Aero 40FP
OPERATOR MANUAL

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EC Declaration of Conformity

We as the manufacturer:

Cold Jet, LLC
455 Wards Corner Road
Loveland, OH 45140 US
+1 513 831 3211 / +1 513 831 1209

declares that the following product:

Product Designation: Aero 40FP         Model no.: 2A0290    Voltage: 120/230 VOLTS AC

complies with all relevant requirements of the directives listed below:


References to the harmonized standards used:


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

Cold Jet Europe bvba, Mr. Wim Eeckelaers, Zone 1 Researchpark 330 B-1731 Zellik, Belgium

Place and Date of Issue: Loveland, OH

Michael E. Rivir
V.P.-Engineering, Cold Jet, LLC.
Dry ice cleaning is similar to sand blasting, plastic bead blasting or soda blasting where a medium is accelerated in a pressurized air stream to impact a surface to be cleaned or prepared.

However, instead of using hard abrasive media to grind on a surface (and damage it), dry ice cleaning uses soft dry ice accelerated at supersonic speeds to impact the surface and lift the undesirable item off the underlying substrate.

**DRY ICE CLEANING:**
- is a non-abrasive, nonflammable and non-conductive cleaning method
- is environmentally-responsible and contains no secondary contaminants such as solvents or grit media
- is clean and approved for use in the food industry
- allows most items to be cleaned in place without time-consuming disassembly
- can be used without damaging active electrical or mechanical parts or creating fire hazards
- can be used to remove production residues, release agents, contaminants, paints, oils and biofilms
- can be as gentle as dusting smoke damage from books or as aggressive as removing weld slag from tooling
- can be used for many general cleaning applications

Cold Jet dry ice cleaning uses compressed air to accelerate frozen carbon dioxide (CO₂) “dry ice” pellets to a high velocity. Dry ice pellets can be made on-site or supplied. Pellets are made from food grade carbon dioxide that has been specifically approved by the FDA, the EPA and the USDA.

Carbon dioxide is a non-poisonous, liquefied gas, which is both inexpensive and easily stored at work sites.
The Aero 40FP is safe and easy to operate; however, certain precautions must be followed during its use. To understand all the necessary precautions, you must read the entire Aero 40FP manual before operating the unit.

⚠️ The Aero 40FP should only be operated by authorized and trained personnel.

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GENERAL SAFETY REQUIREMENTS

- Always follow the guidelines of the governing codes of your local/national body as a minimum standard for ensuring safety.
- Always wear thermal gloves, eye and ear protection (safety glasses and ear plugs).
- Never expose bare skin to CO₂ ice.
- Never point the nozzle at self or anyone else and always exercise extreme caution when people are in the blast area.
- Never use a wire tie to hold the applicator trigger in the on position. This will cause damage that will void the warranty.
- Never use the blasting unit or hoses for anything other than the intended use.
- Never operate in a confined space without an approved ventilation system.
- Never operate the unit with guards removed.
- Never mask the machine's ventilation holes.
- Never operate a damaged blasting unit.
- Never exceed recommended hose or blasting unit pressure levels.
- Do not kink the blast hose before, during or after operation.
- Never disconnect the air supply hose without first shutting off the source air and removing the line pressure.
- Only Cold Jet trained service technicians are certified to work on electrical components.

SAFETY GUIDELINES

- Do not operate equipment with electrical parts exposed, jumpered or rendered inoperable.
- Only use dry ice pellets as the cleaning media.
- Always engage applicator safety switch before laying it down or passing it to someone.
- Always turn the main power off and remove the applicator control cable before removing the blast hose.
- Always ensure that hoses are securely attached.
- Keep hoses and power cord out of forklift traffic areas.
- Check hoses and cables for nicks and gouge.

ELECTROSTATIC DISCHARGE

- Static discharge may ignite flammables.
- Electrostatic discharge can be hazardous to the operator and the equipment.
- The static charge of CO₂ varies with the amount of dry ice and humidity present.

