Operation and Maintenance Manual

TAILORED WATERJET
SOLUTIONS™

A-Series

A-Series

Operation and Maintenance Manual

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Section 1: Introduction

1.1 Overview of the A-Series Waterjet

The A-Series is a compact, heavy-duty waterjet cutting system that offers the capabilities of a full-scale waterjet in a smaller package.

The A-Series is the perfect solution for those with limited floor space. The machine's lightweight design enables it to be moved with a pallet jack or forklift, and it can be positioned against a wall or left free-standing. It has a cutting envelope of 2' x 4' and can accommodate materials up to 7" thick by adjusting the Z-axis on the cutting head. Optional automated water-level control and system enclosure ensure a safe, quiet, and clean work environment, and the included Move™ controller software seamlessly integrates motion control and industrial cutting.

1.2 Warranty Information

A-Series machines come with a 1-year non-consumable parts warranty that also covers the intensifier pump.

WARDJet's warranty does not cover, and makes no warranty with respect to, any defect, failure, damages, deficiency, or error which is not reported to WARDJet within the applicable warranty period; or due to misapplication, modification, disassembly, abuse, misuse, non-compliance with installation instructions, unauthorized repair, improper maintenance, neglect, accident, use of wrong lubricants or abnormal conditions of climate, dirt or corrosive matter; or due to normal wear; or if the system has been operated contrary to WARDJet's instructions or stated limits of rated and normal usage.

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

1.3 Proprietary Information

All drawings, schematics, photos, and related content contained in this manual are proprietary to WARDJet.

The purpose of this manual is to assist the company that purchased a WARDJet machine from WARDJet in regular maintenance. Do not duplicate or replicate this manual and disseminate for any other purpose.

Section 2: Specifications

2.1 A-Series Specifications

	A-0612	A-1212
Footprint	7.6’ x 3.8’ (2.31 m x 1.14 m)	7.6’ x 5.8’ (2.31 m x 1.75 m)
Enclosure Footprint	7.6’ x 3.8’ (2.31 m x 1.14 m)	7.6’ x 5.8’ (2.31 m x 1.75 m)
Cutting Envelope (X, Y, Z Travel)	4.1’ x 2.1’ x 4.1” (1.25 m x 0.64 m x 0.10 m)	4.1’ x 4.1’ x 4.1” (1.25 m x 1.25 m x 0.10 m)
Z Travel	4” (0.1 m)	4” (0.1 m)
Max Material Thickness	7” (0.17 m)	7” (0.17 m)
Power Requirements	120 V, 20 Amps, Single Phase	120 V, 20 Amps, Single Phase
Air Requirements	80 psi min, 2 cfm (5.52 bar min, 0.06 cmm)	80 psi min, 2 cfm (5.52 bar min, 0.06 cmm)
Linear Positional Accuracy	± 0.003” per 3 feet (± 0.08 mm per meter)	± 0.003” per 3 feet (± 0.08 mm per meter)
Repeatability	± 0.002” (± 0.05 mm)	± 0.002” (± 0.05 mm)
Speed	0.01 ipm - 500 ipm (0.25 mm/m - 12,700 mm/m)	0.01 ipm - 500 ipm (0.25 mm/m - 12,700 mm/m)
Drive Mechanism	Helical Rack and Pinion	Helical Rack and Pinion
Software	Move™, WARDCAM	Move™, WARDCAM
Bulk Feed Hopper (Standard)	85 lb Integrated SmartFeed Hopper	85 lb Integrated SmartFeed Hopper

2.2 Pump Specifications

The following specifications are for the Hypertherm HyPrecision P30 pump that is shipped with the A-Series waterjet. For specifications regarding other pumps, see the corresponding pump manual.

DIMENSIONS AND WEIGHTS	
Width	36” (91 cm)
Length	73” (185 cm)
Height	55” (140 cm)
Shipping Weight	2,600 lb (1,200 kg)
Operating Weight	2,400 lb (1,100 kg)

NOTE *The shipping weight is for the pump, pallet, and packaging. Exact weights are determined at shipment. Operating weight is for an unpackaged pump with hydraulic fluid.*

22 kW, 30 hp	50 Hz	60 Hz	
Voltage	400 V	208 V to 230 V	460 V
Full-Load Current	46.9 A	84.9 A to 77.0 A	38.5 A
Primary Circuit Breaker Rating	50.0 A	200.0 A	60.0 A

CUTTING WATER IN	Minimum	Maximum
Flow	4.5 L/min (1.2 gal/min)	-
Pressure	3.5 bar (350 kPa / 50 psi)	7.6 bar (760 kPa / 110 psi)
CUTTING WATER OUT	**Minimum**	**Maximum**
Flow	-	2.3 L/min (0.6 gal/min)
Pressure	345 bar (34,500 kPa / 5,000 psi)	4,140 bar (414,000 kPa / 60,000 psi)
Cut Pressure Factory Setpoint	-	4,140 bar (414,000 kPa / 60,000 psi)
Pierce Pressure Factory Setpoint	1,380 bar (138,000 kPa / 20,000 psi)	-
COOLING IN & COOLING OUT	**Minimum**	**Maximum**
Flow	11.4 L/min (3 gal/min)	-
Pressure	3.5 bar (350 kPa / 50 psi)	7.6 bar (760 kPa / 110 psi)

This model supports the following orifice sizes:

Number of Orifices			
1	0.011” (0.28 mm)	4	0.005” (0.13 mm)
2	0.007” (0.18 mm)	5	0.004” (0.10 mm)
3	0.006” (0.15 mm)	6	0.004” (0.10 mm)

2.3 Requirements

NOTE *Additional options may change the following requirements.*

Power Requirements:
A-Series Gantry:
- 110 V, 20 amps, Single Phase

HyPrecision P30 Pump:
- 208 – 230/460 V, 3 Phase

Air Requirements:
A-Series Gantry:
- 80 psi, 2 cfm (5.52 bar, 0.06 cmm)

HyPrecision P30 Pump:
- 70 psi (4.83 bar)

Water Requirements:
HyPrecision P30 Pump:
- Cutting Water: Minimum inlet flow rate 2 gal/min (7.6 L/min)
- Cooling Water: 3 gal/min (11.4 L/min)

Space Requirements:
A-0612 Footprint:
- 7.6’ x 3.8’ (2.31 m x 1.14 m)

A-1212 Footprint:
- 7.6’ x 5.8’ (2.31 m x 1.75 m)

HyPrecision P30 Pump Footprint:
- 36” x 73” (91 cm x 185 cm) plus an additional clearance of 36” x 36” (91 cm x 91 cm) around the pump

2.4 Tank Weight Limit

The maximum tank load is 227 lb/ft^2 (1110 kg per m^2).

Section 3: Safety

Carefully read and understand this manual before performing maintenance on your waterjet. Follow all safety measures outlined in this manual. Always follow your company's safety procedures.

3.1 Manual Conventions for Safety

WARNING *This indicates a hazardous situation with a moderate risk of injury or death if not avoided.*

WARNING *This indicates an electrical hazard with a moderate risk of injury or death if not avoided.*

NOTICE *This indicates a situation that could result in property or equipment damage if the instructions are not followed.*

NOTE *This provides additional information about known situations that require special attention.*

REFERENCE *This recommends pages or supporting documents with related information and procedures.*

3.2 Noise Declaration

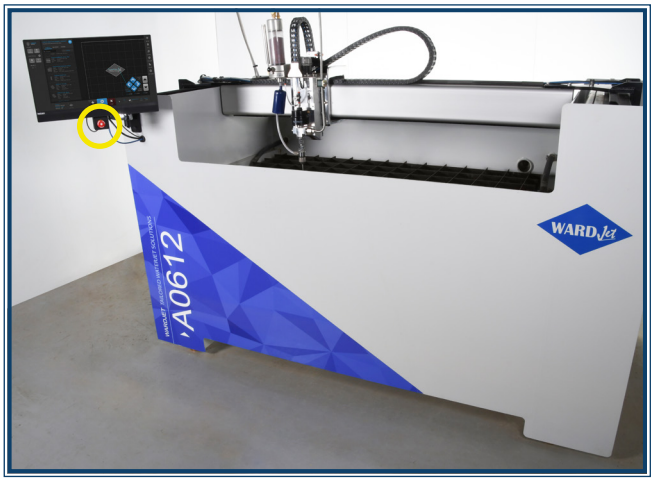
Noise can exceed 80 dBi. Follow local and company safety regulations when taking the appropriate safety precautions. When possible, cutting underwater can minimize the noise emission of waterjet cutting.

Acceptable noise levels, as defined by national and local codes, may be exceeded by this waterjet cutting system. Always wear proper ear protection when the machine is in operation. Any noise measurements taken are dependent on the specific environment in which the system is used. Specific information by product can be requested by contacting WARDJet.

3.3 Emergency Stops

The A-Series waterjet cutting system contains two emergency stop (e-stop) buttons: one on the waterjet controller and the other on the face of the pump. Pressing an e-stop removes power from the motor contact, motors, pump, and solenoids for water/abrasive, stopping movement of the machine and turning off water flow to the orifice.

