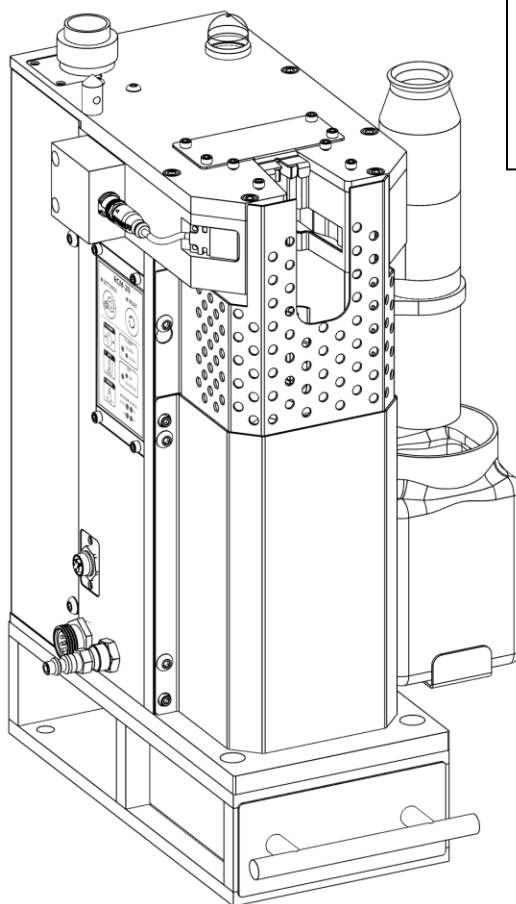


INTELLIREAM[®] DD-EIP

**Safety Depends on You**

**DO NOT INSTALL, OPERATE, OR REPAIR
THIS EQUIPMENT WITHOUT READING THIS
MANUAL AND THE SAFETY PRECAUTIONS
CONTAINED THROUGHOUT.**

OWNER'S MANUAL

Effective with serial No. IR2204045 & following.

"U.S. Patent No.: 7,952,052"

Nasarc Technologies, Inc.
602 Colby Drive
Waterloo, Ontario, N2V 1A2
Tel: (519) 747-0336, Fax: (519) 886-9022
WWW.NASARC.COM

Safety Information

Before installation and commissioning of the INTELLIREAM® DD-EIP, please read and understand all of the following safety information. Failure to follow these instructions may result in damage to the equipment or personal injury.

The INTELLIREAM® DD-EIP is constructed to be safe to operate provided:

- Only authorized personnel may perform installation, commissioning, and maintenance in observance of all safety precautions contained in these operating instructions.
- Accident prevention regulations, as well as the safety specifications referenced below are observed.
- ANSI/RIA R15.06-2012 Industrial Robots and Robot Systems – Safety Requirements

For additional safety information see references below:

This product shall be integrated into a robot cell with an independent safety system.

Before assembling, adjusting, or working with the INTELLIREAM® DD-EIP, ensure all equipment in the area is disabled.

The INTELLIREAM® DD-EIP is to be used only for torch cleaning within the technical operating specifications outlined in this document.

Do not exceed the specified operating pressure of 80 PSI.

Keep hands away from INTELLIREAM® DD-EIP while in operation.

Keep hands away from the clamp and INTELLIREAM® DD-EIP operating space.

Keep hands away from the wire cutter.

Keep eyes away from the sprayer.

Protective eyewear should be worn at all times while working in the vicinity of the INTELLIREAM® DD-EIP.

Protective gloves should be worn at all times when maintaining the INTELLIREAM® DD-EIP.

Disconnect the air and power supplies when adjusting the INTELLIREAM® DD-EIP.
Use only OEM parts and accessories.

Do not use corrosive or aggressive chemicals without first obtaining approval from the manufacturer.

Do not remove or deface warning and instruction labels on the INTELLIREAM® DD-EIP.

For additional safety information, refer to the following publications:

- ANSI/RIA R15.06-2012 Industrial Robots and Robot Systems – Safety Requirements
Robotic Industries Association, 900 Victors Way, Suite 140, Ann Arbor, Michigan, USA 48108
- ANSI Z49.1:2012 Safety in Welding, Cutting, and Allied Processes,
American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126
- CAN/CSA-Z434-14 Industrial robots and robot systems,
Canadian Standards Association, 5060 Spectrum Way, Mississauga, Ontario, L4W 5N6, CANADA

Safety Information

WARNING

Moving parts can crush and cut.
Keep hands away from the operating area of the reaming bit, clamp, and wire cutter.



