

# Operating Instructions

## Dry ice cleaning device

Champ

**DRY ICE**   
**ENERGY**



**CE**

**Made in Germany**

**[www.DryIceEnergy.com](http://www.DryIceEnergy.com)**  
**Wiebestr. 36-37**  
**10553 Berlin**



**Servicehotline**  
**+49 30 364 280 120**

## Preliminary remarks

Thank you very much for choosing our **Champ** dry ice blasting machine!

Before using the blasting device, please first familiarize yourself with the device and read the operating instructions. In this way, they avoid dangers for themselves and others.

You will receive the operating instructions as a PDF when the dry ice blasting machine is shipped. You should always have them at hand. Keep this instruction manual in such a way that it is available to the operator at all times.

The operating instructions explain the installation, operation, operation and maintenance of the Champ dry ice blasting machine and the technology of CO2 cleaning.

Only persons who have read and understood the operating instructions may use the device. In particular, all safety instructions must be observed.

A principle of Dry-Ice-Energy GmbH is to continuously develop and improve the product ranges, which explains possible differences in equipment, technical data, brochures and operating instructions.

Descriptions of activities that do not require special knowledge have been omitted.

Repair work that exceeds normal maintenance work is not described and may only be carried out by the service of Dry-Ice-Energy GmbH or an authorized service partner.

The device is built according to recognized safety standards. Improper use may pose risks to the user.

The manufacturer of this device is not liable for damage caused to the device or by the user in the event of:

- Improper treatment
- Non-observance of the operating instructions
- Repairs by unauthorized professionals
- Installation and replacement of non-original parts
- Non-intended use

## Table of contents


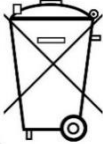
1 Scope of delivery/standard accessories.....	3
2 Environmental protection.....	4
3 Registration .....	4
4 Safety .....	5
5 Guidelines and Regulations .....	6
6 Procedure description.....	9
7 Technical data Champ.....	10
9 Commissioning .....	13
10 Ending the blasting work .....	17
11 Transportation .....	18
12 Maintenance .....	19
13 Disassembly and disposal .....	19
14 Troubleshooting analysis .....	20
15 Warranty and service documentation.....	22

## **1 Scope of delivery/standard accessories**

- Champ dry ice blasting machine
- Pressure regulator with filter
- 7m compressed air hose (max. permissible working pressure 10bar)
- Ice shovel
- Grounding cable (optional)
- Operating instructions

## 2 Environmental protection








Dry-Ice-Energy is committed to comprehensive environmental protection.

	<p>All packaging materials are recyclable. Please recycle the packaging or, if possible, keep the packaging for reuse.</p> <p>For our 24-hour exchange service, we use the transport packaging several times.</p>
	<p>Waste equipment contains valuable recyclable materials that should be recycled. Therefore, please dispose of old equipment via suitable collection systems.</p> <p>Dry-Ice-Energy GmbH takes back your used device.</p>

## 3 Registration

Only if we have your registration data can we support your blasting device on the service side and draw your attention to inspection dates. You can register your blasting device at any time at the specified addresses of Dry-Ice-Energy GmbH, or obtain information about a registration.

## 4 Safety

 <b>DANGER</b>	
	<p><b>Refers to an imminent danger.</b> If the information is not followed, there is a risk to life or serious bodily injury can be the result.</p>
 <b>WARNING</b>	
	<p><b>Identifies a potentially dangerous situation.</b> If the information is not followed, there is a risk to life or serious bodily injury can be the result.</p>
 <b>CAUTION</b>	
	<p><b>Indicates a possible dangerous situation</b> If the information is not followed, property damage and minor or moderate bodily injury may result.</p>
<b>HINT</b>	
	<p><b>Refers to general information</b> Useful user tips and work recommendations, but these have no influence on the safety and health of the staff.</p>

## 5 Guidelines and Regulations

For the blasting of surfaces when using granular abrasives, the regulations of the respective country apply.

In Germany, the regulations of the employers' liability insurance association apply with the designation:

BGV D 26

Blasting work / execution instructions

Other regulations are:

BGR 195 Use of protective gloves

BGR 189 Use of protective clothing

BGR 117 + BGI 534 Working in confined spaces

BGI 836 Gas Detector

Observe general safety rules!

If cleaning with the Champ **causes dusts that are hazardous to health**, appropriate safety measures must be taken before the start of the work.