In the case of an emergency, immediately press one of the e-stop buttons. Ensure that all operators of the waterjet are familiar with the locations of the e-stop buttons.



3.4 Personal Protective Equipment (PPE)

Personal protective equipment is important for keeping waterjet operators, those working in the vicinity of the waterjet, and maintenance personnel safe. Required personal protective equipment may vary depending on the material in use or the application of the waterjet cutting system. Always follow your company's safety program in all aspects of safety, including personal protective equipment.

Eye and Face Protection: Safety glasses should be worn when operating the waterjet to protect the eyes from flying particles, material, water, and/or abrasive.

> **REFERENCE** *OSHA 29 CFR 1910.133*

Foot Protection: Nonslip safety footwear should be worn when operating the waterjet to protect the feet from falling objects, and the operator from slipping.

> **REFERENCE** *OSHA 29 CFR 1910.136*

Hand Protection: Work gloves should be worn when loading and unloading plates and parts from the waterjet to protect the hands from lacerations, cuts, and abrasions.

> **REFERENCE** *OSHA 29 CFR 1910.138*

Hearing Protection: When the machine is in operation, hearing protection should be worn by the operator and workers in the vicinity of the waterjet to prevent hearing loss.

> **REFERENCE** *OSHA 29 CFR 1926.101*

Appropriate Clothing: During milling and when otherwise appropriate, long sleeves and long trousers should be worn to protect the skin from dust and particles in the air that could cause rashes, abrasions, and other irritations.

> **REFERENCE** *OSHA 29 CFR 1910.132 and OSHA 29 CFR 1926.65 App B*

Respiratory Protection: During milling, the handling of certain abrasives, and when otherwise deemed necessary by your local regulatory bodies and facility health and safety committee, a respirator should be worn to protect the respiratory system from dust and particles in the air that could cause discomfort, illness, and other irritations.

> **REFERENCE** *OSHA 29 CFR 1910.134*

> **WARNING** *Airborne hazards may vary based upon the material being machined.*

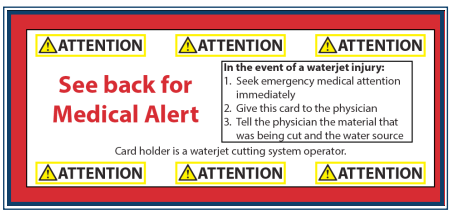
3.5 Accident Awareness

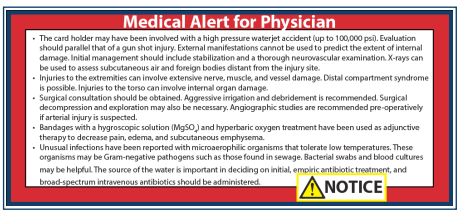
Do not, under any circumstance, allow a body part, tool, or clothing article that is being worn by a person on the cutting table and/or in the cutting envelope while the pump is on.

Injuries: In case of injury, immediately seek professional medical treatment. Waterjet injuries are serious and the visible cut often does not reflect the extent of the internal injury. Damage to internal organs and muscles and the spread of microorganisms are serious concerns. Injuries should be carefully monitored for several days.

National Poison Center: If an accident should occur and high-pressure water penetrates the skin, seek medical attention immediately. Within the United States, the National Poison Center Office may be contacted at 1-800-222-1222 for further assistance and information.

Operator Cards: Several operator cards that give helpful information to medical professionals in the case of a waterjet accident have been included with the machine. These cards outline the possible nature of the injury in order to help with the diagnostic process. We strongly recommend you keep these cards with the waterjet operators or in a convenient location in the case of an emergency.





3.6 Foreseeable Misuse

WARNING *The Z-carriages and the gantry are not attachment points for lifting, and must not be used to move material.*

WARNING *WARDJet abrasive waterjet cutting systems are designed to use only 30-200 mesh garnet or aluminum oxide abrasive. Any other abrasive may cause damage to the machine and the operator's health.*

3.7 Residual Risks

Many safety enhancements have been included in this machine. Despite all the precautions taken, some residual risks may still exist. Electrical risks remain possible with this equipment. To minimize these risks, ensure that all operators and maintenance personnel follow the company and local regulations in regard to locking out/tagging out the machine before maintenance. The main breakers should be off and locked out when working on the pump and the electrical panel on the gantry. Enforcement of lockout/tagout procedures is necessary to minimize these risks.

3.8 Training

Waterjet training is free for the life of the machine, provided that the training sessions are scheduled at our Tallmadge, Ohio facility. Trainees are responsible for travel and accommodations. In-house training can be scheduled at an additional cost.

Any person intending to operate this equipment or be in the vicinity of this equipment must be properly trained. Contact WARDJet directly to schedule waterjet training.

3.9 Housekeeping

A significant and important aspect of safely operating this equipment is keeping the area around the waterjet cutting system as clean, dry, and organized as possible. Passageways must be kept clear of trip hazards and loose items.

REFERENCE *OSHA 29 CFR 1910.22*

3.10 Regular Maintenance

To protect the operator and the machine, the maintenance procedures enclosed in this manual and conveyed during training should be followed at the designated intervals. Keeping the waterjet cutting system in proper working order is an important part of keeping the machine safe for the user and those near the machine.

WARNING *Always lock out/tag out the waterjet cutting system according to your company's lockout/tagout procedures before performing maintenance. (Reference: OSHA 29 CFR 1910.147)*

WARNING *Disconnect the main power supply before performing maintenance.*

WARNING *Hydraulic and pneumatic systems do not necessarily depressurize when the power is disconnected. Bleed down, and lock out/tag out hydraulic and pneumatic systems separately.*

If replacement of a part becomes necessary, use a correct replacement part that is rated as necessary for the application. Always use the proper tools for the maintenance procedure, and always wear appropriate PPE.

3.11 Damaged Machinery and Parts

If the waterjet cutting system should break down, require maintenance, or experience some other form of accident, immediately e-stop the machine. Lock out/tag out the machine according to your company's safety policy. Do not operate the machine when it is broken.

REFERENCE *OSHA 29CFR 1910.147*

Ensure that all warning decals are maintained so that they are visible and legible. Do not cover, obstruct, or remove any warnings, cautions, or instructional material from the waterjet cutting system.

3.12 Lifting Safety

Always take great care when lifting objects. If there is a question as to whether the object can be lifted safely, ask for help, or use a forklift or a crane.

3.13 Legionellosis

The Legionella bacterium, which is known to cause Legionnaire's Disease and Pontiac Fever, is found in water between 42°F and 113°F (20°C and 45°C). Stagnant water, particularly that which provides nutrients for microbial growth, is an area of risk for Legionella bacterium.

Some methods of reducing risk may include:

- Regulating the water temperature
- Avoiding water stagnation
- Draining and cleaning the tank
- Other water treatment techniques

The monitoring and testing of water used in a waterjet is the responsibility of each facility. The risks may vary based on climate and use of the machine.

REFERENCE *CDC. "Legionella (Legionnaire's Disease and Pontiac Fever)." Centers for Disease Control and Prevention, 6 June 2016, www.cdc.gov/legionella. Accessed 6 Mar. 2018.*

3.14 Backflow Risk

Given a unique set of circumstances, backflow from the pump into the facility's water system may be possible. Consult and follow your company's and local government's safety requirements for correct installation of the machinery.

