Aero **40**

Operator Manual

Aero **40**

Model No. 40

This manual illustrates the safety, operation, and maintenance features of the Cold Jet Aero 40.

The build and revision level is located on the machine's data plate.

Special Notes

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Safety

General Safety Precautions

- **NEVER** use a wire tie to hold the applicator trigger in the ON position. (Doing so violates safety regulations, can damage applicator, and voids warranty coverage of applicator.)
- **ALWAYS** turn source air **OFF** and remove the applicator control line before removing the blast hose.
- **ALWAYS** follow the guidelines of the governing codes of your local/national body.
- **NEVER DISCONNECT** the air supply hose without first shutting off the source air and bleeding down the system.
- **ALWAYS WEAR** safety glasses, gloves, 32+NRR ear plugs & ear muffs.
- **NEVER OPERATE** the unit without first reading the Operator Manual.
- **NEVER** exceed recommended hose or blasting unit pressure levels.
- **DO NOT** ever kink the blast hose.
- **ALWAYS ENSURE** that hoses are securely tightened.
- **ALWAYS** electrostatic ground the material being cleaned.
- **CHECK** hoses and tubes for nicks and gouges.
- **NEVER OPERATE** a damaged blasting system.
- **NEVER** mask the ventilation holes.

Electrostatic Discharge

CAUTION:
Static discharge may ignite flammables.

Electrostatic discharge can be hazardous to the operator and the equipment. The electrostatic charge of CO_2 varies with the amount of ice and humidity present. Follow these instructions to assure safe operation while blasting.

A) PLUG INTO A GROUNDED POWER OUTLET This is critical for electrostatic dissipation. If the ground is not connected a charge may build up on the unit or the applicator.

B) KNOW YOUR ENVIRONMENT

Electrostatic buildup changes as humidity levels change and will vary by location. Electrostatic discharge is higher at low humidity levels and occurs most often during winter.

C) ATTACH STATIC BOND CABLE

To minimize static between the part being cleaned and the applicator, attach the static bond cable between the blast hose connection and the part.

D) ATTACH STATIC GROUND CABLE (OPTIONAL)

If a part being cleaned is on a non-grounded surface it will build up an electrostatic charge, which could injure the operator or damage the equipment. Wrap or clip one end of the static ground cable to the part to dissipate the charge and the other end to a grounded surface. Metal framing, that holds the part in place, can be used but the part and frame must be electrically connected. Use a conductivity tester for confirmation.

Carbon Dioxide Safety Precautions

Carbon Dioxide (CO_2) is a naturally occurring non-toxic gas, however caution should be exercised.

- This unit utilizes solid state Carbon Dioxide (Dry Ice) as a blast media.
- Dry Ice is very cold (-110° F / -79° C) and may freeze skin instantly.
- CO_2 is heavier than air, which means it will settle to the ground.
- Always ventilate when blasting.
- CO_2 is nontoxic, non-corrosive, non-conductive and is approved by the FDA and USDA. While exposure to CO_2 gas is not harmful in low concentrations, CAUTION should be exercised when using any material that can DISPLACE OXYGEN.
- Please refer to Carbon Dioxide (CO_2) MSDS sheet for all safety precautions. (available from dry ice supplier.)

BURN HAZARD

Do not allow skin to directly contact dry ice. Always use protective clothing (Thermal Gloves) and eye protection when handling CO_2 solids or when using the blasting unit.

ASPHYXIATION HAZARD

Increased levels of CO_2 when blasting in a confined space can displace breathable oxygen creating a risk of serious injury or death, therefore use of a carbon dioxide monitoring device is required when using in a confined space.

A) ERGONOMICS

CO_2 blasting involves direct discharge of an air powered blasting nozzle. The operator experiences a reactive thrust which increases with blast pressure and air flow. Operator fatigue may become a concern depending on issues such as blasting angle, work area, temperature, operator strength and level of physical conditioning. Do not exceed allowable limits of blast pressure, duty cycle and total blast time as determined by on site health and safety personnel knowledgeable about site-specific conditions and available worker population.

B) LOCK OUT/TAG OUT WARNING

Do not attempt any maintenance procedure unless all input electrical and air sources are locked out and tagged out according to applicable regulations.

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Your Machine

Front View

BLEED VALVE

Turn to the right to close the bleed valve

- A Fill Lid
- B Air Supply Connection
- C Bleed Valve

Rear View

- D Hose Hanger (Left/Right optional)
- E Blast Hose Connection
- F AC Power Cord on Cord Hanger (optional)
- G Static Ground Cable (optional)

Control Panel

POWER INDICATOR

Indicator will turn green when machine is ready (ON)

- I Power Switch
- J Power Indicator
- K Disable Blast
- L Feed Rate Control
- M Air Pressure Gauge
- N Hour Meter

Blast Applicator

APPLICATOR TRIGGER SWITCH

(I = ON / O = OFF) The applicator will blast when trigger switch is in the (I) position.

