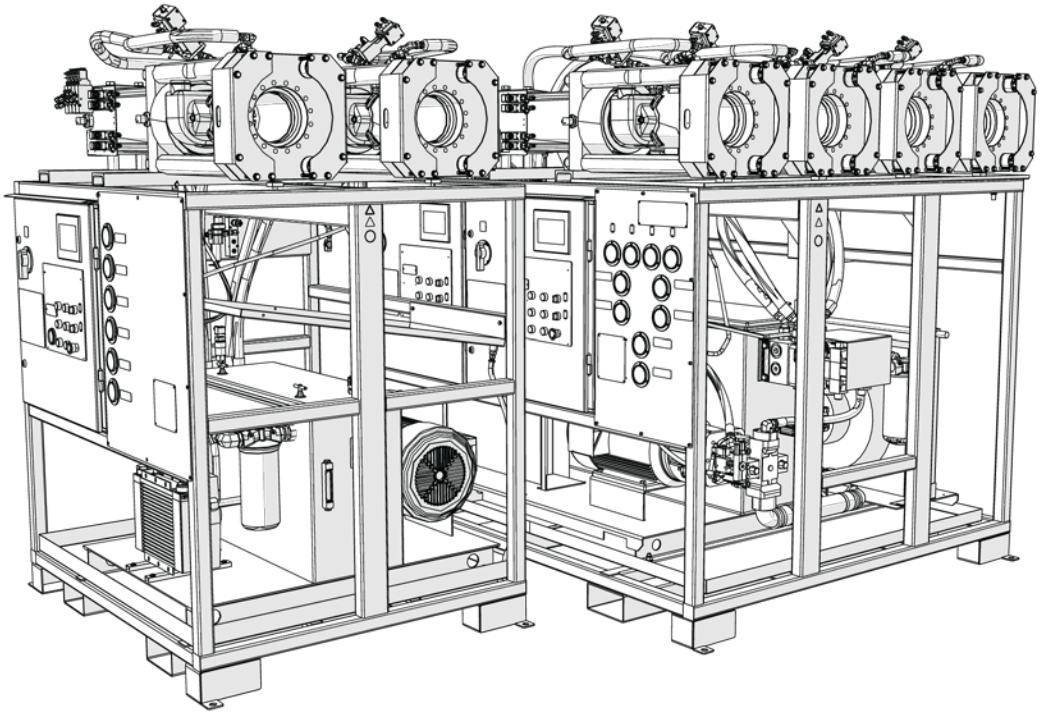
Cold Jet®
the force of nature

# P1500 / P3000

Operation Manual



Original [EN]

Revised July 2018

**Voltage:** 200/400/460 Volts AC

**Model No.:** P1500/P3000

**Control No.:** 2A0270/2A0306

This manual illustrates the safety, operation, and maintenance features of the Cold Jet Pelletizer P1500 and P3000.

At a distance of 3.28 ft (1 meter) and at a steady operating pace, the A-weighted emission sound pressure level at workstations is 83 dB (A). The primary source of the sound is the hydraulic pump/motor. The A-weighted emission sound power level emitted by the machinery may also reach 83 dB (A). The peak C-weighted instantaneous sound pressure value at workstations will not exceed 130 dB (A).

The build revision level is located on the machine's data plate. All machine diagrams are located on the inside of the electrical enclosure door.



### Special Notes

All information contained within this manual, or information derived from exposure to the technology or equipment supplied by Cold Jet remains "CONFIDENTIAL" between Cold Jet and the purchaser or authorized user. Any unauthorized transfer of information to any person or company not in the direct employ of Cold Jet, or not in the direct employ of, or for, the purchaser or the authorized user, is strictly prohibited.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# Contents

# Quick Reference

## Safety First

- DO NOT touch the dry ice with your bare hands!
- TURN ON ventilation before operating the Pelletizer.
- BE SURE that the Pelletizer exhaust is routed out of the building.
- FOLLOW written procedure for start-up and shutdown.
- ENSURE that all gauges are within their operating ranges.
- NEVER tighten or loosen a hose that is pressurized.

## About these Instructions

The P3000 is essentially two P1500s combined onto one frame. The instructions in this manual are for both the P1500 (one panel, two cylinders) and the P3000 (two panels, four cylinders). Therefore, instructions should be applied to both control panels when operating a P3000.

## Start-Up

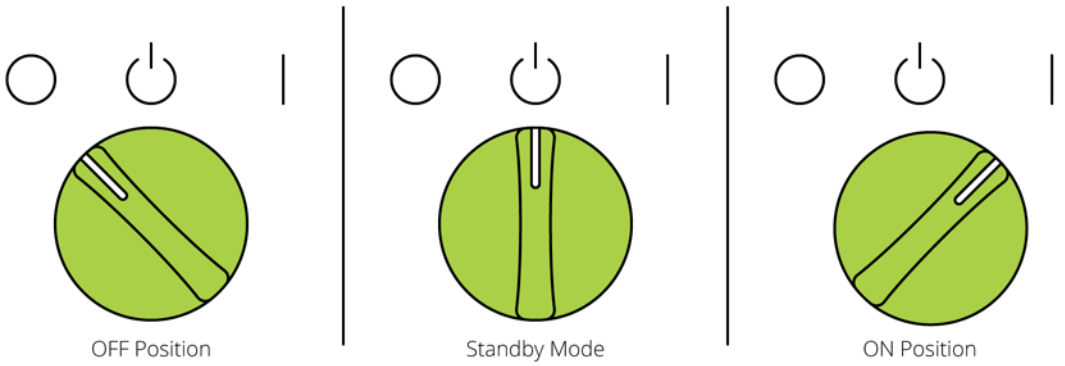

*(The P3000 will have two of these control panels)*

1. Open the liquid $CO_2$ supply and vapor $CO_2$ supply valves.
2. Turn the Main Power switch [1] to the ON positon.
3. Verify the E-Stop button [3] is not depressed.
4. Turn the Chamber Power switches [2] to the OFF (O) position.
5. Press the Reset button [4].
6. Turn the Chamber Power switches [2] to the ON (I) position.

