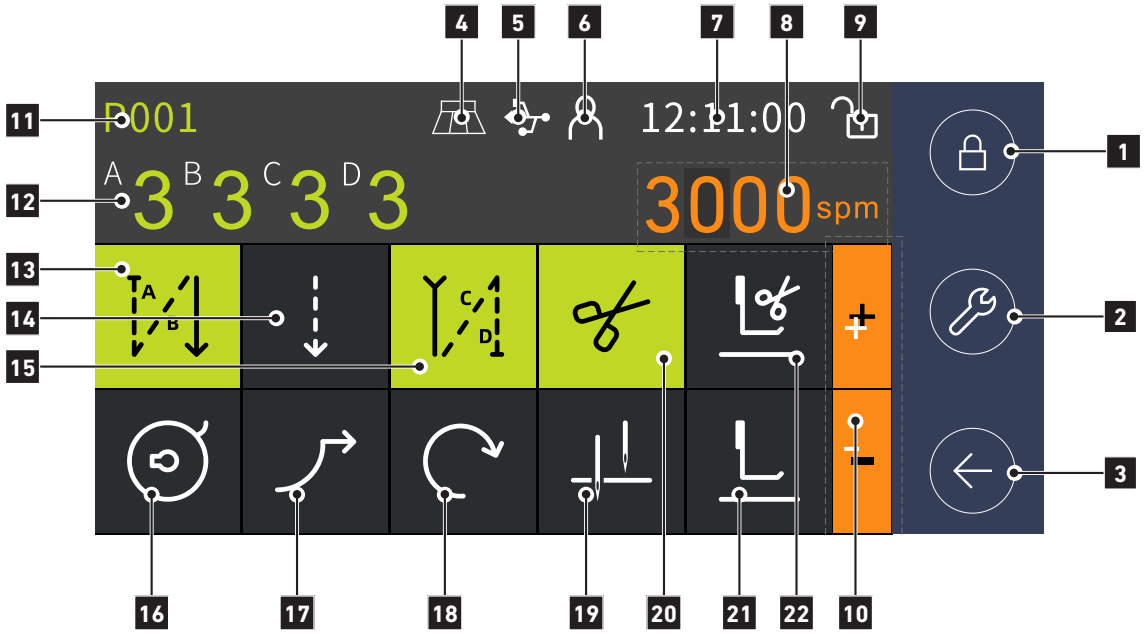
Various functions can be assigned to this key.

These are set via the parameters and should only be carried out by a service technician.

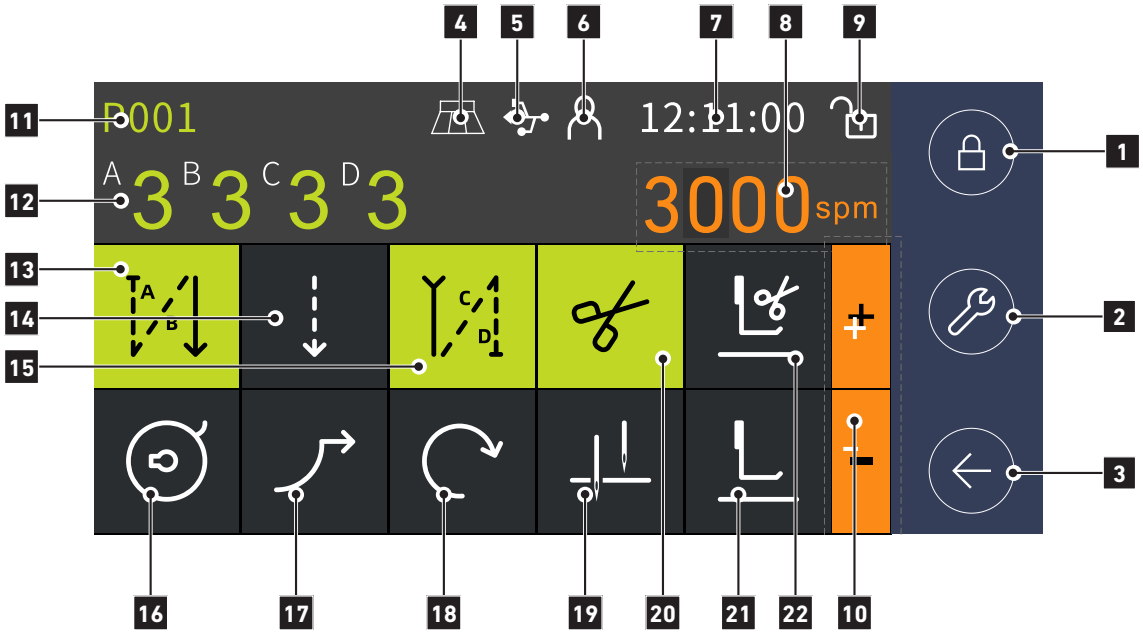
NOTE:
See enclosed operating instruction book YSC -90A0 Servo System.

02.07. TOUCH DISPLAY
-1-2

NOTE:
Settings are made in various areas on the touch display.
E.g. basic setting, system operation, parameter setting and program creation.
For operation on the touch display, see the enclosed operating instruction book YSC -90A0 Servo System.

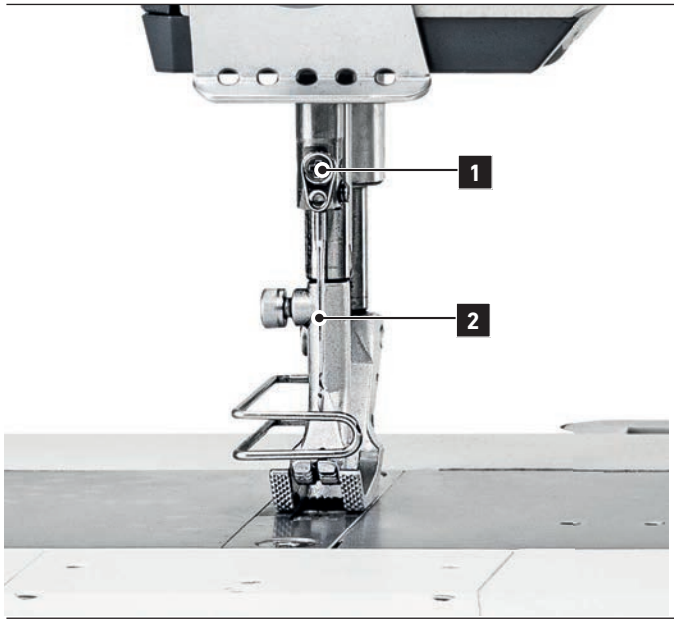


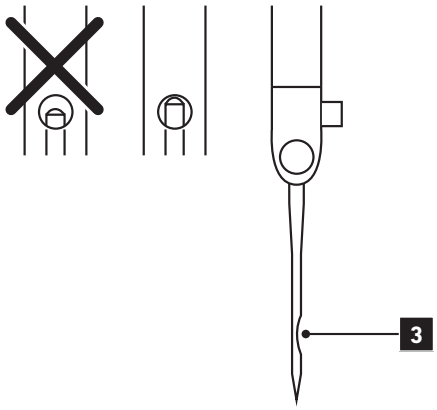
No	KEY	DISCRIPTION
1	Lock key (Physical button)	Lock / unlock touch display
2	Configuration (Physical button)	Enter config interface
3	Return (Physical button)	Return to the previous interface
4	Pedal type	The icon will be shown if standing pedal is selected
5	USB stick	The icon will be shown if a USB-stick is inserted
6	Authorize	Enter the authorize interface
7	Clock	Time
8	Bobbin thread counter or speed display	This area will be shown if the bobbin thread counter is active or the speed adjustment is active. Otherwise, it will be hidden
9	Locked status	The icon shows the status of the touch display
10	Values	Increase / decrease the edibale value. It will be hiodden when there is no edit
11	Program setting	Program setting key. Enter program setting interface, (refer to 06.02)
12	Stitches setting	Increase or decrease the number of stitches in segments A, B, C, D with + / -
13	Start back tack	Selection: Off, Single, Double, Multiple
14	Seam display	Shows current seam Free sewing, programmed sewing (displays the seam section that is being sewn).
15	End back tack	Selection: Off, Single, Double, Multiple



No	KEY	DISCRIPTION
16	Bobbin thread monitoring	Bobbin thread counter via stitch countdown: On / Off
17	Soft start	Soft start: On / Off (refer to 06.03)
18	Sewing speed	Adjust speed
19	Needle position	Switch the position of needle when sewing stop
20	Thread cutting	Thread cutting: On / Off (refer to 06.07)
21	Foot position at sewing stop	Auto foot lift after sewing stop: Up / Down (refer to 06.06)
22	Foot position after thread cutting	Auto foot lift after thread cut: Up / Down (refer to 06.06)

03. OPERATION OF THE MACHINE
03.01. INSERTING THE NEEDLE (1-NEEDLE)



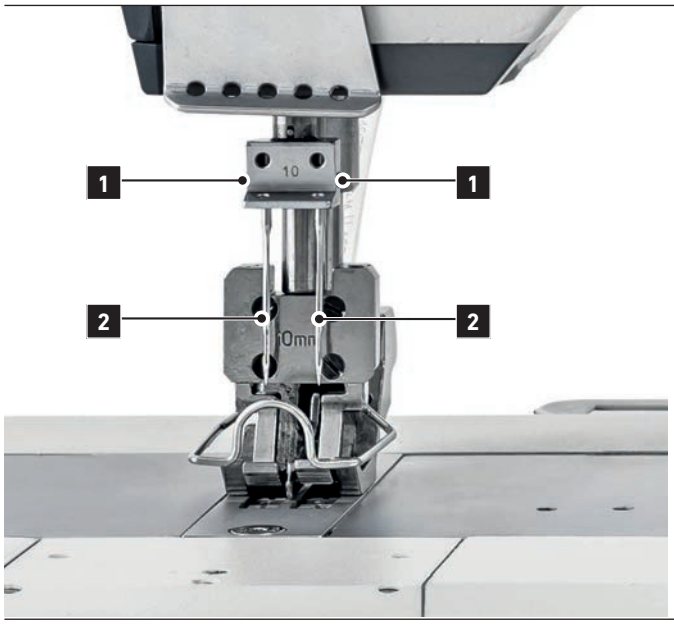


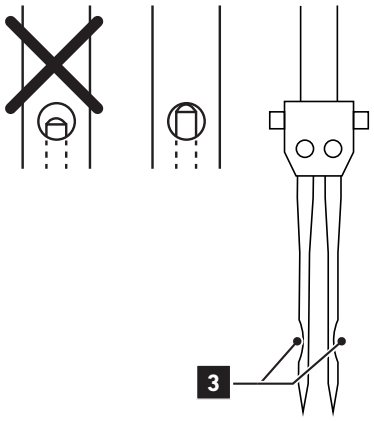
CAUTION! RISK OF INJURY!
Stitch and crush hazard in the sewing area
You can switch off the machine at the main switch or activate the „**LOCKED MODE**" by pressing the lock button (X-button) on the function bar before changing the needle. The threading symbol is shown in the display.

NOTE
Only use needles from the system intended for the machine.
(Needle system 134-35)

01. Push the lock button (X-button) on the function bar. The green light illuminates showing the active **„LOCKED MODE"**, or turn the machine off.
02. Loosen the screw **1**.
03. Push the needle **2** in as far as it will go.Make sure that the groove **3** on the needle is to the right side.
04. Tighten the screw **1** again.
05. Push the lock button (X-button) or switch the machine on again.

03.01.01. INSERTING THE NEEDLE (2-NEEDLE)





CAUTION! RISK OF INJURY!
Stitch and crush hazard in the sewing area
You can switch off the machine at the main switch or activate the „**LOCKED MODE**" by pressing the lock button (X-button) on the function bar before changing the needle. The threading symbol is shown in the display.

NOTE
Only use needles from the system intended for the machine.
(Needle system 134-35)

01. Push the lock button (X-button) on the function bar. The green light illuminates showing the active **„LOCKED MODE"**, or turn the machine off.
02. Loosen the screw **1**.
03. Push the needle **2** in as far as it will go. Make sure that the groove **3** of the right needle points to the right and the left needle to the left.
04. Tighten the screw **1** again.
05. Push the lock button (X-button) or switch the machine on again.

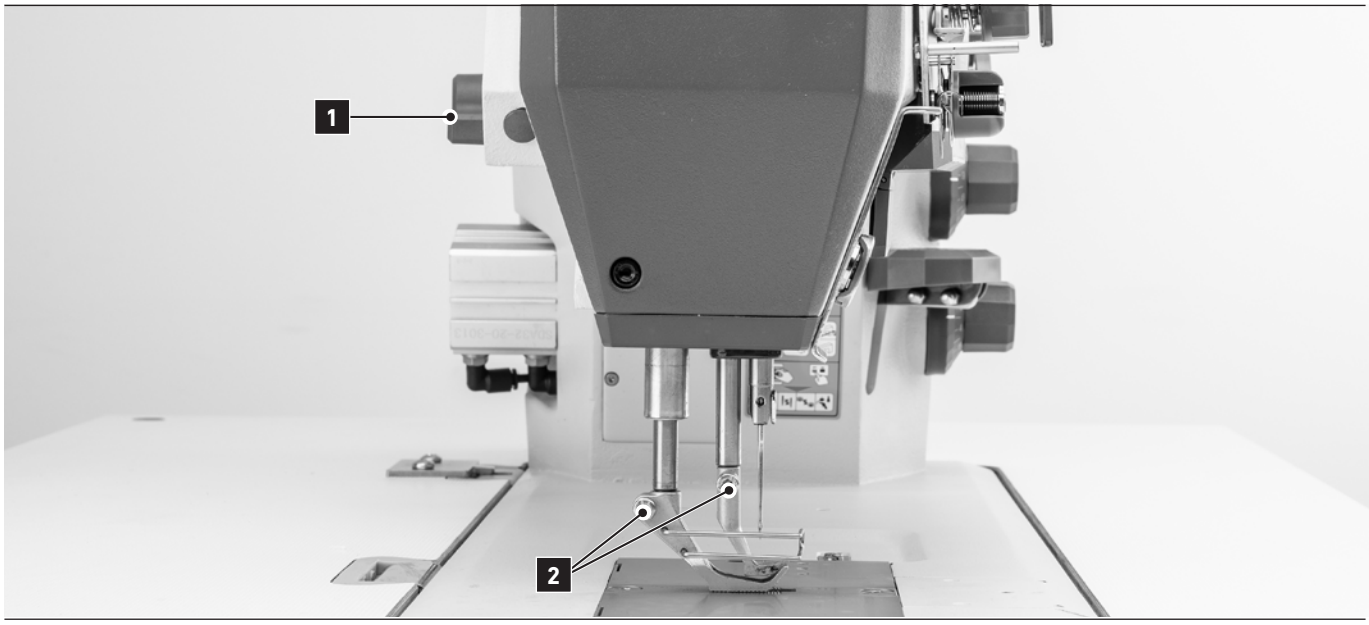
03.02. THREADING THE MACHINE (1- / 2-NEEDLE)

CAUTION! RISK OF INJURY!
Stitch and crush hazard in the sewing area
You can switch off the machine at the main switch or activate the „**LOCKED MODE**" by pressing the lock button (X-button) on the function bar before threading the machine. The threading symbol is shown in the display.

» Make sure that the thread takeup lever **1** is in its top dead position
» Now you can thread the machine according to the picture.
» If the thread tension is set too low, the stitch pattern will be poor.
» If the thread tension is set too high, the stitch pattern will be poor and the thread will break

ADVICE!
Push the lock button (X-button) on the function bar to end the „**LOCKED MODE**" or switch the machine on again.

