GOLDSCHMIDT
Smart Rail Solutions

HYDRAULIC SHEARING UNITS

U-L SERIES SHEARING DEVICES AND POWER UNITS

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

GOLDSCHMIDT
Smart Rail Solutions

EC Declaration of Conformity

in accordance with the EC Machinery Directive 2006/42/EC, appendix II no. 1A

Manufacturer / distributor

ELEKTRO-THERMIT GMBH & CO. KG
A GOLDSCHMIDT COMPANY
Chemiestr. 24
06132 Halle (Saale)
Germany

hereby declares that the following product satisfies the requirements of the EU Machinery Directive 2006/42/EC including any amendments valid at the time this declaration was signed.

Product name:	Shearing unit
Type:	U-L 4, U-L S, U-L W, U-L RK
Function:	Shearing of excess weld metal
Serial number:	T NNNN (T-type, N-serial number)

In addition, this device also complies to the following EU Directive:
EMC 2014/30/EU
Applied harmonised standards:
EN ISO 12100:2011-03 Safety of machinery – General principles for design – Risk assessment and risk reduction
EN 60204-1:2019-06 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

Halle, 03/02/2021

Dr. Matthias Wewel
Managing Director

Ingolf Schöniger
Team leader for design

www.goldschmidt.com

1. General 4

1.1 About these instructions 4
1.2 Symbols in these instructions 4
1.3 Using these instructions 4
1.4 Product identification – type plate 5
1.5 About the shearing unit 5
1.6 Applicable documents 5
1.7 Liability 5
1.8 Copyright 5

2. Notes for your safety 6

2.1 Intended use 6
2.2 Foreseeable misuse 6
2.3 Other specifications 6
2.4 General hazard sources 6
2.4.1 Risk of injury in the work environment 6
2.4.2 Risk of injury during operation 7
2.5 Safety signage 8
2.6 Conduct in the event of an emergency 8
2.7 Operator duties 8
2.8 Personnel qualification 9
2.8.1 General 9
2.8.2 Operating personnel (users) 9
2.9 Personal protective equipment 9

3. Hydraulic shearing unit, design and function 10

3.1 Functional description/operation 10
3.2 Hydraulic shearing unit components 10
3.3 U-L series shearing device for flat-bottom, grooved and crane rails 10
3.3.1 U-L 4 series 11
3.3.2 U-L S series 11
3.3.3 U-L W series 12
3.3.4 U-L RK series 12
3.3.5 Shear blades 12
3.3.6 Use of guide shoes, stop blocks, intermediate plates for the U-L RK series shearing device 13
3.4 Power Units 14
3.4.1 General 14
3.4.2 Power units, flange-mounted 15
3.4.2.1 Hand pump 15
3.4.2.2 Hydraulic pump with electric motor, series L 16
3.4.3 Power units, separate 16
3.4.3.1 Power units with electric motor or combustion engine 16
3.4.3.2 Power units with petrol-driven engines 17
3.4.3.3 Power units with electric motors 17

3.4.3.4 Battery-powered power unit 18

3.5 Hydraulic hoses 18

4. Commissioning the shearing unit 19

4.1 Mounting the shear blades 19
4.2 Coupling the hoses 19
4.3 Test run 19
4.4 Shearing process 20

5. Servicing and maintenance 21

5.1 Shearing device 21
5.2 Shear blades 21
5.3 Power Units 21
5.4 Hydraulic hoses, quick release connectors 21

6. Disposal/recycling 21

Publisher:
ELEKTRO-THERMIT GMBH & CO. KG
A GOLDSCHMIDT COMPANY
Chemiestr. 24, 06132 Halle (Saale), Germany
Phone +49 345 7795-600, Fax +49 345 7795-770
et@goldschmidt.com, www.goldschmidt.com

Status of documentation: 2023-10-11

Images: M. Nies, Agentur Format78 GmbH, Elektro-Thermit GmbH & Co. KG

1. General

1.1 About these instructions

These instructions contain all information for proper use of U-L series shearing devices including the available power units that can be used with them. Amongst other things, it contains information regarding commissioning, operation, transportation and trouble-shooting of the devices.
At the moment, the U-L series covers the following types: **U-L 4**, **U-L S**, **U-L W**, **U-L RK**

Please note the following points:

- The instructions are part of the shearing unit.
- The user must always have access to the instructions.
- The instructions must be kept near the shearing unit at all times throughout its entire service life.
- If sharing the shearing unit, it must also be given to other operators.