## Shut Down

1. Turn the Chamber Power switches [2] to the OFF (O) position.
2. Turn the Main Power switch [1] to the OFF positon.
3. Close the liquid $CO_2$ and vapor $CO_2$ supply valves.

## Standby Mode




**NOTE:** The machine should only be put into standby mode for short breaks.

1. To put the machine into standby mode, turn the Chamber Power switches [2] to the middle position (standby mode).
2. To take the machine out of standby mode, turn the Chamber Power switches [2] to the ON (I) position.

## System Reset

1. To reset the machine, turn the Chamber Power switches [2] to the OFF (O) position.
2. Press the Reset button [4].

## Operation & Storage Tips

- ONLY put dry ice pellets in pellet boxes. Dry ice snow will reduce the quality of the pellets.
- CLOSE and seal the pellet box, when filling is complete, to prevent air circulation over the pellets.
- PERIODICALLY check the $CO_2$ supply pressure and the hourly production rate of the Pelletizer.
- STORE pellet boxes out of direct sunlight.
- KEEP the pellet box lid CLOSED when not filling.
- DO NOT use pellet boxes that have holes or cracks. Make sure the interior of the box is clean and dry.

## Cold Jet Services

- Equipment upgrades
- Maintenance services and training
- Parts and Customer Service (see Contact Information)
- 48-hour pellet delivery: +1-800-736-3423 or +1-513-831-3211 ext. 343
- Engineered solutions

# General Information

## Introducing the P1500/P3000

- The Cold Jet P1500/P3000 is an industrial strength dry ice extruder designed to force $CO_2$ snow into pellets and/or nuggets of variable size.
- The P1500/P3000 produces pellets for dry ice blasting, produce nuggets for preservation of perishable items and other applications.
- The P1500/P3000 requires 3-phase AC power and a liquid $CO_2$ tank for operation. See the data plate on the machine for the voltage, current, and frequency specifications.
- The P1500/P3000 can be fitted with a series of die plates to vary the diameter of the dry ice pellets and an ice cutting extension to cut the pellets to precise lengths.
- The P1500/P3000 contains an innovative injection and extrusion system to produce the highest density and longest lasting pellets in the industry.
- The pellets are produced by injecting liquid $CO_2$ into the Pelletizer extrusion cylinder where a solid $CO_2$ is formed.
- A ram presses the solid $CO_2$ through the die plate to form pellets or nuggets.
- The P1500 is able to produce up to 1200 lb/hr (590 kg/hr) of dry ice pellets. The P3000 is able to produce up to 2400 lb/hr (1090.9 kg/hr) of dry ice pellets.
- The pellets must be stored in the proper containers to minimize sublimation (returning to a gaseous state).

## Before you Begin

### $CO_2$ Quality Requirements

- Standard "Food Quality" liquid $CO_2$ is required.
- Moisture content must be between 1 ppm and 10 ppm.
- Regularly inspect all tanks for moisture or petroleum contamination.

### Pressure Requirements for the Liquid $CO_2$ Supply

- The Liquid $CO_2$ supply must be selected and maintained at a constant pressure between 210 to 290 psig (14.5 to 19.99 bar) with a variance of +/-10 psig (+/-.69 bar).
- If the supply pressure varies by more than +/-10 psig (+/-.69 bar), Cold Jet will not be held responsible for lost production.

### Liquid $CO_2$ Insulation Requirements

- $CO_2$ vaporization in the supply lines, caused by poor insulation, will reduce Pelletizer output.
- 0-50 ft (0-15 m) - use Rubatex (or its equivalent) with minimum thickness of half the pipe's diameter.
- 50-100 ft (15-30 m) - use at least 6 in. (152 mm) urethane foam with a hard plastic outer shell (or its equivalent).

- Over 100 ft (30 m) - use a "Loop" system (auxiliary liquid $CO_2$ pump and vapor-to-tank return line).

## Pelletizer Liquid $CO_2$ Connections for Vapor & Exhaust

- $CO_2$ liquid supply line: 3/4" (19 mm) JICM
- $CO_2$ vapor supply line: 1/2" (13 mm) JICM
- $CO_2$ vapor exhaust line: 2" (51 mm) PVC
- $CO_2$ vapor recovery line (when applicable): 2" (51 mm) copper tube

## Exhaust Venting

- Any structure housing a Pelletizer must have an air circulation system.
- Route the Vapor $CO_2$ to an exhaust system or vent it to an outside source.
- The exhaust backpressure must be less than 1 psig (.07 bar).
- Use a 2" (51 mm) conduit when exhaust pipe is 30 ft (9 m) or less.
- Use a 3" (76 mm) conduit when exhaust pipe is more than 30 ft (9 m)
- The pipe can be PVC, flexible hose, copper pipe, stainless steel pipe, or sheet metal ducting.

## Placement and Spacing

- The Pelletizer needs to be installed on a level floor with adequate load bearing to support it.
- Allow a minimum of 60" (1.5 m) of space in front of the Pelletizer for pellet boxes.

## Supply Valve Locations

- A safety pressure relief valve must exist between the Pelletizer and the supply line shut off valves.
- The liquid and Vapor $CO_2$ shut-off valves and electrical disconnect must be near the Pelletizer within easy reach of the operator.

## Electrical Power Connection

- Cold Jet requires a qualified electrician to install power to the Pelletizer.
- The Pelletizer has been pre-wired for your requested voltage and frequency.
- You must provide the correct hard conduit and four-wire, three-phase power wiring.

## Liquid $CO_2$ Storage Tank Recommendations

- Use a tank large enough to accept a full truckload of $CO_2$.
- A refrigerator and vaporizer (heater) are needed to balance the $CO_2$ temperature and pressure. Ideal storage conditions are 290 psig (19.99 bar) at 0oF (-18oC).
- The refrigeration should turn on at 295 psig (20.3 bar) and turn off at 285 psig (19.7 bar).
- The vaporizer should turn on at 270 psig (18.62 bar) and turn off at 280 psig (19.3 bar).

- Facilities with large and/or multiple tanks (i.e. 220 tons) may only have over-pressure safety valves. In these situations, there are several factors to consider:
    - Length and diameter of supply line.
    - Type and quality of insulation on the supply line.
    - Number of machines drawing liquid from the supply line.
    - Is a liquid loop system being used?

