Operating Instructions

UVR-300 universal feeder
UVR-400 universal feeder

MADE IN GERMANY

GB: English version

Read these operating instructions before starting any work!

CE

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Device numbers

We recommend entering your device numbers here so that they can be accessed quickly if servicing is required.

Device	Type	Serial number
Universal feeder	UVR-300	
Universal feeder	UVR-400	

Operating Instructions

Document no: P00250, 04-2021, translation of the original German instructions (German: P00150)

Revision status

Document	created / modified	Editor	Date
Original	modified	MS/IS	April 01, 2021

CONTENTS

1 General information

These operating instructions contain important information and rules for the operation of your devices. Keep the operating instructions in a readily accessible location close to your devices.

The term 'Devices' in the operating instructions refers to the UVR-300 and UVR-400 universal feeders.

Carefully read the operating instructions and any other documents contained in the technical documentation. Pay particular attention to the safety instructions which are intended to help you recognise any possible residual risks and prevent hazards.

The drawings and diagrams in these operating instructions are for illustration purposes and may vary slightly from the actual equipment.

The manufacturer reserves the right to make technical changes.

1.1 Validity of the operating instructions

These operating instructions apply to the following devices:

Universal feeder UVR-300

Universal feeder UVR-400

1.2 Registered trademarks

The following terms in these instructions are used with registered trademarks:

SOYER®: Developments/technologies of Soyer GmbH.

1.3 Declarations of conformity

The devices are designed and constructed in accordance with the generally accepted codes of practice.

Please note that significant changes to the device will cause the declaration of conformity to become void.

Furthermore, the manufacturer's warranty may be rendered invalid.

Conformity declaration – Universal Feeder

Heinz Soyer Bolzenschweißtechnik GmbH
Inninger Straße 14
82237 Wörthsee

CE Declaration of Conformity

We herewith declare that the design and construction of the machine described below as well as in the version marketed by us meet the safety and health requirements of the stated directives and standards. Any modification of this machine without our confirmation shall automatically annul this declaration.

Designation of the machine	:	**Universal feeder**
Machine type	:	**UVR-300/400**
Machine no.	:	_____
Applicable EU directives	:	RoHS directive (2011/65/EU) EMC directive (2014/30/EU) Machine directive (2006/42/EC)
Harmonised standards applied, in particular	:	EN 60 204-1 EN 61 000-6-2 EN 61 000-4-2 EN 61 000-4-3 EN 61 000-4-4 EN 61 000-4-5 EN 61 000-4-6 EN 61 000-4-11 EN 61 000-3-2 EN 61 000-3-3 EN 55 011
National regulations applied	:	DGUV directive 1
Date	:	26. March 2021
Manufacturer - signature	:	_____
Position of the signatory	:	CEO

1.4 Manufacturer

The manufacturer of the devices is:
Heinz Soyer Bolzenschweißtechnik GmbH
Inninger Straße 14
82237 Wörthsee
Phone: 0049-8153-885-0
Fax: 0049-8153-8030
Email: info@soyer.de
Web: www.soyer.de, www.soyer.com

1.5 Instruction, training

SOYER® offers optional and individual instruction in the operation of the devices.

Moreover, SOYER® offers training for customer-specific use of the devices.

Information on the scope and costs of instruction and training can be obtained from Soyer GmbH.

1.6 Standards and directives

The following standards, inter alia, must be observed for carrying out stud welding work and for the qualification of personnel:

- DIN EN ISO 14555 Welding — Arc stud welding of metallic materials
- DIN EN ISO 14732 Welding personnel - Qualification testing of welding operators and weld setters for mechanised and automatic welding of metallic materials
- DIN EN 60974-9 Arc welding equipment - Installation and use
- Technical Bulletin DVS 0904 Instruction for practice - Arc stud welding

2 Important safety instructions

Read the following chapters carefully and follow the safety instructions. If you are uncertain or an instruction cannot be followed, please contact the manufacturer.

The devices have been constructed according to the generally accepted codes of practice and in compliance with, and application of, the recognised safety requirements. To achieve the greatest possible safety, it is essential that all of the safety instructions in these operating instructions are heeded and followed.

2.1 Safety alerts used

Warning signs are used in this document, depending on the potential danger of the situation.

Safety and information symbols used in this manual	
DANGER	Imminent danger leading to severe injuries or death.
WARNING	Potentially dangerous situation that may lead to severe injuries or death.
CAUTION	Potentially dangerous situation that may lead to minor injuries. Without the warning triangle, this warning sign is also used in the event of danger of material damage.
	Additional information indicating danger from electric current. The additional sign is used in conjunction with a warning sign.
	Additional sign indicating the danger of burns. The additional sign is used in connection with a warning sign.
	Do not touch the surface or the housing: Risk of electric shock.
	Do not touch or open, danger to unauthorised persons.
	Danger to persons with medical implants such as pacemakers.
	The information sign is not a warning sign. It indicates important and useful information on the subject.

Safety instructions on the devices

As an additional warning of danger, warning labels can be found on the devices. Warning labels are affixed by the manufacturer and must not be removed. If a warning label is damaged and thus illegible, a new warning label must be affixed immediately.

Warning labels must be obtained from the manufacturer.

2.2 General safety instructions

DANGER

Danger from electric current, general information

When working on live components, there is a danger to life from electric current.

- Work on electric or electronic components may only be performed by trained electrotechnical personnel in accordance with currently applicable electrotechnical regulations.
- Protective devices must not be manipulated or disabled. Protective devices include, for example, housing and housing cover, fuses or power switches.
- If protective devices have to be removed for maintenance work, the device may only be switched on again when all protective devices are installed and their functionality has been checked.
- Starting the device with faulty protective devices is not permitted. Faulty protective devices must be repaired or replaced immediately. Unintentional operation by third parties must be prevented.

DANGER 

Danger from electric current during maintenance and repair

When working on live components, there is a danger to life from electric current.

- Work on electric or electronic components must only be carried out by trained electrotechnical personnel of Soyer Bolzenschweißtechnik.
- Before performing any work on the stud welding device, the mains switch of the device must be switched off and the mains plug of the stud welding device must be disconnected.
- Before performing any work on the stud welding gun, the supply cables to the stud welding device must be disconnected.
- If protective devices have to be removed for maintenance work, the device must only be switched on again when all protective devices are installed and their functionality has been checked.

DANGER 

Danger from magnetic fields

In the area surrounding the device, strong magnetic fields occur during the welding process. These may influence medical auxiliary aids and therefore result in danger to life.

- Persons with electrical medical aids (such as pacemakers) must keep away from the devices.
- The operating personnel must ensure that persons with medical aids keep away from the devices.

DANGER

Explosion hazard due to inappropriate installation location in a potentially explosive atmosphere

The device is not designed for use in potentially explosive zones.

- The device must not be installed and operated in potentially explosive atmospheres.

CAUTION 

Risk of burns due to hot surfaces

During the welding process, the workpieces and some parts of the welding gun get so hot that touching them may cause burns.

- Always use personal protective equipment.
- Before working on hot parts of the device, check that they have cooled down.
- Do not hold the gun in the welding area.

WARNING 

Risk of burns from hot welding spatter

Dangerous welding spatter can occur during the welding process.

- Always use personal protective equipment.

WARNING 

Fire hazard from hot welding spatter

Welding spatter or hot workpieces produced during the welding process can result in fire hazard.

- Do not store combustible or highly inflammable materials in the welding area.

2.3 Safety information for universal feeder UVR-300 / UVR-400

In addition to the general safety information in these instructions, the following safety information applies to handling the devices:

⚠WARNUNG

Risk due to accelerated welding studs

The welding studs are transported using compressed air and are therefore greatly accelerated.

- Always ensure that the stud feed hose is intact.
- Before each system start, check that the stud feed hose is correctly inserted on both sides, into the feeding unit (feeder) and the gun or welding head.
- Only use stud feed hoses from Soyer GmbH.
- Never bridge the safety pressure switch at the cover hood (do not trigger the switch if the protective hood has been removed).
- Do not carry out a functional check when the cover hood is opened and the compressed air is connected.
- Regularly check that the safety interlock at the stud feed hose connection piece moves smoothly (connecting piece M3 - M8).
- Only ever use system parts which are matched to the stud diameter to be transported (see chapter “7 Converting the universal feeder” on page 34).

⚠CAUTION

Stud feed malfunctions due to misalignment

In the feeder, a few screws are marked red (see the example on the right). If these screws become loose, the feeder must be readjusted at the factory.

- Do not loosen these screws.

Notes regarding compressed air

Only use dry and cleaned compressed air as energy source.

2.4 Personal protective equipment

It is recommended to wear personal protective equipment when working with the stud welding system and universal feeder.

WARNING

Danger due to a lack of or incorrect PPE

During stud welding, there is a risk of burns, especially due to hot welding spatter. The formation of strong electric arcs can also cause a glare hazard.

- Always wear suitable, closed protective clothing.
- Type and extent of the protective equipment depends on the respective occurrence and intensity of welding spatter, arcs and/or noise. This varies depending on the basic material, stud material, stud size and required welding performance.
- Please observe the following instructions for protective equipment.

Recommended personal protection equipment	
	Protective goggles Welding spatters and a flash of light occur during welding. In order to protect your eyes, wear appropriate safety goggles with side protection and a filter protector, if necessary.
	Protective gloves During welding, the workpieces and parts of the welding gun get hot and welding spatters occur. Wear appropriate, non-combustible, heat-resistant protective gloves.
	Protective clothing Welding spatters occur during the welding process. Wear appropriate, non-combustible and, if necessary, heat-resistant, protective clothing.
	Safety shoes Welding spatters occur during the welding process. Wear appropriate, non-combustible, heat-resistant safety footwear.
	Hearing protection Depending on the welding device and the welding application, relatively loud welding noises may occur. In that case, wear appropriate hearing protection.

2.5 Intended use of the stud welding systems

The devices (universal feeders UVR-300 and UVR-400) described here require additional components for automatic operation.

- Stud welding device with feeder interface, e.g. BMS-9 Automatic
- Automatic stud welding gun or head

Typical application areas for the automatic feed of welding fasteners are as follows:

- Stationary robotic stud welding machines
- Stationary CNC stud welding machines
- Mobile hand-operated stud welding machines

For the sake of simplicity, only a hand-operated stud welding system is described in these operating instructions.

For example, in connection with the energy source BMS-9 Automatic and the stud welding gun PS-3A, the studs can be fed into the gun automatically using compressed air.

These operating instructions and the declaration of conformity only apply if the named devices are used together as described in these operating instructions.

In automatic mode, the universal feeders may only be operated with the accessories described in these instructions.

Operation of the stud welding system must be in accordance with the technical data.

Special studs or diameters upon request.

The devices described here can also be operated separately in other combinations. In case of using a stationary robotic or CNC stud welding machine, the respective operating instructions of the devices must also be observed.

2.5.1 Incorrect use

Any use of the devices deviating from the intended use is considered improper use.

Non-intended use, unauthorised modification, separate device operation or manipulation of the devices will void the declaration of conformity and warranty claims against the manufacturer.

2.6 Requirements on the part of the operator

The operator of the devices must ensure that the preconditions described in this operating manual regarding safe operation of the devices are fulfilled. These include, for example, conditions at the installation location, regulatory requirements for a safe workplace, training of the operating personnel and qualified personnel in using the device, if applicable, compliance with required maintenance work as well as monitoring the intended use of the devices.

These operating instructions must be stored in the vicinity of the device.

The operator of the devices must ensure that all protective devices are present, active and intact before the stud welding system is used.

2.6.1 Prerequisites for personnel

Operating personnel

The persons authorised to operate the devices must be familiar with the stud welding system and trained accordingly. They must have read and understood these operating instructions. When working with the stud welding system, they must also be able to avert possible residual danger to themselves and third parties or minimise them as far as possible.

To maintain the qualification, safety training must be carried out at least once a year. In the event of malfunction or for maintenance, specially trained personnel or the manufacturer must be consulted, if necessary.

Operators of stud welding equipment must have technical expertise for operating and adjusting the devices properly as well as for properly carrying out weldings.

If welding personnel have to be qualified for certification of welding, the DIN EN ISO 14555 and DIN EN ISO 14732 standards are to be observed.