03.03. SEWING FEET EXCHANGE

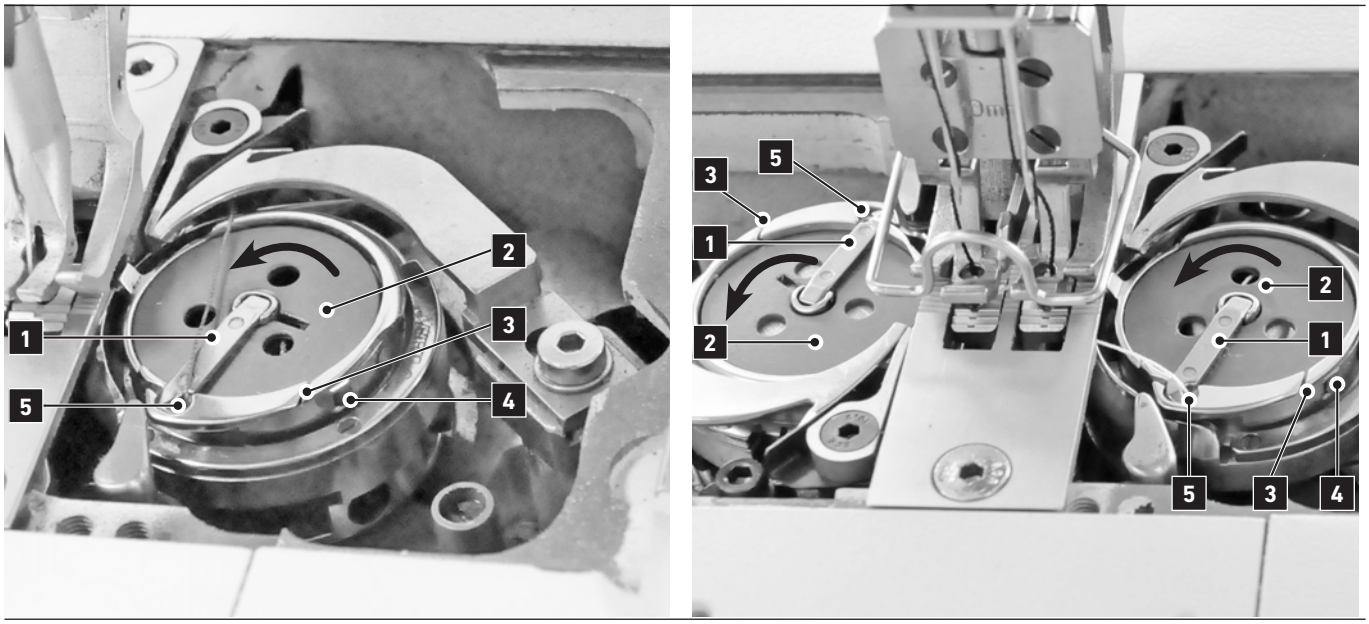


CAUTION! RISK OF INJURY!
Stitch and crush hazard in the sewing area
You can switch off the machine at the main switch or activate the „**LOCKED MODE**“ by pressing the lock button (X-button) on the function bar before changing the sewing feet. The threading symbol is shown in the display.

01. Lift the sewing feet with lever **1**.
02. Loosen the screws **2**.
03. The sewing feet can be changed.
04. Tighten the screws **2** again.

ADVICE!
Push the lock button (X-button) on the function bar to end the „**LOCKED MODE**“ or switch the machine on again.

03.04. EXCHANGING THE BOBBIN AND ADJUSTING THE BOBBIN THREAD TENSION (1- / 2-NEEDLE)

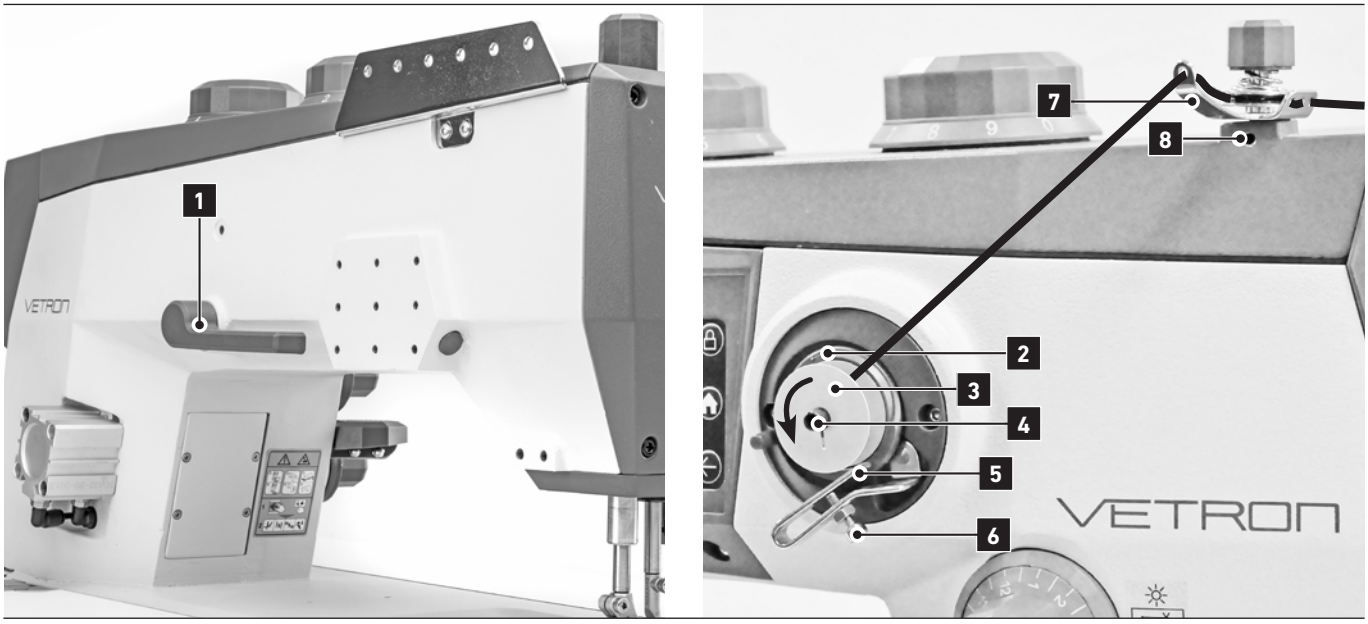


CAUTION! RISK OF INJURY!
Crush and cut hazard through thread catcher
You can switch off the machine at the main switch or activate the „**LOCKED MODE**“ by pressing the lock button (X-button) on the function bar before changing the bobbin. The threading symbol is shown in the display.

01. Push the lock button (X-button) at the function bar. The green light illuminates. The threading symbol appears on the display. **„LOCK MODE“** is switched on.
02. Open the hook cover. Fold up the tab **1** and remove the bobbin **2**.
03. Insert the filled bobbin. Check the correct direction by pulling the thread end and assuring the rotation of the bobbin is counter-clockwise.
04. Pass the bobbin thread through the slot **3**, then pass the tension spring below and pull it out of the thread guide **5**.
05. Close the tab **1** and the hook cover.
06. The bobbin thread tension can be adjusted at screw **4**.

ADVICE!
Push the lock button (X-button) on the function bar to end the „**LOCKED MODE**“ or switch the machine on again.

03.05. WINDING THE BOBBIN THREAD



CAUTION!
Avoid touching rotating parts to avoid the risk of injury or damage of the machine.

01. Turn the machine on.
02. Lift the sewing feet with lever **1**.
03. Place bobbin **3** on the bobbin winder **4**.
04. Push the lever **5** towards the bobbin.
05. After the winding process is finished, the lever **5** automatically moves back.
06. Remove the bobbin and cut the thread at the knife **2**.
07. Turn screw **6** to move lever **5** to adjust the amount of thread on the bobbin. There should be a gap of **1mm** between thread and bobbin edge.

ADVICE!
If necessary, the thread guide **7** can be slightly moved to the left or right to optimize the thread flow to the bobbin. To do so, loosen screw **8**.

03.06. STITCH LENGTH

NOTE!
Pressing key **3** switches the stitch length.

NOTE!
In order to set the small stitch length, you must first switch to the long stitch length. This prevents damage to the adjusting device.

ADJUSTING THE SMALL STITCH LENGTH:

» Press button **3** on the function bar to switch to long stitch length. **LED lights up.**
» Rotary knob **1** is unlocked. The small stitch length can now be set.
» Press button **3** again to switch to the small stitch length.

NOTE!
To set the long stitch length, you must switch to the small stitch length.

ADJUSTING THE LONG STITCH LENGTH:

» Press button **3** on the function bar to switch to small stitch length. **LED does not light up**.
» Rotary knob **2** is unlocked. The long stitch length can now be set.
» Press button **3** again to switch to the long stitch length.

ATTENTION!
It is **not** possible to set the small stitch length on knob **1** larger than the long stitch length on knob **2**. The knob will jam if you try to do this. Do not try to overcome the resistance with greater force - this can lead to mechanical damage to the machine.

03.07. TOP FEED STROKE

NOTE!
In order to avoid damage to the top feed adjustment device, please proceed as follows:

SETTING THE SMALL TOP FEED STROKE:

» Press button 3 on the function bar to switch to the large top feed stroke. **LED lights up**.
» Rotary knob 1 is unlocked. The small top feed stroke can now be set .
» Press button 3 again to switch to the small top feed stroke.

NOTE!
In order to set the large top feed stroke, it is necessary to switch to the small top feed stroke.

SETTING THE LARGE TOP FEED STROKE:

» Press button 3 on the function bar to switch to the small top feed stroke. **LED does not light up**.
» Rotary knob 2 is unlocked. The large top feed stroke can now be set.
» Press button 3 again to switch to the large top feed stroke.

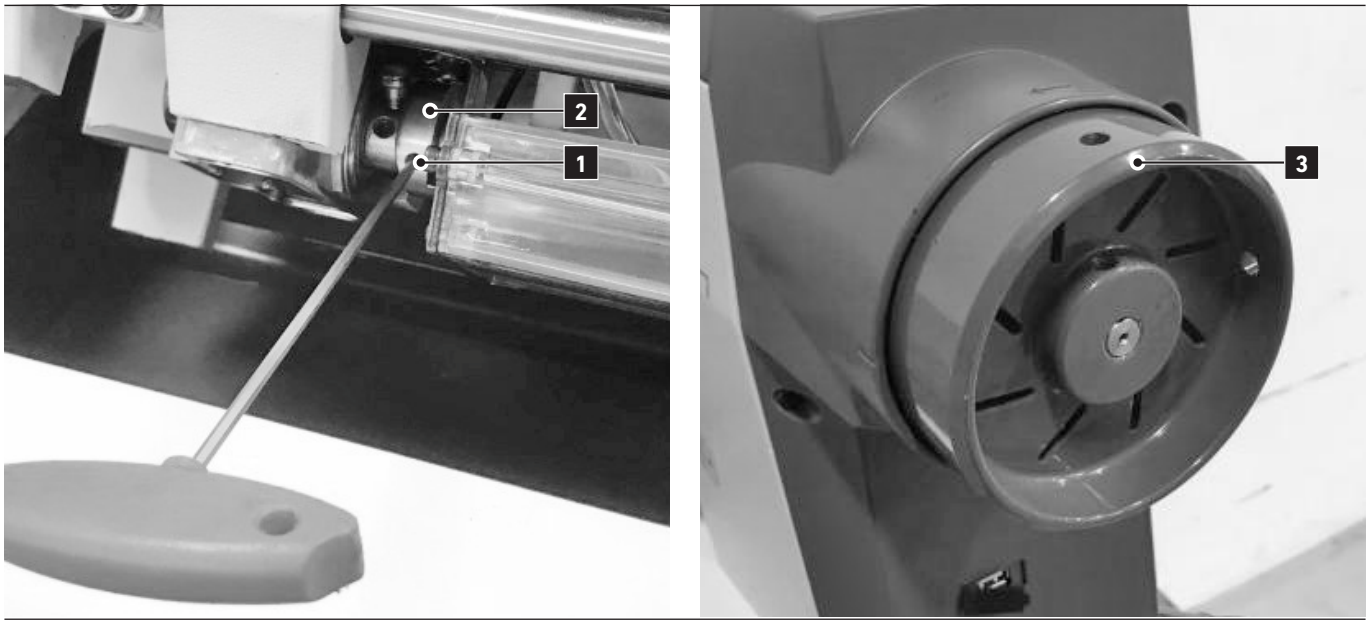
ATTENTION!
It is **not** possible to set the small top feed stroke on knob 1 larger than the large top feed stroke on knob 2. The knob will jam if you try to do this. Do not try to overcome the resistance with greater force - this can lead to mechanical damage to the machine.

03.08. BACK TACK

Reverse sewing can be carried out by manually pressing lever **2**.

Also alternatively via function key **1**. (Factory default setting)

03.09. ENGAGING THE SAFETY CLUTCH

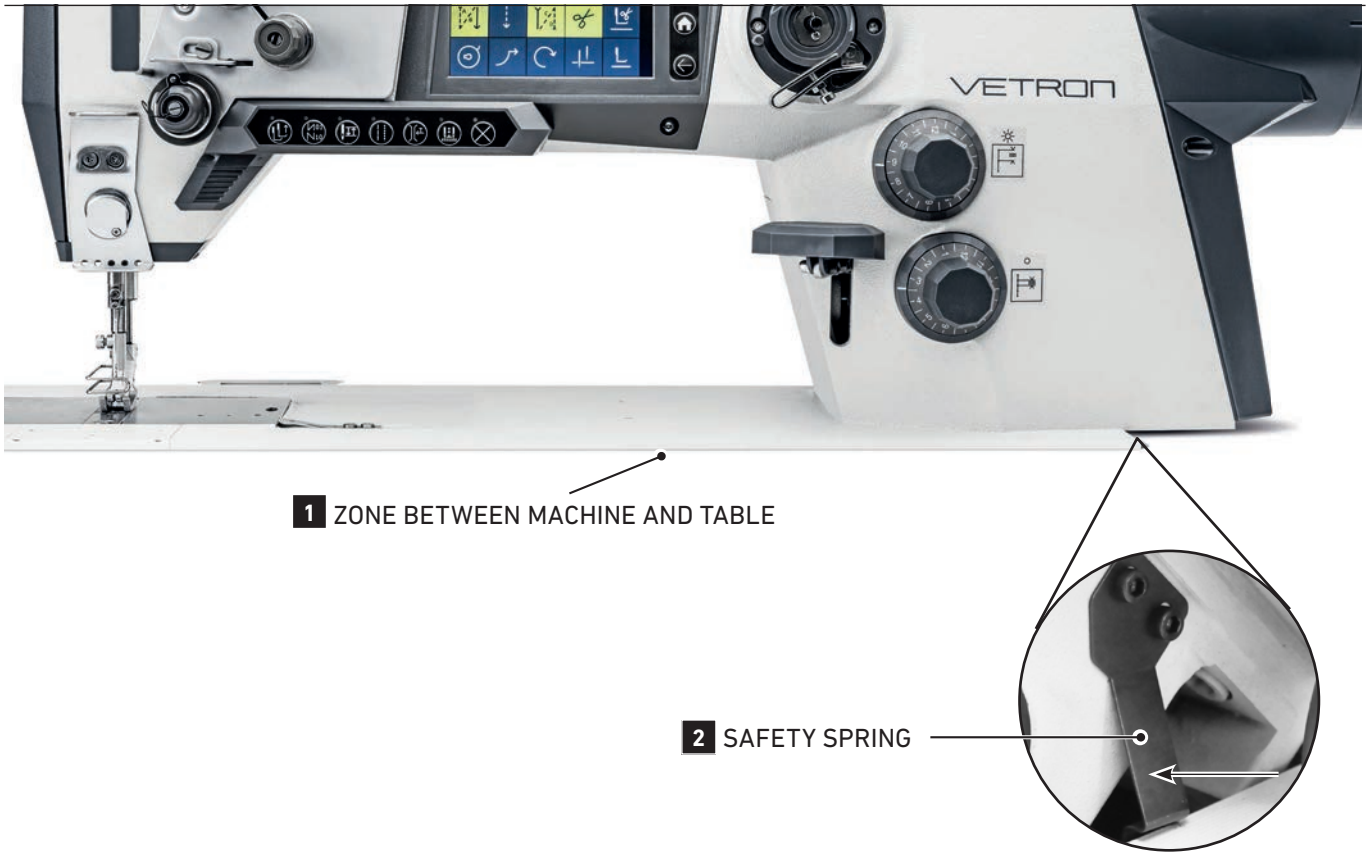


DANGER! RISK OF INJURY!
Crushing from sudden movement of the handwheel.
The safety clutch is to protect the hook from damage.
Causes of damage could be for example thread jamming, needle breakage or incorrect operation.