1.2 Symbols in these instructions

Pay attention to the symbols employed when using these instructions. Failure to comply with these can lead to the following:

- Risk of injury to staff,
- Damage to the shearing unit or the surrounding area,
- the loss of contractual warranty cover, or
- rejection of liability by the manufacturer.

These instructions use the following symbols:

SYMBOL	DEFINITION
WARNING	The signal word WARNING indicates a hazard with a moderate level of risk that, if not avoided, may result in serious injury.
NOTE	The signal word NOTE indicates a hazard that, if not avoided, can result in material or environmental damage.
	Situations with a risk of injury are additionally marked with a warning sign.
	The Info symbol indicates information (tips, recommendations, comments, etc.) that can be useful when dealing with the product.
	Read the safety instructions before using the product. Failure to do this may lead to injuries and to material damage.

Signal words and symbols

1.3 Using these instructions

The information in these instructions is binding in nature. Every user of the shearing unit must have read and understood the whole of these instructions before use. Always follow the instructions, prohibitions and commands and pay attention to all the safety notes contained.

1.4 Product identification – type plate

Type plate (figure is similar)

1.5 About the shearing unit

The shearing unit consists of a shearing device and a power unit and is used to remove off the excess weld metal after carrying out a Thermit® weld.

1.6 Applicable documents

The work instructions for the relevant Thermit® welding process are the applicable documents. They contain important information about how to perform the welding procedure and the shearing process.

1.7 Liability

The user is liable if there is a failure to follow these instructions. The warranty is rendered void if damage to the shearing unit and its accessories, or for malfunctions, that arise from non-compliance with the instructions of due to improper use on the part of the user.

i Retrofits, amendments or use of other units that are not certified by the manufacturer are not covered by this warranty. The CE conformity that was issued also becomes void.

1.8 Copyright

2. Notes for your safety

This chapter contains all the information relating to safety.

Before using the shearing unit, read this chapter thoroughly and pay attention to the notes when using the product.

2.1 Intended use

The shearing unit consists of a U-L series shearing device and a power unit with accessories coupled to it in accordance with the selection guide. It is used for the purpose set out in **chapter 1.5**.

i In case of personal injury or damage to property resulting from improper use of the shearing unit, Elektro-Thermit GmbH & Co. KG cannot accept liability.

2.2 Foreseeable misuse

Foreseeable misuse is when the shearing unit is used for a purpose other than the one described.

2.3 Other specifications

In addition to the details in these instructions, compliance with the legislative stipulations governing accident prevention and environmental protection as well as the health & safety at work specifications of the operator is mandatory.
The operator is considered to be whoever is using the shearing unit or allows it to be used by suitable, trained staff.
The safety specifications issued by railway authorities for work on the track and near the track must be followed. No such work can commence until the responsible safety officers have issued their approval.

2.4 General hazard sources

i The safety precautions stated below must be observed! The safety instructions draw attention to hazards with the potential to cause personal injury and/or damage to equipment and to the environment and are intended to prevent or avert these hazards.

2.4.1 Risk of injury in the work environment

Welding and shearing work both take place in a work environment on a construction site, in which several cases of welding and other work may be carried out in close proximity at the same time. Amongst other things, there is an increased risk of injury due to:

- Railway traffic on adjacent rails,
- Being run over by construction vehicles,
- Being caught on construction vehicles and other moving work machines,
- Slipping on smooth, wet or oily surfaces,
- Stumbling over obstacles,
- Falling onto pointed and angular objects,
- Burns on hot surfaces.