**NOTE:** Large ice production facilities are generally considered on an individual basis.

## Operating Modes

### Purge

When starting the unit from main power off, it will enter a "purge cycle" using high-pressure vapor only to dry out the extrusion cylinder and the exhaust screens before allowing the $CO_2$ liquid to enter this area. This is done for ten strokes on each cylinder.

### Chill down

The next phase is the chill down for up to twenty strokes on each cylinder. Liquid $CO_2$ is introduced to the cylinder through the bottom electric solenoid valve only. This phase may be shortened if the hydraulic pressure switch senses extrusion pressure as required to push the ice through the die.

### Production

The unit will automatically shift into full production and the top ball valve assembly actuates to provide a higher liquid flow rate.

# Safety

## $CO_2$ Safety

| Symbol | Definition |
|---|---|
|  | Danger of Suffocation |
|  | Danger of Electrostatic Discharge |
|  | Danger of Congelation |
|  | Pinch Point Hazard |
|  | Danger of Burns |
|  | Wear Protective Gloves |
|  | Wear Eye Protection |

### Extreme Cold

This machine uses $CO_2$ liquid and gas to create dry ice ($CO_2$ in solid form). The temperature of dry ice is -78°C (-109°F). Avoid coming into direct contact with dry ice as it may cause severe tissue damage.

### Suffocation

$CO_2$ can displace oxygen from the surrounding atmosphere. Therefore, operating the machine in a well-ventilated work area is recommended. Use a $CO_2$ monitoring device if using the machine in a confined workspace.

### Electrostatic Discharge

Dry ice blasting may create electrostatic discharges. This machine is fitted with effective electrostatic dischargers to prevent injury or damage. Also, the machine must be plugged into a properly grounded electrical outlet.

It is recommended to avoid operating the machine near explosive or flammable material. Also, use a plastic shovel when handling dry ice to eliminate any additional static electricity.

## Safety Precautions

The Cold Jet P1500/P3000 is safe to operate. However, certain precautions must be taken during use:

- NEVER OPERATE the unit without first reading the Operator Manual.
- NEVER operate the unit unless trained or authorized to do so.
- NEVER EXPOSE bare skin to $CO_2$ pellets or liquid.
- NEVER OPERATE without proper ear and eye protection.
- NEVER operate in a confined space without a ventilation system that maintains OSHA $CO_2$ concentration levels (5,000 ppm).
- NEVER ATTEMPT to run the unit if it is damaged.
- ALWAYS disconnect the main power to the unit BEFORE performing maintenance services.
- ALWAYS check gauges, when starting the unit, to verify the unit is working properly.
- DO NOT change pressure flow rate settings once they have been set.
- ALWAYS turn off the main power to the Pelletizer if it is to remain unused for an extended time.

### Hose Safety Precautions

- ALWAYS tighten hose fittings with a wrench.
- NEVER OPERATE equipment if the fittings have only been hand tightened.
- NEVER USE hoses above the recommended working pressure.

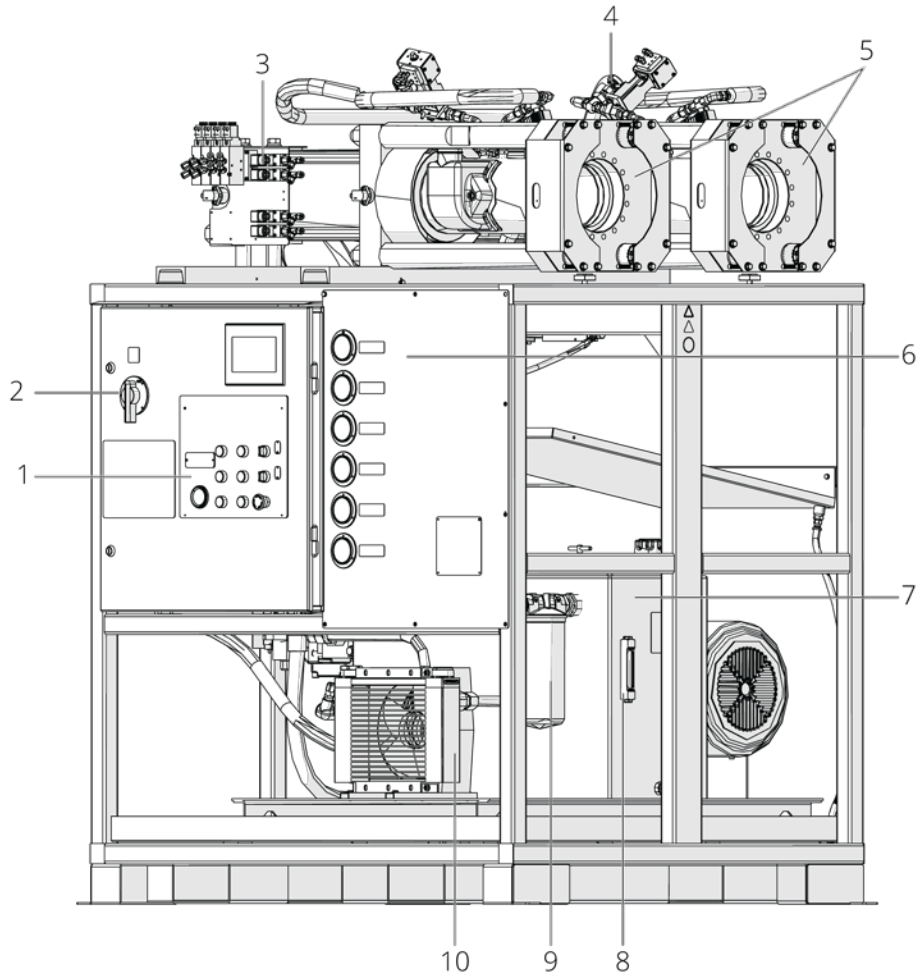
### Electrical Safety Precautions

- UNLESS YOU ARE COLD JET TRAINED as a service technician, you should NEVER attempt to work on the unit's electrical components.
- Do not operate equipment with electrical parts exposed.
- Do not operate equipment that has had safety circuits “jumpered” or rendered inoperable.
- Follow the guidelines set forth in the governing codes of your local/national body as a minimum standard for ensuring safety.

