PFAFF® Industrial

POWERLine

2231

INSTRUCTION MANUAL

This instruction manual applies to machines from the following serial numbers onwards:

2 765 806 ⟶

296-12-19 150/002
Betriebsanleitung engl. 11.10

This Instruction Manual is valid for all models and subclasses listed in the chapter "Specifications".

The adjustment manual for the machines can be downloaded free of charge from the internet address
www.pfaff-industrial.com/pfaff/de/service/downloads
As an alternative to the internet download the adjustment manual can also be ordered in book form under part no. 296-12-19 151/002.

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und Maschinen AG

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1 Safety

1.01 Directives

The machine has been constructed in accordance with the requirements listed in the EC Declaration of Conformity and the Declaration of Incorporation.
In addition to this Instruction Manual, also observe all generally accepted, statutory and other regulations and legal requirements and all valid environmental protection regulations! The regionally valid regulations of the social insurance society for occupational accidents or other supervisory organizations are to be strictly adhered to!

1.02 General notes on safety

- This machine may only be operated by adequately trained operators and only after having completely read and understood the Instruction Manual!
- All Notes on Safety and Instruction Manuals of the motor manufacturer are to be read before operating the machine!
- The danger and safety instructions on the machine itself are to be followed!
- This machine may only be used for the purpose for which it is intended and may not be operated without its safety devices. All safety regulations relevant to its operation are to be adhered to.
- When exchanging sewing tools (e.g. needle, roller presser, needle plate and bobbin), when threading the machine, when leaving the machine unattended and during maintenance work, the machine is to be separated from the power supply by switching off the On/Off switch or by removing the plug from the mains!
- Everyday maintenance work is only to be carried out by appropriately trained personnel!
- Repairs and special maintenance work may only be carried out by qualified service staff or appropriately trained personnel!
- Work on electrical equipment may only be carried out by appropriately trained personnel!
- Work is not permitted on parts and equipment which are connected to the power supply! The only exceptions to this rule are found in the regulations EN 50110.
- Modifications and alterations to the machine may only be carried out under observance of all the relevant safety regulations!
- Only spare parts which have been approved by us are to be used for repairs! We expressly point out that any replacement parts or accessories which are not supplied by us have not been tested and approved by us. The installation and/or use of any such products can lead to negative changes in the structural characteristics of the machine. We are not liable for any damage which may be caused by non-original parts.

1.03 Safety symbols

Danger!
Points to be observed.

Danger of injury for operating and specialist personnel!

Caution

Do not operate without finger guard and safety devices.

Before threading, changing bobbin and needle, cleaning etc. **switch off main switch.**

1.04 Important points for the user

- This Instruction Manual is an integral part of the machine and must be available to the operating personnel at all times.
- The Instruction Manual must be read before operating the machine for the first time.
- The operating and specialist personnel is to be instructed as to the safety equipment of the machine and regarding safe work methods.
- It is the duty of the user to only operate the machine in perfect running order.
- It is the obligation of the user to ensure that none of the safety mechanisms are removed or deactivated.
- It is the obligation of the user to ensure that only authorized persons operate and work on the machine.

  Further information can be obtained from your PFAFF agent.

1.05 Operating and specialist personnel

1.05.01 Operating personnel

Operating personnel are persons responsible for the equipping, operating and cleaning of the machine as well as for taking care of problems arising in the sewing area.

The operating personnel is required to observe the following points and must:

- always observe the Notes on Safety in the Instruction Manual!
- never use any working methods which could adversely affect the safety of the machine!
- not wear loose-fitting clothing or jewelery such as chains or rings!
- also ensure that only authorized persons have access to the potentially dangerous area around the machine!
- always immediately report to the person responsible any changes in the machine which may limit its safety!

1.05.02 Specialist personnel

Specialist personnel are persons with a specialist education in the fields of electrics, electronics and mechanics. They are responsible for the lubrication, maintenance, repair and adjustment of the machine.

The specialist personnel is obliged to observe the following points and must:

- always observe the Notes on Safety in the Instruction Manual!
- switch off the On/Off switch before carrying out adjustments or repairs, and ensure that it cannot be switched on again unintentionally!
- wait until the luminous diode on the control box is no longer blinking or on before beginning adjustment or repair work.
- never work on parts which are still connected to the power supply! Exceptions are explained in the regulations EN 50110.
- replace the protective coverings and close the electrical control box afer all repairs or maintenance work!

1.06 Danger warnings

A working area of **1 m** must be kept free both in front of and behind the machine, so that easy access is possible at all times.

Never put your hands or fingers in the sewing area during sewing!
Danger of injury by the needle!

While setting or adjusting the machine do not leave any objects on the table nor in the needle plate area! Objects may be trapped or flung out of the machine!

