Hypertherm®

EcoSift™

Waterjet abrasive recycling system

Operator Manual

809500 | Revision 0 | English

One of Hypertherm's long-standing core values is a focus on minimizing our impact on the environment. Doing so is critical to our, and our customers', success. We are always striving to become better environmental stewards; it is a process we care deeply about.

EcoSift

Operator Manual

809500
Revision 0

English
Original instructions

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Waterjet product warranty coverage

Product	Warranty coverage up to:
HyPrecision pump	27 months from the ship date, or 24 months from the date of proven installation, or 4,000 hours of operation, whichever occurs first
PowerDredge™ abrasive removal system	15 months from the ship date, or 12 months from the date of proven installation, whichever occurs first
EcoSift™ abrasive recycling system	15 months from the ship date, or 12 months from the date of proven installation, whichever occurs first
Reverse osmosis system	15 months from the ship date, or 12 months from the date of proven installation, whichever occurs first
Bulk abrasive pot	15 months from the ship date, or 12 months from the date of proven installation, whichever occurs first
Abrasive regulator	15 months from the ship date, or 12 months from the date of proven installation, whichever occurs first
On/off valve air actuator	15 months from the ship date, or 12 months from the date of proven installation, whichever occurs first
Diamond orifice	600 hours of operation with the use of a thimble filter and compliance with Hypertherm's water quality requirements

Hypertherm's warranty does not cover any defect, failure, damages, deficiency, or error that is:

- not reported to Hypertherm in the warranty period; or
- due to modification, abuse, misuse, noncompliance with the installation or operation instructions, unauthorized repair, improper maintenance, neglect, accident, or the use of unapproved parts; or
- due to normal wear; or
- if the system has been operated contrary to Hypertherm's instructions or stated limits of rated and normal use.

For full details of the manufacturer's warranty, refer to the conditions of sale provided when the product was purchased.

Consumable parts are not covered by this warranty. Consumable parts include screens, hoses, and abrasive collection bags.

Third-party pumps, hoppers, dryer boxes, dryer box accessories, and plumbing accessories are covered by the respective manufacturers' warranties and are not covered by this warranty.

Disclaimer

Product information contained in this manual is believed to be reliable as of the date of publication. The content in this manual may contain technical inaccuracies or typographical errors. This manual can be changed or updated without notice.

Hypertherm maintains a global regulatory management system to make sure that products comply with regulatory and environmental requirements.

National and local safety regulations

National and local safety regulations shall take precedence over instructions supplied with the product. The product shall be imported, installed, operated, and discarded in compliance with national and local regulations applicable to the installation site.

Certification test marks

Certified products are identified by 1 or more certification test marks from accredited testing laboratories. The certification test marks are on or near the data plate.

Each certification test mark means that the product and its safety-critical parts conform to the national safety standards as reviewed and determined by that testing laboratory. Hypertherm puts a certification test mark on its products only after that product is manufactured with safety-critical parts that have been approved by the accredited testing laboratory.

After the product has left the Hypertherm factory, the certification test marks are invalid if any of these events occurs:

- The product is modified in a manner that creates a hazard or nonconformance with the applicable standards.
- Safety-critical parts are replaced with unapproved spare parts.
- Assembly is unauthorized.
- An accessory that uses or generates a hazardous voltage is added.
- A safety circuit or other feature that is designed into the product as part of the certification has been tampered with.

The Conformité Européene (CE) mark affixed to a product signifies the manufacturer's declaration of conformity to applicable European directives and standards.

Only those versions of Hypertherm products with a CE mark on or near the data plate have been tested for compliance with the applicable European directives, such as the Low Voltage Directive, the Electromagnetic Compatibility Directive, the Pressure Equipment Directive, and the Machinery Directive.

To see the Declaration of Conformity in English and other languages:

1. Go to www.hypertherm.com/docs.
2. Select **Waterjet Family** in the Product/Product type dropdown list.
3. Select **Regulatory** in the Category dropdown list.

The navigation instructions can change without notice.

Declaration of conformity

Hypertherm

305 2nd St NW Suite 115
New Brighton, MN USA
55112

EU DECLARATION OF CONFORMITY

Equipment: Abrasive Recycler

Model: EcoSift

Date of first fixing of CE marking (DofC issued): 8-December-2016

This declaration has been issued under the sole responsibility of the manufacturer.

The undersigned official of the company hereby declares, on behalf of Hypertherm Waterjet Business Team, that the object of the declaration described above with CE Marking on the data plate is in conformity with the relevant Union harmonisation legislation :

Council Directive 2014/30/EU on Electromagnetic Compatibility (EMC)

Using the relevant section of the following EU standards and other normative documents:
EN 61000-6-2: 2005
EN 61000-6-4: 2007 + A1: 2011
EN 55011:2009 + A1: 2010 (Group 1 Class A)
EN 61000-4-2: 2009
EN 61000-4-3: 2006 + A1: 2008 + A2: 2010
EN 61000-4-4: 2004 + AC: 2006 + A1: 2010
EN 61000-4-5: 2006
EN 61000-4-6: 2009
EN 61000-4-8: 2010
EN 61000-4-11: 2004

Council Directive 2006/42/EC on Machinery

TUV SUD used the relevant section of the following EU standards and other normative documents to review the construction of EcoSift:
EN 60204-1: 2006/A1:2009
EN ISO 12100-1: 2010
EN ISO 12100-2: 2010

Sara Mancell, Business Team Leader – Waterjet

Note 1: The Technical Construction File including the test reports and other information required by these EU Directives is maintained at the above address.

Note 2: This DofC is not valid on units without CE Marking on the data plate.

Note 3: For European customer inquiries, contact : Arne van der Boon Hypertherm Europe B.V. Vaartveld 9 4704 SE Roosendaal, The Netherlands Telephone +31(0)165 596907

Differences in national standards

Nations can apply different performance, safety, or other standards. Differences in national standards include, but are not limited to:

- Voltage
- Plug and cord ratings
- Language requirements
- Electromagnetic compatibility requirements

Differences in standards can make it impossible or impractical for all certification test marks to be put on the same version of a product. For example, the Canadian Standards Association (CSA) versions of Hypertherm's products do not comply with European electromagnetic compatibility requirements and therefore do not have a CE mark on the data plate.

Countries that require a CE mark or have compulsory electromagnetic compatibility regulations must use CE versions of Hypertherm products with the CE mark on the data plate. These may include, but are not limited to:

- Countries in the European Union
- Australia
- New Zealand
- Russia

It is important that the product and its certification test mark be suitable for the end-use installation site. When Hypertherm products are shipped to one country for export to a different country, the product must be configured and certified correctly for the end-use installation site.

Higher-level systems

When an original equipment manufacturer (OEM) or a system integrator adds equipment such as cutting tables, motor drives, motion controllers, or robots to a Hypertherm waterjet cutting system, the combined system is considered a higher-level system. A higher-level system with hazardous moving parts can constitute industrial machinery or robotic equipment, in which case the OEM, system integrator, or end-use customer can be subject to more regulations and standards than those applicable to the waterjet cutting system manufactured by Hypertherm.

It is the responsibility of the end-use customer and the OEM or system integrator to do a risk assessment for the higher-level system and to provide protection against hazardous moving parts. Unless the higher-level system is certified when the OEM or system integrator incorporates Hypertherm products into it, the installation can be subject to approval by local authorities. Get advice from legal counsel and local regulatory experts if you are uncertain about compliance.

External interconnecting cables between parts of the higher-level system must be suitable for exposure to contaminants and movement as required by the final end-use installation site. When the external interconnecting cables are subject to exposure to oil, dust, water, or other contaminants, hard usage ratings can be required. When external interconnecting cables are subject to continuous movement, constant flexing ratings can be required. It is the responsibility of the OEM, system integrator, or end-use customer to make sure that external interconnecting cables are suitable for the application and comply with all national, state, and local regulations.

Hypertherm products: waste and recycling

Hypertherm waterjet cutting systems, like all products with electronics, can contain materials or parts, such as printed circuit boards, that cannot be discarded with ordinary waste. It is your responsibility to discard Hypertherm product or part in an environmentally suitable manner and in compliance with national and local codes.

In the United States, read all national, state, and local laws. In the European Union (EU), read the EU directives, national, and local laws. In other countries, refer to national and local laws. Consult with legal or other compliance experts when applicable. For more information, go to www.hypertherm.com/customer-support/product-service/recycling.

Chemical handling and usage

Material safety data sheets (MSDS) and safety data sheets (SDS) are part of a hazard communication plan that supplies detailed information about hazardous chemicals. The information includes the chemical's toxicity and reactivity, first aid for exposure, approved storage and disposal, recommended protective equipment, and spill-handling procedures.

The Occupational Safety and Health Administration (OSHA) has presented new hazardous chemical labeling requirements as a part of its recent revision of the Hazard Communication Standard (29 CFR 1910.1200), to align with the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The GHS is an international system for standardizing chemical classification and labeling.

Chemical regulations in the USA, Europe, and other locations require that MSDS and SDS be made available for chemicals that are supplied with the product and chemicals used in or on the product. The list of chemicals is supplied by Hypertherm.

To see MSDS and SDS:

1. Go to www.hypertherm.com/docs.
2. Select **Waterjet Family** in the Product/Product type dropdown list.
3. Select **Material Safety Data Sheets** in the Category dropdown list.

The navigation instructions can change without notice.

Particle emission and wastewater quality

Hypertherm does not manufacture or supply the materials that are cut and has no knowledge whether the particles released from materials that are cut can pose a physical hazard or health risk. Consult with your supplier or other technical advisor for guidance concerning the properties of the material you cut using a Hypertherm product.

If you are not fully aware of and up to date on all applicable government regulations and legal standards for the installation site, consult a local expert before purchasing, installing, and operating the equipment.

The end user is responsible for the safe operation of this system.

The safety precautions in this manual are general and cannot anticipate all situations. Hypertherm acknowledges that unforeseen situations such as equipment failure, site variability, insufficient maintenance, failure of control equipment, and other events can cause equipment damage, injuries, or death. It is the user's responsibility to identify hazards and to take the steps necessary to minimize risks.

This manual

	Some sections of this manual include safety information specific to the section. Read and understand all of the safety guidelines in this manual.
 WARNING	Before operating any Hypertherm equipment, read the safety instructions in the product's manual. Failure to obey safety instructions can cause personal injury or damage to equipment.
	Keep this manual near the system. The manual is intended to familiarize the user with the EcoSift and its parts, safe operation, and maintenance.

Copies of the manuals may accompany the product in electronic and printed formats. To see an electronic copy of a manual in all languages available for each manual:

1. Go to www.hypertherm.com/docs.
2. Select **Waterjet Family** in the Product/Product type dropdown list.
3. Select **Manuals/Service Information** in the Category dropdown list.

The navigation instructions can change without notice.

Residual risks

Many safety enhancements have been included in this system. Despite all precautions, some residual risks can exist.

User training

	Foreseeable misuse Do not use this system in a manner not specified by Hypertherm or for a purpose for which it is not intended. Such use may impair the protections provided by the system.

Users must read and understand these instructions before installing, operating, or doing maintenance on this system.

Do not let an untrained person operate this system. Only approved personnel can operate, maintain, and repair the machinery. Training must include this information:

- How to start and stop the system during routine operation and in an emergency situation
- The conditions and actions that can lead to injuries to personnel and damage to the system
- How to operate all controls
- How to identify and respond to a problem with the system
- How to do maintenance procedures
- A copy of the operator manual

This list is not all-inclusive.

Personnel who operate or are exposed to this machinery must know this information:

- Applicable safety standards
- The use, limitations, and care of personal protective equipment
- The location of the written hazard communication program and safety data sheets
- How to recognize hazardous energy sources
- The correct methods for isolating and controlling energy.

 **DANGER**	▪ Personnel who maintain and repair this machinery can be seriously injured or killed if hazardous energy is not controlled. Injuries can include burns, cuts, fractures, or electrocution. ▪ Disconnect and lock out the electric power supply before opening the electrical enclosure or doing maintenance or repair procedures. ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. Refer to **Safety** on page 66.
 **DANGER**	▪ Personnel who work on deenergized machinery can be seriously injured or killed if the machinery is reenergized without permission. ▪ All personnel must respect lock-out devices. Only the person(s) who applied the devices shall remove them. ▪ All personnel in an area where energy-control procedures are used must receive training regarding the energy-control procedure and the prohibition against removing a lock-out device.

Lifting hazards

 **WARNING**	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.

Damaged machinery and parts

 **WARNING**	Do not operate the EcoSift when it is damaged or broken.

Use the emergency stop knob to stop the system immediately. Refer to **Emergency stop** on page 51.

Use a lock-out device according to the work site's policy to isolate and control energy.

Make sure that all warning decals are maintained so that they are visible and can be read. Do not cover, block, or remove any warnings, cautions, or instructional materials.

Work area

Safe operation of this system includes keeping the area around the machinery clean, dry, and organized.

Keep work areas clear of tripping hazards and loose items.

Personal protective equipment

Personal protective equipment is important for keeping operators, those working in the area near the machinery, and maintenance personnel safe. Obey your company's safety program in all aspects of safety, to include the use of personal protective equipment.

	Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery.
	Wear approved eye protection when operating or working near this machinery. Protect eyes from particles, cut material, water, and abrasive.
	Wear approved ear protection and control exposure time when operating or working near this machinery.
	Wear approved hand protection when operating or working near this machinery. Wear work gloves to protect hands from lacerations, cuts, and abrasions.
	Wear approved nonslip safety footwear when operating or working near this machinery.
	■ Wear approved respiratory protection when operating or working near this machinery. ■ Wear a respirator when milling, handling abrasives, and doing other activities determined by the local regulatory bodies and the facility health and safety committee as potential sources of airborne dust and particles that can cause discomfort, illness, or other irritations. ■ Airborne hazards vary based upon the material being machined.

Other clothing

Abrasive dust and particles can cause rashes, abrasions, and other irritations. Wear long sleeves and long pants to protect skin.

Information and hazard symbols

Some symbols in these tables can be applicable to other products.

These symbols are used in this manual or on the system.

 DANGER	This symbol identifies an imminently hazardous situation, which, if not prevented, will cause serious injuries or death.
	DANGER Dangerous voltage/risk of shock To decrease the risk of serious injuries or death, wear approved protection and obey safety recommendations when working with electricity.
 WARNING	This symbol identifies a potentially hazardous situation, which, if not prevented, can cause serious injuries or death.
	WARNING A waterjet is a cutting tool. A high-pressure injection injury is a surgical emergency. Get immediate medical treatment for all high-pressure waterjet injuries. Delayed treatment can cause serious injuries or death.
	WARNING Sharp edges and shear points can cause serious injury. Keep hands away.
	WARNING Rotation To repair or maintain the motor, disconnect the power source from the motor and any accessory devices and let the motor to come to a complete stop.
	WARNING Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.
	WARNING To prevent serious electrical shock, the motor must be grounded by trained personnel in accordance with national and local electrical codes.
	WARNING Make sure the ground connections are completed. Before working on the system, disconnect the electric power supply.
	WARNING Risk of falling Do not step on the top surface of this machine.

Symbols and marks

	HARMFUL Skin sensitization or irritation Eye irritation
	HEALTH HAZARD Respiratory sensitization
 **CAUTION**	This symbol identifies a potentially hazardous situation, which, if not prevented, can cause minor or moderate injuries or property damage.
	CAUTION Hot surfaces present a burn hazard. Do not touch hot surfaces.
	CAUTION Lifting hazard – can cause a back injury Use a forklift to move abrasive collection bags.
	CAUTION The floor can be slippery when wet. The bag can spill water onto the floor.
	Refer to the manual. Read and understand all of the safety guidelines in this manual.
	Wear approved eye protection when operating or working near this machinery. Protect eyes from particles, cut material, water, and abrasive.
	Wear approved ear protection and control exposure time when operating or working near this machinery.
	Wear approved hand protection when operating or working near this machinery. Wear work gloves to protect hands from lacerations, cuts, and abrasions.
	Wear approved nonslip safety footwear when operating or working near this machinery.
	Wear approved respiratory protection when operating or working near this machinery.
	This symbol identifies a prohibited action.
	This symbol identifies a mandatory action.
	On/off switch
1 I	On

	Off
	Protective conductor terminal This terminal is intended for connection to an external conductor for protection against electrical shock in the case of a fault.
	AIR-FLOW The arrow indicates the direction of airflow.
	SHIPPING BRACKETS REMOVE BEFORE OPERATION. REPLACE BEFORE SHIPPING.
	This symbol identifies tools or materials that are required or recommended for a procedure.
	This symbol identifies a note or helpful information.

Symbols and marks

These symbols are on the EcoSift data plate or on the waste hopper data plate.

MODEL	Model name or number
P/N	Part number
S/N	Serial number
V	Volts
Φ	Number of phases in an electrical system
Hz	Frequency (hertz)
FLA	Full-load current (amperes)
SCCR	Short-circuit current rating (amperes)
IP	Ingress protection rating
Ⓜ Imax	Primary motor maximum current draw (amperes)
Ⓜ kW	Primary motor power output (kilowatts)
l/min	Maximum outlet flow rate (liters/minute)
MPa	Maximum outlet water pressure (megapascals)
Kg	Weight of the system (kilograms)
DWG	System technical drawing (schematic) number
CE	The Conformité Européene (CE) mark affixed to a product signifies the manufacturer's declaration of conformity to applicable European directives and standards. Only those versions of Hypertherm products with a CE mark on or near the data plate have been tested for compliance with the applicable European directives, such as the Low Voltage Directive, the Electromagnetic Compatibility Directive, the Pressure Equipment Directive, and the Machinery Directive.
	Refer to the manual. Read and understand all of the safety guidelines in this manual.

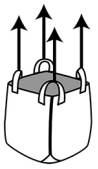
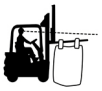
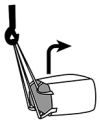
These symbols are on the waste hopper.

WARNING	This symbol identifies a potentially hazardous situation, which, if not prevented, can cause serious injuries or death.
	Refer to the manual. Read and understand all of the safety guidelines in this manual.
	Crush hazard Stay clear of the hopper while transporting or dumping.
	
	

These symbols are on the abrasive collection bag.

WARNING	This symbol identifies a potentially hazardous situation, which, if not prevented, can cause serious injuries or death.
	The forks on the forklift must be at the same width as the bag.
	Do not lift the bag from the side with only 2 loops.
	Do not lift more than 1 bag at a time.
	Do not put the bag on the forks so that you cannot see and operate the forklift.
	Do not lift the bag by only 1 loop.
	Do not lift the bag by bringing all of the loops to the center.

Symbols and marks

	Do not stand below the bag. Do not open the bottom of the bag while standing below the bag. Do not cut the bottom of the bag while standing below the bag.
	Avoid sharp edges
 **HANDLING RECOMMENDATIONS**	HANDLING RECOMMENDATIONS
	Use extensions with a crane to lift the bag.
	The forks on the forklift must be at the same width as the bag.
	Lift vertically with all 4 loops.
	Put the bag on the forks so that you can see when you operate the forklift.
	Use all 4 loops and extensions to lift the bag from the side.
	Avoid ultraviolet (UV) light exposure or inclement weather.

Terminology

Some terms can be applicable to other products.

AWG

American Wire Gauge (AWG), a standardized wire gauge system used in North America

bar

A unit of pressure: 1 bar equals 100 kPa or 14.5 psi or 100,000 N/m^2

Btu

British thermal unit (Btu), a standard unit of energy equal to approximately 1,055 joules or 1,055 watt-seconds; used in the United States and sometimes in the United Kingdom, it measures the energy necessary to increase the temperature of 1 pound of water by 1°F at sea level. Energy-producing or energy-transferring capability are often expressed in Btus per hour; 1 Btu/hr equals 0.293071 watts; 1 watt equals 3.4 Btu/hr

CNC

A computer numerical control (CNC) controls the motion of a machine tool

dB(A)

A-weighted decibels [dB(A)] is an expression of the relative loudness of sounds in air as perceived by the human ear

energy-isolating device

A mechanical device that physically prevents the transmission or release of energy, to include: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit could be disconnected from all ungrounded supply conductors, a line valve, and any similar device used to block or isolate energy. Selector switches, emergency stop knobs, and other control circuit-type devices are not energy-isolating devices.

energy source

Any source of electric, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy

EP

Extreme pressure (EP) is a property used to describe grease; this grease resists mechanical breakdown, oxidation, and heat

fitting

A coupling, a valve, or a gauge that stops, regulates, or directs the flow of water in a pipe

FLA

Full-load current (amperes)

ft·lbf

foot-pound force, a unit of work or energy transferred when applying a force of 1 pound to an object through a distance of one foot; 1 ft·lbf equals 1.36 N·m or 1.36 joules; refer to **joule**

gate valve

Also called a sluice valve, a knife valve, or a slide valve; designed to control the flow of liquid through a pipe

HEPA filter

High-efficiency particulate filter, a mechanical air filter that traps dust particles that are 0.3 microns in diameter (1 micron = 1 millionth of a meter); the US National Institute for Occupational Safety and Health grades HEPA filters based on resistance to degradation from oil (N, R, P), and level of efficiency (95%, 99%, and 99.97%)

hopper

A container that is wider at the top than at the bottom and is used to hold liquids

hose

A flexible hollow cylinder. Dimensions are based on the inside diameter (ID).

ID

Inner diameter, the diameter of the inside of a hose, a tube, or a pipe

impact wrench

An air-, electric-, or hydraulic-powered tool that delivers high torque to turn a socket; also called an impact gun, air wrench, air gun, or rattle gun

ISO

The International Organization for Standardization (ISO), an independent membership organization that develops voluntary standards

JIC

Joint Industry Council (JIC) fittings, a type of flare fitting used in fluid delivery applications. The fittings are machined with a 37° flared seating surface and are composed of a fitting, a flare nut, and a sleeve.

joule

a unit of work or energy transferred when applying a force of 1 newton to an object through a distance of 1 meter; 1 joule equals 1 N·m or 0.746 ft·lbf; refer to **ft·lbf**

kPa

A kilopascal (kPa) is a unit of pressure: 1 kPa equals 0.01 bar or 0.15 psi or 1,000 N/m^2

lbf·ft

pound force inch, the torque created by 1 pound of force applied at a 1-foot distance from a perpendicular pivot point; 1 lbf·ft equals 12 lbf·in or 1.36 N·m

lbf·in

pound force inch, the torque created by 1 pound of force applied at a 1-inch distance from a perpendicular pivot point; 1 lbf·in equals 0.112984829 N·m

lock out

Lock out refers to specific practices and procedures that protect personnel from the unexpected starting of machinery and equipment, or the release of hazardous energy during maintenance or repair activities. Lock-out devices hold energy-isolation devices in a safe or off position and cannot be removed without a key or other unlocking mechanism, or through extraordinary means, such as bolt cutters.

NFPA 70®, National Electrical Code® (NEC®)

US codes and standards for electrical wiring and installation

NLGI grade

A National Lubrication Grease Institute (NLGI) grade (consistency number) classifies the relative hardness of grease; the higher the number, the harder the grease

NLPM

Normal liters per minute, a European measurement of the flow rate of a gas at a certain volume and temperature; refer to **SLPM**

N/m^2

Newtons per square meter (N/m^2) is a unit of pressure: 1 N/m^2 equals 0.00001 bar or 0.001 kPa or 0.00015 psi

Nm^3

Normal cubic meter, the flow rate of a gas at a certain volume and temperature

noncondensing humidity

Water can cause damage to instruments and electronic components. Equipment operates correctly while it is in a specific relative humidity range at a specific temperature range with no water condensation. Refer to **Environmental ratings** on page 134.

normal shutdown

The system turns off after completing an established sequence of actions; refer to **uncontrolled shutdown**

NPT

National pipe thread taper (NPT), a common United States standard for tapered threads that are used on fittings and pipes

OD

Outer diameter, the diameter of the outside of a tube

OEM

An original equipment manufacturer (OEM) of machines that are sold directly to end users

overvoltage category (installation category)

A standard that describes how much transient voltage the equipment can tolerate; refer to **Electric power** on page 133.

pipe

A rigid, hollow cylinder that carries fluids or gases; pipe is sized by wall thickness (gauge) and a standardized outside diameter identified as nominal diameter (DN) or nominal bore (NB) in millimeters or nominal pipe size (NPS) in inches.

pollution degree

A safety classification that describes the environment in which a piece of electrical equipment operates. Underwriters Laboratories (UL) and the International Electrotechnical Commission (IEC) define pollution degree 3 as an environment with conductive pollution or dry nonconductive pollution that becomes conductive due to condensation. A pollution degree 4 environment has pollution that generates persistent conductivity due to dust or wet conditions. Refer to **Electric power** on page 133.

psi

Pound-force per square inch (psi) is a unit of pressure: 1 psi equals 0.07 bar or 6.89 kPa or 6,895 N/m^2

relative humidity (ambient humidity)

Dependent on temperature, this is the percentage of moisture in the air relative to the moisture that is present when the air is saturated, which is when water condensation occurs. Refer to **Environmental ratings** on page 134.

RTV

Room-temperature vulcanization; silicone rubber is mixed with a curing agent to form a compound that is temperature- and thermal-resistant

SAE

SAE (Society of Automotive Engineers) International, a professional association that coordinates the development of technical standards based on best practices in the aerospace, commercial vehicle, and automotive engineering.

SAE Code 61 fittings are designed for 206.8-bar or 20,684-kPa or 3,000-psi applications.

SAE Code 62 fittings are designed for 413.7-bar or 41,369-kPa or 6,000-psi applications.

SCFM

Standard cubic feet per minute, the flow rate of a gas at a certain volume and temperature

SLPM

Standard liters per minute, a US measurement of the flow rate of a gas at a certain volume and temperature; refer to **NLPM**

system integrator

An integrator of waterjet cutting systems that are sold directly to end users

tube

A rigid, hollow cylinder that carries fluids; tube (or tubing) is sized by its outer diameter (OD) and wall thickness (gauge)

uncontrolled shutdown

The system turns off without completing an established sequence of actions; this can occur when power is lost or when the emergency stop knob is pushed. Refer to **normal shutdown**.

union

A 3-part fitting that is similar to a coupling, designed to join 2 pipes or tubes for easy assembly and disassembly

VAC

Volts of alternating current

valve

A device used to control the rate of flow in a pipe or a tube

VDC

Volts of direct current

Product description

The EcoSift abrasive recycling system is a standalone wet-abrasive recycler for waterjet cutting systems.

WARNING	Do not use the EcoSift to recycle abrasive that has been used to cut plastics, wood, hazardous material, or heat-sensitive material with a melting point or flammability of less than 176.7°C (350°F).
	▪ The EcoSift can only recycle garnet and aluminum oxide abrasive. ▪ The system is designed for use with 80-mesh abrasive. ▪ Do not use the EcoSift to recycle abrasive that has been used to cut at 6,205 bar (90,000 psi).

The abrasive removal and recycling process produces 2 types of materials.

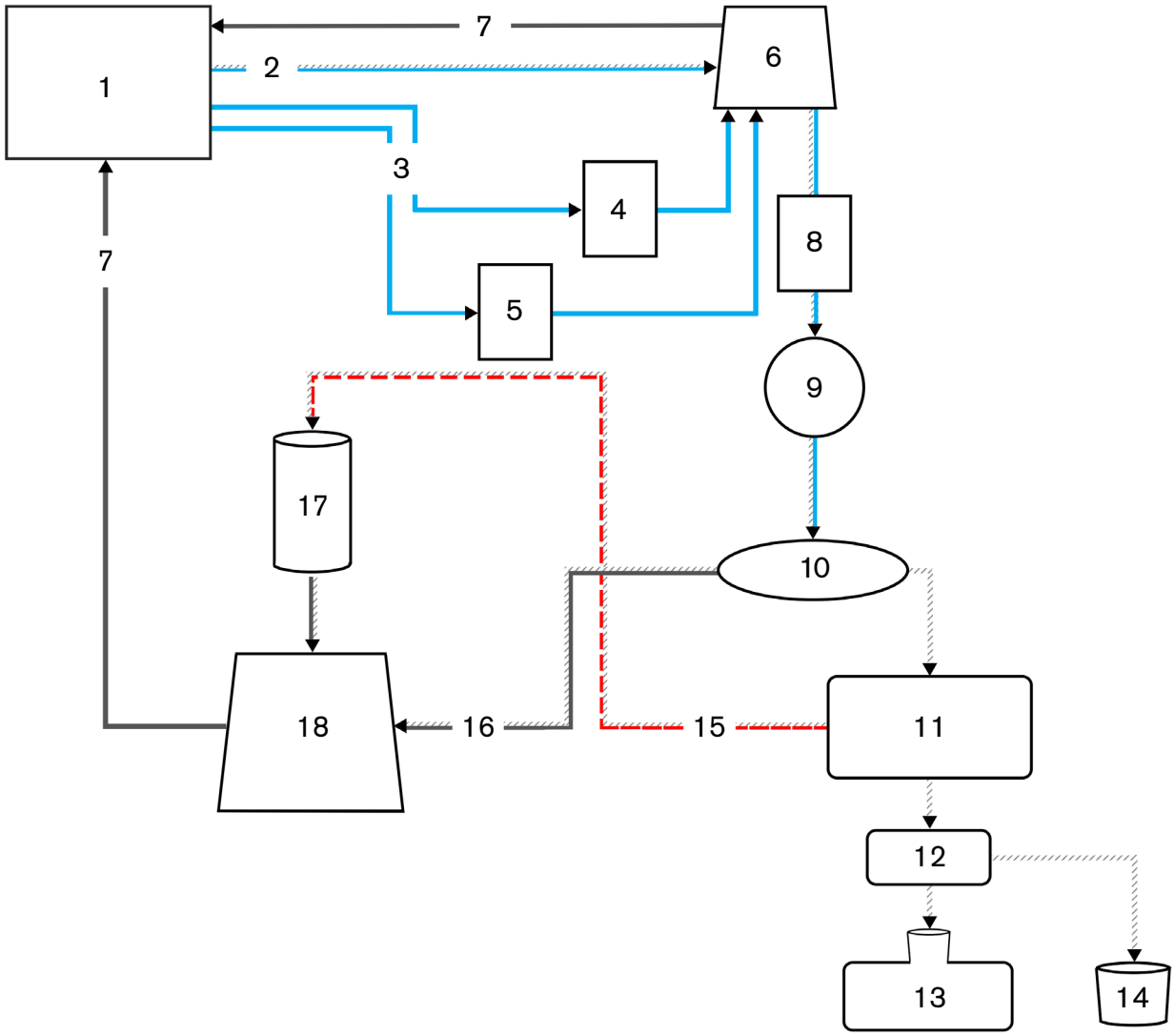
Recycled abrasive

The recycled abrasive is clean and ready for use.

Waste material

Water used for rinsing the abrasive and the abrasive particles that are too small or too large to use for cutting go into waste containers.

Overview



1 Cutting table

2 Water and abrasive from the bottom of the cutting table

3 Water from the top of the cutting table

4 Feed pump

5 Agitation pump

6 EcoSift hopper

7 Waste water to the cutting table

8 Abrasive pump

9 Distribution head

10 Primary screen

11 Dryer box

12 Secondary screen

13 Recycled-abrasive collection bag

14 Waste container

15 Hot air and abrasive particles

16 Waste water and abrasive particles

17 Dust collector

18 Waste hopper

Abrasive

Water

Waste water

Hot air

The EcoSift hopper (6) holds wet used abrasive. A pump (8) pulls that wet abrasive into the EcoSift unit.

The distribution head (9) deposits the wet abrasive onto the primary screen (10). Clean water from the nozzles on the distribution head flushes away debris and small particles that are too small for recycling.

A shaker vibrates wet abrasive on the primary screen. Waste water and abrasive particles fall through the primary screen and are routed to the waste hopper (18). The shaker sends abrasive that is large enough to recycle to the top of the dryer box (11). The dryer box contains heating elements and a blower to remove moisture from the abrasive.

The clean abrasive moves from the dryer box to the secondary screen (12), which vibrates to isolate the good abrasive from debris and abrasive particles that are too large to be reused. The debris and large particles fall into a waste container (14). Clean, dry abrasive passes through the secondary screen and into a recycled-abrasive collection bag (13).

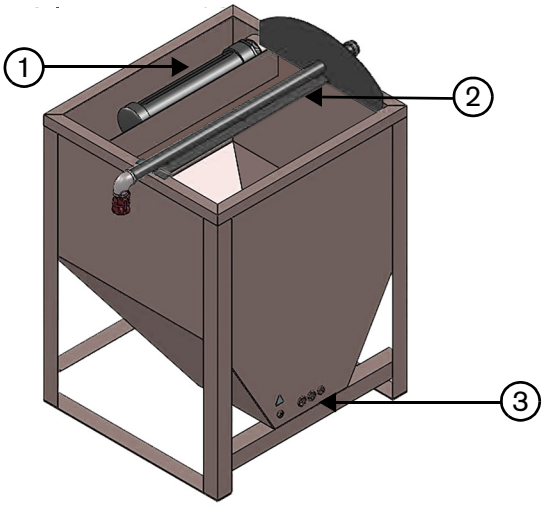
The recycled-abrasive collection bag stays on a pallet, which is on a scale. The scale display shows the weight of the abrasive in the recycled-abrasive collection bag.

The dust collector (17) pulls hot air and abrasive particles from the top of the dryer box. Clean water carries the particles to the waste hopper (18).

EcoSift hopper

Refer to item 6 on page 34.

The EcoSift hopper holds wet, used abrasive. Pumps mix the abrasive with water in the hopper. The abrasive pump on the EcoSift unit pulls the mixture from the bottom of the hopper.



1 Overflow tube

2 Dispersion tube

3 Water and air connections

A dispersion tube is only used on the EcoSift hopper if the EcoSift is installed with an existing PowerDredge system.

Waste hopper

Refer to item 18 on page 34.

Water and abrasive flow from the EcoSift to a waste tube that empties into the waste hopper. Water returns to the cutting table through the overflow tube.

1 Waste tube

2 Overflow tube

The waste hopper tilts easily for cleaning.

Waste-abrasive collection bag (optional)

Refer to item 13 on page 34.

Use a waste-abrasive collection bag in the waste hopper to make removal easier. A shackle at each corner of the hopper holds the bag in place.

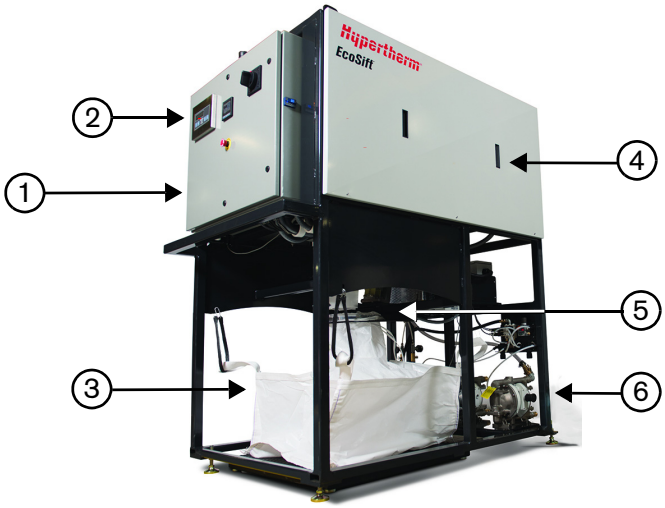
The bag is for one-time use only.

EcoSift unit

WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the EcoSift unit must be done only by an approved technician.

The covers on the left, right, and back of the unit are removable. When a side panel is removed, the primary screen and the dryer box are visible. The secondary screen and the waste container are visible without removing a panel.