Safety instructions attached to the Champ:





**CAUTION**



**Avoid direct skin contact with CO2 pellets!**

Risk of cold burns due to dry ice or cold equipment parts. Dry ice has a temperature of  $-79^{\circ}\text{C}$ . Never touch dry ice and cold equipment parts unprotected. When working on the device, wear suitable cold protective clothing or have dry ice removed and warmed up. Never put dry ice in your mouth!



**Do not shine against living beings – risk of injury!**

Risk of injury from dry ice pellets flying around. Do not point the blast gun at people or your own body parts. Keep people and animals away during operation (e.B. by barrier). Do not touch the nozzle or the dry ice jet during operation.



**Ground compressed air connections and cleaning objects electrically!**





In the case of non-grounded compressed air connections, the device must also be grounded. Danger from electrostatic discharges. Risk of damage to electronic assemblies. Electrically ground the cleaning object and maintain grounding throughout the cleaning process.



**Secure pistol with sliding valve!**

Danger due to unintentional tarnishing.



 <b>DANGER</b>	
    	<p><b>Ensure enough fresh air when blasting indoors!</b></p> <p>or</p> <p><b>Set up extraction near the ground. CO2 is heavier than air!</b></p> <p>Risk of suffocation due to carbon dioxide. The dry ice pellets consist of solid carbon dioxide. When the device is operated, the carbon dioxide content of the air in the workplace increases. Ventilate the workplace sufficiently, if necessary use a personal warning device.</p> <p>Signs of high carbon dioxide concentration in the air we breathe:          3-5%: headache, high respiratory rate.          7-10%: headache, nausea, possibly loss of consciousness.</p> <p>If these signs appear, immediately turn off the device and go out into the fresh air. Before continuing work, improve ventilation measures or use breathing apparatus.</p> <p>During the cleaning process, the cleaning object can be electrically charged.</p>

**If the safety instructions on the device are missing or illegible, they must be replaced!**

### Switching off in an emergency

2. Release the trigger lever of the blasting gun – the air flow from the nozzle is interrupted – the dry ice conveying is stopped.
3. Securing the gun with sliding valve.
4. Interrupt compressed air supply by turning the compressed air connection.

## 6 Procedure description

The **Champ** dry ice blasting machine works with granules from dry ice pellets (1.5mm), which is produced by pressing CO<sub>2</sub> snow.

The dry ice pellets in the dry ice tank are mixed with the compressed air in the blasting gun via a hose and accelerated via the blasting nozzle.

The dirt on the surface is selectively supercooled and bursts off due to the different coefficients of expansion. The CO<sub>2</sub> granules sublimate from the solid to the gaseous state at the moment of impact. And only the original dirt remains as a residue.

**Attention!**

Use the dry ice blasting machine **exclusively** with abrasives, approved by Dry Ice Energy.