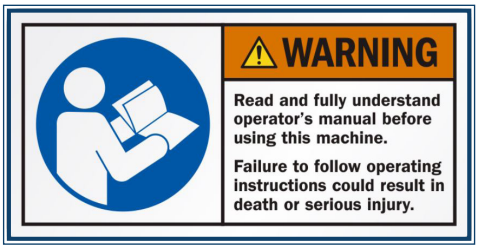
3.15 Warning Labels

3.15.1 WARNING LABELS ON THE MACHINE

Electrical Hazard Warning

High Pressure Caution

Pinch Point Warning



Read Manual Warning

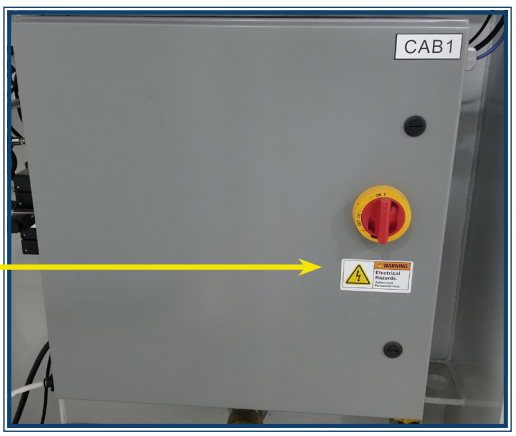
Personal Protective Equipment Caution

Pressure Label

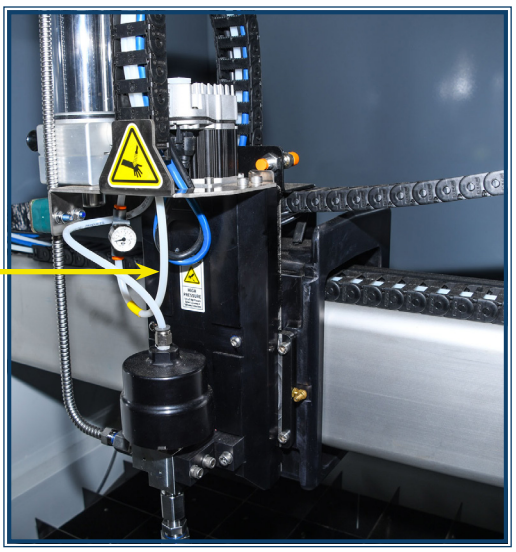
Read Manual Warning

PPE Caution

Electrical Hazard Warning

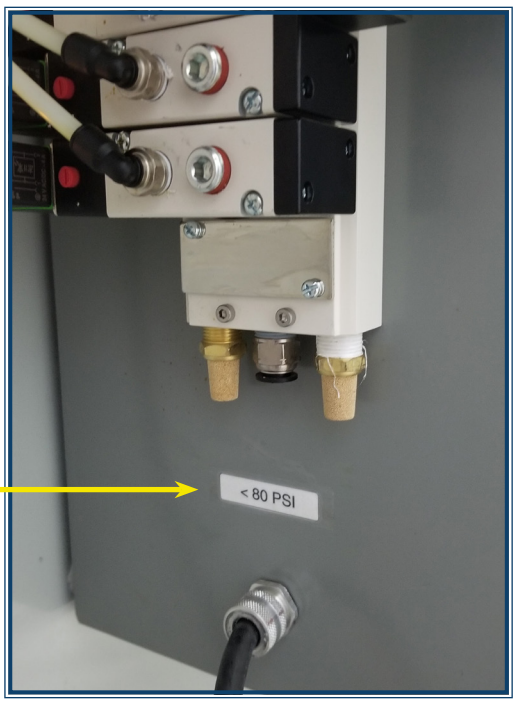


High Pressure Caution



High Pressure Caution

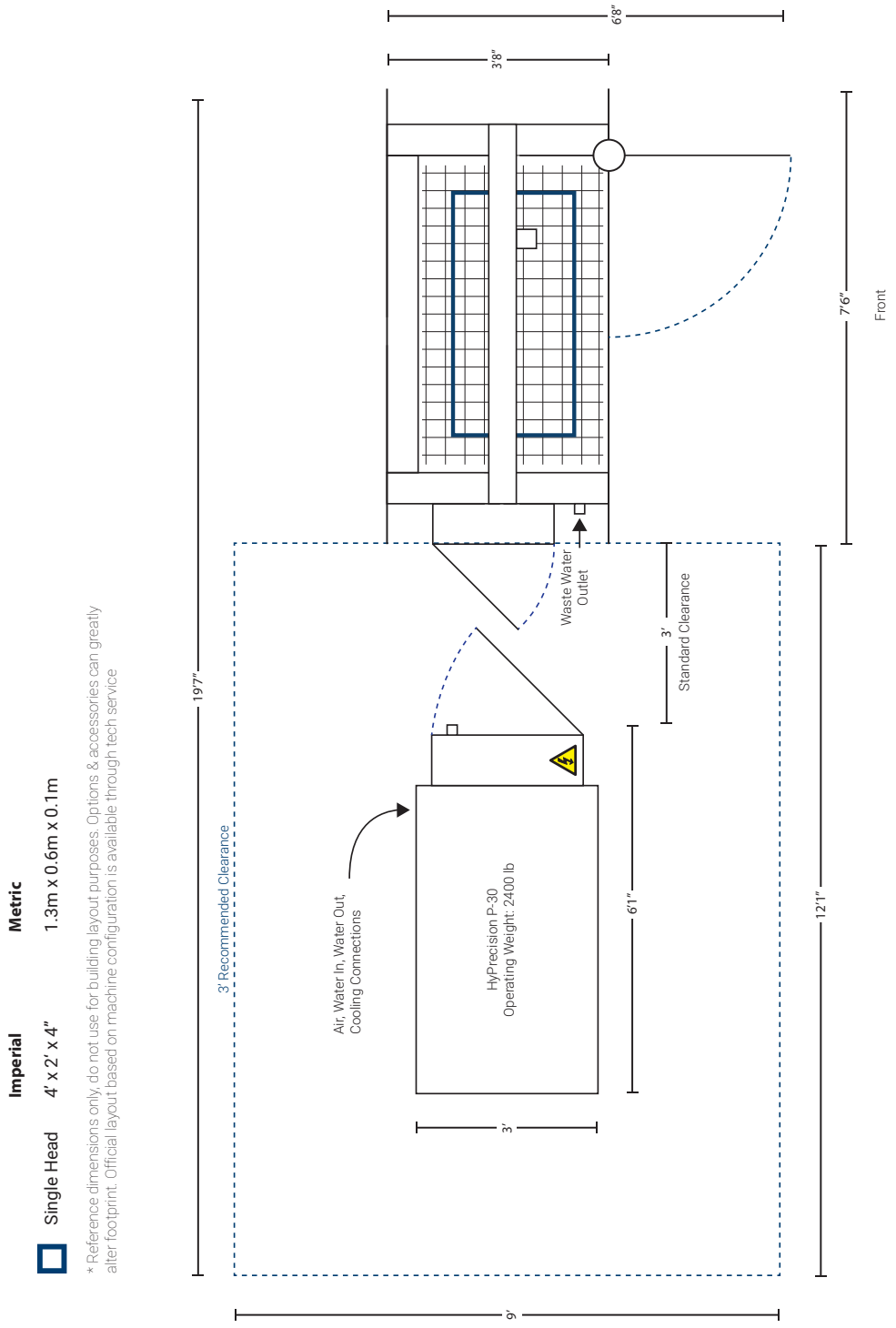
Pressure Label



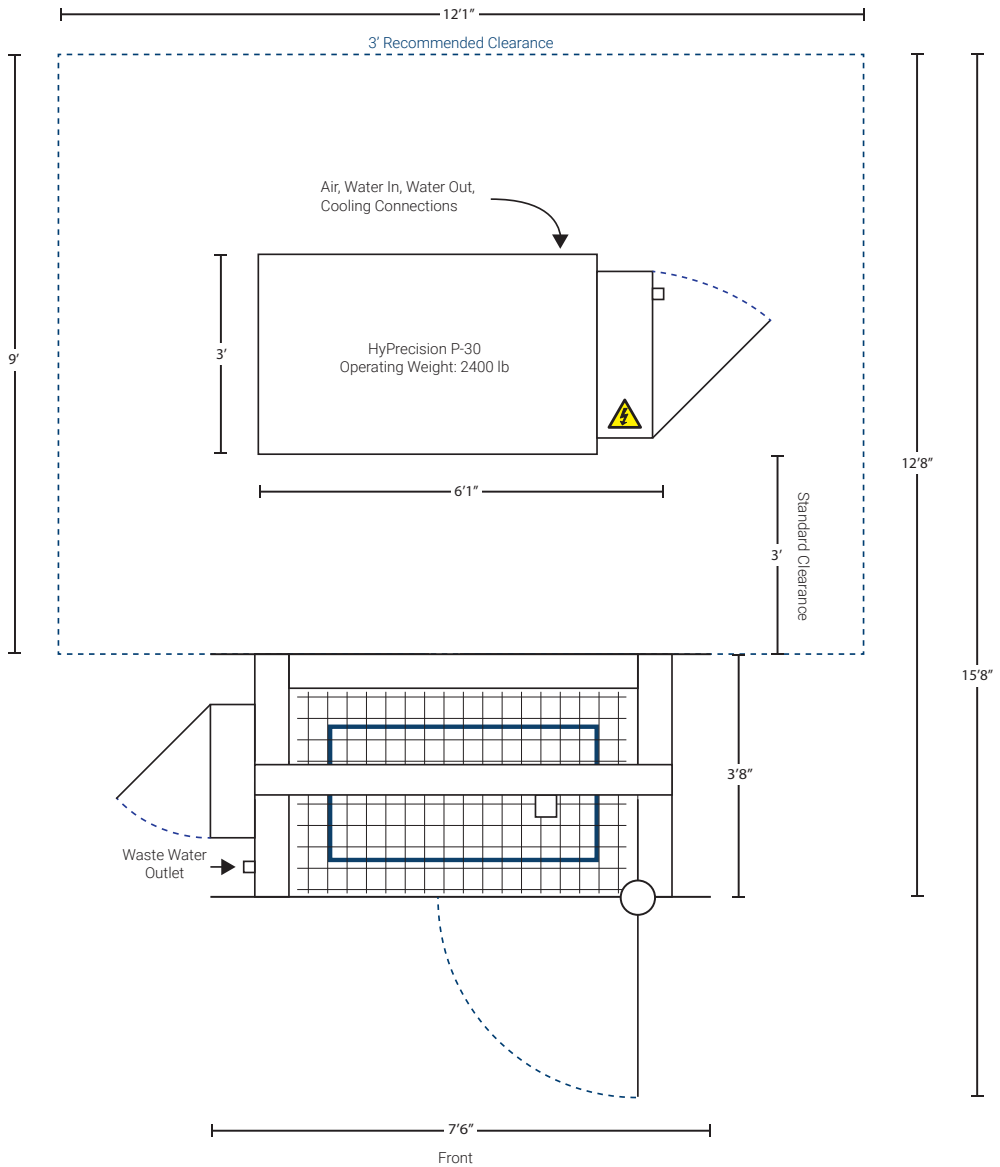
Section 4: Recommended Layouts and Cutting Envelope