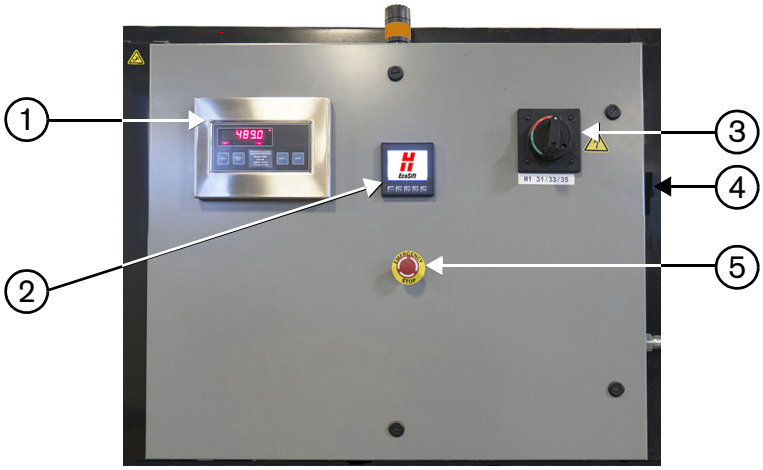
The diaphragm pumps are located on the back of the unit.



1 Electrical enclosure
2 Operation panel
3 Recycled-abrasive collection bag
4 Right side panel
5 Secondary screen and waste container
6 Diaphragm pumps

Operation panel

Controls for the EcoSift are on the outside of the electrical enclosure.



1 Scale display

2 Operator interface

3 Electrical disconnect knob

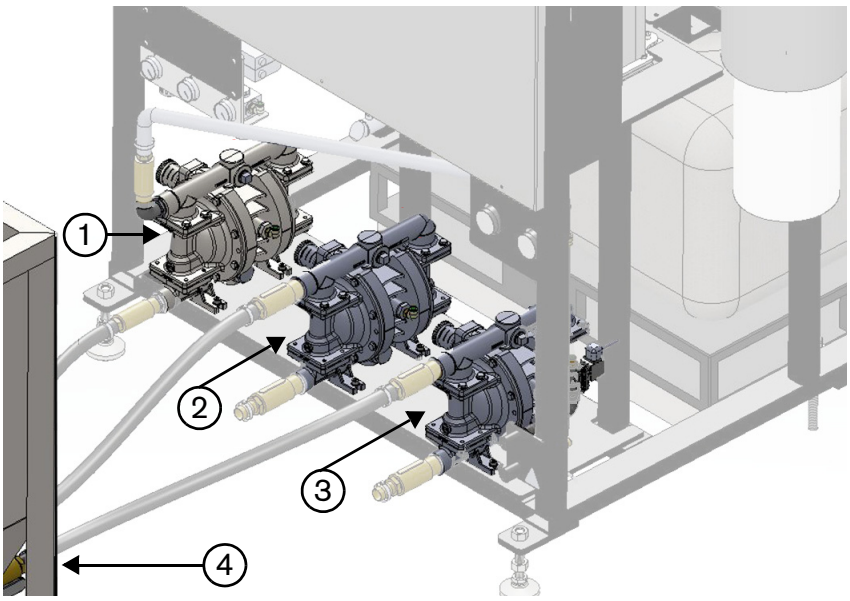
4 Dryer box ammeter

5 Emergency stop knob

Refer to **Operation** on page 43 for detailed descriptions of the controls.

Diaphragm pumps

The diaphragm pumps use compressed air to move water and abrasive particles that are too small for recycling to the waste hopper.



1 Abrasive pump

2 Feed pump

3 Agitation pump

4 EcoSift hopper

A mixture of water and abrasive in the EcoSift hopper moves from the hopper to the EcoSift unit.

Abrasive pump

The abrasive pump pulls water and abrasive from the bottom of the EcoSift hopper and moves it to the top of the EcoSift unit. The mixture goes through the distribution head and onto the primary screen.

Feed pump

The feed pump controls the mixing of water and abrasive in the EcoSift hopper. The pump pulls water from the top of the cutting table into the bottom of the hopper.

Agitation pump

The agitation pump pulls water from the top of the cutting table into the bottom of the EcoSift hopper and mixes the water with abrasive that has collected in the bottom of the hopper.

Options

Voltage

The EcoSift is available in 2 voltage configurations. Refer to the data plate or the technical drawings for the voltage of this equipment. Refer to the **Technical drawings** section, which starts on page 173.

50 Hz	60 Hz
400 VAC	480 VAC

Waste hopper

If a PowerDredge abrasive removal system is in use, use the PowerDredge hopper as the waste hopper for the EcoSift system.

If a PowerDredge abrasive removal system is not in use, order a waste hopper and an overflow assembly. Refer to page 114.

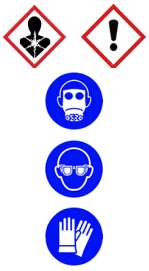
Waste hopper overflow

The standard waste hopper overflow configuration uses a rigid PVC tube to move water from the waste hopper to the cutting table. This option is recommended when the hopper is installed 3 meters (10 feet) or less from the cutting table tank.

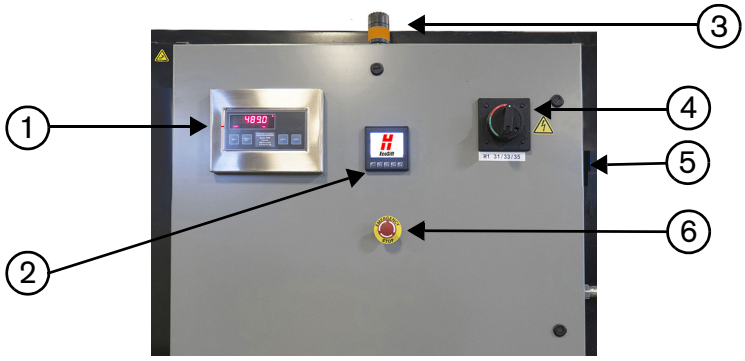
The flexible overflow option is recommended when the waste hopper is installed more than 3 meters (10 feet) from the cutting table tank. The hopper can be installed in more locations when the flexible hose is used.

The EcoSift can only recycle garnet and aluminum oxide abrasive. The system is designed for use with 80-mesh abrasive. Do not use the EcoSift to recycle abrasive that has been used to cut at 6,205 bar (90,000 psi).

Safety

	Refer to the manual. Read and understand all of the safety guidelines in this manual.
 **WARNING**	Do not use the EcoSift to recycle abrasive that has been used to cut plastics, wood, hazardous material, or heat-sensitive material with a melting point or flammability of less than 176.7°C (350°F).
	ABRASIVE DUST CAN CAUSE RESPIRATORY, EYE, AND SKIN IRRITATION Get medical treatment if necessary. Abrasive cutting and recycling causes small particles of airborne dust. Refer to the SDS for the abrasive used and material being cut in your facility for information about the hazards of hazardous chemical products. Testing or monitoring can be necessary to meet national or local air quality regulations. ▪ Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20. ▪ Exposure to abrasive dust can irritate the upper respiratory system. ▪ Eyes: Abrasive can cause eye irritation. Flush with a large quantity of water. ▪ Skin: Avoid touching wet abrasive and abrasive dust, which can cause moderate skin irritation. Clean the exposed area thoroughly with soap and water. ▪ Do not recycle abrasive in enclosed areas. Use exhaust ventilation systems in containment structures to capture abrasive dust. ▪ Clean up abrasive dust with a vacuum equipped with a high-efficiency particulate air (HEPA) filter instead of dry sweeping or using compressed air.
	Examine and clean the system regularly. Refer to the **Preventive maintenance schedule** on page 68. Make repairs immediately.
	Keep the work area clean and free of fluid spills.

Operation panel



1 Scale display
2 Operator interface
3 Fault indicator beacon
4 Electrical disconnect knob
5 Dryer box ammeter
6 Emergency stop knob

Scale display

The scale display shows the weight of the abrasive in the recycled-abrasive collection bag.

1 ZERO
2 UNITS

Touch **ZERO** to set the scale to 0.0. Touch **UNITS** to toggle between metric units and US customary units.

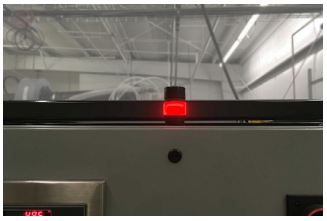
SAMPLE SET and PRINT are not used.

Operator interface

The operator interface is the controller for the EcoSift. Screens on the operator interface show the system status and let the operator start and stop the unit. It also shows failure information, lets the operator to test various components, notifies the operator that the recycled-abrasive collection bag is full, and monitors the time a consumable part has been in use. For details about all of the screens, refer to the **Operator interface screens** on page 52.

Fault indicator beacon

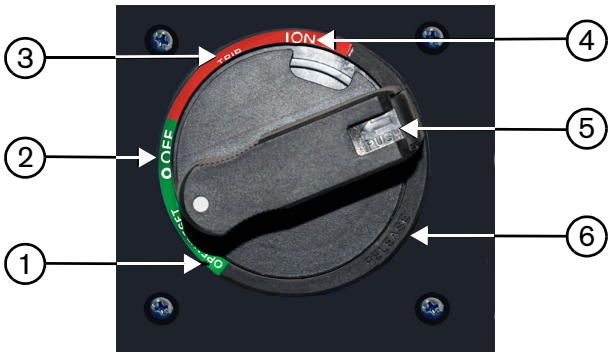
The beacon comes on when the controller senses a warning or a fault condition.



Electrical disconnect knob

DANGER	▪ Personnel who maintain and repair this machinery can be seriously injured or killed if hazardous energy is not controlled. Injuries can include burns, cuts, fractures, or electrocution. ▪ Disconnect and lock out the electric power supply before opening the electrical enclosure or doing maintenance or repair procedures. ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. Refer to **Safety** on page 66.
DANGER	▪ Personnel who work on deenergized machinery can be seriously injured or killed if the machinery is reenergized without permission. ▪ All personnel must respect lock-out devices. Only the person(s) who applied the devices shall remove them. ▪ All personnel in an area where energy-control procedures are used must receive training regarding the energy-control procedure and the prohibition against removing a lock-out device.

The electrical disconnect knob disconnects electric power to the unit motor and controls.



1 OPEN/RESET
2 OFF
3 TRIP
4 ON
5 PUSH
6 RELEASE

Dryer box ammeter

OPEN/RESET	Turn the knob to this position to open the electrical enclosure or to reset the primary breaker.
O OFF	This disconnects electric power to the EcoSift unit. The electrical panel is energized.
TRIP	This indicates that the breaker is open.
I ON	This connects electric power to the EcoSift unit.
PUSH	Push this to open the electrical enclosure door. The knob must be in the **O OFF** position.
RELEASE	The **RELEASE** screw is not used.

The ammeter shows the current (amperes) through each of the legs for the heating elements.

Emergency stop knob

	Do not use the emergency stop knob to turn OFF the machine in nonemergency situations. The system does not do a normal shutdown, and wet abrasive is left on the primary screen and in the abrasive pump and hoses, which can cause a blockage.

The emergency stop knob turns off 24 VDC electricity to the heating elements, the pumps, and the motors. The operator interface and the pressure sensors stay on.

Turn ON the EcoSift

WARNING	Only approved personnel can operate, maintain, and repair this machinery. Refer to **Training** on page 67 for more information.
WARNING	Do not operate this machinery without the access covers and all other safety devices installed. Do not remove guards while the unit is operating.
WARNING	Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20.
CAUTION	If a water line, a fitting, a hose, or a valve might be frozen, do not operate the system. Thaw the system until water moves freely through the entire water circuit.
	Remove all tools and materials from the work area before starting the machine.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Examine the machine before operation

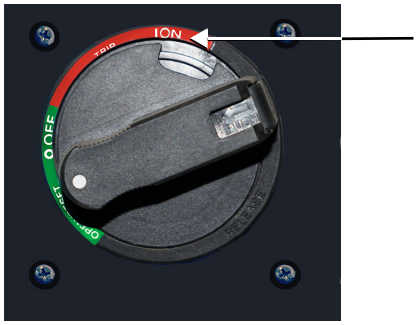
WARNING	Make sure that the waste hopper handle is in the locked position with the safety latch engaged.

- Look for leaks, deterioration, damage, or other conditions that can interfere with operation.
- Make sure that all connections and fasteners are tight, including locking devices, latches, bolts, hoses, and fittings.
- Make sure that all warning decals are maintained so that they are visible and can be read. Do not cover, block, or remove any warnings, cautions, or instructional materials.
- Make sure that the abrasive collection bags and the waste container are not full.
- If the EcoSift turns off because of a fault, correct the fault. Refer to **Warnings and faults** on page 119.
- If the machine turns off because the emergency stop knob was pushed or because of a fault, the unit does an uncontrolled shutdown. Refer to **Uncontrolled shutdown** on page 118.
- Make sure that the EcoSift hopper contains sufficient abrasive to recycle.
- Clean the display on the operator interface. Wipe dust and debris off carefully with a clean, lint-free towel.

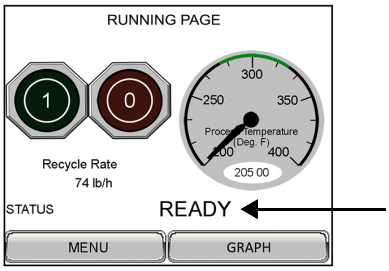
	Do not spray any liquid directly onto the touchscreen.
	Do not use abrasive cloths, paper towels, tissue paper, or rough rags, which can scratch the touchscreen. Do not use cleaners that contain acetone, ammonia, or alcohol, which are found in commercial and household glass cleaners.
	Use a cleaner made for touchscreens or use a 1:1 solution of distilled water and white vinegar for stubborn grease and oil smudges.

Prepare the EcoSift

1. Turn ON the compressed air, the supply water, and the electric power supply.
2. Turn the electrical disconnect knob to **I ON**.

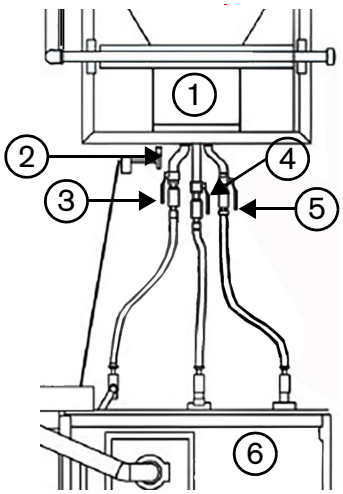


The operator interface turns on. The EcoSift is ready to operate when the home screen (RUNNING PAGE) status is **READY.**



3. Make sure that the feed pump, the agitation pump, and the abrasive pump valves are open.

   The valves are on the EcoSift hopper near the hose connections.



1	EcoSift hopper	**4**	Feed pump valve
2	Air agitation valve	**5**	Abrasive pump valve
3	Agitation pump valve	**6**	EcoSift unit

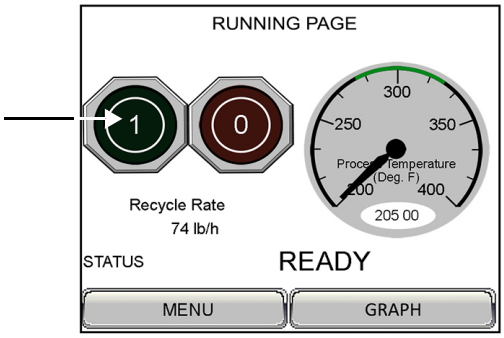
4. Make sure that the air agitation valve on the EcoSift hopper is open.

   It is not necessary to open the valve completely. Too much air causes the water to churn, which prevents the abrasive from collecting in the bottom of the hopper.

Start the EcoSift

	When the dryer blower motor starts, steam and dust can be released into the air. This is normal. Use approved personal protective equipment.

1. On the home screen (RUNNING PAGE), touch **1** to turn ON the EcoSift.



   The heating elements start operating, the dryer blower motor turns on, and the rinse water starts flowing. After 45 seconds, the dust collector turns on.

   When the temperature is 115.6°C (240°F), the shaker, the agitation pump, and the feed pump start operating.

2. Make sure that the agitation pump pressure is set between 1.4 bar and 1.7 bar (20 psi and 25 psi).

3. When the temperature is 160.0°C (320°F):
   - ❑ the abrasive pump and the feed pump start operating.
   - ❑ the status changes from READY to RUNNING.
   - ❑ a mixture of water and abrasive falls onto the primary screen.

4. Make sure that the abrasive pump pressure is set to 1.9 bar (27 psi).

5. Make sure that there is sufficient abrasive on the primary screen.


Sufficient quantity of abrasive


Too much abrasive

   If there is too much abrasive on the primary screen, lower the abrasive pump pressure until the quantity of abrasive on the primary screen is sufficient.

6. Examine the system for leaks or damage.

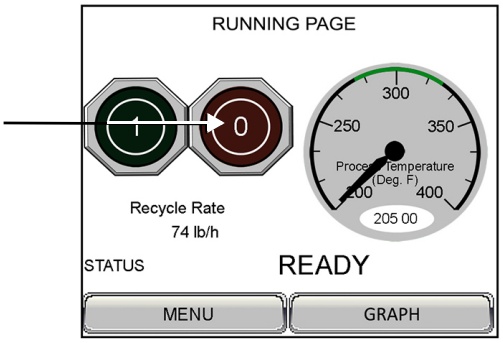
7. Examine the pipes, the hoses, the fittings, and the connections for leaks, deterioration, or damage.

Turn OFF the EcoSift

DANGER	Dangerous voltage/risk of shock To decrease the risk of serious injuries or death, wear approved protection and obey safety recommendations when working with electricity.
DANGER	▪ Personnel who maintain and repair this machinery can be seriously injured or killed if hazardous energy is not controlled. Injuries can include burns, cuts, fractures, or electrocution. ▪ Disconnect and lock out the electric power supply before opening the electrical enclosure or doing maintenance or repair procedures. ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. Refer to **Safety** on page 66.
DANGER	▪ Personnel who work on deenergized machinery can be seriously injured or killed if the machinery is reenergized without permission. ▪ All personnel must respect lock-out devices. Only the person(s) who applied the devices shall remove them. ▪ All personnel in an area where energy-control procedures are used must receive training regarding the energy-control procedure and the prohibition against removing a lock-out device.
WARNING	Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20.

Routine stop

On the home screen (RUNNING PAGE), touch **O** to turn OFF the EcoSift.



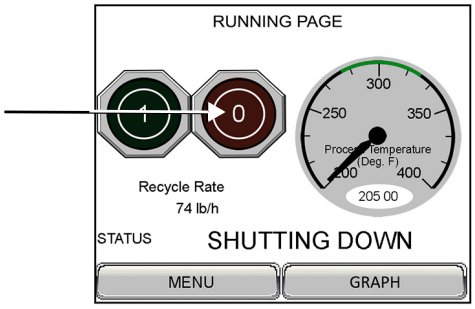
The EcoSift does a normal shutdown.

1. The abrasive pump turns off.
2. The feed pump water hoses are cleared.
3. After 10 minutes, the heating elements turn off.

Stop for maintenance, repair, or at the end of the day

	Turn OFF the pump valves when stopping the EcoSift for longer than 1 day. Abrasive can flow from the EcoSift hopper into the pump hoses. Dried abrasive is not easily cleaned from the hoses.

1. On the home screen (RUNNING PAGE), touch **O** to turn OFF the EcoSift.



   The EcoSift does a normal shutdown.

   a. The abrasive pump turns off.

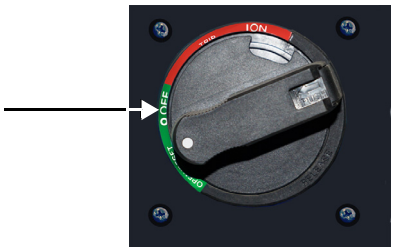
   b. The feed pump water hoses are cleared.

   c. After 10 minutes, the heating elements turn off.

2. When the heating element turns off, turn the electrical disconnect knob to **O OFF.**

	Do not use the emergency stop knob to turn OFF the machine in nonemergency situations. The system does not do a normal shutdown, and wet abrasive is left on the primary screen and in the abrasive pump and hoses, which can cause a blockage.

3. Turn OFF the compressed air.



4. Turn OFF the supply water.

5. Close the valves on the feed pump, the agitation pump, and the abrasive pump.

   The valves are on the EcoSift Hopper near the hose connections.

6. Turn OFF the electric power supply.

7. Use a lock-out device according to the work site's policy to isolate and control energy.

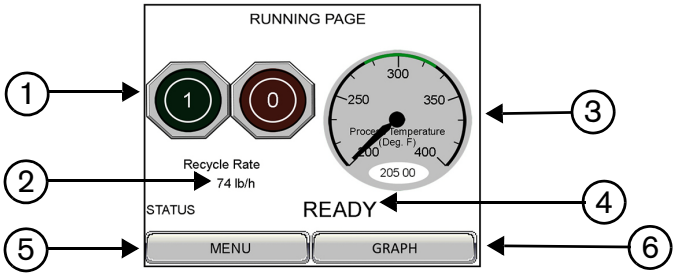
Emergency stop

The EcoSift does an uncontrolled shutdown when the emergency stop knob is pushed. Refer to **Uncontrolled shutdown** on page 118.

Operator interface screens

Home screen (RUNNING PAGE)

Refer to the **OPTIONS screen** on page 63 to toggle between metric units and US customary units.



1		Touch **1** to turn ON the EcoSift. Touch **O** to turn OFF the EcoSift.
2	**Recycle Rate**	Information only This shows the delivery rate of abrasive in kilograms (or US pounds) per hour to the recycled-abrasive collection bag.
3		Information only This shows the temperature of the heating elements inside the dryer box. The optimal temperature is between 137.8°C (280°F) and 160.0°C (320°F).
4	**STATUS**	Information only This shows the status of the EcoSift. Refer to **STATUS** on page 52.
5		**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.
6		**GRAPH** opens the GRAPH screen. Refer to **SCALE WEIGHT/PROCESS TEMPERATURE screen** on page 64.

STATUS

Normal operating statuses on this screen are:

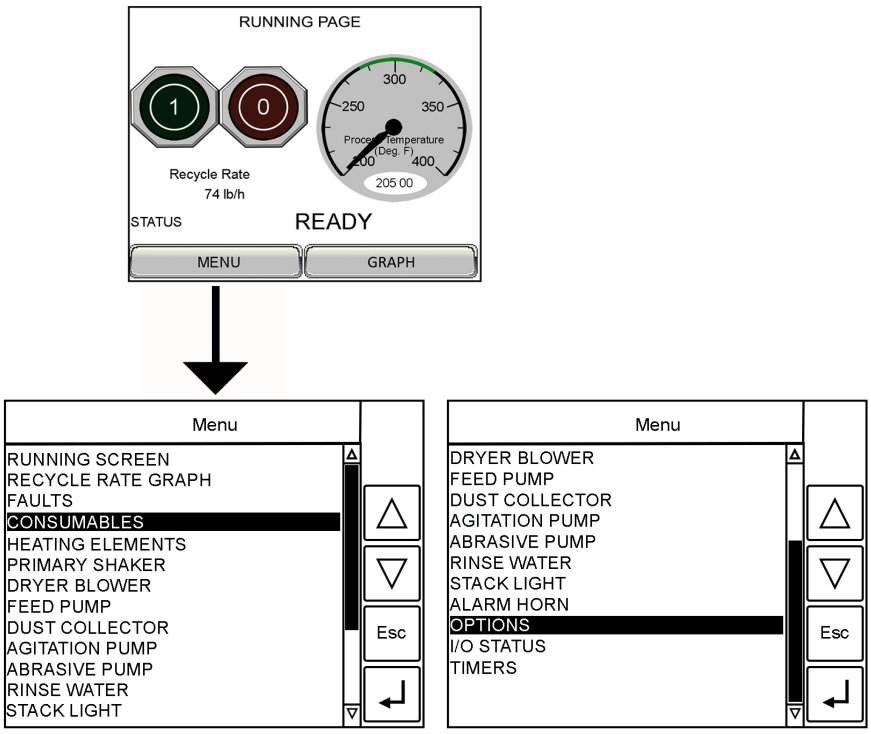
READY	the machine is ready for operation.
HEATING	The heating elements in the dryer box are warming.
RUNNING	the machine is operating normally.
SHUTTING DOWN	the machine is turning off normally.

Warning and fault statuses shown on this screen are:

- EMERGENCY STOP
- LOW TEMPERATURE
- HIGH TEMPERATURE
- LOW ABRASIVE
- FAULTED

Refer to **Warnings and faults** on page 119 for more information.

MENU screen

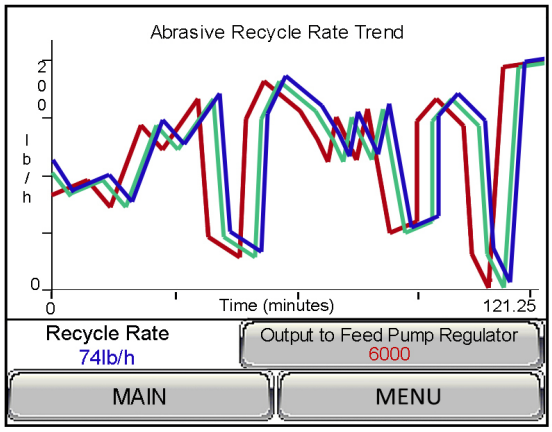


Use the arrows to move the highlight bar up and down in the menu. Touch the enter symbol to open the selected screen.

RUNNING SCREEN	This opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
RECYCLE RATE GRAPH	This opens the RECYCLE RATE GRAPH screen. Refer to **ABRASIVE RECYCLE RATE TREND screen** on page 55.
FAULTS	This opens the FAULTS screen. Refer to **FAULTS screen** on page 56.
CONSUMABLES	This opens 1 of the CONSUMABLES screens. Refer to **CONSUMABLES screens** on page 61.
HEATING ELEMENTS	This opens the HEATING ELEMENTS screen. Refer to **Component on/off screens** on page 57.
PRIMARY SHAKER	This opens the PRIMARY SHAKER screen. Refer to **Component on/off screens** on page 57.
DRYER BLOWER	This opens the DRYER BLOWER screen. Refer to **Component on/off screens** on page 57.
FEED PUMP	This opens the FEED PUMP screen. Refer to **Component on/off screens** on page 57.
DUST COLLECTOR	This opens the DUST COLLECTOR BLOWER screen. Refer to **Component on/off screens** on page 57.
AGITATION PUMP	This opens the AGITION PUMP screen. Refer to **Component on/off screens** on page 57.

ABRASIVE PUMP	This opens the ABRASIVE PUMP screen. Refer to **Component on/off screens** on page 57.
RINSE WATER	This opens the RINSE WATER screen. Refer to **Component on/off screens** on page 57.
FAULT LIGHT	This opens the FAULT LIGHT screen. Refer to **Component on/off screens** on page 57.
ALARM HORN	This opens the ALARM HORN screen. Refer to **Component on/off screens** on page 57.
OPTIONS	This opens the OPTIONS screen. Refer to **OPTIONS screen** on page 63.
I/O STATUS	This opens the I/O STATUS screen. Refer to **I/O STATUS screen** on page 56.
TIMERS	This opens the TIME screen. Refer to **TIME screen** on page 60.

ABRASIVE RECYCLE RATE TREND screen

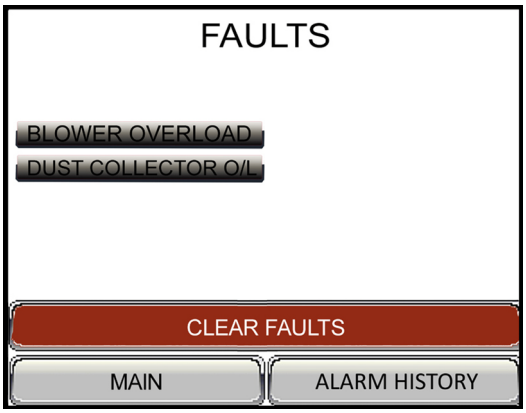


This screen shows the abrasive recycling rate.

Refer to the **OPTIONS screen** on page 63 to toggle between metric units and US customary units.

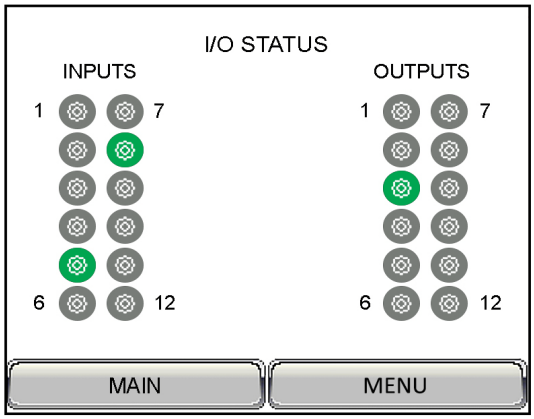
lb/h	Information only Kilograms (or US pounds) per hour, from 0 to 200
Time (minutes)	Information only This shows the minutes elapsed since starting the machine. The number sets to 0 when the EcoSift turns off.
Recycle Rate 	Information only The blue line on the graph shows the rate of abrasive in kilograms (or US pounds) per hour that is delivered to the recycled-abrasive collection bag.
	Information only The green line on the graph shows the recycle rate averaged over 5 minutes.
	Information only The red line on the graph shows the feed pump output number (4500 to 7500) divided by 100. This is used for troubleshooting or maintenance.
	After turning ON the manual feed, touch this to set the value of the feed output number. The value range is 4500 to 7500. This is used for troubleshooting or maintenance.
	**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
	**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.

FAULTS screen



The FAULTS screen is described in detail in the **Warnings and faults** section, which starts on page 119.

I/O STATUS screen



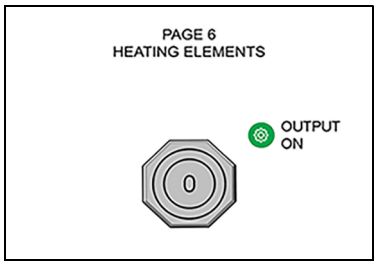
The input and output information on this screen is typically useful to a certified technician.

	Information only The specified controller input or output is on.
	**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
	**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.

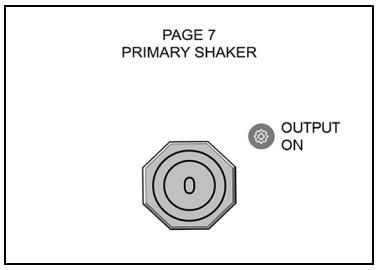
Component on/off screens

Use the screens to operate individual components.

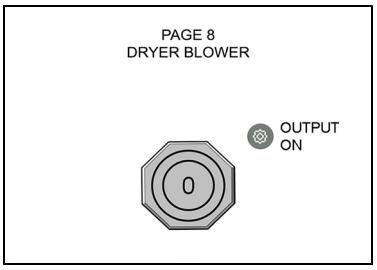
	Touch this to turn the component ON or OFF.
	Information only OUTPUT ON The indicator is green when the component is on.
	**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
	**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.



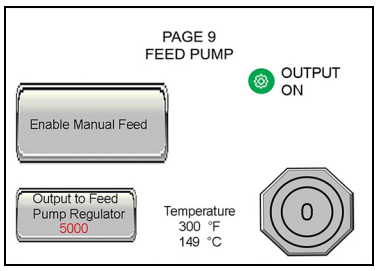
HEATING ELEMENTS screen



PRIMARY SHAKER screen

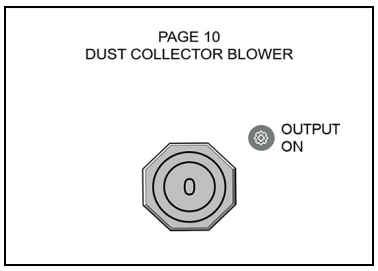


DRYER BLOWER screen

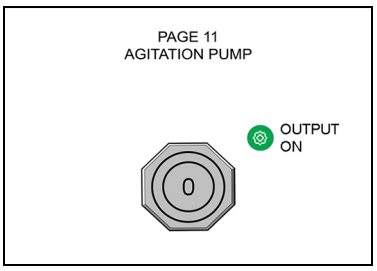


FEED PUMP screen

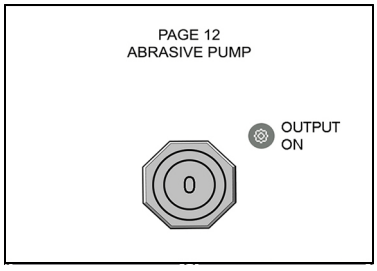
Refer to page 59 for more information.



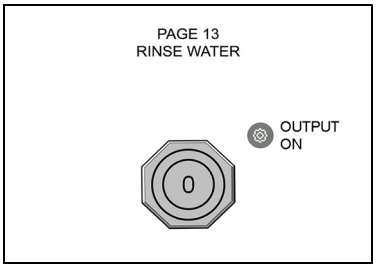
DUST COLLECTOR BLOWER screen



AGITATION PUMP screen



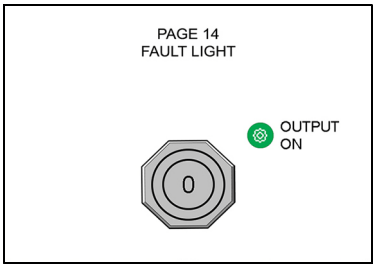
ABRASIVE PUMP screen



RINSE WATER screen

For testing

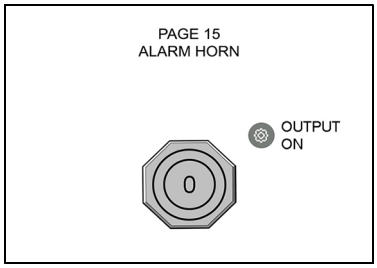
This turns the water from the sprayer head ON or OFF.



FAULT LIGHT screen

For testing

This turns the fault indicator beacon ON or OFF.

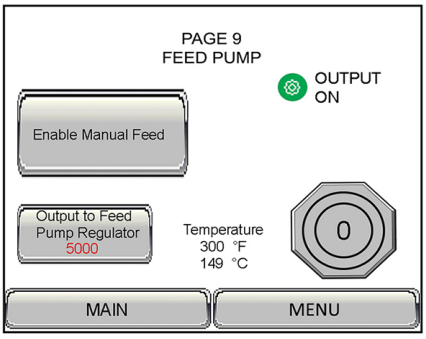


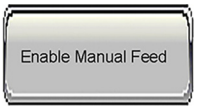
ALARM HORN screen

For testing

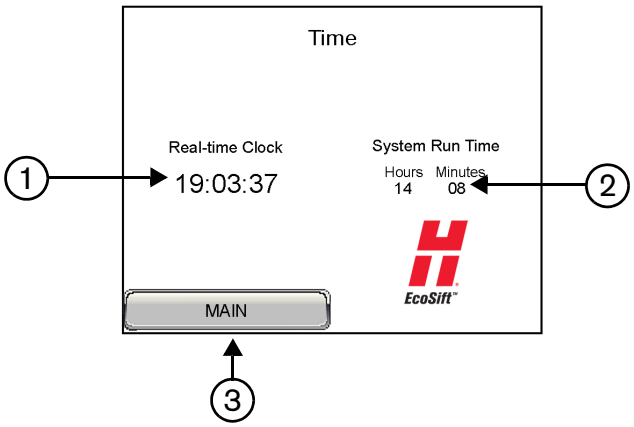
This turns the alarm ON or OFF.

FEED PUMP screen



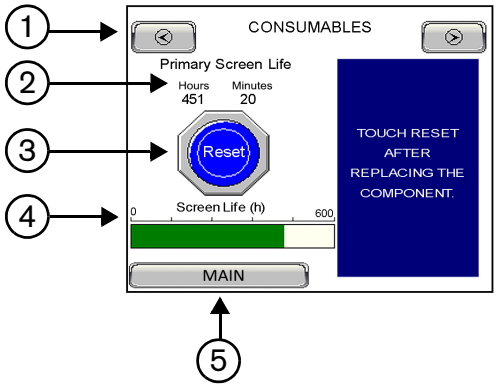
	**ENABLE MANUAL FEED** Touch this to turn ON manual control of the feed pump.
	**OUTPUT TO FEED PUMP REGULATOR** After turning ON the manual feed, touch this to set the value of the feed output number. The value range is 4500 to 7500.
Temperature	**TEMPERATURE** Information only This shows the temperature of the heating elements inside the dryer box.
	**OUTPUT ON** Information only The indicator is green when the component is on.
	Touch this to turn the component ON or OFF.
	**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
	**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.