Trained electrotechnical personnel

The following generally applies:
Work on live elements may only be performed by authorised electricians. This work must be performed in line with the applicable technical rules for electrotechnical devices.

All devices of Soyer Bolzenschweißtechnik GmbH must only be opened by SOYER® personnel or personnel authorised by SOYER®.

3 Transport

When transporting the devices, make sure they cannot be damaged. Use appropriate packaging to protect the device against weathering effects, especially moisture.

4 Storage, shutdown

During storage or shutdown, make sure to protect the devices against dirt and humidity.

Protect the stud welding system against unauthorised access by third parties.

5 Disposal

Local environmental directives must be observed when disposing of the device.

Water-endangering as well as environmentally hazardous substances are to be disposed of in accordance with legal regulations.

If applicable, materials must be separated according to regulations.

6 Description of the UVR-300 / UVR-400 feeders

The UVR-300 and UVR-400 universal feeders allow weld studs of different diameters to be loaded rapidly and fully automatically into the welding gun or welding head. Time-consuming conversion or adjustments to other stud diameters are not required.

A vibration drive transmits vibrations to the feeder bowl. The studs move clockwise from the base of the feeder bowl to the stud escapement via spiral-shaped steps travelling upwards.

The feeder bowl is fitted with a step width adjustment to strip off studs lying on top of one another, or to separate studs sitting next to one another. After the studs have run through the separating device, the individual studs move into the outlet rail through the vibration and hang in a vertical position.

When transporting tapped studs, it cannot be ruled out that the ignition tip in the internal thread may become entangled in a preceding or subsequent tapped stud. The air flow of an air nozzle separates the entangled tapped studs before they are fed into an inclined plane where they are transported to the slide.

A compressed air cylinder moves the stud retainer, which serves to hold the studs, under a hose retainer. Compressed air is fed through a blow air nozzle which blows the studs and moves them into the stud welding gun or the welding head via the stud feed hose.

The feeder intensity can be adjusted via a potentiometer. This is controlled via a control panel with membrane keypad. LED displays and signal transmitters on the stud escapement enable a regulated function in both continuous and automatic mode.

■ Automatic feed

In connection with e.g. the PS-3A stud welding gun and an energy source with feeder interface, the studs can be fed into the gun automatically using compressed air.

6.1 Overview of UVR-300 / UVR-400 feeder

Complete overview

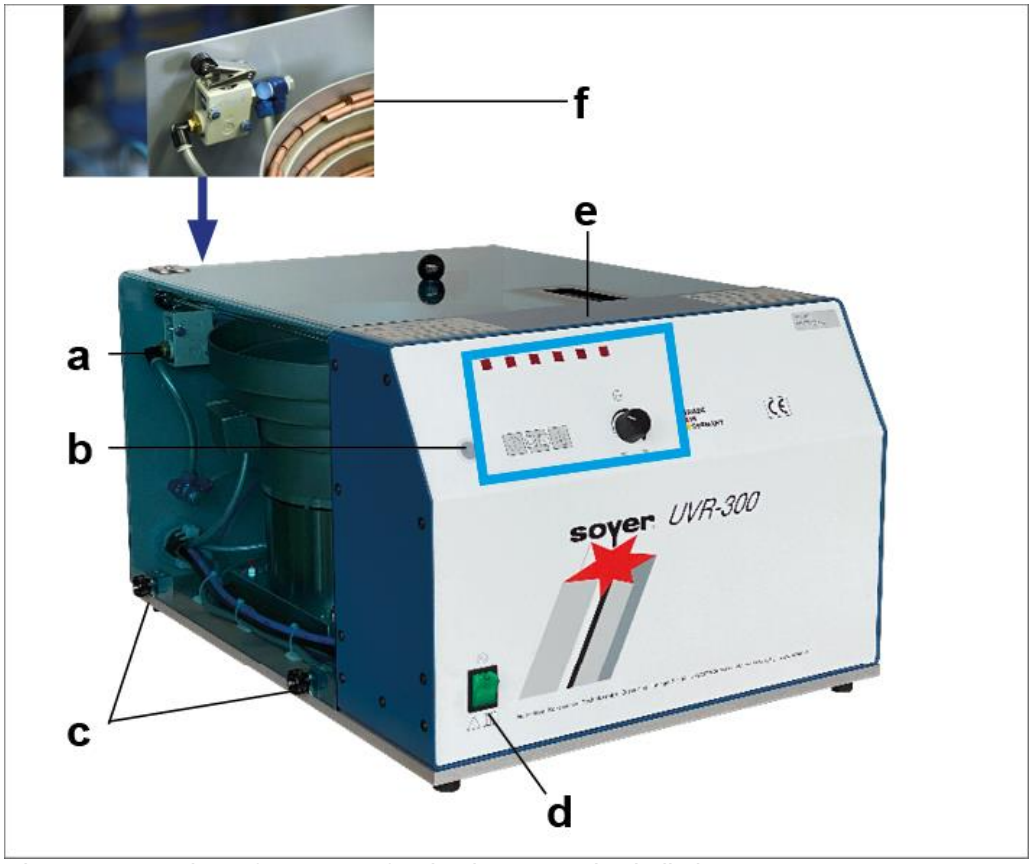


Figure 1: Overview of UVR-300 feeder (UVR-400 is similar)

Item	Designation
a	Protective hood
b	Function keys of the universal feeder (see “6.2.1 Overview of the front panel” from page 21)
c	Both sides, locking screws for the protective hood
d	Mains switch for turning the device on/off
e	Feed opening for the stud feed hose
f	Safety switch to disconnect the compressed air when the protective hood is not attached. **WARNING** **The safety switch must not be bypassed!**

6.1.1 Rear panel/connections

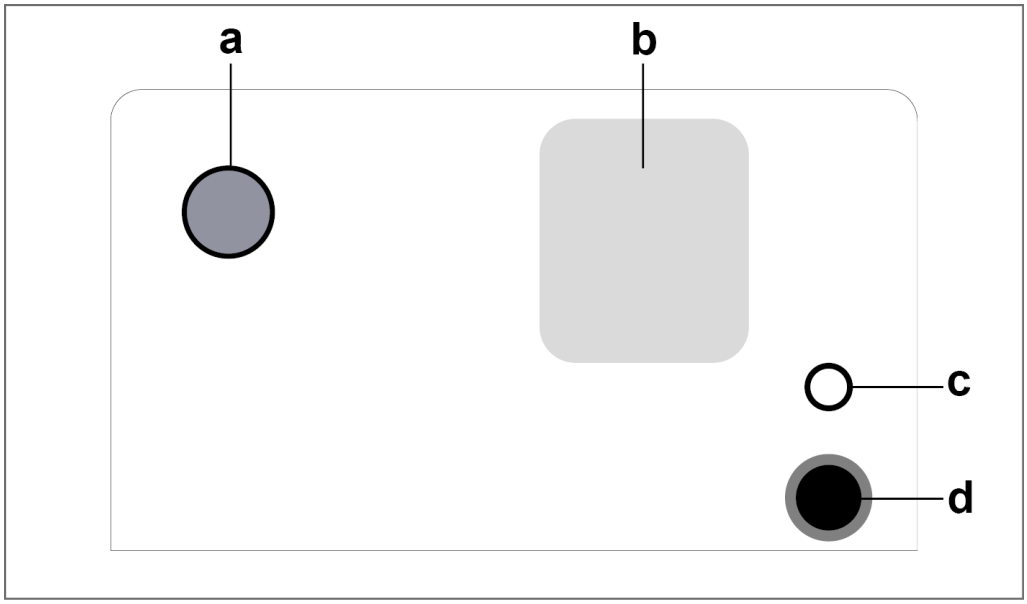


Figure 2: Overview of the device back panel

Item	Designation
a	Blow air regulator
b	Type plate
c	Main air connection **Observe the maximum permitted pressure.**
d	Hose package with all lines and hoses for connection to the stud welding device and with the mains plug for the feeder.

Transport area

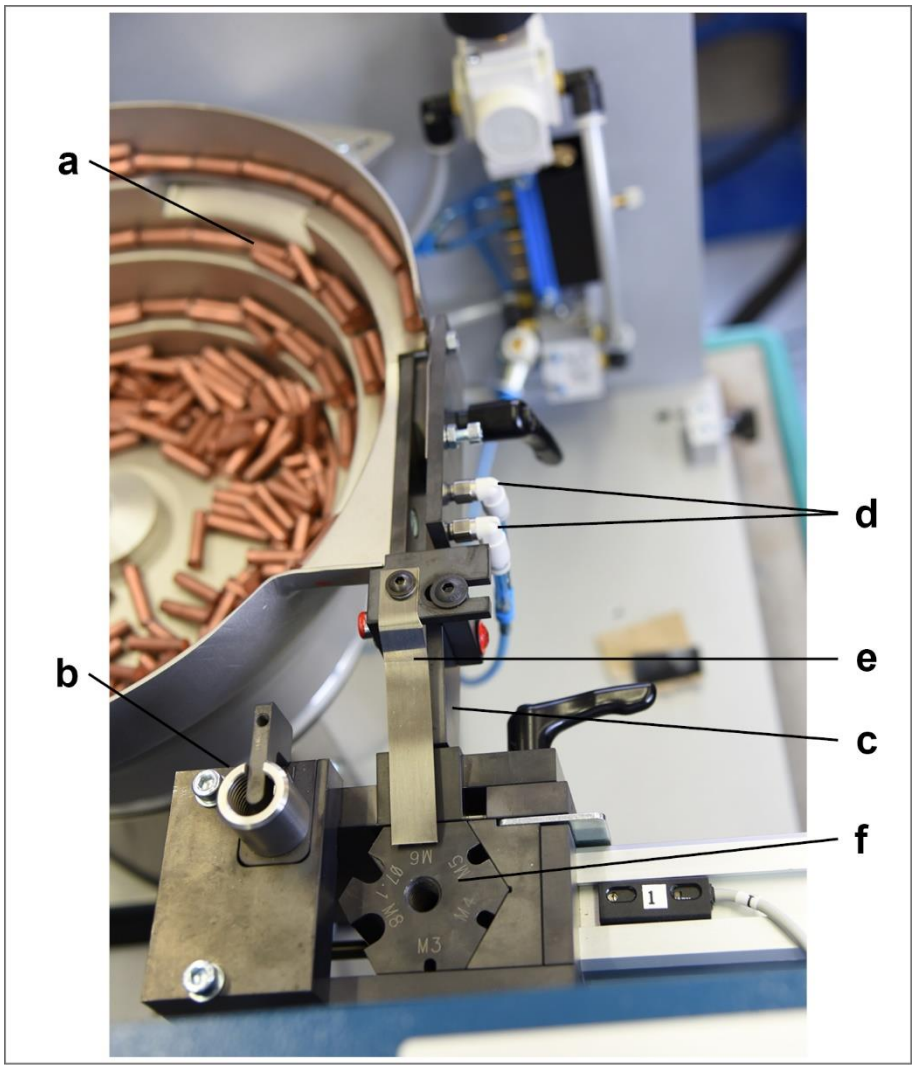


Figure 3: Overview of the transport area UVR-300 (UVR-400 is similar)

Item	Designation
a	Feeder bowl with welding studs
b	Connection piece for the stud feed hose (replaceable part)
c	Outlet rail (replaceable part)
d	Blow-off nozzles to separate studs lying on top of one another
e	Hold-down plate
f	Stud retainer