Follow the precautionary measures below:

- Observe all regulations on the construction site.
- Ensure that no other people are present within the range of the shearing unit.
- Only use if lighting is sufficient.
- Be careful and alert at all times.
- Ensure that there is adequate ventilation.
- If the drive unit is running, do not leave it unsupervised.

2.4.2 Risk of injury during operation

The shearing unit must only be used by trained staff. Improper use may result in serious injuries such as burns or crushing.

Follow the precautionary measures below:

- Ensure that the construction site cannot be accessed by unauthorized people. Coordination must be carried out by construction site management.
- The shearing unit must be protected against unauthorized use.
- Transportation, set-up and lifting of the shearing device must be done by two people. Pay attention to the weight of the unit!
- Always ensure that no readily flammable or explosive substances are located close to the shearing unit.
- Where necessary, clear the workplace of combustible substances and provide sufficient ventilation.
- Before use, check the shearing device to see if there are any leaks, and do not use if there are any!
- Wear personal protective equipment (see Chapter 2.9 "Personal protective equipment").
- Ensure that there is no risk of electric shock.
- Do not put the shearing unit in water or hose it down.
- Lay out the hydraulic hoses to avoid tripping.

2.5 Safety signage

NOTE
Keep safety designations readable at all times! In the event of safety signage getting damaged or going missing during the service life of the unit, the operator must obtain suitable replacements.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Follow instructions		Wear safety gloves
	Wear eye protection		Wear protective clothing
	Wear safety footwear		
	Warning of hot surfaces		Risk of crushing injuries

Safety signage

2.6 Conduct in the event of an emergency

If an emergency occurs, then immediately stop shearing by putting the control valve on the shearing device into the BACK position to open the shearing traverse and to start the return, then switch off the power unit and leave the hazardous area as quickly as possible.

- In the event of **personal injury**, immediately initiate first aid measures.
- **In the event of a fire**, immediately initiate the requisite steps to combat the fire.

2.7 Operator duties

The system operator is the person who operates the shearing unit for vocational or business purposes, or who who arranges for a third party to use/apply the machine, and who assumes during all operations the legal product responsibility for the protection of the machine operator, in-house personnel or third parties.

Obligations of the system operator:
The operator must know and implement the applicable specifications governing workplace safety and accident prevention.

2.8 Personnel qualification

2.8.1 General

Work must only be carried out by qualified staff!

All persons who satisfy the following requirements are entitled to work with the shearing unit.

- You have read and understood the whole of these instructions.
- To assure workplace safety, you wear the required personal protective equipment (see chapter 2.9 "Personal protective equipment").
- You always pay attention to the health & safety at work stipulations for the operator as well as to all legislative provisions of relevance to personal safety and to the safety of other persons.

2.8.2 Operating personnel (users)

Operating staff on the shearing unit that carry out work as described in these instructions, are defined as follows:

- All personnel must be trained on a continuous basis about technological innovations and must have the requisite basic understanding of how to use U-L series shearing devices and its power units along with the accessories.
- The following main points should be covered as part of initial instruction:
  - Functional description of the shearing unit,
  - Explanation of the individual components,
  - Explanation of the danger sources,
  - Use of the shearing unit,
  - Detection of functional defects and problems.

2.9 Personal protective equipment

If the system operator does not issue additional stipulations, the personal protective equipment listed in the following table must be used with the shearing unit.

SYMBOL	PROTECTIVE EQUIPMENT	TASKS
	Protective workplace clothing (Welder's protective clothing as per EN 470-1, high-visibility clothing as per EN 471)	Transportation, commissioning, operation, decommissioning, maintenance, cleaning/upkeep
	Safety footwear (Safety shoe S3 as per EN ISO 20345 for ankle-high shoes)	Transportation, commissioning, operation, decommissioning, maintenance, cleaning/upkeep
	Safety goggles	Operation (shearing)
	Workplace gloves (severe mechanical hazards in accordance with EN 388 (4242), EN 402, if necessary, gloves that protect against thermal hazards as per EN 407)	Transportation, commissioning, operation, decommissioning, maintenance, cleaning/upkeep

Personal protective equipment

3. Hydraulic shearing unit, design and function

3.1 Functional description/operation

The shearing unit consists of a shearing device and a power unit and is used to remove off the excess weld metal after carrying out of Thermit® welding.