TIME screen

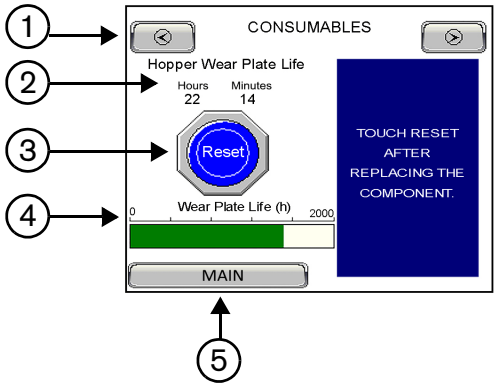


1	**Real-time Clock**	**REAL-TIME CLOCK** Information only This shows the time in 24-hour format.
2	**System Run Time**	**SYSTEM RUN TIME** Information only This shows how long in hours and minutes that the machine has been operating.
3	MAIN	**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.

CONSUMABLES screens



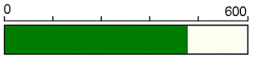
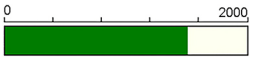
Primary Screen Life screen



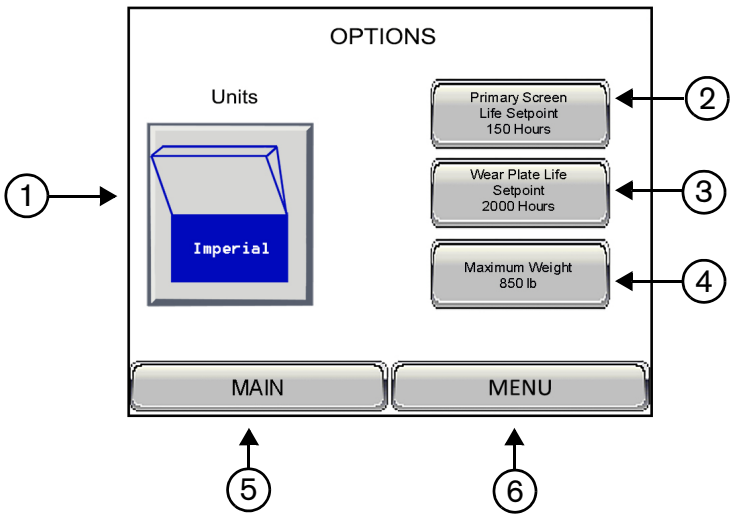
Hopper Wear Plate Life screen

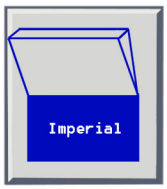
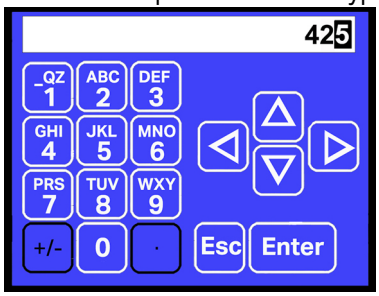
The screens show how long in hours and minutes that the primary screen and the EcoSift hopper wear plate have been in use.

1		Use these to toggle between the PRIMARY SCREEN LIFE screen and the HOPPER WEAR PLATE LIFE screen.
2	**Primary Screen Life** **Hours Minutes** or **Hopper Wear Plate Life** **Hours Minutes**	**PRIMARY SCREEN LIFE** or **HOPPER WEAR PLATE LIFE** Information only This shows the time in hours and minutes that the component has been in operation.

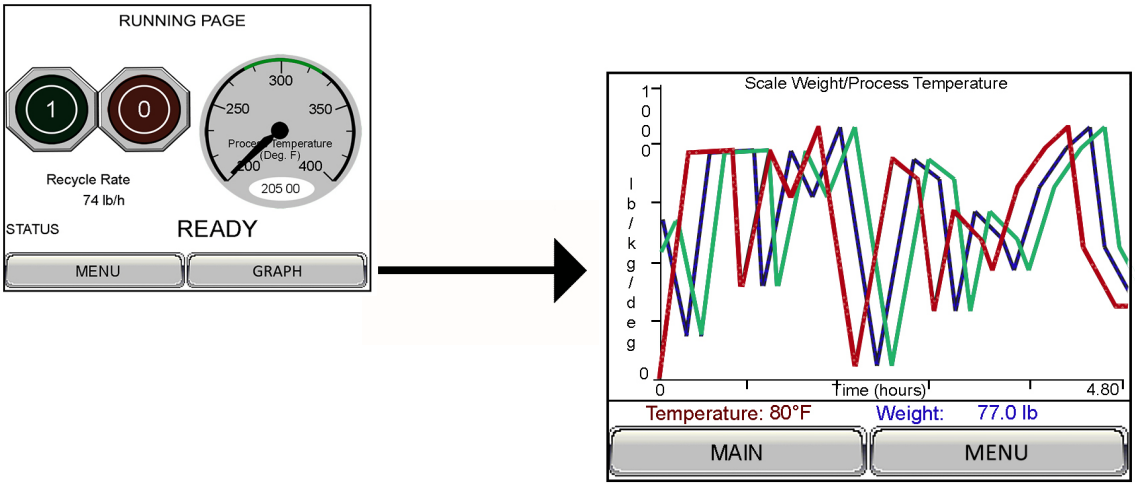
3	 **THE COMPONENT HAS BEEN IN USE LONGER THAN THE COMPONENT LIFE SETPOINT. REPLACE THE COMPONENT. TOUCH RESET AFTER REPLACING THE COMPONENT.** **TOUCH RESET AFTER REPLACING THE COMPONENT.**	**RESET** After replacing the component, touch this to set the operation time on the component to 0.
4	**Screen Life (h)**  **Wear Plate Life (h)** 	**SCREEN LIFE** and **WEAR PLATE LIFE** Information only A bar shows a visual representation of the component's operation time in hours **(h)**. Enter the maximum time setpoint on the OPTIONS screen. Refer to page 63.
5		**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.

OPTIONS screen



1		**UNITS** Touch this to toggle between metric units and US customary units.
2		**PRIMARY SCREEN LIFE SETPOINT** and **WEAR PLATE LIFE SETPOINT** Touch this to open a numeric keypad.  Enter the component life setpoint in hours. The maximum setting for the primary screen is 600 hours. The maximum setting for the wear plate is 2,000 hours.
3		
4		**MAXIMUM WEIGHT** Touch this to open a numeric keypad. Enter the maximum weight for the recycled-abrasive collection bag. The maximum weight that the bag can hold is 454 kg (1,000 lb).
5		**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
6		**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.

SCALE WEIGHT/PROCESS TEMPERATURE screen



This graph shows the weight and dryer box temperature of the recycled abrasive over time.

Refer to the **OPTIONS screen** on page 63 to toggle between metric units and US customary units.

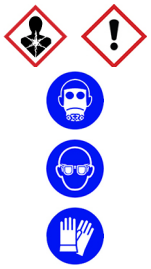
lb/kg/deg	Information only "**lb/kg**" refers to the weight. "**deg**" refers to the temperature.
Time (hrs)	**TIME** Information only This shows the hours (**hrs**) elapsed since starting the machine. The number sets to 0 when the EcoSift turns off.
Temp	**TEMP** Information only This shows the temperature of the heating elements inside the dryer box.
Weight	**WEIGHT** Information only This shows the weight of the recycled abrasive in the collection bag.
	Information only The blue line on the graph shows the weight of the recycled abrasive in the collection bag.
	Information only The green line on the graph shows the rate of abrasive in kilograms (or US pounds) per hour that is delivered to the recycled-abrasive collection bag.
	Information only The red line on the graph shows the temperature over time.
MAIN	**MAIN** opens the home screen (RUNNING PAGE). Refer to **Home screen (RUNNING PAGE)** on page 52.
MENU	**MENU** opens the MENU screen. Refer to **MENU screen** on page 53.

Hypertherm recommends preventive and scheduled maintenance for this system. High-quality systems that are maintained on a schedule lasts longer than systems that are not maintained regularly. Maintenance includes, but is not limited to, adjustments, cleaning, lubrication, repairs, and replacement of parts.

Benefits of preventive maintenance

- Improves reliability
- Identifies potential problems before they cause unplanned downtime and become expensive repairs
- Extends the life of the system and decreases the frequency of replacement
- Contributes positively to reputation and profits
- Creates traceability through records

Safety

	Refer to the manual. Read and understand all of the safety guidelines in this manual.
 **DANGER**	▪ Personnel who maintain and repair this machinery can be seriously injured or killed if hazardous energy is not controlled. Injuries can include burns, cuts, fractures, or electrocution. ▪ Disconnect and lock out the electric power supply before opening the electrical enclosure or doing maintenance or repair procedures. ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements.
 **DANGER**	▪ Personnel who work on deenergized machinery can be seriously injured or killed if the machinery is reenergized without permission. ▪ All personnel must respect lock-out devices. Only the person(s) who applied the devices shall remove them. ▪ All personnel in an area where energy-control procedures are used must receive training regarding the energy-control procedure and the prohibition against removing a lock-out device.
 **WARNING**	Work that requires opening the electrical enclosure or removing covers or panels from the machine unit must be done only by an approved technician.
 **CAUTION**	Do not touch hot surfaces.
	ABRASIVE DUST CAN CAUSE RESPIRATORY, EYE, AND SKIN IRRITATION Get medical treatment if necessary. Abrasive cutting and recycling causes small particles of airborne dust. Refer to the SDS for the abrasive used and material being cut in your facility for information about the hazards of hazardous chemical products. Testing or monitoring can be necessary to meet national or local air quality regulations. ▪ Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20. ▪ Exposure to abrasive dust can irritate the upper respiratory system. ▪ Eyes: Abrasive can cause eye irritation. Flush with a large quantity of water. ▪ Skin: Avoid touching wet abrasive and abrasive dust, which can cause moderate skin irritation. Clean the exposed area thoroughly with soap and water. ▪ Do not recycle abrasive in enclosed areas. Use exhaust ventilation systems in containment structures to capture abrasive dust. ▪ Clean up abrasive dust with a vacuum equipped with a high-efficiency particulate air (HEPA) filter instead of dry sweeping or using compressed air.
	Obey all safety requirements and applicable safety laws and regulations.
	Coordinate preventive maintenance and repair activities with operations and safety staff.
	Examine and clean the system regularly. Refer to the **Preventive maintenance schedule** on page 68. Make repairs immediately.

	Personnel who maintain and repair this machinery must know how to use standard hand tools.
	Use the correct tools for maintenance procedures. Some tools are designed to make the procedure easier and to prevent damage to the system.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.

Training

The employer must provide training for maintenance activities and retraining for all personnel when there is a change in job assignments, machinery or processes that present a new hazard, or energy-control procedures, or when a periodic inspection finds, or an employer has reason to believe, that shortcomings exist in a person's knowledge or use of the energy-control procedure.

Tips

- Keep accurate maintenance records. Good records can help with predicting and preventing maintenance problems. Refer to **Preventive maintenance records** on page 111.
- Keep the work area clean and free of fluid spills. Use buckets or other containers in areas where water can spill during maintenance or repair procedures.

Preventive maintenance schedule

The maintenance intervals are general guidelines. This table assumes that the EcoSift will be used 40 to 50 hours per week. Revise this schedule as necessary to accommodate local conditions and use.

	As necessary	Daily	Weekly	Annually
Examine the EcoSift unit.		page 70		
Examine the diaphragm pumps.		page 94		
▪ *Repair a diaphragm pump.*	page 96			
Examine the EcoSift hopper.		page 70		
▪ *Replace the recycled-abrasive collection bag.*	page 71			
▪ *Replace the hopper wear plate.*	page 91			
Examine the waste hopper.		page 76		
▪ *Replace the waste-abrasive collection bag.*	page 71			
▪ *Clean the waste hopper.*	page 81			
Put the balls on the screen.			page 88	
Examine the primary screen.		page 84		
▪ *Replace the primary screen.*	page 84			
▪ *Replace the ball carrier screen.*	page 88			
Examine the secondary screen.		page 89		
▪ *Empty the secondary screen waste container.*	page 89			
Examine the dryer box.			page 90	
▪ *Replace the dryer blower air filter.*				page 93

Special tools

Some procedures recommend or require special tools. For help identifying these tools, refer to **Special tools** on page 146.

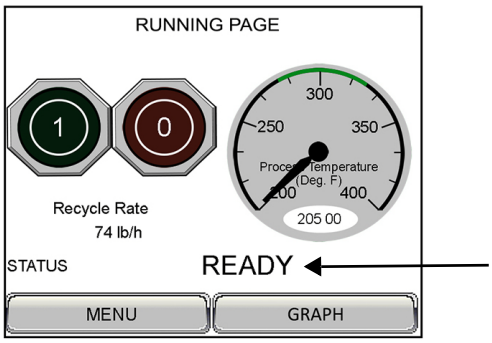
Cooling time

CAUTION	Do not touch hot surfaces.
CAUTION	The heating elements can take up to 24 hours to cool. Make sure that the temperature shown on the home screen (RUNNING PAGE) is less than 40.0°C (104°F) before doing maintenance on components inside the machine.

The EcoSift can be very hot when it is operating. Some tasks require that the unit is cool before touching components. Plan for cooling time before maintenance.

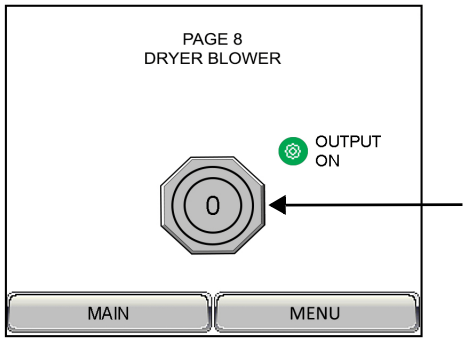
To cool the heating elements, do the following:

1. Make sure that the home screen (RUNNING PAGE) status is **READY.**



2. Touch **MENU** to open the MENU screen.
3. Touch **DRYER BLOWER** to highlight the selection. Touch the enter symbol.

   The DRYER BLOWER screen opens.
4. Touch **I** to turn ON the dryer blower. The OUTPUT ON indicator is green when the component is on.



Touch **MAIN** to open the home screen (RUNNING PAGE).

Examine the EcoSift unit

 CAUTION	Do not touch hot surfaces.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Do this task when the EcoSift is running.

1. Examine the machine unit for leaks, deterioration, or damage.
2. Examine the pipes, the hoses, the fittings, and the connections for leaks, deterioration, or damage.

   Identify the source of a leak and correct the problem.
3. Make sure that all connections and fasteners are tight, including locking devices, latches, bolts, hoses, and fittings.
4. Examine the recycled-abrasive collection bag for deterioration or damage.
5. Replace the recycled-abrasive collection bag, if necessary. Refer to **Replace the recycled-abrasive collection bag** on page 71.

Examine the EcoSift hopper

	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Do this task when the EcoSift is operating.

1. Examine the hopper for leaks, deterioration, or damage.
2. Examine the pipes, the hoses, the fittings, and the connections for leaks, deterioration, or damage.

   Identify the source of a leak and correct the problem.
3. Make sure that the EcoSift hopper contains sufficient abrasive to recycle.

Replace the recycled-abrasive collection bag

WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.
	▪ The maximum weight that the recycled-abrasive collection bag can hold is 454 kg (1,000 pounds). ▪ Use lifting equipment that can safely lift and move the bag.

Required parts, tools, and materials

1-16445 Recycled-abrasive collection bag

Forklift

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

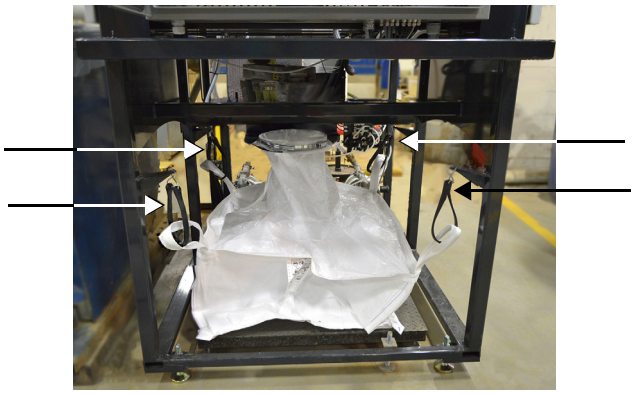
Do this task when the EcoSift is not operating.

1. Disconnect the rubber straps on the EcoSift to release the bag loops on each corner.
2. Use a forklift to move the pallet with the abrasive collection bag.
3. Put the pallet on the floor and use the forklift to lift the abrasive collection bag off of the pallet.
4. Put the empty pallet on the EcoSift scale.
5. Put a recycled-abrasive collection bag on top of the pallet.
6. Put the neck of the bag through the bag support.

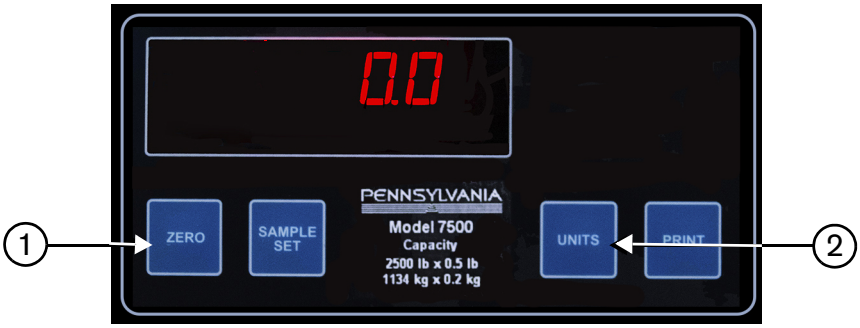
7. Fold the top of the bag over the support.

8. Close the clamp to hold the bag on the support.

9. Put a rubber strap through the bag loops on each corner.



10. Make sure that the scale display shows 0.0.

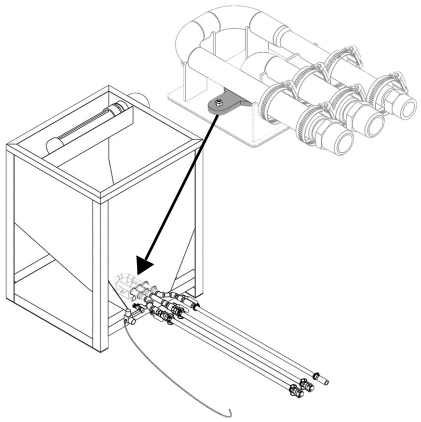


Touch **ZERO** to set the scale to 0.0. Touch **UNITS** to toggle between metric units and US customary units.

Replace the hopper wear plate

WARNING	Before doing maintenance or repair procedures: ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. ▪ Release all water pressure from the pumps before starting maintenance or repairs. ▪ Bleed down and lock out compressed air sources. Compressed air systems do not always depressurize when other power is disconnected. Refer to page 66 for more information.
WARNING	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Required parts, tools, and materials



1-16449 Hopper wear plate

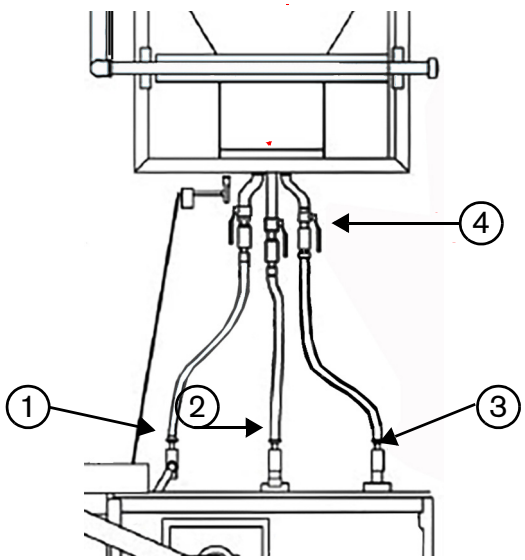
Flat-tip screwdriver or 5/32-inch nut driver

Shovel

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

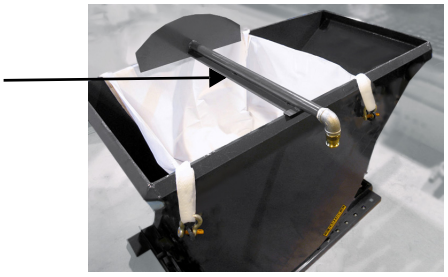
Do this task when the EcoSift is not operating.

1. Turn OFF the pump valves.
2. Disconnect the pump hoses from the hopper connections.



1 Agitation pump connection
2 Feed pump connection
3 Abrasive pump connection
4 EcoSift hopper connections

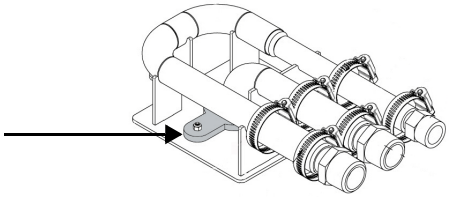
3. Disconnect the discharge hose from the dispersion tube.
4. Use an assistant to help remove the dispersion tube assembly from the hopper.



5. Empty the EcoSift hopper. Use an assistant to help tip the hopper on its side. Use a shovel to remove the abrasive.

CAUTION	A shovel can cause damage to the hose and other parts in the bottom of the hopper.
CAUTION	Do not put the side of the hopper with the overflow drain on the ground. This can cause damage to the hardware.

6. Lift the nozzle assembly to get access to the wear plate.



7. Replace the wear plate.
8. Install the nozzle assembly.
9. Use an assistant to help move the hopper back to its working position.
10. Use an assistant to help put the dispersion tube assembly on the hopper.

    The elbow fitting points toward the ground.
11. Connect the discharge hose to the dispersion tube.
12. Make sure that all connections and fasteners are tight, including locking devices, latches, bolts, hoses, and fittings.
13. Examine the pipes, the hoses, the fittings, and the connections for leaks, deterioration, or damage.

    Identify the source of a leak and correct the problem.

Examine the waste hopper

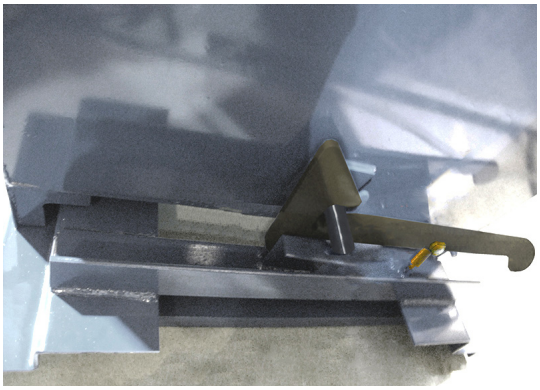
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Do this task when the EcoSift is operating.

1. Examine the hopper for leaks, deterioration, or damage.

   Identify the source of a leak and correct the problem.

2. Examine the latch assembly for deterioration or damage. Lubricate the hinges and the pivot points with oil or grease, if necessary.



3. Replace the waste-abrasive collection bag, if necessary.

Replace the waste-abrasive collection bag

WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
WARNING	Make sure that the waste hopper handle is in the locked position with the safety latch engaged.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.
	▪ The maximum weight that the waste-abrasive collection bag can hold is 1,000 kg (2,205 pounds). ▪ Use lifting equipment that can lift and move the bag safely.

If the bag is too full, particles of abrasive accumulate outside of the bag in the waste hopper and the hopper must be cleaned. Refer to **Clean the waste hopper** on page 81.

This procedure requires 2 people for some tasks.

Required parts, tools, and materials

1-16133 Waste-abrasive collection bag

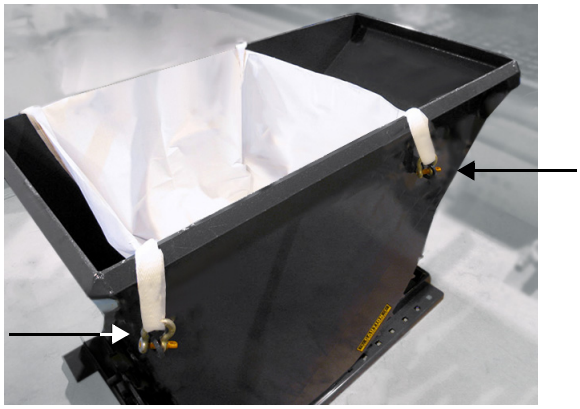
Forklift or overhead crane with a frame or a lifting device

Pliers or knife

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

Do this task when the EcoSift is not operating.

1. Use a forklift to move the hopper away from the dust collector.
2. Remove the carrying loops on the recycled-abrasive collection bag from the shackles.



3. Lift the full bag straight up out of the hopper.

WARNING	Do not stand below the abrasive collection bag.
CAUTION	▪ Lift the bag vertically, using all 4 carrying loops. ▪ Do not pull the carrying loops to the center.

Refer to **Use a forklift to remove the waste-abrasive collection bag** on page 78 or **Use a crane to remove the waste-abrasive collection bag** on page 79.

4. Empty the waste-abrasive collection bag. Refer to **Empty the waste-abrasive collection bag** on page 80.
5. Put a new waste-abrasive collection bag in the hopper.
6. Attach the carrying loops to the lifting tabs on the hopper with the shackles.

CAUTION	Make sure that the carrying loops are not twisted. Twisted loops can make the bag hard to remove and can cause damage to the loops or to the bag.

Make sure that the bag is pushed down into the hopper.

7. Put the waste hopper next to the EcoSift unit. The waste hopper must be installed on the left side of the machine, below the dust collector.

Use a forklift to remove the waste-abrasive collection bag

WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
WARNING	Slippery surface The abrasive collection bag can spill water onto the floor. The floor can be slippery when wet.
CAUTION	The forklift forks must be dulled or protected to prevent tearing the carrying loops.
	▪ The maximum weight that the waste-abrasive collection bag can hold is 1,000 kg (2,205 pounds). ▪ Use lifting equipment that can lift and move the bag safely.

1. Set the forks to approximately 89 cm (35 inches) apart, which is the distance between the carrying loops on the abrasive collection bag.
2. With the forks raised to approximately 51 mm (2 inches) above the top of the hopper, move the forklift slowly toward the hopper.
3. Put a fork through each of the carrying loops closest to the forklift, then put the forks through the second set of loops.

CAUTION	Make sure that the carrying loops are not twisted. Twisted loops can make the bag hard to remove and can cause damage to the loops or to the bag.

4. Lift the full bag straight up out of the hopper.

WARNING	Do not stand below the abrasive collection bag.
CAUTION	▪ Lift the bag vertically, using all 4 carrying loops. ▪ Do not pull the carrying loops to the center.

Use a crane to remove the waste-abrasive collection bag

 WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
 WARNING	Slippery surface The abrasive collection bag can spill water onto the floor. The floor can be slippery when wet.
	▪ The maximum weight that the waste-abrasive collection bag can hold is 1,000 kg (2,205 pounds). ▪ Use lifting equipment that can lift and move the bag safely.
	Use a frame or a similar device to keep the carrying loops aligned vertically with the corners of the bag while it is being lifted.

Do this task when the EcoSift is not operating.

1. Put the crane over the abrasive collection bag.
2. Attach the carrying loops to the frame or device.
3. Lift the full bag straight up out of the hopper.

 WARNING	Do not stand below the abrasive collection bag.
 CAUTION	▪ Lift the bag vertically, using all 4 carrying loops. ▪ Do not pull the carrying loops to the center.

Empty the waste-abrasive collection bag

WARNING	Slippery surface The floor can be slippery when wet.
WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
WARNING	Do not stand below the abrasive collection bag.
	▪ The maximum weight that the waste-abrasive collection bag can hold is 1,000 kg (2,205 pounds). ▪ Use lifting equipment that can lift and move the bag safely.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.

Do this task when the EcoSift is not operating.

1. Hang the waste-abrasive collection bag above the waste collection area.
2. Open the bag. Use pliers to pull open the 3 ties on the bottom of the bag or slice the bag open with a knife.

3. Discard the bag.

	Do not reuse the waste-abrasive collection bag. The bag is for one-time use only.

Clean the waste hopper

WARNING	Slippery surface The floor can be slippery when wet.
WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
WARNING	Make sure that the waste hopper handle is in the locked position with the safety latch engaged.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.
	Use a forklift to move the hopper to the cleaning area. Do not use a crane.

Required parts, tools, and materials

Forklift

PTFE tape or thread sealant

Flowing water and a hose

Recommended materials

Shovel

Do this task when the EcoSift is not operating.

1. If there is a waste-abrasive collection bag in the hopper, remove it.
2. Disconnect the hopper overflow tube from the elbow fitting on the outside of the hopper.
3. Remove the hopper overflow tube from the coupling on the inside of the hopper.
4. Insert the forklift forks into the opening in the base of the hopper with the forks spread as wide as possible.

	Put the hopper on the forks with the release latch toward the vehicle. 

5. Move the hopper to the cleaning area.
6. Keep the forklift mast tilted back and release the hopper tilt latch.

   It could be necessary to tilt the forks forward or backward to decrease tension on the hopper tilt latch before the latch releases.

7. Lift the forks to dumping height. Tilt the mast of the forklift forward to dump the water and the abrasive from the hopper.

   Put the hopper on the ground and use a shovel to remove the remaining abrasive.

8. Use a hose and flowing water to clean the inside of the hopper.

9. Move the hopper back to its working position. Make sure that the tilt latch is engaged.

10. Connect the overflow tube to the coupling on the inside of the hopper.

11. Connect the end of the overflow tube with the elbow to the coupling on the outside of the hopper.

	Do not use PVC cement on threaded fittings.
	Use PTFE tape or thread sealant on all threaded fittings.

12. Make sure that all connections and fasteners are tight, including locking devices, latches, bolts, hoses, and fittings.

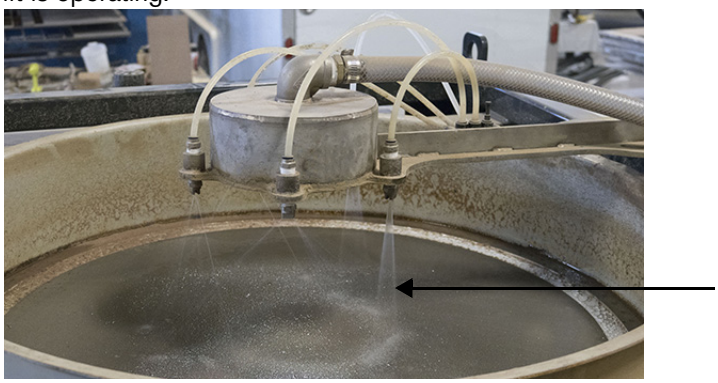
13. Examine the pipes, the hoses, the fittings, and the connections for leaks, deterioration, or damage.

    Identify the source of a leak and correct the problem.

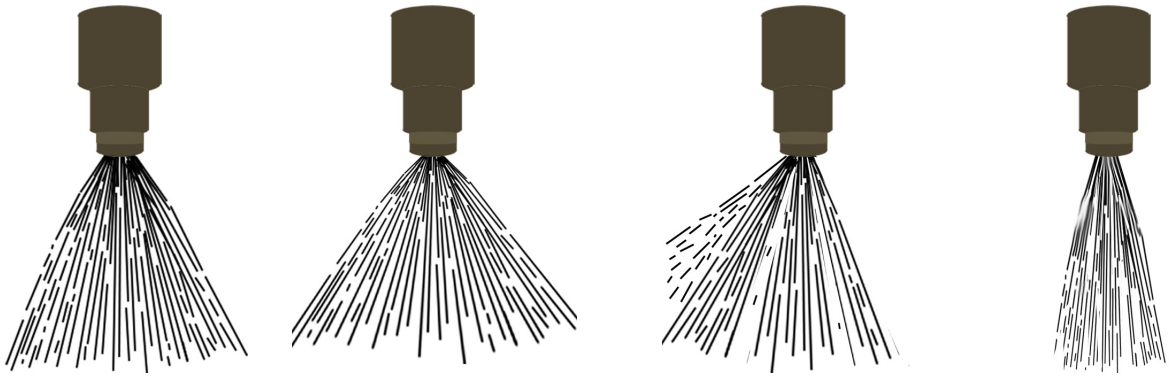
Examine the sprayer head

	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Do this task when the EcoSift is operating.



Make sure that the spray from each nozzle on the bottom of the sprayer head is fan shaped.



Acceptable spray patterns

Unacceptable spray patterns

If the spray pattern is not fan shaped, do the following:

1. Make sure that the rinse water flow and the dust collector water flow are set correctly. Adjust the flow with the water regulators behind the gauge panel on the back of the EcoSift unit.
2. Test the water hardness. Mineral buildup from hard water can block the nozzle.
3. Clean the nozzle.
   a. Turn OFF the machine.
   b. Remove the nozzle.
   c. Use needle nose pliers to remove the small piece of metal from inside the nozzle.
   d. Use compressed air to blow debris out of the nozzle.
   e. Put the small piece of metal into the nozzle.
   f. Install the nozzle on the sprayer head.

Examine the primary screen

Required parts, tools, and materials

Clean water source for rinsing

Do this task when the EcoSift is not operating.

1. Flush the primary screen with clean water to remove abrasive and debris.
2. Examine the primary screen for holes, wear, or damage.

Replace the screen, if necessary. Refer to **Replace the primary screen**.

Replace the primary screen

WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the machine unit must be done only by an approved technician.
CAUTION	Do not touch hot surfaces.
	Do not spray water inside the dryer box.

Required parts, tools, and materials

1-16469 Primary screen	Clean water source for rinsing
5/8-inch wrench	Clean, lint-free towel
5/8-inch socket	Petroleum jelly (white petrolatum)
5/16-inch nut driver	Ladder
Standard hex key wrenches	General purpose silicone sealant
Flat-tip screwdriver	Silicone dispenser (caulk gun)

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

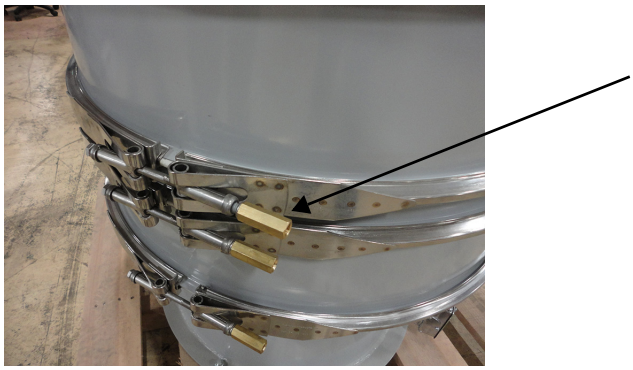
Do this task when the EcoSift is not operating.

1. Flush the primary screen with clean water to remove abrasive and debris.

2. Loosen the socket-head cap screws that hold the sprayer head on the EcoSift frame. Move the sprayer head to the side.

3. Use a nut driver to remove a side panel from the EcoSift unit.

4. Loosen the nut on the clamp ring.



5. To open the clamp ring, push in the lock and pull the clamp lever.

It could be necessary to loosen the nut on the other side of the clamp ring.

6. Remove the overflow tube.

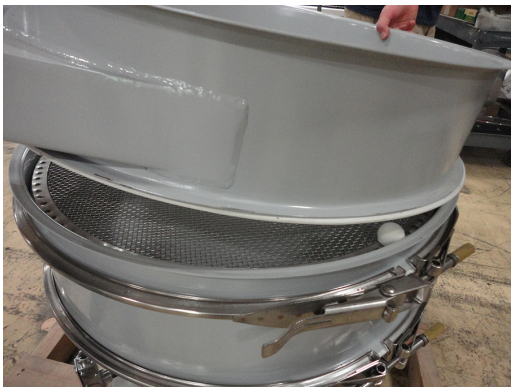
7. Lift the top of the assembly that contains the primary screen.

8. Turn the top of the assembly over to get access to the primary screen.

9. Remove the worn screen and discard it.

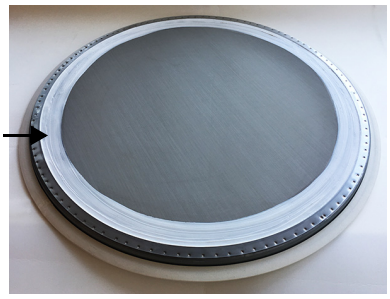
10. Wipe abrasive off of all of the frame surfaces with a clean, lint-free towel.