4.1 A-0612

4.1.1 PUMP BESIDE WATERJET

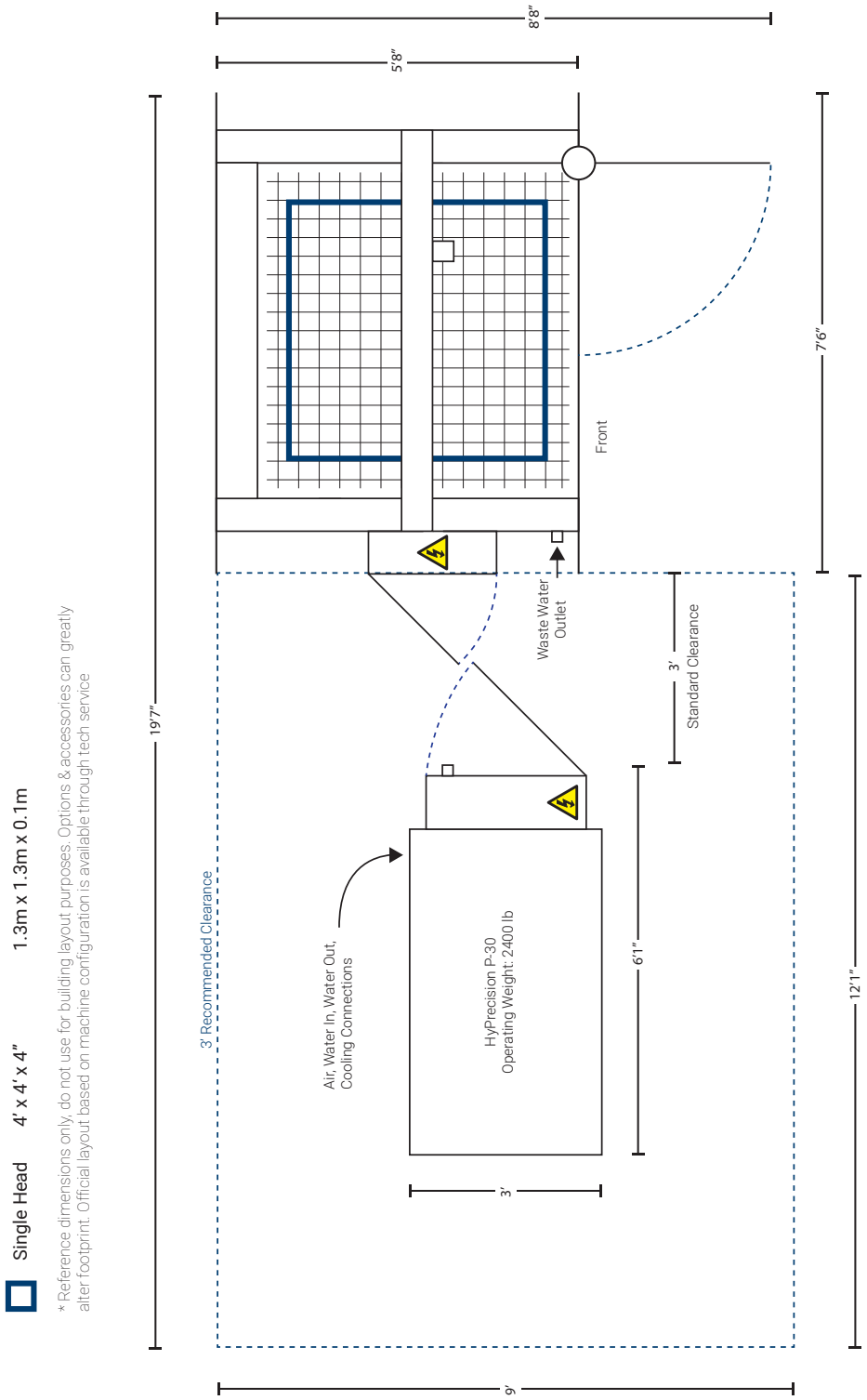


4.1.2 PUMP BEHIND WATERJET

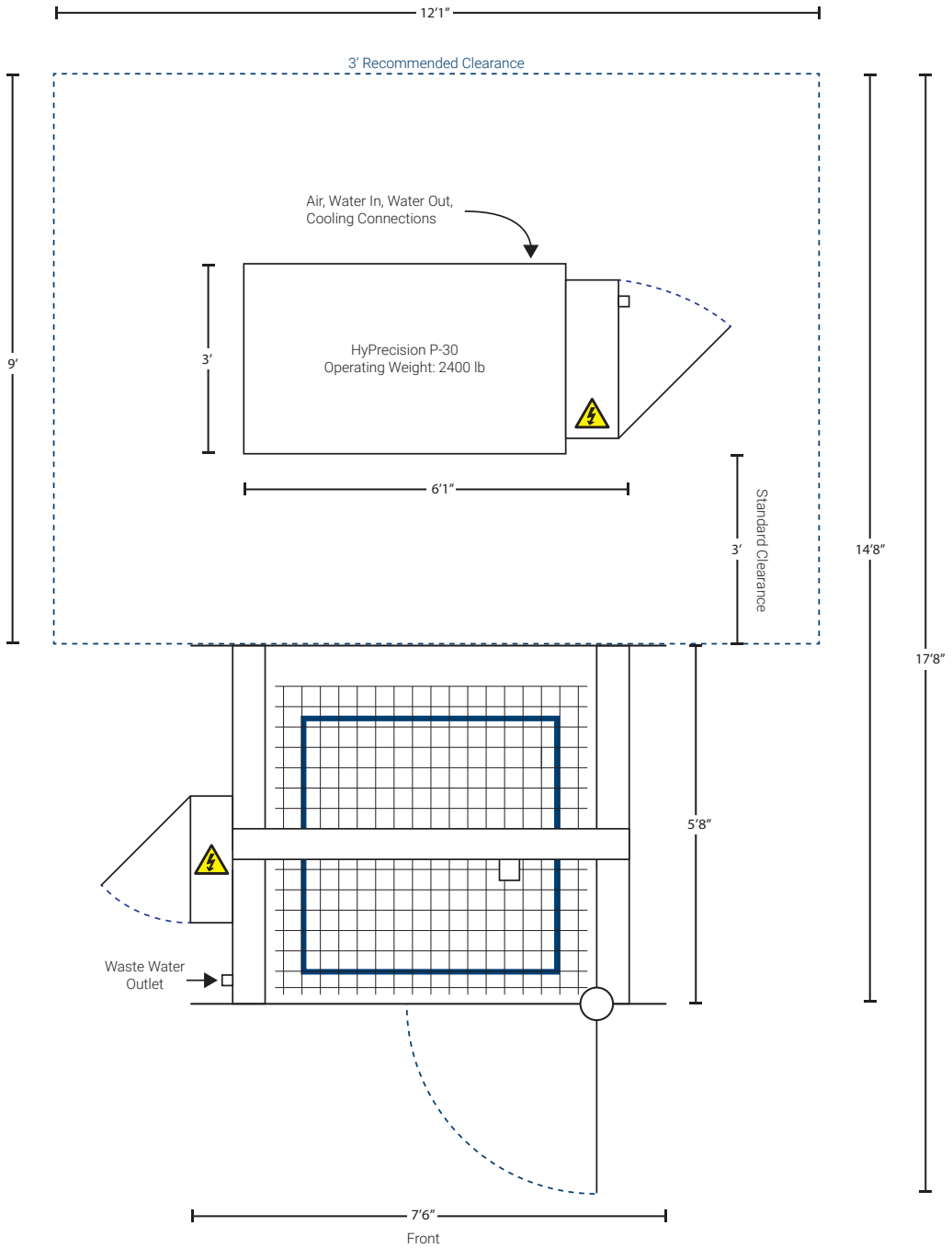


4.2 A-1212

4.2.1 PUMP BESIDE WATERJET



4.2.2 PUMP BEHIND WATERJET



Section 5: Installation

5.1 Machine Arrival Procedure

When the A-Series waterjet arrives at your facility, use this procedure to prepare for installation.

Step 1: Confirm that the machine arrived in good condition.

