### CMI 300 PULSE

Bruksanvisning User guide Betriebsanleitung Guide de l'utilisateur Brugsvejledning Guida per l'utilizzatore Gebruikershandleiding Käyttöohje Návod k obsluze Podręcznik użytkownika Guía de usuario



**CAR-O-LINER®** 

# **CAR-O-LINER**<sup>®</sup> Warning



Arc welding and cutting can be dangerous to user and surroundings in case of improper use. Therefore, the equipment must be used only under the strict observance of all relevant safety instructions. In particular, your attention is drawn to the following:

Installation and use

The welding equipment must be installed and used by authorized personnel according to EN/IEC60974-9. CAR-O-LINER takes no responsibility for unintended use or use beyond the specifications of the machine/ cables.

### Meeting requirements for electricity values

- All CAR-O-LINER welding machines are manufactured according to the technical safety regulations valid in the EU.
  - The welding machines are designed according to the Low-voltage directive of the Danish Safety Technology Authority and meet the requirements of DS/EN/IEC 60974-3.
- The welding machines comply with maximum values according to DN/EN/IEC 60974-3 for manually operated torches.
- Peak voltage: 15kV
- Electric load: 8uC

Average energy (period: 1 second): 4J

#### Electricity

- The welding/cutting equipment must be installed according to regulations. The machine must be connected to earth through the mains cable.
- Make sure that the welding equipment is regularly inspected.
- In case of damaged cables or insulation, work must be stopped immediately in order to carry out repairs.
- Inspection, repair and maintenance of the equipment must be carried out by a properly trained and gualified person.
- Avoid all contact with live components in the cutting torch, earth clamp or electrodes if you have bare hands.
- Keep your clothes dry and never use defective or wet welding gloves.
- Make sure that you are properly and safely earthed (e.g. use shoes with rubber sole).
- Use a safe and stable working position (avoid risk of falling).
- Observe the rules for "Welding under special working conditions".
- Disconnect the machine prior to disassembling the torch in case of change of electrode or other service.
- Use specified welding/cutting torches and spare parts only (see spare parts list).

#### Shocks from high frequency ignition (TIG/PLASMA)

 If your TIG/Plasma welding machine is installed correctly and you maintain and use it according to instructions, the welding machine will not jeopardize the safety of you and other persons.

Improper use of the welding machine may cause shocks from a high frequency (HF) ignition. Getting shocks from a high frequency ignition on a welding machine is not dangerous but you are advised to consult a doctor if you feel unwell.

#### Light and heat emissions

- Protect the eyes as even short-term exposure may cause permanent eyesight damage. Use welding helmet with prescribed radiation protection glass.
- Protect the body against the light from the arc as the skin may be damaged by welding radiation. Use protective clothes, covering all parts of the body.
- Shield the place of work, if possible, and warn other persons in the area against the light from the arc.

#### Smoke and gases

 Inhalation of smoke and gases emitted during welding/cutting is very damaging to health. Ensure proper ventilation and extraction.

#### Fire hazard

- Radiation and sparks from the arc represent a fire hazard. Keep combustible materials away from the place of welding/cutting.
- Working clothes should be protected against sparks and spatter from the arc (use a welding apron and beware of open pockets).
- The special regulations for rooms with danger of fire and explosion must be observed.

#### Noise

- The arc generates acoustic and electromagnetic noise, the level of which depends on the welding/ cutting operation, which is why the use of hearing protection will often be necessary.
- Welders using pacemakers or hearing aids should minimize electromagnetic interference by using the shortest possible plus and minus cables, arranged side by side at floor level.

#### **Dangerous** areas

- Avoid putting your fingers into the rotating gear wheels in the wire feed unit.
- Take the necessary precautions when welding/ cutting is carried out in confined spaces or at heights where there is a risk of falling.

#### Positioning of the machine

- Place the welding/cutting machine in such a way that the risk of tipping over is avoided.
- The special regulations for rooms with danger of fire and explosion must be observed.