11. Examine the ball carrier screen for holes, wear, or damage. The ball carrier screen is below the primary screen.



Replace the screen, if necessary. Refer to **Replace the ball carrier screen** on page 88.

12. Put petroleum jelly on the rubber gasket on the bottom of the new primary screen.

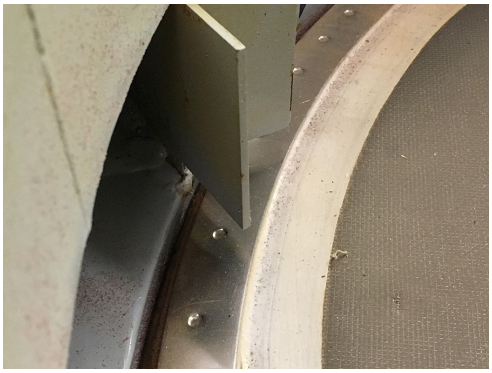


13. Replace the primary screen.

The rubber gasket is on the bottom side of the screen.

14. Put the top assembly on the screen.

15. Fill the gap between the primary screen and the metal wall above it with a bead of silicone.



The silicone bead directs the abrasive into the dryer box and protects the screen from rubbing.

	The silicone bead must be reapplied each time the screen is removed.

16. Close the clamp ring.

    Make sure that the primary screen and the frame are centered.

17. Tighten the hex nuts on the frame.

18. Install the overflow tube.

19. Install the side cover.

20. Move the sprayer head over the screen and tighten it.

Replace the ball carrier screen

WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the machine unit must be done only by an approved technician.
CAUTION	The heating elements can take up to 24 hours to cool. Make sure that the temperature shown on the home screen (RUNNING PAGE) is less than 40.0°C (104°F) before doing maintenance on components inside the machine.

Required parts, tools, and materials

1-16484 Shaker ball carrier screen

5/8-inch wrench

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

Do this task when the EcoSift is not operating.

1. Remove the balls from the carrier screen.
2. Remove the screen clamp.
3. Replace the ball carrier screen.
4. Install the screen clamp.
5. Put the balls on the screen.

Examine the secondary screen

 **CAUTION**	Do not touch hot surfaces.

Required parts, tools, and materials

4 mm hex key wrench

Do this task when the EcoSift is not operating.

Examine the secondary screen for holes, wear, or damage.

Replace the screen, if necessary.

Empty the secondary screen waste container

 **CAUTION**	Do not touch hot surfaces.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.

Do this task when the EcoSift is not operating.

1. Remove the waste container from the bracket.
2. Discard the contents of the container.
3. Install the waste container.

Examine the dryer box

Monitor the dryer box ammeter

The ammeter shows the current (amperes) through each of the legs for the heating elements. If the machine is working correctly, the current on each leg (L1, L2, and L3) is no more than 2 amperes more or less than the others.

Do this task when the EcoSift is operating.

1. Turn ON the dryer blower and the heating elements.
2. Touch **SEL** to see the reading for each leg.

   If the difference between readings is more than 2 amperes, a heating element has failed. Refer to **Replace a dryer box component or remove a blockage** on page 91.

Replace a dryer box component or remove a blockage

Use this procedure to replace a heating element or a thermocouple, or to remove a blockage.

WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the machine unit must be done only by an approved technician.
WARNING	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
CAUTION	Do not touch hot surfaces.
CAUTION	The heating elements can take up to 24 hours to cool. Refer to **Cooling time** on page 69.
CAUTION	The heating elements can take up to 24 hours to cool. Make sure that the temperature shown on the home screen (RUNNING PAGE) is less than 40.0°C (104°F) before doing maintenance on components inside the machine.

Required parts, tools, and materials

1-16495 Type J thermocouple with probe

1-16490 Type J thermocouple with compression fitting

1-16483 Narrow heating element (for a 400 VAC EcoSift)

1-16482 Wide heating element (for a 400 VAC EcoSift)

1-16489 Narrow heating element (for a 480 VAC EcoSift)

1-16488 Wide heating element (for a 480 VAC EcoSift)

45 kg (100 pounds) of clean, dry abrasive

Recommended materials

Bucket or other container

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

Do this task when the EcoSIft is not running.

1. Disconnect the heating elements from their power sources.
2. Remove the element plate.

CAUTION	Prevent damage to the thermocouple wires.

Abrasive pours out through the opening. Put a bucket or other container below the dryer box to catch the spilled abrasive.

3. Remove loose abrasive near the opening.

4. Replace the part(s) or remove the blockage.

WARNING	Rewiring the heating element involves 3-phase wiring. This work must be done only by an approved technician. Refer to the wiring diagram in **Preventive maintenance** on page 65.

5. Install the element plate.

6. Connect the heating elements to their power sources.

7. Turn ON the dryer blower.

8. Pour 45 kg (100 pounds) of abrasive into the top of the dryer box.

   Make sure that the added abrasive covers the tops of the elements. This prevents a blockage in the blower nozzles.

Replace the dryer blower air filter

WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the machine unit must be done only by an approved technician.
WARNING	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
CAUTION	Do not touch hot surfaces.
CAUTION	The heating elements can take up to 24 hours to cool. Refer to **Cooling time** on page 69.
CAUTION	The heating elements can take up to 24 hours to cool. Make sure that the temperature shown on the home screen (RUNNING PAGE) is less than 40.0°C (104°F) before doing maintenance on components inside the machine.

Required parts, tools, and materials

1-16474 Blower air filter

5/16-inch nut driver

Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

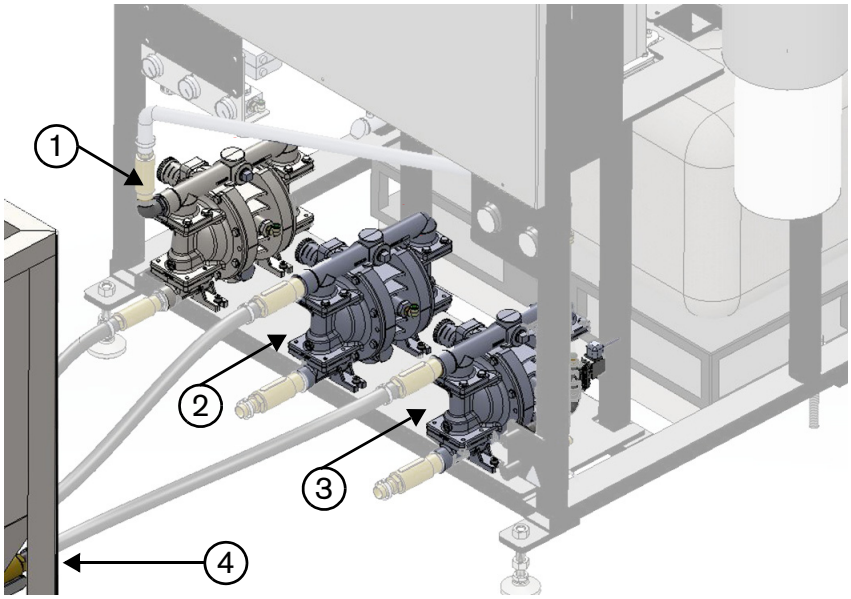
Do this task when the EcoSift is not operating.

1. Use a nut driver to remove the right side panel from the machine.
2. Remove the wing nut on the dryer blower filter and remove the cover from the dryer blower.
3. Replace the dryer blower air filter.
4. Install the cover.
5. Hand tighten the wing nut on the dryer blower filter.
6. Install the right-side cover.

Examine the diaphragm pumps

CAUTION	Do not touch hot surfaces.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Examine the pumps regularly to find and correct problems early.



1 Abrasive pump

2 Feed pump

3 Agitation pump

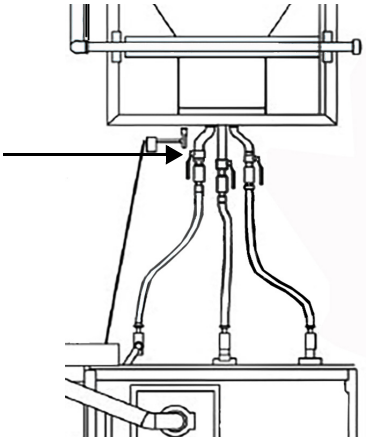
4 EcoSift hopper

Do this task when the EcoSift is operating.

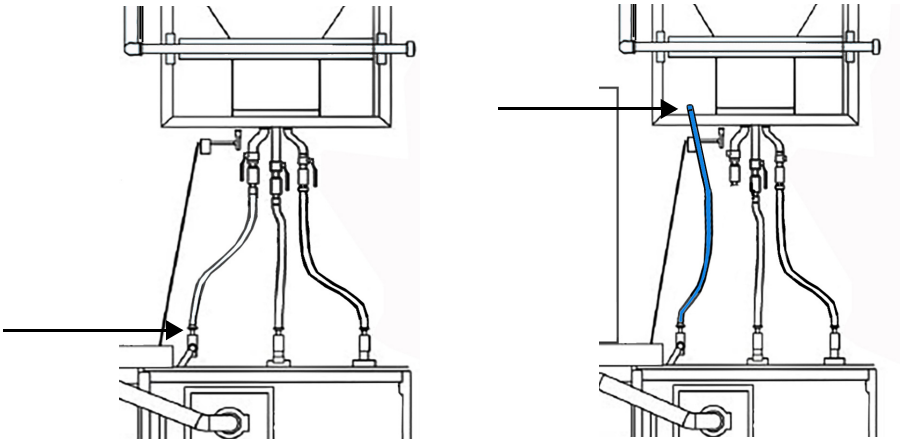
1. Examine the pumps for leaks, deterioration, or damage. Examine the pipes, the hoses, the fittings, and the connections for leaks, deterioration, or damage.

   Identify the source of a leak and correct the problem.

2. Close the agitation valve on the EcoSift hopper.



3. Disconnect the agitation pump hose from the hopper. Put the end of the hose over the edge of the hopper so water goes into the hopper.



4. Turn ON the agitation pump.

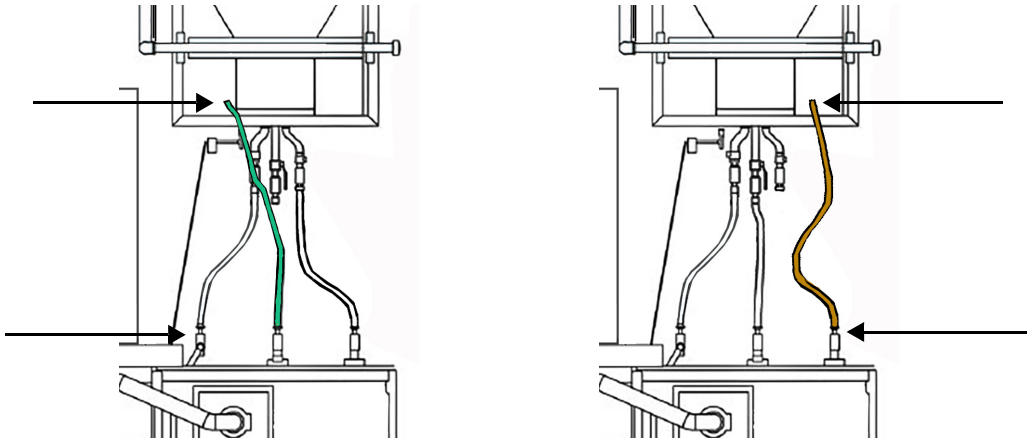
   Water flows into the hopper.

5. Turn OFF the agitation pump.

6. Connect the agitation pump hose to the hopper.

7. Open the agitation valve on the EcoSift hopper.

8. Do these steps again for the feed pump and then for the abrasive pump.



9. Make sure that all connections and fasteners are tight, including locking devices, latches, bolts, hoses, and fittings.

Repair a diaphragm pump

 **WARNING**	Before doing maintenance or repair procedures: ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. ▪ Release all water pressure from the pumps before starting maintenance or repairs. ▪ Bleed down and lock out compressed air sources. Compressed air systems do not always depressurize when other power is disconnected. Refer to page 66 for more information.
 **WARNING**	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.
	Obey local regulations when discarding parts, materials, abrasive, and wastewater. Refer to **Recycling and end of product life** on page 110.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Required parts, tools, and materials

1-16475 Wet-end seal replacement kit

1-16476 Air-end seal replacement kit

13186 Antiseize bolt lubricant (white lithium grease)

Two 3/4-inch wrenches or

2 ratchets with 3/4-inch sockets

1/2-inch wrench or

ratchet with a 1/2-inch socket

3/16-inch hex key wrench

6 mm hex key wrench

3/16-inch hex driver bit

3/4-inch impact socket

Torque wrench

3.05 N·m to 8.47 N·m (27 lbf·in to 75 lbf·in)

Impact wrench

Needle nose pliers

Snap ring pliers

O-ring pick

Electrical tape or

section of heat shrink tubing

Marking pen

Rubber mallet

Vise with nonmarring jaws

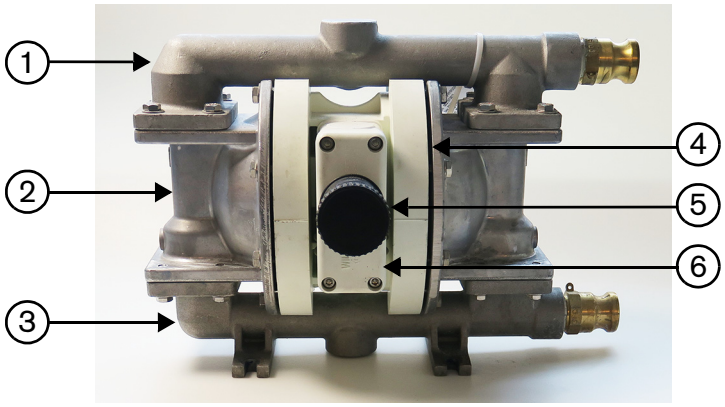
Keep spare parts available so that they are ready when required. To order parts, refer to the **Parts** section, which begins on page 113.

Do this task when the EcoSift is not operating.

Remove a pump from the EcoSift unit

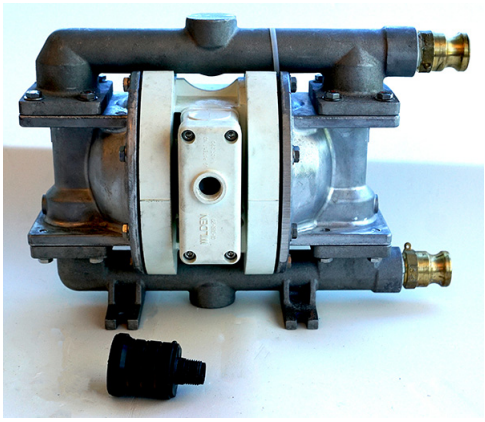
1. Disconnect the inlet hose, the discharge hose, and the compressed air hose.
2. Use a hex key wrench to remove the 4 bolts on the base of the pump.
3. Drain the water from the pump.

Disassemble the pump



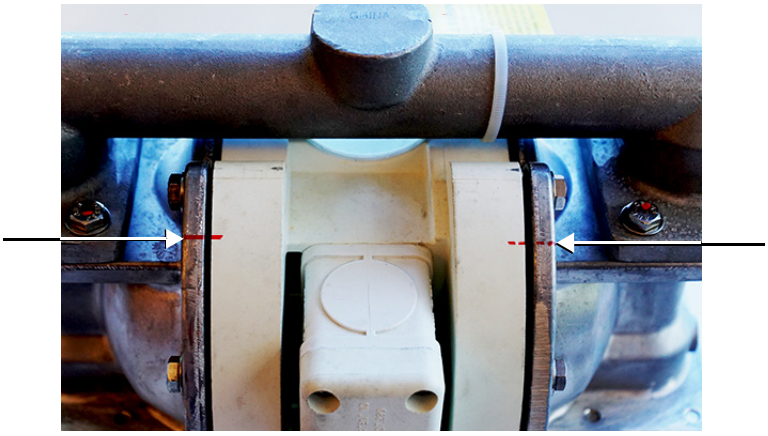
1 Discharge manifold
2 Liquid chamber
3 Inlet manifold
4 Center section
5 Muffler
6 Air valve assembly

1. Remove the muffler from the pump.

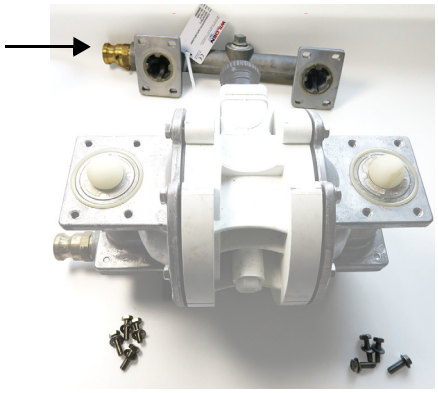


2. Turn the pump upside-down to drain the liquid from it.

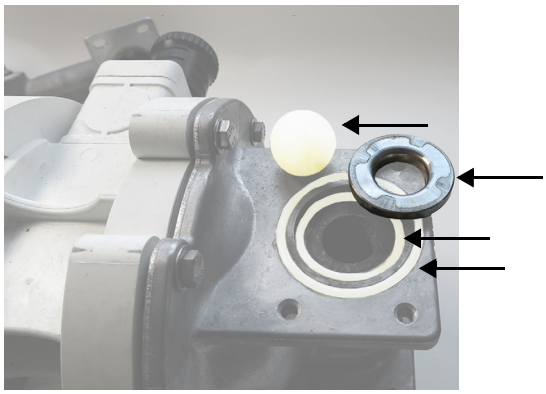
3. Use a marking pen to make a line on each liquid chamber and the center section. This will help to align the parts during reassembly.



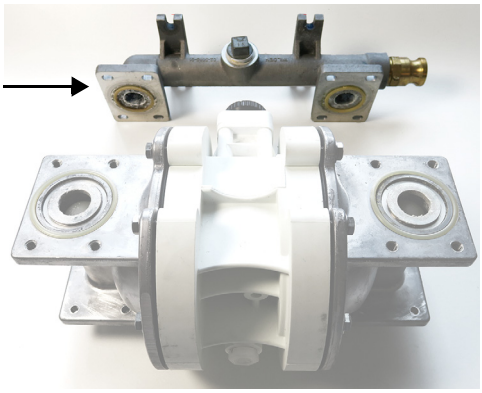
4. Use a 1/2-inch wrench or socket to remove the discharge manifold from the liquid chambers.



5. Remove the check valve balls, the seats, and the seat O-rings.

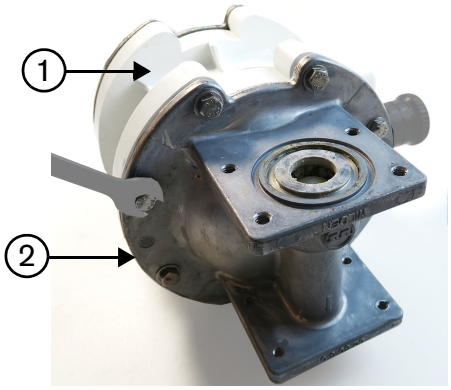


6. Use a 1/2-inch wrench or socket to remove the inlet manifold from the liquid chambers.



7. Remove the check valve balls, the seats, and the seat O-rings.

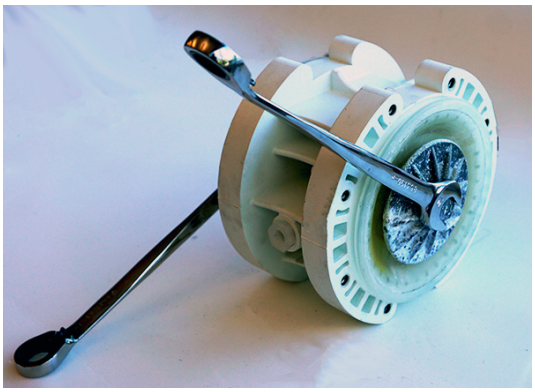
8. Use a 1/2-inch wrench or socket to remove both liquid chambers from the center section.



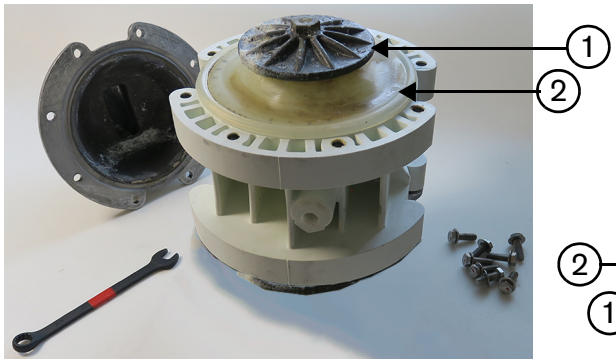
1 Center section

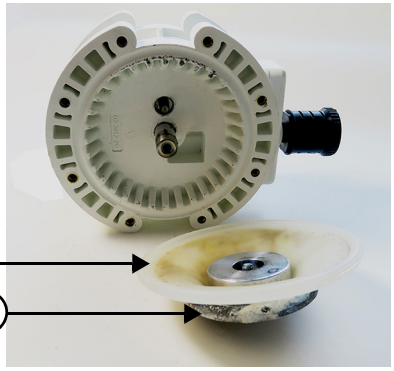
2 Liquid chamber

9. Use two 3/4-inch wrenches or sockets to remove the diaphragm assembly from the center section.



10. Remove 1 outer piston and diaphragm from the center section.

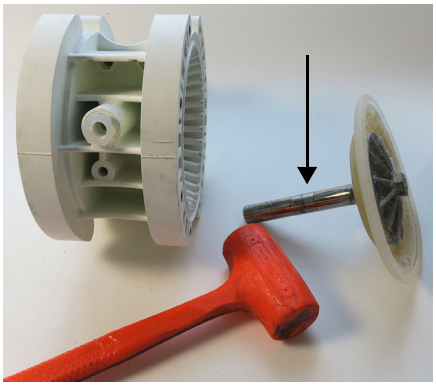




1 Outer piston

2 Diaphragm

11. Use a rubber mallet to tap the shaft out of the center section.

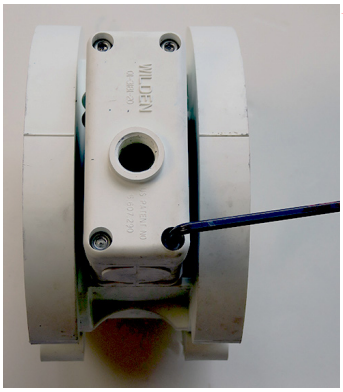


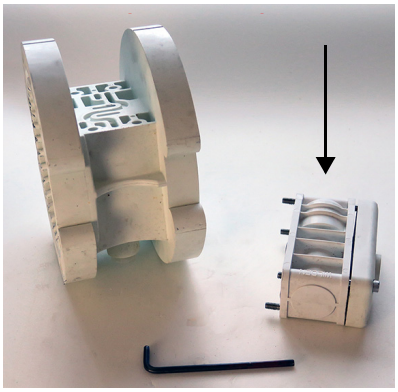
12. Remove the other diaphragm assembly from the shaft.

a. Put the shaft in a vise with nonmarring jaws. Make sure that the shaft is not nicked, scratched, or gouged.

b. Use an impact wrench and a 3/4-inch socket to remove the diaphragm assembly from the shaft.

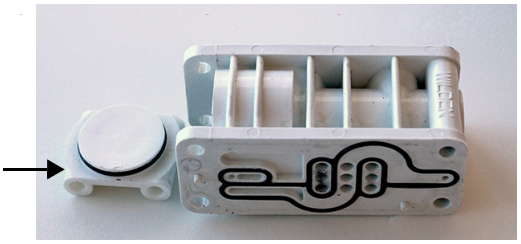
13. Use a 3/16-inch hex key wrench to loosen the bolts that hold the air valve assembly on the center section.





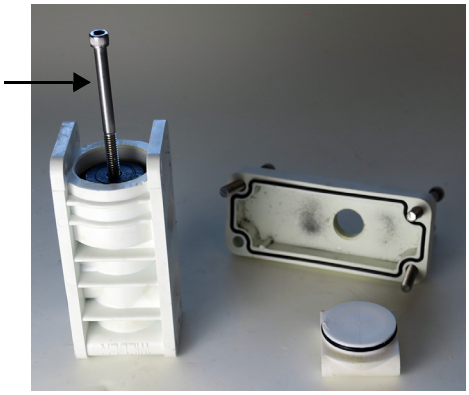
14. Remove the muffler plate and the air valve bolts from the air valve body.

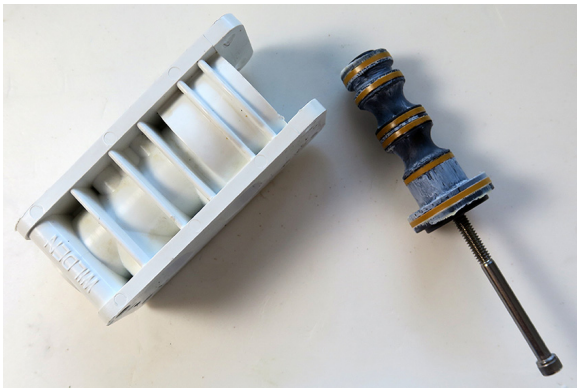
15. Remove the air valve end cap from the air valve body.



16. Remove the gaskets from the muffler plate and the air valve body.

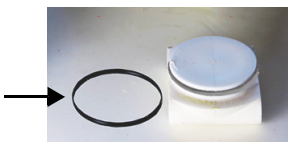
17. Put an air valve bolt into the air valve spool to help pull the spool out of the air valve body.



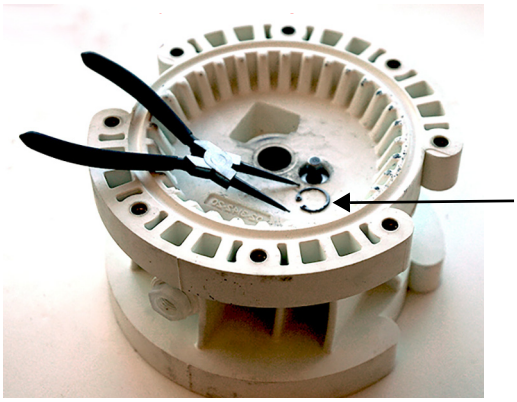


18. Remove the air valve bolt from the air valve spool.

19. Remove the O-ring from the air valve body end cap.

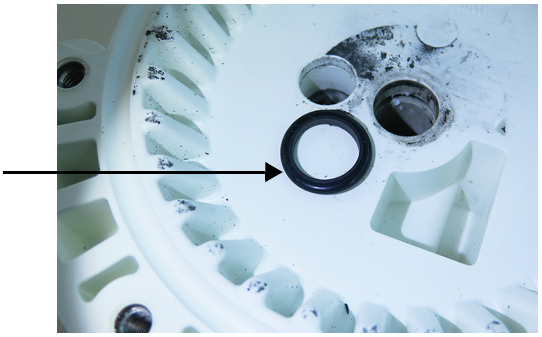


20. Use snap ring pliers to remove the 2 snap rings that hold the pilot spool in the center section.



21. Remove the pilot spool from the center section.

22. Use an O-ring pick to remove the 2 shaft seals from shaft hole in the center section.



23. Discard the shaft seals, the snap rings, the muffler plate gasket, the air valve gasket, the air valve spool, the end cap O-ring, and the pilot spool.

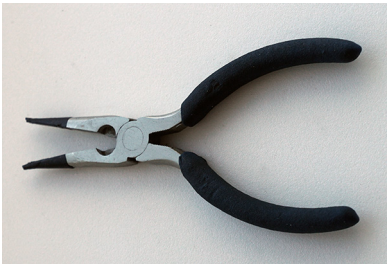
Assemble the pump

	Lubricate stainless steel bolts with antiseize bolt lubricant (white lithium grease) to prevent seizing. Lubricate the air valve bore, the center section shaft, and the pilot spool bore with NLGI grade 2 white EP bearing grease or an equivalent. This grease is found in the air end seal kit.

Torque specifications

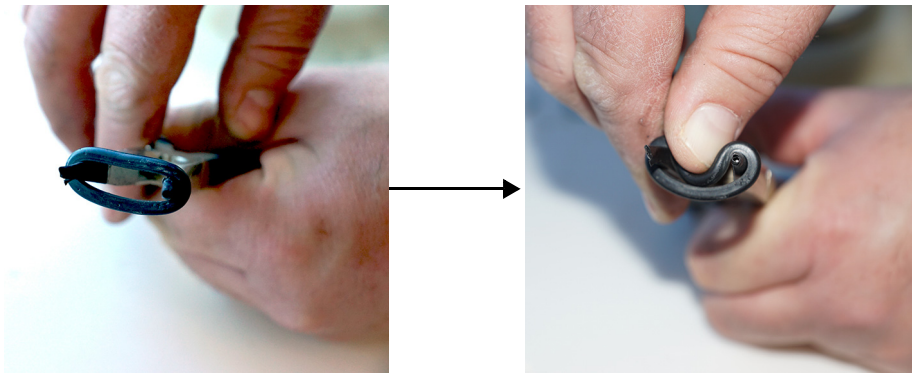
Air valve	3.05 N·m (27 lbf·in)	**Top and bottom manifolds**	8.47 N·m (75 lbf·in)
Outer pistons	3.40 N·m (30 lbf·in)	**Liquid chambers to the center section**	8.47 N·m (75 lbf·in)
Diaphragms	3.40 N·m (30 lbf·in)		

1. Make sure that the shaft hole and the pilot spool hole in the center section are clean and free of debris.
2. Put electrical tape or put heat shrink tubing around each jaw of needle nose pliers. This prevents damage to the new shaft seal.



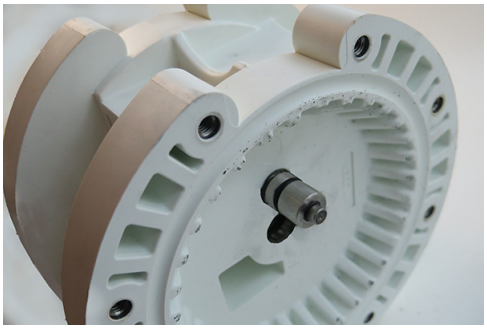
3. Use needle nose pliers to put the shaft seals into the grooves in the shaft hole.

   Suggested method: Put the jaws of the pliers inside the shaft seal and open the pliers as wide as possible. Push down on the top of the seal to form a kidney shape. Squeeze the jaws to hold the seal in this shape while it is installed in the shaft hole.



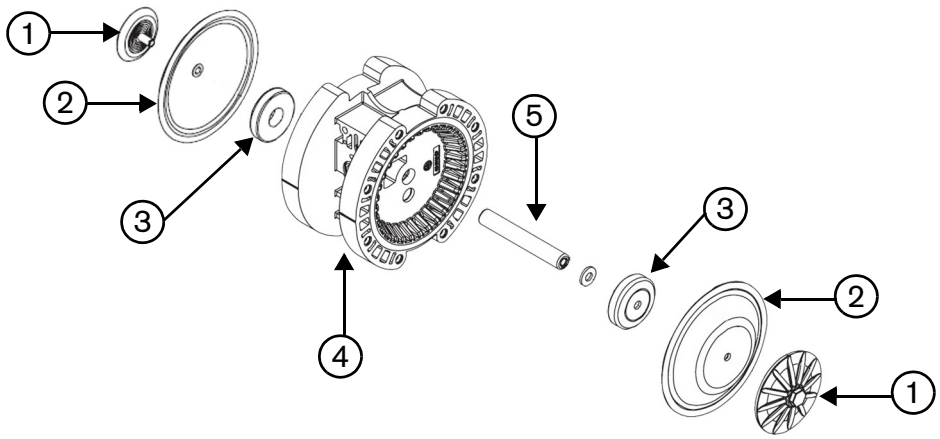
4. The shaft seal can have a bump from being deformed for installation. Push on the bump until it is equally smooth all the way around the groove.
5. Lubricate the pilot spool with NLGI grade 2 white EP bearing grease.

6. Replace the pilot spool.



7. Replace the snap ring on each side of the center section.

8. Use two 3/4-inch wrenches to assemble the center section.

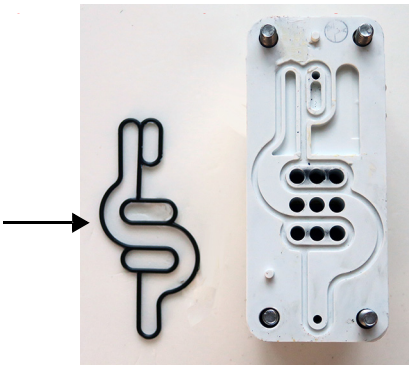


1 Outer piston
2 Diaphragm
3 Inner piston
4 Center section
5 Shaft

Lubricate the shaft with NLGI grade 2 white EP bearing grease.

To tighten the outer pistons, turn them in opposite directions at the same time. Torque the outer pistons and the diaphragms to 3.40 N·m (30 lbf·in).

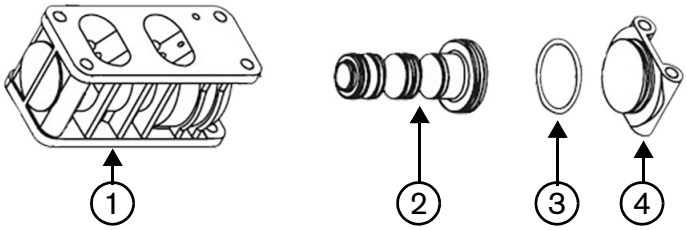
9. Lubricate the air valve gasket with NLGI grade 2 white EP bearing grease. Replace the gasket on the air valve body.



10. Assemble the air valve.

CAUTION	Prevent damage to the seals when handling the air valve spool.
	Do not remove the seals.

11. Lubricate the valve spool and the end cap O-ring with NLGI grade 2 white EP bearing grease.



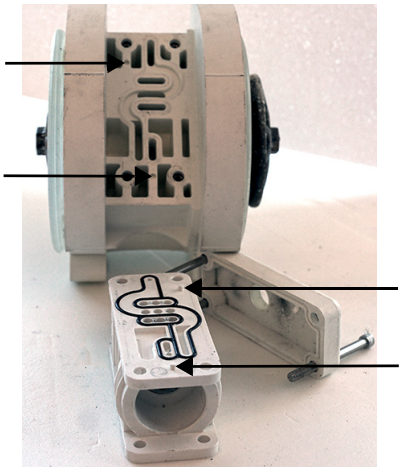
1 Air valve body

2 Valve spool

3 End cap O-ring

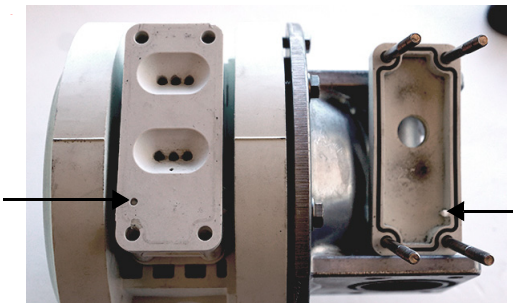
4 End cap

Align the pins on the air valve to the alignment holes in the center section to make sure that the air valve is installed correctly.



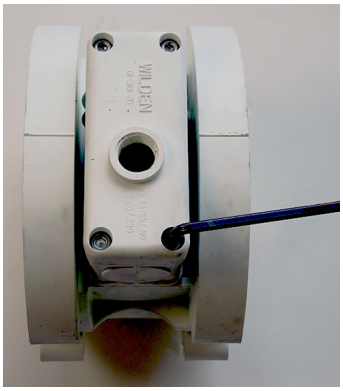
12. Lubricate the muffler gasket with NLGI grade 2 white EP bearing grease. Replace the gasket on the muffler plate.

13. Put the muffler plate on the air valve body.



Align the pin on the muffler plate to the alignment hole in the air valve body to make sure that the air valve is installed correctly.