The shearing unit consists of a U-L 4 series shearing device and a series L power unit.

3.2 Hydraulic shearing unit components

The hydraulic shearing unit consists of three components.

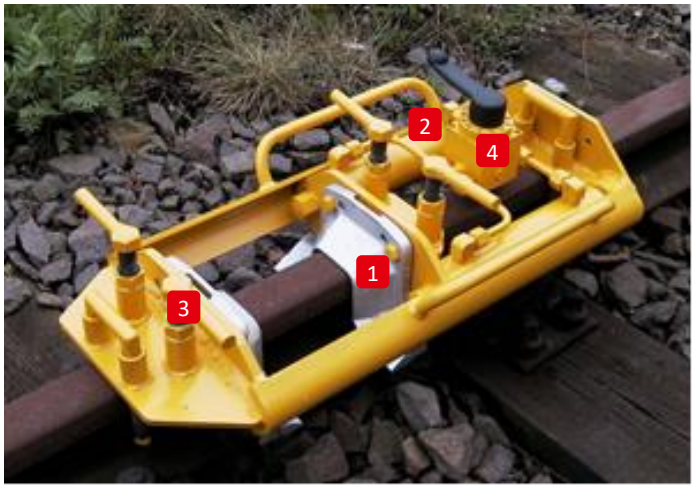
Shearing device
It consists of a guide frame, 2 hydraulic cylinders, a shearing traverse, 4 guide shoes and a 4/3 control valve.

Power unit
This can be operated manually, electrically, or with petrol.

Hydraulic hoses
These connect the shearing device with the power unit.

3.3 U-L series shearing device for flat-bottom, grooved and crane rails

The shearing device is fitted with two the rail profile adapted, exchangeable shear blades (1) that are moved on top of each other by two hydraulic cylinders (2) arranged in parallel, enabling excess weld metal to be shorn off on both sides. Controlling takes place via a 4/3 control valve.



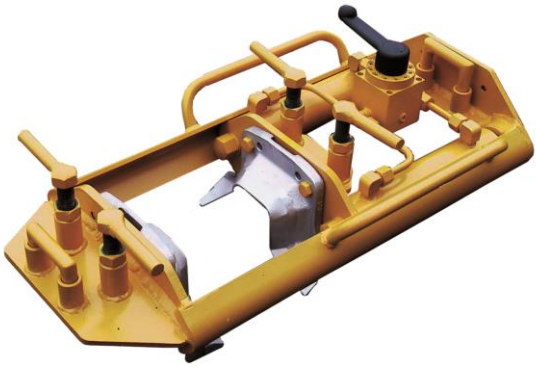
(1) Shear blade
(2) Hydraulic cylinder
(3) Guide shoe
(4) 4/3 control valve

SERIES	COMPRESSIVE FORCE (KN)	STROKE (MM)	WEIGHT (KG)	SHEAR BLADES TYPE	RAIL TYPE	WIDE GAP L 50, L 75
U-L 4	200	150	33.5	A, B	Flat-bottom	+
U-L S	200	150	28.5	A, B	Flat-bottom	-
U-L W	200	150	37.5	A, B	Flat-bottom	+
U-L RK	200	150	39.0	A, B, C	Flat-bottom, groove, crane	+

Overview of shearing devices

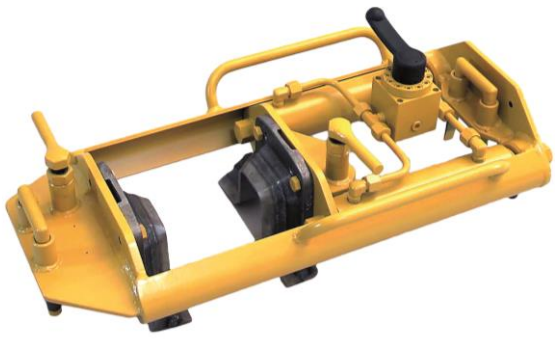
3.3.1 U-L 4 series

The shearing device with power unit works on the pincer principle to take excess weld metal away from flat bottom rails. Type A and B shear blades can be used.