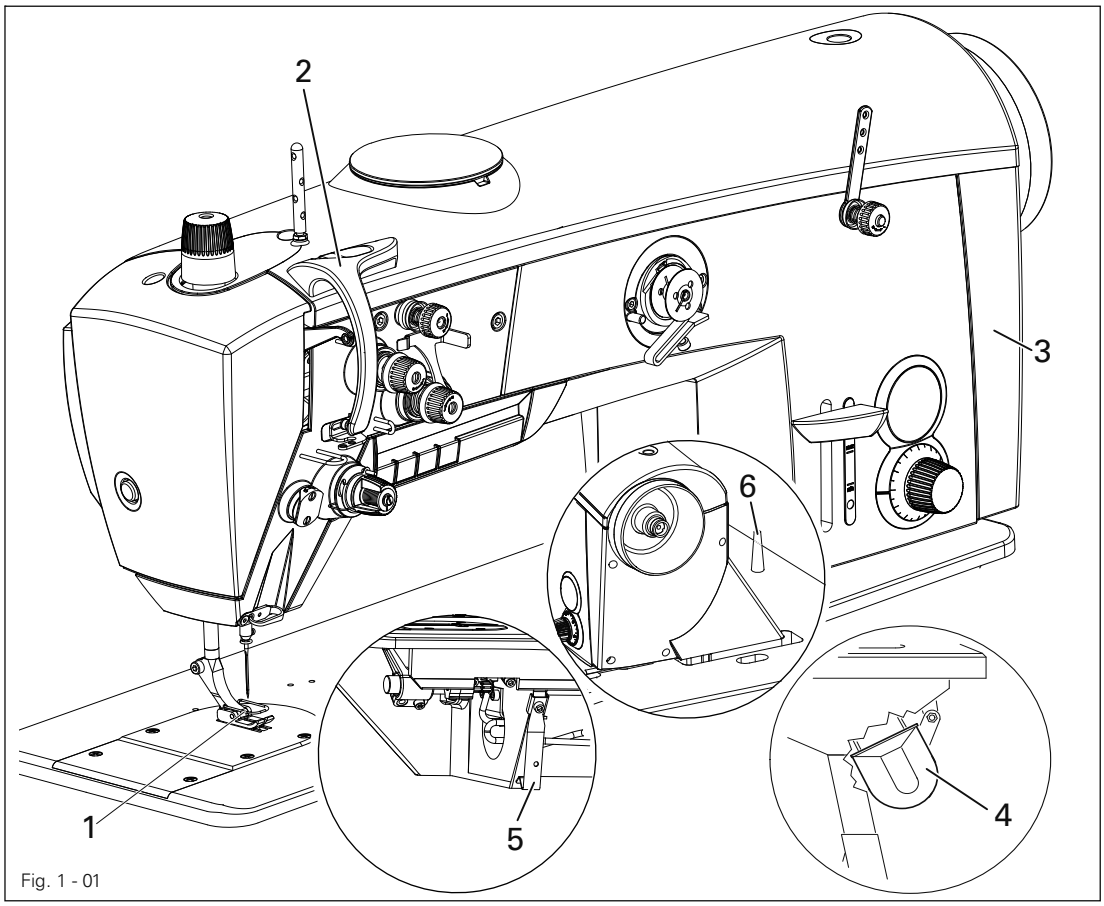


Fig. 1 - 01

Do not run the machine without finger guard **1**!
Danger of injury by up and down movement of needle!

Do not run the machine without take-up lever guard **2**!
Danger of injury by moving take-up lever!

Do not run the machine without belt guards **3** and **4**!
Danger of injury by rotating v-belt!

Do not operate the machine without tilt lock **5**!
Danger of crushing between sewing head and table!

Do not operate the machine without support **6**! Danger due to top-heavy sewing head! Machine can tip over backwards when tilted!

2 Proper use

The PFAFF 2231 PLUS is an single needle flatbed sewing machines with compound feed and large horizontal hook for sewing lockstitch seams.

The machine is intended for commercial (industrial) use

Any and all uses of this machine which have not been approved of by the manufacturer are considered to be inappropriate! The manufacturer cannot be held liable for any damage caused by the inappropriate use of the machine! The appropriate use of the machine includes the observance of all operational, adjustment, maintenance and repair measures required by the manufacturer!

3 Specifications *

3.01 PFAFF 2231

Stitch type: .....301 (lockstitch)
Needle system: 134-35

Version: ..... BN, CN

Needle size in 1/100 mm:
Version BN: ..... 80 - 100
Version CN: ..... 110 - 140

Max. stitch length: .....6 mm
Max. speed.: 3500

Max.thread size (synthetic):
Version BN : ..... 40/3▲
Version CN : ..... 15/3▲

Presser foot clearance: .....20 mm
Clearance width: .....350 mm
Clearance height: .....120 mm
Bed plate dimensions: .....640 x 200 mm

Noise data:
Noise emission level at workplace with a sewing speed of 2400 spm: ..... L_{pA} < 80 dB(A)■
(Noise measurement in accordance with DIN 45 635-48-A-1, ISO 11204, ISO 3744, ISO

Motor data: ..... See instruction manual for the motor
Leakage current ..... $\leq$ 5 mA ◆

Air consumption per switch cycle: .....0.146 Nl

Net weight of sewing head: .....approx. 69 kg
Gross weight of sewing head : .....approx. 79 kg

* Subject to alterations

◆ Due to the use of network filters there is a nominal leakage current of $\leq$ 5 mA.

▲ synthetic, or other sizes of comparable thread types

■ K_{pA} = 2,5 dB

3.02 Machine equipment and options

PFAFF 2231	PLUS
Horizontal hook, large	●
Thread trimmer (-900/91), < 12 mm thread ends	●
Thread pulling device (-909/12), controlled	❍
Presser foot lift (-910/04), electropneumatic	●
Presser foot lift, manual via knee lever	❍
Manual backtacking with mech. hand switch	●
Automatic backtacking (-911/35), electropneumatic	●
1 preselectable stitch length	●
2 preselectable thread tensions, one can be switched on manually	●
Drop feed	●
Oil level control through inspection glass	●
Presser foot pressure, manually adjustable	●
DC-motor functionality	●
Control panel - PicoTop	●
Remaining bobbin thread recognition function by stitch counting with LED display	●
Integrated multiple switch on machine head	●
Integrated LED sewing lamp on sewing head, dimmable	❍
Bobbin thread winding device	●
Machine version BN for processing medium materials	●
Machine version CN for processing medium heavy materials	●

● = Standard, ❍ = optional

4 Disposal of Machine

- Proper disposal of the machine is the responsibility of the customer.
- The materials used for the machine are steel, aluminium, brass and various plastic materials. The electrical equipment comprises plastic materials and copper.
- The machine is to be disposed of according to the locally valid pollution control regula-tions; if necessary, a specialist ist to be commissioned.

Care must be taken that parts soiled with lubricants are disposed of separately according to the locally valid pollution control regulations!

5 Transportation, packing and storage

5.01 Transportation to customer‘s premises

The machines are delivered completely packed.

5.02 Transportation inside the customer‘s premises

The manufacturer cannot be made liable for transportation inside the customer‘s premises nor to other operating locations. It must be ensured that the machines are only transported in an upright position.

5.03 Disposal of packing materials

The packing materials of this machine comprise paper, cardboard and VCE fibre. Proper disposal of the packing material is the responsibility of the customer.

5.04 Storage

If the machine is not in use, it can be stored as it is for a period of up to six months, but It should be protected against dust and moisture.
If the machine is stored for longer periods, the individual parts, especially the surfaces of moving parts, must be protected against corrosion, e.g. by a film of oil.

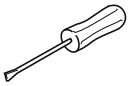
6 Explanation of symbols

In this instruction manual, work to be carried out or important information is accentuated by symbols. These symbols have the following meanings:

Note, information

Cleaning, care

Lubrication



Maintenance, repairs, adjustment, service work
(only to be carried out by technical staff)

7 Controls

7.01 On- off switch / Sewing lamp switch (optional)

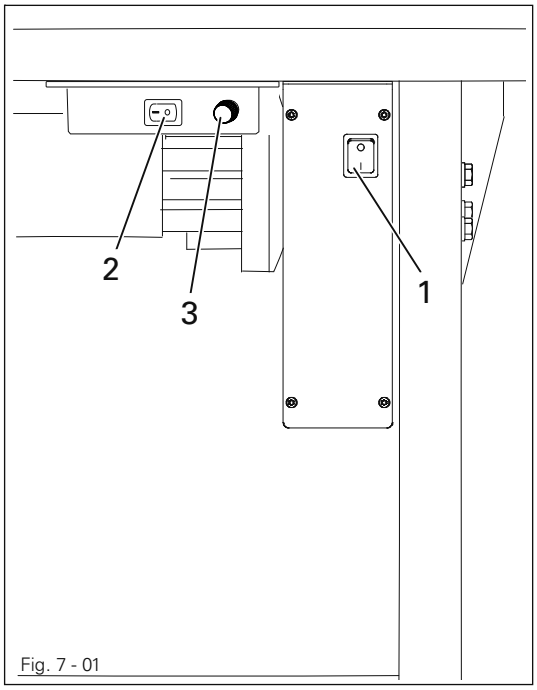


Fig. 7 - 01

- Operate main switch **1** to switch the machine on or off.
- Switch the sewing lamp, which is integrated in the machine head, on or off by operating switch **2**.
- Switch 3 regulates the brightness of the sewing lamp.