14. Use a 3/16-inch hex key wrench to attach the muffler plate and the air valve body to the center section.

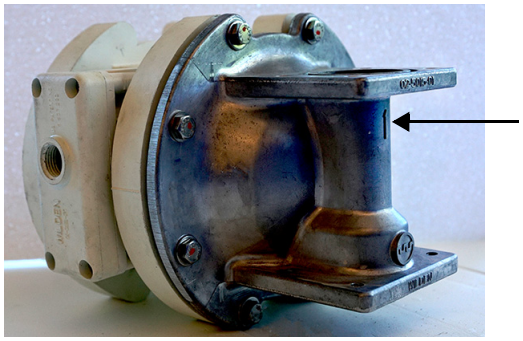


15. Torque the air valve bolts to 3.05 N·m (27 lbf·in).

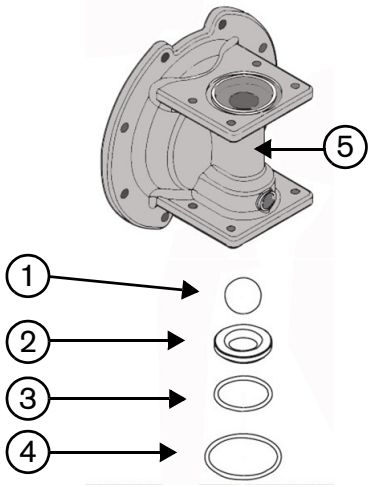
16. Use a 1/2-inch wrench or socket to attach the liquid chambers to the center section.

Lubricate stainless steel bolts with antiseize bolt lubricant (white lithium grease) to prevent seizing.

17. Find the direction arrows on the liquid chambers. The arrows point up toward the discharge manifold when the pump is assembled.

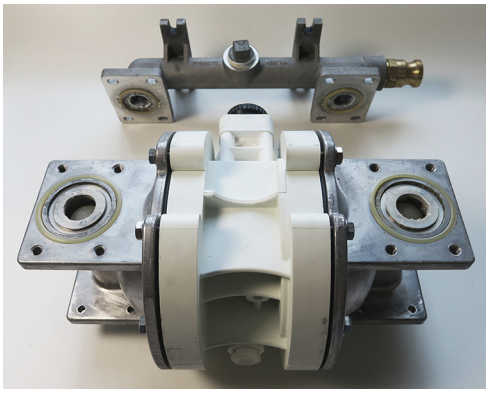


18. Replace the O-rings, the check valve seat, and the check valve ball in the lower liquid chambers.



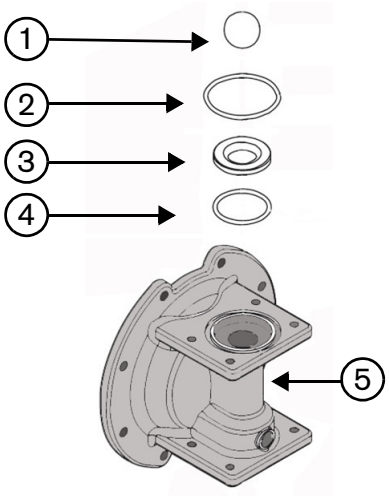
1 Check valve ball
2 Check valve seat
3 Valve seat O-ring
4 Manifold O-ring
5 Liquid chamber

19. Use a 1/2-inch wrench or socket to attach the inlet manifold to the liquid chambers.



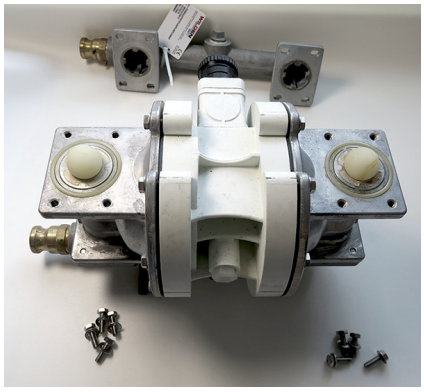
Lubricate stainless steel bolts with antiseize bolt lubricant (white lithium grease) to prevent seizing. Torque the bolts to 8.47 N·m (75 lbf·in).

20. Replace the O-rings, the check valve seat, and the check valve ball in the upper liquid chambers



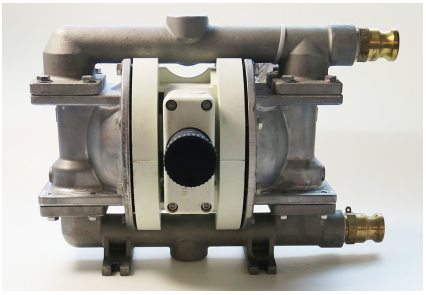
1 Check valve ball
2 Manifold O-ring
3 Check valve seat
4 Valve seat O-ring
5 Liquid chamber

21. Use a 1/2-inch wrench or socket to attach the inlet manifold to the liquid chambers.



Lubricate stainless steel bolts with antiseize bolt lubricant (white lithium grease) to prevent seizing. Torque the bolts to 8.47 N·m (75 lbf·in).

22. Install the muffler on the muffler plate.



23. Connect the inlet hose, the discharge hose, and the compressed air hose.

Start the EcoSift after maintenance

WARNING	Only approved personnel can operate, maintain, and repair this machinery. Refer to **Training** on page 67 for more information.
WARNING	Do not operate this machinery without the access covers and all other safety devices installed. Do not remove guards while the unit is operating.
WARNING	Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20.
CAUTION	If a water line, a fitting, a hose, or a valve might be frozen, do not operate the system. Thaw the system until water moves freely through the entire water circuit.
	Remove all tools and materials from the work area before starting the machine.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Turn ON the EcoSift. Refer to **Turn ON the EcoSift** on page 47.

Long-term storage

WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.
CAUTION	Do not store outdoors or in areas with high humidity

1. Disassemble the EcoSift.
2. Clean and dry all of the parts.
3. Use compressed air to blow water out of the hoses.
4. Lubricate parts that can oxidize.
5. Put the system on a pallet.
6. Wrap the pallet and the EcoSift with plastic.

The recommended storage temperature is -25.0°C to 55.0°C (-13°F to 131°F).

Recycling and end of product life

Correct disposal of waste protects us from hazards, conserves energy and natural resources by recycling, and decreases and eliminates waste.

At the end of the life of the product or its parts, recycle or discard materials and parts using an environmentally satisfactory method and in accordance with your company policy and local regulations.

If the product contains substances that are harmful to the environment, remove and discard the product safely in accordance with national and local hazardous material handling regulations. This includes liquids such as hydraulic fluid and wastewater. Make sure that personal protective equipment is used, when applicable.

Preventive maintenance records

	Problem and work done
Date	
Hours	
Initials	
Date	
Hours	
Initials	
Date	
Hours	
Initials	
Date	
Hours	
Initials	
Date	
Hours	
Initials	
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	Problem and work done
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Hours	
Initials	

Parts

Genuine Hypertherm parts are the factory-recommended replacement parts for this system. The Hypertherm warranty might not cover damage caused by using nongenuine Hypertherm parts.

To order parts, contact the original equipment manufacturer (OEM) or Hypertherm with the part numbers and quantities.

Hypertherm Waterjet
305 2nd Ave NW, Suite 115
New Brighton, MN 55112 USA
+1 866-566-7099
+1 651-294-8620 fax

1-16156 Waste hopper

Quantity refers to the number of units included with the assembly.

Description	Quantity
Waste hopper	1
Hopper overflow tube	1
Screw-pin anchor shackle, 4-1/2-ton, 5/8 inch	4
Waste-abrasive collection bag	2

Hopper overflow assemblies

An overflow assembly is required for each hopper.

Quantity refers to the number of units included with the assembly.

1-16136 PVC overflow assembly

Description	Quantity
PVC overflow elbow assembly	1
PVC overflow tube with coupling, 152.4 cm (60 inch) length	2

1-16137 Flexible overflow assembly

Description	Quantity
PVC overflow elbow assembly, U-shaped	1
Flexible overflow hose assembly, 3.7 m (12 feet) length	1

Diaphragm pump maintenance kits

Quantity refers to the number of units included with each kit.

1-16475 Wet-end seal replacement kit

Description	Quantity
Check valve ball	4
Diaphragm	2
Manifold O-ring, 2.359 × 0.139	4
Valve seat O-ring, 1.734 × 0.139	4

1-16476 Air-end seal replacement kit

Description	Quantity
Grease, air system, 2.67 g (0.09 oz)	1
Gasket, muffler plate	1
Gasket, air valve	1
Pilot sleeve assembly	1
Closed air-valve spool assembly	1
Reducer bushing, 1/2 inch to 1/4 inch	1
Retaining snap ring	2
O-ring, 0.103 × 1.362	1
Glyd-ring® O-ring, 0.749 × 0.133	2

Replacement parts and consumable parts

Quantity refers to the number of units included with each part number.

Part number	Description	Quantity
1-16497	Spray nozzle, distribution head	1
1-16469	Primary screen	1
1-16484	Shaker ball carrier screen	1
1-16482	Wide heating element, 400 VAC, 2,500 W	5
1-16488	Wide heating element, 480 VAC, 2,500 W	5
1-16483	Narrow heating element, 400 VAC, 2,500 W	4
1-16489	Narrow heating element, 480 VAC, 2,500 W	4
1-16495	Type J thermocouple with probe	1
1-16490	Type J thermocouple with compression fitting	1
1-16474	Blower air filter	1
1-16493	Spray nozzle, dust collector	1
1-16451	Feed and agitation hose assembly	2
1-16452	Abrasive hose assembly	1
1-16463	Abrasive pump–to–distribution head hose assembly	1
1-16133	Waste-abrasive collection bag	10
1-16445	Recycled-abrasive collection bag	1
1-16449	Hopper wear plate	1
1-13186	Antiseize bolt lubricant (white lithium grease)	1

Safety

	Refer to the manual. Read and understand all of the safety guidelines in this manual.
 **WARNING**	Before opening the electrical enclosure or doing maintenance or repair procedures: ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. ▪ Release all water pressure from the pumps before starting maintenance or repairs. ▪ Bleed down and lock out compressed air sources. Compressed air systems do not always depressurize when other power is disconnected. Refer to page 66 for more information.
 **WARNING**	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.
 **WARNING**	Work that requires opening the electrical enclosure or removing covers or panels from the EcoSift unit must be done only by an approved technician.
 **WARNING**	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
	Keep all interior parts and surfaces clean. Put all parts on a clean work surface.

Refer to the following pages for problems.

Uncontrolled shutdown, page 118

Warnings and faults, page 119

Diaphragm pumps, page 127

Uncontrolled shutdown

	Do not use the emergency stop knob to turn OFF the EcoSift in nonemergency situations. The system does not do a normal shutdown, and wet abrasive is left on the primary screen and in the abrasive pump and hoses, which can cause a blockage.

An uncontrolled shutdown can cause damage to the system or problems with the operation of the EcoSift.

- Wet abrasive remains on the primary screen.
- Wet abrasive in the dryer box can spill water onto the heating elements.
- The abrasive pump can have abrasive in the diaphragm.
- The abrasive hoses contain abrasive.

After an uncontrolled shutdown

1. Turn ON the dryer blower.

   Abrasive flows from the dryer.

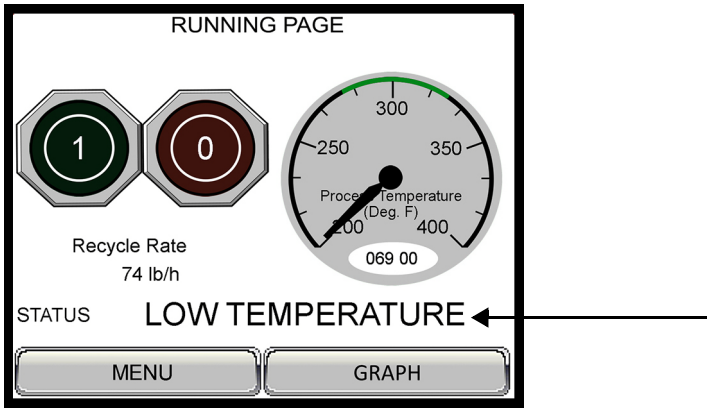
2. Wait 2 minutes.
3. Turn ON the heating elements to add heat to the system.
4. Wait 1 minute.
5. Turn ON the primary shaker.
6. Wait 3 minutes.

   The abrasive is shaken off of the primary screen.

7. Turn OFF the primary shaker, the elements, and the dryer blower.
8. Start the system normally.
9. When the temperature is 160.0°C (320°F), make sure that the abrasive pump pressure gauge needle changes. A steady needle indicates that the abrasive pump is not cycling.

Warnings and faults

The fault indicator beacon comes on when the system senses a warning or a fault condition. The operator interface shows information about warnings and faults in the STATUS area.

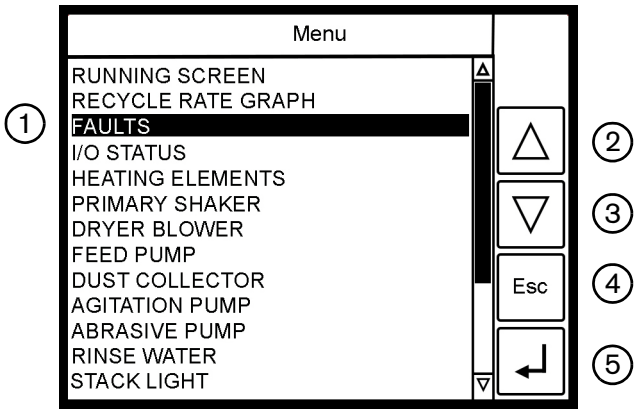


Warning and fault statuses shown on this screen are:

- EMERGENCY STOP
- LOW TEMPERATURE
- HIGH TEMPERATURE
- LOW ABRASIVE
- FAULTED

1. If the home screen (RUNNING PAGE) shows a warning or fault status, touch **MENU**.

   The MENU screen opens.



1 Highlight bar

2 Arrow up

Scrolls up in the list

3 Arrow down

Scrolls down in the list

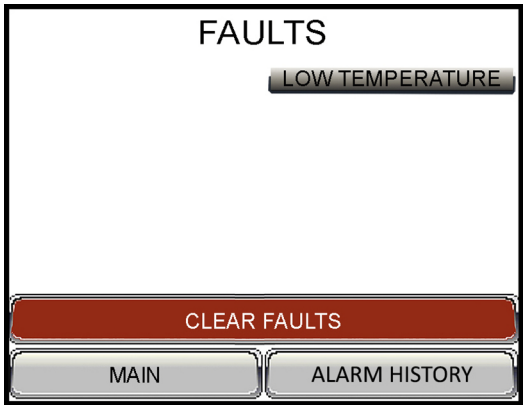
4 Escape

Returns to the home screen (**RUNNING PAGE**).

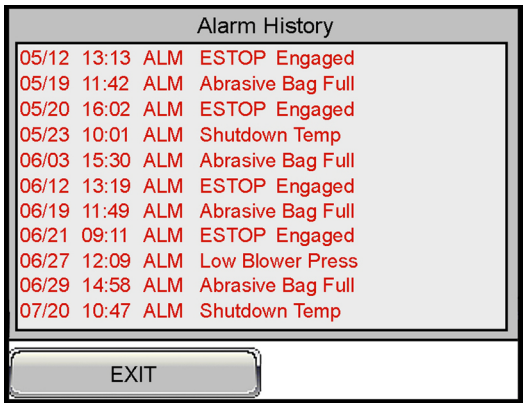
5 Enter symbol

2. Use the arrows to move the highlight bar to FAULTS. Touch the enter symbol.

   The FAULTS screen opens to show a list of active warnings and faults.



   Touch **ALARM HISTORY** to see the previous 11 warnings and faults. This screen is for information only.

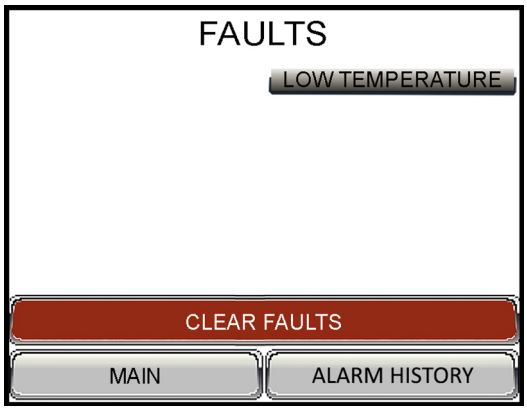


3. Correct the problem. Refer to the **Warning and fault descriptions** section, which begins on page 121.

4. If the EcoSift turned off, turn ON the unit.

Remove a warning or a fault

Touch **CLEAR FAULTS** to remove the warning or the fault.



Warning and fault descriptions

E-STOP ENGAGED

	Do not use the emergency stop knob to turn OFF the EcoSift in nonemergency situations. The system does not do a normal shutdown, and wet abrasive is left on the primary screen and in the abrasive pump and hoses, which can cause a blockage.

If the EcoSift turns off because the emergency stop knob was pushed or because of a fault, the unit does an uncontrolled shutdown. Power to the heating elements, pumps, and motors turns off. The operator interface stays on. Refer to **Uncontrolled shutdown** on page 118.

To reset the emergency stop, turn the knob clockwise.

SCREEN OVERLOAD

This fault is caused by an overload on relay **1OL** or a motor failure.

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118

Cause	Solution
The primary screen shaker motor is using too much current. The overload relay opened the circuit breaker.	Push the RESET button on the overload relay inside the electrical enclosure.
The overload setting is incorrect.	Contact a Hypertherm Technical Service Associate. Refer to Hypertherm contact information on page 4.
The overload relay failed.	
The motor failed.	

Blower overload

This fault is caused by an overload on relay **2OL** or a motor failure.

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

Cause	Solution
The dryer blower motor is using too much current. The overload relay opened the circuit breaker.	Push the RESET button on the overload relay inside the electrical enclosure.
The overload setting is incorrect.	Contact a Hypertherm Technical Service Associate. Refer to Hypertherm contact information on page 4.
The overload relay failed.	
The motor failed.	

Dust collector O/L

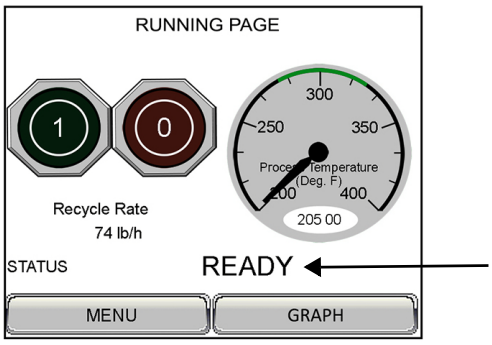
This fault is caused by an overload on relay **4MS/OL** or a motor failure.

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

Cause	Solution
The dust collector motor is using too much current. The overload relay opened the circuit breaker.	1. Push the RESET button on the overload relay inside the electrical enclosure. 2. Start the system. If the fault occurs again, dry the abrasive manually. Refer to **Dry the abrasive in the dryer box manually** on page 123.
The overload setting is incorrect.	Contact a Hypertherm Technical Service Associate. Refer to Hypertherm contact information on page 4.
The overload relay failed.	
The motor failed.	

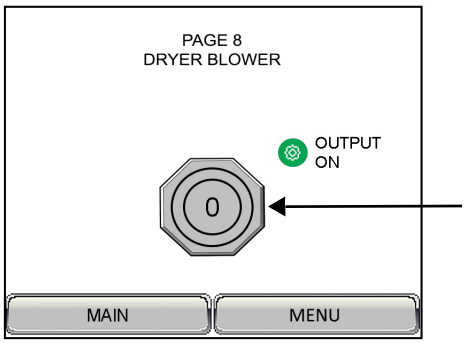
Dry the abrasive in the dryer box manually

1. Make sure that the home screen (RUNNING PAGE) status is **READY**.



2. Touch **MENU** to open the MENU screen.
3. Touch **DRYER BLOWER** to highlight the selection. Touch the enter symbol.

   The DRYER BLOWER screen opens.
4. Touch **O** to turn ON the dryer blower. The OUTPUT ON indicator is green when the component is on.



5. Touch **MENU** to open the MENU screen.
6. Touch **DRYER BLOWER** to highlight the selection. Touch the enter symbol.

   The DRYER BLOWER screen opens.
7. Touch **O** to turn ON the dryer blower. The OUTPUT ON indicator is green when the component is on.

Shutdown temp

This fault occurs when the temperature in the dryer box is less than 115.6°C (240°F).

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

If the abrasive in the dryer box is not too wet, the system operates normally when it is started.

If the fault reoccurs, clean the wet abrasive out of the dryer box before starting the EcoSift.

Pressure sensor

Pressure sensor 1PS monitors the air pressure in the dryer box. This sensor is mounted on the bottom of the dryer box, toward the back of the unit.

The pressure shows on the sensor. The programmed range is between 0.06 bar (0.9 psi) and 0.14 bar (2.0 psi).

This fault occurs when the sensor senses that the pressure is out of range.

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

Cause	Solution
The sensor is not plugged in.	Plug in the sensor.
The sensor is not receiving sufficient power.	Make sure that the sensor display lamp is on. This shows that the sensor is receiving 24 VDC.
The cable is damaged.	Replace the cable.
The sensor failed.	Replace the sensor.

Recycle rate

When the dryer box temperature is too high, the system compensates by sending less water and more abrasive to the primary screen. This causes the temperature in the dryer box to decrease.

If the dryer box temperature is too low, the system compensates by sending more water and less abrasive to the primary screen. This causes the temperature in the dryer box to increase.

Cause	Solution
There is not enough abrasive in the EcoSift hopper.	Add abrasive to the EcoSift hopper. Make sure that the EcoSift hopper contains sufficient abrasive to recycle.
A hose is clogged.	Clean the hose. Refer to **Clean a hose** on page 129.
There is a blockage in the feed pump.	Disassemble the pump and look for blockages in the air passages or debris that prevents the pump parts from moving. Refer to **Repair a diaphragm pump** on page 96.

Low temperature

When the temperature in the dryer box is too low, the abrasive does not dry.

This warning occurs when the temperature in the dryer box is less than the minimum setpoint of 137.8°C (280°F). The feed pump decreases the quantity of abrasive going to the primary screen, which gives the dryer box time to dry the wet abrasive. When the temperature increases to the setpoint, the feed pump resumes delivering a normal quantity of abrasive.

This fault occurs when the temperature in the dryer box is less than 115.6°C (240°F).

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

Cause	Solution
The primary screen is blocked.	Remove blockages from the primary screen.
There is too much wet abrasive in the dryer box.	▪ Turn ON the dryer blower and the heating elements to dry the abrasive. ▪ Remove wet abrasive from the dryer box.
There is a problem with a heating element.	▪ Monitor the dryer box ammeter. Refer to **Monitor the dryer box ammeter** on page 90. ▪ Replace the heating element. Refer to **Replace a dryer box component or remove a blockage** on page 91.

Low blower press

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

This fault occurs when the air pressure from the dryer blower in the dryer box is too low.

Cause	Solution
The dryer blower is not working.	Make sure that there is not a blockage between the dryer blower motor and the pressure sensor.
The filter is clogged.	Examine the dryer blower motor filter. Clean the filter, if necessary.

HIGH BLOWER PRESS

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

This fault occurs when the air pressure from the dryer blower in the dryer box is more than 0.06 bar (0.8 psi).

Cause	Solution
The nozzles in the bottom of the dryer box are clogged.	Unclog the nozzles.
Abrasive in the dryer box is too wet.	Let the abrasive dry.

ABRASIVE BAG FULL

The recycled-abrasive collection bag is full. The EcoSift turns off normally.

Replace the bag. Refer to **Replace the recycled-abrasive collection bag** on page 71.

HIGH TEMPERATURE

This warning occurs when the heating element temperature is more than 160.0°C (320°F). The system turns off the elements to cool.

The system turns on the elements when they are at a safe operating temperature.

CRITICAL HIGH TEMP

The EcoSift does not turn off normally. It could be necessary to clean out the wet abrasive before starting the machine. Refer to **Uncontrolled shutdown** on page 118.

This fault occurs when the heating element temperature is more than 232.2°C (450°F).

Cause	Solution
There is a short on contactor 1CON or on Din-a-mite 1SSR.	Contact a Hypertherm Technical Service Associate. Refer to Hypertherm contact information on page 4.
The EcoSift controller is malfunctioning.	

Diaphragm pumps

A diaphragm pump does not operate

 **WARNING**	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.

If a pump does not start operating when the air valve on the pump is open, use this troubleshooting table.

Cause	Solution
The compressed air supply is off.	Makes sure the compressor is plugged in and the power switch is on.
The pressure in the compressed air tank is low.	Operate the compressor to increase the pressure. Refer to the compressor manual for more troubleshooting instructions.
There is a blockage in the pump.	Disassemble the pump and look for blockages in the air passages or debris that prevents the pump parts from moving. Refer to **Repair a diaphragm pump** on page 96.
The air valve spool is not moving because the inner piston is damaged.	Replace the inner piston. Refer to **Repair a diaphragm pump** on page 96.

A diaphragm pump operates slowly

WARNING	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.

If a pump operates too slowly, use this troubleshooting table.

Cause	Solution
The pressure is not set correctly.	Set the pressure on the **feed pump** between 1.0 bar and 1.4 bar (15 psi and 20 psi). This pump pulls water and abrasive from the waterjet tank into the EcoSift hopper. Set the pressure on the **abrasive pump** between 1.8 bar and 1.9 bar (26 psi and 28 psi). This pump pulls the abrasive into the EcoSift system from a nozzle in the EcoSift hopper and deposits it on the primary screen. Set the pressure on the **agitation pump** between 1.9 bar and 2.2 bar (28 psi and 32 psi). This pump pushes water through the center of the nozzle to agitate the contents of the EcoSift hopper.
The feed pump recycle rate is low.	If the feed pump operates too slowly, the system compensates by sending less water and more abrasive to the primary screen. If the condition is not changed, a fault occurs and the EcoSift turns off. Refer to **Recycle rate** on page 124.
The pressure in the compressed air tank is low.	Operate the compressor to increase the pressure. Refer to the compressor manual for more troubleshooting instructions.
A check valve ball or a seat is blocked by abrasive or small debris.	Force clean water through the suction side while the pump is operating.
The inlet air filter is clogged.	Clean the filter.
A check valve ball is sticking in the seat.	Examine the check valves. Replace the balls and seats. Refer to **Repair a diaphragm pump** on page 96.
There is not enough abrasive in the EcoSift hopper.	Add abrasive to the EcoSift hopper. Make sure that the EcoSift hopper contains sufficient abrasive to recycle.
Parts inside the pump cannot move because of debris.	Disassemble the pump and remove blockages in the air passages or debris interfering with the movement of parts. Refer to **Repair a diaphragm pump** on page 96.
A hose is clogged.	Clean the hose. Refer to **Clean a hose** on page 129.

Clean a hose

Make sure that the ball valve is closed.

Disconnect the hose from its connections and clean out the inside of the hose with utility water, or do the following:

1. Disconnect the hose from the hopper.
2. Turn ON the affected pump.
3. Open the ball valve to send water through the hose.

   Use an assistant to direct the water from the hose into a container such as a bucket.

The water flow is slow

WARNING	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.

Cause	Solution
A ball valve is not fully open.	Make sure that the ball valve is open. Refer to **Repair a diaphragm pump** on page 96.
A check valve inside the pump is damaged or has failed. The compressed air pressure reads high when this occurs.	Repair the pump. Refer to **Repair a diaphragm pump** on page 96.
The compressed air supply is insufficient or pressure in the compressed air tank is low.	Operate the compressor to increase the pressure. Refer to the compressor manual for more troubleshooting instructions.
A pump diaphragm is damaged or has failed. Water can be seen coming from the muffler when this occurs.	Replace the diaphragms. Refer to **Repair a diaphragm pump** on page 96.
The compressed air pressure is set too low.	Turn the regulator knob to increase the pressure to approximately 0.8 bar (12 psi).
A check valve ball is sticking in the seat.	Examine the check valves. Replace the balls and seats. Refer to **Repair a diaphragm pump** on page 96.
A component of the system is clogged with abrasive or debris such as workpiece scraps.	▪ Dispersion tube: Remove the dispersion tube from the hopper and clean it. This is only applicable when the EcoSift is installed with an existing PowerDredge system. ▪ Diaphragm pump: Clean the pump. Refer to **Repair a diaphragm pump** on page 96.

Abrasive returns to the cutting table tank

Cause	Solution
The compressed air pressure is set too high. Too much pressure causes the water to churn, which prevents the abrasive from collecting in the bottom of the hopper. This is only applicable when the EcoSift is installed with an existing PowerDredge system.	Turn the regulator knob to decrease the pressure to approximately 0.8 bar (12 psi).
The waste-abrasive collection bag is full.	When the waste-abrasive collection bag is 75% full, replace the bag. Refer to **Replace the waste-abrasive collection bag** on page 76.
If a collection bag is not being used, the waste hopper is full.	Clean the waste hopper. Refer to **Clean the waste hopper** on page 81.

The EcoSift is made up of the EcoSift unit, the EcoSift hopper, and the waste hopper.

EcoSift unit

Width	203 cm (80 in.)
Height	251 cm (99 in.)
Length	198 cm (78 in.)
Shipping weight (empty)	1,134 kg (2,500 pounds)

Safety

Pollution degree	
System	4
Electrical panel	3

Overvoltage category	III

Electric power

50 Hz	**60 Hz**
400 VAC	480 VAC
3-phase at 40 FLA	3-phase at 34 FLA
Recommended breaker size: 60 A	

The system uses 3-phase alternating current (VAC) electricity. Some parts, such as valve solenoids and sensors, use 24-volt direct current (VDC) electricity from a power supply in the electrical enclosure.

Environmental ratings

	Do not install this system in an environment where the temperature is freezing.

Ambient temperature	0.0°C to 40.0°C (32°F to 104°F)
Operation temperature	5.0°C to 40.0°C (41°F to 104°F)
Relative humidity (noncondensing)	50% at 40.0°C (104°F) 90% at 20.0°C (68°F)

Altitude (above mean sea level)	up to 2,000 m (6,562 feet)
Transportation and storage temperature	-25.0°C to 55.0°C (-13°F to 131°F)

Noise

Acceptable noise levels as defined by national and local codes may be exceeded by this system. Noise measurements are dependent on the specific environment in which the system is used.

dB(A) Measured at 1 m (3.28 feet) from all sides			
Front	90.9	**Rear**	85.7
Left side	90.0	**Right side**	84.6

Noise level is influenced by factors such as water flow rate, system layout, and the acoustical characteristics of the building.

To see noise data:

1. Go to www.hypertherm.com/docs.
2. Select **Waterjet Family** in the Product/Product type dropdown list.
3. Select **Regulatory** in the Category dropdown list.
4. Select **Acoustical Noise Data** in the All Subcategories dropdown list.

The navigation instructions can change without notice.

Diaphragm pumps

Width	37.9 cm (14.9 in.)
Height	34.0 cm (13.4 in.)
Length	24.4 cm (9.6 in.)

Shipping weight (empty)	
Aluminum model (agitation pump and feed pump)	15 kg (33 pounds)
Stainless steel model (abrasive pump)	28 kg (61 pounds)

Hoppers

 WARNING	Obey your company's lifting safety procedures while moving this machinery. Use straps, chains, or a crane rated for the weight of the system.
	Do not stack hoppers.

EcoSift hopper

Width	105 cm (41.5 in.)
Height	133 cm (52.5 in.)
Length	121 cm (47.5 in.)
Shipping weight (empty)	272 kg (600 pounds)

Waste hopper

Width	130 cm (51 in.)
Height	140 cm (55 in.)
Length	142 cm (56 in.)
Shipping weight (empty)	340 kg (750 pounds)

Waste-abrasive collection bag

The maximum capacity of each bag is 1,000 kg (2,205 pounds).

Width	89 cm (35 in.)
Height	46 cm (18 in.)
Length	89 cm (35 in.)

The waste-abrasive collection bag is for one-time use only.

Safety

	Refer to the manual. Read and understand all of the safety guidelines in this manual.
 DANGER	Dangerous voltage/risk of shock To decrease the risk of serious injuries or death, wear approved protection and obey safety recommendations when working with electricity.
 DANGER	▪ Personnel who maintain and repair this machinery can be seriously injured or killed if hazardous energy is not controlled. Injuries can include burns, cuts, fractures, or electrocution. ▪ Disconnect and lock out the electric power supply before opening the electrical enclosure or doing maintenance or repair procedures. ▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. ▪ Refer to **Safety** on page 66.
 DANGER	▪ Personnel who work on deenergized machinery can be seriously injured or killed if the machinery is reenergized without permission. ▪ All personnel must respect lock-out devices. Only the person(s) who applied the devices shall remove them. ▪ All personnel in an area where energy-control procedures are used must receive training regarding the energy-control procedure and the prohibition against removing a lock-out device.
 WARNING	Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20.

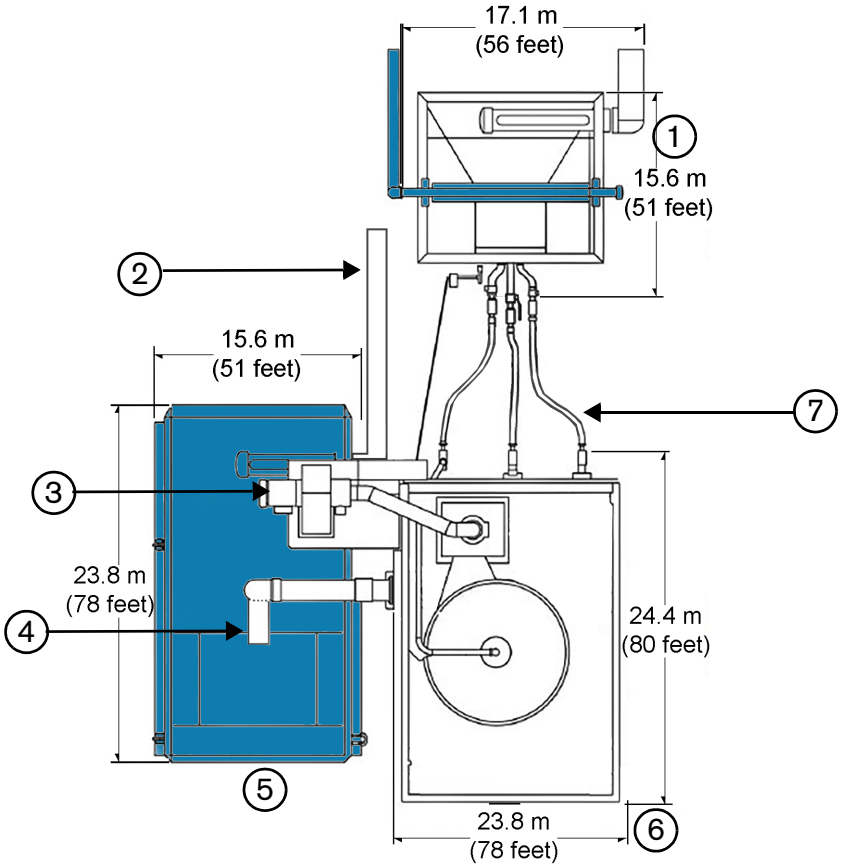
Hypertherm products are designed and manufactured with a commitment to continuous quality control and safety. Contact a Hypertherm Technical Service Associate for information and support regarding the installation, operation, maintenance, and repair of this system. Refer to Hypertherm contact information on page 4.

Buyer obligations

- Cooperate with Hypertherm and the Hypertherm original equipment manufacturer (OEM) regarding the installation of the system.
- Obey all setup and first-time starting instructions in this manual.
- Research and comply with all local codes.
- Make sure that the site is prepared. The installation site must have sufficient electric power, air, water, and drain access.
- Make all connections to the system.
- Train all users. Refer to **User training** on page SC-18 for more information.

Planning

The EcoSift can be installed with an existing PowerDredge abrasive removal system or with an alternative waste hopper. The diagram shows PowerDredge system components in blue.