WARNING

Rotating Cutter.
Keep hands away from the operating area of the cutter.



WARNING

Entanglement Hazard.
Do not operate with exposed long hair, jewelry, or loose clothing.



WARNING

Disconnect power before servicing.



WARNING

Disconnect air supply before servicing.



WARNING

Do not use damaged, frayed, or deteriorated air hoses and fittings.



WARNING

Maintain safe operating pressure (80 psi).

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INTELLIREAM® DD-EIP

1. Specifications

PNEUMATIC SPECIFICATIONS	
Pressure: 80 PSI	Flow: 18 SCFM
Caution: Use Filtered (5um), Non-Lubricated, Regulated Air	

ELECTRICAL SPECIFICATIONS	
Voltage: 24 VDC +/- 10%	Current: 0.75 Amp DC

REAMING SPECIFICATIONS	
Speed: 320 RPM	Power: 0.50 HP

WIRE CUTTING SPECIFICATIONS	
Minimum wire diameter: 0.030" (0.8mm)	
Maximum wire diameter: 0.063" (1.6mm)	

ANTI SPATTER FLUID SPECIFICATIONS	
Use recommended water based anti-spatter fluid in this product.	
Do not use oil based anti-spatter fluid.	

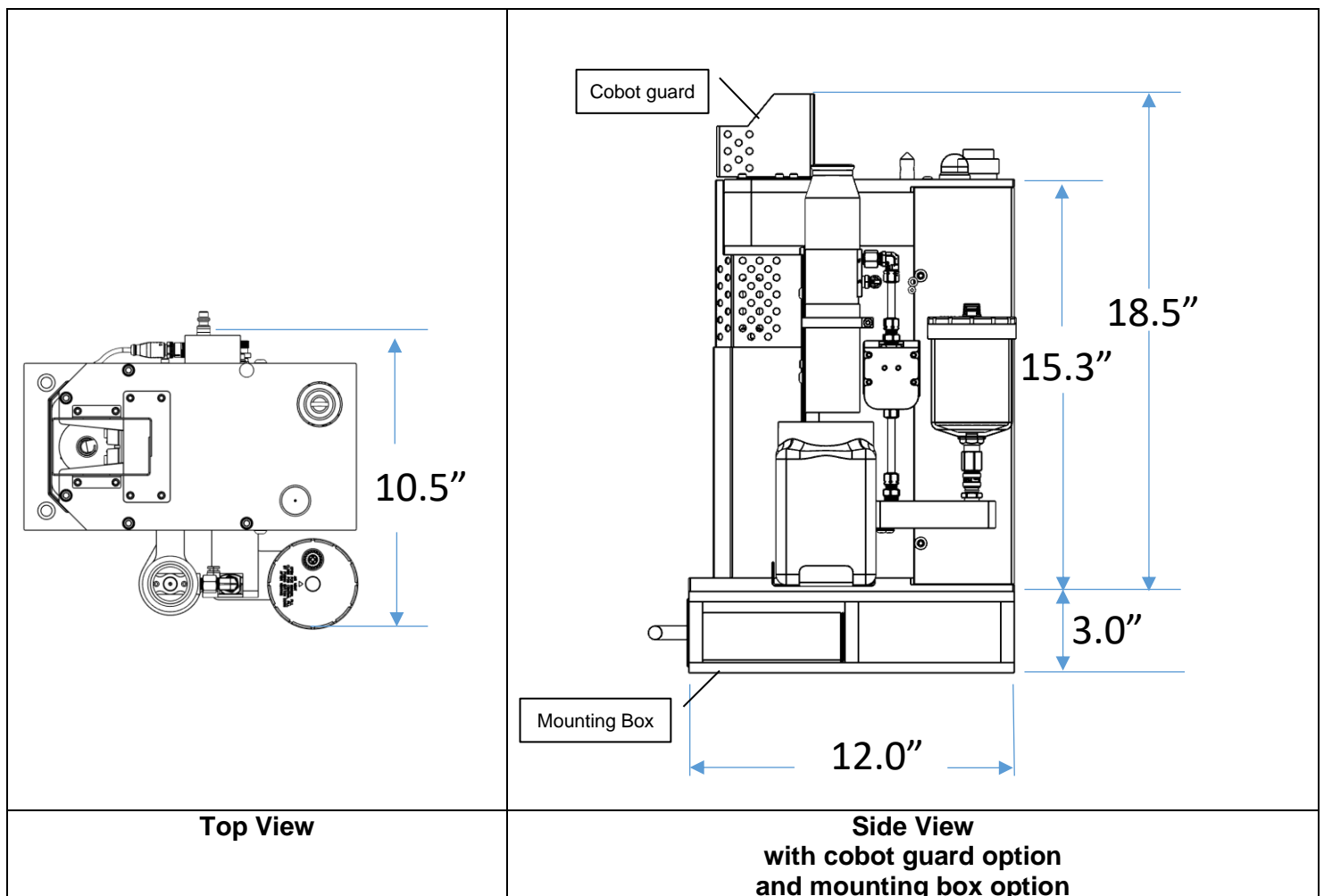
PHYSICAL DIMENSIONS			
HEIGHT	WIDTH	DEPTH	NET WEIGHT
19 in.	10.5 in.	12 in.	44 lbs
483 mm	267 mm	305 mm	20 kg