If the safety clutch has released, perform the following procedure:

01. Turn the machine off.
02. Remove the cause of the disorder.
03. Tilt the machine to the back.
04. Take a long **3 mm** allen key and stick it in screw **1** of the thread cut cam **2**.
05. Hold the allen key and turn the hand wheel **3** in the direction of rotation of the machine until the safety clutch engages securely.
06. Check the needle bar rise. (refer to the adjustment manual).
If confirmed, the machine is ready for use again.

03.10. SAFETY SPRING



CRUSHING
Crushing and bruising can occur, when the machine is moved to the operating position, between the machine and the table **1** .

NOTICE:
By tilting the machine back, the safety spring **2** hooks on the table.
The machine can not tilt forward.

How to unlatch the safety spring **2** :

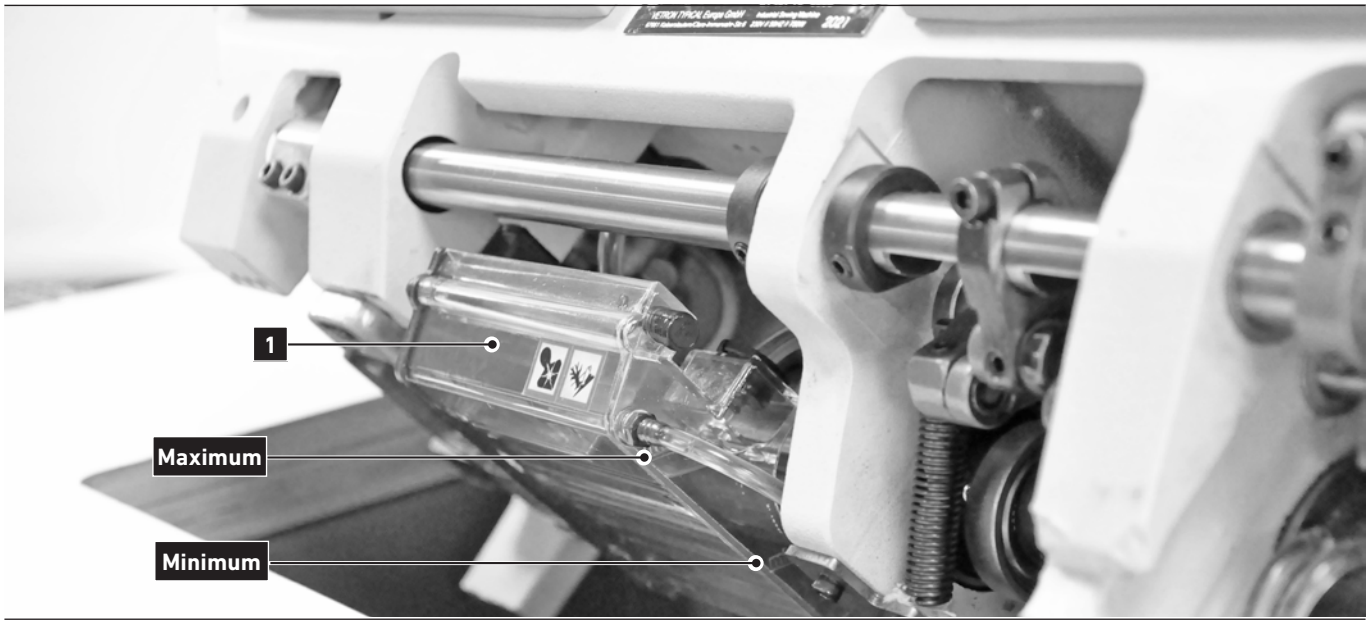
01. Push the machine slightly backward.
02. Press safety spring **2** carefully in direction of arrow.
03. Under consideration that nothing is between machine and table **1**, the machine can now be tilted forward.
04. The machine is ready for use again.

04. MAINTENANCE
04.01. CLEANING EXPLANATION

ADVICE!
In the following chapter we will introduce you to the most important maintenance areas to be checked daily & before each use.
Detailed maintenance and cleaning instructions can be found in the respective adjustment instructions.

CAUTION! RISK OF INJURY!
Crush and cut hazard
You can switch off the machine at the main switch or activate the „**LOCKED MODE**" by pressing the lock button (X-button) on the function bar before maintenance work. The threading symbol is shown in the display. Failure to comply produces a risk of injury in case of an unintentional machine operation.

04.02. OIL LEVEL CHECK



Check the oil level before starting!

ADVICE:
The handling and disposal of mineral oils is subject to legal regulation.
Deliver used oil to an authorized collection point.
Protect your enviornment. Take care not to spill oil.

INFO!
By tilting the machine during power on, a gravity sensor automatically switches the machine into **„LOCKED MODE"**. This is noted on the display.

01. Tilt the machine to the back. The oil tank is located below the base plate.
02. If necessary, slightly pull the oil plug **1** and fill the tank up to the "MAX" marking.
03. Please use only oil types recommended by VETRON.
    E.g.: Oil PP 20 DAB 10
    (Viscosity 40° C: 15 mm2/s; Flashpoint: 150°)
    (Can be ordered under the number: SuS 6436)

WARNING!
Oil on the skin, or swallowed.
If you get oil on your skin, make sure you clean it off the skin thoroughly.
In case you should swallow the oil seek medical attention immediately.

Or call the service hotline: **+49 631 / 2014 - 460**

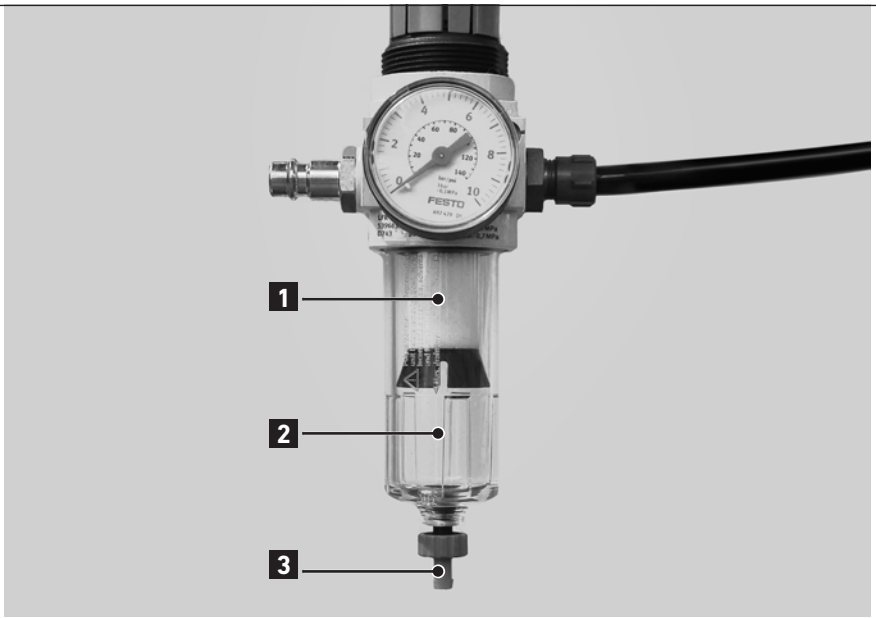
CAUTION! RISK OF INJURY!
Danger of crushing and cutting by the thread catcher
You can switch off the machine at the main switch or activate the „**LOCKED MODE**" by pressing the lock button (X-button) on the function bar before cleaning the hook area. The threading symbol is shown in the display. Failure to comply produces a risk of injury in case of an unintentional machine operation.

PLACES IN SPECIAL NEED OF CLEANING:

- Area under the stitch plate **1**
- Area around the hook **2**
- Bobbin housing
- Feeders
- Thread trimmer
- Needle area

Clean the hook area daily.
With increased lint production, depending on materials, clean the hook area several times a day.
For more cleaning tilt the machine back and clean the guard tub.

ADVICE!
Push the lock button (X-button) on the function bar to end the „**LOCKED MODE**" or switch the machine on again. If you tilt the machine during power on, a gravity sensor automatically switches the machine into „**LOCKED MODE"**. This is noted on the display.



CAUTION! RISK OF INJURY!
Compressed air hazard
You can switch off the machine at the main switch or activate the „**LOCKED MODE**" by pressing the lock button (X-button) on the function bar before checking the pneumatic system. The threading symbol is shown in the display. Failure to comply produces a risk of injury in case of an unintentional machine operation.

CHECKING THE MAINTENANCE UNIT:

Check water in pressure regulator:

» The water level should not rise to the level of the filter cartridge **1**.
After unscrewing the drain screw **3**, the water will flow under pressure out of the water seperator **2**.

Clean filter cartridge:

» Dirt and condensation are seperated through the filter cartridge **1**.
» Disconnect the machine from the compressed air supply.
» Loosen the drain screw **3**.
There should not be any pressure in the machine pneumatic system.
» Unscrew the water seperator **2**.
» Unscrew the filter cartridge **1**.
Wash the filter shell and cartridge with cleaning fluid (no solvent) and blast clean.
» Re-assemble the maintenance unit.

Check for system leaks.

ADVICE!
Push the lock button (X-button) on the function bar to end the „**LOCKED MODE**" or switch the machine on again.

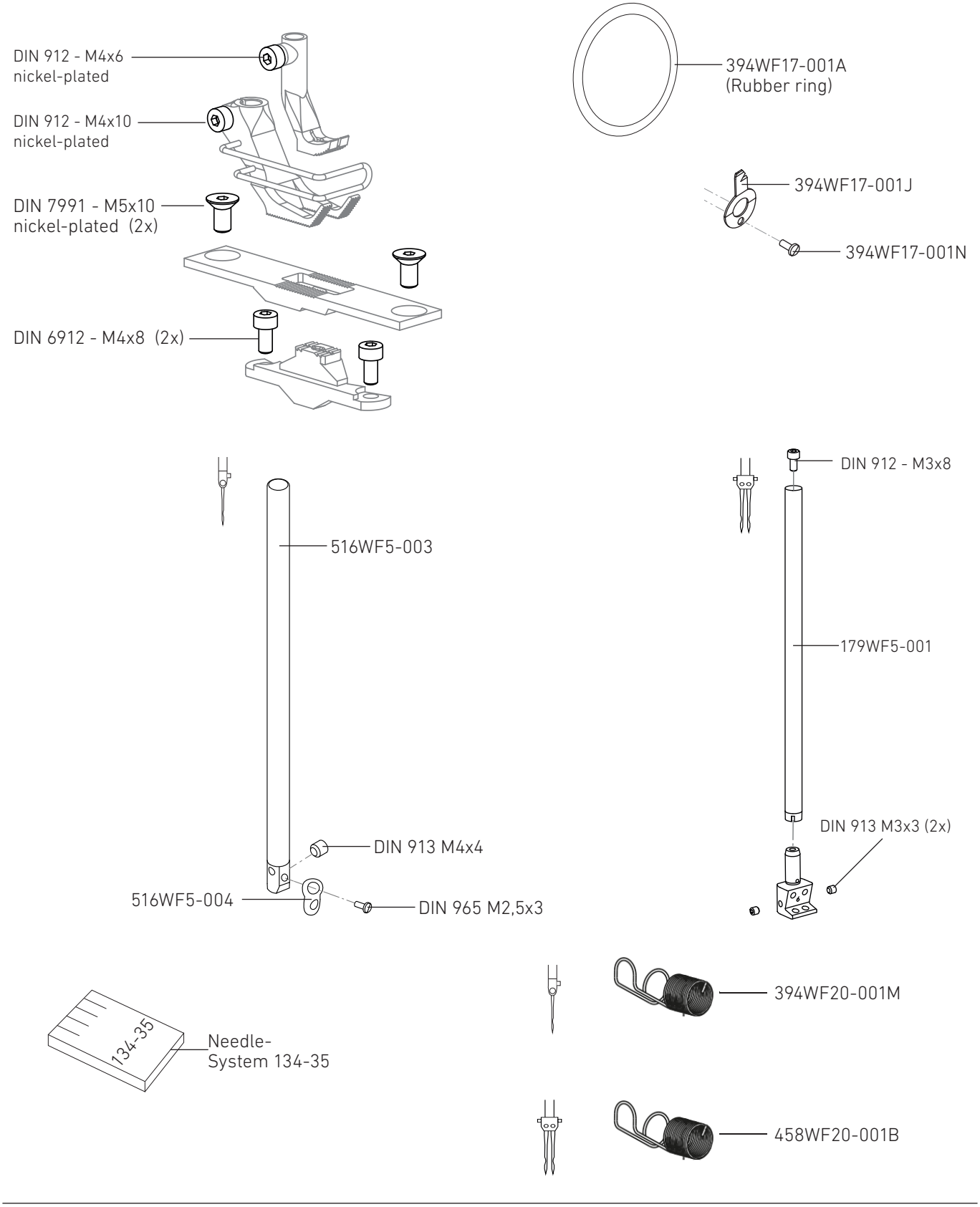
05. WEAR PARTS
05.01. GENERAL INFORMATION

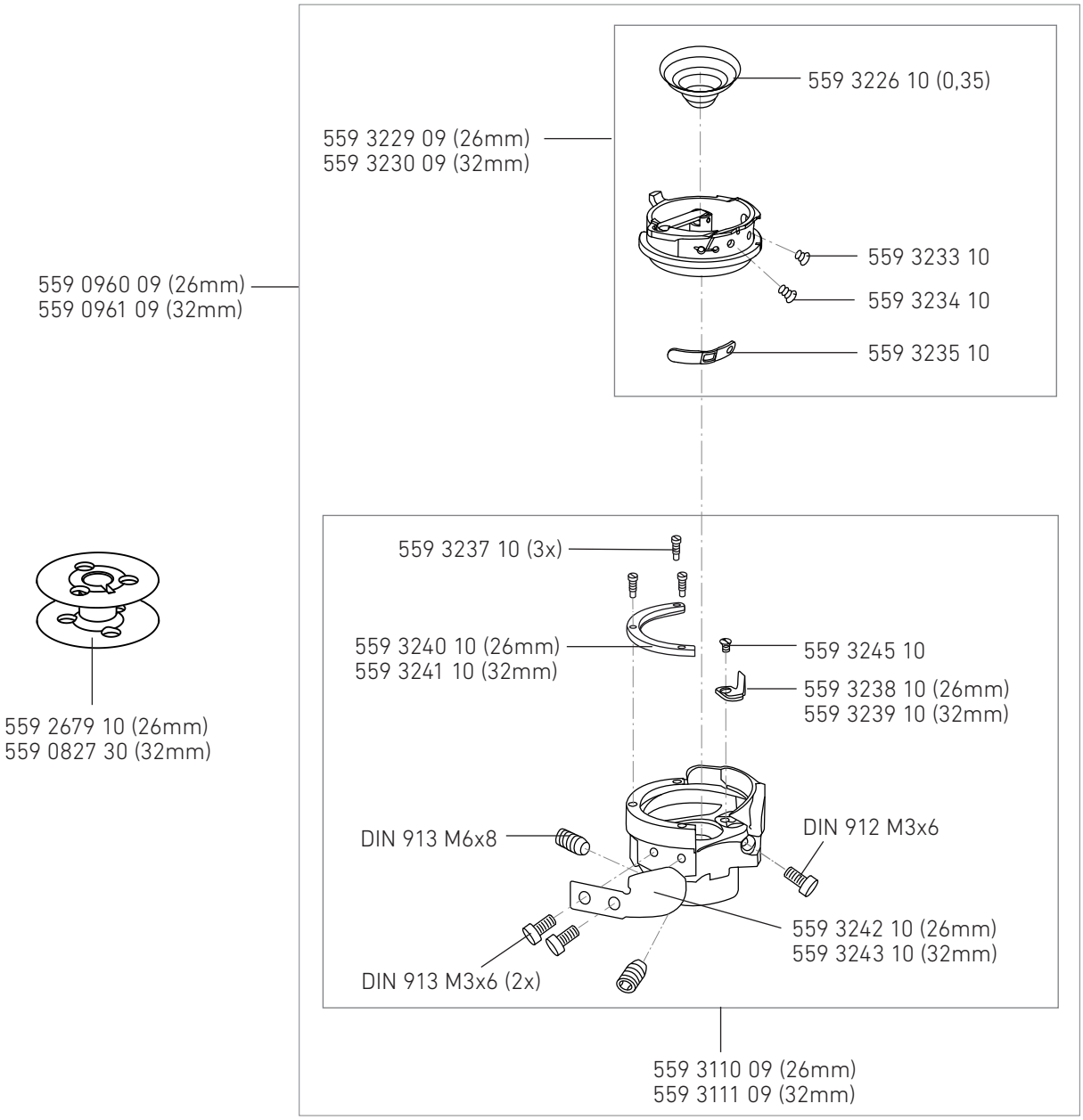
At the time of printing, all information and illustrations in this document were up-to-date.