Ground the Material Being Cleaned

Always ground the material being cleaned to assure safe operation while blasting.

1. 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.

2. Attach static bond cable.
   - To minimize electrostatic buildup between the part being cleaned and the applicator, attach the static bond cable between the target surface and the blast hose connection or to an electrically conductive supporting structure. Use a conductivity tester for confirmation.

3. Plug into a grounded power outlet.
   - This step is critical for electrostatic dissipation. If the ground is not connected, a charge may build up on the unit or the applicator.
CO₂ SAFETY

• The Aero 40FP uses solid state carbon dioxide (CO₂). CO₂ is nontoxic, noncorrosive and non-conductive. It is approved by the FDA and USDA.

• Solid CO₂ is extremely cold (-109 °F/-78 °C). Always protect skin from direct contact with CO₂ pellets. Direct contact with skin or eyes quickly causes tissue damage.

• Vapor CO₂ can displace the oxygen from any breathing environment rapidly.

• Only operate the 40FP with a proper ventilation system that maintains the concentration levels of the governing codes of your local/national body.

• Always review and observe all safety guidelines when using materials that displace oxygen.

• All operators and supervisors should familiarize themselves with the literature on the physiological characteristics of CO₂ before using the 40FP. The information can be obtained from the governing codes of your local/national body.

• Always use a CO₂ monitoring device when using the 40FP in a confined space.
The 40FP guarantees the best pellet integrity, maximum cleaning aggression, and the most reliable blast stream on the market. In addition to the standard Aero features, the 40FP uses multiple agitation devices to eliminate clogging—allowing you to blast through the 40lb hopper without stopping.

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SPECIFICATIONS

<table>
<thead>
<tr>
<th><strong>Weight (empty)</strong></th>
<th>257lb (117kg)</th>
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<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td>36 x 20 x 40in (91 x 51 x 102cm)</td>
</tr>
<tr>
<td><strong>Dry Ice Capacity</strong></td>
<td>40 lb (18.2 kg)</td>
</tr>
<tr>
<td><strong>Variable Feed Rate</strong></td>
<td>0 - 4.5 lbs/min (0 - 2 kg/min)</td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>100 - 140 volts AC 1 Phase (50/60 Hz) 2.5 amps</td>
</tr>
<tr>
<td></td>
<td>200 - 240 volts AC 1 Phase (50/60 Hz) 1.2 amps</td>
</tr>
<tr>
<td><strong>Feeder Drive</strong></td>
<td>1/4 HP, AC Motor 1, 750 RPM</td>
</tr>
<tr>
<td><strong>Blast Pressure Range</strong></td>
<td>20 - 250 psi (1.4 - 17.2 bar)</td>
</tr>
<tr>
<td><strong>Supply Pressure Range</strong></td>
<td>65 - 250 psi (4.4 - 17.2 bar)</td>
</tr>
<tr>
<td><strong>Air Consumption Range</strong></td>
<td>50-165 CFM (1.4 - 4.7 m³/min) at 80 psi (5.5 bar)</td>
</tr>
</tbody>
</table>
AERO 40FP (BACK)

1. Blast pressure control
2. Nozzle hanger
3. AC power cord
4. Blast hose connection

CONTROL PANEL

1. Power switch
2. Blast / power indicator
3. Disable blast, blue light = disabled
4. Feed rate control
5. Incoming / blast air pressure
6. Hour meter
**PERFORMANCE APPLICATOR**

1. Machine power indicator
2. Air only - off - air & ice
3. Light switch
4. Blast lights
5. Nozzle retention collar

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6. Electric cable connection
7. Blast hose connector
8. Front / rear concurrent hand trigger
9. Threaded mount & hook hanger

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**HEAVY DUTY APPLICATOR**

1. LED light switch (optional)
2. Applicator safety switch
3. Air / ice control
4. Electric cable connection

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5. Nozzle retention collar
6. Blast hose connector
7. Trigger
8. LED light (optional)
START UP

Read all safety instructions before operation and follow them closely (p. 2-4).
Always wear proper personal protective equipment including eye protection to guard against flying objects, ear protection to prevent hearing loss and gloves to protect hands from exposure to cryogenic temperatures.
Before loading dry ice, purge with compressed air to be sure the system is clear of excess moisture and debris.