6.2 Overview of the controls

6.2.1 Overview of the front panel

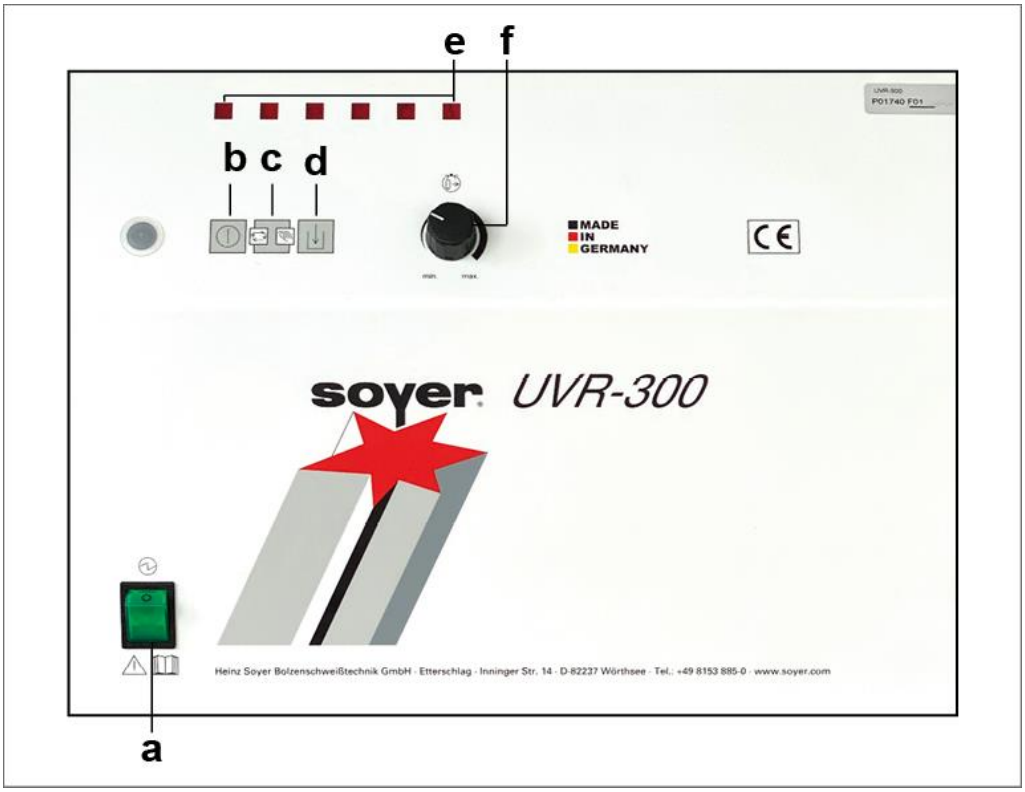


Figure 4: Overview – Front panel of UVR-300 (UVR-400 is similar)

Item	Designation
a	Mains switch for turning the mains supply on/off
b	Function key: ON/OFF, to switch the control system on/off
c	Function key: Operating mode to switch to • Manual mode (continuous operation) • Automatic mode
d	Function key: Reload to convey a stud to the welding gun/welding head. You can also reload by triggering the welding gun or welding head.
e	LED operating mode (see “6.3 Display of the operating states“ on page 22)
f	Rotary control for adjusting the feed speed in the feeder bowl • Min.: Minimum feed speed • Max.: Maximum feed speed

6.3 Display of the operating states

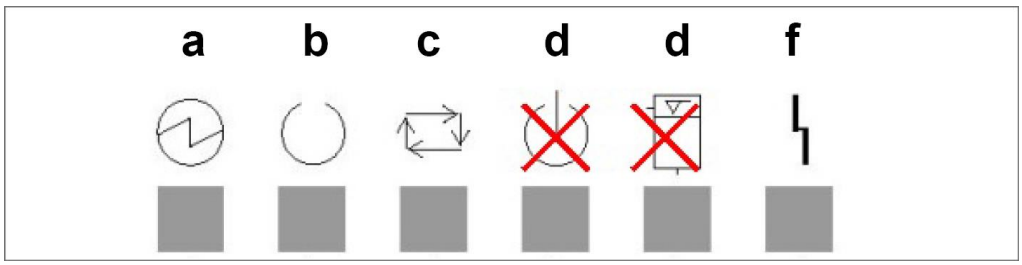


Figure 5: Operating states (feeding unit)

Item	Designation
a	**Feeding unit ready** LED lights up when line voltage is supplied.
b	**Operation** LED lights up when vibration drive is in operation.
c	**Automatic** LED lights up with automatic operation being switched on.
d	**No function** LEDs unassigned with UVR-300 / UVR-400**.**
f	**Malfunction** LED lights up in case of malfunction.

6.4 Special functions (potentiometer)

Under the cover cap on the front panel of the device, there are adjustment elements for special functions.

The jumper and potentiometer have been preset at the factory and do not normally have to be adjusted.

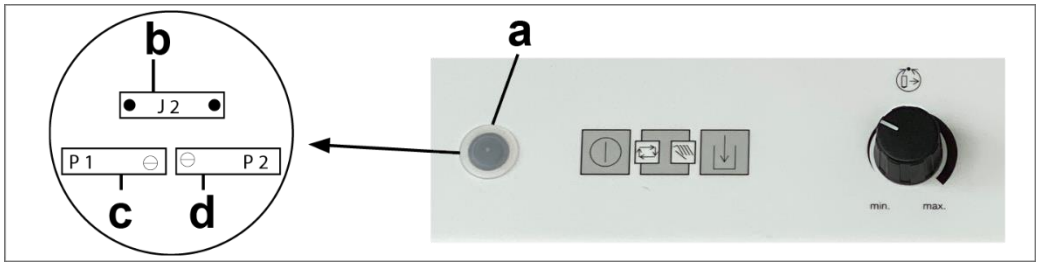


Figure 6: Potentiometer and jumper for special functions (feeder control)

a	Cover cap
b	J 2 jumper to switch between BMK and BMS mode. • BMK mode (preset for feeder operation): J 2 is open. In the light test after switching on, all 6 operating displays light up and then go out again one by one. • BMS mode: J 2 is plugged in. In the light test after switching on, all 6 operating displays light up and then go out again at the same time.
c	P 1: Feeder reload time (only in BMS mode) After each loading process, the vibration drive reloads briefly to guarantee the outlet is sufficiently full. The reload time can be regulated based on the stud diameter. Turning to the left increases the time; turning to the right shortens the time.
d	P 2: Frequency adjustment for the feeder vibration drive.

6.5 Technical data for the universal feeder

6.5.1 Technical data for the UVR-300 universal feeder

Designation	UVR-300 universal feeder
Item no.	P01740
Working area	SOYER® threaded studs and pins with flange in accordance with DIN EN ISO 13918 M3, M4, M5, M6, Ø 7.1 and M8 from 6 - 40 mm in length
Material	Steel, stainless steel, aluminium and brass
Feeding capacity	Approx. 20 - 50 studs/minute, depending on the dimensions and feed length
Feeding quantity	max. 6 kg
Control connection	Direct connection to SOYER® stud welding device with feeder interface
Mains connection	230 V, 50/60 Hz, 10 A
Fuse Feeder control	2 x T 1 A (fuse 5x20 mm time-lag)
Compressed air con-nection	5 up to 7 bar
Dimensions	450 x 340 x 580 mm (w x h x d)
Weight	46 kg (without studs)
Subject to technical changes	

WARNING

Hazards due to wrong fuse

Only replace fuses when mains plug is disconnected!

Should it become necessary to replace fuses, only use fuses with the specified electrical values. Oversized fuses could either cause defects in the electrical system or a fire.

6.5.2 Technical data for the UVR-400 universal feeder

Designation	UVR-400 universal feeder
Item no.	P01725
Working area	SOYER® threaded studs and pins with flange in accordance with DIN EN ISO 13918 M10, Ø 10.8 and M12 from 12 - 40 mm in length Optional possible: M6, Ø 7.1, M8 from 6 - 40 mm in length
Material	Steel, stainless steel, aluminium and brass
Feeding capacity	Approx. 20 - 50 studs/minute, depending on the dimensions and feed length
Feeding quantity	max. 8 kg
Control connection	Direct connection to SOYER® stud welding device with feeder interface
Mains connection	230 V, 50/60 Hz, 10 A
Fuse Feeder control	2 x T 1 A (fuse 5x20 mm time-lag)
Compressed air connection	5 up to 7 bar
Dimensions	570 x 440 x 680 mm (w x h x d)
Weight	76 kg (without studs)
Subject to technical changes	

WARNING

Hazards due to wrong fuse

Only replace fuses when the mains plug is disconnected!

Should it become necessary to replace fuses, only use fuses with the specified electrical values. Oversized fuses could either cause defects in the electrical system or a fire.

6.6 Setup and connection of the devices

The following describes how the devices are connected to power and interconnected to the automatic system.

6.6.1 Requirements for the installation site

The installation site for the device must be clean and dry. Ensure that ventilation for the device is sufficient. Do not install the device in an unventilated room. There is a danger of overheating.

Ensure that the installation surface is flat, clean and stable.

The installation site and workplace must comply with legal requirements. Ensure that the installation site is readily accessible for maintenance work.

Make sure that the device cannot be soiled by dust (especially metal dust or swarf) caused by work in the immediate vicinity (e.g. by grinding work).

⚠ DANGER

Danger from humid operation site

There is a danger of electrocution when operating the device in a humid environment.

- The device must only be operated in a dry environment.

6.6.2 Example for a connection diagram

For example, in connection with the energy source BMS-9 Automatic and the PS-3A stud welding gun, the studs can be fed into the gun automatically using compressed air.

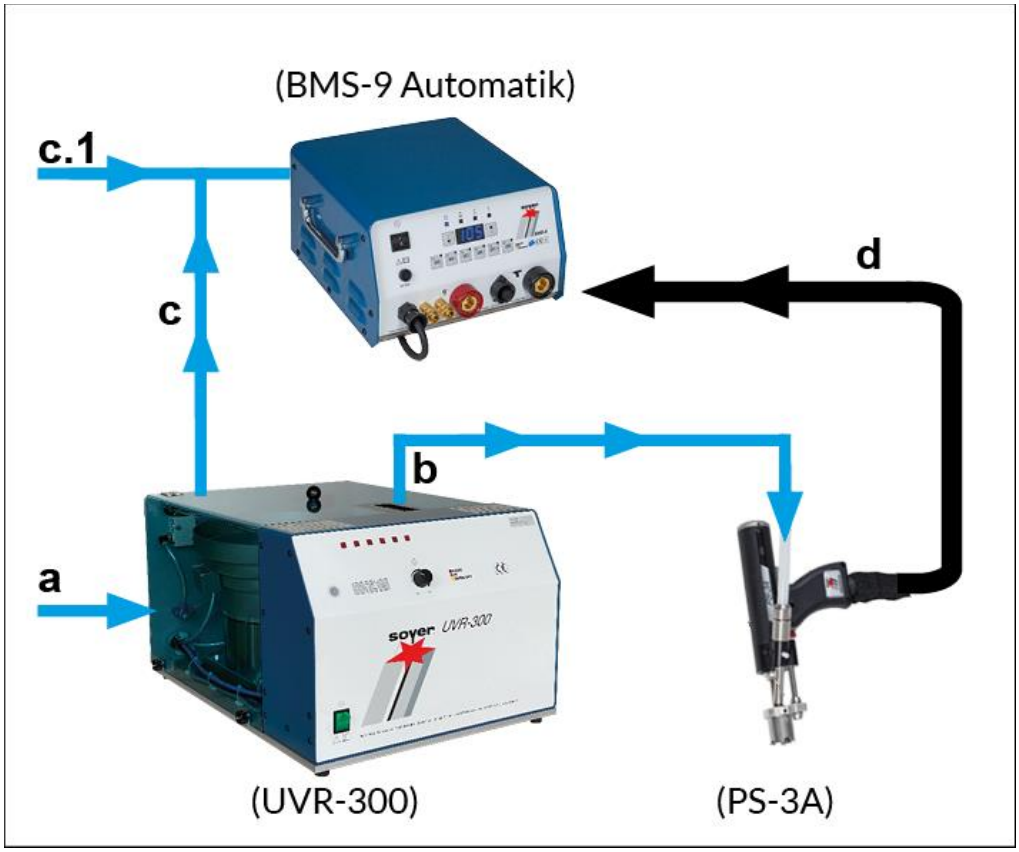


Figure 7: Example for a connection diagram with UVR-300 (UVR-400 is similar)

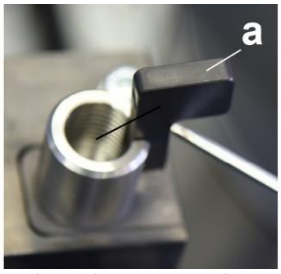
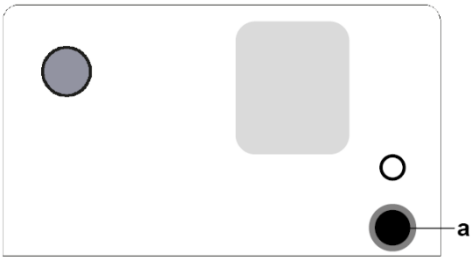
Item	Designation
a	Main compressed air feed (5 - 7 bar)
b	Stud feed hose
c	Hose package with control cable and compressed-air supply from the feeder to the stud welding device
c.1	Mains connection cable for the feeder control
d	Hose package with welding and control cable and compressed air hose for connection to the stud welding device.