# Know Your Machine

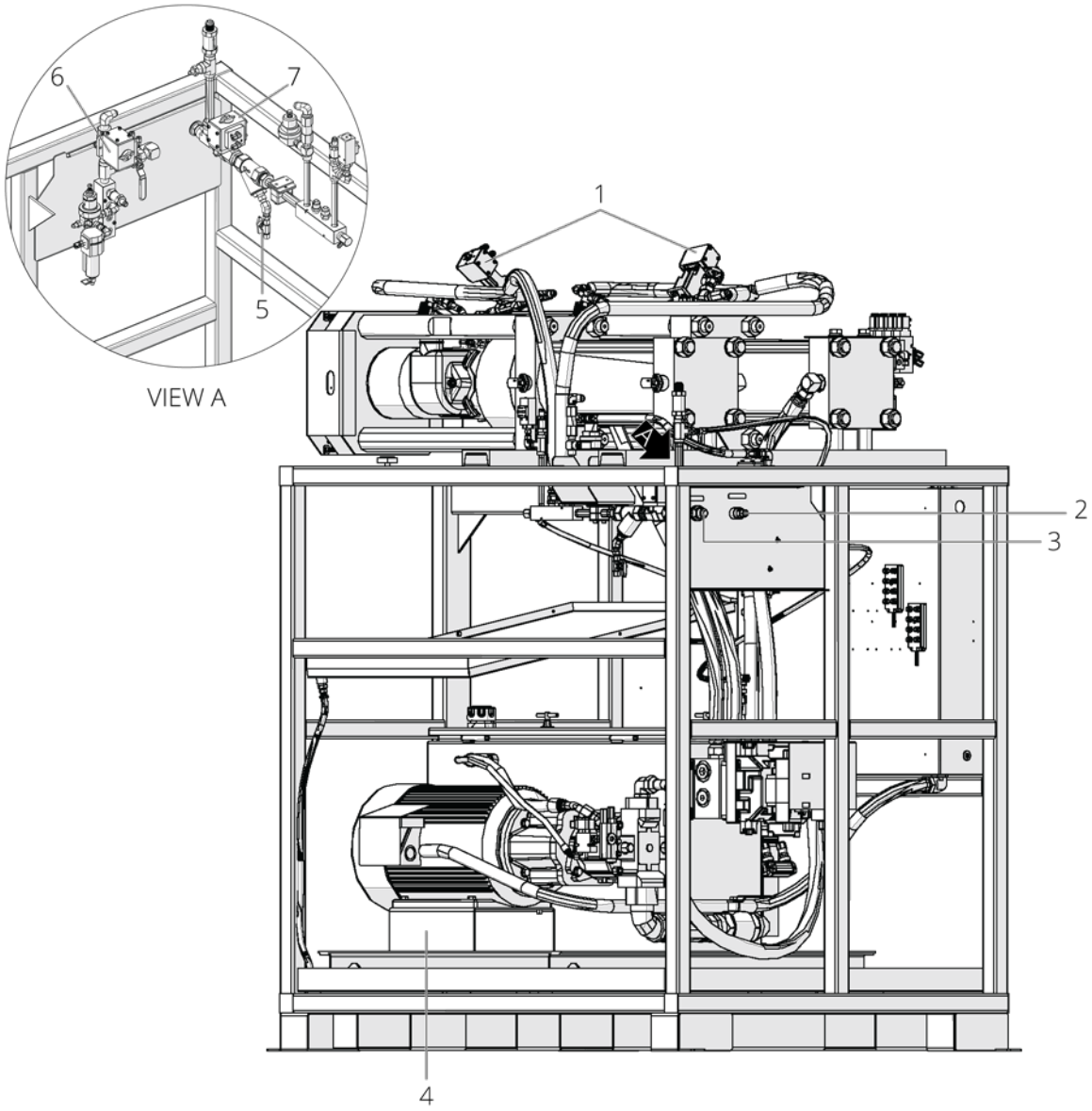
For illustrative purposes, only the P1500 is shown. See About these Instructions for more information.

## Front



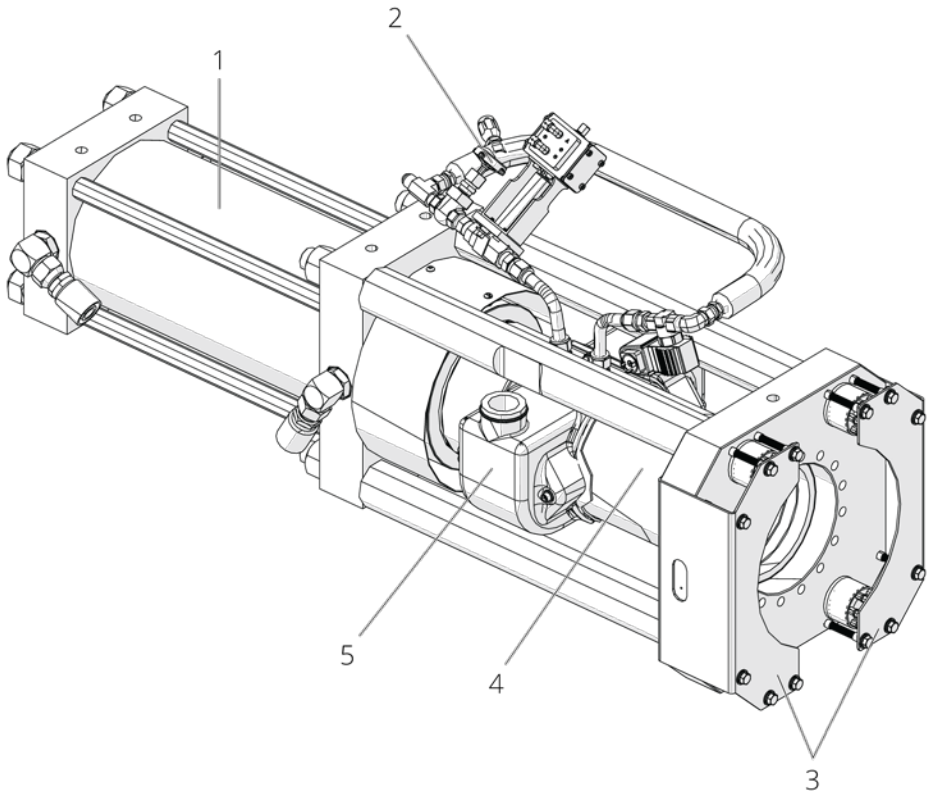

1. Control Panel
2. Main Power Switch
3. Chamber Pressure Switches
4. Top Injector Valve
5. Extrusion Cylinders
6. Gauges Panel
7. Hydraulic Oil Tank
8. Sight Gauge