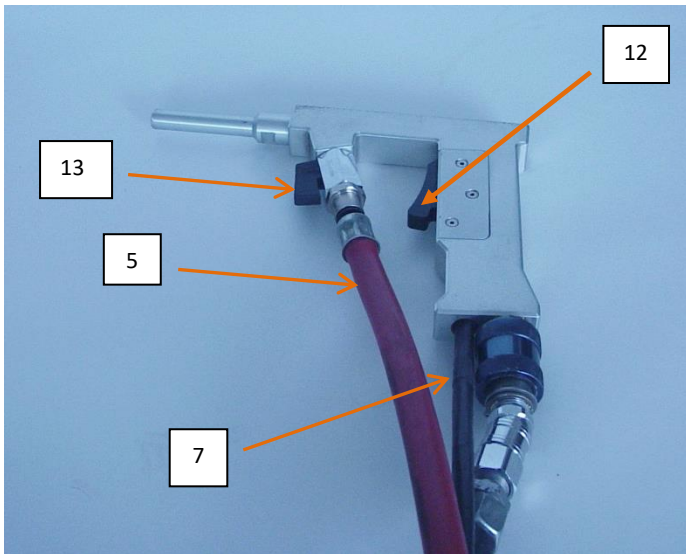
## 7 Technical data Champ

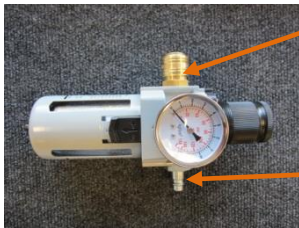
Length	530 mm
Width	370 mm
Height	470 mm
Empty weight	17 kg
Dry ice filling capacity	4,1 kg
Dry ice consumption	8kg/h – 20kg/h at 6 bar blasting pressure, depending on the number of dosing discs used
Supply pressure required	min. 4 bar – max. 8 bar
Compressed air consumption	600 l/min at 5 bar pressure
Operating pressure	max. 8 bar
<b>Compressed air requirements</b>	<b>The compressed air must be clean, free of oil and dry. Min. quality: ISO 8573- 1 Class 3</b>
Compressed air connection	European standard hose NW 7.2
Noise emission	60 dB (A) - 90 dB(A) – depending on the nozzle combination and the surface of the object to be cleaned
Blasting agent	1.5 mm mini-pellets from Dry-Ice-Energy (recommended)
Hose length of working hose	3.0 m
Hose length of compressed air hose	7.0 m

## 8 Structure of the Champ

- 1 Housing with integrated dry ice container
- 2 Blasting pistol holder
- 3 Blasting pistol
- 4 Compressed air connection at the rear of the machine
- 5 Ice pellet hose
- 6 Compressed air hose
- 7 Control line
- 8 Protective hose
- 9 Dry ice container lid
- 10 Castors
- 11 Safety instructions on the rear of the machine
- 12 Trigger
- 13 Ice supply lever







Connection to the dry ice blasting machine



**Pressure regulator with water separator**


Connection compressed air supply



Mount the pressure regulator on the dry ice blasting machine. If the system-side requirements (pressure regulator, water separator) are met at the place of use, the pressure regulator can be dispensed with.



## 9 Commissioning



Please note the following points before commissioning:

 <b>CAUTION</b>	
	<p><b>Ground compressed air connections and cleaning objects electrically!</b></p> <p>In the case of non-grounded compressed air connections, the device must also be grounded.            Danger from electrostatic discharges. Risk of damage to electronic assemblies. Electrically ground the cleaning object with the attached grounding cable and maintain grounding throughout the cleaning process.            In the absence of grounding, flammable materials can ignite due to static discharge!</p>

NOTE	
	<p>Before filling with dry ice, operate the machine in an empty condition for 5 seconds. This will prevent the pellet dosing from icing up when filling with dry ice.</p> <p>Risk of damage to the machine. Only use blasting agents that have been approved by Dry Ice Energy. Use of other blasting agents will lead to the warranty becoming invalid.</p>

 CAUTION	
	<p><b>Avoid direct skin contact with CO2 pellets!</b></p> <p>Danger of cold burns from dry ice or cold device components. Dry ice has a temperature of -79°C. Never touch dry ice and cold device components without protection. When working with the machine, wear suitable protective clothing against cold or remove the dry ice and allow the machine to warm up. Never put dry ice in the mouth!</p>

 DANGER	
	<p><b>Ensure sufficient fresh air when carrying out blasting in closed spaces!</b>  <b>or</b>  <b>Setup extraction at ground level. CO2 is heavier than air!</b></p> <p>Danger of suffocation from carbon dioxide. The dry ice pellets consist of solid carbon dioxide. The concentration of carbon dioxide in the air at the</p>

  	<p>workplace will increase while the machine is being operated. Ventilate the workplace sufficiently, use a personal warning device if required (see page 15 “Accessories”).</p> <p>Symptoms of high concentration of carbon dioxide in the air for breathing:          3-5%: Headaches, breathing rate is high.          7-10%: Headaches, nausea, possible loss of consciousness.</p> <p>If these symptoms should appear, switch the machine off immediately and go into fresh air. Improve the ventilation measures or use breathing apparatus before continuing the work.</p> <p><b>The Champ must not be operated in an explosive atmosphere!</b>          The object to be cleaned can electrically discharge during the cleaning process.</p>
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**Commissioning:**

Match the air supply (available pressure, capacity, temperature and humidity) with the specified values.