Other combinations are possible.

The devices described here can also be operated separately in other combinations. If a stationary robot or CNC stud welding system is used, the respective device operating instructions must also be observed.

6.6.3 Connections on the universal feeder

Connecting the universal feeder (rear side)

Step 1:	**Supply air**  Connect the main line of the compressed-air supply (a). **Observe the maximum permitted pressure.**
Step 2:	**Stud feed hose**  Insert the stud feed hose into the connection piece (a) until the stop. **The stud feed hose and connection piece must match the stud diameter being processed.**
Step 3:	**Mains connection**  Check that the mains switch is turned off and after installation, connect the feeder to the power supply using the mains plug. You can find the mains plug in the hose package (a).
The device is connected.	

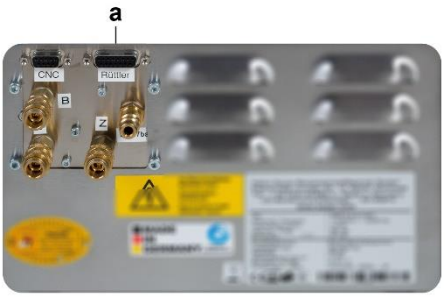
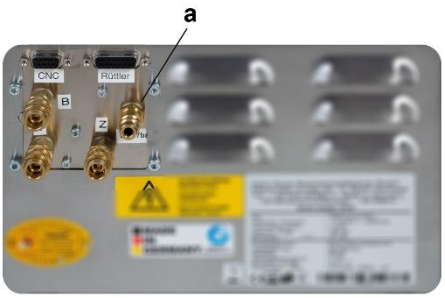
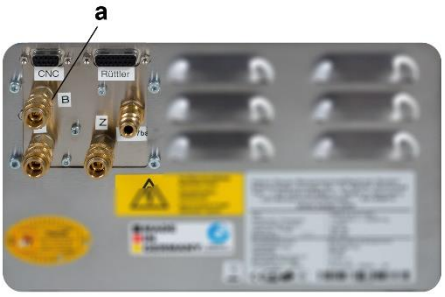
⚠CAUTION

Risk of injury from ejected welding studs

If the stud feed hose is used incorrectly, or an unsuitable hose is used, there is a risk of injury from ejected welding studs.

- Only use original stud feed hoses from Soyer GmbH.
- Only ever use stud feed hoses which match the stud diameter.
- Ensure correct and tight fit of the stud feed hose in the plug connection of the stud welding gun, welding head and device.
- Ensure that the stud feed hose is intact. Do not use stud feed hoses that are damaged or worn.
- Do not bend the stud feed hose.

Connecting the universal feeder with the stud welding device (example BMS-9 Automatic)

Step 1:	**Check that both devices are switched off.**
Step 2:	**Feeder connection – interface**  Connect the interface plug "Feeder" (a) from the feeder hose package for the controls. **Please note: The CNC interface is not required/connected.**
Step 3:	**Feeder connection – Supply air**  Connect the supply air hose (a) from the feeder hose package. Observe the maximum permitted pressure.
Step 4:	**Feeder connection – Blow air**  Connect the blowing air line (a) from the feeder hose package. Observe the maximum permitted pressure. **Observe the labelling on the connection and hose, do not mix up!** **(B/blow air = silver hose)**

Connecting the universal feeder with the stud welding device (example BMS-9 Automatic)

Step 5:	**Feeder connection - Compressed air slide**  Connect both compressed air hoses for the slide (a) from the hose package. **Observe the labelling on the connection and hose, do not mix up!** **(V/Forward = blue hose; Z/Backward = black hose)**
The universal feeder is connected with the stud welding device.	

6.7 Permitted devices in combination with the universal feeder

WARNING

Hazards due to wrong device combination

Hazards for the operator may occur when wrong devices are used.

- Only use devices permitted by Soyer GmbH.

The use of other devices or devices from another manufacturer invalidate the declarations of conformity and warranties of Soyer GmbH.

Permitted SOYER® stud welding guns for automatic operation

Gun	Note
PS-3A	Standard gun (M3 - M8)
PS-6A	M3 - M8
PK-3A	M3 - M8
PH-3A	M3 - M10
PH-6A	M3 - M10

Permitted SOYER® stud welding heads for automatic operation

Gun	Note
SK-5AP	Standard head (M3 - M8)
SK-5AKS	
SK-5AN	No longer produced

Permitted SOYER® stud welding devices for automatic operation

Stud welding device	Note
BMS-9/9V Automatic	Capacitor discharge stud welding device
BMS-10N/NV Automatic	Capacitor discharge stud welding device
BMS-10P	Capacitor discharge stud welding device
BMK-16i Automatic	Drawn arc and SRM® stud welding device

6.8 Cleaning the devices

DANGER

Hazards during cleaning

Improper cleaning of the devices can endanger persons.

- The device may only be cleaned by trained specialists.
- Prior to starting work, the stud welding system must be disconnected from the mains power supply and secured against accidental switch-on.
- Work on electrical devices and components may only be carried out by skilled electricians in accordance with the electrotechnical regulations.
- Make sure that no detergents get into the device.

Do not use aggressive detergents for cleaning the device.

Make sure that any cleaning waste is disposed of in an environmentally safe manner. Comply with the instructions of the detergent manufacturer.

CAUTION

Damage to the device due to incorrect cleaning

Improper cleaning may cause damage to the device.

- Make sure that no detergents get into the device.
- Do not use aggressive detergents for cleaning the device.

The frequency of cleaning depends on the operating conditions of the devices.

7 Converting the universal feeder

The universal feeder must be converted and/or readjusted when the stud type is changed, according to the studs being used.

Always convert all the required parts, as malfunctions may otherwise occur.

To convert the universal feeder to another stud size, there is a conversion set available with the parts to be changed.

The parts to be converted are labelled according to the stud diameter for which they must be installed.

7.1.1 Conversion set for M3 - M8 (preferably for UVR-300)

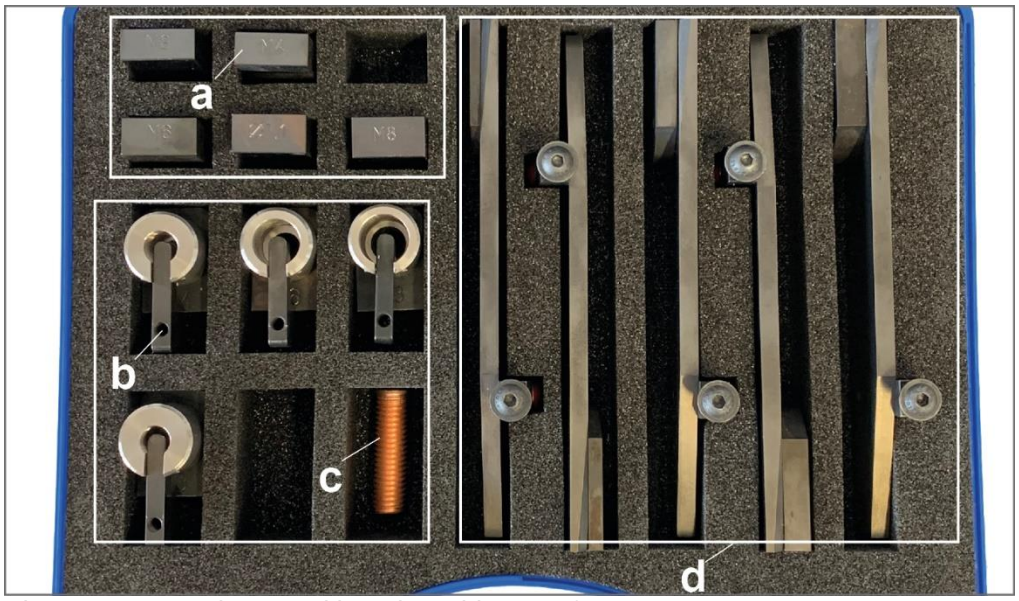


Figure 8: Conversion set with replaceable parts for UVR-300

Item	Designation
a	Limit stop distance plates
b	Connection pieces for the stud feed hose
c	Threaded studs M10, aid to remove the stud retainer
d	Outlet rails with distance piece

All conversion set parts can be ordered separately. Please refer to chapter “12.1 Feeder conversion set (M3 - M8)” from page 60.

7.1.2 Conversion set for UVR-400 (M10, M12 and Ø 10.8)

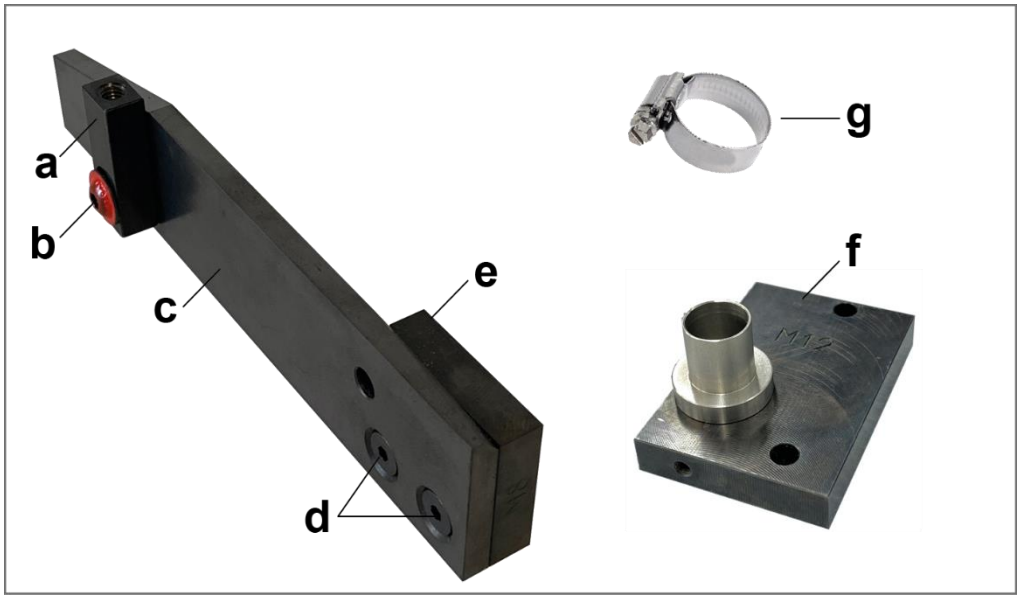


Figure 9: Conversion set with replaceable parts for UVR-400

Item	Designation
a	Limit stop for fixing bracket
b	Lens flange screw
c	Guide rail
d	Countersunk Allen screw
e	Distance piece
f	Hose connection
g	Hose locking device

All conversion set parts can be ordered separately. Please refer to chapter “12.2 Individual parts for the UVR-400 conversion set (M10, M12 and Ø 10.8)” on page 62.