7.02 Pedal

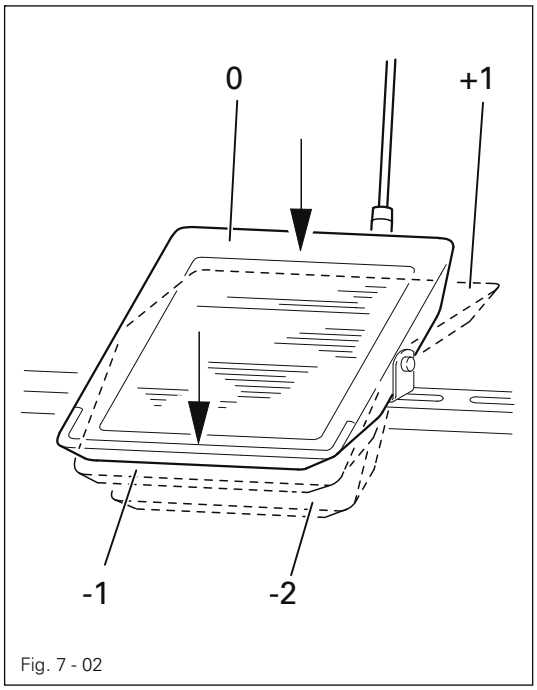


Fig. 7 - 02

- With the on/off switch on
  - **0** = Machine stop
  - **+1** = Sew
  - **- 1** = Raise presserfoot
  - **- 2** = Trim thread (on machines with thread trimmer)

7.03 Keyboard on machine head (on the PFAFF 2231 PLUS))

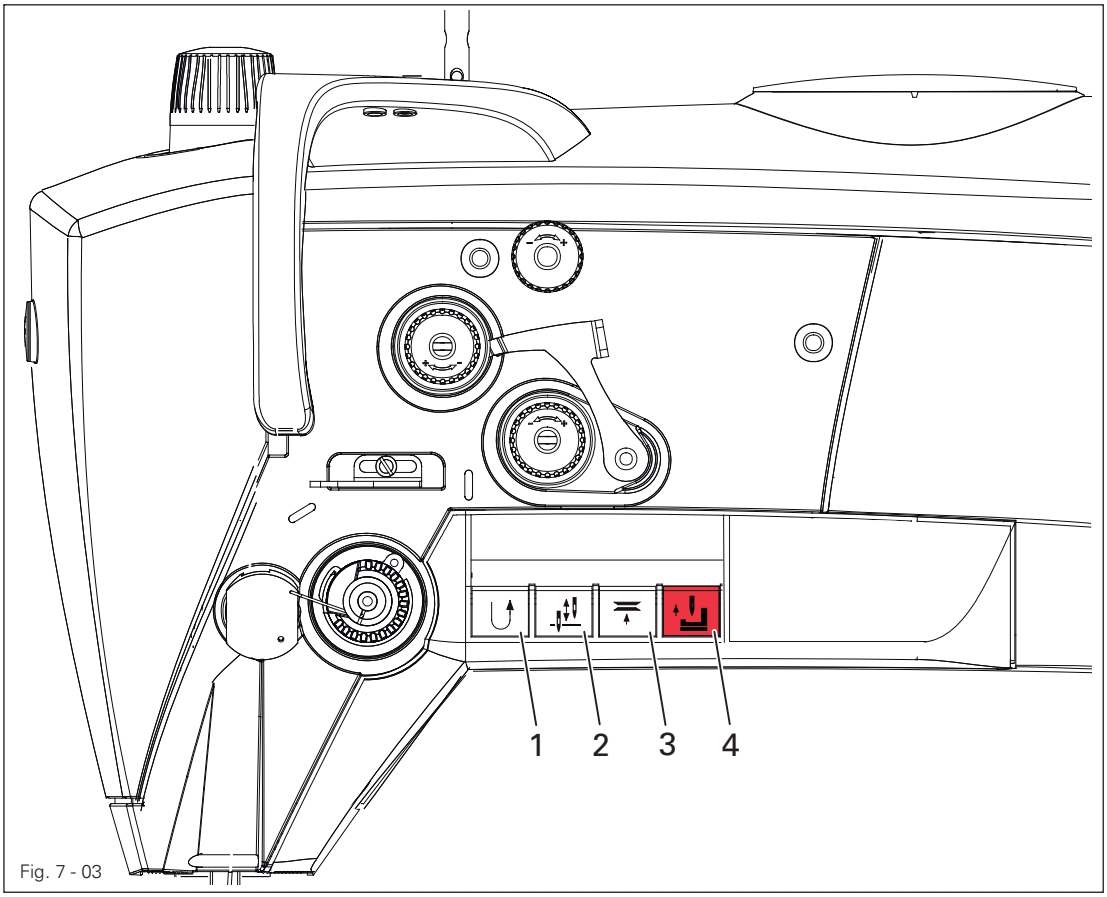


Fig. 7 - 03

- The machine as a keyboard with **4** keys to activate different functions.
- When the keys **1** – **4** are operated on the standard version, the functions listed below are carried out.

Key **1**: Reverse sewing or intermediate backtacks during the seam.

Key **2**: Needle position change.
This button can be assigned with other functions in parameter **446**

Setting value
1 = needle raised without trimming
2 = needle position change
3 = single stitch
4 = not allocated
5 = tack inversion
6 = tack suppression

Key **3**: Threading aid

Needle is raised without trimming, the thread clamp is opened, the thread tension released and the motor start inhibitor activated.
If the key is pressed again, the motor start inhibitor is deactivated again.

Under Parameter **748** other functions can be assigned to this key.

Einstellwert 1 = threading aid + needle raised withouttrimming
2 = needle position change
3 = single stitch
4 = not allocated
5 = tack inversion
6 = tack suppression

Key **4**: EMERGENCY KEY.

(needle is raised without trimming, the thread clamp is opened, the thread tension is released, the presser foot raised and the motor start inhibitor activated).

If the "**scroll**" key on the control panel is pressed, the motor start inhibitor is deactivated again.