Step 2: Confirm that the facility is ready in accordance with the Pre-Installation Checklist provided by WARDJet.

Step 3: Remove anything that is on or in the tank, such as the controller and high-pressure whip.

Step 4: Unpack all parts and discard all packaging.

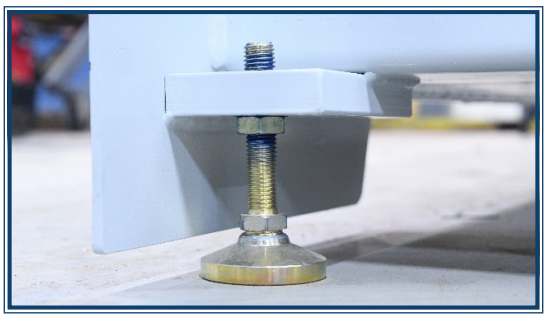
Step 5: Take an inventory of all parts to confirm that everything is accounted for.

5.2 Moving and Placing the Waterjet

The A-Series can be moved with a pallet jack or forklift. Position the forks underneath the machine, ensuring that the weight of the waterjet is evenly distributed. Place the waterjet according to the suggested layouts under Section 4: Recommended Layouts and Cutting Envelope.

5.3 Leveling the Machine

A level machine is necessary to achieve maximum cutting accuracy. A laser level is recommended for a more accurate reading of the machine's levelness, but a standard I-Beam level can also be used.



A-Series machines feature four adjustable leveling feet. To level the machine:

Step 1: Place the level directly on the waterjet grates.

Step 2: Loosen the top bolts on the leveling feet to unlock for adjusting.

Step 3: Adjust the bottom bolt on each foot to raise or lower each corner of the waterjet until the machine is level.

Step 4: Tighten the top bolts on each foot to lock in the foot position.

NOTE *Remember to measure for levelness in both the X and Y axes by rotating the level in the necessary direction.*

5.4 Installing the Controller

The waterjet controller will arrive unattached to the machine in order to prevent damage during shipment.

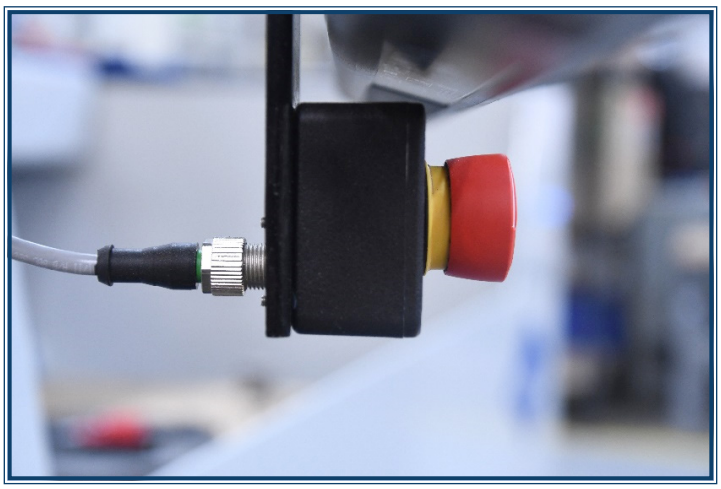
> **NOTE** *Upon powering up the machine, ensure that the e-stop is working properly. When the e-stop is engaged, a warning should appear at the bottom of the screen within the Move™ software. Twist the e-stop to the right to disengage the e-stop.*

Step 1: Mount the monitor to the swivel arm using the hardware provided. The e-stop plate must go between the monitor and the swivel arm.

The touch screen is mounted to the swivel arm with four screws.

Step 2: Plug the power cord and network cable into the back of the controller.

Step 3: Attach the power cord to the back of the e-stop button.



Connect the e-stop power cord to the back of the e-stop mechanism mounted on the touch screen.

5.5 Filling the Tank

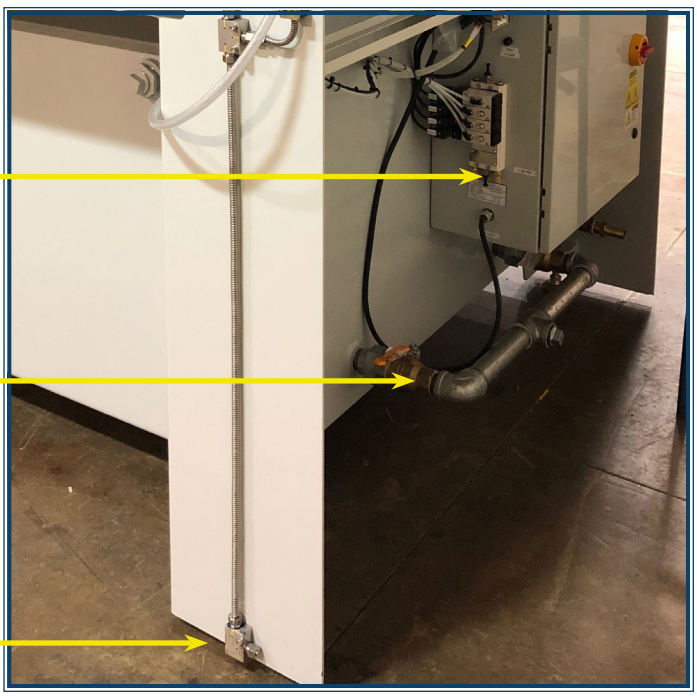
Fill the tank with water until the water line is just below the surface of the grates.

5.6 Power, High-Pressure, and Air

The A-Series gantry runs off of single-phase power. Simply plug the power cord into a standard three-prong wall outlet. There is no on/off switch for A-Series machines; the waterjet will automatically turn on once it is plugged in. Run the high-pressure line to the inlet on the back left of the machine, and attach the air compressor to the air quick disconnect. Run a hose from the drain line to the drain, ensuring that the water is able to flow freely.

NOTICE *To avoid damage to the waterjet, air input should be 80 – 100 psi.*

The A-Series gantry plugs into a standard wall outlet.



Section 6: Commissioning the Pump

6.1 Unloading the Pump

> **WARNING** *Misuse of lifting equipment could cause the load to become unstable, which can result in property damage, personal injury, or death.*

> **WARNING** *Lifting must be done by a trained operator. Follow all of the relevant worksite safety requirements, safety instructions for lifting equipment, and safety information in this manual.*

> **WARNING** *Do not use eyebolts or cast-in lifting lugs to lift the pump, motor, or assemblies.*

Step 1: Examine the pallet for cracks or damage.

Step 2: Test the hydraulic controls on the lifting equipment before picking up a load.

Step 3: Set the forklift forks as far apart as possible, keeping the pump's center of gravity centered between the forks.

Step 4: To increase stability, tilt the load backward and keep it as low as possible. This is especially important when the forks are not longer than the width of the pallet.

Step 5: When the pump is in position to unload, set the brake and tilt the load forward until the pallet is horizontal.

Step 6: Lower the load so that all four corners of the pallet touch the floor at the same time.

Step 7: Keeping the forks parallel to the ground, lower the forks far enough to disengage from the pallet and back away from the pump.

6.2 Unpacking the Pump

> **NOTE** *Boxes and parts are frequently packed inside the pump, or in crates, boxes, and packaging. Look for accessories and spare parts before discarding the packaging.*

Step 1: Remove the pump from the shipping pallet. Use the leveling feet to level the pump on a flat surface.

Step 2: Make sure that these items are included and complete:

- Dirty water container
- Tool kit (optional)
- Spare parts kit (optional)
- Cord grip connector, two -16 JIC female connectors, and 2 hydraulic hoses for the external heat exchanger (optional)
  - The hydraulic hoses are approx. 9 m (30 feet) long.
- Water hose and cord grip connector for the external boost pump (optional)

- Key for the LOCAL/REMOTE key switch
  - This is usually shipped inside the electrical enclosure.
- Electrical schematic
  - This is usually shipped inside the electrical enclosure.
- Key for the electrical interlock (optional)
  - This is usually shipped inside the electrical enclosure.
- MicroSD card adapter
  - This is usually shipped inside the electrical enclosure.

6.3 Inspecting the Pump

Step 1: Make sure that the equipment was not damaged during transportation. If the equipment was damaged during shipment, a claim must be filed with the carrier.

Step 2: Make sure that the delivery and shipping documents match the equipment that was ordered and what was received. Report shortages or damages to WARDJet within 10 days of receiving the equipment.

6.4 Installing the Pump

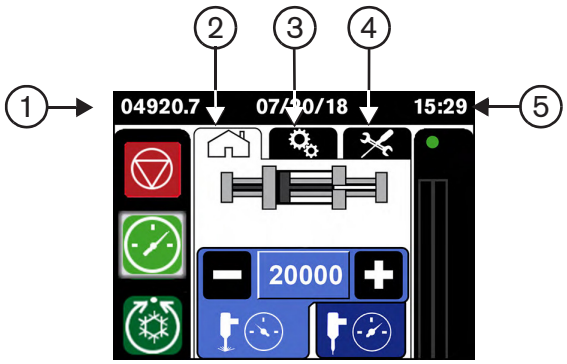
REFERENCE

For information on how to install the pump, refer to the Installation - Install the Pump section of the HyPrecision Predictive™ Waterjet Pumps Operator Manual.