INTELLIREAM® DD-EIP

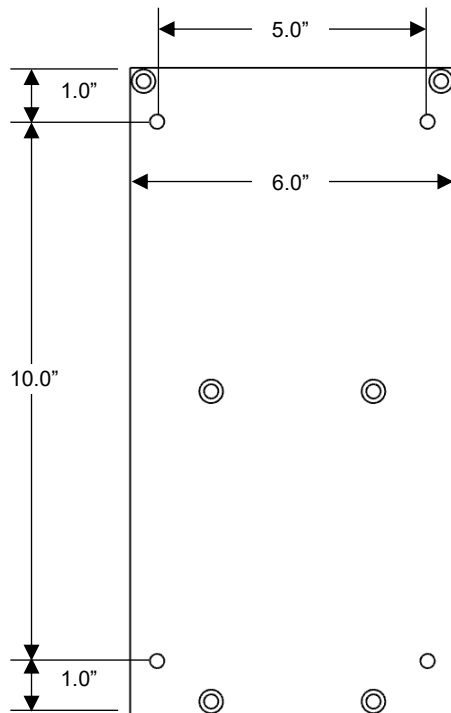
2. Installation

Danger of accident when connecting the pneumatic or electrical supply!

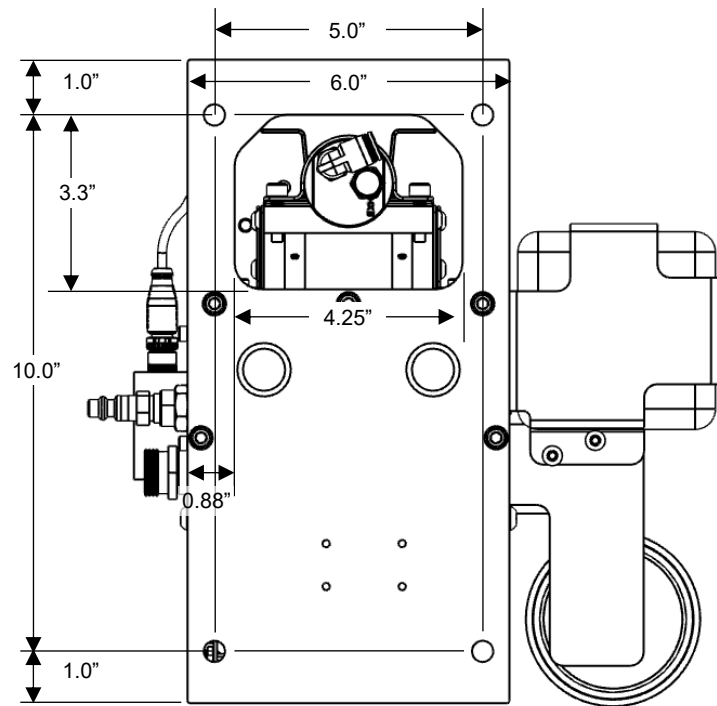
- Prior to installation ensure that all protective measures have been taken and will remain in place while performing the installation.
- Ensure that the air supply and electrical power to the INTELLIREAM® DD-EIP are disconnected until the installation is complete.
- The INTELLIREAM® DD-EIP should be installed within the weld cell at a convenient location. Be sure to consider movable fixtures, robot envelope, and maintenance personnel accessibility.
- If using the mounting box with spatter discharge tray (optional):
 - Affix the mounting box to a sturdy platform using the four bolt holes provided for 1/4"-20 Socket Head Cap Screw (SHCS) mounting hardware.
 - Affix INTELLIREAM® DD-EIP to the mounting box platform using mounting hardware provided.
- If not using the mounting box:
 - Note: spatter discharge may be managed more effectively if allowed to pass through the hole in the base plate to a customer supplied catchment device (see diagram below).
 - Affix the INTELLIREAM® DD-EIP to a sturdy platform using the four bolt holes provided for 3/8" mounting hardware.
- Before operating the INTELLIREAM® DD-EIP, ensure that the correct reaming bit for the torch nozzle is installed.