3.3.2 U-L S series

This unit corresponds to the U-L 4 series, but has a narrower frame and is preferably used in switch areas. It is not possible to shear welds with wide gaps. Type A and B shear blades can be used.

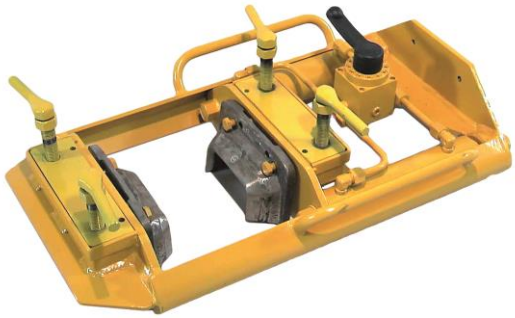


3.3.3 U-L W series

This unit corresponds to the U-L 4 series, but has a wider frame. This is a special version. Type A and B shear blades can be used.

3.3.4 U-L RK series

This unit has a wide frame and a guide shoes that can be flexibly used. It can be used on flat-bottom, grooved and crane rails. Type A, B and C shear blades can be used.



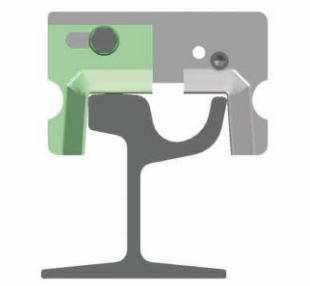
3.3.5 Shear blades

The relevant shear blade types are adapted to the rail profile. Their cutting edges consist of hard-wearing, heat-resistant steel.

i It is extremely important that the shearing times stated in the operation manual are observed! Shearing a cold weld leads to the destruction of the cutters on the shear blades.

Type A flat-bottom rail

Type B flat-bottom and crane rail



Type C grooved rail

i The type of shear blade and rail profile must be stated when ordering.

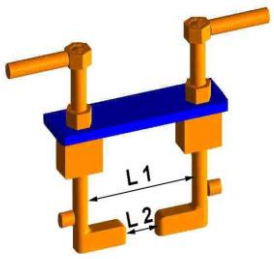
3.3.6 Use of guide shoes, stop blocks, intermediate plates for the U-L RK series shearing device

Depending on the rail profile, various guide shoes can be used in combination with stop blocks, distance plates and intermediate plates.

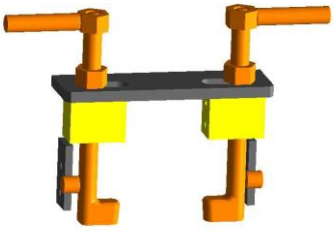
PROFILES	2 GUIDE SHOES TYPE – MASS L1 / MASS L2	4 STOP BLOCKS TYPE	4 DISTANCE PLATES TYPE	2 INTERMEDIATE PLATES PASSAGE WIDTH
59R1, 60R1	Type R – 140/40	-	-	155
67R1	Type Ph 37a	-	-	155
57R1	Type R – 140/40	-	-	155
62R1	Type R – 140/40	-	-	155
NP 4	Type R – 140/40	-	-	155
75C1	Type R – 140/40	-	-	155
105Cr1	Type VK (2A) – 140/90	-	-	155
A120, MRS 125	Type VK (2A) – 140/90	-	-	155
A100, PRI 85R, 175 CR	Type VK (1A) – 120/70	Type 1A (10 mm)	-	155
A 75	Type VK (2B) – 100/50	Type 2B (20 mm)	10 mm	85
A 65	Type VK (2B) – 100/50	Type 2B (20 mm)	10 mm	85
A 55	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85
A 45	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85
R 65	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85
60E1	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85
54E1	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85
54E3	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85
49E1	Type VK (1B) – 80/30	Type 1B (30 mm)	2x10 mm	85

Further profiles on request.

