

# LEISTER Cosmo

## Automatic wedge welding machine



Please read operating instructions carefully before use and keep for further reference

### APPLICATION

The **LEISTER Cosmo** is an automatic wedge welding machine for overlap welding of geomembrane liners for earthwork and civil engineering.

• **Thermoplastic lining membranes**

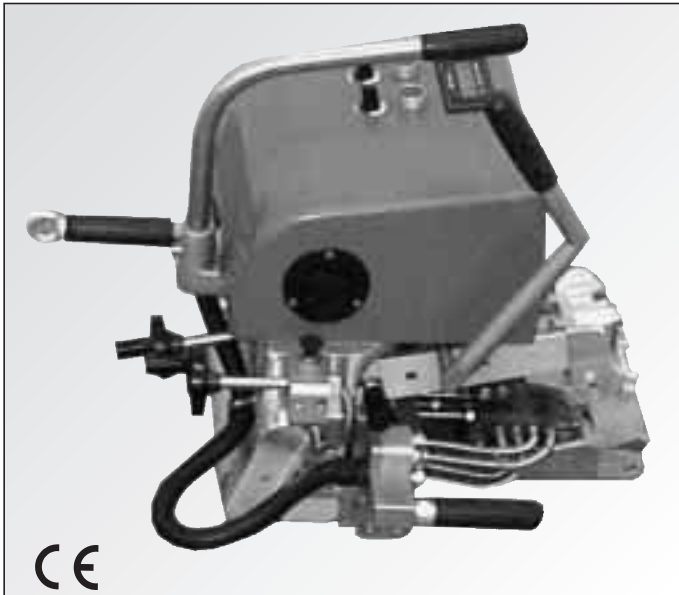
Polyethylene high density	PE-HD
Polyethylene low density	PE-LD
Chlorinated polyethylene	PE-C
Polypropylene	PP

• **Type of seam**

Welding seams are produced in accordance with DVS 2225 part I and BAM.  
Other dimensions are possible on request.

*DVS: German Welding Association*

*BAM: Federal Institute for Materials Research and Testing, Berlin*





## WARNING



**Danger!** Unplug the tool before opening it as live components and connections are exposed.



Incorrect use of the hot air tool can present a **fire and explosion hazard** especially near combustible materials and explosive gases.



Do not touch the hot air wedge when hot as it can cause **burns**. Allow the tool to cool down.



Connect tool to a **receptacle with protective earth terminal**. Any interruption of the protective conductor inside or outside the tool is dangerous!  
**Line/mains extension cables must always have a protective ground conductor!**



## CAUTION



The **voltage rating** stated on the tool should correspond to the mains voltage.



For personal protection, we strongly recommend the tool be connected to an **RCCB** (Residual Current Circuit Breaker) before using it on construction sites.



The tool **must be** operated under supervision. The radiating heat can ignite combustible materials.



Protect the tool from **damp and wet**.

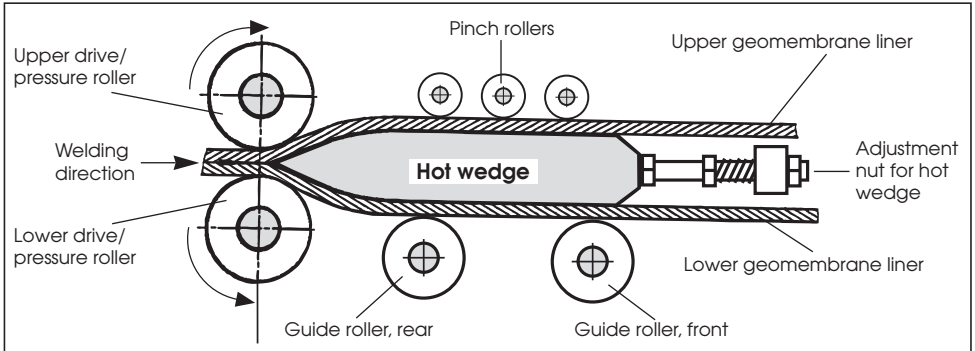
The tool is **CCA** certified (**CENELEC Certification Agreement**).