7.04 Knee lever (optional)

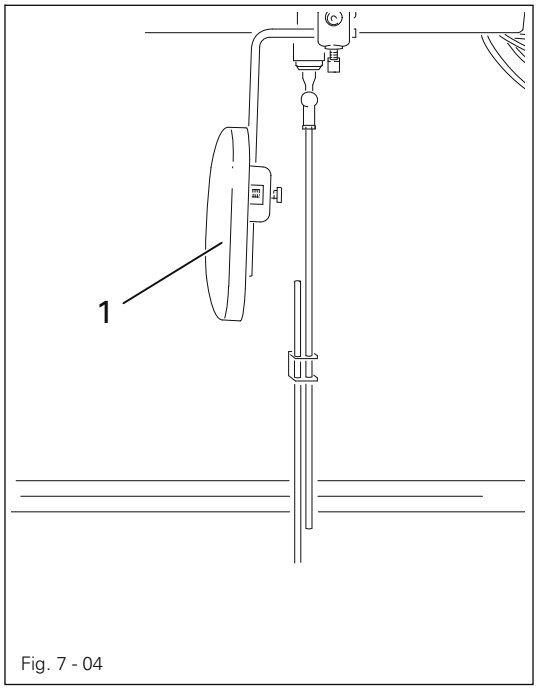


Fig. 7 - 04

- By pressing the knee lever **1** in the direction of the arrow, the presser foot is raised.

7.05 Presser foot fixing key

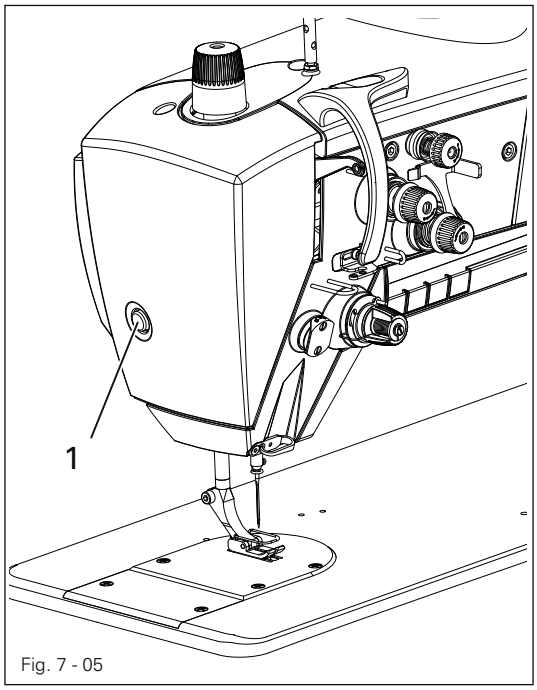


Fig. 7 - 05

- To fix the presser foot, raise it with the pedal, then press key **1** and release the pedal again.
- To release the presser foot, raise it briefly with the pedal.

7.06 Adjusting the stitch length / Reverse feed lever

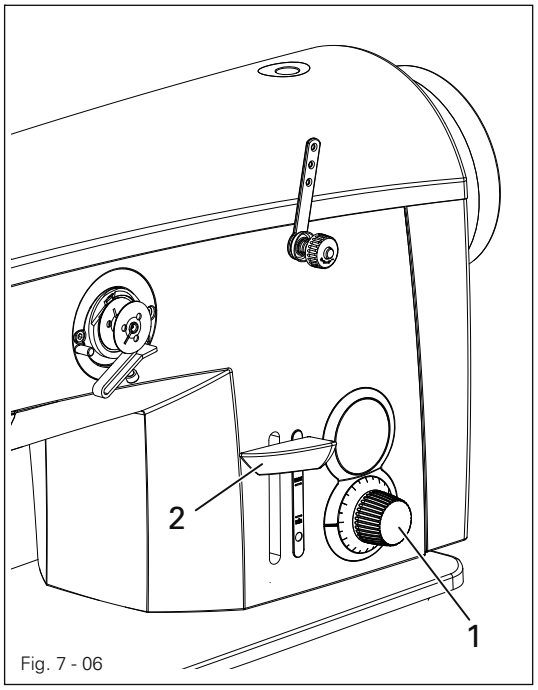
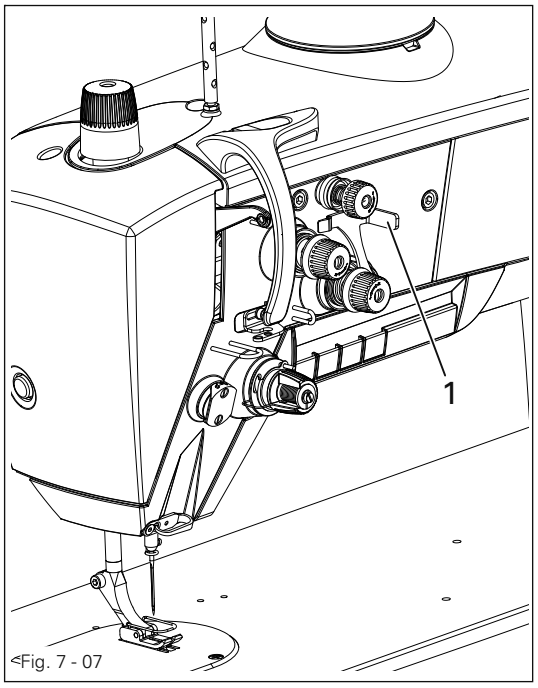


Fig. 7 - 06

- Adjustment wheel **1** is used to pre-select the stitch length.
- As long as the reverse feed lever **2** is pressed during the sewing operation, the machine sews in reverse.

7.07 Switchable needle thread tension



<Fig. 7 - 07

- The needle thread tension can be increased by turning lever **1** to the right.

7.08 Bobbin thread control by stitch-counting (only on machines with PicoDrive)

- When the pre-set number for stitches have been sewn, the machine stops and the signal "Bobbin" appears on the display.
- After the pedal has been released and the forwards sewing function has been operated twice, the seam can be completed.
- The display goes off and the LED in the F1 key flashes as a reminder.

After the thread trimming operation and the bobbin change, the F1 key on the control panel must be pressed. When sewing begins, the new pre-set counting process begins.

Pre-setting the number of stitches, see Chapter **8.06 Setting the bobbin thread control.**

7.09 Control panel (only on machines with PicoDrive)

The description can be found in the separate instruction manual for the motor.

7.10 Safety coupling (optional)

- The safety coupling in the handwheel is set to automatically unlatch in case of a thread jam to prevent damage to the gripper.
- Once the thread jam has been removed, the coupling can be reset on the handwheel by turning the wheel.

8 Preparation

All regulations and instructions in this Instruction Manual are to be observed! Special attention is to be paid to the safety regulations!

All preparation work is only to be carried out by appropriately trained personnel. Before all preparation work, the machine is to be separated from the electricity supply by removing the plug from the mains or switching off the On/Off switch!