- a) Fix the object to be cleaned if required and earth electrically.
- b) Wear protective clothing, safety gloves, tightly sealed goggles, hearing protection and a suitable protective mask.
- c) The settings at the pressure regulator depend on the material of the object to be cleaned and the level of contamination. The blasting pressure influences the speed that the dry ice pellets exit from the nozzle. The higher the blasting pressure that is set, the higher the cleaning effect is.
- d) 4 - 5.5 bar for minor contamination  
 6 - 10 bar for severe contamination
- e) Activate the compressed air supply by the **slide valve**.
- f) Hold the blasting pistol securely in your hand.
- g) Activate the dry ice stream initially for 5 seconds without dry ice “blow through” by operating **the trigger**.
- h) Fill the dry ice pellets into the dry ice container with the ice beaker supplied.
- i) During filling, it must be observed that no foreign objects fall into the dry ice container. The foreign objects could clog the pellet dosing during blasting.



- j) Close the lid
- k) Carry out the cleaning process.

### Switching off in an emergency

- a) Release the trigger of the blasting pistol - the air flow from the nozzle will be interrupted - the dry ice supply will stop.
- b) Secure the pistol with slide valve
- c) Interrupt the compressed air supply connection by turning at the compressed air connection

#### NOTE



Leave the lid of the dry ice container closed during operation. This will prevent any blasted off dirt from getting in.

To avoid any faults arising from clogged dry ice pellets, it is sensible to use up the content of the dry ice container completely before filling with new dry ice.



Before long work stoppages, operate the machine until the dry ice container is empty, or until the dry ice can be removed from the machine by tipping the machine.

Insert the blasting pistol into the pistol holder of the cover and interrupt the compressed air supply by turning at the compressed air connection.

Open the lid so that the condensate water in the drying container can dry.

## 10 Ending the blasting work




- a) If there is still dry ice located in the funnel, then blast until the Champ is completely empty.
- b) As soon as there are no longer any pellets coming out of the blasting nozzle, blast for about another 10 seconds to completely empty the blasting hose.
- c) Release the trigger;
- d) Slide the slide valve into the OFF position;
- e) To release the pressure on the compressed air hose, switch off the compressed air supply at the compressed air source (compressor).
- f) First relieve the pressure on the compressed air hose (by pressing the trigger) then hold the hose firmly and remove. The compressed air pressure gauge will show 0 bar.

 <b>CAUTION</b>	
	<p><b>Avoid direct skin contact with CO2 pellets!</b></p> <p>Danger of cold burns from dry ice or cold device components. Dry ice has a temperature of -79°C. Never touch dry ice and cold device components without protection. When working with the machine, wear suitable protective clothing against cold or remove the dry ice and allow the machine to warm up. Never put dry ice in the mouth!</p>

## 11 Transportation

Before transportation, carry out all of the steps in the “Ending the blasting work” chapter.

- Secure the machine to the transportation vehicle using tensioning straps.

	
DANGER	
  	<p>Risk of accident due to dry ice residues in the machine. Before transportation in closed vehicles or when setting up in small unventilated areas, e.g. lifts, the dry ice must be removed from the machine with no residue.</p> <p><b>Setup extraction at ground level. CO2 is heavier than air!</b></p> <p>Danger of suffocation from carbon dioxide. The dry ice pellets consist of solid carbon dioxide. The concentration of carbon dioxide in the air at the workplace will increase while the machine is being operated. Ventilate the workplace sufficiently, use a personal warning device if required (see page 15 “Accessories”).</p> <p>Symptoms of high concentration of carbon dioxide in the air for breathing:            3-5%: Headaches, breathing rate is high.            7-10%: Headaches, nausea, possible loss of consciousness.</p> <p>If these symptoms should appear, switch the machine off immediately and go into fresh air. Improve the ventilation measures or use breathing apparatus before continuing the work.</p>

## 12 Maintenance

As a result of the pneumatic structure of the **Champ**, there is an extremely low requirement for maintenance. It is important however to inspect the machine every time before use.

The **Champ** has been designed in the factory such that only a few components require maintenance; you can carry out the following work yourself.

Each time before and after use

- Check the hoses for damage and kinks and that they are fitted securely
- Check that the pressure regulator is fitted securely (if it has been installed).

**Caution!**

All other work must only be carried out  
by Dry-Ice-Energy Service.

Have the machine be serviced 1x annually by Dry-Ice-Energy Service.  
Also see the 24h replacement service.

### Maintenance contract

To ensure reliable operation of the system, we recommend that you enter into a contract with our 24h replacement service. Please contact our Sales or Customer Service departments.