## Technical Data

Voltage	V~	230
Frequency	Hz	50 / 60
Power consumption	W	2000
Temperature	°C	max. 450 stepless
Welding pressure	N	max. 2500 stepless
Drive	m/min.	0,5 – 5,0 stepless
Overlap width	mm	180
Material thickness	mm	1,5 – 3,0
Size	mm	600 × 380 × 450
Weight	kg	32,0

- **Heating System** → The hot wedge temperature is steplessly adjustable and electronically controlled. As required, the hot wedge can be steplessly adjusted to match the material thickness.

### Heating system cross sectional diagram

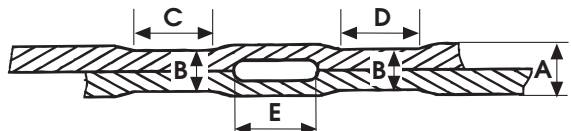


- **Welding pressure** → steplessly adjustable. The welding pressure is transmitted via the toggle lever to the pressure rollers. The swivel-head guarantees an even seam thickness reduction on both welded sections (C and D) as well as on a welded seam without test channel. This allows T-joints to be welded easily. During the welding process the pressure is matched linearly to the change in thickness of the geomembrane liner.

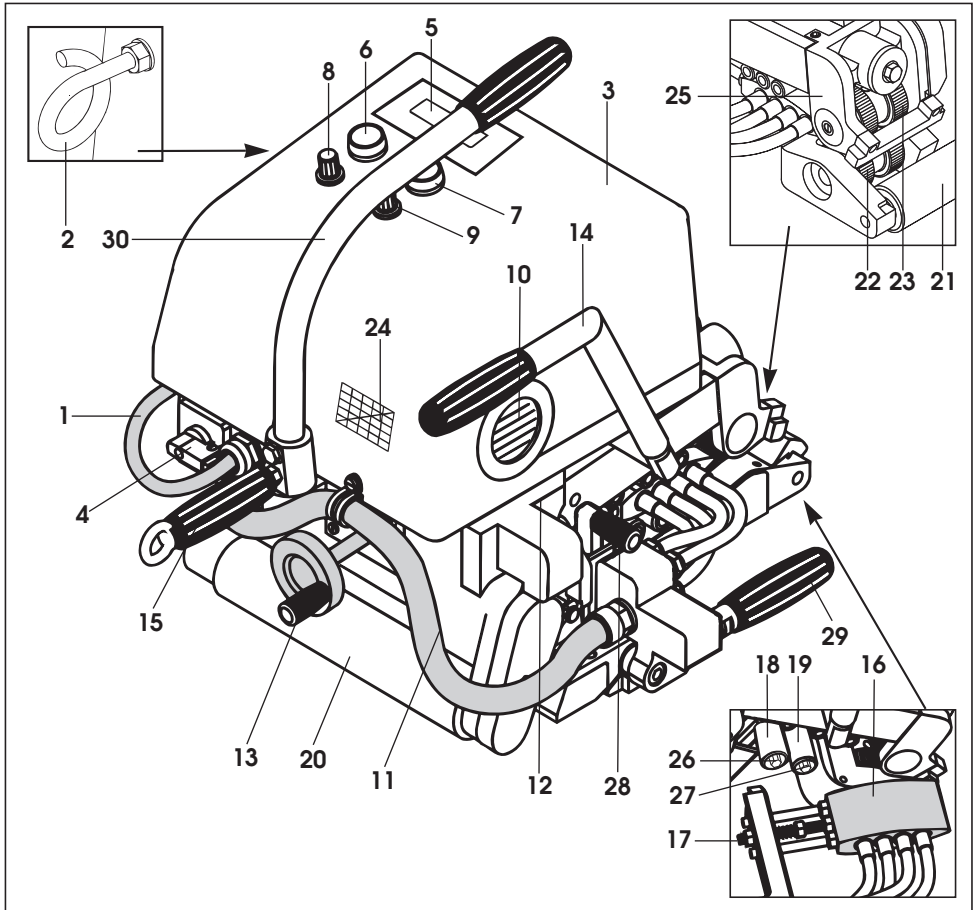
### Cross-sectional diagram of an overlap weld

**Seam thickness reduction = A – B**

- A** : Thickness of upper and lower geomembrane liner
- B** : Thickness of welding seam
- C** : Welded section 1
- D** : Welded section 2
- E** : Test channel