## Back



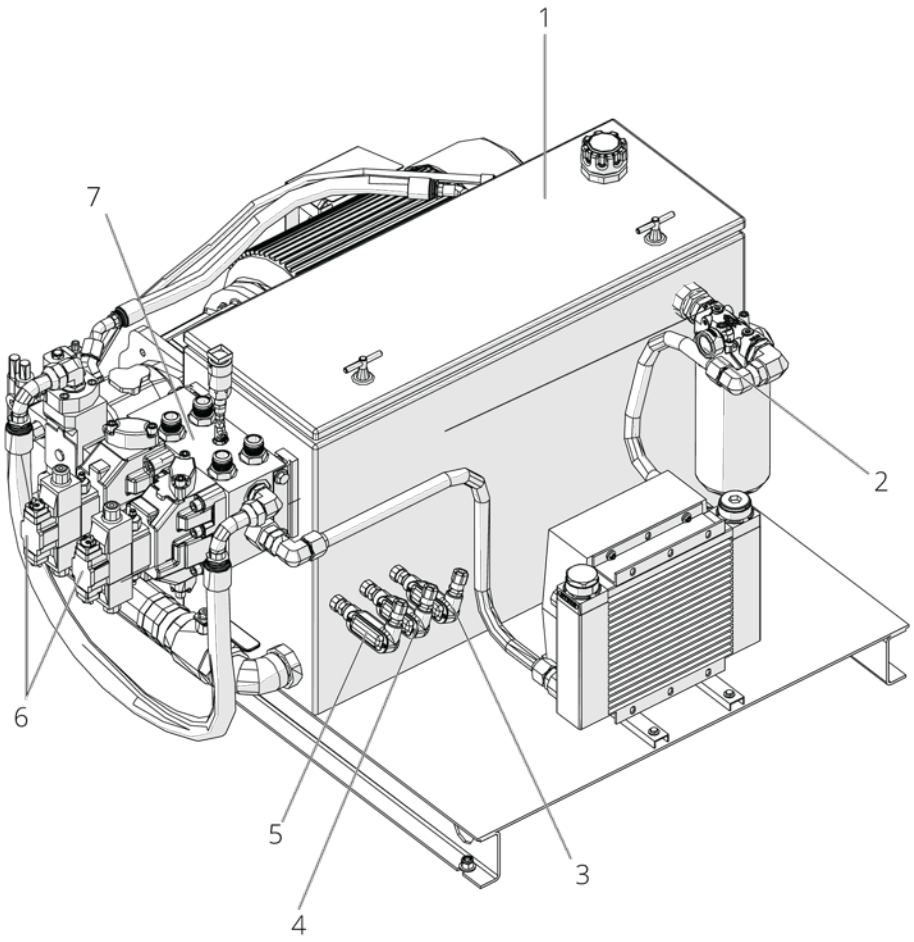

1. Top Injector Valve Assembly
2. Vapor $CO_2$ Supply
3. Liquid $CO_2$ Supply
4. Hydraulic Unit
5. Liquid Bleed Valve
6. Vapor Purge Valve
7. Liquid $CO_2$ Supply Valve

# Extrusion Cylinder




1. Hydraulic Cylinder
2. Liquid $CO_2$ Flow Control Valve
3. Tie-Rod Guards
4. Extrusion Cylinder
5. Exhaust Collectors

# Hydraulic Unit



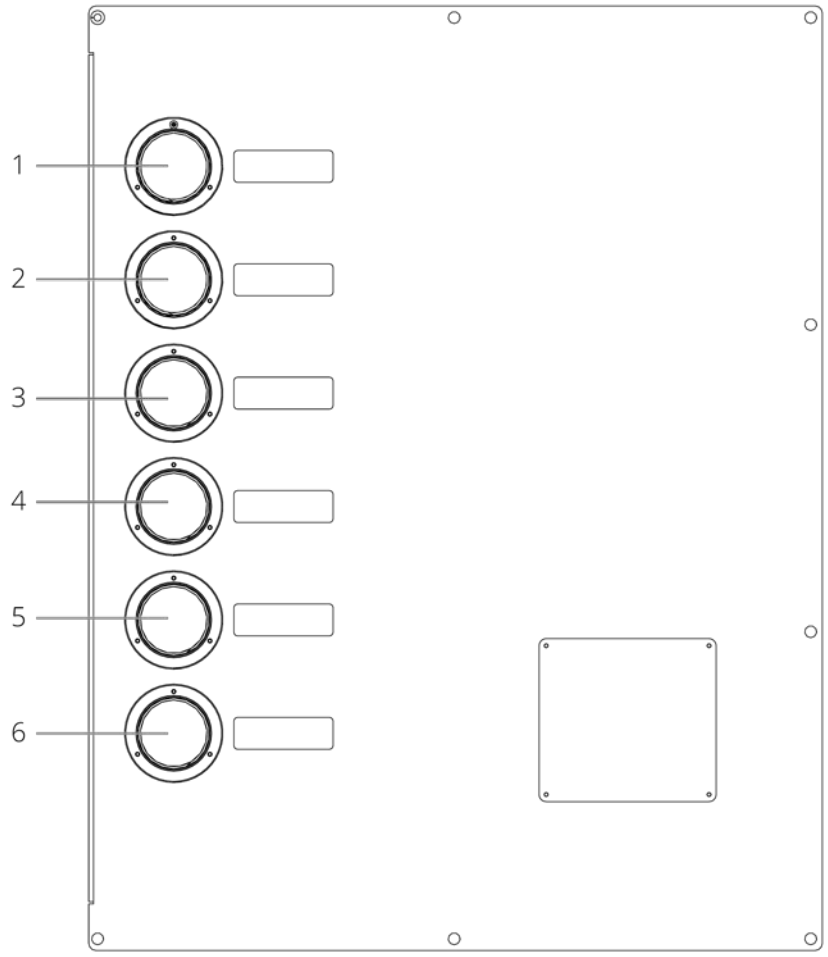

1. Hydraulic Oil Tank
2. Oil Filter
3. Oil Temperature Sensor
4. Oil Level Sensor
5. Cooling Fan Sensor
6. Hydraulic Directional Control Valve Solenoid
7. Directional Control Valve