## 13 Disassembly and disposal


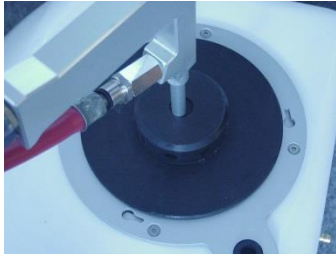
The national regulations must be observed when disposing of the machine.  
Dry-Ice-Energy GmbH will take back your used machine.

## 14 Troubleshooting analysis

Fault	Cause-solution
No compressed air at the pistol	Connect the compressed air - switch on the main switch at the compressor - open slide valve (9) at the pistol
No pellet supply	<p>Kinked pellet hose → Pellets cannot be sucked in → Check the pellet hose for kinks and replace if necessary.</p> <p>Ice clumps in the pellet dosing → Backwashing → see the note on the next page</p> <p>Check that there is 600 l/min compressed air present.</p> <p>No pellets or incorrect pellets in the container → Only mini-pellets from Dry Ice Energy can be used for the Champ .</p> <p>Foreign objects in the dry ice container - styrofoam parts etc. → Backwash and refill the dry ice container.</p> <p>Dosing does not switch on → See the next cause.</p>
Dosing does not switch on	<p>Check the compressed air supply.</p> <p>Operate the Reset switch (red) underneath the machine for around 5 seconds (with the compressed air supply connected).</p> <p>Blasting pressure falls below 3 bar during operation → Check whether min. 600 l/min compressed air is present.</p>
Poor cleaning performance	Too little pressure or too small supply line cross section - if the pressure is set as 6 bar then the display at the pressure regulator must not fall below 4 bar during cleaning.

<p>The machine switches off with a delay</p>	<p>Pistol nozzle ices up → Compressed air contains too much water → Check the refrigeration drier of the compressed air system → Empty the water trap at the compressor.</p>
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**NOTE**

		<p><b>In the event of irregular ice flow when blasting - recoil:</b>        Insert the pistol with the nozzle into the hole provided in the lid. Press the pistol forcefully against the lid. Operate the trigger until a regular air flow flows out of the openings of the lid.</p>
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## 15 Warranty and service documentation

The warranty is valid for 12 months after delivery.

The spare part or the machine must be sent to Dry-Ice-Energy GmbH for an assessment of the warranty.

The warranty does not include faults that are partially or entirely the result of:

- Deviating from the operating rules and regulations with regards to normal use with the prescribed pressure settings or the use of blasting agents other than the dry ice pellets.
- Normal wear and tear, also wear and tear of the blasting hose.
- Mounting/installation or repair by third parties or the customer.
- Insufficient maintenance.

**Caution: The machine must only be opened by the Dry-Ice-Energy GmbH Service department. The warranty claims shall become invalid if the housing of the machine is opened without permission.**

In the event of a warranty claim, please contact Dry-Ice-Energy GmbH or our sales partner.

Dry-Ice-Energy GmbH  
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10553 Berlin

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## EC Declaration of Conformity

According to the EC Machinery Directive(MRL) 2006/42/EC of May 17, 2006, Annex II A

for machines

The design type of the machine (trade name): Dry ice blasting machine

**Brand/Function/Model/Type:** Series Champ

**Serial No./Year of construction:** Indication on the type plate of the machine

was developed, designed and manufactured under sole responsibility of

**Manufacturer:** DRY-Ice-Energy GmbH  
Wiebestraße 36-37  
10553 Berlin  
T.: +49 (0) 30 364280127  
E.: [info@dryiceenergy.com](mailto:info@dryiceenergy.com)

and complies with all relevant provisions of MRL 2006/42/EC.

The technical documentation has been prepared in accordance with Annex VII A of the MRL 2006/42/EC and can be submitted to the competent market surveillance authority upon request.

**Person responsible for documentation (located in the Community):** Gernot Schnettler

The operating manual(s) belonging to the machine (original and translations, if applicable) - and installation declarations and assembly instructions, if applicable - are available.

Berlin 16.11.2023  
Ort, Datum

Gernot Schnettler, Geschäftsführer  
Name, Funktion des Bevollmächtigten



**DRY ICE ENERGY**  
so einfach kann Trockeneisreinigung sein

Stempel, Unterschrift des Bevollmächtigten



## Service-Dokumentation

## Service-Dokumentation

## Service-Dokumentation

# DRY ICE ENERGY



so einfach kann **Trockeneisreinigung** sein