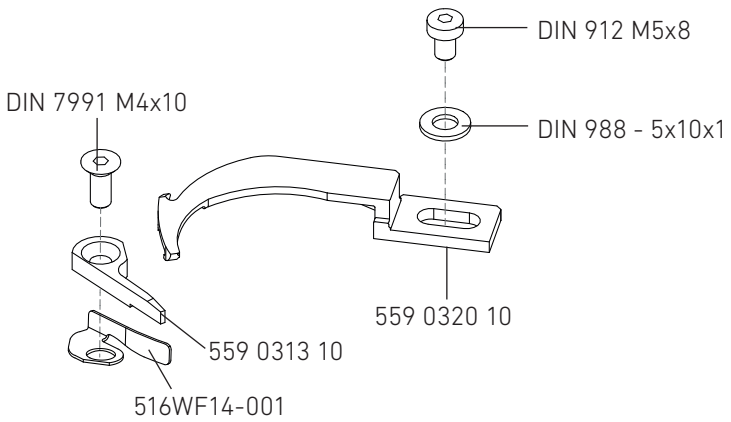
Technical changes without prior notice!

ADVICE!

» Please remember that we are not liable for spare parts and accessories not purchased from us. These parts were neither examined by us, nor released. Consequently, the installation or use of these products can have a negative influence on features and your workflow of the machine.
» We accept no liability for any damage caused by the use of non-original parts.
» This Wear Parts List shows the main parts of the machine. A detailed list for the complete machine is available on our website www.vetrontypical.com and can also be ordered as a manual.


DIN 912 - M4x6
nickel-plated
DIN 912 - M4x10
nickel-plated
DIN 7991 - M5x10
nickel-plated (2x)
DIN 6912 - M4x8 (2x)
394WF17-001A
(Rubber ring)
394WF17-001J
394WF17-001N
516WF5-003
DIN 913 M4x4
516WF5-004
DIN 965 M2,5x3
DIN 912 - M3x8
179WF5-001
DIN 913 M3x3 (2x)
134-35
Needle-
System 134-35
394WF20-001M
458WF20-001B


559 3226 10 (0,35)
559 3229 09 (26mm)
559 3230 09 (32mm)
559 0960 09 (26mm)
559 0961 09 (32mm)
559 3233 10
559 3234 10
559 3235 10
559 3237 10 (3x)
559 3240 10 (26mm)
559 3241 10 (32mm)
559 3245 10
559 3238 10 (26mm)
559 3239 10 (32mm)
559 2679 10 (26mm)
559 0827 30 (32mm)
DIN 913 M6x8
DIN 912 M3x6
559 3242 10 (26mm)
559 3243 10 (32mm)
DIN 913 M3x6 (2x)
559 3110 09 (26mm)
559 3111 09 (32mm)

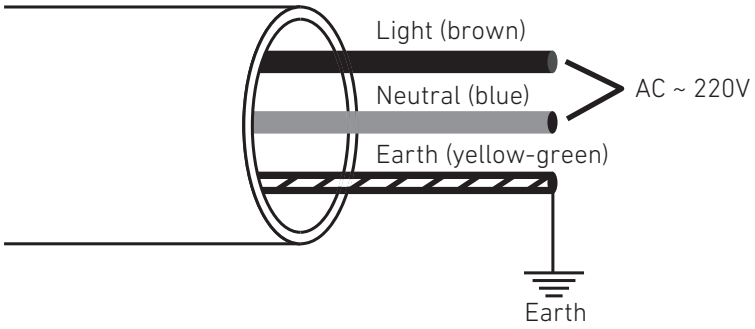

DIN 912 M5x8
DIN 7991 M4x10
DIN 988 - 5x10x1
559 0320 10
559 0313 10
516WF14-001

06. ELECTRICAL CONNECTION

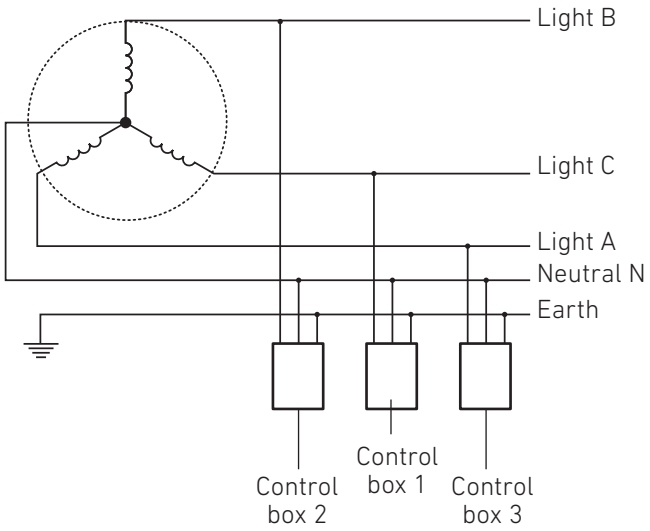
06.01. CABLE

Work on the electrical equipment may only be performed by qualified technicians or personal who have undergone the necessary training. The power supply is AC 220V!

Single phase: 220V power connection



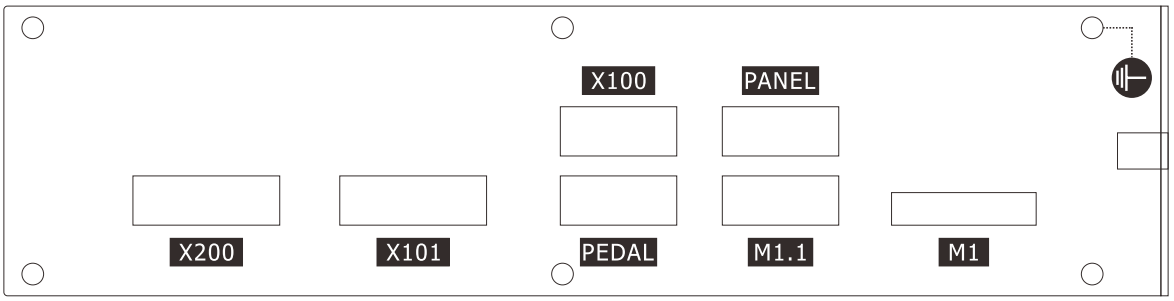
Three phase: 380V power connection



ATTENTION:
The yellow-green earth cable must be connected to the earth properly.
Otherwise there are risks of human electric shock and the controller doesn't work properly sometimes.

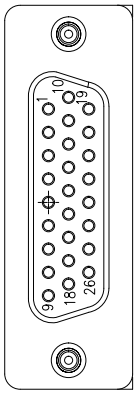
06.02. PLUG ASSIGNMENT
06.02.01. BACK OF THE CONTROLLER

Work on the electrical equipment may only be performed by qualified technicians or personal who have undergone the necessary training. The power supply is AC 220V!



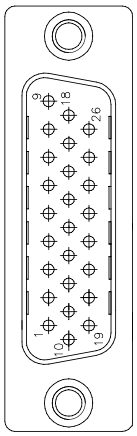
- » X200 - Outputs
- » X101 - TTL I/O
- » X100 - CAN Bus
- » PEDAL - Pedal
- » PANEL - Touch panel
- » M1.1 - Sewing motor encoder interface
- » M1 - Sewing motor

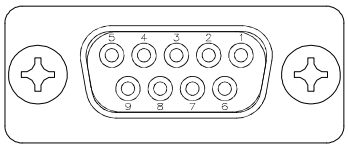
06.02.02. PIN DEFINITION
-1-3

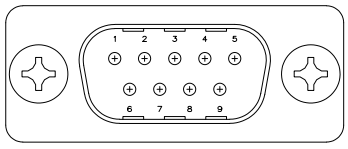
INTERFACE ICON	PIN	DEFINITION	PIN	DEFINITION
 X200	1	DC31V	14	Output-04
	2	Output-02	15	Output-05
	3	Output-01	16	Output-06
	4	Output-03	17	Output-07
	5	Output-04	18	Output-10
	6	Output-05	19	DC31V
	7	Output-06	20	Output-02
	8	Output-07	21	Output-01
	9	Output-10	22	DC31V
	10	DC31V	23	Output-09
	11	Output-02	24	Output-09
	12	Output-01	25	Output-08
	13	Output-03	26	Output-08

06.02.02. PIN DEFINITION

-2-3

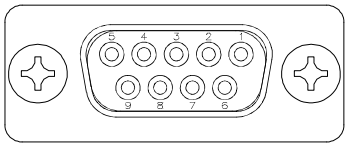
INTERFACE ICON	PIN	DEFINITION	PIN	DEFINITION
 X101	1	VCC	14	CHA2
	2	Function bar-LOCK	15	Machine ID-SDA
	3	Machine ID-SCL	16	Input-06 (digital)
	4	Function bar-CLK	17	Input-05 (digital)
	5	CHB 2	18	Input-02 (digital)
	6	Input-04 (digital)	19	DC12V
	7	Input-03 (digital)	20	DC12V
	8	Elec Hand Wheel-CHB	21	Input-10 (analog)
	9	Elec Hand Wheel-CHA	22	Input-09 (analog)
	10	GND	23	Input-08 (analog)
	11	GND	24	Input-07 (analog)
	12		25	Function bar-Key
	13	Function bar-DATA	26	Input-01 (digital)

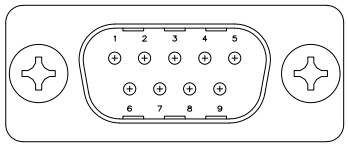
INTERFACE ICON	PIN	DEFINITION
 X100	1	EXT-SYNC
	2	CANL
	3	UART-RX
	4	VCC
	5	GND
	6	CANH
	7	UART-TX
	8	VCC
	9	GND

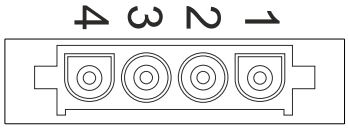
INTERFACE ICON	PIN	NORMAL PEDAL	STANDING PEDAL	SPI
 PEDAL	1	GND	GND	GND
	2	VCC	VCC	VCC
	3	PEDAL - AN	PEDAL - AN	INT 2
	4			SPI-SCK
	5			SPI-MISO
	6			INT 1
	7			INT 3
	8			SPI-NSS
	9			SPI-MOSI

06.02.02. PIN DEFINITION

-3-3

INTERFACE ICON	PIN	DEFINITION
 PANEL	1	
	2	CANL
	3	HMI-RXD
	4	VCC
	5	GND
	6	CANH
	7	HMI-TXD
	8	VCC
	9	GND

INTERFACE ICON	PIN	DEFINITION
 M1.1	1	GND
	2	VCC
	3	MC-U
	4	MC-W
	5	MC-CHA
	6	
	7	MC-SYNC
	8	MC-V
	9	MC-CHB

INTERFACE ICON	PIN	DEFINITION
 M1	1	EARTH
	2	A phase
	3	B phase
	4	C phase

07. SUPPORT FORMULAR

01. COMPLAINT FORM

Dear Customer,
we are very sorry to hear that there is an issue regarding one of our products and that you are not satisfied. To fully process your complaint, we need some information from you. Therefore we would kindly like to ask you to complete the below questionnaire and return it back to us. We will then process your complaint in our quality department and send you feedback as soon as possible.

Thank you very much for your understanding and your efforts in advance.

Kind regards,
your Vetron Typical Europe Team

1. CUSTOMER:	
Name:	Country:
Address:	Phone:
Zip code, city:	Email:
2. DEALER:	
Name:	Country:
Address:	Phone:
Zip code, City:	Email:
3. MACHINE DATAS:	
Product-Type:	Control box type:
Serial number of machine:	Serial number of control box:
Year of manufacturing:	Software release:
4. PROBLEM OR FEATURE REQUEST:	
Detailed description:	
Date of first error, error count:	
Date, Signature:	

In order to process the complaint properly, we ask you for the following information:

- This signed support sheet
- Original product / part(s) or videos and pictures of the problem

Please send the defective part(s) and completed document to:

Vetron Typical Europe GmbH
Clara-Immerwahr-Str. 6
67661 Kaiserslautern / Germany

Phone: +49 (0)6301 320 75-0
Fax: +49 (0)6301 320 75-1

Or contact us by mail:
support@vetrontypical.com

VETRON TYPICAL EUROPE GmbH
Clara-Immerwahr-Str. 6
67661 Kaiserslautern, Germany
Tel.: +49 6301 320 75-0
Fax: +49 6301 320 75-11

info@vetrontypical.com
www.vetrontypical.com

VETRON

YSC-90A0 Servo System

INSTRUCTION BOOK

03/2023

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info@vetrontypical.com
www.vetrontypical.com

ⓘ The documents for the machines can be accessed by logging on **https://www.vetrontypical.com/** downloaded for free.

CE marked after §7 Prod SG

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YSC-90A0 AC SERVO SYSTEM

01. SAFETY INSTRUCTIONS

02. ELECTRICAL CONNECTION

03. TOUCH PANEL

04. PREPARATION AND TEST

05. SYSTEM OPERATION

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YSC-90A0 AC SERVO SYSTEM

06. SETTING THE BASIC FUNCTIONS

07. ERROR MESSAGES & POSSIBLE TROUBLESHOOTING

08. UPDATE FIRMWARE

01. SAFETY INSTRUCTIONS

01.01. WORKING ENVIRONMENT / INSTALLATION

To ensure correct operation and safety, read these operating instructions before using your new machine.

The controller YSC-90A0 is used for an industrial sewing machine. With industrial sewing machines, it is normal to work directly in front of moving parts such as the needle and thread take-up. As a result, there is always a risk of injury from these parts. When you are ready to operate the machine, please follow the instructions of trained personnel and instructors for safe and correct operation.