## Control Panel


*(The P3000 will have two of these control panels)*

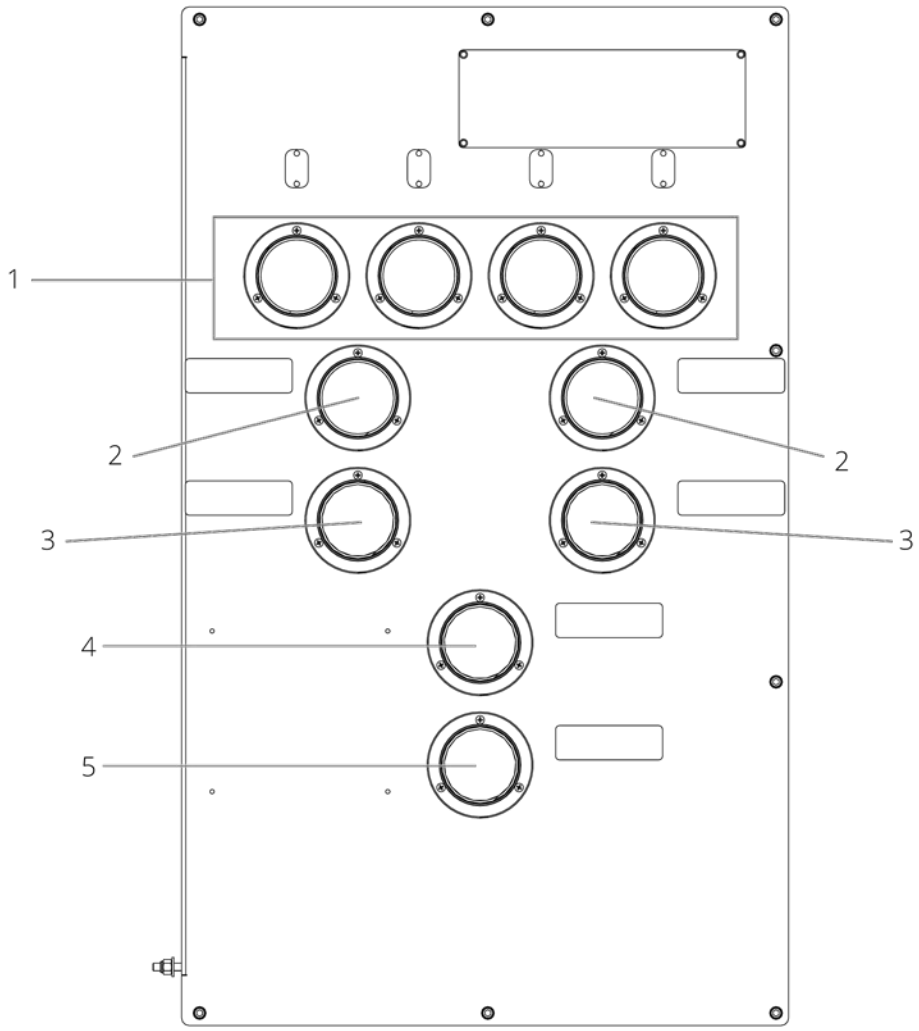
1. Main Power Switch
2. Chamber Power Switches
3. Emergency Stop
4. Reset

## Gauge Panel (P1500)




1. Chamber Pressure
2. Chamber Pressure
3. Liquid $CO_2$ Injection Pressure
4. Liquid $CO_2$ Pressure
5. Vapor $CO_2$ Pressure
6. Hydraulic Pressure

## Gauge Panel (P3000)




1. Chamber Pressure
2. Hydraulic Pressure
3. Liquid $CO_2$ Injection Pressure
4. Liquid $CO_2$ Pressure
5. Vapor $CO_2$ Pressure

# Gauges

## Chamber Pressure

The chamber pressure gauge should indicate a maximum of 30 psig (2.1 bar) at the end of the injection cycle. The pressure then drops rapidly to zero as the piston starts to advance.

## Liquid $CO_2$ Injection Pressure

The injection pressure gauge indicates Liquid $CO_2$ pressure in the line when the valves are open. It should not indicate any more than a 20 psig (1.4 bar) drop from normal during the injection cycle.

## Liquid $CO_2$ Pressure

The liquid $CO_2$ pressure gauge indicates the Liquid $CO_2$ pressure supplied to the machine. This gauge, and the injection pressure gauge, should read within 20 psig (1.4 bar) of each other during the injection cycle when Liquid $CO_2$ is at full flow rate.

## Vapor $CO_2$ Pressure

The vapor pressure gauge may range from 150 to 300 psig (10.3 to 20.7 bar) and it is not always the same as the Liquid $CO_2$ pressure. The $CO_2$ vapor supply must maintain at least 150 psig (10.3 bar) during the purge and chill down portions of the machine operating cycle.

## Hydraulic Pressure

The hydraulic pressure should increase from 1000 psig (68.9 bar) to 2500 psig (172.3 bar) or 3000 psig (206.8 bar) during the extrusion cycle. The cycle should require no more than 12 to 13 sec. to complete. Timing is done from the rear proximity switch to the front proximity switch.

# Valve Types

## Liquid Bleed Valve

This valve is used to relieve pressure from the liquid side and the liquid filter. It can also be used to bleed excess vapor from the liquid supply lines before start up.

## Vapor Purge Valve

This is a pneumatically actuated valve controlled by the Pelletizer.  It is actuated any time the machine is RESET from an E-stop condition or the main power is turned on. It's used to flush out debris from the extrusion barrel during the purge cycle.