7.2 Carrying out the conversion

The following describes how to convert the UVR-300 universal feeder and the UVR-400 universal feeder to a different stud diameter. To convert the feeders to another stud diameter, proceed as follows:

- Adjust the step width
- Replace the connection piece for the stud feed hose
- Replace the outlet rail and rotate the stud retainer
- Change or replace the limit stop distance plate

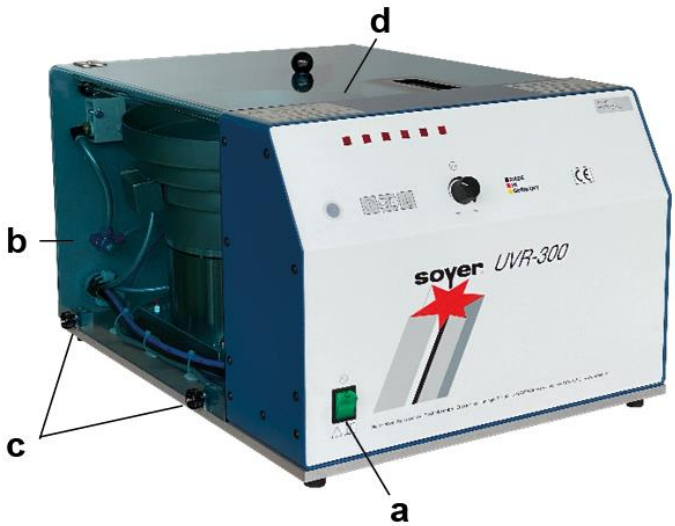
Please also refer to chapter "7.7 Differing work steps for UVR-400" from page 44 for the different process steps regarding the following stud dimensions: M10, M12 and Ø 10.8.

CAUTION

Risks when the device is switched on

Before carrying out any conversion work, the following applies:

- Turn off the mains switch (a).
- Disconnect the main air supply (b) at the rear of the device.
- Remove the cover (d) via the fastening screws (c) on both sides.



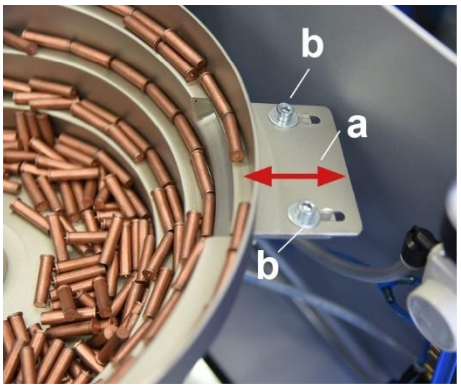
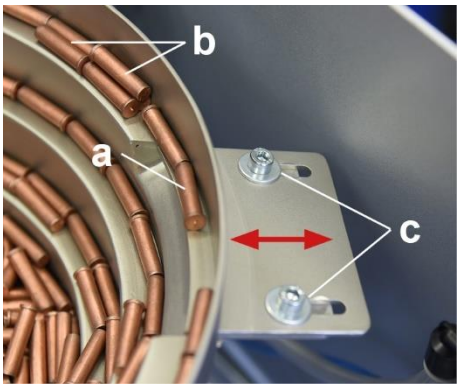
Note for UVR-400 universal feeder:
The cover may only be opened but not removed completely.

Figure 10: Universal feeder UVR-300 (UVR-400 is similar)

7.3 Adjusting the step width

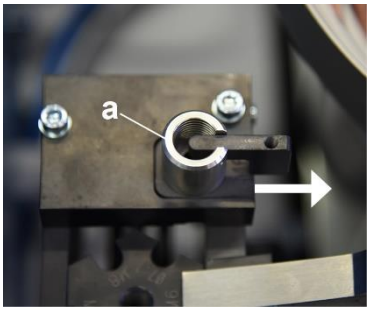
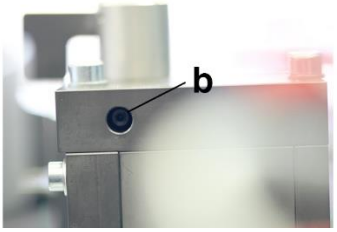
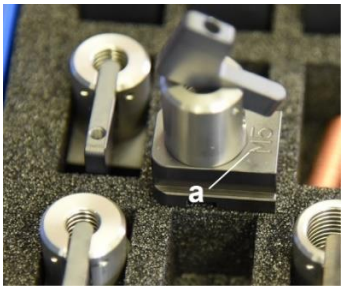
The step width is the width of the spiral-shaped upward steps in the feeder bowl. The continuous adjustment of the step width guarantees the separation of adjacent studs which would cause a malfunction if they reached the outlet rails.

Adjusting the step width

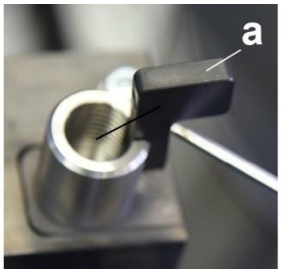
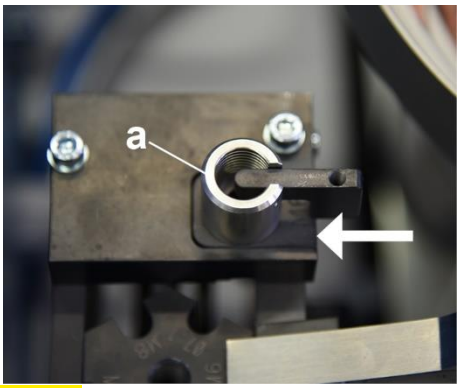
Step 1:	**WARNING** **Turn off the mains switch on the device, disconnect the main air supply and remove the cover hood.**
Step 2:	To adjust the step width, there is an adjustable plate (a) on the feeder bowl. To adjust the plate, loosen both clamp screws (b). 
Step 3:	Adjust the plate so that only one stud can lie across the whole retainer surface (a). Studs which are parallel to one another or on top of one another (b) will then fall off the plate. After the adjustment, retighten the clamp screws (c). 
The step width is adjusted.	

7.4 Replacing the connection piece for the stud feed hose (M3 - M8)

Replacing the connection piece for the stud feed hose

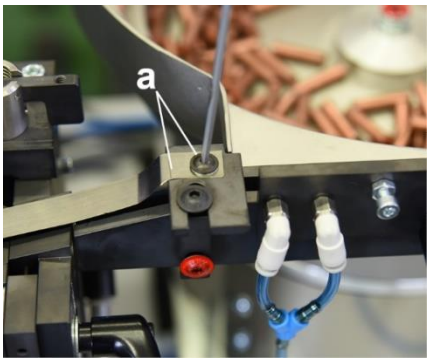
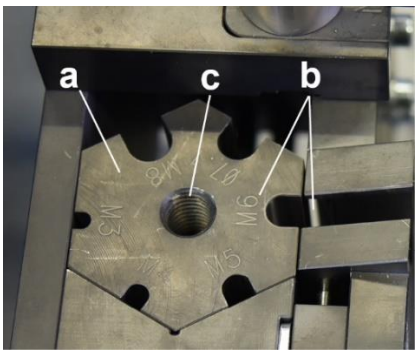
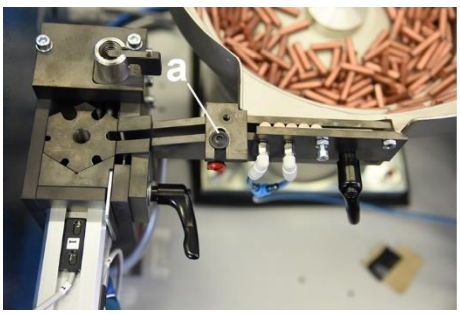
Step 1:	**WARNING** **Turn off the mains switch on the device, disconnect the main air supply and remove the cover hood.**
Step 2:	Remove the hose connection (a) from the feeder.  **The hose connection is fastened with a spring-loaded pin. Through the bore hole of the top panel (b) you can loosen or re-attach the threaded pin with an Allen key if required.** 
Step 3:	Remove the required hose connection from the conversion set.  **Each hose connection is labelled with the stud diameter for which it must be used (a).**

Replacing the connection piece for the stud feed hose

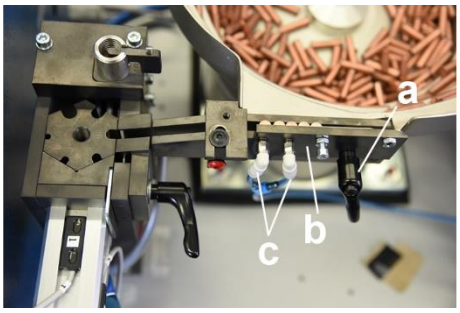
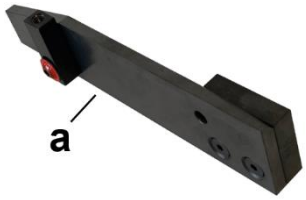
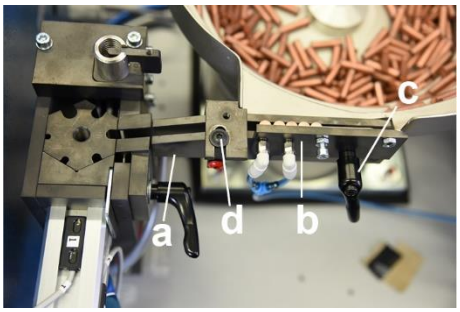
Step 4:	Ensure that the safety interlock (a) moves freely and smoothly. 
Step 5:	Insert the correct hose connection (a).  **⚠CAUTION** **Ensure that the spring-loaded pin clicks into place (see step 2).**
Step 6:	Insert the correct stud feed hose. Ensure that the hose end is clean, straight and free of burrs. Lightly chamfer the internal diameter of the hose, to avoid studs becoming stuck (e.g. with the 60° countersink F04922 from SOYER®). Insert the hose into the connection piece until the stop.
The hose connection has been replaced.	

7.5 Replacing the outlet rail and rotating the stud retainer

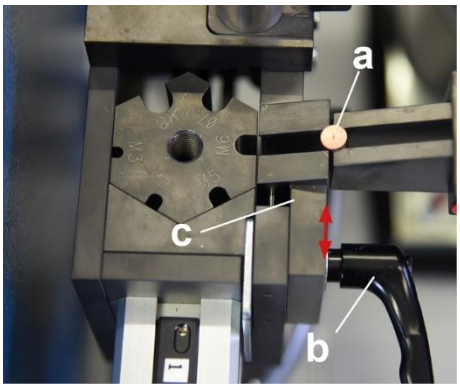
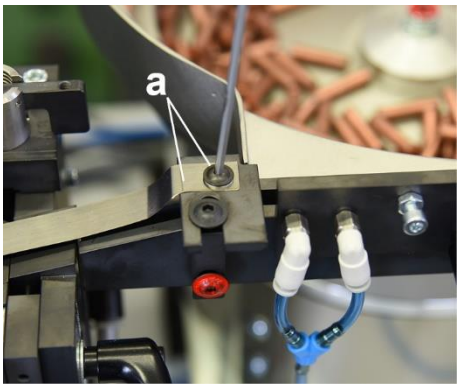
Replacing the outlet rail and rotating the stud retainer

Step 1:	**WARNING** **Turn off the mains switch on the device, disconnect the main air supply and remove the cover hood.**
Step 2:	Remove the hold-down plate with the fastening screw (a) above the outlet rail. 
Step 3:	Remove the stud retainer (a) and rotate the desired diameter to the outlet rail (b).  **To remove and insert the stud retainer, use a screw or a stud with diameter M10 which you screw into the centre (c).** **CAUTION** **Remove the screw/stud again after inserting the barrel.**
Step 4:	Loosen the fastening screws (a). 

Replacing the outlet rail and rotating the stud retainer

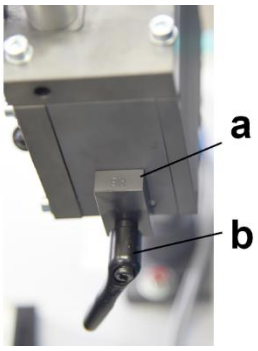
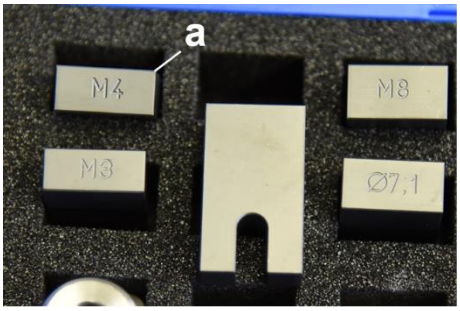
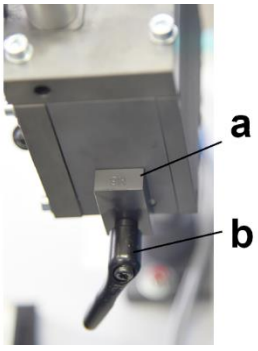
Step 5:	Open the tommy screw (a) and remove the panel (b) with the compressed air connection (c).  **⚠CAUTION** **Be careful not to damage the compressed air lines and the compressed air nozzles.**
Step 6:	Replace the outlet rail (a). Take the required outlet rail (a) out of the conversion set.  **Each outlet rail is labelled with the stud diameter for which it must be used.**
Step 7:	Insert the outlet rail (a) and the panel with the compressed air connection (b). Fasten both with the tommy screw (c) and the fastening screw (d).  **⚠CAUTION** **Be careful not to damage the compressed air lines and the compressed air nozzles.**

Replacing the outlet rail and rotating the stud retainer

Step 8:	Check with a stud whether this slips through the outlet rail transition (a) without catching. If not, open the tommy screw (b) and push the block on the transition (c) until there is a clean, aligned transition. 
Step 9:	Attach the hold-down plate with the fastening screw (a) above the outlet rail. 
The outlet rail has been changed.	