1 EcoSift hopper
2 Overflow tube
3 Dust collector
4 Waste hopper
5 Waste water tube
6 EcoSift unit
7 Abrasive hose

Location

WARNING	Some locations can be hazardous if the atmosphere contains gas, vapors, or dust in explosive quantities. Refer to requirements from NFPA 70, National Electrical Code (NEC), the International Electrotechnical Commission (IEC), and the Occupational Safety and Health Administration (OSHA), as well as local codes for detailed information about environmental criteria.

EcoSift unit

Put the EcoSift on a flat surface that is capable of supporting the weight of the system and thick enough to resist vibration.

Make sure that there is a minimum clearance of 91 cm (36 inches) on all sides of the equipment for efficient cooling and space for maintenance and repair.

EcoSift hopper

The system includes a 1.22-meter (48-inch) hose to connect the abrasive pump to the EcoSift hopper. If the hopper is installed farther away, make sure that the replacement hose is not longer than 6.1 meters (20 feet).

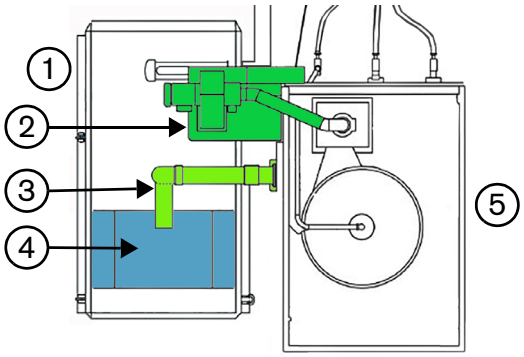
Make sure that the hose from the pump connection to the hopper is long enough. Pump maintenance recommends operating the pump with the hose directed into the hopper tank.

A longer hose can decrease the pump's efficiency.

Waste hopper

	If a PowerDredge abrasive removal system is not part of the system, purchase a waste hopper and an overflow assembly.
	Make sure that the overflow tube or the overflow hose from the waste hopper to the cutting table tank is long enough.
	Leave enough space around the waste hopper for a forklift or a pallet jack. The waste hopper must be emptied regularly. Refer to **Preventive maintenance** on page 65.

Install the waste hopper on the left side of the EcoSift unit below the dust collector and the waste water tube.



1 Waste hopper
2 Dust collector
3 Waste water tube
4 Waste-abrasive collection bag (optional)
5 EcoSift unit

Requirements

Environment

 WARNING	Some locations can be hazardous if the atmosphere contains gas, vapors, or dust in explosive quantities. Refer to requirements from NFPA 70, National Electrical Code (NEC), the International Electrotechnical Commission (IEC), and the Occupational Safety and Health Administration (OSHA), as well as local codes for detailed information about environmental criteria.
	Do not install this system in an environment where the temperature is freezing.

The ambient temperature can affect cooling. Supplementary cooling can be necessary for a system that is confined to a small, high-temperature space.

Ambient temperature	0.0°C to 40.0°C (32°F to 104°F)
Operation temperature	5.0°C to 40.0°C (41°F to 104°F)
Relative humidity (noncondensing)	50% at 40.0°C (104°F) 90% at 20.0°C (68°F)

Altitude (above mean sea level)	up to 2,000 m (6,562 feet)
Transportation and storage temperature	-25.0°C to 55.0°C (-13°F to 131°F)

Utilities

Electric power

 WARNING	Make sure that a line switch for disconnecting incoming electric power is installed near the power supply to serve as a supply-voltage disconnecting or energy-isolating device.
 WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the EcoSift unit must be done only by an approved technician.
 WARNING	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
	Make sure that the primary feed protection device (circuit breaker or fuse) is sized to handle inrush and steady-state current. Use a motor-start circuit breaker or an equivalent breaker if time-delayed, high-inrush fuses are not approved by local or national codes.

50 Hz	60 Hz
400 VAC	480 VAC
3-phase at 40 FLA	3-phase at 34 FLA
Recommended breaker size: 60 A	

The system uses 3-phase alternating current (VAC) electricity. Some parts, such as valve solenoids and sensors, use 24-volt direct current (VDC) electricity from a power supply in the electrical enclosure

Clean water

 WARNING	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
	Use regular supply water. Do not use water from the cutting table tank.

Maximum size of solids	6.35 mm (1/4 in.)	**Total flow rate**	15.9 L/min (4.2 gal/min)

The EcoSift has a 1/2-inch female NPT water fitting.

Compressed air

 WARNING	▪ Isolate all sources of electric, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy with a lockable energy-isolating device that meets local and national requirements. ▪ Bleed down and lock out compressed air sources. Compressed air systems do not always depressurize when other power is disconnected. Refer to page 66 for more information.
 WARNING	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.
	Dry and filter the air before it goes into the pump.

Minimum air supply pressure	2.1 bar at 142 slpm (30 psi at 5 scfm)	**Maximum air supply pressure**	8.6 bar (125 psig)

The EcoSift has a 1/2-inch female NPT air hose fitting.

Receive and unpack the equipment

WARNING	▪ Lifting must be done by a trained operator. ▪ Obey all work site-safety requirements, the safety instructions for the lifting equipment, and the safety information in this manual. ▪ Misuse of lifting equipment can cause the load to become unstable, which can cause property damage, personal injury, or death.

1. Unload boxes, crates, and pallets with a crane or a forklift. Use slings if necessary.
2. Examine containers, crates, and pallets for cracks or damage.
3. Remove the system from the shipping crates and pallets.
4. Examine the equipment to make sure that it was not damaged during shipping.

   If the system is damaged, a claim must be filed with the carrier.
5. Make sure that the delivery and shipping documents agree with the system that was ordered and what was received. Report shortages or damages to the OEM or to Hypertherm Waterjet no more than 10 days after receipt of the system.

EcoSift unit

Technical drawings for the system are found inside the electrical enclosure.

EcoSift hopper

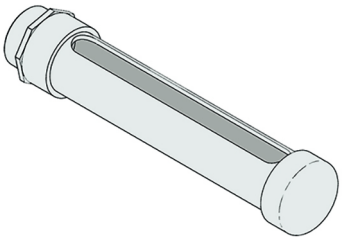
The hopper arrives with all of the internal plumbing and external connections installed.

Parts

Boxes and parts are packed inside the EcoSift shipping crate and the EcoSift hopper. Make sure that no parts are missing.

Distribution head assembly

Leveling foot (2)



Overflow tube

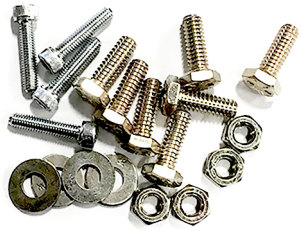
Overflow hose assembly

Agitation and feed hose, 25 mm (1 inch) OD (2)

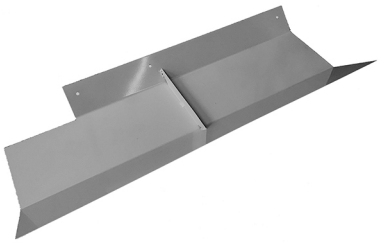
Agitation and feed inlet hose, 25 mm (1 inch) OD (2)

Abrasive hose, 19 mm (3/4 inch) OD

Rubber strap (4)

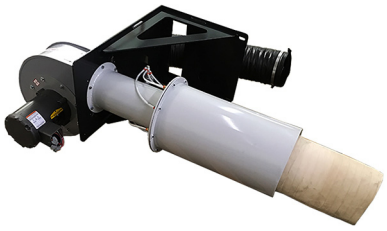


Assorted hardware



Heat shield

Waste tube assembly



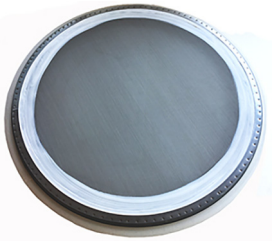
Dust collector assembly

Plastic pallet

Scale

Recycled-abrasive collection bag (2)

Waste container



Primary screen (spare)

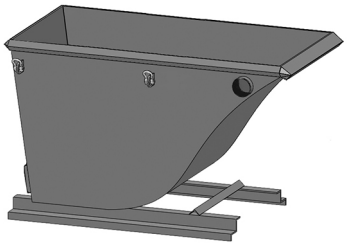
Hopper wear plate (spare)

Waste hopper

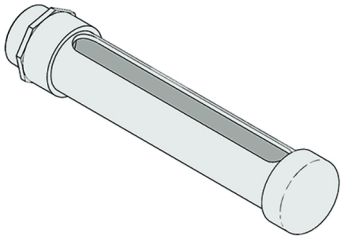
If a PowerDredge abrasive removal system is part of the system, use the PowerDredge hopper as the waste hopper for the EcoSift.

If a PowerDredge abrasive removal system is not part of the system, purchase a waste hopper and an overflow assembly.

Boxes and parts are packed inside the hopper. Make sure that no parts are missing.

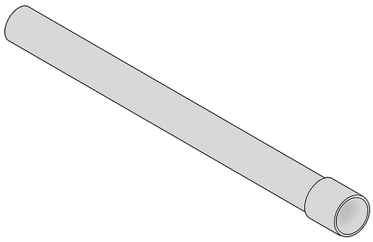


Waste hopper

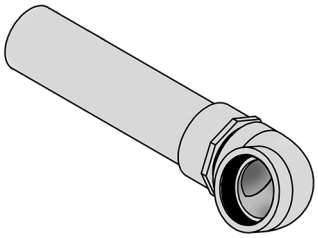


Overflow tube

PVC overflow option



Hopper overflow tube (2)



Hopper overflow elbow assembly

Flexible overflow option

Overflow hose assembly

Install the EcoSift

These instructions are for a typical installation. Some locations can require installing the EcoSift unit and the hoppers in a different order.

Special tools

Some procedures recommend or require special tools. This page is intended to help a user identify tools and parts that are unfamiliar or are known by other names.


Nut driver


Open-ended wrench


Box-end wrench


Adjustable wrench


Pipe wrench


Hose clamp


Hacksaw


Snap ring pliers

O-ring pick


Silicone dispenser (caulk gun)


Hammer drill


Electrician's fish tape (draw tape)

Install the EcoSift unit

	Make sure all fasteners and connections are tight. The EcoSift unit vibrates.

Parts, tools, and materials

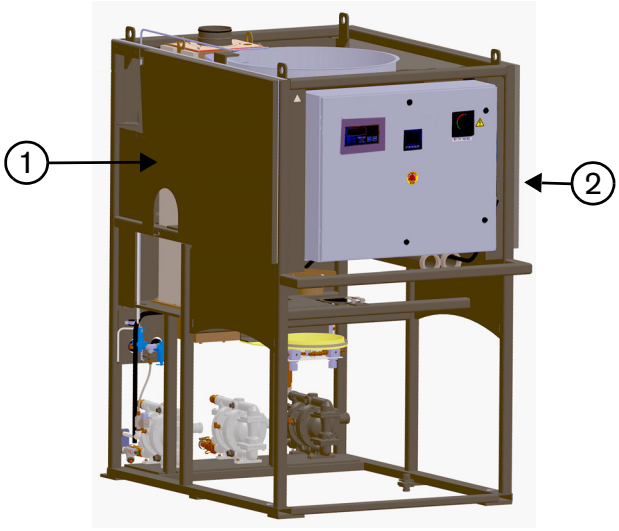
- Forklift or crane
- Full set of standard open-ended wrenches, sockets, nut drivers, and screwdrivers
- 14 mm open-ended wrench
- Full set of metric hex key wrenches
- 2 adjustable wrenches
- Pliers or knife
- Saw
- Hammer drill
- Level (no longer than 60.96 cm/24 inches)
- Electrician's fish tape (draw tape)
- Measuring tape
- Ladder
- PTFE tape or thread sealant
- Epoxy
- 2 sections of threaded rod, no larger than 19 mm (3/4 inch) in diameter
- Nuts to fit the threaded rod

Recommended materials

- Heat gun
- Silicone lubricant
- Light penetrating oil

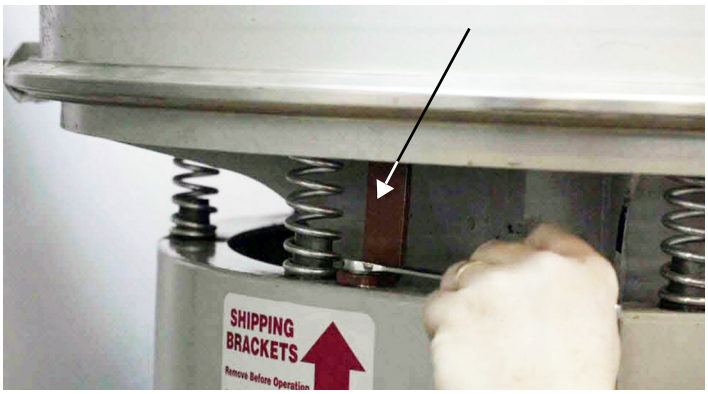
Remove the shipping brackets from the EcoSift unit

1. Use a nut driver to remove the left and right side panels from the EcoSift unit.



1 Left side panel **2** Right side panel

2. Use a 14 mm open-ended wrench to remove the shipping brackets between the upper and lower drums of the primary shaker. The brackets protect the shaker during shipping and are not necessary for operation.

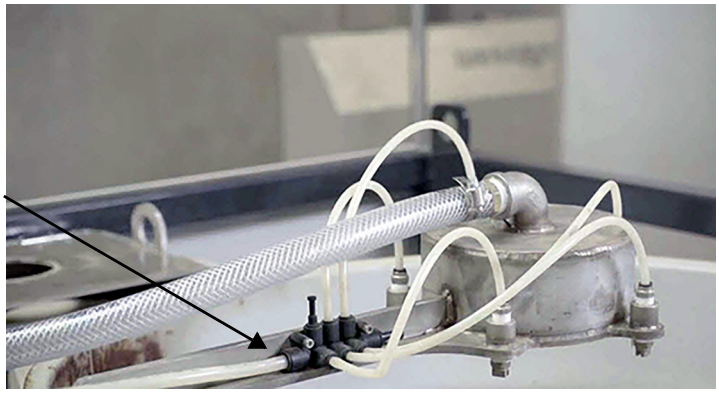


Keep the brackets for moving or storing the unit.

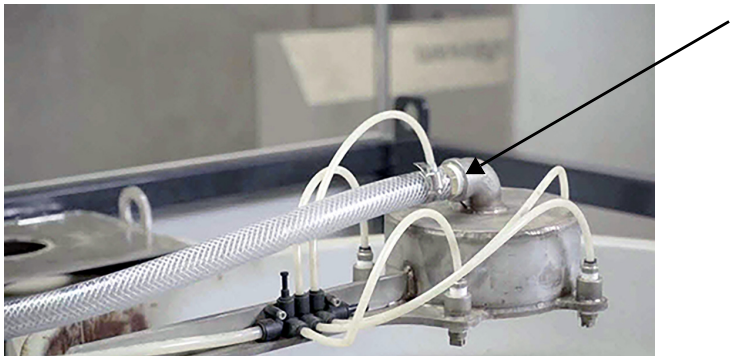
Install the distribution head assembly

1. Put the distribution head assembly on top of the EcoSift unit. Use an 8 mm hex key wrench to install 2 socket-head cap screws (M8×1.2×20 mm) into the threaded holes in the EcoSift frame.

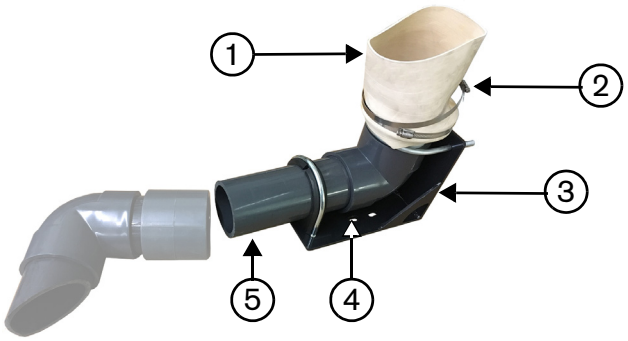
2. Put the smaller hose in the push-to-connect fitting on the bottom inlet of the distribution head assembly. This is the fresh water hose.



3. Put a hose clamp over the larger hose. Connect this hose to the top inlet of the distribution head assembly. This is the abrasive hose. Tighten the hose clamp with a flat-tip screwdriver.



Install the waste tube assembly



1 Flexible tube
2 Hose clamp
3 Mounting plate
4 Screw slots
5 Waste water tube

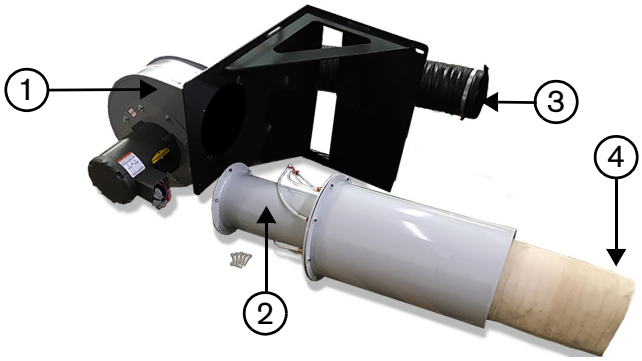
1. Put the mounting plate and the waste tube assembly on the support beam below the primary shaker discharge chute

1 Primary shaker discharge chute
2 Waste tube assembly

2. Install 4 socket-head cap screws (M8×1.25×25 mm) through the mounting plate and into the EcoSift frame.

3. Put the flexible tube over the bottom of the primary shaker discharge chute. Install 2 hose clamps to hold the flexible tube in position.

Install the dust collector assembly

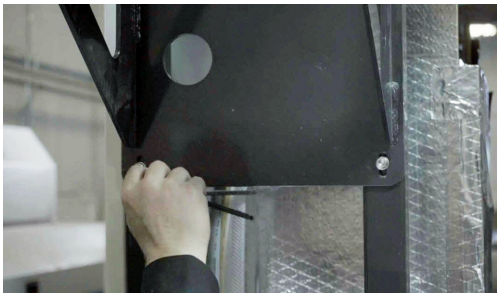


1 Frame and motor assembly
2 Collar
3 Vent hose
4 Rubber sleeve

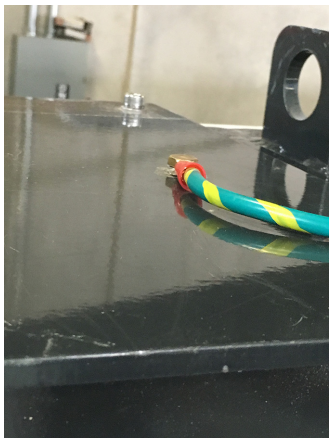
1. If the dust assembly frame is attached to the collar, remove the 6 socket-head cap screws on the collar to disconnect the pieces.

2. Use an assistant to put the dust collector frame and motor assembly on the EcoSift frame. The frame hooks over an L-shaped bracket on the EcoSift.

3. Install 4 socket-head cap screws (M6×1.00×10 mm) through the mounting plate and into the EcoSift frame.



4. Connect the ground wire on top of the EcoSift frame to the top of the dust collector assembly with a bolt and a hex nut.



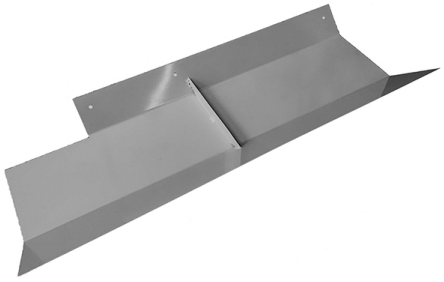
5. Use an assistant to hold the dust collector collar below the dust collector frame.

The dust collector collar, the vent hose, and the rubber sleeve are all 1 assembly.

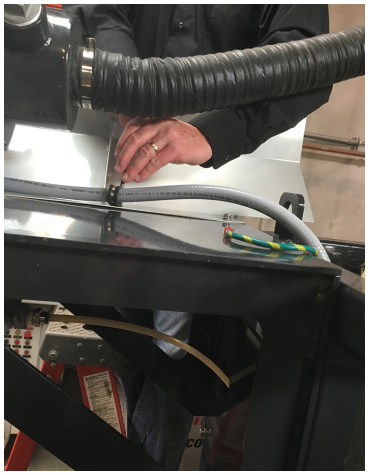
6. Install 6 socket-head cap screws (M6×1.00×10mm) through the collar and into the threaded holes in the dust collector frame.

7. Attach the vent hose to the vent intake flap on top of the EcoSift unit.

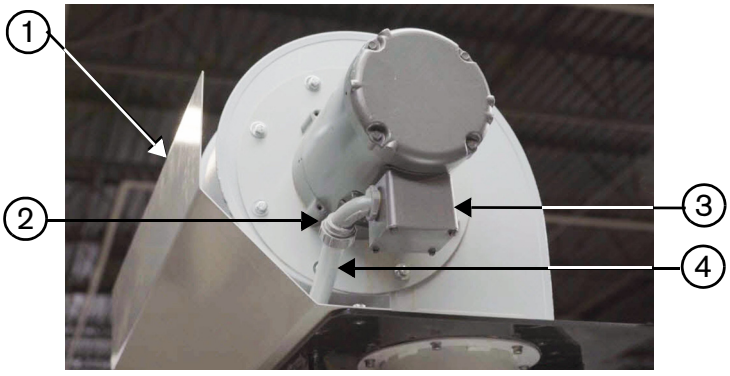
Install the heat shield



1. Put the heat shield on the dust collector frame.
2. Install a socket-head cap screw (M6×1.00×10 mm) through the holes on the right and left ends on the top of the heat shield. The screws go into the threaded holes in the dust collector frame.
3. Put the flexible conduit along the bottom of the heat shield and install a socket-head cap screw (M6×1.00×10 mm) through the middle hole on the top of the heat shield. The screw goes into the threaded hole in the dust collector frame.

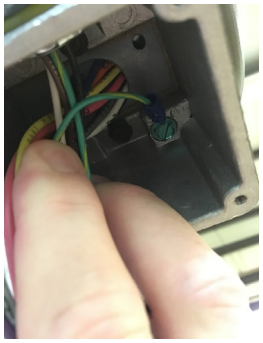


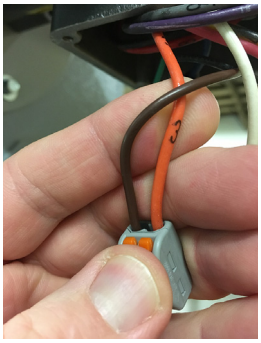
4. Open the junction box on the bottom of the dust collector motor.



1 Heat shield
2 Conduit connector
3 Junction box
4 Flexible conduit

5. Put the wires from the flexible conduit into the junction box and tighten the connector on the conduit.





6. Connect the wires. Refer to the wiring diagram in **Technical drawings** on page 173.

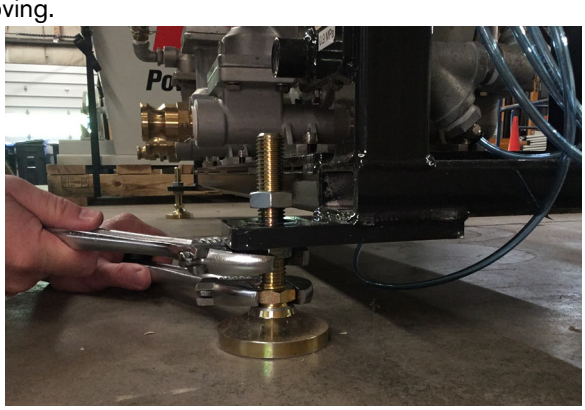
7. Install the junction box cover.

Lag and level the EcoSift unit

	The primary screen must be level for correct abrasive movement.

To decrease noise and vibration, Hypertherm recommends lagging the EcoSift unit to the floor. The EcoSift frame has 2 holes for mounting studs.

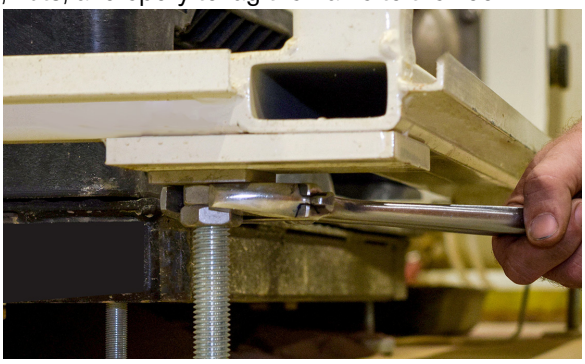
1. When the unit is in position, use adjustable wrenches to install the leveling feet on the corners of the EcoSift unit. There are 2 nuts on each foot. The lower nut sets the height. The upper nut tightens against the lower nut to keep the nuts from moving.



2. Use a hammer drill to make holes in the floor on each side of the unit. The holes must align with the holes in the lagging tabs on the EcoSift frame.

Lagging tab

3. Use a length of threaded rod, nuts, and epoxy to lag the frame to the floor.



Let the epoxy cure fully before tightening the nuts on the threaded rods.

4. Put a level on top of the primary screen.

CAUTION	Prevent damage to the primary screen.

5. Use an adjustable wrench to adjust each of the 4 leveling feet.

	Make sure that the unit is level in all directions (front-to-back and side-to-side).

Install the EcoSift hopper

Put the EcoSift hopper in position with the hose connections facing the pumps on the back of the EcoSift unit.

Install the waste hopper

	Leave enough space around the waste hopper for a forklift or a pallet jack. The waste hopper must be emptied regularly. Refer to **Preventive maintenance** on page 65.
	Make sure that the end of the overflow that goes to the cutting table tank is at least 76 mm (3 inches) lower than the water height in the hopper.

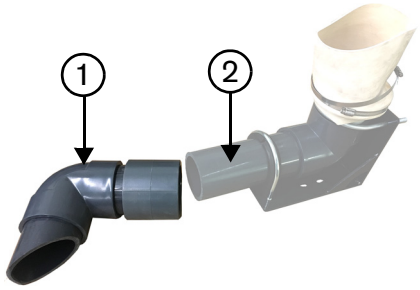
If the waste hopper is part of a PowerDredge system, the PowerDredge hopper becomes the waste hopper and the EcoSift hopper receives water and abrasive pumped from the bottom of the cutting table tank.

If the waste hopper is not part of a PowerDredge system, used abrasive must be put into the EcoSift hopper. The hopper holds 454 kg (1,000 pounds) of abrasive.

1. Use a forklift to put the waste hopper next to the EcoSift unit. The waste hopper must be installed on the left side of the EcoSift unit below the dust collector. Refer to **Waste hopper** on page 139.

WARNING	Make sure that the waste hopper handle is in the locked position with the safety latch engaged.

2. Push the PVC downpipe onto the waste outlet elbow. Turn the end of the elbow so that water and abrasive will flow into the bag.



1 PVC downpipe **2** Waste water tube

No glue or cement is required for this connection.

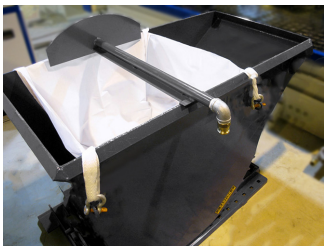
When correctly installed, the rubber sleeve of the dust collector is lower than the water hose in the waste hopper.

3. Put an empty waste-abrasive collection bag in the hopper. (This is optional.)

   Attach the carrying loops to the lifting tabs on the hopper with the shackles.

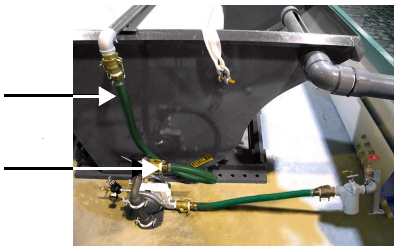
If the waste hopper is part of a PowerDredge system

1. Use an assistant to help move the dispersion tube assembly from the waste (PowerDredge) hopper to the EcoSift hopper. The elbow fitting points toward the ground.



Elbow

2. Attach the discharge hose from the PowerDredge between the diaphragm pump and the dispersion tube.



To make assembling a hose onto the barbed end of a fitting easier, heat the end of the hose with a heat gun and lubricate the barbed end of the fitting with penetrating oil. Twist the fitting while pushing it on.

If the waste hopper is not part of a PowerDredge system

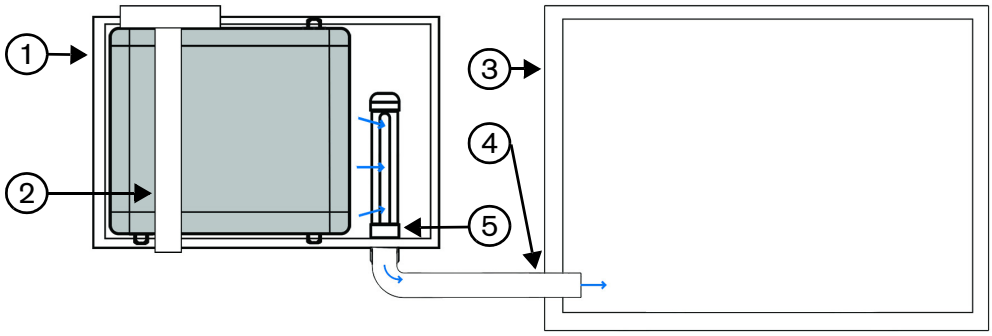
Install the overflow

There are 2 overflow options.

PVC overflow

	Do not use PVC cement on threaded fittings.
	Use PTFE tape or thread sealant on all threaded fittings.

1. Connect the hopper overflow tube to the coupling on the inside of the hopper.



1 EcoSift hopper
2 Hopper overflow tube
3 Cutting table tank
4 PVC overflow
5 Coupling

2. Measure the distance between the coupling on the outside of the hopper and the cutting table. Cut the overflow tube to the correct length, if necessary,

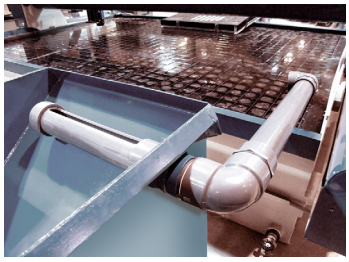
   To make cutting PVC tube easier, spray a small quantity of silicone lubricant on the tube immediately before cutting.

3. Connect the end of the overflow tube with the elbow to the coupling on the outside of the hopper.

4. Put the end of the overflow tube without the elbow over the edge of the cutting table so that water from the hopper returns to the cutting table tank.

	Make sure that the end of the overflow that goes to the cutting table tank is at least 76 mm (3 inches) lower than the water height in the hopper.

   Add a 4-inch NPT elbow to the end of the tube to point the water flow in a direction to decrease splashing.

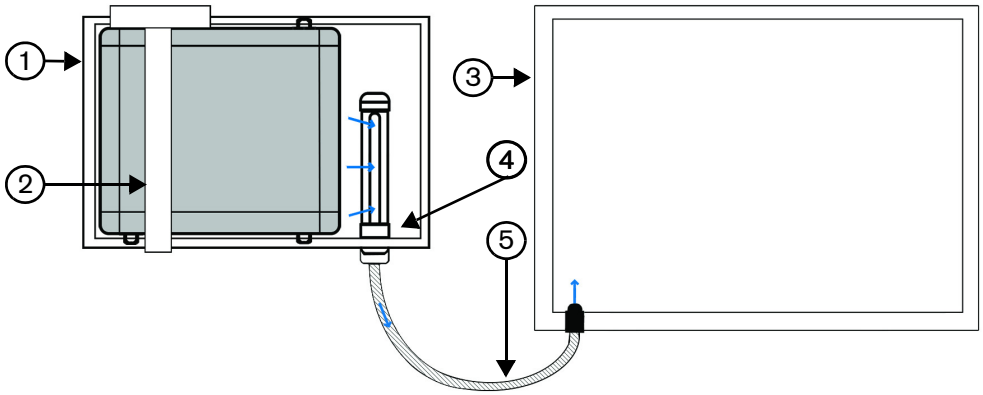


5. Make sure that all connections are tight.

Flexible overflow

	Do not use PVC cement on threaded fittings.
	Use PTFE tape or thread sealant on all threaded fittings.

1. Connect the hopper overflow tube to the coupling on the inside of the hopper.

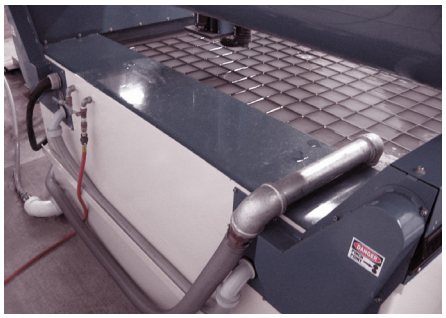


1 Hopper
2 Hopper overflow tube
3 Cutting table tank
4 Coupling
5 Overflow hose assembly

2. Connect the U-shaped overflow elbow assembly to the overflow hose assembly.

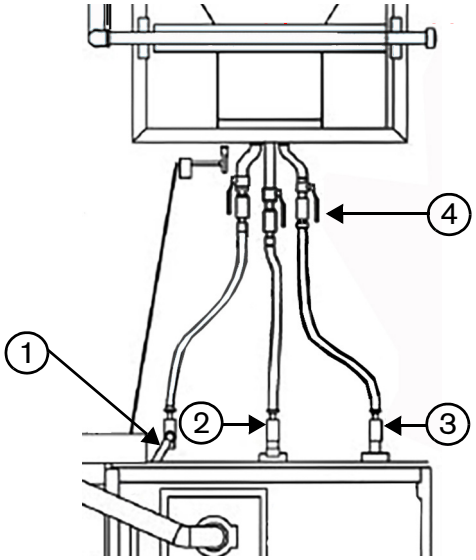
3. Connect the overflow hose assembly to the coupling on the outside of the hopper.

4. Hang the hopper overflow elbow assembly over the edge of the cutting table tank.



5. Make sure that all connections are tight.

Connect the hoses



1 Agitation pump connection

2 Feed pump connection

3 Abrasive pump connection

4 EcoSift hopper connections

1. Connect the abrasive hose from the EcoSift hopper's abrasive outlet to the lower connection on the EcoSift abrasive pump.
2. Connect the hose from the hopper's agitation pump connection to the upper connections on the agitation pump. Do the same procedure for the feed pump.
3. Insert the reusable cotter pins to attach all hose connections. Loose connections can disconnect during operation.
4. Connect the agitation pump and feed pump water inlet hoses to the lower connections on the pumps.
5. Connect the other end of the agitation and feed pump inlet hoses in the waterjet cutting table below the water line.
6. Connect a clean water–supply hose to the water inlet.
7. Connect a compressed air hose to the air inlet.

WARNING	Compressed air is an energy source that can discharge with force. Use care when connecting and disconnecting this energy source.

8. Connect the drain hose from the waste hopper to the waterjet table.

Connect the electric power

 WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the EcoSift unit must be done only by an approved technician.
 WARNING	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
 WARNING	To decrease the risk of serious injuries or death, wear approved protection and obey safety recommendations when working with electricity.
 WARNING	Working on this system while it is energized can cause a potentially dangerous situation, which, if not prevented, can cause serious injuries or death. Use a lock-out program when personnel do service or maintenance operations on machines that are capable of exposing a person to hazardous energy from unexpected energization, startup, or release of stored energy. This energy can be from electric, hydraulic fluid, or water sources.
 WARNING	Make sure that a line switch for disconnecting incoming electric power is installed near the power supply to serve as a supply-voltage disconnecting or energy-isolating device.

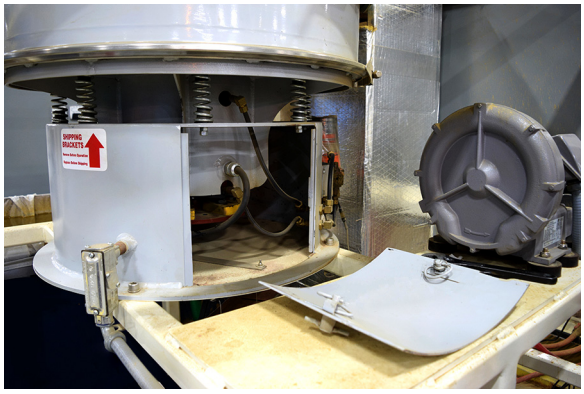
1. Open the electrical enclosure.
2. Put the electric cable up through the bottom of the electrical enclosure, along the right inside edge of the electrical panel.
3. Connect the electric cable as shown on the electrical drawings.
4. Close the electrical enclosure.