AIR / ICE CONTROL

(I = Air Only / II = Air and Ice) Use in Air Only mode to purge the system before blasting.

- O Nozzle Retention Collar
- P LED Light (optional)
- S Blast Hose Connector
- R Trigger
- Q Applicator Trigger Switch
- T Air / Ice Control
- U Electric Cable Connection

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Operation

Start Up

1. Make sure the Power Switch is off and the bleed valve is closed.
2. Attach the blast hose and control cable to the machine.
3. Attach the applicator to the blast hose and control cable.
4. Attach a nozzle to the applicator.
5. Attach the air supply hose to the machine.
(Check the data plate for the operating pressure range.)
6. Connect one end of the static bonding cable to the item being blasted and other end to the connector on the blast hose or to an electrically conductive supporting structure (or the optional static ground cable from the machine to the target surface).
7. Turn air supply on and allow the air hose to pressurize.
8. Plug the power cord into an electrical outlet. If an extension cord is necessary, it must comply with the power requirements of this unit and all governing electrical codes (Check the data plate for the operating voltage range).
9. Turn on the machine.
10. Turn the bleed valve ON (I) to purge water out of the filter, then turn it OFF (O) to close it. The unit is now ready to blast. (If water content of compressed air is relatively high, adjust bleed valve so a very small amount of air/water may continuously drain.)

Shut Down

1. Run machine until all remaining ice in the hopper has been used.*
2. Stop blasting and press the Disable Blast button down.
3. Press the OFF switch to shut off power to the machine.
4. Turn OFF the compressed air supply.
5. Open the bleed valve to relieve all remaining pressure.
6. If open, close the fill lid.
7. When the air hose is fully depressurized disconnect the machine.

*When shutting the machine down for more than 15 min. Always make sure the hopper is empty and blast with air only for 1 min. Failure to do so may result in feeder and/or nozzle freeze-up.

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Maintenance

Troubleshooting

PROBLEM	CHECK THIS	SOLUTION
Machine will NOT start (GREEN light is not on)	Is the unit plugged in?	If NO...Plug Unit in.
	Is the power switch in the I position?	If NO...Push power switch to I.
	It still will not start?	Call Cold Jet for support.
Machine will NOT blast	Is the machine active light (the GREEN light) on?	If NO... Reset the disable blast button. If the above does not work then call Cold Jet for support.
	Is the applicator safety switch pushed back? (Safety ON) (O).	If YES...Flip the switch forward (Safety OFF) (I).
	Is the air supply connected and the air supply on?	If YES...The nozzle may be clogged, blast with air only to unclog the nozzle.
	Is the air supply gauge showing pressure?	
	Is the optional pressure regulator open and displaying pressure?	
	Is the applicator cable connected to the machine and the applicator?	
Machine blasts AIR but NOT pellets	Is the feed rate adjusted?	Turn up the feed rate
	Is the Hopper clogged?	If YES...call Cold Jet for support.
	Is applicator Air/Ice control in the (II) position?	If YES...call Cold Jet for support.
	Is a foreign object lodged in the feeder assembly?	If YES...call Cold Jet for support.

BIANNUAL	• Check pneumatic air lines • Check static ground cable & reel • Check the accessories • Check all valves • Safety test the unit • Check thumper • Inspect hoses for damage • Check the pressure gauge
MONTHLY	• Check the air filter by unscrewing the base a 1/4 turn clockwise.
WEEKLY	• Look through the hopper to check the rotor for nicks or gouges. • Make sure the nozzle airflow exit end is not deformed or burred.
DAILY	• Drain water out of the air filter before using the machine. • While in operation check the pressure gauge for damage. • Check the air and blast hoses for damage (ie: cuts or scuff marks).

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Appendix

Specifications

Weight (empty)	260 lbs (118 kg)
Dry Ice Capacity	40 lbs (18.2 kg)
Feed Rate	0 - 4 lbs/min (0 - 1.8 kg/min)
Power Requirements	100 140 volts AC 1 O (50/60 Hz) 4.2 amps or 200 - 240 volts AC 1 O (50/60 Hz) 2.1 amps
Feeder Drive	1/2 HP, AC Motor 1,750 RPM
Blast Pressure Range	20 - 140 PSI (1.4 - 9.7 bar)
Supply Pressure Range	65 to 140 PSI (4.5 to 9.7 bar)
Dimensions	36" x 17" x 40" (91 cm x 43 cm x 101 cm)

Required compressed airflow volume depends on the nozzle being used. Most Cold Jet nozzles need 50 to 180 cfm (1.4 to 5.1 m^3/min) at 80 psi (5.5 bar) blast pressure.