WORKING ENVIRONMENT

- » Please use 220 VAC in ± 10% ranges.
- » Keep the product away from strong electromagnetic interference to avoid incorrect operation.
- » Please work in an area with a temperature of 5 °C ~ 45 °C and a humidity of 80% or less.

INSTALLATION NOTE

- » The control box should be installed correctly. Follow the instructions in this manual
- » Turn off the power and unplug the cable before installation.
- » Keep the wire away from the handwheel, pulley, and other moving parts.
- » To avoid static interference and power leaks, all grounding must be done.

NOTE ON SAFETY

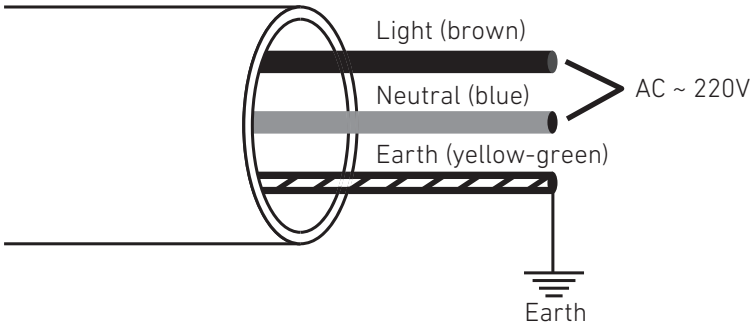
- » If there is water, any other liquids or corrosive materials on the controller or motor, stop operation and turn off power.
- » All plugs should not be plugged in and unplugged when the machine is on.
- » The plugs should be plugged in and unplugged by using the correct method.
- » The control should only be opened by a specialist.
- » When you switch on the machine for the first time, work at a low speed and check the correct direction of rotation.
- » Do not touch any moving parts while the machine is in operation.
- » The protective devices must be used on all moving parts in order to avoid contact with the body and the insertion of objects.
- » Turn off the power before: servicing and repairing, lifting the head of the machine, changing the needle, or threading the needle.

02. ELECTRICAL CONNECTION

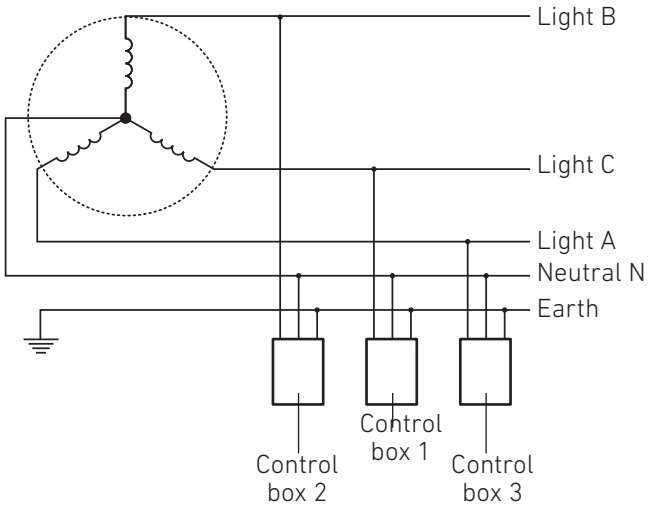
02.01. CABLE

Work on the electrical equipment may only be performed by qualified technicians or personal who have undergone the necessary training. The power supply is AC 220V!

Single phase: 220V power connection



Three phase: 380V power connection

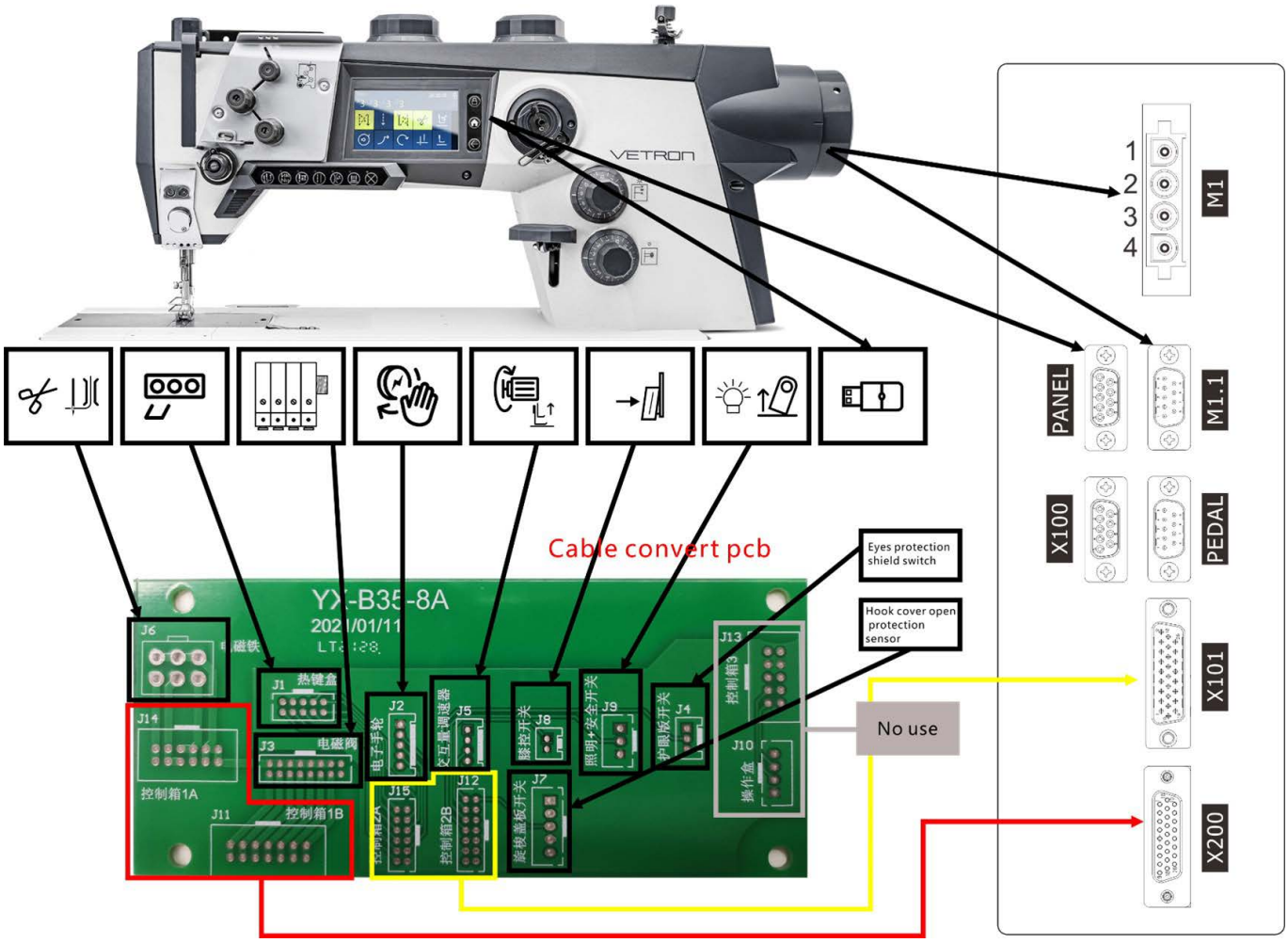


ATTENTION:
The yellow-green earth cable must be connected to the earth properly.
Otherwise there are risks of human electric shock and the controller doesn't work properly sometimes.

02.02. WIRING DIAGRAM

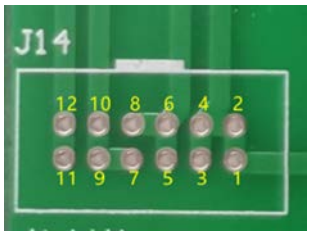
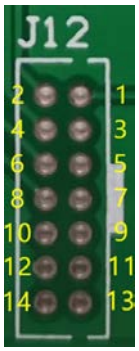
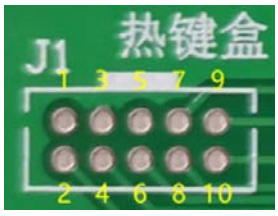
02.02.01. CONNECTORS & CONNECTIONS

-1-4



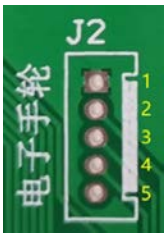
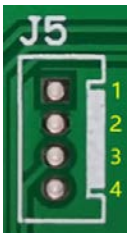
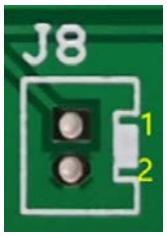
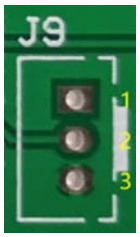
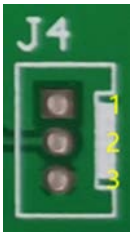
- M1 - Sewing motor
- M1.1 - Sewing motor encoder interface
- PANEL - Touch panel
- PEDAL - Pedal
- X100 - CAN Bus
- X101 - TTL I/O
- X200 - Outputs

02.02.01. CONNECTORS & CONNECTIONS
-2-4

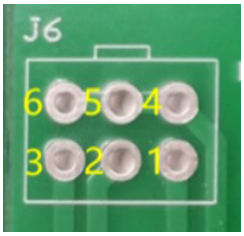
CONNECTION	CIRCUIT BOARD CONNECTOR	PIN	DESCRIPTION	PIN	DESCRIPTION
To control box connector X200 (Solenoid outputs)		1	31V	2	31V
		3	31V	4	31V
		5	Output-02	6	Output-02
		7	Output-01	8	Output-02
		9	Output-01	10	Output-01
		11	Output-03	12	Output-03
		1	Output-04	2	Output-04
		3	Output-05	4	Output-05
		5	Output-06	6	Output-06
		7	Output-07	8	Output-07
		9	Output-10	10	Output-10
		11	Output-09	12	Output-09
		13	Output-08	14	Output-08
To control box connector X101 (TTL I/O) & DC12V		1	VCC	2	SCL
		3	SDA	4	Reverse SW.
		5	Input-04	6	PAD-KEY
		7	Electron. Handwheel CHB	8	PAD-CLK
		9	Electron. Handwheel CHA	10	PAD-LOCK
		11	GND	12	PAD-DATA
		1	Input-01	2	Input-07
		3	Input-10	4	Input-05
		5	Input-09	6	Input-03
		7	CHB2	8	Input-06
		9	CHA2	10	Input-08
		11	IO14	12	GND
		13	DC12V	14	DC12V
For short key groups		1	VCC	2	PAD-DATA
		3	GND	4	PAD-LOCK
		5	-	6	PAD-CLK
		7	SDA	8	PAD-KEY
		9	SCL	10	Input-02

02.02.01. CONNECTORS & CONNECTIONS

-3-4

CONNECTION	CIRCUIT BOARD CONNECTOR	PIN	DESCRIPTION
Reserved for electronic handwheel		1	GND
		2	Electron. Handwheel CHA
		3	Electron. Handwheel CHB
		4	Input-04
		5	-
For stroke knob potentiometer input		1	VCC
		2	GND
		3	Input-07
		4	-
Reserved for knee switch input		1	Input-05
		2	GND
Reserved for hook cover open protection proximity sensor		1	-
		2	-
		3	Input-01
		4	GND
		5	DC12V
For lighting and machine tilt detection		1	VCC
		2	Input-03
		3	GND
Reserved for eye protection shield switch		1	-
		2	Input-06
		3	GND

02.02.01. CONNECTORS & CONNECTIONS
-4-4

CONNECTION	CIRCUIT BOARD CONNECTOR	PIN	DESCRIPTION	PIN	DESCRIPTION
Solenoids should be connected to J6		1	Output-02	4	31V
		2	Output-01	5	31V
		3	Output-03	6	31V
Air actuator relays should be connected to J3		1	31V	2	Output-08
		3	31V	4	Output-09
		5	31V	6	Output-10
		7	31V	8	Output-07
		9	31V	10	Output-06
		11	31V	12	Output-05
		13	31V	14	Output-04
		15	-	16	-

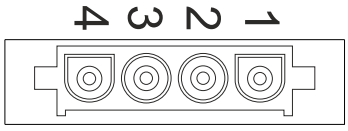
02.03. YSC-90A0 INPUTS & OUTPUTS DEFAULT CONFIGURATION

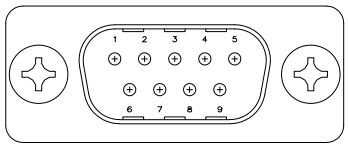
DESCRIPTION	PARAMETER	TYPE	DEFAULT FUNCTION
Input-01	A04	Digital	Hook cover open protection proximity sensor
Input-02	A05	Digital	Reverse SW.
Input-03	A81	Digital	Tilt detection SW.
Input-04	A82	Digital	Push button of electronic handwheel
Input-05	A83	Digital	Knee SW.
Input-06	A84	Digital	Eyes protection shield SW.
Input-07	A85	Analog	For stroke knob potentiometer input
Input-08	A86	Analog	Reserved
Input-09	A87	Analog	Reserved
Input-01	A88	Analog	Reserved

DESCRIPTION	PARAMETER	TYPE	DEFAULT FUNCTION
Output-01		Fast decay	Reserved
Output-02			Reserved
Output-03			Trimmer
Output-04			Additional tension
Output-05			Main tension
Output-06			Foot lift
Output-07			Reverse sewing direction
Output-08			Reserved
Output-09			Second stitch length
Output-10			Stroke height

02.04. PIN DEFINITION

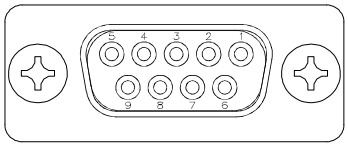
-1-3

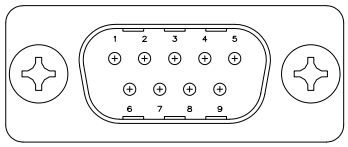
INTERFACE ICON	PIN	DEFINITION
 M1	1	EARTH
	2	A phase
	3	B phase
	4	C phase

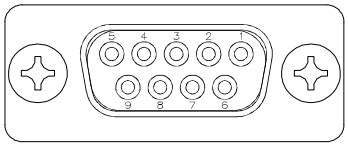
INTERFACE ICON	PIN	DEFINITION
 M1.1	1	GND
	2	VCC
	3	MC-U
	4	MC-W
	5	MC-CHA
	6	
	7	MC-SYNC
	8	MC-V
	9	MC-CHB

02.04. PIN DEFINITION

-2-3

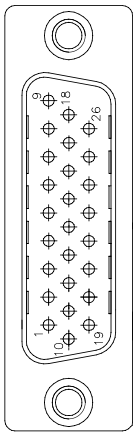
INTERFACE ICON	PIN	DEFINITION
 PANEL	1	
	2	CANL
	3	HMI-RXD
	4	VCC
	5	GND
	6	CANH
	7	HMI-TXD
	8	VCC
	9	GND

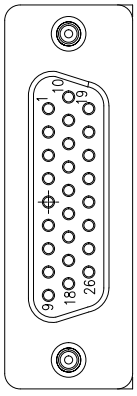
INTERFACE ICON	PIN	NORMAL PEDAL	STANDING PEDAL	SPI
 PEDAL	1	GND	GND	GND
	2	VCC	VCC	VCC
	3	PEDAL-AN	PEDAL-AN	INT 2
	4			SPI-SCK
	5			SPI-MISO
	6			INT 1
	7			INT 3
	8			SPI-NSS
	9			SPI-MOSI