A copy of the pump manual is shipped with each machine. The pump manual can also be found on the Hypertherm website:
https://www.hypertherm.com/en-US/customer-support/documents-library/

Section 7: Operation

7.1 Primary Operation Screen



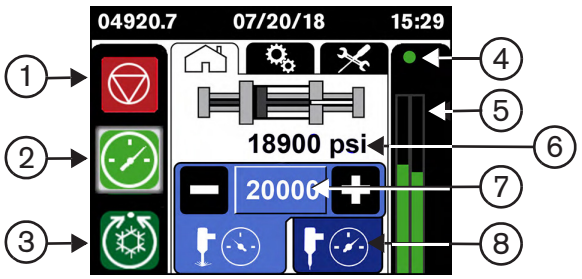
1 Hour meter
This shows the total hours the pump motor has been in operation.

2 Primary operator screen symbol

3 Adjustments screen symbol
Refer to **Operator interface: Adjustment screens** on page 214.

4 Maintenance screen symbol
Refer to **Operator interface: Maintenance screens** on page 124.

5 Date and time



1 STOP
Touch this symbol to stop the pump.

2 RUN
Touch this symbol to start the pump.

3 COOLING MODE
Touch this symbol to operate the pump with the intensifier off.

4 Intensifier status indicator

5 Intensifier stroke indicator

6 Output water pressure

7 Target water pressure

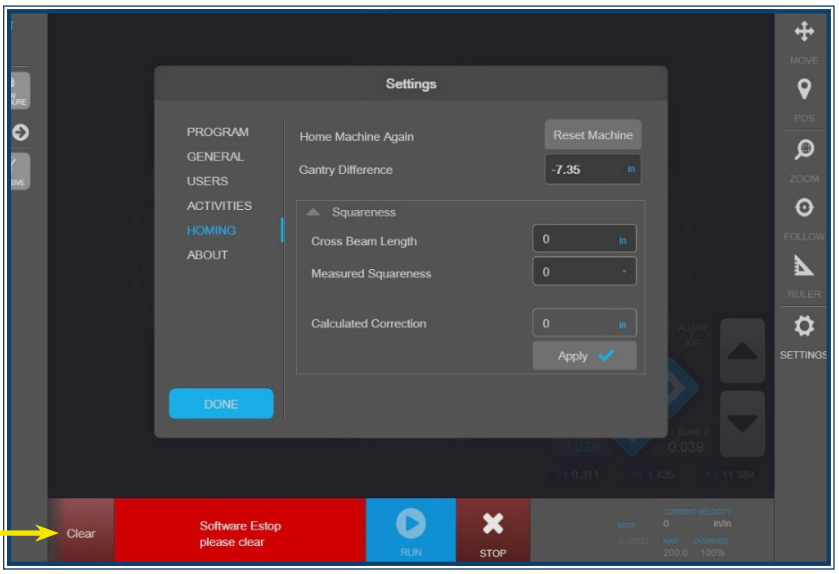
8 Pierce-pressure mode (shown on) / cut-pressure mode

REFERENCE *Refer to the HyPrecision Predictive™ Waterjet Pumps Operator Manual for more information.*

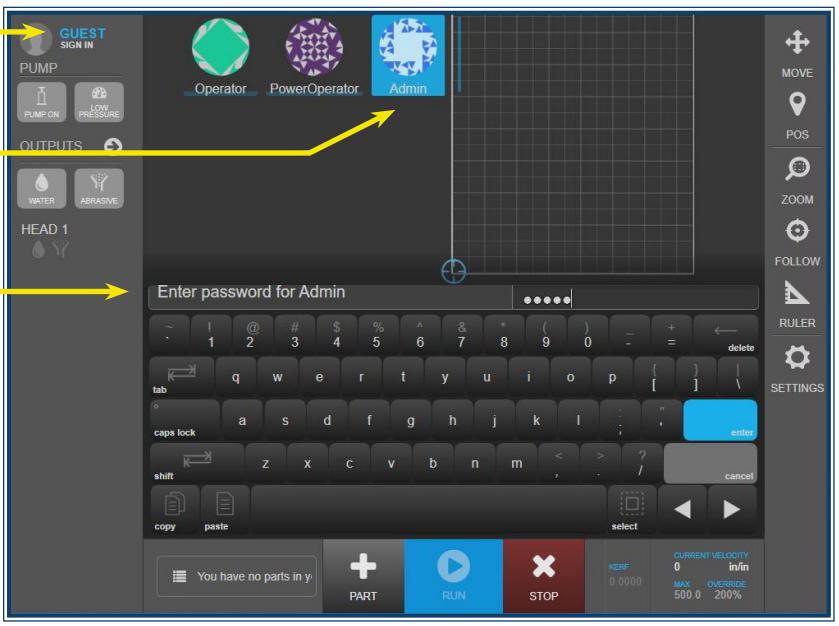
7.2 System Start-Up

Step 1: On the controller desktop, click on the Move™ icon to open the controller software.

Step 2: If the hardware e-stop message appears, reset the hardware e-stop on the machine. Clear the software e-stop by clicking the “Clear” button in Move™.

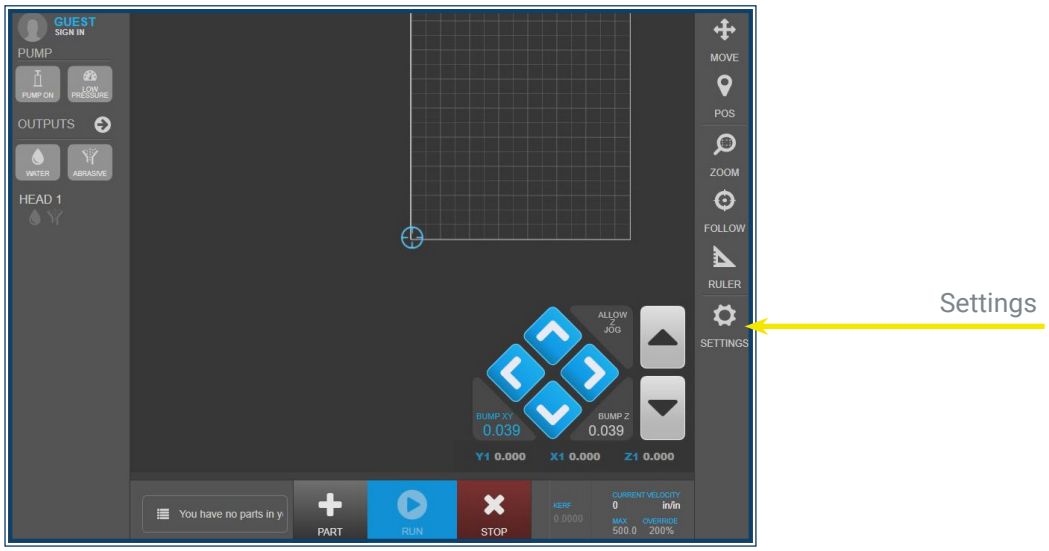


Step 3: Click on the top left of the screen where it says “Sign In”. Click the Admin account and log in with the password provided by WARDJet.

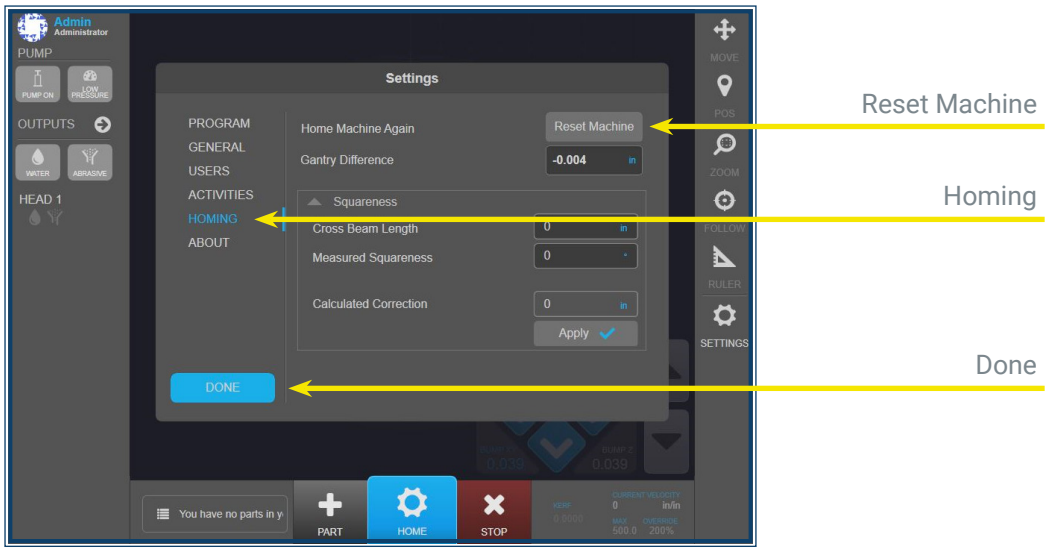


7.3 Homing the Waterjet

Step 1: Click the “Settings” button on the bottom of the right-hand side menu.