Symbol Glossary

	General Danger		Variable feed
	Electric Shock or Electrocution		Enable Blasting
	Extreme Cold		Disable Blasting
	Hand Crush from Side		Wear Ear Protection
	Hand Cut from Impeller Blade		Wear Eye Protection
	Flying Debris		Read Operator Manual
	Skin Puncture from Pressurized Air Jet		Wear Safety Gloves
	Loud Noise		General Mandatory Action
	Explosive Release of Pressure		Maintain Safe Pressure
	Air Bleed		Do Not Operate with Guard removed
	CO_2 Only		No Foreign Objects

Symbol Glossary (cont.)

	Refer to Manual
	Lock Out/ Tag Out Before Servicing
	Disconnect Power Before Servicing
	Hour Meter
	Crush Hazard
	Protective Earth/Ground
	Earth/Ground
I	Applicator Trigger Enabled (on bottom of applicator)
I	Air Only
O	Applicator Trigger Disabled
II	Air and Ice

Using Plant Air (Central Compressed Air System)

Manufacturing plants, with central compressed air systems, should have an After Cooler and a 2-stage coalescing filter assembly downstream of the receiver tank. Hot metal pipes are an indication this is needed.

To verify that the plant air system is adequate for the Aero **40** the air compressor needs to produce an air volume 10% greater than the blast machine's maximum air volume...in addition to the air volume consumed by normal plant operation.

To determine adequate air volume, watch the pressure gauge while blasting.

- If the gauge drops slowly the compressor is insufficient.
- If the gauge drops quickly there is a restriction or the pipe is too small.
- If the gauge stays steady then the compressor and piping are adequate.

To maintain adequate pressure to the Aero **40**:

- From the air compressor to 50 ft (15 m) use a flexible 1 in (2.5 cm) air hose (preferably the hose supplied with the machine).
- From the air compressor to beyond 50 ft (15 m) make sure the pipe is 1 in (2.5 cm) in diameter before attaching the air hose.

If an air drop isn't used much, water and rust will collect in the line. Before plugging into the air supply, purge the line, to prevent contamination of the Aero **40**.

Using Portable Air (minimum of 185 cfm - 5.6 m^3/min)

Portable diesel air compressors are frequently not optimized for dry ice blasting units and are therefore not configured to cool or remove air moisture.

The Cold Jet After Cooler is required to reduce the discharge

air temperature 180°F (82°C) to within 15°F (-9°C) of ambient air temperature. Visit www.coldjet.com to learn more about purchasing a Cold Jet After Cooler.

Without the After Cooler, the following will occur:

1. Incoming air moisture may rapidly cool and freeze at the Aero **40** feeder.
2. Water ice may accumulate in the feeder, distorting the air flow and seal.
3. Water ice buildup may continue inside the blast hose, to the nozzle.
4. Water ice may break off inside the hose and lodge in the nozzle, causing a jam.
5. Water ice, may exit the nozzle, and damage the target surface.

If blasting continuously, an air dryer will further reduce the air moisture (dew point). Desiccant dryers produce a dew point of -40°F (-40°C), resulting in a dew point low enough for continuous blasting.

To verify the compressor is of adequate size for the Aero 40, the air compressor needs to produce an air volume 10% greater than the blast system's maximum required air volume.

To determine adequate air volume, blast while watching the pressure gauge.

- If the gauge drops slowly the compressor is insufficient.
- If the gauge drops quickly there is a restriction or the pipe is too small.
- If the gauge stays steady then the compressor is adequate.

To maintain adequate pressure, the hose size from the compressor to the blast system needs to be a minimum of 1 in (2.5 cm) in diameter.

Warranty Information

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, under normal use, maintenance and service as stipulated in the Operator's Manual. 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 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, except for any freight or travel expenses, 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 as warranted, CJ may, at its discretion, replace the Equipment in its entirety. Any claim must be made to CJ, in writing, within 30 days of discovering the defect and any claim not made within that period shall be deemed waived or released, and thus 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 in excess of the purchase price, whether there is a breach of contract or warranty claim of negligence or negligent manufacture.

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.

Customer Service

Cold Jet employs an experienced customer support team to assist you with troubleshooting, maintenance, parts and accessories for your **Aero 40.**

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