INTERFACE ICON	PIN	DEFINITION
 X100	1	EXT-SYNC
	2	CANL
	3	UART-RX
	4	VCC
	5	GND
	6	CANH
	7	UART-TX
	8	VCC
	9	GND

02.04. PIN DEFINITION

-3-3

INTERFACE ICON	PIN	DEFINITION	PIN	DEFINITION
 X101	1	VCC	14	CHA2
	2	Function bar-LOCK	15	Machine ID-SDA
	3	Machine ID-SCL	16	Input-06 (digital)
	4	Function bar-CLK	17	Input-05 (digital)
	5	CHB 2	18	Input-02 (digital)
	6	Input-04 (digital)	19	DC12V
	7	Input-03 (digital)	20	DC12V
	8	Elec Hand Wheel-CHB	21	Input-10 (analog)
	9	Elec Hand Wheel-CHA	22	Input-09 (analog)
	10	GND	23	Input-08 (analog)
	11	GND	24	Input-07 (analog)
	12		25	Function bar-Key
	13	Function bar-DATA	26	Input-01 (digital)

INTERFACE ICON	PIN	DEFINITION	PIN	DEFINITION
 X200	1	DC31V	14	Output-04
	2	Output-02	15	Output-05
	3	Output-01	16	Output-06
	4	Output-03	17	Output-07
	5	Output-04	18	Output-10
	6	Output-05	19	DC31V
	7	Output-06	20	Output-02
	8	Output-07	21	Output-01
	9	Output-10	22	DC31V
	10	DC31V	23	Output-09
	11	Output-02	24	Output-09
	12	Output-01	25	Output-08
	13	Output-03	26	Output-08

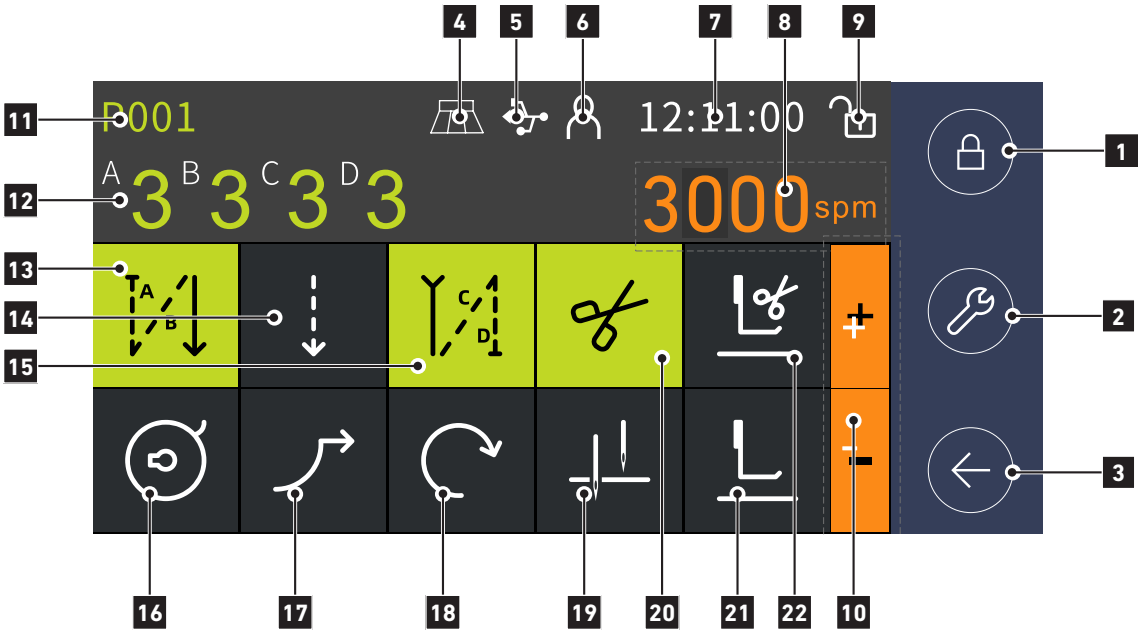
03. TOUCH PANEL

03.01. WELCOME

The panel is connected to control box via a cable. If the connection is normal, the main sewing interface will be displayed after welcome:

03.02. MAIN SEWING INTERFACE

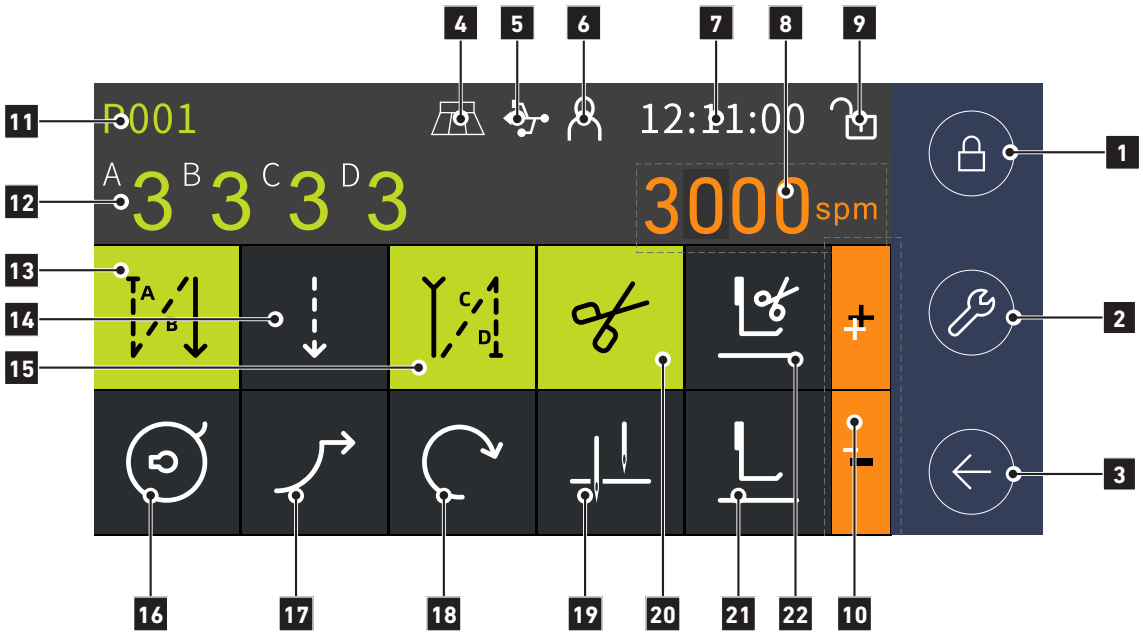
-1-2



No	KEY	DISCRIPTION
1	Lock key (Physical button)	Lock / unlock touch display
2	Configuration (Physical button)	Enter config interface
3	Return (Physical button)	Return to the previous interface
4	Pedal type	The icon will be shown if standing pedal is selected
5	USB stick	The icon will be shown if a USB-stick is inserted
6	Authorize	Enter the authorize interface
7	Clock	Time
8	Bobbin thread counter or speed display	This area will be shown if the bobbin thread counter is active or the speed adjustment is active. Otherwise, it will be hidden

03.02. MAIN SEWING INTERFACE

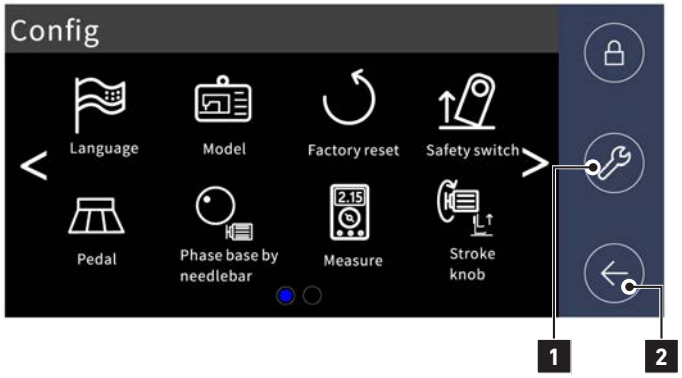
-2-2

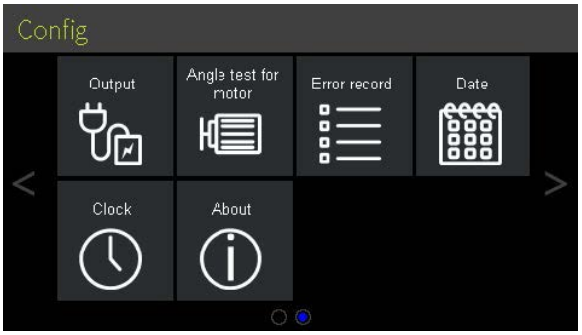


No	KEY	DISCRIPTION
9	Locked status	The icon shows the status of the touch display
10	Values	Increase / decrease the edibale value. It will be hiodden when there is no edit
11	Program setting	Program setting key. Enter program setting interface, (refer to 06.02)
12	Stiches setting	Increase or decrease the number of stitches in segments A, B, C, D with + / -
13	Start back tack	Selection: Off, Single, Double, Multiple
14	Seam display	Shows current seam Free sewing, programmed sewing (displays the seam section that is being sewn).
15	End back tack	Selection: Off, Single, Double, Multiple
16	Bobbin thread monitoring	Bobbin thread counter via stitch countdown: On / Off
17	Soft start	Soft start: On / Off (refer 06.03)
18	Sewing speed	Adjust speed
19	Needle position	Switch the position of needle when sewing stop
20	Thread cutting	Thread cutting: On / Off (refer to 06.07)
21	Foot position at sewing stop	Auto foot lift after sewing stop: Up / Down (refer to 06.06)
22	Foot position after thread cutting	Auto foot lift after thread cut: Up / Down (refer to 06.06)

04. PREPARATION AND TEST

04.01. HOW TO ENTER THE INTERFACE





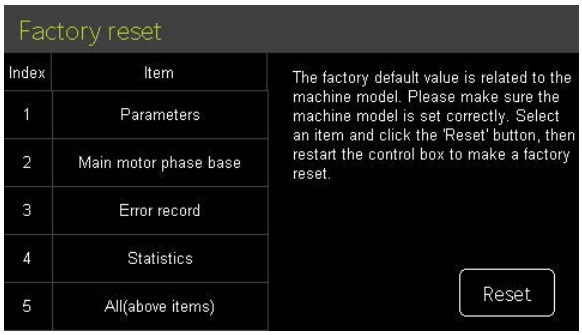
Press Config button **1** when switching on the controller to enter **Preparation and Test interface**. You can select: language, the machine model, make a factory reset, set pedal type, set the machine ZERO position, test the input and output, etc. With the return key **2** you come back.

04.02. SELECT MACHINE MODEL

At **Preparation and Test interface**, press icon „**Model**".
If the machine type is not set correctly the machine will not work properly. Normally, the control box has a different default value with different model such as speed limit and actuator action angle, etc.

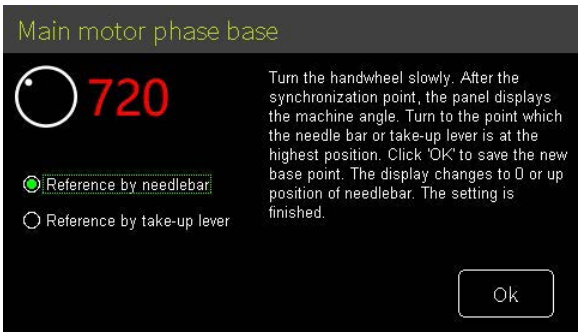
The machine ID is saved in memory of the control box or the machine head. For the VE4000, the default option is saved in the memory of machine head (the chip is integrated on the 7 short keys assembly). If there are some problems with the 7 short keys (function bar), you can select the options which are saved in the control box.

04.03. FACTORY RESET



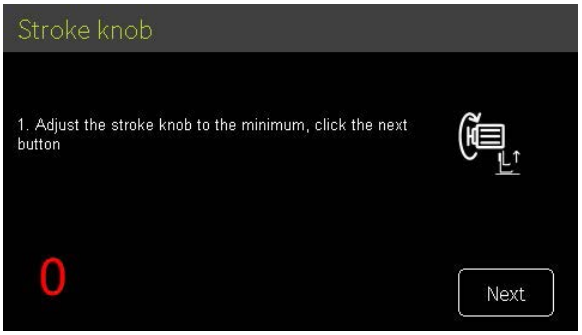
At **Preparation and Test interface**, press icon **„Factory Reset“**.
Select: 1- „Parameter“, 2-„Machine ZERO“, 3-„Error record“, 4-„Statistics“ or all items to reset.
The machine needs to be restarted.

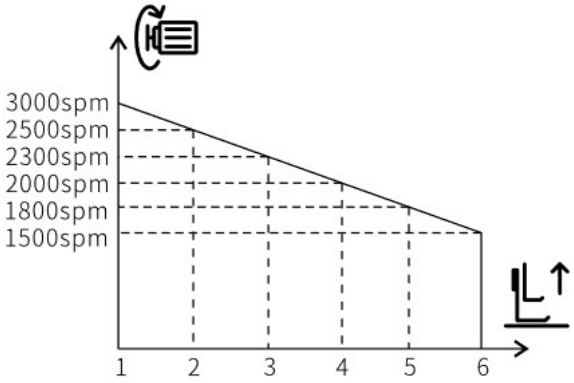
04.04. MACHINE ZERO POSITION



At **Preparation and Test interface**, press icon **„Phase base by needle bar“** or **„Phase base by lever “**.
The first option sets the base at highest position of the needle bar. The second option sets the base at the highest position of the thread take up lever. Two options are equivalent.

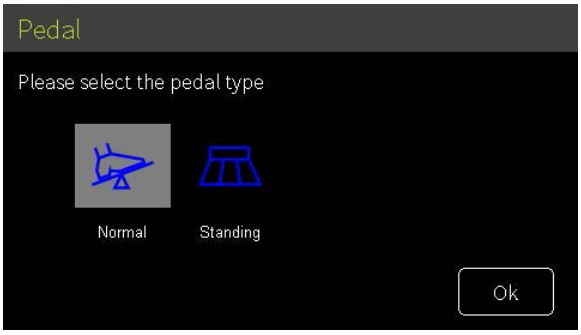
04.05. CALIBRATE THE SENSOR OF FOOT KNOB





» At **Preparation and Test interface**, press icon **„Stroke knob“**
» Set the left upper feed dog adjustment knob to „5“.
» Press „Next“.
» Set the right upper feed dog adjustment button to “9” and the left knob also to “9”.
» Press “Next”.
» The configuration display appears.

04.06. SELECT PEDAL TYPE



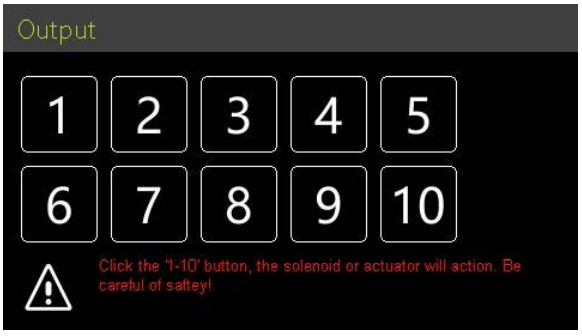
At **Preparation and Test interface**, press icon **„Pedal“**.
You can choose the normal pedal or standing operate pedal, click **OK** to save.

04.07. INPUT TESTS

Item	Value	Item	Value
AC voltage	220	Jog dial	111
Extern Synchronizer	0	Shortkey groups	6
Index and UVW	U:1 H:5	Ia	2047
Raw encoder value	1589	Ib	2065
Motor encoder	0	AN1	256
Pedal	1810	AN2	256
Standing	0 0 0	AN3	256
Input	010101	AN4	256

At **Preparation and Test interface**, press icon **„Measure“**.
You can check the values of the various functions.

04.08. OUTPUT TESTS



At **Preparation and Test interface**, press icon „**Output**“.
There are ten solenoid outputs which are labeled as SOL01~SOL10. You can test the solenoid output by pressing the number button.

04.09. SAFETY SWITCH

At **Preparation and Test interface**, press icon **„Safety switch".**
Various safety divices can be switched on or off: machine-tilt-protection, hook covering protection and eye protection.