Test the motor rotation

WARNING	Rotation To repair or maintain the motor, disconnect the power source from the motor and any accessory devices and let the motor to come to a complete stop.
WARNING	Work that requires opening the electrical enclosure or removing covers or panels from the EcoSift unit must be done only by an approved technician.
WARNING	Installation, maintenance, and repairs to the electrical and plumbing systems must meet national and local electrical and plumbing codes. This work must be done only by an approved technician.
WARNING	To decrease the risk of serious injuries or death, wear approved protection and obey safety recommendations when working with electricity.
WARNING	Working on this system while it is energized can cause a potentially dangerous situation, which, if not prevented, can cause serious injuries or death. Use a lock-out program when personnel do service or maintenance operations on machines that are capable of exposing a person to hazardous energy from unexpected energization, startup, or release of stored energy. This energy can be from electric, hydraulic fluid, or water sources.

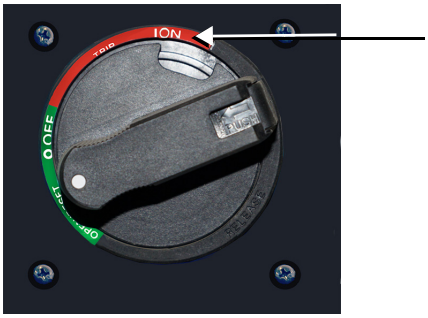
This procedure is sometimes called a bump start. Turn ON the motor briefly to see which direction that the shaft and the counterweight disk spin.

1. Remove the small panel on the lower drum housing of the primary shaker to see the lower counterweights.

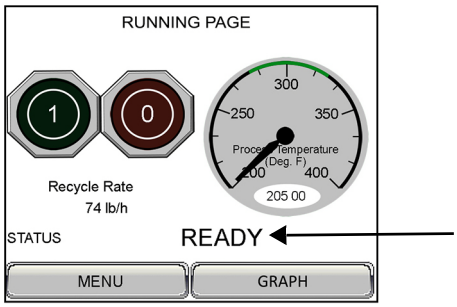


2. Turn ON the electric power supply.

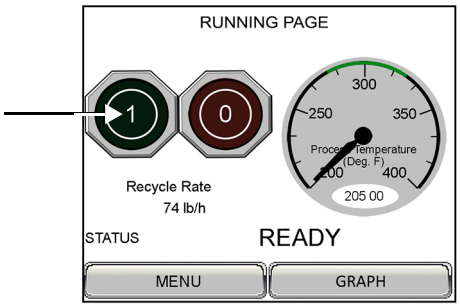
3. Turn the electrical disconnect knob to **I ON**.



The operator interface turns on. The EcoSift is ready to operate when the home screen (RUNNING PAGE) status is **READY.**



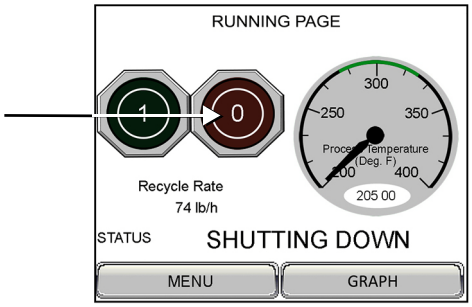
4. Touch **1** to turn ON the EcoSift.



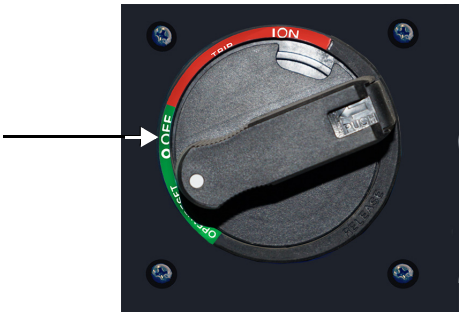
5. For approximately 5 seconds, watch the direction that the shaft and the counterweight disk spin.

   It can be helpful to have 1 person operate the panel while another person watches the rotation of the shaft and the counterweight disk.

6. On the home screen (RUNNING PAGE), touch **O** to turn OFF the EcoSift.



7. Turn the electrical disconnect knob to **O OFF.**



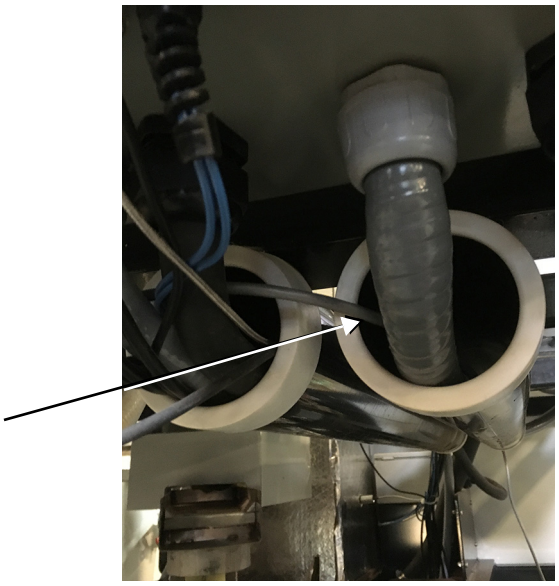
8. If the shaft and the counterweight disk turn counterclockwise (when seen from above), the motor is wired correctly. Continue to **Add abrasive to the dryer box** on page 169.

If the shaft and the counterweight disk turn clockwise (when seen from above), the motor is not wired correctly.

9. Turn OFF the electric power supply.
10. Use a lock-out device according to the work site's policy to isolate and control energy.
11. Inside the electrical enclosure, exchange 2 of the electric cables on the terminals.
12. Test the motor rotation again.

Install the abrasive collection components

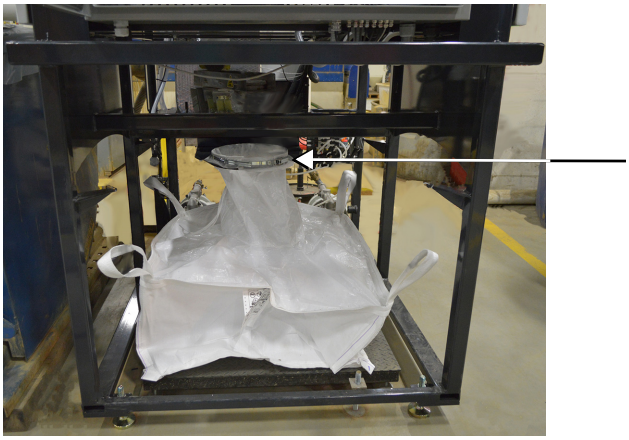
1. Put the scale on the floor below the EcoSift.
2. Put the plastic pallet on top of the scale.
3. Use a fish tape to pull the wiring harness for the scale through a conduit below the electrical enclosure. Pull the harness from the back of the EcoSift unit toward the front.



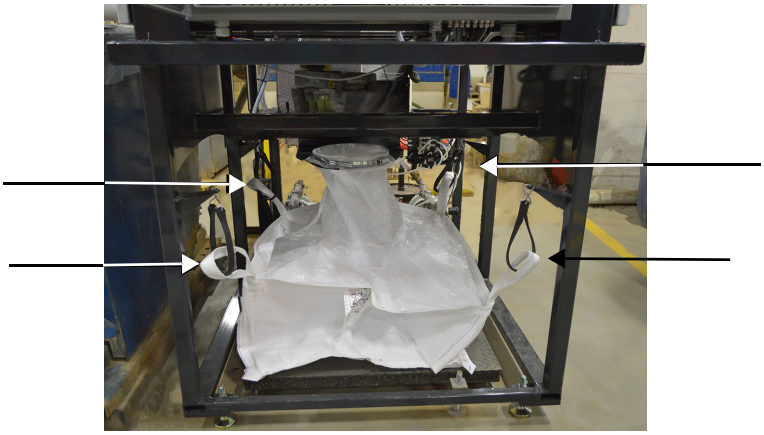
4. Plug the circular connector on the wiring harness into the socket on the bottom of the electrical panel. Twist the connector to lock it.

5. Put a recycled-abrasive collection bag on top of the pallet.
6. Put the neck of the bag through the bag support.
7. Fold the top of the bag over the support.

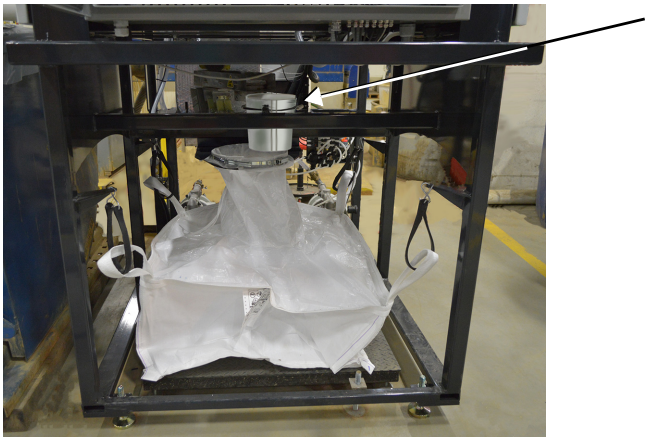
8. Use a screwdriver to tighten the hose clamp to hold the bag on the support.



9. Put a rubber strap through the bag loops on each corner.



10. Put the waste container in the bracket next to the bag support. Adjust the bracket so that the bucket captures large particles coming from the secondary screen chute.



Do the first startup

 WARNING	Only approved personnel can operate, maintain, and repair this machinery. Refer to **Training** on page 67 for more information.
 WARNING	Do not operate this machinery without the access covers and all other safety devices installed. Do not remove guards while the unit is operating.
 WARNING	Wear approved personal protective equipment such as goggles, gloves, and respirators when operating or working near this machinery. Refer to **Personal protective equipment** on page SC-20.
 CAUTION	If a water line, a fitting, a hose, or a valve might be frozen, do not operate the system. Thaw the system until water moves freely through the entire water circuit.
 CAUTION	Do not turn ON the EcoSift without abrasive in the dryer box.
	Remove all tools and materials from the work area before starting the EcoSift.
	Repair or replace parts identified in the preventive maintenance schedule or if the parts are defective, deteriorated, corroded, or damaged.

Examine the EcoSift before operation

- Look for leaks, deterioration, damage, or other conditions that can interfere with operation.
- Make sure that all connections and fasteners are tight, including locking devices, latches, bolts, hoses, and fittings.
- Make sure that all warning decals are maintained so that they are visible and can be read. Do not cover, block, or remove any warnings, cautions, or instructional materials.
- Make sure that the EcoSift hopper contains sufficient abrasive to recycle.
- Clean the display on the operator interface. Wipe dust and debris off carefully with a clean, lint-free towel.

	Do not spray any liquid directly onto the touchscreen.
	Do not use abrasive cloths, paper towels, tissue paper, or rough rags, which can scratch the touchscreen. Do not use cleaners that contain acetone, ammonia, or alcohol, which are found in commercial and household glass cleaners.
	Use a cleaner made for touchscreens or use a 1:1 solution of distilled water and white vinegar for stubborn grease and oil smudges.

Prepare the EcoSift

Add abrasive to the dryer box

CAUTION	Do not turn ON the EcoSift without abrasive in the dryer box.
	▪ The EcoSift can only recycle garnet and aluminum oxide abrasive. ▪ The system is designed for use with 80-mesh abrasive. ▪ Do not use the EcoSift to recycle abrasive that has been used to cut at 6,205 bar (90,000 psi).

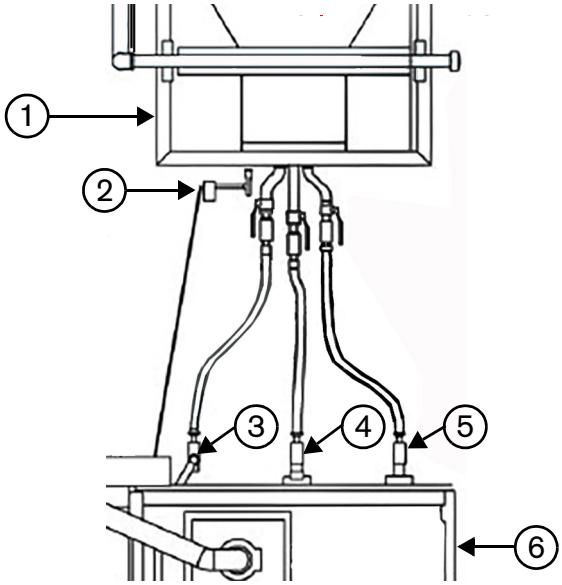
Do this task when the EcoSift is not operating.

1. Open the top of the dryer box.
2. Pour 50 kg (110 pounds) of clean, dry abrasive into the dryer box.

   Make sure that the abrasive covers the heating elements in the bottom of the dryer box.

1. Turn ON the compressed air, the supply water, and the electric power supply.
2. Make sure that the feed pump, the agitation pump, and the abrasive pump valves are open.

   The valves are on the EcoSift hopper near the hose connections.



1	EcoSift hopper	**4**	Feed pump valve
2	Air agitation valve	**5**	Abrasive pump valve
3	Agitation pump valve	**6**	EcoSift unit

3. Make sure that the air agitation valve on the EcoSift hopper is open.

   It is not necessary to open the valve completely. Too much air causes the water to churn, which prevents the abrasive from collecting in the bottom of the hopper.

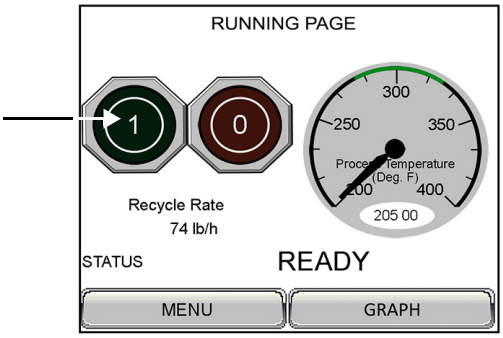
4. Make sure that the scale display shows 0.0.

Touch **ZERO** to set the scale to 0.0. Touch **UNITS** to toggle between metric units and US customary units.

Start the EcoSift

	When the dryer blower motor starts, steam and dust can be released into the air. This is normal. Use approved personal protective equipment.

1. On the home screen (RUNNING PAGE), touch **1** to turn ON the EcoSift.



The heating elements start operating, the dryer blower motor turns on, and the rinse water starts flowing. After 45 seconds, the dust collector turns on.

2. When the temperature is 115.6°C (240°F), the shaker, the agitation pump, and the feed pump start operating.

3. Make sure that the agitation pump pressure is set between 1.4 bar and 1.7 bar (20 psi and 25 psi).

4. When the temperature is 160.0°C (320°F):
   - ❑ the abrasive pump and the feed pump start operating.
   - ❑ the status changes to RUNNING.
   - ❑ a mixture of water and abrasive falls onto the primary screen.

5. Make sure that the abrasive pump pressure is set to 1.9 bar (27 psi).

6. Make sure that there is sufficient abrasive on the primary screen.

Sufficient quantity of abrasive

Too much abrasive

If there is too much abrasive on the primary screen, lower the abrasive pump pressure until the quantity of abrasive on the primary screen is sufficient.

Long-term storage

To store the EcoSift, refer to **Long-term storage** on page 109.

Technical drawings

In this section:

- Wiring diagrams
  - 400 VAC
  - 480 VAC
- Air diagrams
- Water diagrams

If you are printing this manual from a PDF, Hypertherm recommends printing the diagrams on A3-, tabloid-, or ledger-size paper.

CUSTOMER SUPPLIED
400VAC, 3 PHASE, 50 Hz
40.0FLA

U V W PE

PE

DS1
MAIN DISCONNECT
50A

U V W

MOUNTED TO ELEC CABINET
1AMM 2AMM 3AMM

CB1
1L1
1L2
1L3
40A

CON1
1L1A
1L2A
1L3A
328
HEATER CONTACTOR

1SSR
DIN-A-MITE
230

1T1 1T2 1T3

JB1
1T1 1T2 1T3
2 2 2

2500W (x3)
2500W (x3)
2500W (x3)

DRYER MOUNTED HEATING
ELEMENTS 9 PCS TOTAL 32.5FLA

CB2
2L1
2L2
2L3
2A

M1
2T1 2T2 2T3
329
PRIMARY SCREEN
MOTOR STARTER
(SHAKER)

MOT1
1HP
746W

PRIMARY SCREEN MOTOR
400V, 1.5FLA, 50HZ

CB3
3L1
3L2
3L3
2A

M2
3T1 3T2 3T3
330
DRYER BLOWER
MOTOR STARTER

MOT2
1HP
373W

DRYER BLOWER MOTOR
400V, 1.8FLA, 50HZ

CB4
4L1
4L2
4L3
1A

M3
4T1 4T2 4T3
332
DUST COLLECTOR
MOTOR STARTER

MOT3
1/3HP
250W

DUST COLLECTOR MOTOR
400V, 0.8FLA, 50HZ

U V W to 125

U V W from 124

CB5
5L2
5L1
2A

H2 H3 H4 H6
PH250MGJ
XF1
250VA
X5 X4 X3 X2

VOLTAGE	INTERCONNECT	WIRE
380	NONE	H2,H6
120	X4-X5,X2-X3	X2,X5

** ALL DRAWING COMPONENTS SHOWN SIZED FOR 400V MAINS.

129
1A CB6

1 2

MOUNTED NEAR HEATER BOX

M2
13 14/22
133 133

DRYER BLOWER
MOTOR STARTER

SECONDARY SCREEN
CONTROLLER
P N
GND GND GND
M1 M2

MOT4
.9FLA
135 135A

AMM
AMMETER

PW2
5V POWER SUPPLY
L N
V- V+
GND GND GND

MOUNTED ON PRIMARY SHAKER

141 141
142 142
DV2
OILER
GND GND

TAS1
143
CR1
TEMPERATURE SWITCH
RELAY NO 328
NC

CB7
6L2
6L3
1A

PW1
24V POWER SUPPLY
L1 L2
GND GND
+ -
5A

10 to 200 24V
20 to 200 COM

NO.	DATE	REVISION	BY

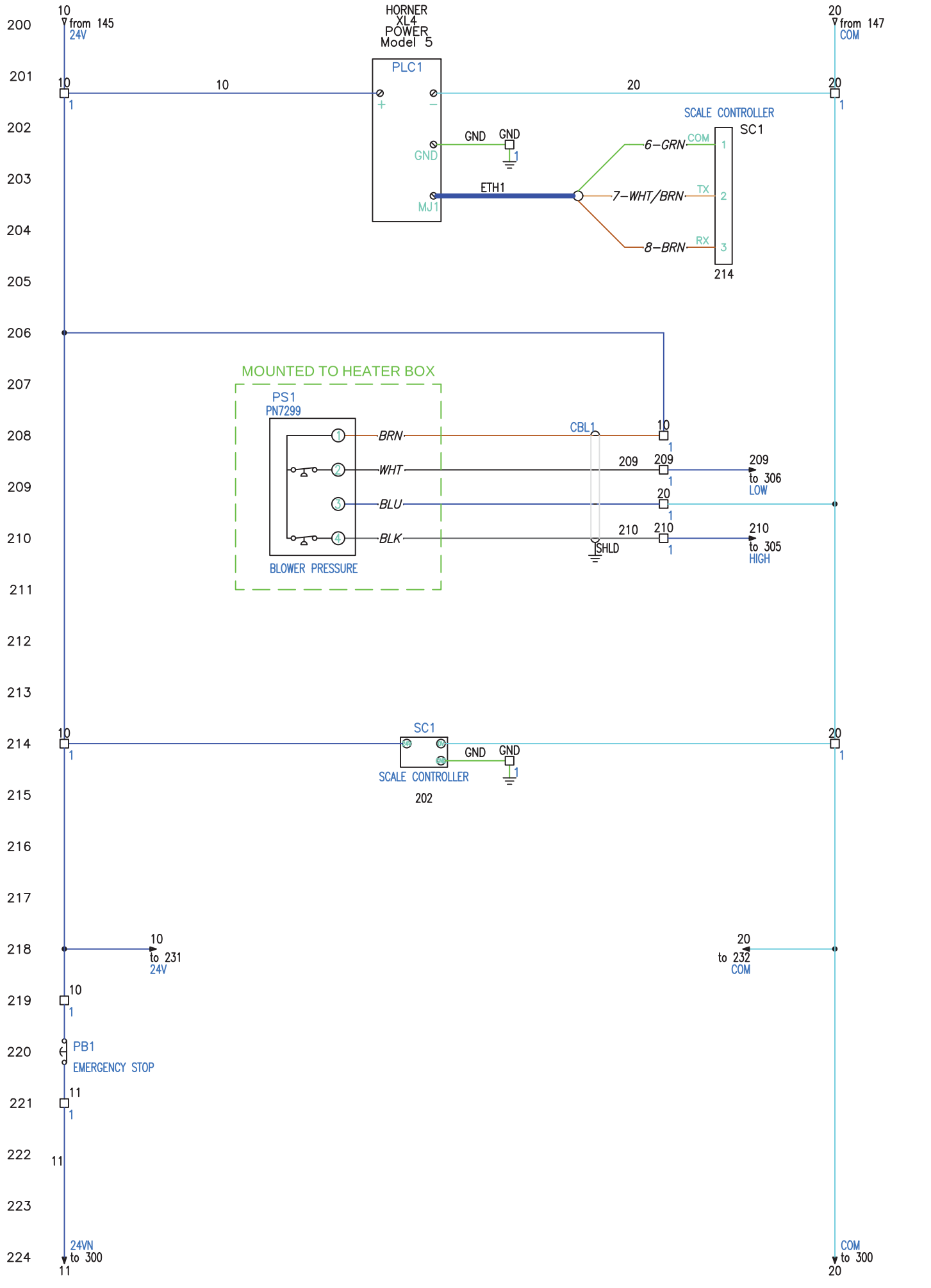
DWG TITLE
400V ABRASIVE RECYCLING SYSTEM Power

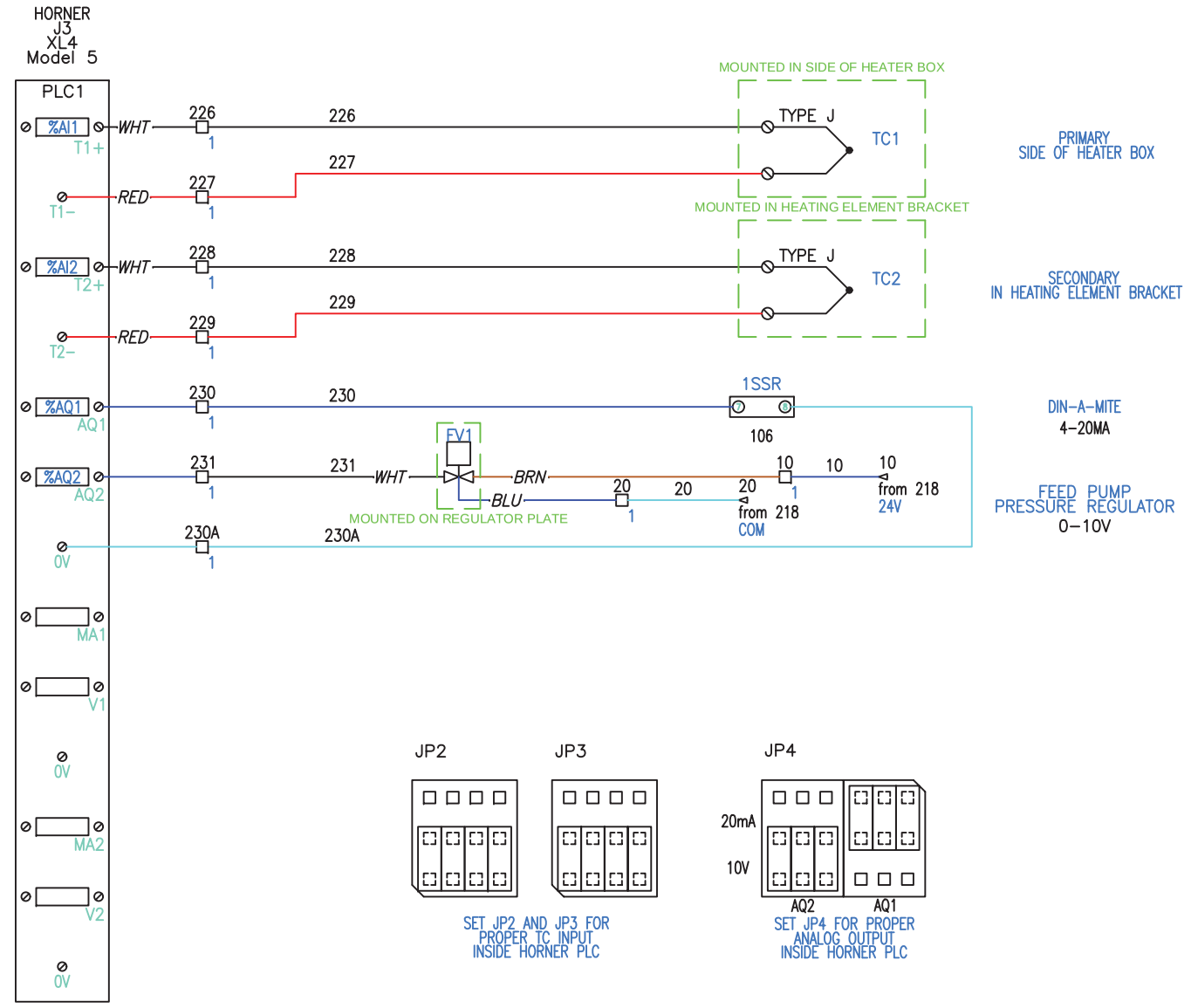
ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO
WJ-A-29049

SHEET NO
1 OF 6

CAD DWG FILE ARS 400V Power.dwg





NO.	DATE	REVISION	BY

DWG TITLE

400V ABRASIVE RECYCLING SYSTEM Control

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

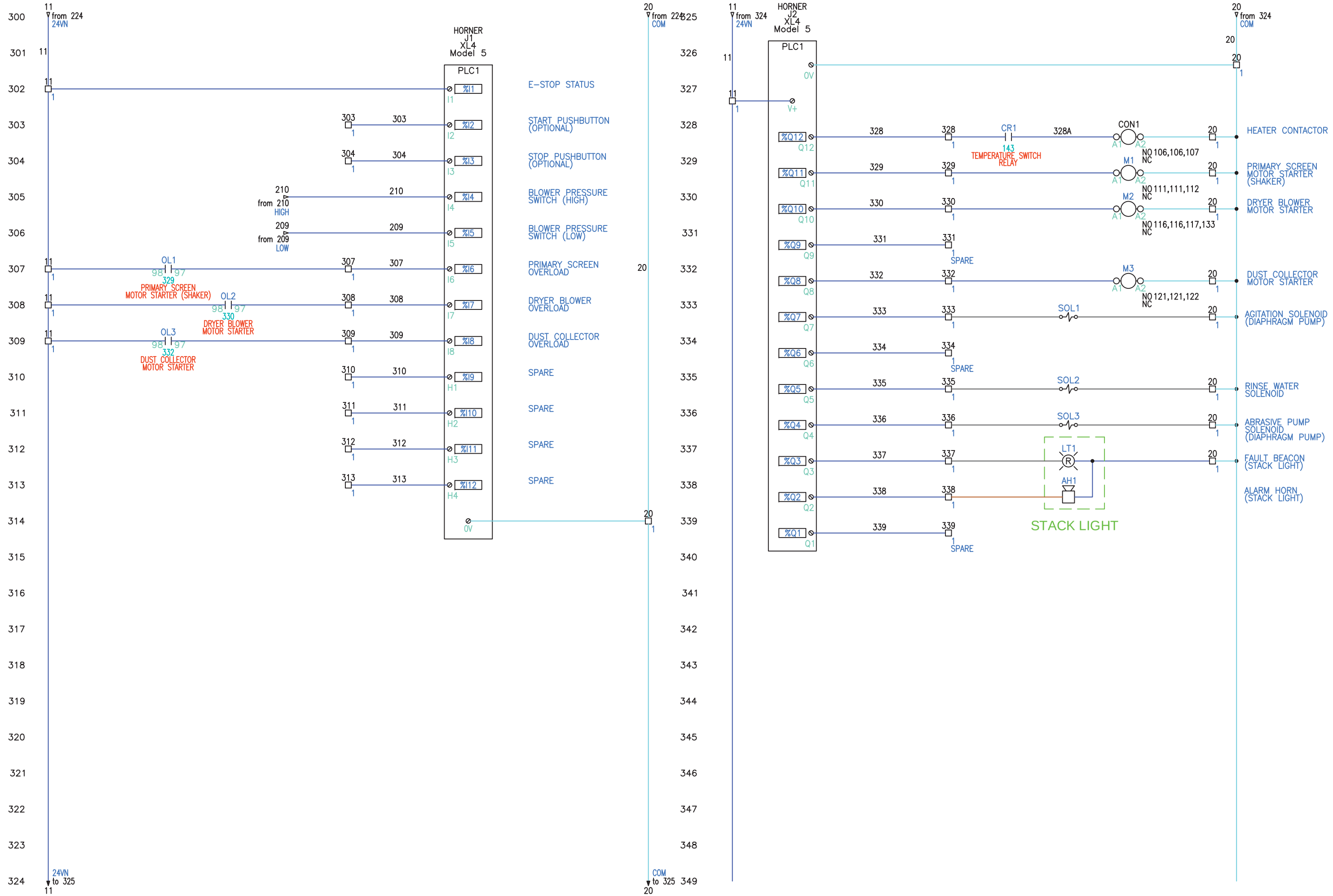
DWG NO

WJ-A-29049

SHEET NO

2 OF 6

CAD DWG FILE: ARS 400V Control.dwg



NO.	DATE	REVISION	BY

DWG TITLE

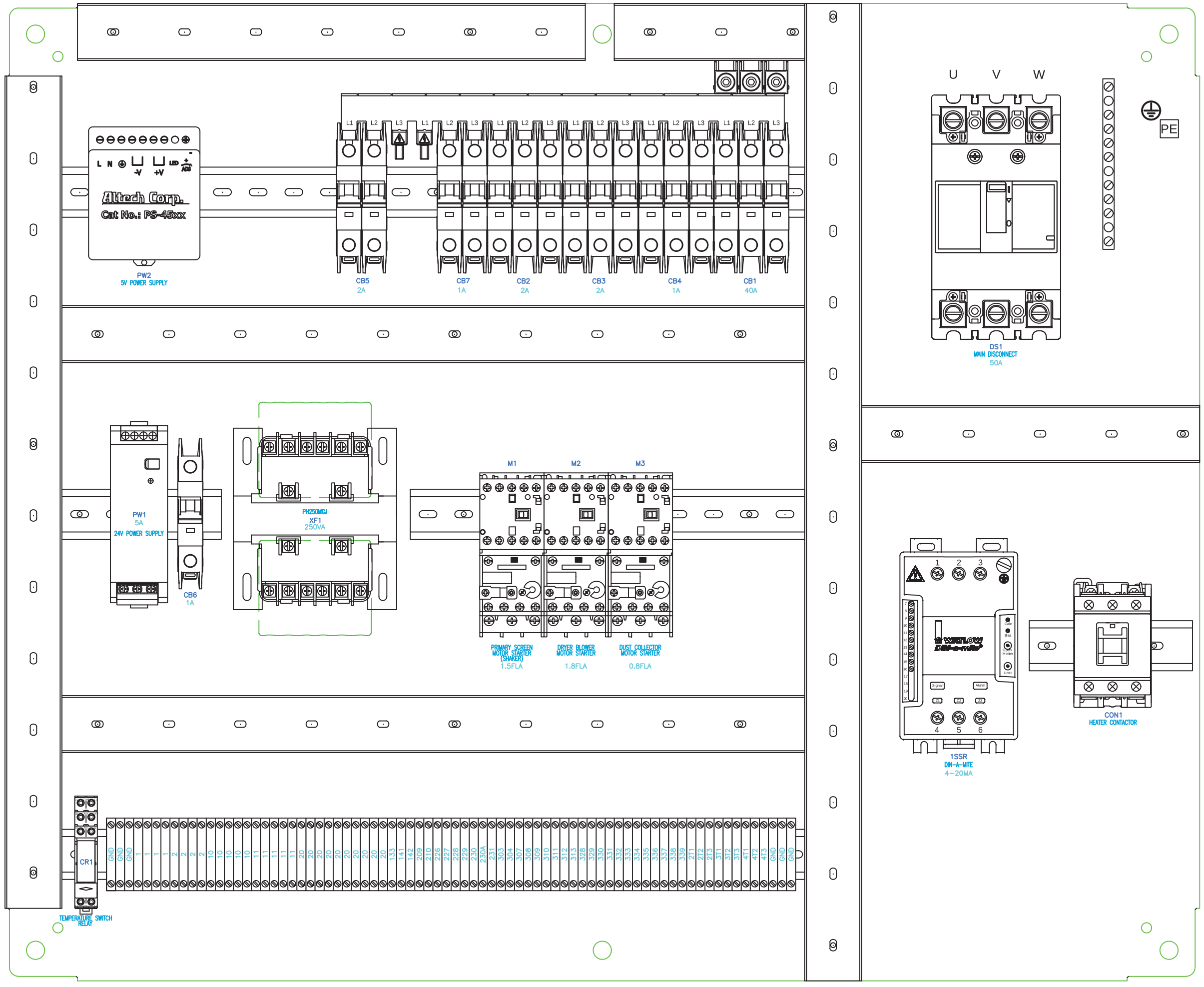
400V ABRASIVE RECYCLING SYSTEM PLC

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO **WJ-A-29049**

SHEET NO **3 OF 6**

CAD DWG FILE ARS 400V PLC.dwg



NO.	DATE	REVISION	BY

DWG TITLE

400V ABRASIVE RECYCLING SYSTEM Panel

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17
DWG NO WJ-A-29049	
SHEET NO 4 OF 6	

CAD DWG FILE: ARS 400V Panel.dwg

CAB1

SC1
SCALE CONTROLLER

PLC1
XL4 OCS

Length of lock bar: 5.125"