#### Lifting the welding/cutting machine

 CAUTION SHOULD BE EXERCISED when lifting the welding/cutting machine. Use a lifting device if possible in order to prevent back injuries. Read lifting instructions in the instruction manual.

Use of the machine for other purposes than it is designed for (e.g. thawing frozen water pipes) is not advisable and will be on user's own responsibility.



### **Connection and start-up**



#### Warning

Read warning notice and instruction manual carefully prior to initial operation and save the information for later use.

### **Permissible installation**

#### Mains connection

Connect the machine to the correct mains supply. Please read the type plate  $(U_1)$  on the rear side of the machine.





#### Connection of shielding gas

Connect the gas hose, which branches off from the back panel of the welding machine (3), to a gas supply with pressure regulator (2-6 bar). (Note: Some types of pressure regulators require an output pressure of more than 2 bar to function optimally). One/two gas cylinders can be mounted on the bottle carrier on the back of the trolley.



#### Important!

In order to avoid destruction of plugs and cables, good electric contact is required when connecting earth cables and welding hoses to the machine.

Do not lift the machine by the handle. Do not step on the handle.

The machine must not be lifted with a crane.



#### Connection of welding hose





WARNING When you activate the torch trigger, there is voltage applied to the welding wire.

#### **Recommended cable dimensions**

Welding current	DC	PULSE
200 A	35 mm²	35 mm²
300 A	50 mm <sup>2</sup>	70 mm <sup>2</sup>

Welding process	Distance to work piece (a)	Total cable length in welding circuit (a+b)
MIG - pulse	10 m	20 m
MIG - non pulse	30 m	60 m



# **CAR-O-LINER**<sup>®</sup> Connection and start-up



- 1. Mains connection
- 2. Power switch on/off
- 3. Connection of shielding gas
- 4. Connection of welding hose
- 5. Connection of earth clamp



#### Adjustment of wire brake

The wire brake must be adjusted so as to stop the wire reel before the welding wire runs over the edge of the reel. The brake force depends on the weight of the wire reel and the wire feed speed. Factory setting is:

15 kg (CMI 300 Pulse/CMI 300 Pulse Twin) or 5 kg (CMI 300 Pulse Trio).

Adjustment:

- Dismount the control knob by placing a thin screw driver behind the knob and then pull it out.
- Adjust the wire brake by fastening or loosening the self-locking nut on the axle of the wire hub.
- Remount the control knob

#### Adjustment:

Adjust the wire brake by ٠ fastening or loosening the selflocking nut on the axle of the wire hub.



Adjusting the 15 kg wire brake

Adjusting the 5 kg wire brake

#### Software update

- Insert the SD-card
- Turn on the machine
- Wait until the unit indicates that the update is complete
- Turn off the machine and • remove the SD card
- The machine is now ready for use

connected units.



New software will be loaded into power source and all

### Assembly of parts in wire feed unit



Adjust the pressure of the thumbscrew so that the wire feed rolls run smoothly on the wire when it is stopped at the contact tip

### **CAR-O-LINER**<sup>®</sup> Special functions





# **Error handling**

CMI Pulse has a sophisticated built-in self-protection system. The machine automatically stops the gas supply, interrupts the welding current and stops the wire feeding in case of an error.

#### Selected errors:

#### Gas control error (IGC)

A gas control error can be due to too low or too high gas flow.

Check that the pressure of the gas flow is higher than 2 bar and lower than 6 bar, corresponding to 5 l/min and 27 l/min. Correct the gas error by adjusting the manual gas flow to 27 l/min. Reset the the gas error by briefly pressing the  $\sqrt{-key}$ .