04.10. LANGUAGE

At **Preparation and Test interface**, press icon **„Language"**.
Choose the language which you need. Click **OK** to save. The machine needs to be restarted.

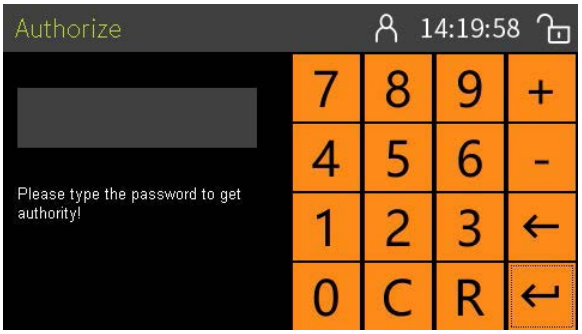
05. SYSTEM OPERATION

05.01. PARAMETER AUTHORITY

05.01.01. AUTHORITY STRUCTURE

LEVEL	ACCESSIBLE PARAMETER	ICON
Operator	Basic parameters	
Technician	Advanced Parameters	
Developer	Parameters about motor drive	

05.01.02. ACCESS RIGHTS TO THE TECHNICIANS LEVEL



NOTE!
Normally, only the operator has basic authority. The symbol is gray. The technicians level is not to be accessed by normal users. Modifications at this level must only be done by service staff.

The technicians level is unlocked by the following:
At **Main sewing interface**, press icon to enter **„Authority interface".** If not done at the main sewing interface, the click will be ignored.

05.02. QUICK RESET ALL PARAMETERS

Press return button **1** when switching on the controller. The controller will make a factory reset. There will be a message near the wait cycle animation.

05.03. USER SETTINGS

05.03.01. SELECT THE FUNCTION CATEGORY TO BE ADJUSTED

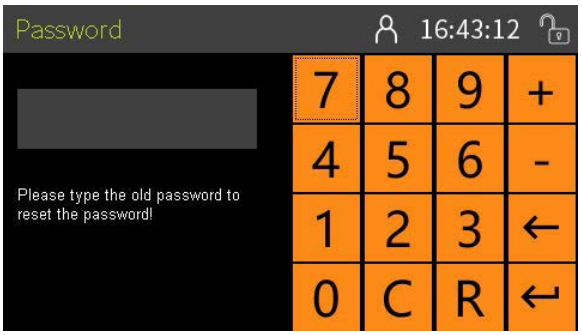
At **Main sewing interface**, press **„User setting button"** to enter **„User setting interface".** Most items are the parameter setting by categorized function.

05.03.02. ADJUST PARAMETER VALUE

Click a function category icon to enter the interface. The parameter list is on the left side, where you can swipe the list and select a parameter to adjust.

» The default value of parameter: click „Reset" button.
» Click „Save" button to save the modified result.
» Click „Reset" button to reset to default value.

05.03.03. CHANGE PASSWORD

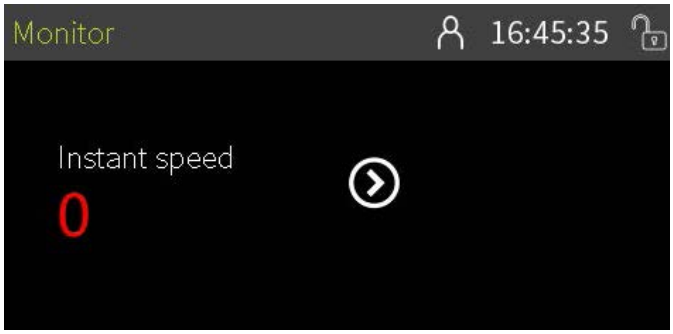


At **Main sewing interface**, press Configuration key . Enter **„User setting interface"**, then select sub-item: *** „Password". You can set a new password, if the old password is entered correctly. The default technician password is 051234.

05.04. VIEW SOFTWARE VERSION

At **Main sewing interface**, press Configuration key (Physical button) . Enter **„User setting interface“**, then select sub-item: **„About“**.

05.05. MONITOR

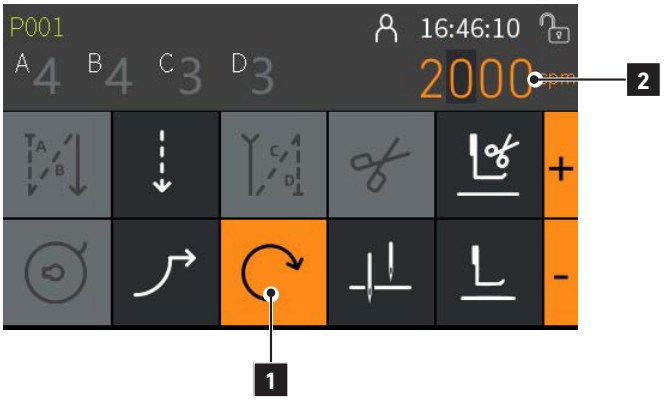


At **Main sewing interface**, press Configuration key .
Enter **„User setting interface“**, then select sub-item: **„Monitor“**.
You can select the monitor value by the arrow button. The monitor items are: instant speed, instant angle, raw encoder value, hall sensor of motor, electric angle, stroke knob sensor, etc.

06. SETTING THE BASIC FUNCTIONS

06.01. MAXIMUM SPEED

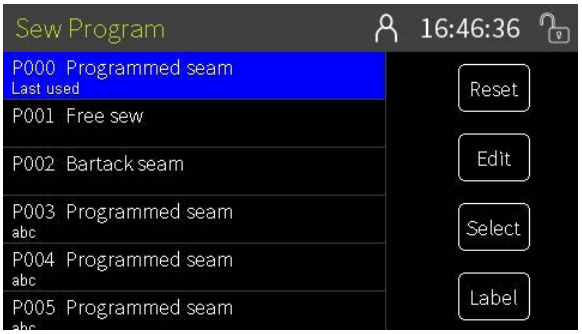
INDEX	MAX	MIN	UNIT	DESCRIPTION
S01	3500	150	rpm	Maximum speed
S05	2000	500	rpm	Speed of mulitple tacking
S06	2000	500	rpm	Speed of programmed stitches



Different machine classes have different maximum speeds.

Setting speed: press the **„Speed“** icon 1 at **Main sewing interface**. The speed value and „**+ / -**“ button will be displayed. The focused number (dark gray background) can be adjusted by the „**+ / -**“ button. You can change the focus by pressing an other number. If value is changed, then return to the **Main sewing interface** by double-clicking on the **„Speed display“** 2.

06.02. SETTING BACKTACK AND SEAM



The control box used programs are to define the seams. The **P000** program is the program which the control box saved before switching on. You can use the button to select other programs. The **P001** program is free sewing. The **P002** is a multible backtack seam. The **P003- P009** are the fixed-stitches program sewing. The operator can press the program button to enter the list interface to select a program.

06.02.01. COMMON SETTING ABOUT START/END TACKING

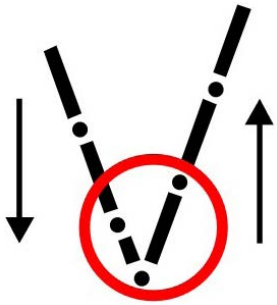
INDEX	MAX	MIN	UNIT	DESCRIPTION
S03	2000	500	rpm	Speed in backtack at seam begin
S04	2000	500	rpm	Speed in backtack at seam end
T01	200	1	ms	Reverse solenoid action time (Start)
T02	200	1	ms	Reverse solenoid release time (End)
D05	359	0	degree	Reverse power on angle
D06	359	0	degree	Reverse power off angle
A20	1	0	-	Ornamental-stitch backtack at seam start 0 = OFF 1 = ON, the motor will stop at sewing direction changing point
A22	1	0	-	Ornamental-stitch backtack at seam end 0 = OFF 1 = ON, the motor will stop at sewing direction changing point
T11	1000	1	ms	Stop time for sewing direction change of individual backtack sections in order to reach the specified stitch lengths (forwards/ backwards)

06.02.02. STITCH IN STITCH

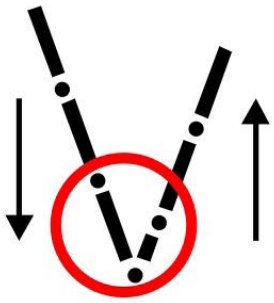
Before adjustment, make sure that forward stitch length is the same with backward stitch length. Use the reverse lever.

NOTE:
Cannot be set for decorative tacking (SD Mode, A20, A22)

The time required for the actuator to move backwards can be set with parameter **T01**. See the following figure:

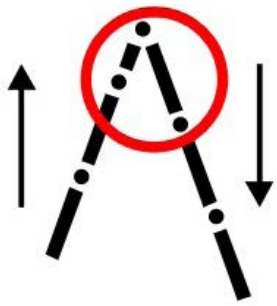


Decrease T01

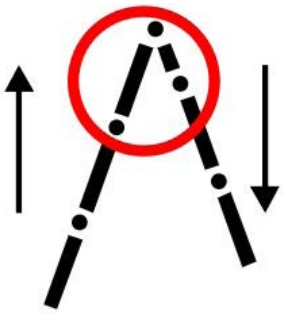


Increase T01

The time required for the actuator to move backwards can be set with parameter **T02**. See the following figure:



Decrease T02

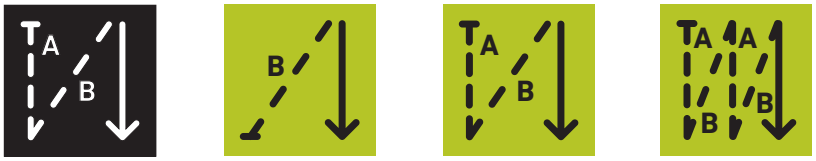


Increase T02

06.02.03. FREE SEWING PROGRAM

Click Seam setting button at **Main sewing interface**, select **P001** program.
This seam will be run without stitch counting.

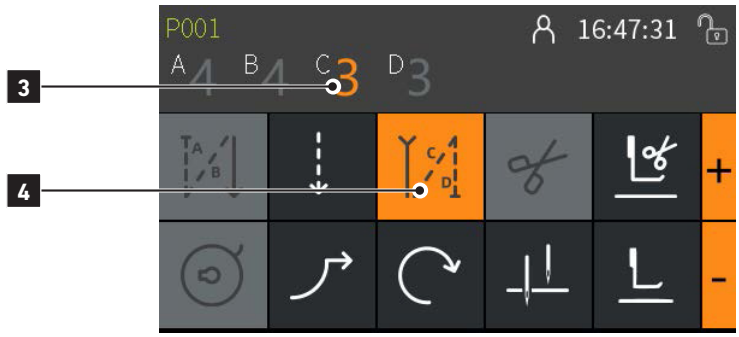
Set the **start tacking**:
Click the tacking stitches number **1** to adjust the value.



Click the start tacking button **2** to change the tacking mode.
Four options are: Off, Single, Double, Multiple.

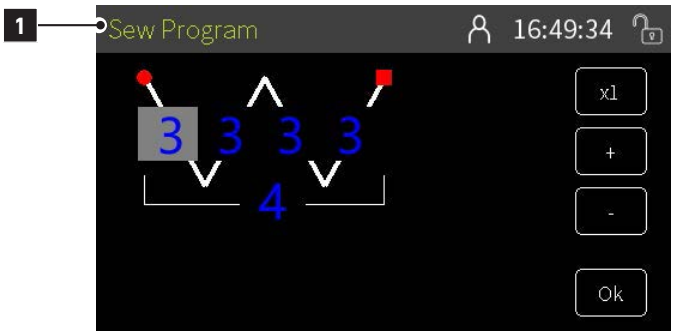
Set the **end tacking**:

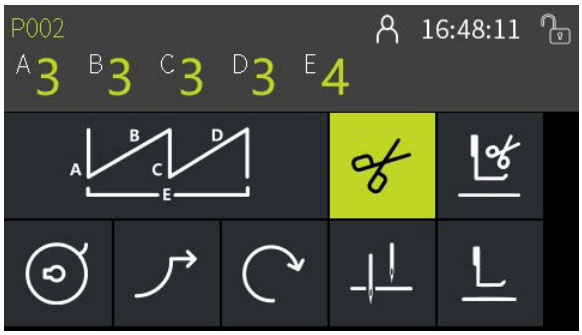
Click the tacking stitches number **3** to adjust the value.

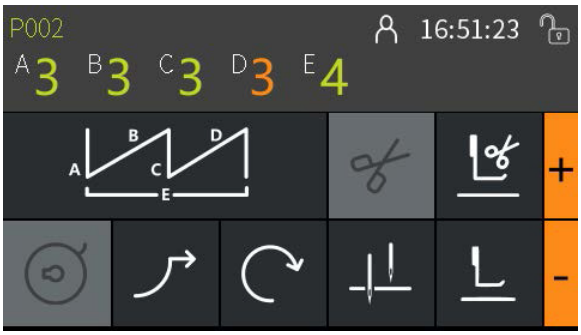


Click the end tacking button **4** to change the tacking mode.
Four options are: Off, Single, Double, Multiple.

06.02.04. BAR SEAM PROGRAM







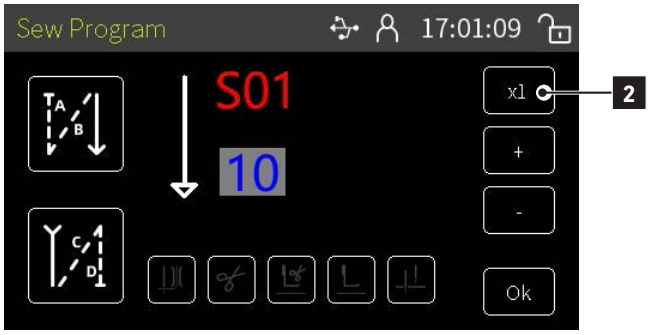
Click **Seam setting** button **1** at **Main sewing interface**, select **P002** program (multible tacking).

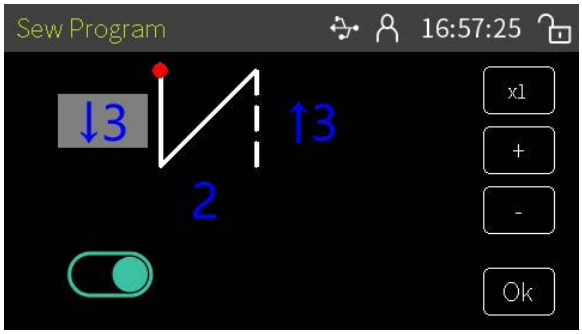
There are 5 editable numbers. The 4 numbers at 1st line is ABCD, the last number at 2nd line is E.
The segments are programmed as E, range 1~15. The stitches of first segment is defined as A, the stitches of second segment is defined as B, the stitches of other segments are defined as C (forward) and D (backward).
When the tack sewing is finished, the pedal must be stepped back to 0 position and then can be stepped forward to start the next sewing.

06.02.05. FIXED STITCHES PROGRAM

This seam can be programmed with a maximum 25 segments and a maximum of 99 stitches for each segment.

» Click „**Seam setting**" button at **Main sewing interface**, select **P003~P009** program.
» Click the edit button to enter the fixed-stitches seam edit interface.
» Click '>' button **1** to edit the selected segment.
» Click the '+' '-' button to insert or delete segment
» In each segment it is possible to switch the start / end backtack, foot lifting, needle position at stop, thread trimming and number of stitches on or off. Stitches can be entered in units or 10, toggled with key **2**.





E means the number of stitches in the respective seam.

"S01-04" means that there are 4 segments, the S01 is the next seam to be sewed. You can click the button  to select the segment to be sewed. All the options (start/end bartack, stitches, thread trim, clamp, foot lift and needle stop position) can also be modified in the **Main sewing interface**.