EMERGENCY STOP

NO.	DATE	REVISION	BY

DWG TITLE

400V ABRASIVE RECYCLING SYSTEM
CAB1

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO
WJ-A-29049

SHEET NO
5 OF 6

CAD DWG FILE ARS 400V Cabinet.dwg

NO.	DATE	REVISION	BY

DWG TITLE

400V ABRASIVE
RECYCLING SYSTEM
JB1

ENGINEER	BJA
CHECKED BY	
DRAWN BY	JPS
JOB NO	
SCALE	
DATE	5/1/17

DWG NO

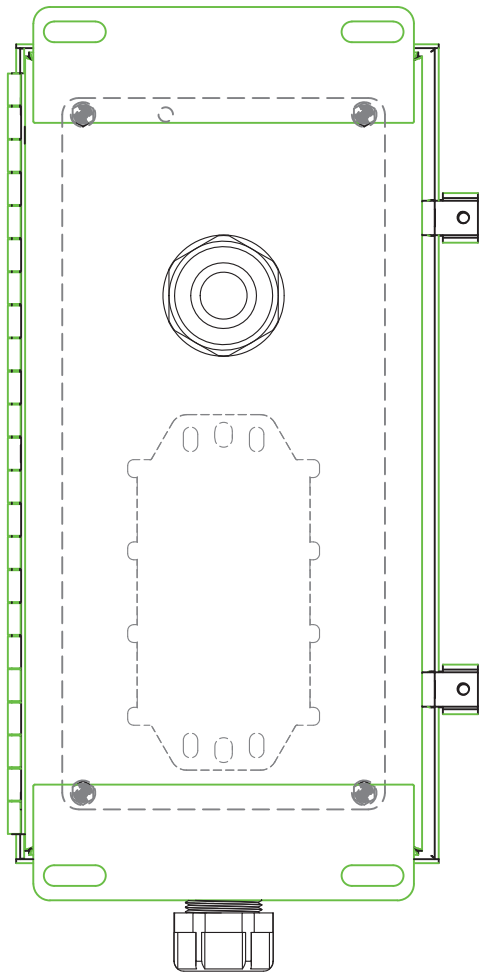
WJ-A-29049

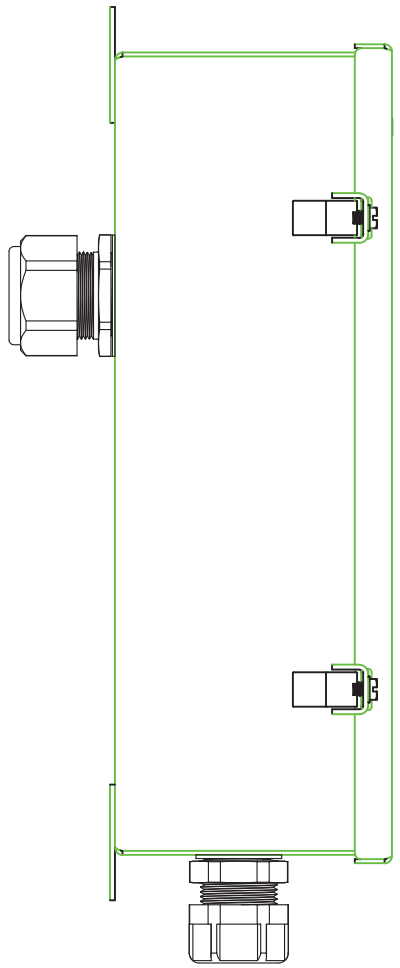
SHEET NO

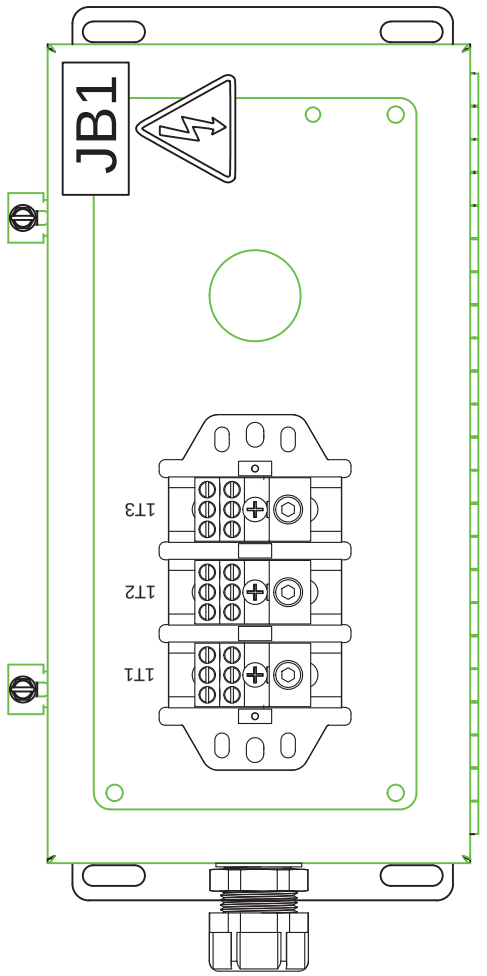
6 OF 6

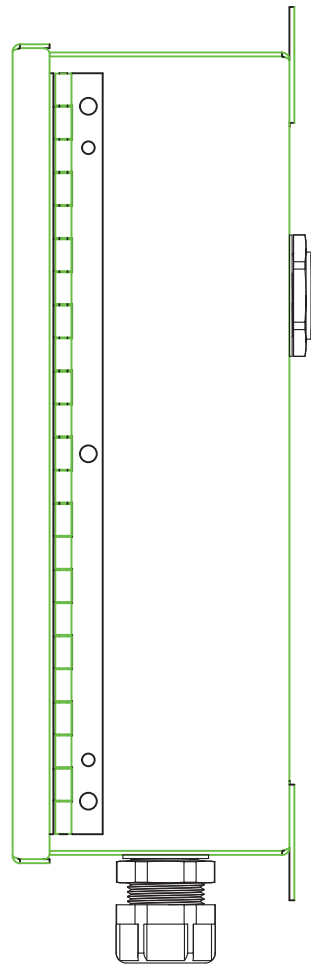
CAD DWG FILE

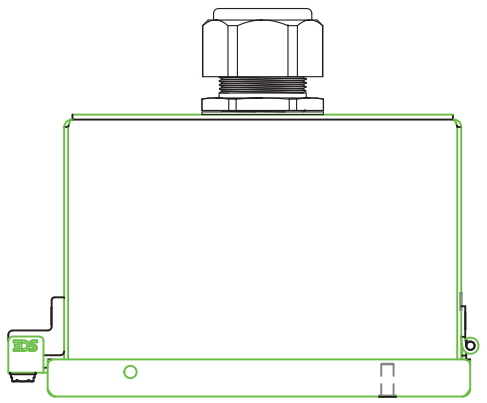
ARS 400V Dist Box.dwg

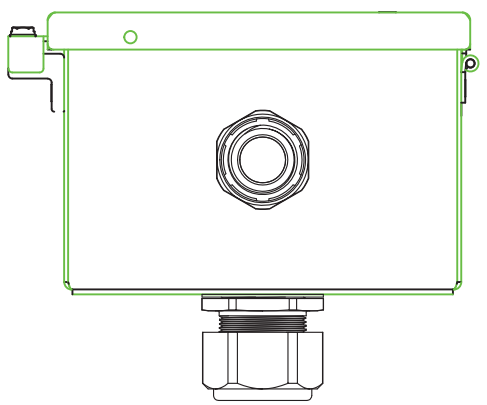












CUSTOMER SUPPLIED
480VAC, 3 PHASE, 60 Hz
34.2FLA

L1 L2 L3 PE

PE

DS1
MAIN DISCONNECT
50A

L1 L2 L3

MOUNTED TO ELEC CABINET

1AMM 2AMM 3AMM

CB1
1L1
1L2
1L3
32A

CON1
1L1A
1L2A
1L3A

328
HEATER CONTACTOR

1SSR
DIN-A-MITE
230

1T1 1T2 1T3

JB1
1T1
1T2
1T3

2500W (x3)
2500W (x3)
2500W (x3)

DRYER MOUNTED HEATING
ELEMENTS 9 PCS TOTAL 27FLA

CB2
2L1
2L2
2L3
2A

M1
2T1 2T2 2T3

MOT1
1/2HP

PRIMARY SCREEN MOTOR
480V, 1.3FLA, 60HZ

329
PRIMARY SCREEN
MOTOR STARTER
(SHAKER)

CB3
3L1
3L2
3L3
2A

M2
3T1 3T2 3T3

MOT2
1/2HP

DRYER BLOWER MOTOR
480V, 1.4FLA, 60HZ

330
DRYER BLOWER
MOTOR STARTER

CB4
4L1
4L2
4L3
1A

M3
4T1 4T2 4T3

MOT3
1/3HP

DUST COLLECTOR MOTOR
480V, 0.8FLA, 60HZ

332
DUST COLLECTOR
MOTOR STARTER

to 125
L1 L2 L3

L1 L2 L3 from 124

CB5
5L2
5L1
2A

H2 H3 H4 H5
PH250MQMJ
XF1
250VA
X5 X4 X3 X2

129

1A CB6

VOLTAGE	INTERCONNECT	WIRE
480/460/440	H3-H4	H2,H5
120/115/110	X4-X5,X2-X3	X2,X5

** ALL DRAWING COMPONENTS SHOWN SIZED FOR 480V MAINS.

MOUNTED NEAR HEATER BOX

M2
13 14/22
DRYER BLOWER
MOTOR STARTER

133 133

SECONDARY SCREEN
CONTROLLER
P N
GND GND
M1 M2

MOT4
.9FLA
135 135A

AMM
AMMETER

PW2
5V POWER SUPPLY
L N
V- V+
GND GND

MOUNTED ON PRIMARY SHAKER

141 141
142 142

DV2
OILER
GND GND

TAS1
143
CR1
TEMPERATURE SWITCH
RELAY NO 328
NC

CB7
6L2
6L3
1A

PW1
24V POWER SUPPLY
L1 L2
GND GND
+ -
5A

10 to 200 24V
20 to 200 COM

NO.	DATE	REVISION	BY

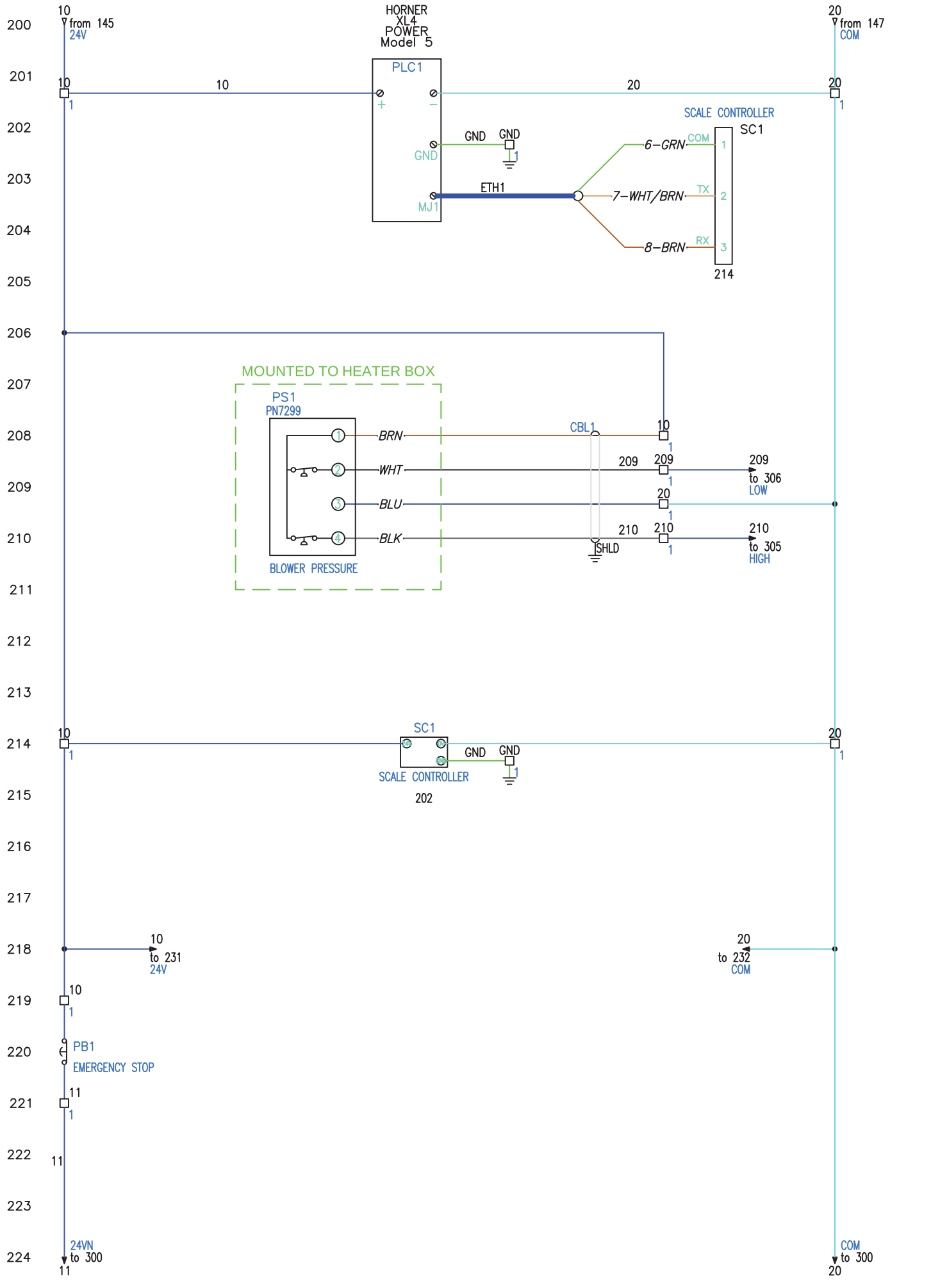
DWG TITLE
480V ABRASIVE RECYCLING SYSTEM Power

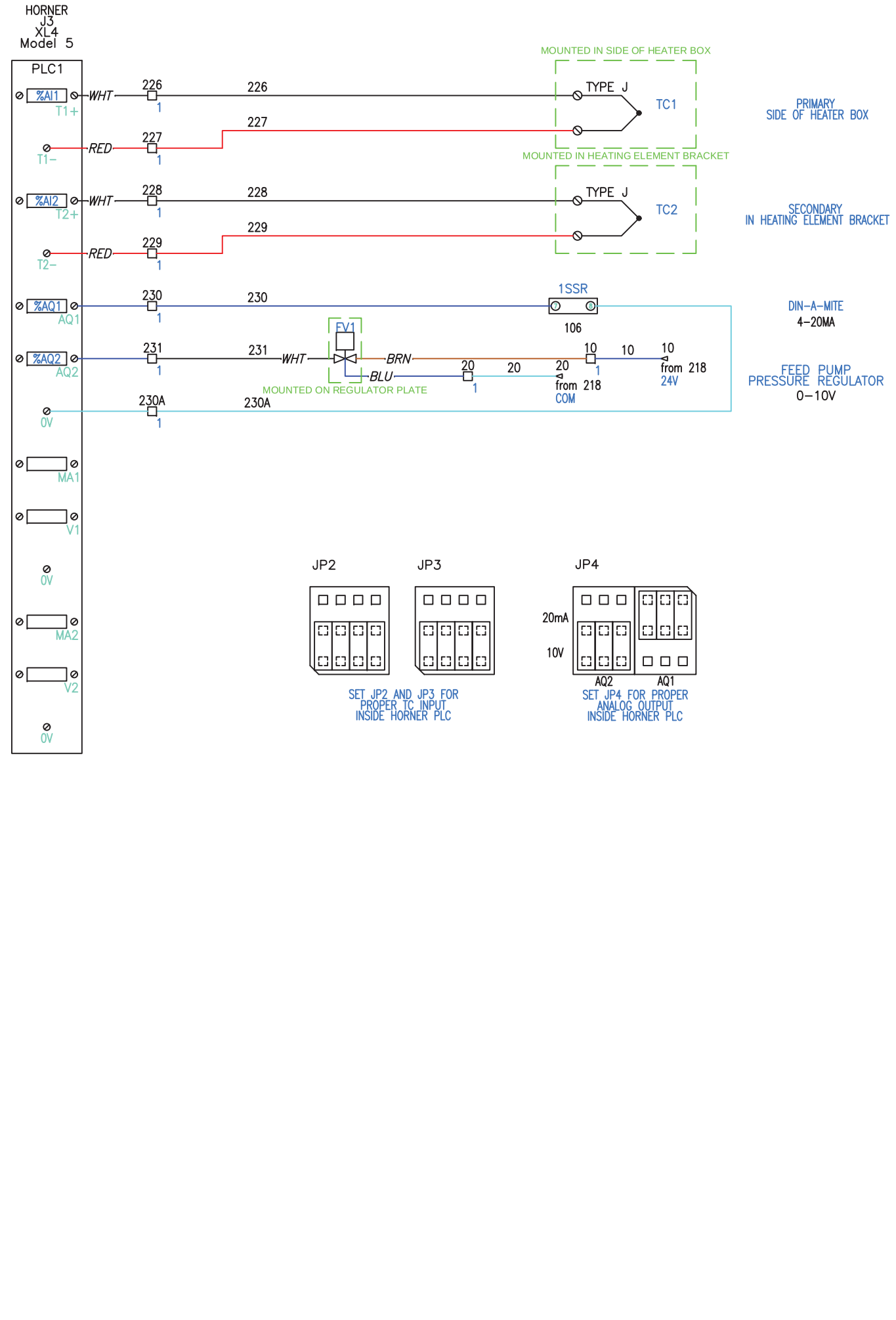
ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO
WJ-A-29032

SHEET NO
1 OF 6

CAD DWG FILE ARS 480V Power.dwg





NO.	DATE	REVISION	BY

DWG TITLE

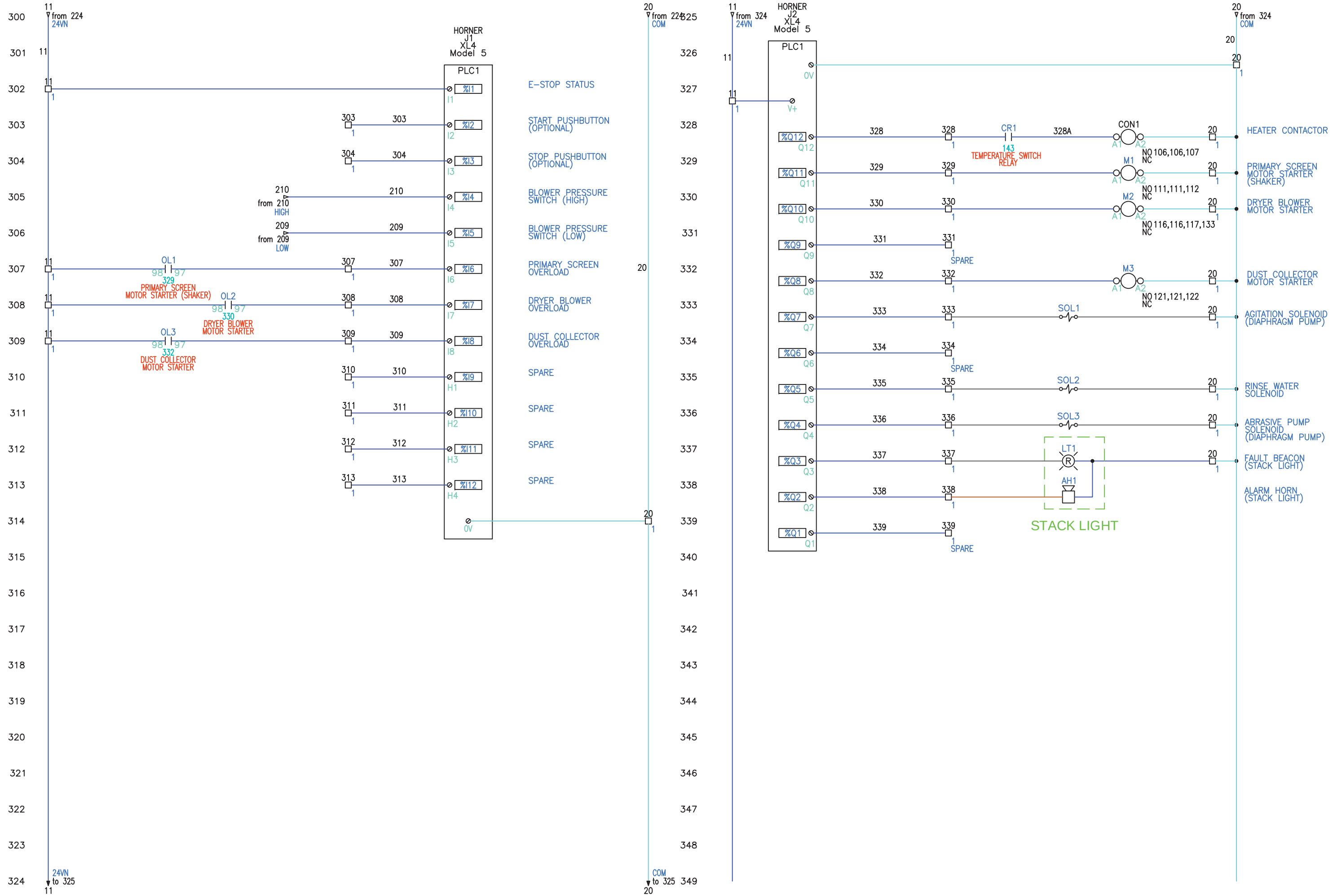
480V ABRASIVE RECYCLING SYSTEM Control

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO WJ-A-29032

SHEET NO 2 OF 6

CAD DWG FILE: ARS 480V Control.dwg



NO.	DATE	REVISION	BY

DWG TITLE

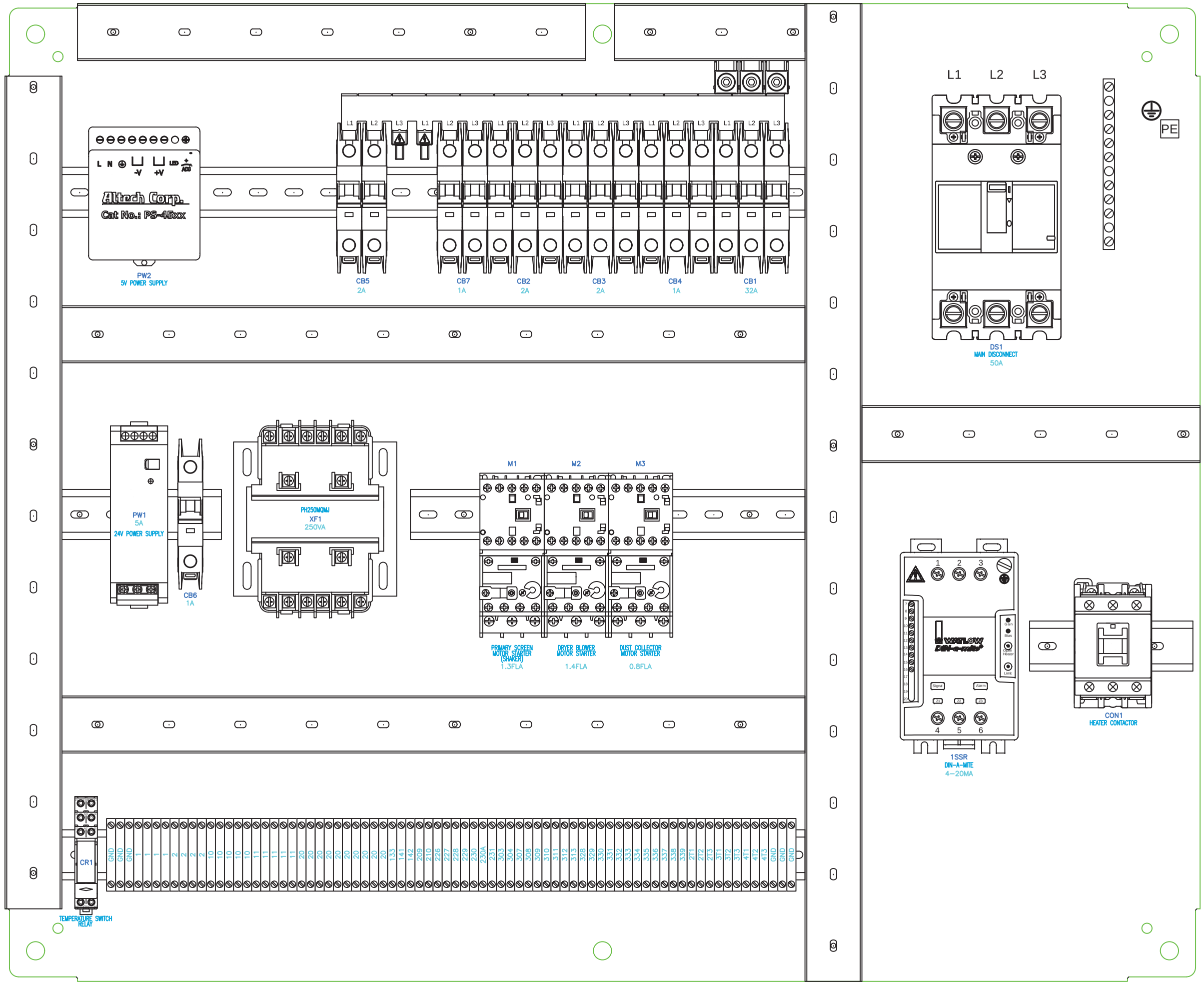
480V ABRASIVE RECYCLING SYSTEM PLC

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO WJ-A-29032

SHEET NO 3 OF 6

CAD DWG FILE ARS 480V PLC.dwg



NO.	DATE	REVISION	BY

DWG TITLE

480V ABRASIVE RECYCLING SYSTEM Panel

ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

DWG NO WJ-A-29032

SHEET NO 4 OF 6

CAD DWG FILE ARS 480V Panel.dwg

CAB1

SC1
SCALE CONTROLLER

PLC1
XL4 OCS

Length of lock bar: 5.125"

EMERGENCY STOP

NO.	DATE	REVISION	BY

DWG TITLE

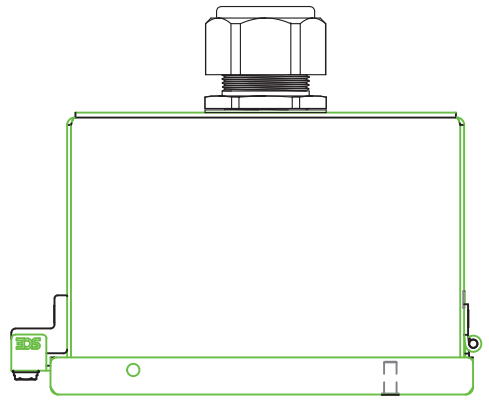
480V ABRASIVE RECYCLING SYSTEM
CAB1

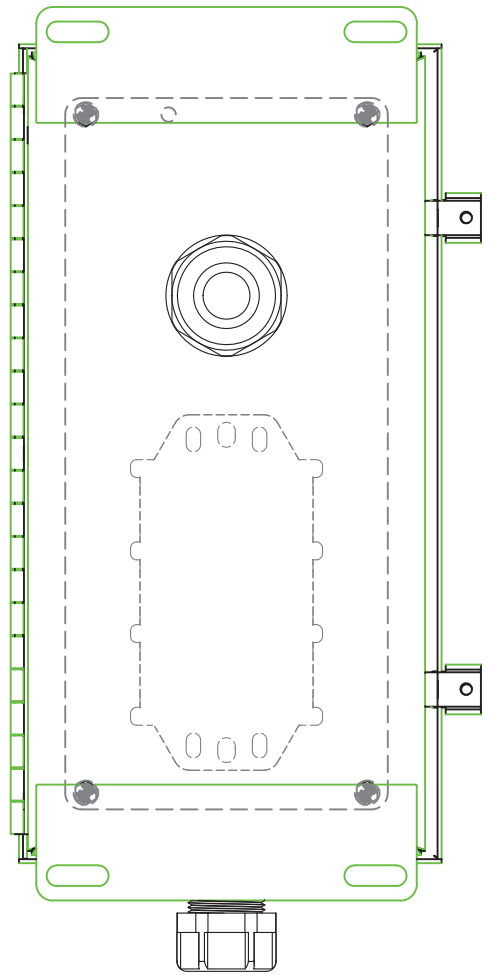
ENGINEER BJA	CHECKED BY
JOB NO	DRAWN BY JPS
SCALE	DATE 5/1/17

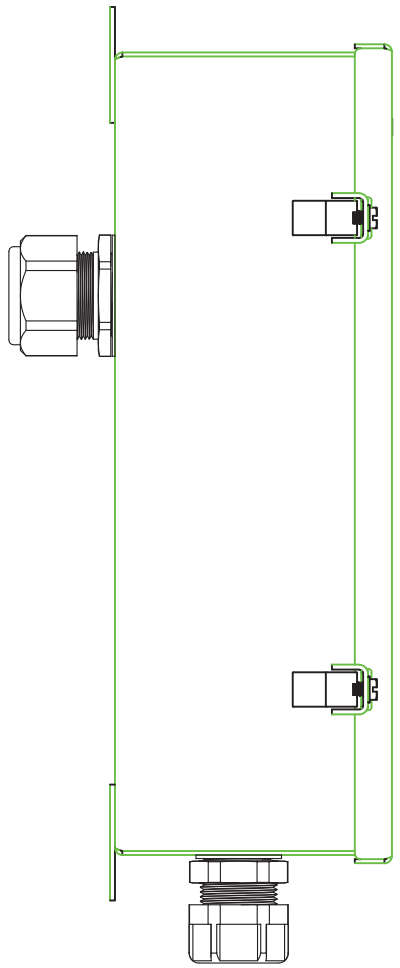
DWG NO
WJ-A-29032

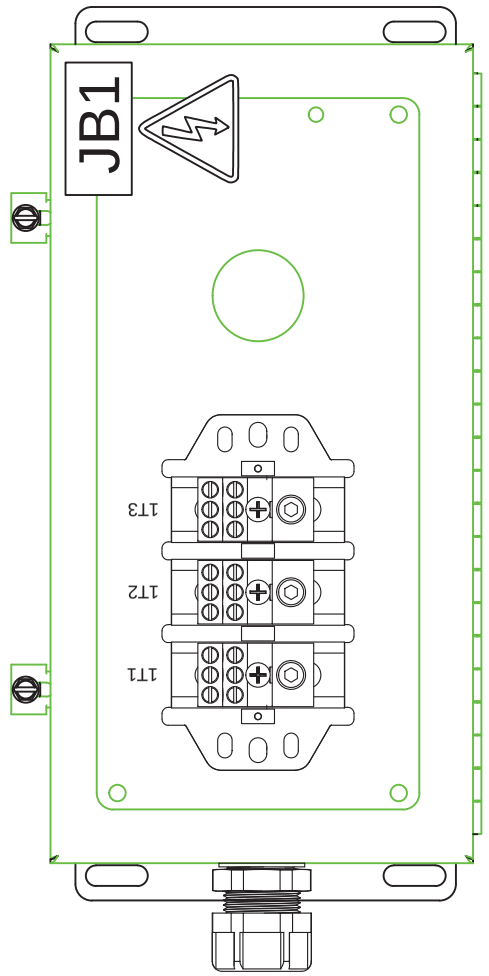
SHEET NO
5 OF 6

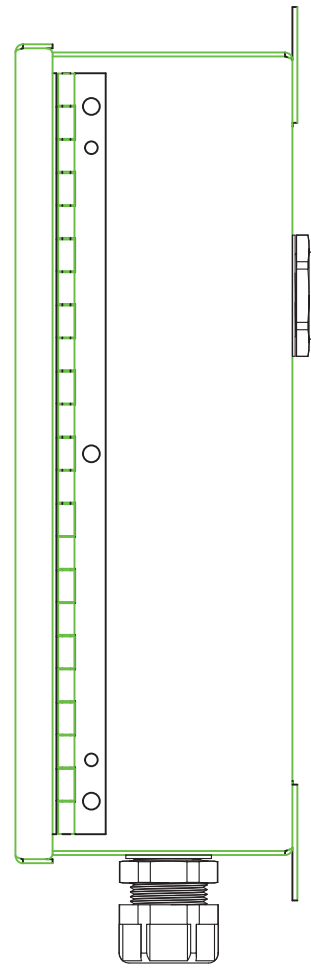
CAD DWG FILE ARS 480V Cabinet.dwg

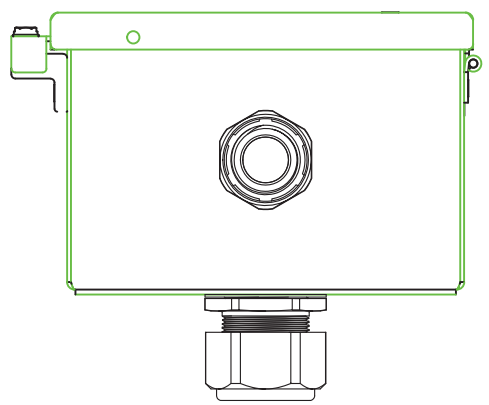












NO.	DATE	REVISION	BY

DWG TITLE

480V ABRASIVE RECYCLING SYSTEM JB1

ENGINEER BJA	CHECKED BY
DRAWN BY JPS	JOB NO
DATE 5/1/17	SCALE
	DWG NO WJ-A-29032

SHEET NO 6 OF 6

CAD DWG FILE ARS 480V Dist Box.dwg

CONTROL PANEL

AGITATION PUMP

3/8" NYLON TUBING

ABRASIVE PUMP

3/8" NYLON TUBING

FEED PUMP

3/8" NYLON TUBING

COM

W

A

D

X

A

D

P

E_B

E_A

3/8" NYLON TUBING

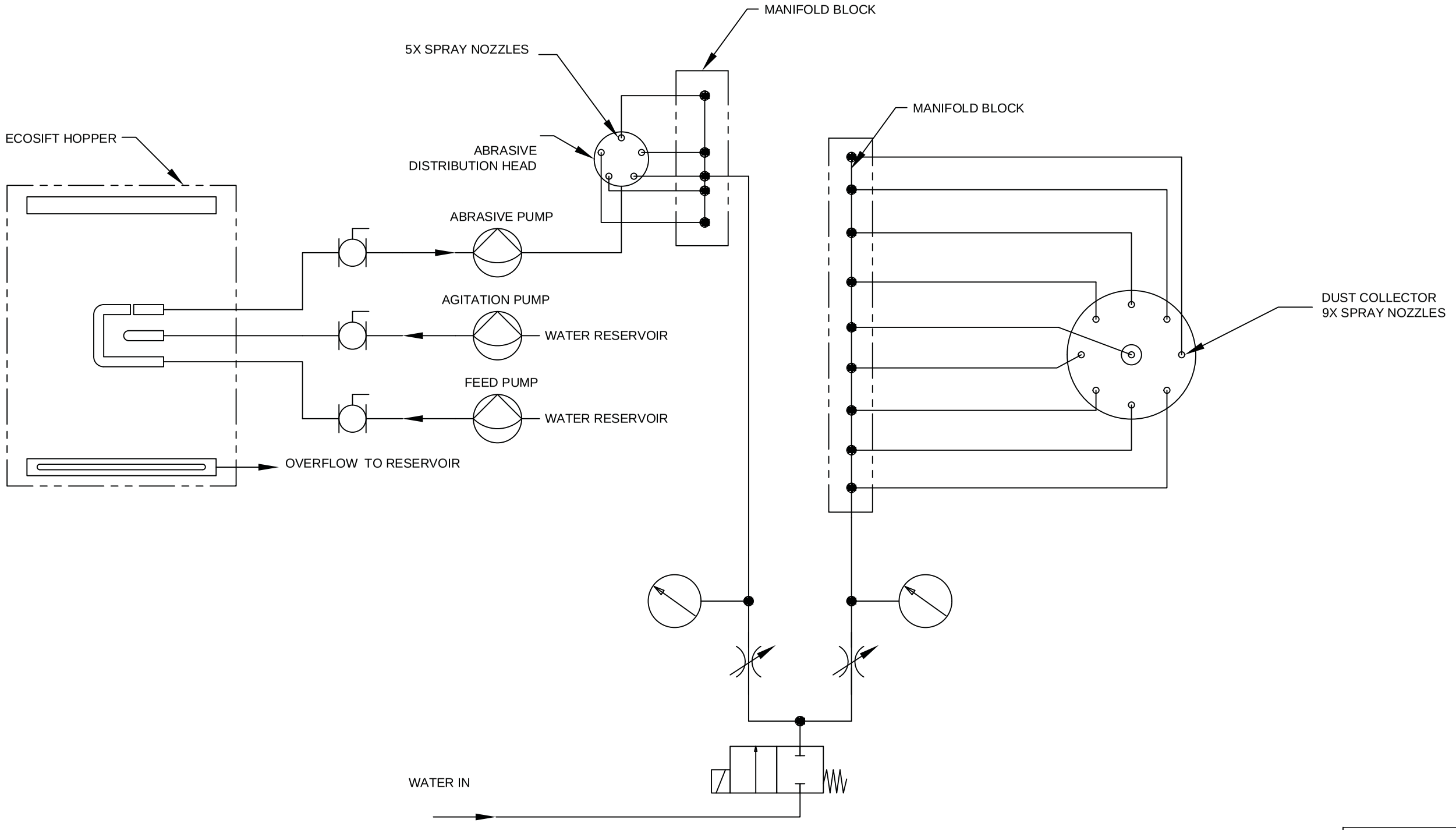
AIR INPUT

1/4" NYLON TUBING

ECOSIFT AERATOR

TITLE:
ABRASIVE RECYCLER PNEUMATIC SCHEMATIC

SIZE	DWG. NO.	REV
B		—



TITLE:
ABRASIVE RECYCLER WATER SCHEMATIC

SIZE	DWG. NO.	REV
B		—