8.01 Inserting the needle

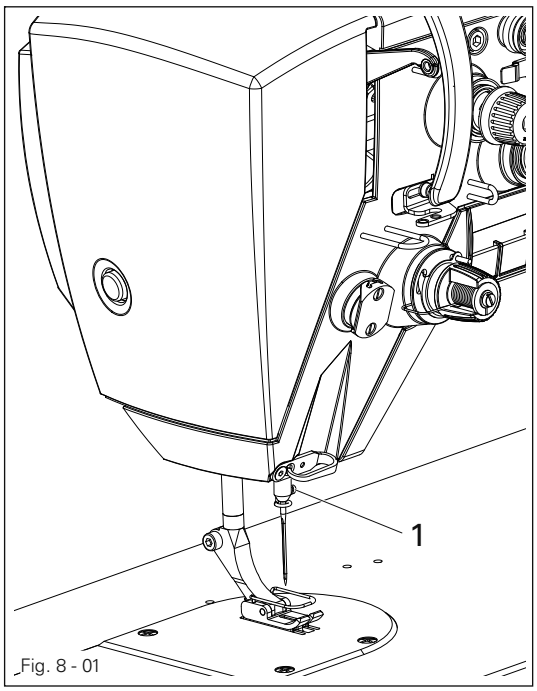


Fig. 8 - 01

Switch off the machine! Danger of injury due to unintentional starting of the machine!

Only use needles from the system intended for the machine, see Chapter **3 Specifications.**

- Raise needle bar.
- Loosen screw **1** and insert needle until you feel it stop.
- The long needle-groove must be facing left.
- Tighten screw **1.**

8.02 Winding the bobbin thread, regulating the winder tension

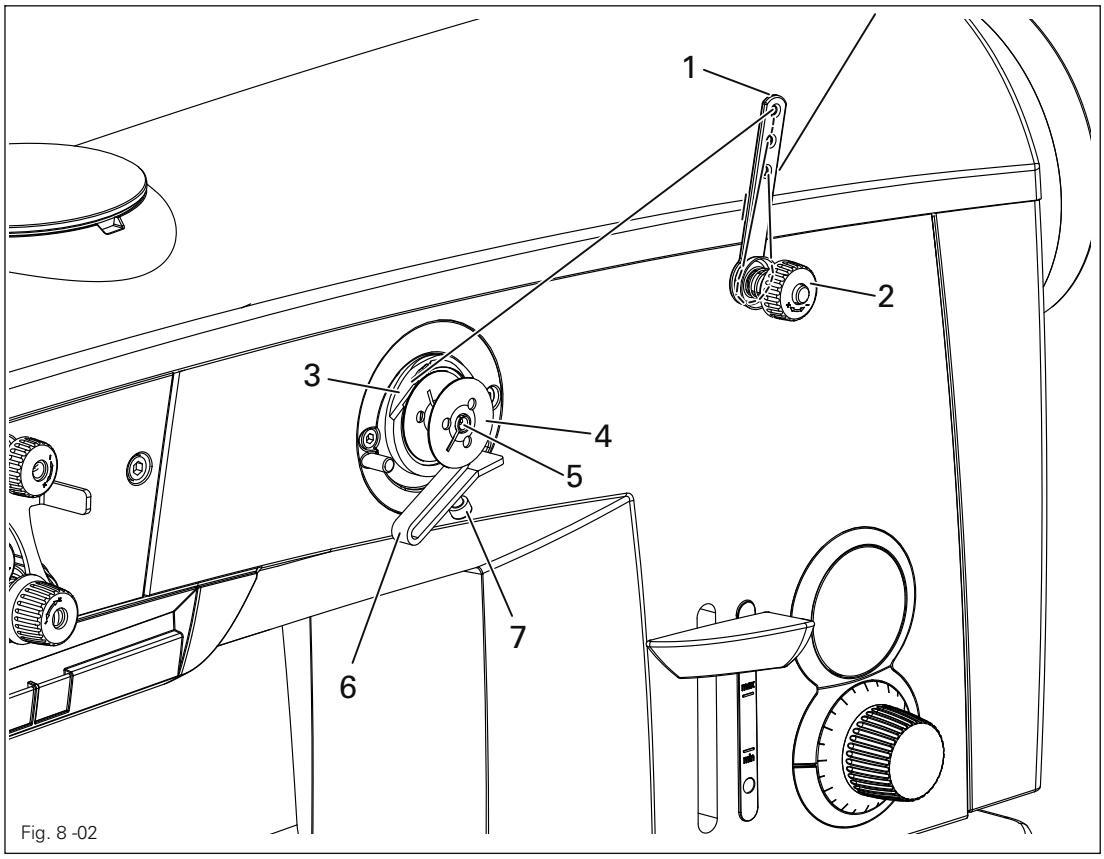


Fig. 8 -02

- Draw the thread from the reel stand through guide hole **1** into the bobbin winder tension unit **2** and then behind the thread clamp **3.**
- Cut off the thread in thread clamp **3.** The thread is retained.
- Place empty bobbin **4** on the bobbin winder spindle.
- To switch on the bobbin winder, push up lever **6.**

The bobbin is wound during sewing.

- The bobbin winder stops automatically, when the bobbin **4** is filled sufficiently.
- Remove full bobbin **4** and cut off the thread in thread clamp **3.**
- The tension of the thread on bobbin **4** can be adjusted on the bobbin winder tension unit **2.**
- The volume of thread on bobbin **4** can be adjusted with screw **7.**

8.03 Removing / Inserting the bobbin case

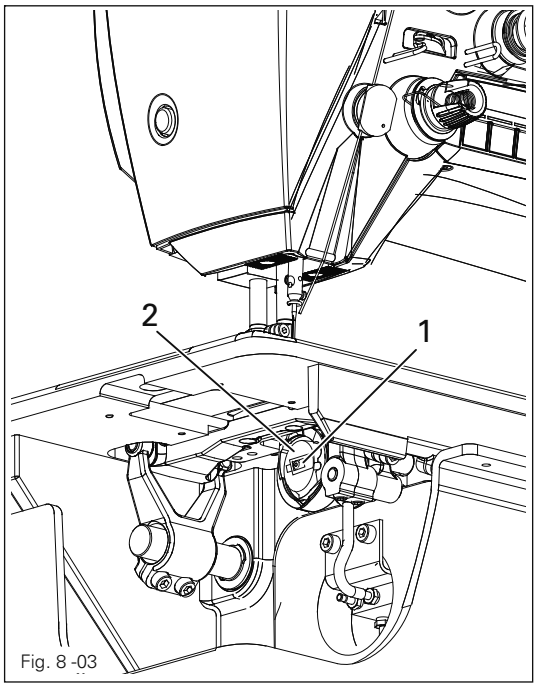


Fig. 8 -03

Switch off the machine!
Danger of injury due to unintentional starting of the machine!