06.03. SOFT START

INDEX	MAX	MIN	UNIT	DESCRIPTION
A21	1	0	-	Soft start 0 = OFF 1 = ON
S08	500	200	rpm	Speed of soft start
O01	10	1	stitches	Number of soft start stitches

Click „**soft start**“ button  . Is the icon on, the soft start is ON. Is the icon off, the soft start is OFF

Functions: when beginning a new seam, speed is determined by the pedal and limited to the soft start speed.

06.04. TURNING BACK

INDEX	MAX	MIN	UNIT	DESCRIPTION
A13	1	0	-	Turning back 0 = OFF 1 = ON
O35	359	0	degree	Moving angle of rotation
S16	500	50	rpm	Speed of turning back
T12	1000	1	ms	Waiting time up to the turning back

Turning back ON: set **A13** as to **1**.
Function: turning back function starts after thread trimming. When the motor stops, wait the time which is set by **T12**. The motor turns back at the speed which set by **S16**, and reaches the position which is set by **O35**.

06.05. CORRECTION

INDEX	MAX	MIN	UNIT	DESCRIPTION
A03	1	0	-	Stop position of correction: 0 = Half stitches 1 = One stitch
A30	1	0	-	Correction mode: 0 = Single correction 1 = Continuous correction
D15	359	0	degree	Up position of correction
D16	359	0	degree	Down position of correction
O69	1	0	-	Correction timing: 0 = The correction is inhibited after thread trimming 1 = No limit

06.06. SEWING FOOT LIFT

INDEX	MAX	MIN	UNIT	DESCRIPTION
A09	1	0	-	Sewing foot lift: 0 = OFF 1 = ON
T05	500	1	ms	Lifting foot confirm delay time: to avoid unexpected foot lifting when stepping backward for trimming, the time is less and the sensitivity is higher
T06	500	1	ms	Release lift foot delay time
T07	999	1	ms	Full activation duration of foot lift solenoid
T10	200	1	ms	Pedal delay time adjustment for debounce
A14	1	0	-	Foot lift at sewing stop 0 = OFF 1 = automatic lifting the sewing foot during stop
A15	1	0	-	Foot lift after thread trim: 0 = OFF 1 = automatic lifting the sewing foot during stop
O05	100	1	%	Duty cycle in time period which PWM activation
O06	1	0	-	Foot lifting solenoid automatically power off: 0 = OFF 1 = ON
O07	30	5	s	Hold time before foot lifting solenoid automatically power off

Sewing foot lift at sewing stop: click  at **Main sewing interface**, icon is on, the function is ON.

Sewing foot lift after trim: click  at **Main sewing interface**, icon is on, the function is ON.

Foot timed release: the max. time that the foot can be permanently raised is restricted by parameter **O07**, after the time has elapsed it is lowered automatically and can only be raised again by stepping the pedal backwards (-1 position). From this time the restriction time is effective again. This function is switched off with **O06=0**.

Holding force of the raised foot: the foot lifting is raised by full activation, then it switches automatically to partial activation to reduce the load on the controller and the connected magnets. The full activation period is set with **T07** and holding force during partial activation is set with **O05**.

When pushing the pedal forward, with a raised sewing foot the start up delay, which can be set with parameter **T06.**

06.07. THREAD TRIM

-1-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
A06	1	0	-	Thread trim: 0 = OFF 1 = ON
S07	300	150	rpm	Thread trimming speed
A42	1	0	-	Short thread cutter
D03	359	0	degree	Thread trimmng power on angle
D04	359	0	degree	Thread trimming power off angle

06.07. THREAD TRIM

-2-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
D19	359	0	degree	Reverse of short thread trimming power on angle
D20	359	0	degree	Reverse of short thread trimming power off angle
D21	359	0	degree	Zero stitch length of short thread trimming power on angle
D22	359	0	degree	Zero stitch length of short thread trimming power off angle

Thread trim ON: click trim button  at **Main sewing interface**, the icon light is on.

06.08. THREAD TENSION

INDEX	MAX	MIN	UNIT	DESCRIPTION
A27	3	0	-	Mode for lifting the thread tension during active foot lift. 0 = The thread tension is not lifted; 1 = The thread tension is lifted as the sewing feet are lifted during sewing 2 = The thread tension is lifted after thread trimming 3 = The thread tension is lifted as the sewing feet are lifted during sewing and after thread trimming
A28	3	0	-	Coupling of additional thread tension with quick stroke height adjustment. If the second foot stroke is switched on, the second thread tension is automatically activated: 0 = Knee switch off, function bar off 1 = Knee switch on, function bar off 2 = Knee switch off, function bar on 3 = Knee switch on, function bar on
A83	199	0		Additional thread tension: See chapter 06.18. A04 - 9
D13	359	0	degree	Thread tension power on angle
D14	359	0	degree	Thread tension power off angle
O49	100	1	ms	Full activation time of main thread tension
O50	9999	1	%	Holding force of main thread tension
O75	500	0	ms	Thread tension power on time 0 = always Other = Automatically release after the **O75** set time
O86	100	1	ms	Full activation time of additional thread tension
O87	1	1	%	Holding force of additional thread tension
O88		0	-	Type of thread tension 0 = Electro magnet 1 = Solenoid valve

The thread tension power is on when position is reached with **D13** and power off when position is reached with **D14** during thread trimming.

Adjust parameter of the thread tension during active foot lift: the mode for thread tension is determined by parameter **A27**, the default value is **2**.

Adjust parameter of the sewing foot stroke during active the second thread tension: the mode is determined by parameter **A28**, the default value **1**.

06.09. THREAD CLAMP

INDEX	MAX	MIN	UNIT	DESCRIPTION
A10	1	0	-	Thread clamp: 0 = OFF 1 = ON
A29	3	0	-	Thread clamp option: 0 = Thread clamp only at start of seam 1 = Thread clamp at start of seam and at turning back 2 = Thread clamp at start of seam and with foot lifting 3 = Thread clamp at start seam, at turning back and with foot lifting
T15	2000	1	ms	Thread clamp power on time with foot lifting or at turning back
D07	359	0	degree	Position for activating of the thread clamp
D08	359	0	degree	Thread clamp power off angle
O48	100	1	%	Duty cycle in time period which PWM activation

Thread clamp at turning back: clamp power on during turning back. The max. permissible time is set by **T15** to protect from damage.

Thread clamp at foot lifting: clamp power on during foot lifting. The max. permissible time is set by **T15** to protect from damage.

06.10. FOOT STROKE

-1-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
S09	3500	500	rpm	Limit speed for 1st stroke height
S10	3500	500	rpm	Limit speed for 2nd stroke height
S11	3500	500	rpm	Limit speed for 3rd stroke height
S12	3500	500	rpm	Limit speed for 4th stroke height
S13	3500	500	rpm	Limit speed for 5th stroke height
S14	3500	500	rpm	Limit speed for 6th stroke height
S15	3500	500	rpm	Limit speed for the maximum stroke height
A32	99	0	stitches	Number of stitches for automatic switch off 2nd foot stroke 0 = Manual deactivated N = Number of stitches after which the 2nd foot stroke is automatically deactivated
A35	1	0	-	Speed limit during quick stroke adjustment: 0 = No limit 1 = Limit
A45	1	0	-	2nd stroke adjustment: 0 = OFF 1 = ON
A83	199	0		Quick stroke height adjustment: See chapter 06.18. A04 - 6
O85	2	0	-	Type of stroke adjustment sensor: 0 = No 1 = Contact switch 2 = Potentionmeter

06.10. FOOT STROKE

-2-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
O76	500	1	ms	Full activation duration
O77	100	1	%	Duty cycle in time period which PWM activation

Adjust parameter of the speed limitation in relation to the sewing foot stroke: if parameter **A35** set to **1**, the speed is reduced down to parameter **S15** when 2nd stroke activated.

Number of stitches 2nd stroke off: if **A32** is not **0**, after sewing **N** stitches, the second sewing foot stroke is automatically deactivated.

06.11. SECOND STITCH LENGTH

INDEX	MAX	MIN	UNIT	DESCRIPTION
A46	1	0	-	2nd stitch length adjustment 0 = OFF 1 = ON
A83	199	0		Second stitch length: See chapter 06.18. A04 - 8
S17	3500	150	rpm	Limit speed for the big stitch length
O33	1	0	-	Speed limit during second stitch length adjustment: 0 = No limit 1 = Limit when big stitch length
O78	500	1	ms	Full activation duration
O79	100	1	%	Duty cycle in time period which PWM activation

Adjust parameter of the speed limitation in relation to the 2nd stitch length: if parameter **O33** set to **1**, the speed is reduced down to parameter **S17** when 2nd stitch length activated.

06.12. SEAM CENTER GUIDE

INDEX	MAX	MIN	UNIT	DESCRIPTION
A47	1	0	-	Seam center guide: 0 = OFF 1 = ON
A51	3	0	-	Mode for automatic raising of the seam center guide: 0 = Raising of seam center guide is deactivated; it is not raised automatically. 1 = Raising of seam center guide when lifting the sewing foot 2 = Raising of seam center guide when sewing the backtack; 3 = Raising of seam center guide when sewing the backtack and lifting the sewing foot
A83	199	0		Seam center guide: See chapter 06.18. A04 - 12
O89	500	1	ms	Full activation duration
O90	100	1	%	Duty cycle in time period which PWM activation

06.13. NEEDLE COOLING

INDEX	MAX	MIN	UNIT	DESCRIPTION
A48	1	0	-	Needle cooling function: 0 = OFF 1 = ON
O93	999	1	ms	Full activation duration
O94	100	1	%	Duty cycle in time period which PWM action

Function: set **A48** as to **1**, when the motor runs, the cooling air pipe is open.

06.14. ELECTRONIC HAND WHEEL

INDEX	MAX	MIN	UNIT	DESCRIPTION
A23	1	0	-	Electronic hand wheel: 0 = OFF 1 = ON
A43	1	0	-	Direction of rotation of electronic hand wheel: 0 = Right 1 = Left

Function: when at stop, toggle the electronic hand wheel and the motor will also rotate accordingly.

06.15. BOBBIN THREAD MONITOR -1-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
A12	1	0	-	Bobbin thread counter: 0 = OFF 1 = ON
O43	5000	1	-	Reset value of the bobbin thread counter
O44	5000	0	-	Bobbin thread counter value

Function: using bobbin thread monitor allows users to know the remaining thread amount.

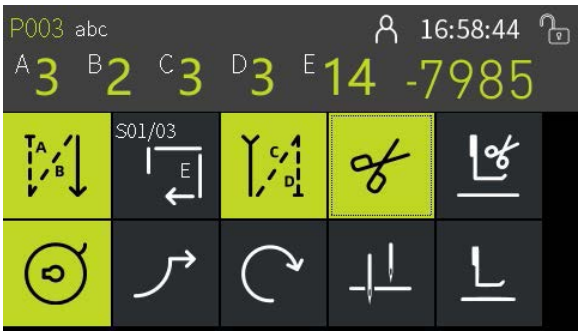
Adjust reset value: enter **Setting interface**. Adjust the value of parameter **O43**.

Open function: at **Main sewing interface**, click **bobbin thread monitor** button  .

Remaining thread amount display: remaining thread amount display at **Main sewing interface** = reset value of the bobbin thread counter (**O43**) – bobbin thread counter value (**O44**).

06.15. BOBBIN THREAD MONITOR

-2-2



NOTE!
Warning process: when the counter is activated, every time 10 stitches are sewn, the value of parameter **044** increases by **1**, remaining thread amount decreases by **1**. Sewing stops and a notice is shown on the display when the remaining thread amount reach 0, press Return key to reset the counter.

06.16. SERVICE COUNTER

INDEX	MAX	MIN	UNIT	DESCRIPTION
A60	1	0	-	Service counter: 0 = OFF 1 = Activated
A61	9999	1	-	Reset value of service counter
A62	200	1	stitches	Factor of service counter
A63	9999	0	-	Counter value

Function: the service counter can be used for regular mechanical maintenance.

Activate counter: enter setting interface, set **A60** to **1**.

Adjust reset value: enter **setting interface**. Adjust the value of parameter **A61**.

NOTE!
Warning process: when the counter is activated, every time **N** stitches are sewn which is set by parameter **A62**, the value of parameter **A63** increases by **1**. Sewing stops and a notice is shown on the display, when **A63** reaches the reset value, which is set at **A61**. Press „Return" key to reset the counter.

06.17. DAILY PIECE COUNTER

INDEX	MAX	MIN	UNIT	DESCRIPTION
A11	1	0	-	Daily piece counter: 0 = OFF 1 = Activated
045	999	1	stitches	Min number of stitches for counter plus 1
046	99	1	-	Min number of thread trimming times for counter plus 1
047	999	0	-	Value of daily piece counter

06.18. ASSIGNING INPUT -1-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
A04	199	0	-	Input-01 function 0 = No function 1 = Manual reverse 2 = Forward correction 3 = Backward correction 4 = Forward correction at stop, reverse at running 5 = Backward correction at stop, reverse at running 6 = Quick stroke height adjustment 7 = Backtack active / inactive 8 = Second stitch length 9 = Additional thread tension 10 = Pause mode 11 = Thread a needle 12 = Seam center guide 13 = Tilt switch 14 = Up thread broken sensor 15 = Finger protect 16 = Bobbin cover 17 = Toggle foot up/down 18 = Knee foot switch 100 = Foot stroke knob 101 = Foot height sensor
A05	199	0	-	Function of input-02, refer to A04
A36	199	0	-	Function of function bar key 1, refer to A04
A37	199	0	-	Function of function bar key 2, refer to A04
A38	199	0	-	Function of function bar key 3, refer to A04
A39	199	0	-	Function of function bar key 4, refer to A04
A40	199	0	-	Function of function bar key 5, refer to A04
A41	199	0	-	Function of function bar key 6, refer to A04
A68	199	0	-	Function of function bar key 7, refer to A04
A81	199	0	-	Function of input-03, refer to A04
A82	199	0	-	Function of input-04, refer to A04
A83	199	0	-	Function of input-05, refer to A04 (Knee switch function)
A84	199	0	-	Function of input-06, refer to A04

06.18. ASSIGNING INPUT
-2-2

INDEX	MAX	MIN	UNIT	DESCRIPTION
A85	199	0	-	Function of input-07, refer to A04
A86	199	0	-	Function of input-08, refer to A04
A87	199	0	-	Function of input-09, refer to A04
A88	199	0	-	Function of input-10, refer to A04

Input ports include reverse sewing button and buttons on the function bar. Different function can be applied directly to these inputs.

NOTE!
Some functions may not be available depending on the model; some functions may not be available depending on the port type.

06.19. ASSIGNING OUTPUT

INDEX	MAX	MIN	UNIT	DESCRIPTION
A71	13	0	-	Function definition of output-01: 0 = No function 1 = Thread trim 2 = Thread tension 3 = Thread clamp 4 = Reverse 5 = Sewing foot lift 6 = Foot stroke 7 = Additional thread tension 8 = Thread wiper 9 = Second stitch length 10 = Needle cooling 11 = Short thread cutter 12 = Seam center guide 13 = Short thread zero stitch length
A72	13	0	-	Function of output-02, refer to A71
A73	13	0	-	Function of output-03, refer to A71
A74	13	0	-	Function of output-04, refer to A71
A75	13	0	-	Function of output-05, refer to A71
A76	13	0	-	Function of output-06, refer to A71
A77	13	0	-	Function of output-07, refer to A71
A78	13	0	-	Function of output-08, refer to A71
A79	13	0	-	Function of output-09, refer to A71
A80	13	0	-	Function of output-10, refer to A71

There are ten outputs. A mode can be allocated to every output.

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