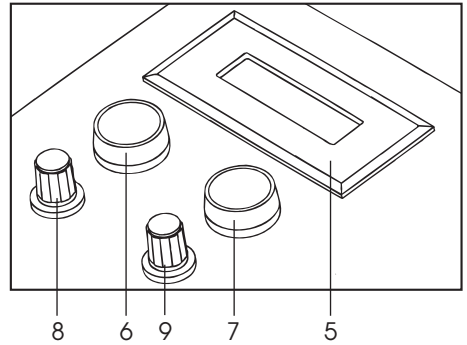
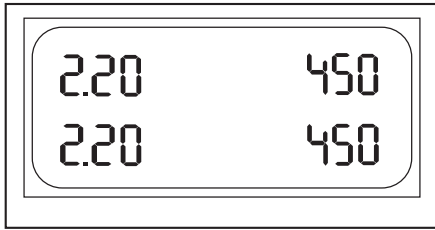


- **Drive** → electronically steplessly adjustable and electronically controlled. Digital display of SET and ACTUAL value. The power transmission works through a three stage planetary gear. Should rippling occur in the laid-out geomembrane liners, the upper or lower drive/pressure roller can be switched over alternately.



- |  |   |
|--|---|
| 1. Cable to mains  | 16. Hot wedge                                   |
| 2. Cable holder  | 17. Adjustment nut for hot wedge                |
| 3. Housing for drive motor                                       | 18. Guide roller, front                         |
| 4. Main switch   | 19. Guide roller, rear                          |
| 5. Display   | 20. Front roller                                |
| 6. Drive ON/OFF  | 21. Rear roller                                 |
| 7. Heating ON/OFF  | 22. Lower drive/pressure roller                 |
| 8. Potentiometer for drive                                       | 23. Upper drive/pressure roller                 |
| 9. Potentiometer for heating                                     | 24. Diagram «Pressure adjustment»               |
| 10. Ventilator grill   | 25. Swivel head                                 |
| 11. ON/OFF switch lever for upper or lower drive/pressure roller | 26. Hexagonal cap screw for guide roller, front |
| 12. Locking device for switch lever (11).                        | 27. Hexagonal cap screw for guide roller, rear  |
| 13. Hand wheel for stepless adjustment of the welding pressure   | 28. Hot wedge locking lever                     |
| 14. Tension lever for welding pressure                           | 29. Hot wedge guide handle                      |
| 15. Handle   | 30. Carrying handle                             |

## Display



- |                             |        |  |
|-----------------------------|--------|--|
| 1. Welding speed            | m/min. | 5. Display                               |
| ACTUAL value                |        | 6. Drive ON/OFF                          |
| 2. Welding speed            | m/min. | 7. Heating ON/OFF                        |
| SET value                   |        | 8. Potentiometer for drive     v (m/min) |
| 3. Temperature ACTUAL value | °C     | 9. Potentiometer for heating   t (°C)    |
| 4. Temperature SET value    | °C     |  |

## HOT WEDGE ADJUSTMENT

## LEISTER Cosmo

The Hot wedge can be adjustet according to the material thickness as required.

- Guide the automatic wedge welding machine into the geomembrane liner or film to be welded.
- Hold the **hot wedge guide handle (29)**, pull the **hot wedge locking lever (28)** and position the **hot wedge (16)** with the **hot wedge guide handle (29)**, to engage release the **hot wedge locking lever (28)**.
- Tighten the **tension lever (14)** to the specified welding pressure.
- Loosen the **hexagonal cap screw (26)**.
- Adjust the **guide roller, front (18)** to the correct height. The distance of the **hot wedge (16)** from the **guide roller, front (18)** should match the material thickness.
- Tighten the **hexagonal cap screw (26)** and secure the **guide roller, front (18)** with a spanner.
- Loosen the **hexagonal cap screw (27)**.
- Adjust the **guide roller, rear (19)** to the correct height. The distance of the **hot wedge (16)** from the **guide roller, rear (19)** should match the material thickness.
- Tighten the **hexagonal cap screw (27)** and secure the **guide roller, rear (19)** with a spanner.
- Do a test weld