Removing the bobbin case:

- Raise latch **1** and remove bobbin case **2.**

Inserting the bobbin case:

- Press bobbin case **2** until you feel it snap into the bobbin case base.

8.04 Inserting the bobbin case / Adjusting the bobbin thread tension

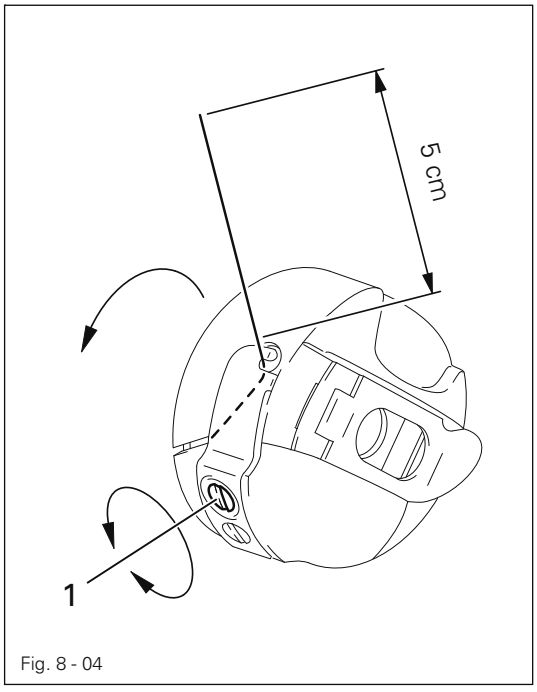


Fig. 8 - 04

- Insert the bobbin into the bobbin case.
- Pass the thread through the slot under the spring according to Fig. **8 - 04.**
- Pass the thread through the notch.
- Adjust the thread tension by turning screw **1.**

When the thread is pulled, the bobbin must rotate in the direction of the arrow.

8.05 Threading needle thread/adjusting needle thread tension

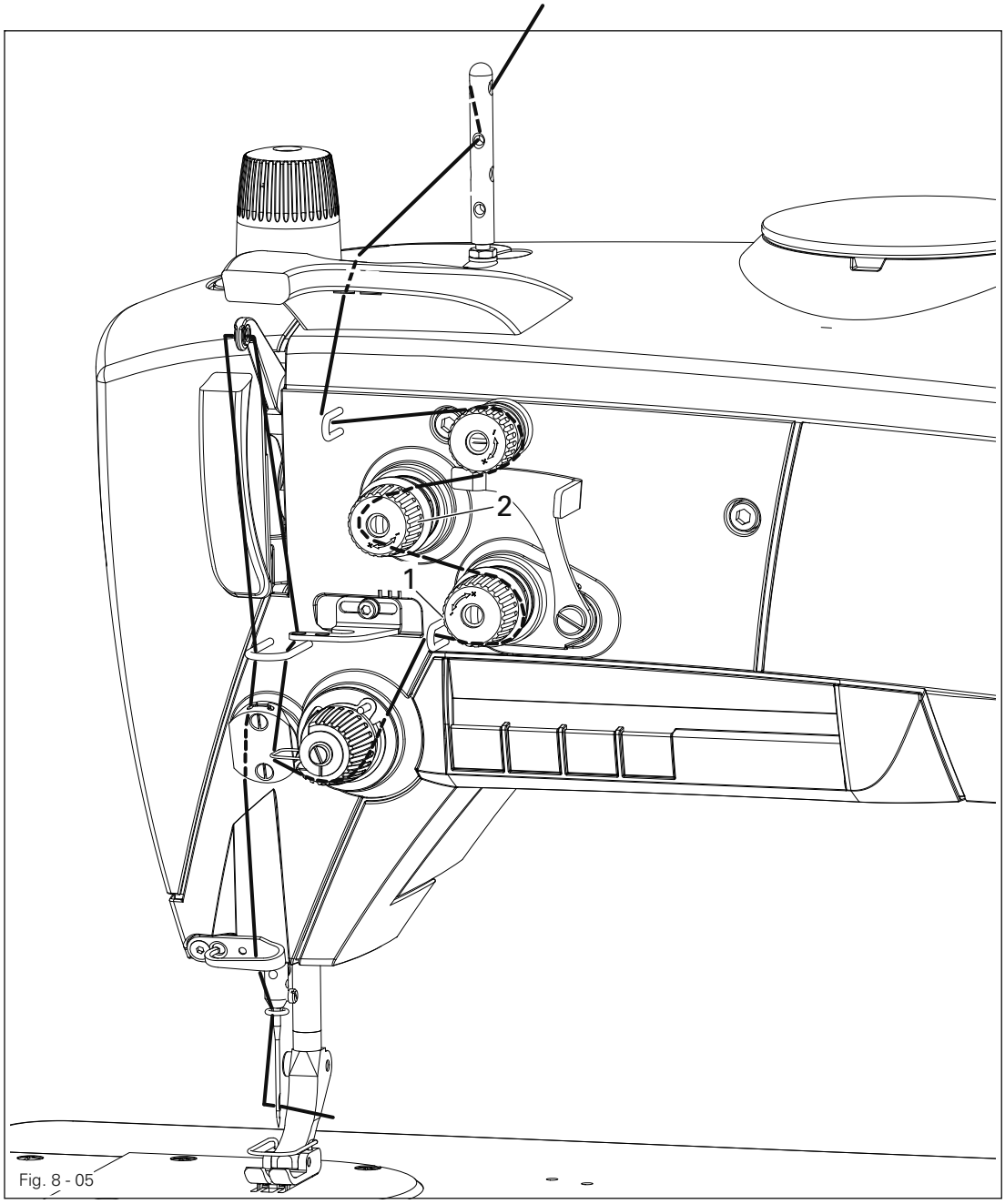


Fig. 8 - 05

Switch off the machine!
Danger of injury due to unintentional starting of the machine!

- Thread the machine as shown in Fig. 8 - 06.
- Regulate the needle-thread tension by turning milled screw 1 or 2.

8.06 Setting the bobbin thread control function by reverse stitch counting

The description can be found in the separate instruction manual for the motor.

9 Care and maintenance

9.01 Servicing and maintenance intervals

Clean the hook compartment	Daily, several times if in continuous use
Check the oil level	Daily, before starting the machine
Check/adjust the air pressure	Daily, before starting the machine
Clean the filter of the air filter/lubricator	As required

These maintenance intervals are calculated for the average running time of a single shift operation. If the machine is operated more than this, shorter intervals are recommended.

9.02 Cleaning the machine

The cleaning cycle required for the machine depends on following factors:

- Single or several shift operation
- Amount of dust resulting from the workpiece

It is therefore only possible to stipulate the best possible cleaning instructions for each individual case.

For all cleaning work the machine must be disconnected from the mains by switching off the on/off switch or by removing the mains plug!
Danger of injury if the machine suddenly starts up .