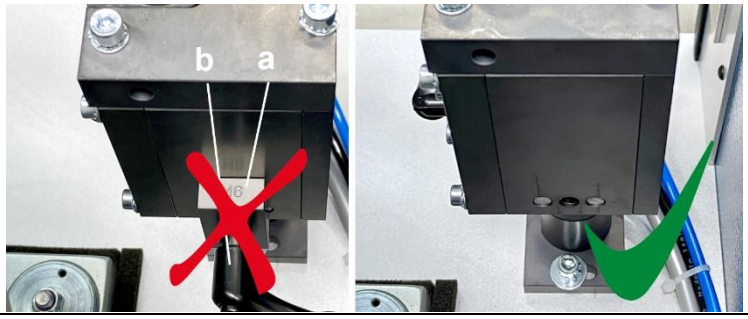
7.6 Replacing the limit stop distance plate

Replacing the limit stop distance plate

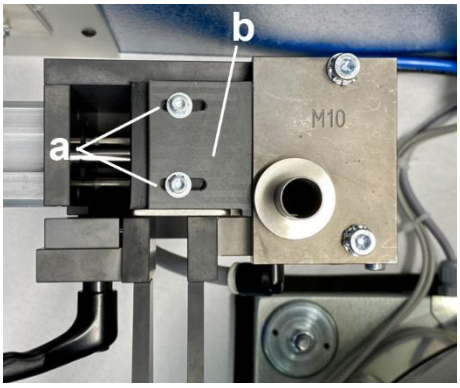
Step 1:	**WARNING** **Turn off the mains switch on the device, disconnect the main air supply and remove the cover hood.**
Step 2:	Remove the limit stop distance plate (a) by opening the tommy screw (b). 
Step 3:	Remove the required limit stop distance plate from the conversion set.  **Each limit stop distance plate is labelled with the stud diameter for which it must be used (a).**
Step 4:	Attach the limit stop distance plate (a) and clamp it with the tommy screw (b). 
The limit stop distance plate has been changed.	

7.7 Differing work steps for UVR-400

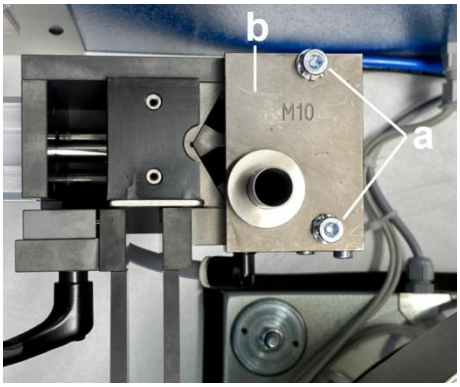
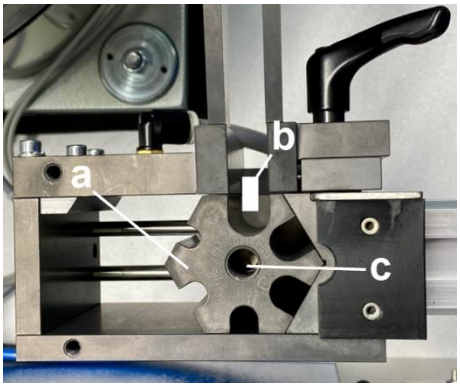
The following describes different work steps/tasks for the UVR-400 universal feeder. These tasks are only required for the following stud dimensions: M10, M12 and Ø 10.8.

⚠WARNING **Turn off the mains switch on the device, disconnect the main air supply and remove the cover hood.**
No limit stop distance plate (a) is required for the stud dimensions M10, M12 and Ø 10.8. Remove the limit stop distance plate (a) and the tommy screw (b).   

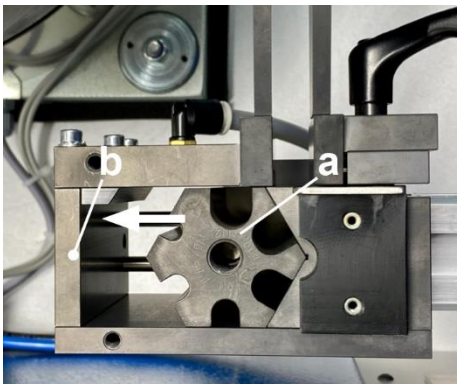
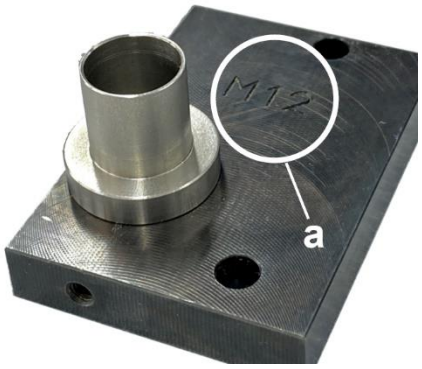
Replacing the connection piece for the stud feed hose and rotating the stud retainer (UVR-400 universal feeder)

Step 1:	**⚠WARNING** **Turn off the mains switch on the device, disconnect the main air supply and remove the cover hood.**
Step 2:	Loosen the fastening screws (a) and remove the cover panel (b). 

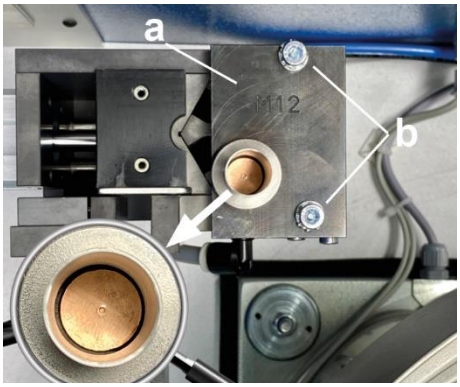
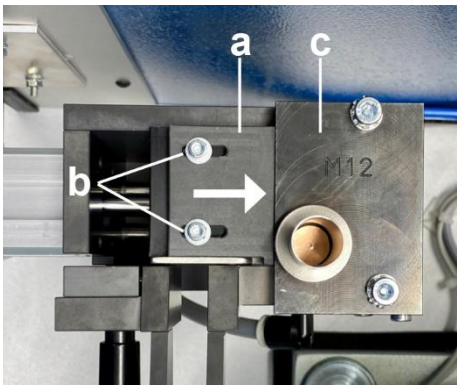
Replacing the connection piece for the stud feed hose and rotating the stud retainer (UVR-400 universal feeder)

Step 3:	Loosen the fastening screws (a) and remove the connection piece (b) for the stud feed hose. 
Step 4:	Pull out the stud retainer (a) and rotate the desired diameter to the outlet rail (b).  **To pull out and insert the stud retainer, use a screw or a stud with diameter M10 which you screw into the centre (c).** **⚠CAUTION** **Remove the screw/stud again after inserting the barrel.**

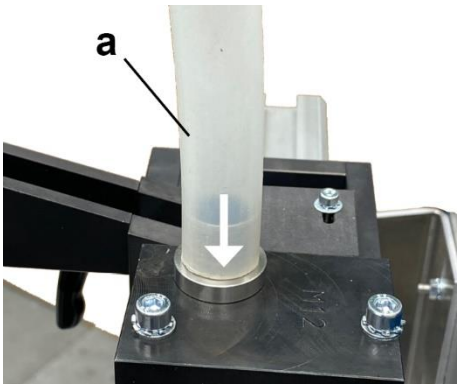
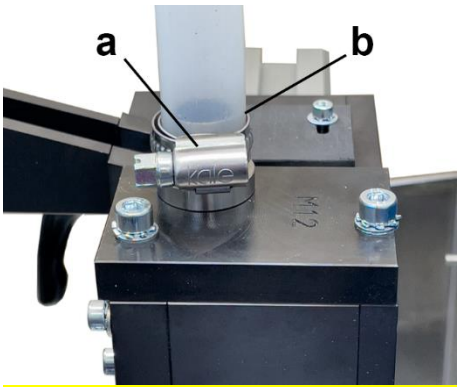
Replacing the connection piece for the stud feed hose and rotating the stud retainer (UVR-400 universal feeder)

Step 5:	Slide the stud retainer (a) to the end position (b) until the stop. 
Step 6:	Use the hose connection required for the stud size used.  **Each hose connection is labelled with the stud diameter for which it must be used (a).**

Replacing the connection piece for the stud feed hose and rotating the stud retainer (UVR-400 universal feeder)

Step 7:	Attach the correct hose connection (a) with the fastening screws (b) above the escapement.  Align the hose connection (a) with the position of the stud retainer. Ensure that there is a clean, aligned transition. It is helpful if a stud is already inserted in the stud retainer for this purpose. This makes it easier to determine a central positioning. **WARNING** **Risk due to accelerated welding studs** Before adjusting the hose connection, make sure that the device is not connected to the compressed air supply.
Step 8:	Attach the cover panel (a) with the fastening screws (b) above the escapement. To do this, push the cover panel (a) in the direction of the hose connection (c) until the stop. 

Replacing the connection piece for the stud feed hose and rotating the stud retainer (UVR-400 universal feeder)

Step 9:	Insert the correct stud feed hose. Ensure that the hose end is clean, straight and free of burrs. Insert the hose into the connection piece until the stop. 
Step 10:	Secure the stud feed hose with a hose clip (a) against accidental loosening. Please refer to chapter “12.2 Individual parts for the UVR-400 conversion set (M10, M12 and Ø 10.8)” on page 62.  **It is important that the clip (a) is completely seated on the connector (b) before fastening.** **The hose clip is sufficiently tight when the hose can no longer be moved/turned. Do not overtighten the hose clip to avoid pinches and damage to the hose.**
The deviating conversion work is finished.	

7.8 Adjusting the universal feeder

Various adjustments can be made to the universal feeder to optimise operation and to eliminate operational process malfunctions. For this, please also refer to chapter “9.1 Eliminating malfunctions at the universal feeder” on page 57.

7.8.1 Adjusting the blow air regulator

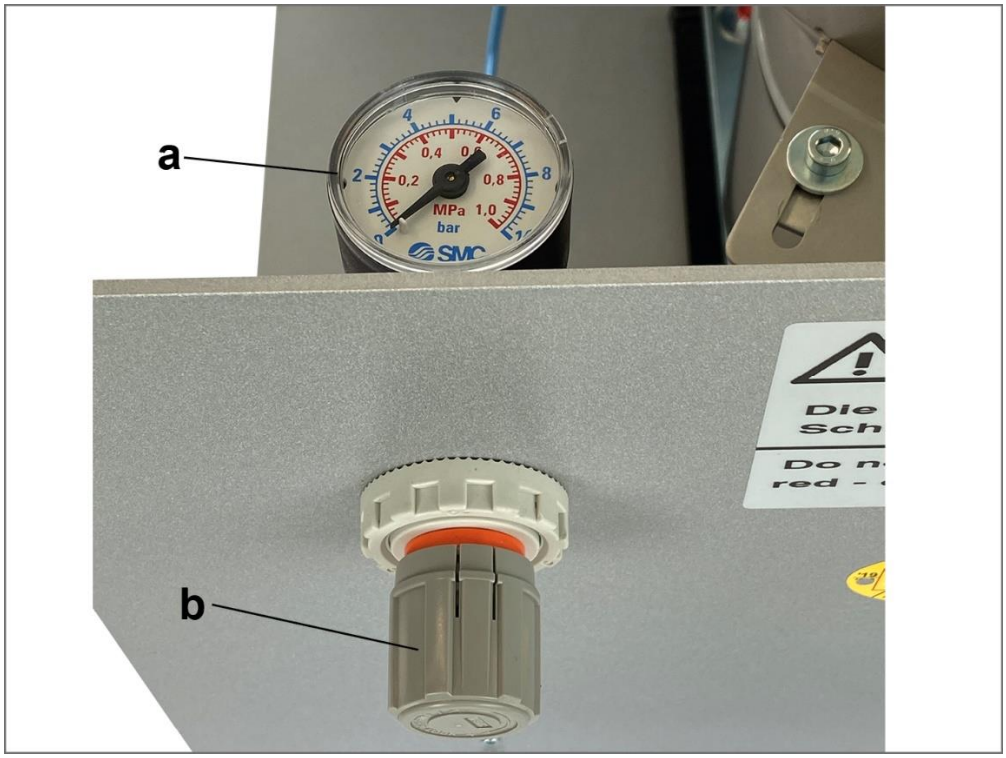


Figure 11: Blow air regulator UVR-300 (UVR-400 is similar)

Item	Designation
a	Manometer
b	Pressure regulator Pull out to make the adjustment, push back in after adjusting the pressure.