### Welding preparation

- Attach the **carrying handle (30)** and **handle (15)**
- Check laying out of material: Width of overlap min. 100 mm and max. 180 mm  
The geomembrane liners must be clean between the overlap as well as above and below
- Check: Mains supply  $\geq 5$  kW and a minimum cable cross section

230 V~	up to 50 m	<b>2x2.5 mm<sup>2</sup></b>
	from 50 m	<b>2x4.0 mm<sup>2</sup></b>

- Connect the automatic hot wedge welding machine to the mains supply.
- Heating up: Switch on **main switch (4)**  
Set the temperature via the **potentiometer (9)**  
Switch on heating by pressing **button (7)**, the drive remains switched off when starting the machine.  
Heating up time approx. 5 min.

#### Beginning of welding procedure

- Check:
  - **Drive/Pressure rollers (22/23)** as well as the **hot wedge (16)** must be clean before positioning into geomembrane liner or film.
  - Required welding temperature must be achieved
  - Cable length/cable guide
- Guide and position the automatic wedge welding machine into the overlapped geomembrane liners.
- Pull the **tension lever (14)** (without engaging the hot wedge).
- Set welding pressure:
  - Gently press the pressure roller with the **hand wheel (13)** onto the material to be welded (laid overlap).
  - In accordance with the **printed diagram (24)** turn the **hand wheel (13)**.
- Release the tension **lever (14)**.
- Switch in the drive motor by pressing **button (6)**.
- Engage the **hot wedge (16)**.
- Pull the **tension lever (14)** slowly.

#### End of welding procedure

- Release the **tension lever (14)** 1 cm before end of welding operation, pull the **locking lever (12)**, move the **hot wedge (16)** by the **guide handle (29)** out of the overlap and swivel up until it stops.
- Switch off drive motor
- Clean **hot wedge (16)** with a wire brush.

### Welding tips

- Should ripples occur in the laid-out geomembrane material, the upper or lower drive/pressure roller can be switched over alternately. This allows wrinkle-free welding, so that the overlap width remains constant and the welding process should not have to be interrupted. Rippling in the upper geomembrane liner: engage upper **drive roller (23)** only. Rippling in the lower geomembrane liner: engage lower **drive roller (22)** only.
- With T-joints or when welding upwards, both drive rollers must be engaged.
- For welding T-joints, a reduction in welding speed of approx. 20% is recommended.

## ACCESSORIES

- Only LEISTER accessories should be used.

## TRAINING

The LEISTER Company and its authorized service centres offer welding courses free of charge world-wide. The customer can be trained on site if necessary.

## MAINTENANCE

- The **ventilator grill (10)** should be cleaned with a brush when dirty.
- Clean **hot wedge (16)** with a wire brush.

## SERVICE AND REPAIR

- The automatic welding machine should be checked after about 1000 hours running time by your service centre.
- Repairs have to be carried out by authorised **LEISTER Service Centres** only. They guarantee a specialized and reliable **repair service within 24 hours** using original LEISTER spare parts.

## NOTICE

- Guarantee and liability are in accordance with the guarantee certificate as well as with the currently valid general business and sales conditions.
- LEISTER Process Technologies rejects any guarantee claims for tools which are not in their original condition. The tools must never be altered or changed.

**Technical data and specifications are subject to change without prior notice.**

**Your authorised Service Centre is:**

**Service Record LEISTER Cosmo**

This document should be kept up to date during repair or servicing by the authorized LEISTER Service Centre. This document should be in the possession of the owner of the equipment.

**Technical data**

**Type of Automatic Wedge Welding Machine** .....

**Order No.** .....

**Serial No.** .....

**Rated voltage** ..... **V**

**Rated capacity** ..... **W**

**Sale** ..... **date**



**Service**

- 1. Date ..... Service Centre ..... Signature .....
- 2. Date ..... Service Centre ..... Signature .....
- 3. Date ..... Service Centre ..... Signature .....
- 4. Date ..... Service Centre ..... Signature .....
- 5. Date ..... Service Centre ..... Signature .....
- 6. Date ..... Service Centre ..... Signature .....

**Repair**

- 1. Date ..... Service Centre ..... Signature .....
- 2. Date ..... Service Centre ..... Signature .....
- 3. Date ..... Service Centre ..... Signature .....