### **Technical data 1**

Power source	CMI 300 Pulse	CMI 300 Pulse Twin	CMI 300 Pulse Trio	
Mains voltage ±15% (50-60Hz), V	3x400	3x400	3x400	
Minimum generator size, kVA	16	16	16	
<sup>1)</sup> Minimum short-circuit power, MVA	3.7	3.7	3.7	
Fuse, A	10/16	10/16	10/16	
Mains current effective, A	8.5	8.5	8.5	
Mains current max., A	15.3	15.3	15.3	
Power 100%, kVA	5.8	5.8	5.8	
Power max., kVA	10.6	10.6	10.6	
Power open circuit, W	30	35	40	
Efficiency	0.86	0.86	0.86	
Power factor	0.93	0.93	0.93	
Current range, A	15-300	15-300	15-300	
Duty cycle 100% 20°C, A/V	250/26.5	250/26.5	250/26.5	
Duty cycle max. 20°C, A/%/V	300/60/29.0	300/60/29.0	300/60/29.0	
Duty cycle 100% 40°C, A/V	200/24.0	200/24.0	200/24.0	
Duty cycle 60% 40°C, A/V	230/25.5	230/25.5	230/25.5	
Duty cycle max. 40°C, A/%/V	300/20/29.0	300/20/29.0	300/20/29.0	
Open circuit voltage, V	50-60	50-60	50-60	
<sup>2)</sup> Sphere of application	S/CE	S/CE	S/CE	
<sup>3)</sup> Protection class	IP23S	IP23S	IP23S	
Standards	IEC60974-	1. IEC60974-5. IEC60974-10	) Cl. A	
Dimensions (HxWxL), mm	838x443x1003	1104x597x1003	1104x597x1003	
Weight, kg	49	63	67	
Wire feed speed, m/min	0.5-30.0	0.5-30.0	0.5-30	
Torch connection	EURO	EURO	EURO	
Wire dimension, mm	0.6-1.6 0.6-1.6 0.4		0.6-1.6	
Wire spool diameter, mm	300	2x300	3x200	
Wire spool, kg	5-18	2x5-18	3x5	
Gas pressure, max., MPA (bar)	0.6 (6.0)	0.6 (6.0)	0.6 (6.0)	

FUNCTION	PROCESS	VALUE RANGE
Selection of trigger mode, 2-times / 4-times	MIG/MAG	2/4
Gas pre-flow, sec.	MIG/MAG	0-10
Soft-start, m/min	MIG/MAG	0.5-24.0
Hot-start, %	Synergic	-99-(+)99
Hot-start-time, sec.	Synergic	0-20
Slope down time, sec.	Synergic	0-10
Final current, %	Synergic	0-100
Final current time, sec.	Synergic	0-10
Gas post-flow, sec	MIG	0-20
Spot welding time, sec.	MIG	0-5.0
Step welding time, sec.	MIG	0.1-5.0
DUO Plus™ value	MIG	1-50
Electronic choke	MIG	-5-(+)5

<sup>1)</sup> This equipment complies with IEC 61000-3-12 provided that the short-circuit power Ssc of the grid at the interface point is greater than or equal to the stated data in the abovementioned table. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to the stated data in the abovementioned table.

2) S This machine meets the demand made for machines which are to operate in areas with increased hazard of electric chocks.

3) Equipment marked IP23S is designed for indoor and outdoor applications.