2.1. Baseplate Dimensions



Mounting Box Bottom View



Reamer Base Bottom View

2.2. Air Connection

Use only regulated, filtered, non-lubricated air. Mount a 5-micron airline filter (not supplied) in the airline to the INTELLIREAM® DD-EIP.

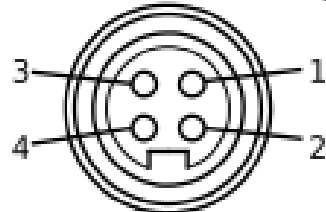
AIR SUPPLY REQUIREMENTS: 80 PSI at 22 SCFM. Connect the inlet supply line to the quick connect pneumatic fitting located at the side of the INTELLIREAM® DD-EIP.

2.3. Electrical Connection

WARNING: Damage to equipment may occur if connected improperly. Only a qualified technician should perform the following operation. Secure the connector into the receptacle at the side of the Intelliream®DD-EIP. Feed the other end through a strain relief into the robot controller cabinet. Connect Robot/PLC power via the 4-pin cable according to the following description.

Colour	Name	Description
Brown	+24VDC Actuator	Connect to power supply (+) 24VDC, 1.0A min through safety circuit to disable solenoid power when required.
White	+24VDC Control	Connect to power supply (+) 24VDC, 0.5A min for controls and sensor power.
Blue	0VDC Control	Connect to power supply (-) 0VDC, 0.5A min for controls and sensor power.
Black	0VDC Actuator	Connect to power supply (-) 0VDC, 1.0A min through safety circuit to disable solenoid power when required.

Interface Wiring



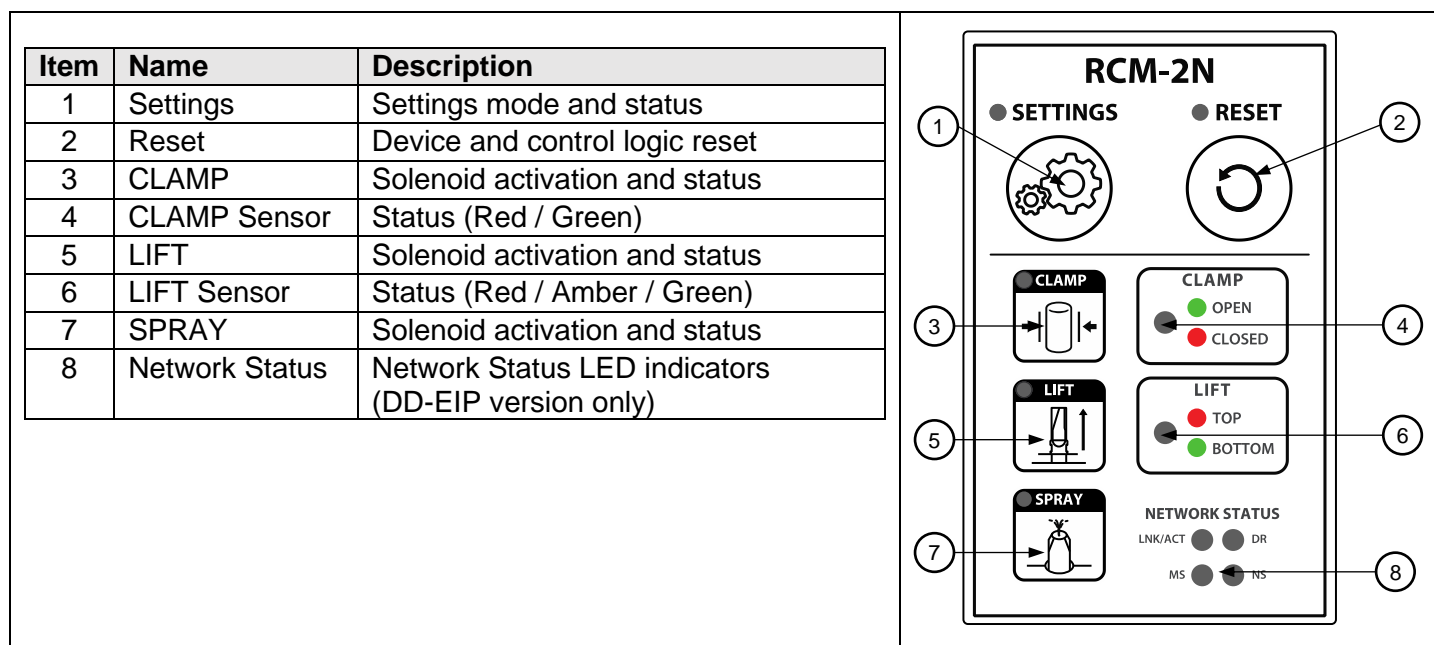
- 1. +24 VDC Actuator (BRN)
- 2. +24 VDC Control (WHT)
- 3. 0 VDC Control (BLU)
- 4. 0 VDC Actuator (BLK)