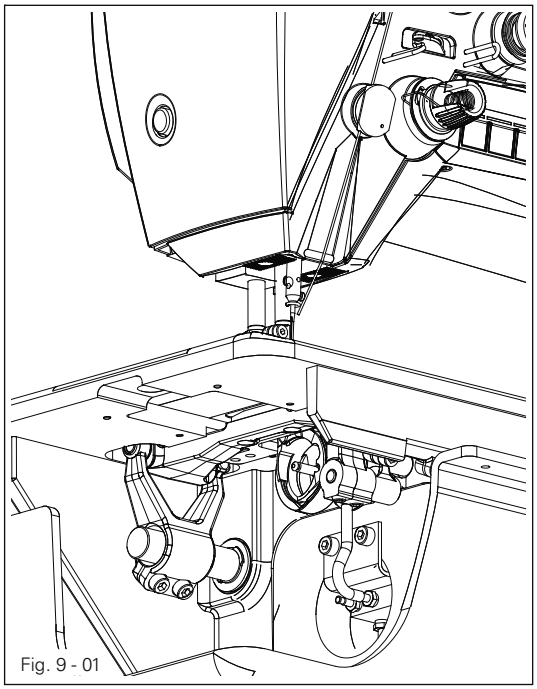


Fig. 9 - 01

To avoid breakdowns, the following cleaning work is recommended for single shift operation:

- Tilt the machine back onto the sewing head support.
- Clean the hook and hook compartment daily, more often if in continuous operation.

Return the machine to its upright position using **both** hands!
Danger of injury by crushing between the edge of the machine and the table top!

9.03 Lubricating

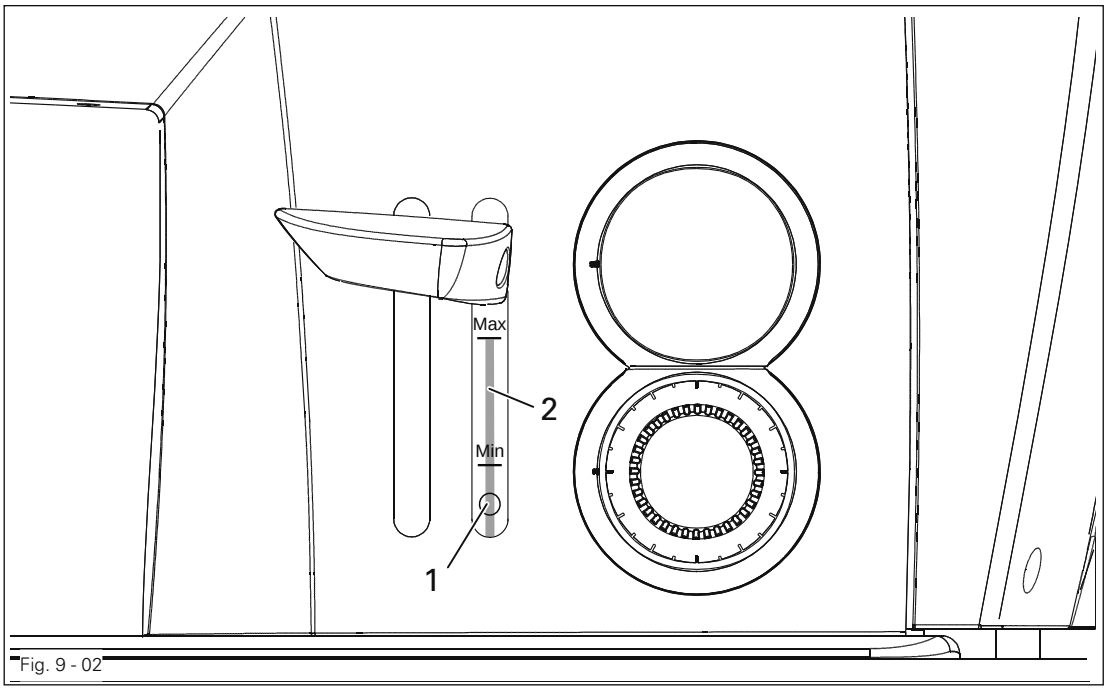
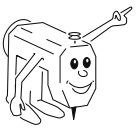


Fig. 9 - 02

Before commissioning the machine, fill in oil through hole **1** until the oil level indicator **2** is at the "MAX" marking.

Check the oil level daily before starting the machine!
The level of the oil in indicator **2** must not sink below the "**MIN**" marking and not exceed the "**MAX**" marking.
If required, fill oil into the tank through hole **1**.

Only use oil with a medium viscosity of **22.0 mm²/s** at **40° C** and a density of **0.865 g/cm³** at **15°C**!



We recommend PFAFF sewing-machine oil, part No. **280-1-120 144**.

9.04 Checking/regulating the air pressure

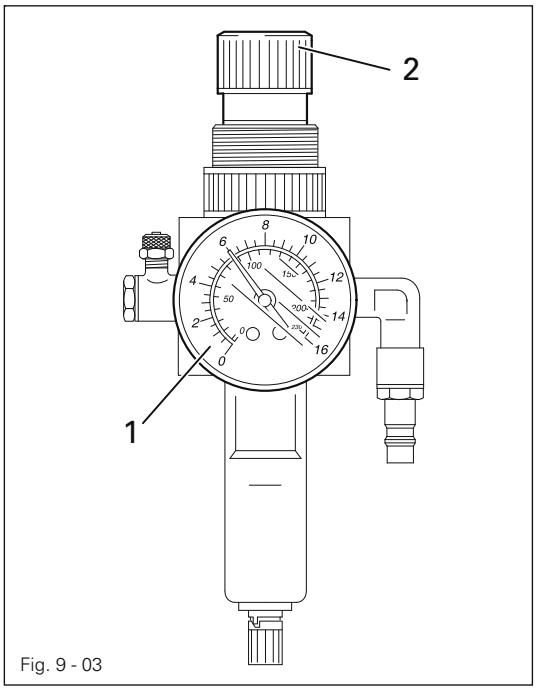


Fig. 9 - 03

- Check the air pressure on gauge **1** every time before operation.
- Gauge **1** must show a pressure of **6** bar.
- Regulate this pressure if required.
- To do so, pull knob **2** up and turn it accordingly.