To start the Aero 40FP:

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 whip check to the air supply hose, then attach the air supply hose to the machine. (Check the data plate for the operating pressure range.)
6. Connect the static bond cable to the connector on the hose and then 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 the Control Panel Power Switch on and ensure the Disable Blast button is disengaged (blue light is off).
UNIT OPERATION

10. Before loading dry ice, purge the system. Open bleed valve for 30 seconds to remove accumulated moisture from the internal filtration system. Enable the applicator, place applicator in Air + Dry Ice mode, set the feed rate to maximum and blast with compressed air for 30 seconds to clear any moisture build-up in the air and feeder system.

11. Disable the applicator, open the lid, fill with dry ice and close the lid. Enable the blast applicator.

12. The unit is now ready to use. Please read the section on Blast Cleaning Technique before proceeding.

BLAST CLEANING TECHNIQUE

- Read all safety instructions before operation and follow them closely.

1. Always purge the system with air upon start-up, after breaks and before loading dry ice. Following the proper start-up procedure will remove any water ice and moisture build up in the system.

2. Position the blast hose for maximum maneuverability before blasting.

3. Do not kink the blast hose or use the blast hose to pull / maneuver the machine.

4. Hold nozzles perpendicular to the surface for fastest cleaning (recommended for most applications).

5. Optimum standoff distance is 2 - 6 in (5 - 15 cm) for most nozzles.

6. Never allow foreign objects in the dry ice hopper.

7. Do not abuse the nozzles, blast hose, applicator or control cable.

8. To find the optimum feed rate, set the feeder speed to 0 and increase the rate to achieve desired results. Use the minimum amount that is effective.

9. Reduce the feed rate to avoid clogging the nozzle at pressures below 50 psi (3.4 bar).

10. Use the Blast Pressure control by operating the push / pull locking mechanism and turning the dial clockwise to increase and counter-clockwise to decrease.

RE-LOADING DRY ICE

- Always wear gloves to protect hands from exposure to cryogenic temperatures.

1. Disable the applicator.

2. Place dry ice into the hopper.

3. Close the fill lid.

4. Enable the applicator mode to the air + dry ice position.

5. Squeeze the blast applicator trigger to blast.

SHUT DOWN

- Always wear gloves to protect hands from exposure to cryogenic temperatures.
- Always disconnect electric cables and hoses before transporting the unit.

To shut down the Aero 40FP:

1. Stop blasting and push in the Disable Blast Button on the Control Panel.

2. Remove unused ice from the hopper.

3. Pull out the Disable Blast Button on the Control Panel.

4. Flip the Air/Ice Control Switch on the Applicator to Air Only and blast for 1 minute.

5. Stop blasting and disable the Applicator Safety.

6. Turn OFF the Power Switch.

7. Turn OFF the compressed air supply.

8. Open the bleed valve to relieve all remaining pressure.

9. If open, close the fill lid.

10. When the air hose is fully depressurized, disconnect the machine.

- When shutting the machine down for more than 15 minutes, always make sure the hopper is empty and blast with air only for 1 minute. Failure to do so may result in feeder and/or nozzle freeze-up.
The Aero 40FP uses ISO safety symbols. The symbols come in three categories:

1. A yellow warning triangle/black graphical symbol indicates what the hazard is.
2. A blue mandatory action circle/white graphical symbol indicates an action to take to avoid the hazard.
3. A red prohibited action circle-with-slash/black graphical symbol indicates an action to avoid.