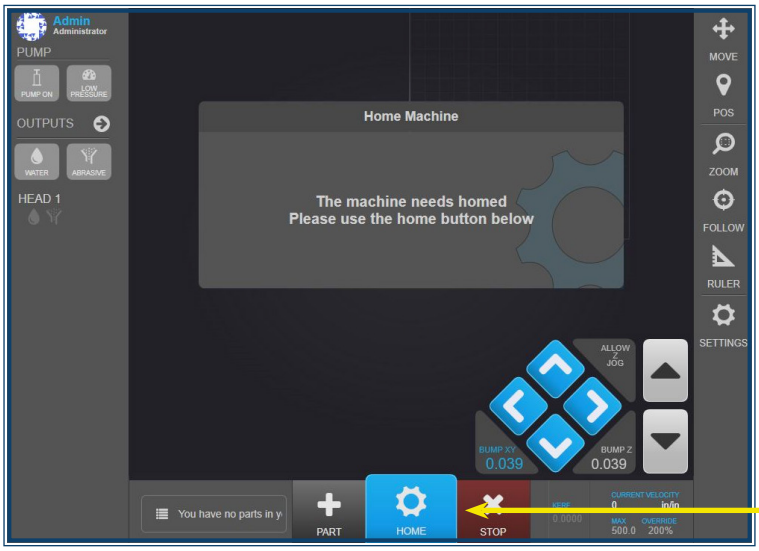
Step 2: Click on the “Homing” button.

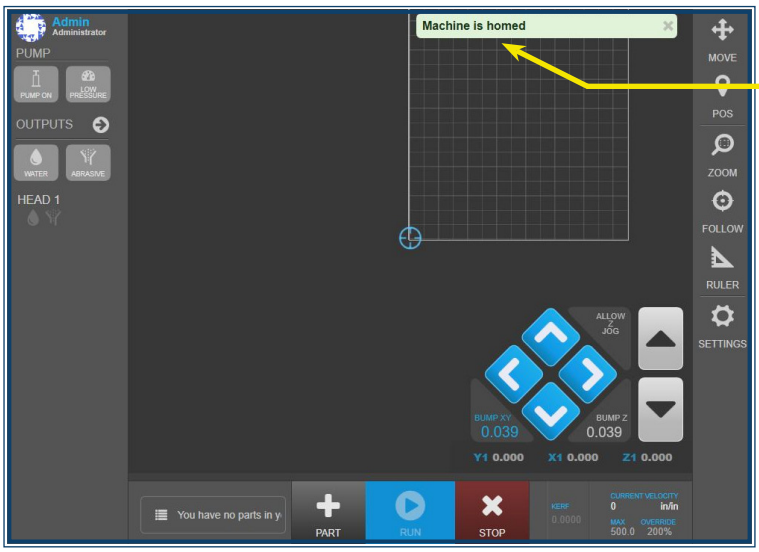


Step 3: Click “Reset Machine”.

Step 4: Click “Done”.

Step 5: Press the “Home” button. The waterjet will home itself, after which a message will appear at the top right of the screen that says “Machine is homed”.

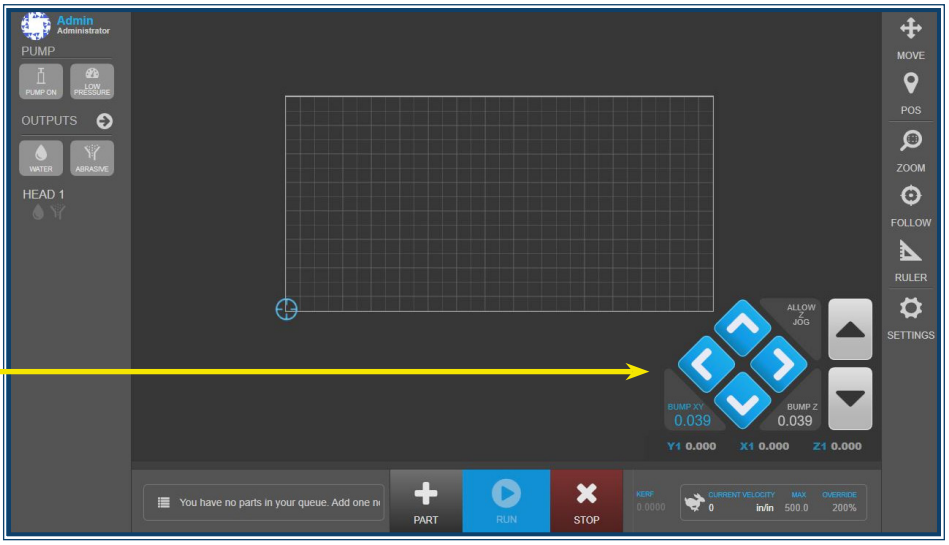




7.4 Jogging the Waterjet

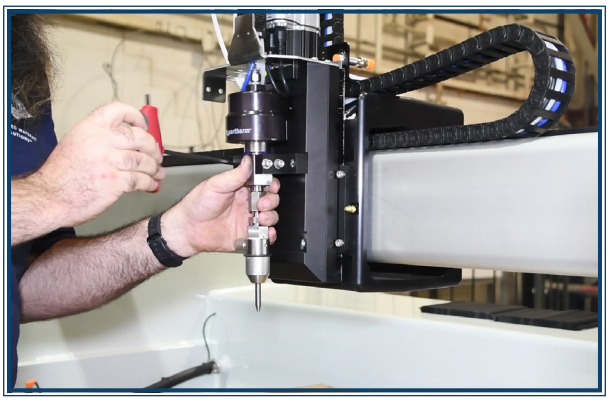
Using the jog controls on the Move™ interface, run the cutting head to all four corners and the center of the machine to verify that the whip does not get caught on any obstructions.

Machine Jog Controls



7.5 Adjusting the Z-Axis

The Z-axis height is controlled by Move™, WARDJet's proprietary motion control software. To cut materials up to 7" thick, the cutting head can be remounted at a higher position on the Z-carriage. Remove all bolts holding the cutting head on the Z-carriage and remount it using the pre-drilled mounting holes.



7.6 Move™ Controller Software

The A-Series waterjet comes packaged with Move™, WARDJet's proprietary motion control software. For questions regarding Move™, contact WARDJet's customer support department.

7.7 Water Level Control

Water level control allows the operator to cut material underwater. Underwater cutting significantly reduces both splash back and noise associated with cutting, providing a cleaner and quieter work environment.

The A-Series tank is designed with a built-in air compartment for controlling water level. You can manually adjust the water level using a self-supplied air compressor. For an additional cost, the A-Series' hardware can be upgraded to control the water level with the attached controller. This allows for the automation of lowering and raising the water level before and after each batch of parts.

Section 8: Maintenance

8.1 Maintenance Tips

While WARDJet waterjets are robust cutting systems designed to minimize the need for repair and service, preventative maintenance is necessary to maximize uptime and longevity of the machine. These general maintenance tips will help prolong the life of the system's components:

- Do not spray down the machine.
- Listen to the machine while in operation for indications of impending problems. If there is an unusual sound, investigate further to ward off a problem before it becomes a significant issue.
- Keep a record of any maintenance procedures performed. This record can be helpful to pinpoint pending issues.
- Perform the regular maintenance procedures at the intervals outlined in this manual and during training.
- Use the recommended grease for lubricating parts. Store the grease in a clean location to avoid contamination from dirt and water.

8.2 Maintenance Charts

TASK	FREQUENCY	PROCEDURE
Check High-Pressure Fittings for Leaks	Daily	Inspect all high-pressure fittings for leaks from the pump to the cutting heads. Do NOT use your hands.
Clean the Machine	Weekly	Use a damp cloth with soap to remove dust and abrasive from the crossbeam and sidebeams.
Inspect and Lubricate Y and YY Side Beams	Every 2 months or 300 hours	Contact WARDJet for instructions.
Inspect and Lubricate X Crossbeam	Every 2 months or 300 hours	Contact WARDJet for instructions.

NOTE *The intervals listed in the table are based on an 8-hour day, 5-day week operation schedule. Revise the schedule as necessary to accommodate local conditions.*

Section 9: Parts and Consumables

9.1 WARDJet Parts and Consumables Department Contact Information

WARDJet Parts and Consumables Department
Email: parts@wardjet.com
Phone: (330) 677-9100

9.2 Consumable Parts Lists

A consumable parts list specific to your waterjet cutting system was included as an insert in this manual. Please consult these inserts for part numbers when planning for the replacement of consumables. If these inserts have been misplaced or you would like another copy, please contact WARDJet's Parts and Consumables Department.