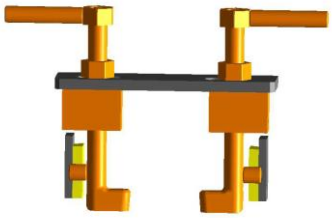
Type R



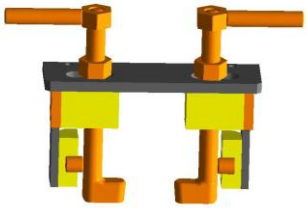
Type VK-2A



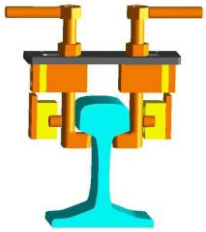
Type VK-1A



Type VK-2B



Type VK-1B



3.4 Power Units

3.4.1 General

Depending on the design, these units can either be flange-mounted on the shearing device or be used as individual components.

TYPE	CONVEYING CAPACITY	MOUNTED/ SEPARATE	WEIGHT	FUEL CAPACITY	CAPACITY HYDRAULIC OIL	SOUND PRESSURE LEVEL
Hand pump	Operator-dependent	+ / -	10.8 kg		0.7 l	
Series L, Alternating current motor (0.55 kW, 230 V)	0.85 l/min	+ / -	19.6 kg		2.5 l	73 db
Alternating current motor (1.5 kW, 230 V)	1.8 l/min	- / +	38 kg		2.5 l	78 db (1500 rpm) 82 db (3000 rpm)
Three-phase current motor (1.5 kW, 230/380 V)	1.8 l/min	- / +	34 kg		2.5 l	78 db (1500 rpm) 82 db (3000 rpm)
4-stroke motor (3 kW) Briggs & Stratton	1.8 l/min	- / +	31 kg	4 l	2.5 l	70 db (1500 rpm) 83 db (3000 rpm)
4-stroke motor (3 kW) Honda	1.8 l/min	- / +	34 kg	4 l	2.5 l	70 db (1500 rpm) 83 db (3000 rpm)
MPU 410 B, Direct current, battery (1.4 kW, 60 V)	1.3 l/min	- / +	27.8 kg		3.8 l	max. 85 db

Overview of power units

Hydraulic oil with a viscosity of 15 – 25 cSt (40°C) as per ISO VG 22 should be used.

Always check the oil level prior to commissioning! Only use the power unit when connected to the shearing device.

Pump connections for all power units:
Pressure hose**: P – P**, Return hose**: T -T**

WARNING

The oil pressure generated by the hydraulic pump is set to 500 bar at the factory via a pressure relief valve.
This must not be changed by the operator!

NOTE
The shearing unit must only be operated by a single person, never with two! Ensure that the shearing unit is in ideal condition before every use!

Ventilation

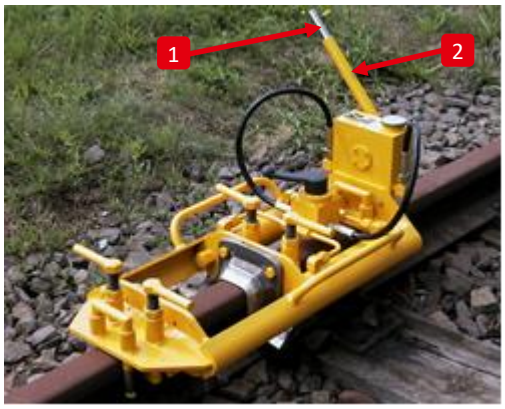
The union nut on the pressure hose on the power unit should be briefly loosened (not unscrewed), then start the motor. Observe the union nut, a mixture of oil and air escapes after a few seconds. When an even flow of oil seeps out, tighten the union nut once again. Carry out 3-4 test runs when the motor is running. Immediately catch any escaping oil and remove it.

Afterwards, check the oil level of the container with the dipstick.