## Liquid $CO_2$ Supply Valve

This is a pneumatically actuated valve controlled by the Pelletizer. It releases Liquid $CO_2$ into the system from the supply tank when the unit is turned on.

## Top Injector Valve Assembly

This assembly consists of two parts: a manually set flow control valve (set at the time of installation) and the pneumatically actuated ball valve. The top injector is activated for the purge and production cycles.

**WARNING:** *THE FLOW CONTROL VALVE IS ONLY ALLOWED TO BE CALIBRATED BY A COLD JET TRAINED OPERATOR.*

# Preventative Maintenance

## Weekly Checklist

- Check hydraulic oil level at the oil temp and level gauge.
- Check for leaking and worn hoses.
- Check for oil leaks.
- Check gauges on control panel.
- Check for proper operation of the chamber pressure gauge.
- Check lights on the control panel by pushing the reset button.
- Run machine and check for $CO_2$ leaks.
- While making ice make sure the piston advance time is 12 sec.
- Check the ice quality to make sure it does not easily crumble.
- Check if the cooling fan turns on when the oil temperature reaches 100°F (38°C).

# Incidental Malfunctions

## General Malfunctions

### Chamber Pressure

If the Chamber Pressure is below 30 psig (2.1 bar):

- Turn the flow control valve 1/8-turn counter clockwise, each injection cycle, until the chamber pressure reads a maximum of 30 psig (2.1 bar).
- The liquid supply line or the filter is plugged with $CO_2$ snow. This can result from an improper start up procedure.

If the Chamber Pressure does not drop to zero at the end of an injection cycle:

- The ball valve is not providing a positive valve shutoff at the end of the cycle.
- The actuator may not be closing the ball valve completely or the ball valve may be faulty.
- If the flow control valve is open too far, it will cause high and/or erratic chamber pressure indications.

### Liquid $CO_2$ Injection Pressure

If the pressure drop exceeds 20 psig (1.4 bar) during injection:

- The liquid filter is clogged.
- There is $CO_2$ snow somewhere in the liquid $CO_2$ lines.

### Liquid $CO_2$ Supply Pressure

If the liquid $CO_2$ gauge indicates pressure and the liquid injection pressure is very low, while the liquid valve is open and the machine is not running, a $CO_2$ snow plug may exist in the internal plumbing of the pelletizer.

- Snow plugs are typically the result of the liquid $CO_2$ valve being opened on an unpressurized machine when the supply pipe is cold and the liquid $CO_2$ is already at the machine inlet.
- The incoming liquid experiences an immediate pressure drop and "flashes to snow", forming a plug in the liquid $CO_2$ line.

### $CO_2$ Vapor Pressure

The vapor pressure gauge may range from 150 to 300 psig (10.3 to 20.7 bar). It is not always the same as the liquid $CO_2$ pressure. The $CO_2$ vapor supply must maintain at least 150 psig (10.3 bar) during the purge and chill cycles.

### Hydraulic Pressure

The hydraulic pressure should increase from 1000 psig to 2500-3000 psig (69 bar to 172.4-206.8 bar) - this depends on the die plate size - during the extrusion portion of the production cycle. The high pressure portion of the cycle requires only 8 to 9 sec to complete, or 12-13 sec for the piston to advance from the rear proximity switch to the front one after operating for at least 30 minutes.

### Oil Filter Pressure

The Oil Filter pressure will average 5 - 8 psig (0.4 - 0.6 bar) except on the return stroke of either cylinder; the gauge will indicate 10 psig (0.7 bar). When the pressure exceeds 20 psig (1.4 bar), the filter element needs to be replaced.

### $CO_2$ Vapor Pressure

The vapor pressure gauge may range from 150 - 300 psig. (10.3 - 20.7 bar) It is not always the same as the liquid $CO_2$ pressure. The $CO_2$ vapor supply must maintain at least 150 psig (10.3 bar) during the purge and chill cycles.

## No Piston Movement

When the chamber power switch is off, press the reset button and turn the chamber power switch on. If the machine does not operate, check the following:

- Check fuse 3 for a possible OFF position.
- If Rotary Knives are installed, check fuse 5. If blown, an indicator light will be on the blown fuse. Piston movement will stop in the cylinder with the blown fuse. The damaged side is jammed with $CO_2$ “snow” or water ice. Remove the jammed elbow and clear the ice, then re-install it and resume production.
- With the Pelletizer in “standby” mode the hydraulic pressure should be 400 psig (27.6 bar) or less.
    - Turn the hydraulic pump off.

    - Check the hydraulic cylinder proximity switch lights. All must be on to determine the piston position and switch power status. The rear switch light must be red (indicates the piston is at the home position).
    - Locate the hydraulic directional control valve solenoids. In the center of the solenoid is a manual override brass button. With the system switched OFF, and the hydraulic motor running, depress the manual override to retract the piston until the proximity switch light on the hydraulic cylinder illuminates red. Turn the system ON again. If the Pelletizer still does not run, repeat the procedure on the other solenoid. (All the proximity switches must have the indicator light illuminated or it will not operate).
- Disconnect the yellow cable from the hydraulic directional control valve solenoid and measure the solenoid resistance. It should be 33-35 ohms. If either solenoid is defective, neither cylinder will operate.
- If neither proximity switch is illuminated then its cable may have failed. Disconnect the proximity switch cable and check for 115 VAC. If power is present the proximity switch has failed and must be replaced.

## Pellet Quality

- Pellet quality is determined by extrusion speed and moisture content of the $CO_2$ supply.
- Dirty collector screens degrade pellet quality because the gas cannot rapidly escape. This results in reduced production and brittle pellets.
- If connected to a gas recovery system and the backpressure exceeds 20 psig (1.4 bar), then pellet quality diminishes.
- When brittle pellets are transported, they can break into “fines” or snow then form a solid $CO_2$ “snow cake” within a few hours.

To avoid these problems check the following:

- The extrusion cycle should be between 12 and 13 sec.
- The pump shift point, from high volume to low volume, should be between 1000 to 1500 psig (68.9 to 103.4 bar).
- Check the condition of the collector screens.