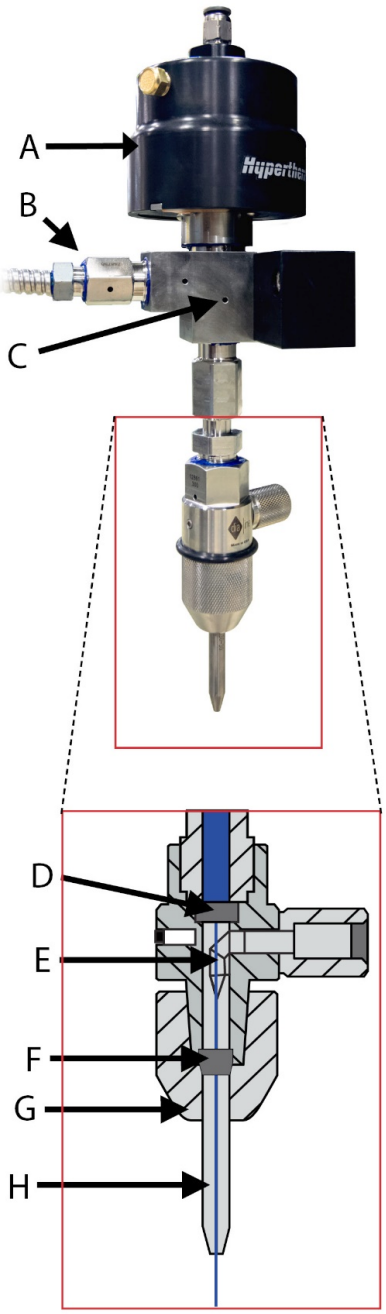
9.3 Ordering Replacement Parts

WARDJet stocks all common replacement parts necessary for your waterjet. Having the following information ready when contacting our Parts and Consumables Department will allow them to serve you better:

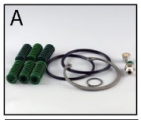
- The part number of the part that needs replacing
- The quantity of each part you are ordering
- The shipping company you wish to use and your account number with that company
- Whether you wish to have the part shipped next day, second day, or standard ground
- Your shipping address

9.4 Cutting Head Part Numbers

9.4.1 ABRASIVE CUTTING HEAD PART NUMBERS

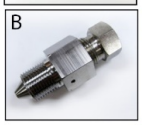


Standard Abrasive Head Parts & Consumables



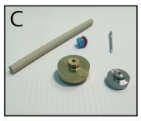
Actuator Rebuild Kit

#12686	Actuator Rebuild Kit



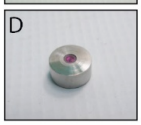
⅜M-¼F High Pressure Adapter

#3000355	⅜M-¼F High Pressure Adapter



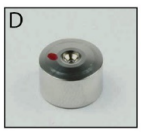
On/Off Valve Repair Kit

#11328	On/Off Repair Kit (Includes seat)



Ruby Orifice

#12835-012	Ruby Orifice (0.012" Diameter)
#12835-014	Ruby Orifice (0.014" Diameter)
#12835-016	Ruby Orifice (0.016" Diameter)



Diamond Orifice

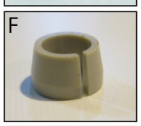
#12749-012	Diamond Orifice (0.012" Diameter)
#12749-014	Diamond Orifice (0.014" Diameter)
#12749-016	Diamond Orifice (0.016" Diameter)

Parts Required for Diamond Orifice

#11394	3/8M-1/4F Adapter
#11288	3/8 Bullet Cone
#12401	Bullet Filter

Mixing Chamber

#12747	Mixing Chamber for Abrasive Head



Nozzle Collet

#12276	Nozzle Collet

Nozzle Retaining Nut

#12862	Nozzle Retaining Nut

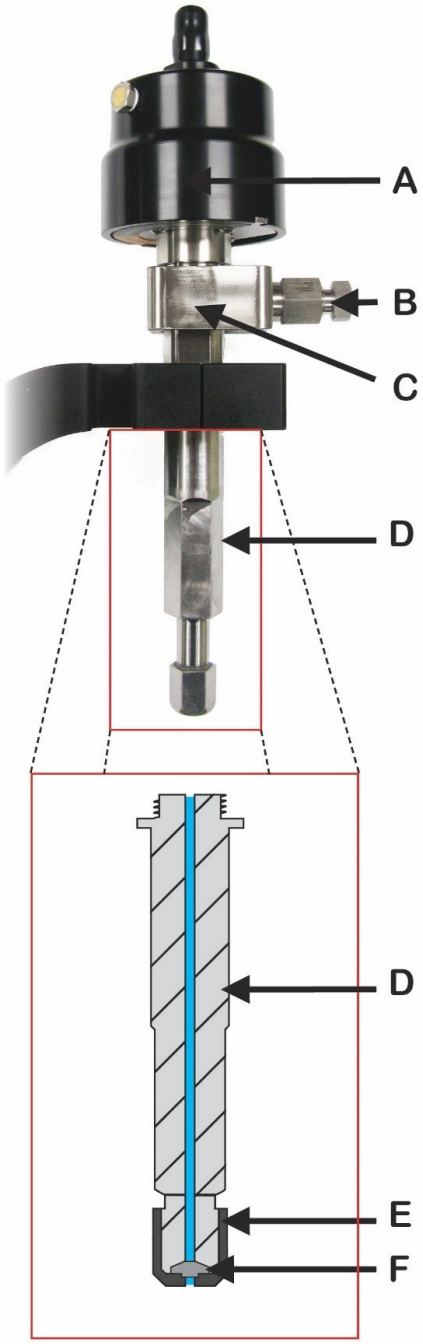
Nozzles

#12781-030-3	.040 Nozzle (.300 x .030 x 3in. long)
#12781-040-3	.040 Nozzle (.300 x .040 x 3in. long)

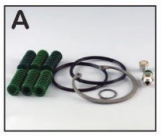
Full Dialine Cutting Head Assembly

#13904-1-1-1	.300 Dialine Cutting Head Assembly

9.4.2 WATER-ONLY CUTTING HEAD PART NUMBERS

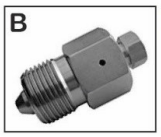


Water Only Head Parts & Consumables



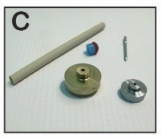
Actuator Rebuild Kit

#12686	Actuator Rebuild Kit



⅜M-¼F High Pressure Adapter

#60A6H4H	3/8M-1/4F High Pressure Adapter



On/Off Valve Repair Kit

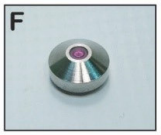
#11328	On/Off Valve Repair Kit (Includes seat)

Psy-Winder Water Only Stem

#ZX08050	Water Only Stem for Psy-Winder

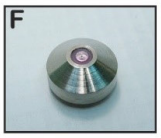
Water Nut

#12849	Water Nut (For 5-Axis)



Ruby Orifice

#11007-005	Ruby Orifice (0.005″ Diameter)
#11007-007	Ruby Orifice (0.007″ Diameter)
#11007-010	Ruby Orifice (0.010″ Diameter)



Diamond Orifice

#11007D-005	Diamond Orifice (0.005″ Diameter)

Parts Required for Diamond Orifice

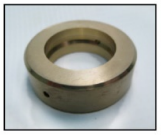
#11394	3/8M-1/4F Adapter
#11288	3/8 Bullet Cone
#12401	Bullet Filter

9.5 Pump Part Numbers

HyPrecision HP Pump Parts and Consumables

High Pressure Seal Kit (60K)

#11451	High Pressure Seal Kit (60K)



Seal Backup

#11610	Bronze Dynamic Seal Backup Disk

Rod Seal

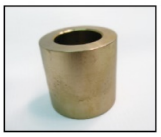
#11090	Pump Rod Seal, 1 in.

Check Valve Repair Kit

#12024	Check Valve Repair Kit

Bleed Down Valve Repair Kit

#12981	Bleed Down Valve Repair Kit



Plunger Bearing

#11608	Plunger Bearing

Pump Filters

#LPD20	.2 Micron Filter
#GDMB1	1 Micron Filter
#11107	10 Micron Filter

Section 10: Technical Support

10.1 WARDJet Technical Support Contact Information

WARDJet Technical Support
Email: support@wardjet.com
Phone: (330) 677-9100

10.2 Remote Technical Support

WARDJet offers remote technical support via phone calls, remote access, and live video conferencing. When calling into WARDJet Technical Support, you will never be outsourced to another country. All of our support technicians are based right here in our Tallmadge, Ohio facility, and are steps away from engineers, developers, and installers that can provide the most up-to-date, accurate support available. In fact, 94% of all support calls are solved without ever sending a technician.

10.3 Technical Support Videos

Our Technical Support staff are here to help you as best we can. Additionally, many useful technical support videos are available online at www.wardjet.com under Extended Support with your customer login and password. If you do not have a customer login and password, please contact WARDJet's Technical Support Department to set up an account.

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