### OPERATION SYMBOL

<table>
<thead>
<tr>
<th>OPERATION SYMBOL</th>
<th>OPERATION SYMBOL</th>
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<tbody>
<tr>
<td>On</td>
<td>Hour Meter</td>
</tr>
<tr>
<td>Off</td>
<td>Air Bleed</td>
</tr>
<tr>
<td>Variable Dry Ice Feed Rate</td>
<td>Trigger Disable</td>
</tr>
<tr>
<td>Regulated Air Pressure</td>
<td></td>
</tr>
</tbody>
</table>
### SYMBOL GLOSSARY

- **WARNING SYMBOL**
  - **Electrical Shock**
  - **General Danger**
  - **Hand Crush**
  - **Debris**
  - **Static Shock**
  - **Hand Entanglement-Chain Drive**
  - **Low Temperature**
  - **Blade**
  - **Explosive Release of Pressure**
  - **Skin Puncture / Pressurized Jet**

- **MANDATORY ACTION**
  - Consult Operators Manual
  - Disconnect Power
  - General Mandatory
  - Lock Out in De-Energized State
  - Maintain Safe Pressure
  - Wear Ear Protection
  - Wear Eye Protection
  - Wear Protective Gloves

- **PROHIBITED ACTION**
  - Do Not Operate with Guard Removed
  - No Foreign Objects

### MAINTENANCE

#### DAILY
- Use the bleed valve to drain water out of the air filter before using the machine.
- While in operation, check the pressure gauge for damage.
- Inspect the air and blast hoses for damage (IE: cuts or scuff marks).

#### 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.

#### MONTHLY
- Inspect the hopper thumper for worn or damaged parts and also check for loose fittings.

#### BIANNUAL
- Inspect pneumatic air lines
- Inspect the power cord for damage.
- Inspect all lights.
- Inspect the static bonding cable for damage.
- Inspect all the accessories for damage.
- Inspect all valves.
- Inspect for air leaks.
TROUBLESHOOTING

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CHECK THIS</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine will NOT start</td>
<td>Is the unit plugged in?</td>
<td>Plug unit in.</td>
</tr>
<tr>
<td>Machine blasts air but not pellets</td>
<td>Is the Air/ice Control Switch set to Air ONLY?</td>
<td>Set the Air/ice Control Switch to Air and Dry Ice.</td>
</tr>
<tr>
<td></td>
<td>Is the hopper clogged?</td>
<td>Call Cold Jet for support.</td>
</tr>
<tr>
<td></td>
<td>Is applicator Air/ice control in position?</td>
<td>Call Cold Jet for support.</td>
</tr>
<tr>
<td></td>
<td>Is a foreign object lodged in the feeder assembly?</td>
<td>Call Cold Jet for support.</td>
</tr>
<tr>
<td>Machine will NOTblast</td>
<td>Is the air supply connected and the air supply on?</td>
<td>The nozzle may be clogged. Blast with air only to unclog the nozzle.</td>
</tr>
<tr>
<td></td>
<td>Is the incoming air pressure gauge showing pressure?</td>
<td>The nozzle may be clogged. Blast with air only to unclog the nozzle.</td>
</tr>
<tr>
<td></td>
<td>Is the applicator control cable connected to the machine and the applicator?</td>
<td>The nozzle may be clogged. Blast with air only to unclog the nozzle.</td>
</tr>
<tr>
<td></td>
<td>Is the pressure regulator open and displaying pressure?</td>
<td>The nozzle may be clogged. Blast with air only to unclog the nozzle.</td>
</tr>
</tbody>
</table>

If the problem is not resolved, please contact our Customer Support Hotline at: +1-800-777-9101 (+1-513.831.3672)

CONTACTING COLD JET

For technical support, accessories and spare parts, contact the appropriate Cold Jet office.