3. Operation

3.1. User Interface

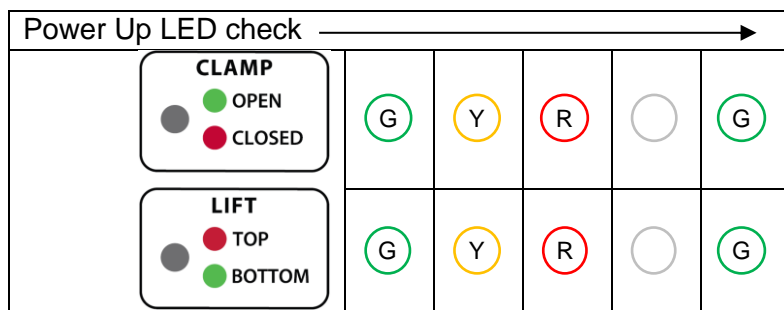
The user interface is part of the Reamer Control Module (RCM-2N) and can be found on the electrical supply side of the INTELLIREAM® DD-EIP (opposite the reservoir). The user interface provides the following features:

- Manual operation of the clamp, lift and spray system.
- The status of each solenoid is shown on its respective button.
- Monitor sensor operation of the clamp and lift reed switches.
- Input / Output configuration and other feature settings.
- Control logic reset.



3.2. Power-Up

Once the INTELLIREAM® DD-EIP is wired into the controller and power is applied, the device status LEDs will display the power up sequence (green – yellow – red) and then show positions of the cylinders according to the legend next to the LEDs.



INTELLIREAM® DD-EIP

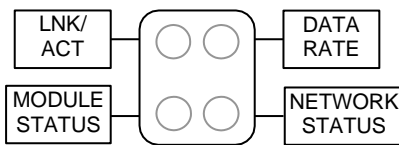
If the sensor LEDs are not reporting the clamp open and the lift at the bottom, then check the air pressure or sensor positions. If the sensor LEDs are flashing yellow and green, check for **start lock** (see below). If the LEDs are flashing yellow, ensure the settings pushbutton is not pressed or defective.

Start Lock: The start lock feature is a safety measure that blocks a command signal during power-up when it is unsafe to begin an operation. If a command is present while the INTELLIREAM® DD-EIP powers up, the INTELLIREAM® DD-EIP will enter a start lock mode instead of cycling immediately and the “Error” input will turn on. During power up, the device status LEDs will display the power up sequence (green-yellow-red) and then flash yellow/green if an output from the controller is present. To resume operation, turn off all controller outputs to the INTELLIREAM® DD-EIP.

Robot Input: If the device has completed the power up sequence, and is not in cycle, then with the clamp open, and lift at the bottom, the “Complete” input to the robot controller will be on. Similarly, if an error has occurred during a machine operation, the “Error” input will be on.

3.3. Network Status Indicators:

At power up the network status indicators run a self-check sequence to show red/green functionality of each LED. After the power up sequence the network status status indicators will operate according to the description in the table below.



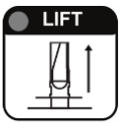





LED	State	Status
Link / Activity	Off	Device Not Powered
	Green	Module connected to Ethernet Network
	Green, flashing	RX / TX activity
	Alternating Red / Green	Self-Test in progress
Data Rate	Off	10 Mbps operation
	Green	100 Mbps operation
	Alternating Red / Green	Self-Test in progress
Module Status	Off	Device not powered
	Green	Device in EtherNet / IP mode
	Green, flashing	Device in EtherNet / IP idle mode or no connection established
	Red	Major Fault
	Red, flashing	Minor Fault
	Alternating Red / Green	Self-Test in progress
Network Status	Off	No power or no IP address
	Green	EtherNet / IP connection established
	Green, flashing	No EtherNet / IP connections established
	Red	Duplicate IP address detected
	Red, flashing	One of several EtherNet / IP connections has timed out
	Alternating Red / Green	Self-Test in progress

3.4. Manual Operation

Operation of the clamp, lift and spray valves is possible with the buttons on the user interface. The green LED indicator at the top left shows button feedback and solenoid operation. The sensor LED indicators to the right indicate the sensor feedback of the corresponding device.