### **CAR-O-LINER**<sup>®</sup> Technical data 2

Power source	CMI 300 Pulse Boost			CMI 300 Pulse Twin Boost			CMI 300 Pulse Trio Boost					
Mains voltage ±10% (50-60Hz), V	380-440	208-380	380-440	208-380	380-440	208-380	380-440	208-380	380-440	208-380	380-440	208-380
Phases	3	3	1	1	3	3	1	1	3	3	1	1
Minimum generator size, kVA	16	16	10	9	16	16	10	9	16	16	10	9
<sup>1)</sup> Minimum short-circuit power, MVA	3.75				3.75				3.75			
Fuse, A	10/16/20	20	10/16/20	20	10/16/20	20	10/16/20	20	10/16/20	20	10/16/20	20
Mains current effective, A	10.6	19.5	10.6	19.3	10.6	19.5	10.6	19.3	10.6	19.5	10.6	19.3
Mains current max., A	16.2	31.6	16.0	29.1	16.2	31.6	16.0	29.1	16.2	31.6	16.0	29.1
Power 100%, kVA	7.0	7.1	3.9	4.0	7.0	7.1	3.9	4.0	7.0	7.1	3.9	4.0
Power max., kVA	10.6	11.0	6.0	6.1	10.6	11.0	6.0	6.1	10.6	11.0	6.0	6.1
Power open circuit, W	45	45	45	45	50	50	50	45	55	55	55	45
Efficiency	0.85	0.82	0.81	0.80	0.85	0.82	0.81	0.80	0.85	0.82	0.81	0.80
Power factor	0.95	0.95	0.98	0.98	0.95	0.95	0.98	0.98	0.95	0.95	0.98	0.98
Current range, A	15-300		15-200		15-300		15-200		15-300 15-200			
Duty cycle 100% 40°C, A/V	200/24.0		150/21.5		200/24.0		150/21.5		200/24.0 150		150/21.5	
Duty cycle 60% 40°C, A/V	210/24.5		160/22.0		210/24.5		160/22.0		210/24.5 160/22.0			
Duty cycle max. 40°C, A/%/V	300/20/29	0 200/30/24.0		300/20/29	0/29.0 200/30/24.0		300/20/29.0 200/30/24.0					
Open circuit voltage, V	50-60	50-60			50-60			50-60				
<sup>2)</sup> Sphere of application	S/CE	S/CE			S/CE			S/CE				
<sup>3)</sup> Protection class	IP23S				IP23S			IP23S				
Standards	IEC60974-	1. IEC60974	4-5. IEC6097	74-10 Cl. A	IEC60974-1. IEC60974-5. IEC60974-10 Cl. A			IEC60974-1. IEC60974-5. IEC60974-10 Cl. A				
Dimensions (HxWxL), mm	838x443x <sup>2</sup>	1003			1104x597x1003			1104x597x1003				
Weight, kg	52				66			70				
Wire feed speed, m/min	0.5-30.0	0.5-30.0			0.5-30.0			0.5-30				
Torch connection	EURO			EURO			EURO					
Wire dimension, mm	0.6-1.6			0.6-1.6			0.6-1.6					
Wire spool diameter, mm	300			2x300			3x200					
Wire spool, kg	5-18	5-18			2x5-18			3x5				
Gas pressure, max., MPA (bar)	0.6(6.0)	0.6(6.0)			0.6 (6.0)			0.6 (6.0)				

FUNCTION	PROCESS	VALUE RANGE
Selection of trigger mode, 2-times / 4-times	MIG/MAG	2/4
Gas pre-flow, sec.	MIG/MAG	0-10
Soft-start, m/min	MIG/MAG	0.5-24.0
Hot-start, %	Synergic	-99-(+)99
Hot-start-time, sec.	Synergic	0-20
Slope down time, sec.	Synergic	0-10
Final current, %	Synergic	0-100
Final current time, sec.	Synergic	0-10
Gas post-flow, sec	MIG	0-20
Spot welding time, sec.	MIG	0-5.0
Step welding time, sec.	MIG	0.1-5.0
DUO Plus™ value	MIG	1-50
Electronic choke	MIG	-5-(+)5

EC DECLARATION OF CONFORMITY					
CAR-O-LINER GROUP AB Sweden					
hereby declare that ou	r machine as stated below				
Type: CMI Pulse					
conforms to directives:	2014/35/EU 2014/30/EU 2011/65/EU				
European standards:	EN/IEC60974-1 EN/IEC60974-5 EN/IEC60974-10 (Class A)				

3) Equipment marked IP23S is designed for indoor and outdoor applications.

<sup>1)</sup> This equipment complies with IEC 61000-3-12 provided that the short-circuit power Ssc of the grid at the interface point is greater than or equal to the stated data in the abovementioned table. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to the stated data in the abovementioned table.

<sup>2)</sup> S This machine meets the demand made for machines which are to operate in areas with increased hazard of electric chocks.