North America

USA-Cold Jet, LLC  
(World Headquarters)  
24-hour Customer Support and Technical Service  
Inside the US: +1 800.777.9101  
Outside the US: +1 513.576.8981  
FAX: +1 513.831.1209

Canada-Cold Jet Canada  
Phone: +1 800.337.9423 Ext. 501  
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After Hours Technical Support: +1 800.777.9101

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Belgium-Cold Jet Europe bvba  
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Japan/Korea  
Phone: +81 3 6869 2665  
After Hours Technical Support: +1 513.576.8981
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 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 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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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 40FP, the air compressor needs to produce an air volume 10% greater than the Aero 40FP 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 40FP:

• For distances less than 100 ft (30 m) between the air compressor and the Aero 40FP, Cold Jet recommends a flexible 1 in (25 mm) air hose, preferably the hose supplied with the Aero 40FP.
• For distances greater than 100 ft (30 m) between the air compressor and the Aero 40FP, Cold Jet recommends a larger hose/pipe to maintain adequate blast pressure.

PORTABLE AIR

Portable air compressors are mainly used for shop tools, not dry ice blasting units; therefore, they may not be equipped to cool or remove air moisture.

⚠️ An after cooler and moisture trap/filter MUST be used. An after cooler with a 15 °F (-9 °C) approach is required to reduce the discharge air temperature 180 °F (82 °C) to within 15 °F (-9°C) of ambient air temperature.

If an air cooler is not used:

• Incoming air moisture will rapidly cool and freeze at the Aero 40FP feeder.
• Ice will accumulate in the feeder, distorting the air flow and seal.
• Ice will break off inside the hose and lodge in the nozzle, causing a jam.
• Ice may exit the nozzle and damage the target surface.

If blasting continuously, use an air dryer to 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 40FP, the air compressor needs to produce an air volume 10% greater than the Aero 40FP’s maximum permissible air volume. 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, the hose size from the compressor to the Aero 40FP needs to be a minimum 1 in (25 mm) in diameter for lengths up to 100 ft (30 m). Longer runs may require larger hose sizes.

⚠️ If an air drop is seldom used or is being used with the Aero 40FP for the first time, water and rust may have collected in the line. Before connecting to the air supply, purge the line to prevent contamination of the Aero 40FP.
When safety instructions are followed, most of the risks associated with the Aero 40FP are mitigated. However, the operator should be aware that a few residual risks remain.

1. Carbon Dioxide

CO₂ is an asphyxiant gas, which displaces the oxygen in the air. When the carbon dioxide levels are not monitored, there is a risk of exposure to high concentrations of CO₂. Exposure to high concentrations of carbon dioxide can result in shortness of breath, headaches, dizziness, increased heart rate, impaired hearing, nausea, loss of consciousness or, in extreme cases, death. Always use a CO₂ monitoring device when using the Aero 40FP in a confined space.

Solid CO₂ is extremely cold (-109 °F/-78 °C). This presents a risk to the operator, as direct contact with skin or eyes quickly causes tissue damage. Always protect skin from direct contact with CO₂ pellets, nuggets or slices.

2. Noise Emissions

When the proper safety precautions are not followed, prolonged exposure to the noise emitted by the Aero 40FP can cause damage. Long-term exposure to loud noises can result in loss of hearing or tinnitus. Always wear ear protection.

3. Pressurized Air

Operating the Aero 40FP requires the use of pressurized air, resulting in the risk of hoses bursting or fittings failing. Always be alert when operating the machinery. If a failure does occur, be sure to turn off the air at the source.

Never hold the air stream directly against skin. This could result in an air embolism, which is often fatal.

4. Static Electricity

⚠ Static electricity can interfere with the proper functioning of a pacemaker.

Even when grounding or bonding procedures are followed, static electricity can present a danger to the operator. To reduce this risk, always follow grounding or bonding instructions.
<table>
<thead>
<tr>
<th>ITEM/USER</th>
<th>TAGS</th>
<th>QTY</th>
<th>SUB</th>
<th>DESC/INV</th>
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<tr>
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<td>CABLE</td>
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<td>5-15 SPASH-PROOF</td>
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<td>INSULATION DISPLACEMENT</td>
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**BILL OF MATERIAL**

**6G0310**

**ASSEMBLY**

**DIAGRAM**

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