The blow air regulator is used to set the pressure for transporting the studs through the stud feed hose to the gun or head.
The required pressure depends, for example, on the stud diameter and weight, as well as on the length of the stud feed hose.

Please observe the maximum permitted pressure (see technical data, chapter “6.5 Technical data for the universal feeder“ from page 24).

).

7.8.2 Adjusting the blow-off nozzles

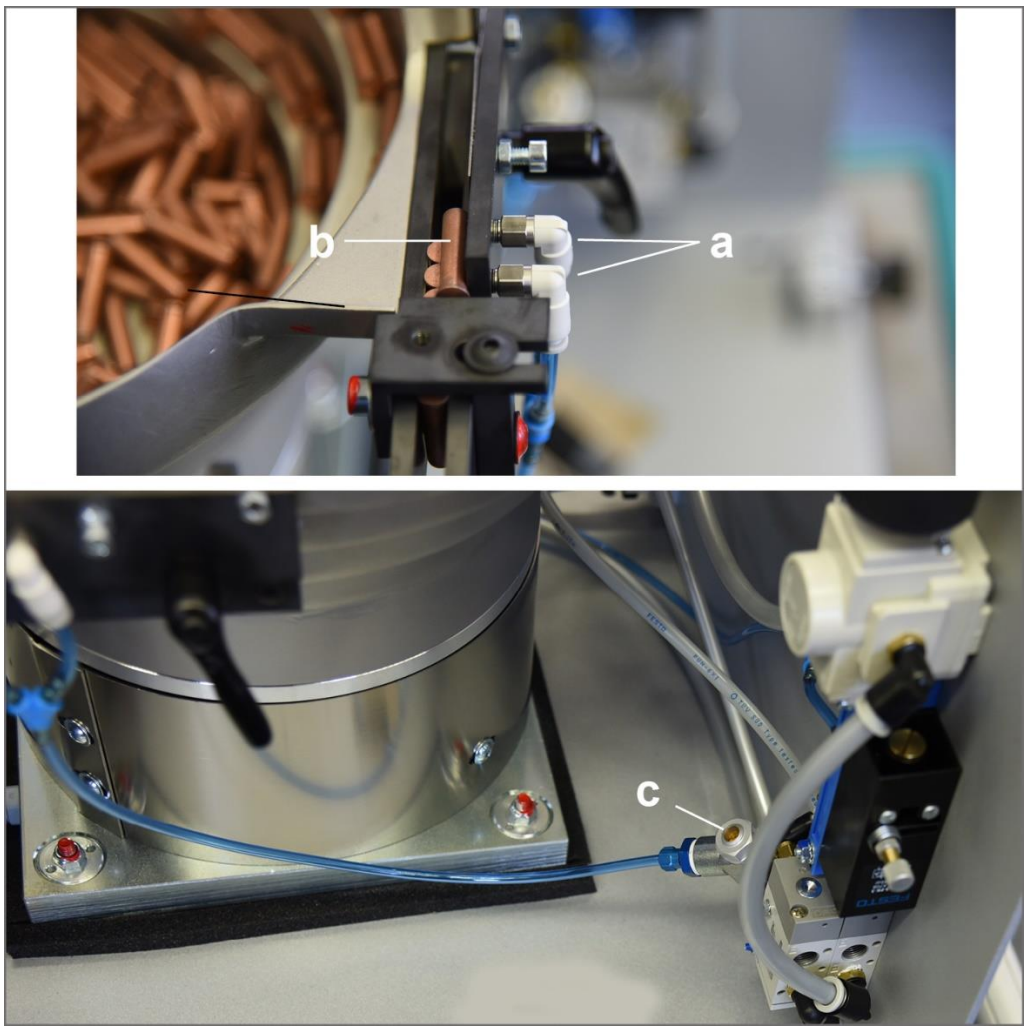


Figure 12: Blow-off nozzles UVR-300 (UVR-400 is similar)

Item	Designation
a	Blow-off nozzles
b	Part to be blown off (example)
c	Valve for regulating the blow-off air

The blow-off nozzles prevent an incorrectly positioned stud from being transported further. The blow-off air is adjusted via a central valve.

7.8.3 Adjusting the transport speed of the weld studs

The rotary control for adjusting the transport speed of the studs in the feeder bowl is located on the front panel of the device.

• Min.: Minimum transport speed
• Max.: Maximum transport speed

The transport speed to be adjusted depends on the type and size of the welding studs.

The welding studs must be transported upwards evenly, without gaps and without being pushed on top of one another.

7.8.4 Readjusting the limit switch

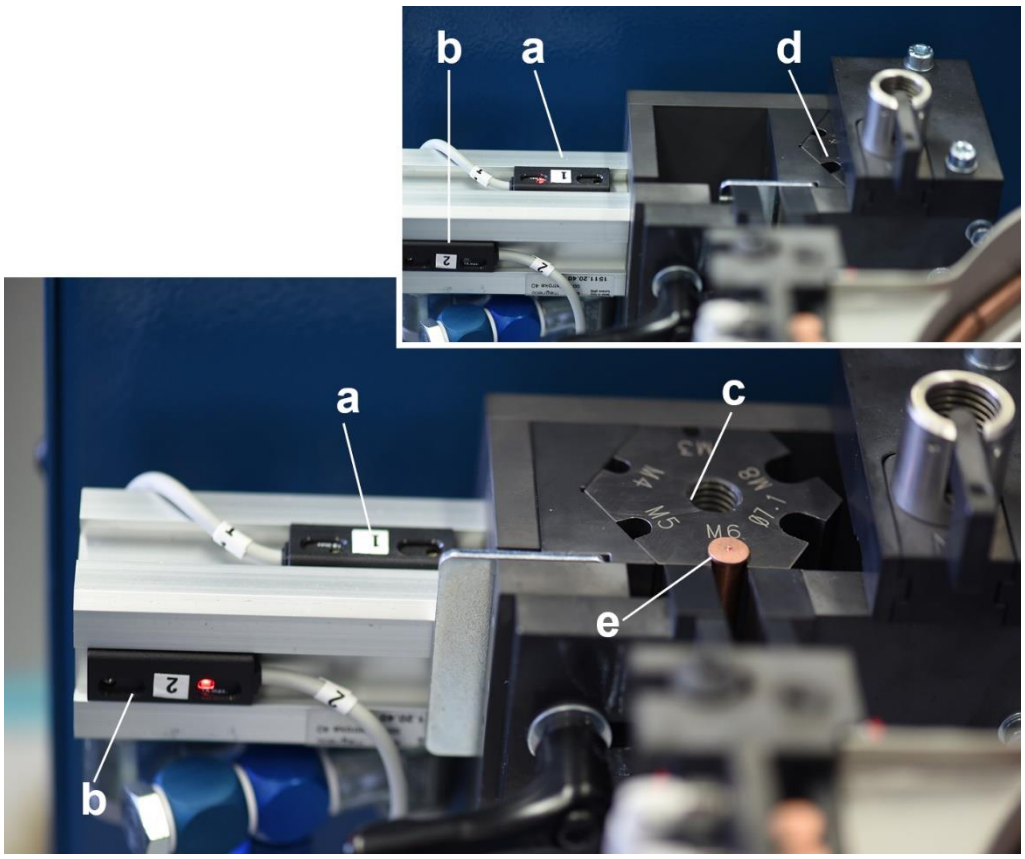


Figure 13: Limit switch for the feed slide with stud retainer

Item	Designation
a	Feed position limit switch The limit switch (lit up) is active when the stud retainer is in the feed position under the stud feed hose (item d).
b	Limit switch transfer position The limit switch (lit up) is active when the stud retainer is in the transfer position to hold the stud (item c).
c	Stud retainer in the transfer position to hold the stud.
d	Stud retainer in the feed position under the stud feed hose.
e	Stud

The limit switches must be readjusted when they are not active in the respective position of the slide (not lit up).
If the limit switches are not active, no notification about the end position of the slide is issued to the controls and the system stops.
To adjust this, the compressed air remains switched off and the mains switch of the device is switched on for power supply.
Push the feed slide into the end position of the limit switch to be adjusted. Then, move the limit switch until its LED lights up.

8 Preparing the devices for the welding operation

The following describes the tasks required for the welding process. The basic requirements for the welding process are described in these instructions:

- The proper connection of the devices
- The appropriate set-up of the stud welding gun or welding head for the stud diameter to be processed
- The appropriate setting of the universal feeder for the stud diameter

This requires mechanical adjustment/conversions to the respective stud diameter and programme settings for the respective welding situation.

Conversion sets
To convert the universal feeder, you require a conversion set with the required parts.

WARNING

Hazards due to incorrect working method

Hazards for operators and third parties can arise due to an incorrect working method.

- Ensure sufficient stability and a dry installation location for the device.
- Make sure you do not knock over the device or pull it down from its stand with the gun cables.
- Ensure your own good stability while welding, especially during mobile use.
- Do not hold the workpiece in your hands while welding. The workpiece must be securely fixed during the welding process.
- Never wrap the gun lines around parts of your body (e.g. arm) as electric fields can occur.
- If the gun is not positioned properly or the gun settings are incorrect, a flash of light can occur during welding. Do not look directly into the flash.
- The gun carries out lifting movements during the welding process. Do not hold the gun tight in the area of moving parts.

8.1 Starting the automatic system and carrying out welding

The following describes how weldings are carried out and how possible welding errors can be avoided.

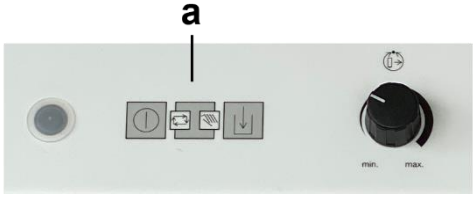
DANGER

Danger from incorrect operation

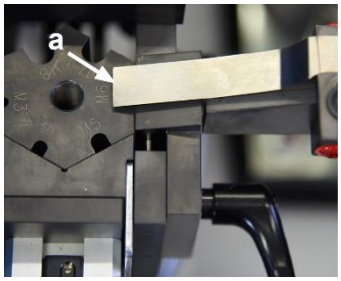
A variety of hazards can occur while stud welding if the equipment is operated incorrectly. Before using the devices, see chapter “2 Important safety instructions” from page 8.
If you have any problems understanding the operating instructions, contact the manufacturer, SOYER®.

Please observe the operating instructions for the components used.

Carrying out welding

Step 1:	Before welding, see chapter “2. Important safety instructions” from page 8.
Step 2:	Connect the devices as described in chapter “6.6.2. Example for a connection diagram" on page 27.
Step 3:	Check or convert the universal feeder according to chapter “7. Converting the universal feeder” on page 34.
Step 4:	Fill the feeder bowl with welding studs. Only use SOYER® welding studs. Observe the permitted filling weight. 
Step 5:	Push the continuous load button (a) on the feeder.  The studs are transported to the stud retainer.