## Low Pellet Output

(Less than 1200 lb/hour (545.5 kg/hour))

Low pellet production can be caused by several factors:

- Poor insulation of the liquid supply line.
- The size of the supply line compared to the distance and number of Pelletizers being supplied.
- The capacity of the gas recovery system versus the back pressure.

- A reduction of more than 20 psig (1.4 bar) in the supply line, indicated at the $CO_2$ injection pressure gauge.
- Excessive gas in the liquid supply line (erratic chamber pressure gauge).

Within the machine itself, the following items can affect production:

- Dirty exhaust collector screens.
- Clogged liquid $CO_2$ filters.

### $CO_2$ Snow behind the Piston

There are two reasons for snow accumulating behind the piston:

- The wear rings are worn and snow is being pushed past them during each cycle.
- The injector ball valve is not shutting off completely, allowing snow to build up behind the piston as it advances. The chamber pressure gauge will spike high and then drop to zero. Too much buildup will cause the unit to shut off the extrusion process and a Long Retract Time fault will display.

## Specifications

| | **P1500** | **P3000** |
|---|---|---|
| **Dimensions** | 59 x 74 x 49 in.<br>(150 x 74 x 124 cm) | 73 x 76 x 71 in.<br>(192 x 211 x 180 cm) |
| **Weight** | 3765 lb (1708 kg) | 6825 lb (3100 kg) |
| **Pellet Capacity** | 1200 lb/hour (545.5 kg/hour) | 2400 lb/hour (1091 kg/hour) |
| **Power Requirements** | 200-480 Volt AC<br>3-Phase, 20 HP, 16 kw | 200-480 Volt AC<br>3-Phase, 20 HP, 16 kw |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# Warranty

Cold Jet® ("CJ") warrants its products ("Equipment") provided under this Agreement to be free from defects in materials and workmanship for a period of 12 months (90 days on used equipment), under normal use, maintenance and service as stipulated in the Operator's Manual, Commissioning, and Operator Training. At the discretion of CJ, failure to complete Installation, Commissioning, and Operator Training shall result in forfeit of warranty rights. CJ warrants that the equipment will be in good working order on the Date of Shipment and will conform to CJ's official published specifications.

The warranty period is 12 months (90 days for used equipment) for CJ manufactured Equipment. Original Equipment Manufacturers' warranties provided by CJ on equipment purchased under this Agreement not manufactured by CJ will be passed through to the Buyer. The warranty period commences on the Date of Shipment of the Equipment.

CJ's liability is limited to repairing or replacing, at its option, any covered part of its Equipment, which CJ has determined to be defective. Said repair or replacement will be made by CJ or its authorized representative free of charge to the Buyer during the warranty period. Any replaced part will become the property of CJ. If, after repeated efforts, CJ is unable to restore its Equipment to good working order, or to replace the defective parts all as warranted, CJ may replace the Equipment in its entirety at its discretion. Any claim must be made in writing to CJ within 30 days after the defect is discovered and any claim not made within that period shall be deemed waived or released and denied.

Warranty service provided under this Agreement does not assume uninterrupted operation of the Equipment. The suitability of the equipment for the purpose intended is not included in the warranty.

This warranty shall not apply and CJ shall be neither responsible nor liable for:

A. Consequential, collateral or special losses or damages;

B. Equipment conditions caused by abnormal conditions of use, accident, neglect or misuse of Equipment, improper storage or damages resulting during shipment as determined by CJ;

C. The replacement of normal wear items, including but not limited to air, blast and whip end hoses;

D. Deviation from the Equipment's prescribed maintenance programs, replacement parts, operating instructions, specifications or other terms of sale;

E. Labor charges, loss or damage resulting from improper operation, maintenance or repairs made by person(s) other than CJ or CJ-authorized service representatives;

F. Improper application of the product.

In no event shall CJ be liable for claims, whether arising from breach of contract or warranty claims of negligence or negligent manufacture, in excess of the purchase price.

THIS WARRANTY IS THE SOLE WARRANTY OF CJ AND ANY OTHER WARRANTIES, EXPRESS, IMPLIED IN LAW OR IMPLIED BY FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE, ARE HEREBY SPECIFICALLY EXCLUDED.

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# EC Declaration of Conformity

Original [EN]

**We as the manufacturer:**

Cold Jet, ApS
Industrivej 62
DK - 6740 Bramming

**Hereby declares that the following product:**

Product Designation:

Type/Serial no.:

**Is in compliance with the following European directives:**

| | |
|---|---|
| Directive 2006/42/EC | [Machinery Directive] |
| Directive 2014/30/EU | [EMC Directive] |
| Directive 2014/35/EU | [Low Voltage Directive] |

**Harmonized standards applied:**

| | | |
|---|---|---|
| EN ISO 12100:2010 | EN ISO 4414:2010 | EN ISO 13850:2015 |
| EN ISO 14120:2016-03 | EN ISO 13732-3:2008 | EN ISO 13857:2008 |
| EN ISO 14119:2014-03 | EN ISO 13849-1:2015 | EN 60204-1:2006/AC:2010 |

The Cold Jet dry ice production equipment has been assessed in accordance with the Pressure Equipment Directive 2014/68/EC. The assembly is classified as Article 4 paragraph 3, and is designed and manufactured in accordance with the SEP (Sound Engineering Practices). In accordance with the exclusion clauses of the PED directive (Article1, clause 3.6); equipment classified as no higher than category I under article 9 of the PED directive and covered by the Machinery directive 2006/42/EC are excluded. Therefore, the Cold Jet dry ice production equipment is excluded from the requirements of the PED 2014/68/EC directive and is CE-marked according to the Machinery directive 2006/42/EC.

**Person in the European Community authorized to compile the technical documentation:**

Cold Jet ApS, Product Development Manager Jesper Moslund, Industrivej 62, 6740 Bramming, Denmark

**Place and Date of Issue:** Bramming, Denmark, June 7, 2018

Arvid Nielsen
Head of Technology & Engineering, VP

Compliant with Directive 2006/42/EC Annex II A

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# Contact Information

Find the customer support and technical services contact information for your region in the table below.

| | |
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