3.4.2 Power units, flange-mounted

3.4.2.1 Hand pump

Actuation of the double-piston hand pump is with a hand-operated double stroke lever.



To shear, the extension **(1)** must be fitted on the stationary hand-operated lever **(2)** and this must be quickly moved back and forth. Approx. 25 to 30 double strokes are necessary depending on the welding process. Afterwards, it is advised to move it back quickly without the extension to protect the cutting edges.

The hand pump can also be connected with quick release connectors and hydraulic hoses so that it can be disconnected and that alternative power units listed in the overview can also be connected.

3.4.2.2 Hydraulic pump with electric motor, series L

The unit, consisting of a hydraulic pump with electric motor.

3.4.3 Power units, separate

Motorised drives are available as separate power units. The hydraulic pump integrated in an oil tank with a support frame may, as an option, be equipped with different motors. See the following chapter.

The motor's technical data can be found in the manufacturer's operation manual.

i Fill with hydraulic oil and petrol if necessary before initial commissioning!

3.4.3.1 Power units with electric motor or combustion engine

NOTE
Follow the manufacturer's operation manual!

i Short-term operation with max. operating pressure of up to 500 bar, and up to 350 bar for non-stop operation.

Accessories

The following accessories are part of the scope of delivery for every power unit:

- Hydraulic oil as per ISO VG 22
- Hopper

3.4.3.2 Power units with petrol-driven engines

4-stroke engines from Briggs & Stratton and Honda are available.

4-stroke engine "Briggs & Stratton"

4-stroke engine "Honda"

3.4.3.3 Power units with electric motors

A three-phase and an alternating current motor are available, as well as a battery-driven motor. The three-phase and alternating current motors are supplied with a 15 m connecting cable and a motor protection switch as per the IEC – 204 standard along with a double insulated protective housing in the IP 54 protective class.

3.4.3.4 Battery-powered power unit

The **MPU 410 B** battery-powered power unit is available as a compact, emissions-free drive.

3.5 Hydraulic hoses

Connection of the power unit with the shearing device is done with hydraulic hoses as per EN ISO 3821.
Three variants are used.

Hose pair 0.6 m

In the case of flange-mounted power units, hoses can either be connected in a fixed manner or are connected with quick release connector to the junction with the control valve. The shearing device can then either be operated with a flange-mounted hand pump or with the series L power unit.

Hose pair 7 m with quick release connector on one side

Two securely mounted hoses should be used if a separate power unit is to be used. The connection to the shearing device is via quick release connector (except for battery-driven power units).

Hose pair 7 m with quick release connector on both sides

The battery-driven power unit is operated with a pair of hoses with quick release couplings on both sides.

	**WARNING**
	Do not mix up the connections! Couplings must be fully locked in position! Only use permitted hoses! Check hoses in line with legal requirements!

4. Commissioning the shearing unit

4.1 Mounting the shear blades

The shear blades should be positioned and screwed into place via the positioning pins on the traverses of the shearing device. In this case, use only the shear blades that are appropriate for the relevant rail profile.

4.2 Coupling the hoses

Coupling is not necessary on the version with a flange-mounted power unit. If the power unit is separate then coupling to the shearing device takes place as follows:

Coupling the pressure and return side

1. Remove the cap from the coupling connector and coupling sleeve
2. Push the coupling connector into the coupling sleeve, then push back the knurled ring on the sleeve.
3. After decoupling push the caps back on again to protect the hoses and valve connections from dirt and damage.

4.3 Test run

The shearing unit should have a test run and the oil level must be checked before starting welding.

In this case, proceed as follows:

1. Couple the hoses to the shearing device.
2. Place the shearing device on the rail.
3. Using the nut, set the guide shoes to approx. 1 mm below the rail head.
4. Set the control valve on the pressure unit to IDLE SPEED.
5. Switch on the power unit.
6. Set control valve to FORWARDS and the shear blades come together. Leave it in the end position for approx. 1 second, motor noise level increases.
7. Slowly change the setting on the control valve from IDLE SPEED to BACK. Allow the piston to move to the end position. Slowly change the setting on the control valve to IDLE SPEED again.