9.05 Emptying/cleaning the water bowl of the air filter/regulator

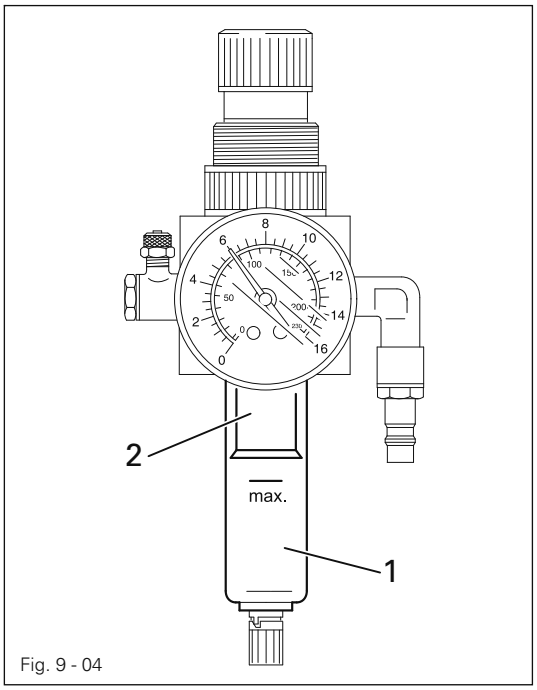


Fig. 9 - 04

Switch off the machine.
Disconnect the air hose at the air filter/regulating unit.

Emptying the water bowl

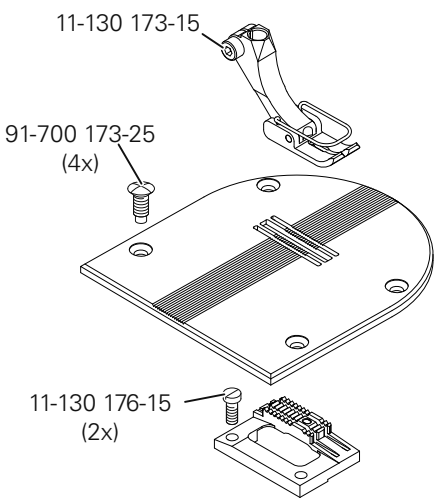
- Water bowl **1** empties itself automatically when the air hose is disconnected from the air filter/regulator.

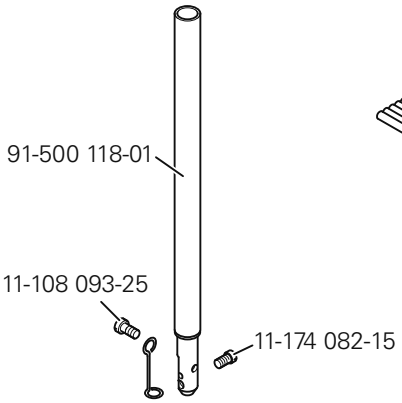
Cleaning the filter

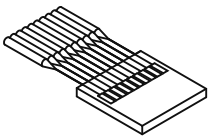
- Unscrew water bowl **1** and take out filter **2**.
- Clean the filter with compressed air or with isopropyl-alcohol, part number **95-665735-91**.
- Screw in filter **2** and screw on water bowl **1**.

10 Wearing parts

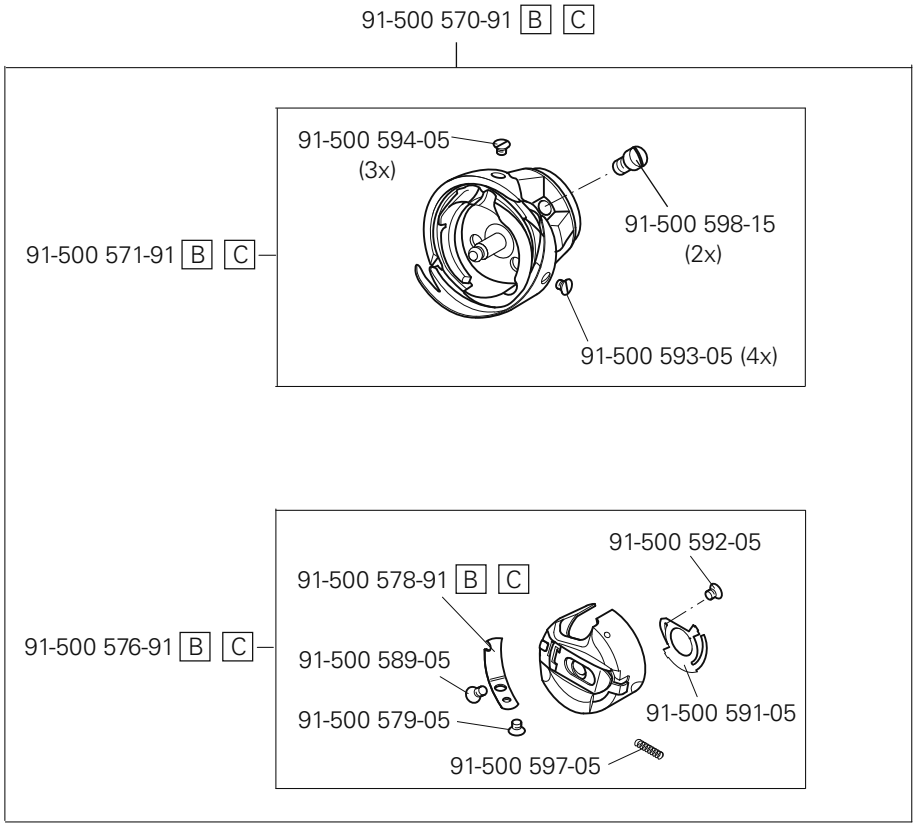
This is a list of the most important wearing parts.
A detailed parts list for the complete machine is included with the accessories. In case of loss, the parts list can be downloaded from the internet address **www.pfaff-industrial.com/pfaff/de/service/downloads** As an alternative to the internet download the parts lists can also be ordered in book form under part no. **296-12-19 150.**





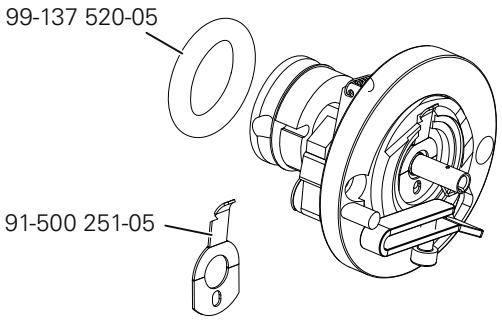


System 134 - 35

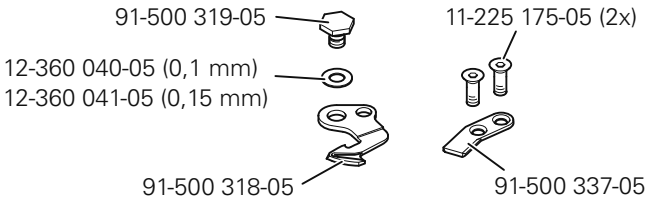


B = Version
C = Version

91-500 460-05


99-137 520-05
91-500 251-05

-900/91


91-500 319-05
12-360 040-05 (0,1 mm)
12-360 041-05 (0,15 mm)
91-500 318-05
11-225 175-05 (2x)
91-500 337-05

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