Carrying out welding

Step 6:	Once a stud is in the stud retainer (a), press the continuous flow button on the feeder again to switch back to automatic mode. 
Step 7:	Check the stud feed hose for a correct and tight fit in the plug connections of the stud welding gun or welding head and device.
Step 8:	Press either the reload button on the feeder (a) or e.g. the release button on the welding gun (b) until a welding stud is conveyed to the gun.   The function "Reload" can also be released by the energy source connected or via a CNC interface or welding head. **CAUTION** **When reloading, a welding stud can be pushed out of the gun or welding head. Hold guns or welding heads with the stud ejectors facing downwards and do not point them at persons or animals.**
Step 9:	Ensure that the welding points on the stud and workpiece are metallically bright.

Step 10:	Press the gun onto the workpiece at an angle of 90 degrees. When using a contact gun, press it firmly against the spring force. 
Step 11:	Push the release button of the gun. Welding is carried out. **During the welding process, hold the gun steadily and only remove it vertically from the welded stud after the welding process is finished. By doing so, widening or damaging the stud chuck is avoided.**
The welding process is finished. After removing the welding gun or welding head from the welded stud, a welding stud is reloaded into the gun or head. After a few seconds, the system is ready to weld again (LED "Ready" lights up).	

8.1.1 Refilling the feeder during operation

To refill the feeder, open the protective hood (this switches off the compressed-air supply) and pour the welding studs directly into the feeder bowl. Observe the permitted filling weight and that the stud type matches.
Afterwards, mount the protective hood. The compressed-air supply is re-established and work can be continued.

8.2 Switching off the universal feeder

Switch off the universal feeder at the mains switch.

Switch off the main compressed air or disconnect the device from the compressed-air supply.

Switch off any other devices that may be connected to the universal feeder.

9 Maintenance and repair

Maintenance and repair of the devices may only be performed by Heinz Soyer Bolzenschweißtechnik GmbH or authorised specialists.

9.1 Eliminating malfunctions at the universal feeder

WARNING

Risk due to accelerated welding studs

The welding studs are transported using compressed air and are therefore greatly accelerated.

- Before troubleshooting, switch off the device at the mains switch.
- Before troubleshooting, switch off the compressed-air supply. Be aware of any compressed air that may still be trapped.

The following table describes the most frequently occurring malfunctions and how to correct them.

Feeder malfunctions and how to correct them

Faults	Possible cause and troubleshooting
The feeder is not conveying any studs.	The system is not switched on. • Turn on the mains switch. The pilot lamps “Network” and “Automatic” must light up (the universal feeder is only able to function when the stud welding device is switched on).
	The control cable and/or mains cable are not connected properly or they are damaged. • Connect the cable properly or inspect it for damage and replace if required.
A stud has become stuck in the air gap between the outlet rail and stud escapement.	Insufficient studs in the outlet rail. • Press the “Operating mode” button to switch the vibration drive briefly to continuous operation.
	Incorrect, undersized replacement set installed. • Check the conversion parts and install them according to the stud diameter.
	Insufficient quality of the welding studs. • Only use SOYER® welding studs which are suitable for automated systems.
A stud falls through the outlet rails or into the stud escapement.	Insufficient quality of the welding studs. • Only use SOYER® welding studs which are suitable for automated systems.
	Outlet rail or stud escapement is set to too great a diameter. • Use the correct distance piece according to the stud diameter.

Feeder malfunctions and how to correct them

The transport speed of the studs in the feeder bowl is too slow.	Potentiometer for transport speed is too close to “min”. • Turn the potentiometer for transport speed towards “max”.
	The permitted stud fill quantity has been exceeded. • Observe the maximum stud fill quantity, remove studs again if necessary. See chapter "6.5.1 Technical data for the UVR-300 universal feeder" on page 24.
The feeder drive is running constantly.	The feeder controls are set to “Manual”. The “Automatic” control LED has gone out. • Set the feeder controls to “Automatic”. The “Automatic” control LED lights up.
	A stud is stuck in the outlet rail. The stud cannot reach the front position of the replaceable slide part. • Remove the trapped stud and reposition the outlet rail or stud escapement.
A stud is not blown out of the stud retainer.	The proximity switch is set incorrectly or defective (blowing is not activated). • Readjust the proximity switch or check its function (turnkey). Replace if necessary.
	The hose connection does not align with the stud retainer or the limit stop is misaligned. • Realign the hose connection to the stud retainer, or readjust the limit stop.
	The stud retainer cannot be moved into the blow-out position (stop) as a foreign object or stud has fallen into the main body of the escapement. • Switch off the compressed air. Switch off the device. Disassemble the stud retainer and remove any foreign objects or studs.
	The stud remains at the transition between the hose connection and the stud feed hose. • Cleanly cut the stud feed hose and chamfer the inside to get rid of burrs.
	The pressure regulator is set too low. • Turn the pressure regulator back up in a clockwise direction. Observe the maximum permitted pressure!
	No compressed-air supply. • Check the compressed-air supply, check the compressed air connection and switch on the compressed air source.
The stud does not reach the welding gun.	The compressed-air supply is not sufficient. • Regulate the pressure (observe maximum pressure).
	Problems with the stud feed hose. • Check the internal diameter. • Check for damage or kinks (and radii which are too small). • Check the hose ends, chamfer the inside of the hose end if necessary.

10 Service

If servicing is required, please contact:

Heinz Soyer Bolzenschweißtechnik GmbH
Inninger Straße 14
82237 Wörthsee
Phone: 0049-8153-885-0
Fax: 0049-8153-8030
Email: info@soyer.de

Please have the serial number ready during service requests.

Alternatively, you can also contact your respective SOYER® agent. The contact data is available on our website at
www.soyer.de or
www.soyer.com (English)

11 Warranty conditions

The warranty period for commercial or equivalent use is 12 months. If repair is required, we guarantee the correction of the defects at the Etterschlag plant. Wearing parts are excluded.

The warranty claim shall expire if damage is caused through improper operation, repairs or interventions are undertaken by unauthorised persons and accessories and spare parts are used that are not intended for our system.

When using welding studs from external manufacturers, we do not assume any warranty for proper function of the stud welding device and the quality of the welding joint.

12 Spare and wear parts

The following lists contain the required conversion parts for changing the stud diameter to be processed.

12.1 Feeder conversion set (M3 - M8)

To convert the universal feeders for another stud size, there is a conversion set available with the parts (M3 - M8) which need to be changed.
The parts to be converted are labelled according to the stud diameter for which they must be installed.

Figure 14: Conversion set UVR-300 – exchange parts (1)

Individual parts in the feeder conversion set

Item	Description	Dimension	Item no.
a	Adjustment plate (limit stop distance plate)	M3	F05343
		M4	F05344
		M5	F05345
		M6	F05346
		Ø 7.1 mm	F05347
		M8	F05348
b	Hose connection	M3	F04554
		M4	F04555
		M5	F04556
		M6	F04557
		Ø 7.1 mm / M8	F04558
c	Threaded stud	M10 x 35 mm	B04673

Individual parts in the feeder conversion set

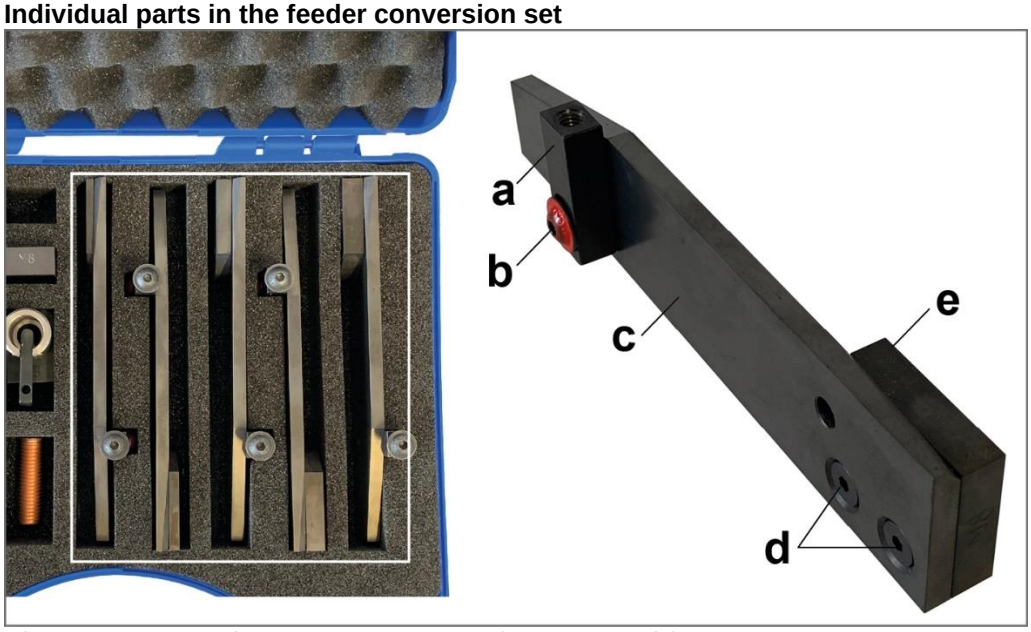


Figure 15: Conversion set UVR-300 – exchange parts (2)

Individual parts in the feeder conversion set

Item	Description	Dimension	Item no.
a	Limit stop for fixing bracket	-/-	F05335
b	Lens flange screw	M5 x12 mm	M03870
c	Guide rail	-/-	F05329
d	Countersunk Allen screw	M4 x 8 mm	M01563
e	Distance piece	M3	F05349
		M4	F05350
		M5	F05351
		M6	F05352
		Ø 7.1 mm	F06115
		M8	F05290

12.2 Individual parts for the UVR-400 conversion set (M10, M12 and Ø 10.8)

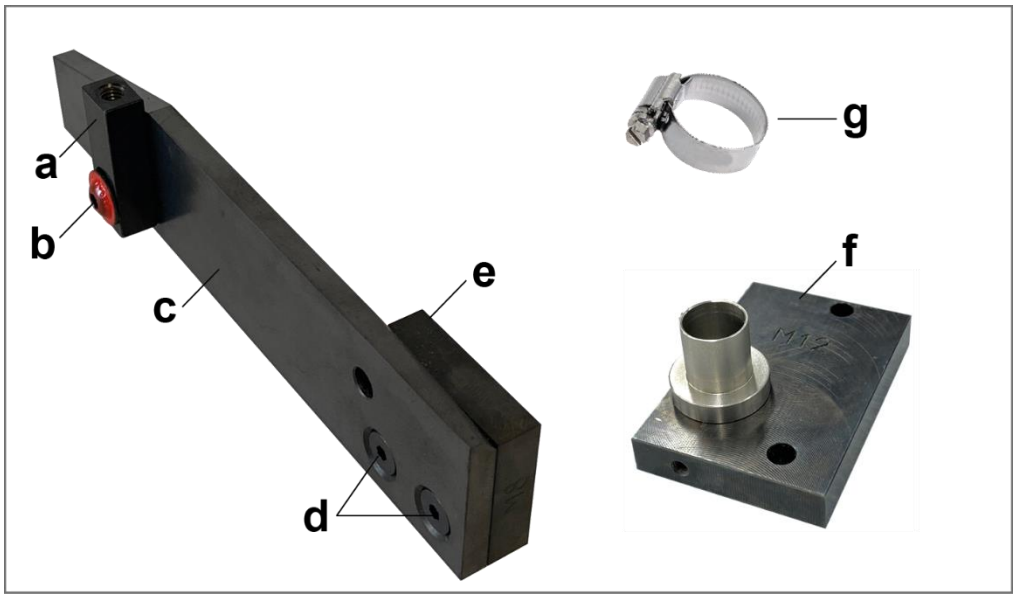


Figure 16: Conversion set UVR-400 – exchange parts

Conversion parts UVR-400 (M10, M12 and Ø 10.8)

Item	Description	Dimension	Item no.
a	Limit stop for fixing bracket	-/-	F05335
b	Lens flange screw	M5 x12 mm	M03870
c	Guide rail	-/-	F05572
d	Countersunk Allen screw	M4 x 8 mm	M01563
e	Distance piece	M10	F05567
		M12	F05568
		Ø 10.8	F05747
f	Hose connection	M10	F05230
		M12	F05231
		Ø 10.8	F06246
g	Hose locking device (hose clip with screw thread)	SK 16 – 25 mm	M01514

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