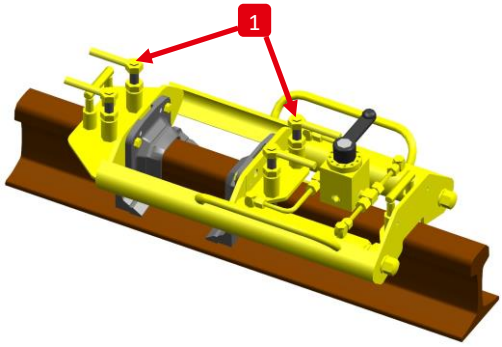
IDLE SPEED

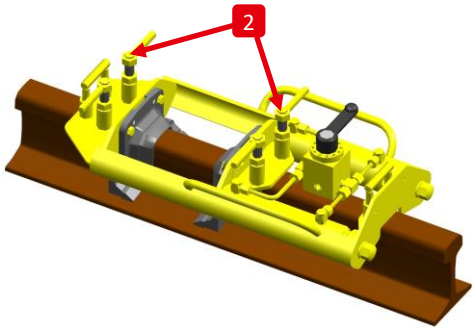
FORWARDS

BACKWARDS

Valve positions

4.4 Shearing process





1. Turn the guide shoes in the transport position **(1)**
2. With two people, place the shearing device on the rail.
3. Turn the hold guide shoes in the operating position **(2)**
4. Switch on the power unit or use the hand pump to start shearing.
5. Start the shearing process by moving the control valve to FORWARDS, the shear blades come together.
6. Slowly move the control valve to BACKWARDS via IDLE SPEED, the shear blades move away from each other into the starting position, then slowly move the control valve back to IDLE SPEED.
7. To lift the guide shoes, turn to the transport position **(1)**.
8. Lift and shut down the shearing device with two people.
9. If necessary, strike off sheared excess weld metal with the hammer.

If the power unit malfunctions during shearing then the shearing device can be lifted as follows:

- Release the guide shoes, transport position **(1)**,
- Control valve in BACKWARDS,
- Push the shear blades as far apart as required with a crow bar until the shearing device can be lifted.

5. Servicing and maintenance

5.1 Shearing device

- Keep contact surfaces for shear blades and inner surfaces for the support frame clean.
- Visual inspection for leak tightness – oil leakage due to the piping, coupling, control valve and cylinder.
- Visual inspection of the frame and weld seams for cracks and other damage.

5.2 Shear blades

Elimination of burrs

Small burrs may form on the inside of the cutting surfaces, and these should be immediately and carefully removed with an angle grinder.

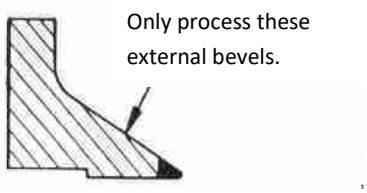
Elimination of displacements

Small displacements may form on the inside of the cutting surfaces, and these should be carefully removed with an angle grinder. To do so, bring the shear blades together.

Regrinding

If the outer area of the cutting edge is heavily worn, then this must be reground. To do so, disassemble the shear blades.

When bringing them together the cutting edges should come together along the entire length of the cutting edges.



Replacing the shear blades

If reworking is not possible, then the shear blades must be replaced.

5.3 Power Units

Power units should be maintained in line with the manufacturer's instructions.

5.4 Hydraulic hoses, quick release connectors

- The coupling halves should be cleaned regularly and carefully.
- The coupling halves and their cover caps should be checked regularly for damage, functionality and to see if they fit properly.
- Use cover caps on the coupling halves when not in use.
- Check the cover on hoses for leak tightness and damage.
- Hoses should be properly reeled in for storage.

6. Disposal/recycling

i Ensure that all components of the shearing unit are disposed of in an environmentally friendly manner.

At the end of the service life of the shearing unit, the owner must arrange for disposal of the machine in accordance with prevailing specifications.