Note: a “Local Lockout” mode is enabled for 5 seconds following the press of any of these buttons. Robot I/O is disabled and the LEDs blink slowly during this time. The lockout will cancel itself after 5 seconds or if the “Settings” button is pressed. One second before the lockout is cancelled, the user interface LEDs will be turned on to indicate the lockout expiry.

	 <p>WARNING: the clamp will operate under this condition. KEEP HANDS CLEAR of the operating space of the clamp and wire cutter. This device is intended for one-man operation during setup.</p>
	 <p>WARNING: the lift cylinder will operate under this condition. KEEP HANDS CLEAR of the operating space of the reaming bit. This device is intended for one-man operation during setup.</p>
	 <p>WARNING: the spray will operate under this condition. KEEP FACE and HANDS CLEAR of the operating space of the sprayer. This device is intended for one-man operation during setup.</p>

4. Network I/O

Network I/O is communicated through the Ethernet/IP gateway. This communication module provides integration in any ethernet based LAN via Ethernet/IP or HTTP protocols.

Features:

- 10 and 100mbit operation, Full and Half Duplex
- Up to 144 bytes of fieldbus I/O in each direction
- Adapter Class Functionality
- UCMM Capable, up to 5 explicit server connections

Ethernet/IP Connection Parameters	
Input Size	128 bytes*
Output Size	128 Bytes*
Input Instance (aka Input Assembly)	100
Output Instance (aka Output Assembly)	150

*For a minimal I/O size setup see section 11.6

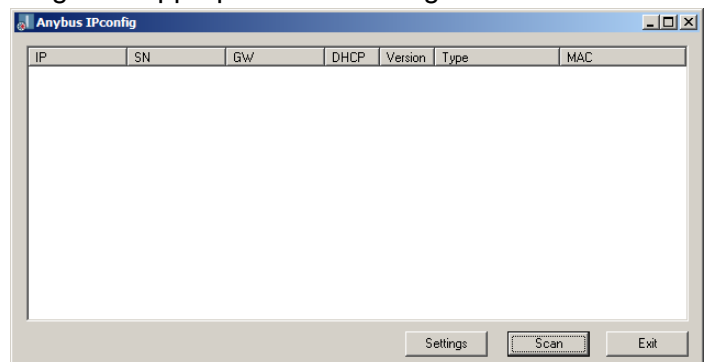
4.1. Network Setup

Outlined below is a procedure that offers complete access to all of the network parameters. To perform the procedure, the following items are required:

- A PC with the “Anybus IPconfig” application installed. Anybus IPconfig may be downloaded and installed free of charge from.
<http://www.nasarc.com/downloads/Intelliream/hms-IPConfig.zip>
- A CAT-5E or Cat-6 cable.
- A network switch or cross-over cable (dependent on hardware setup).

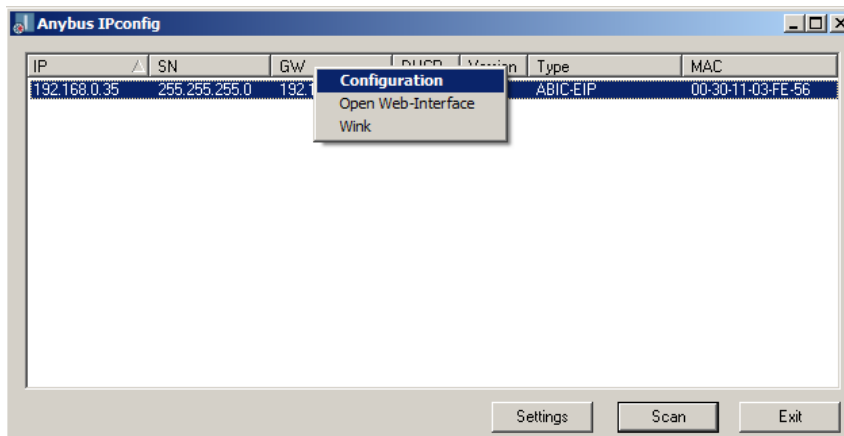
The steps to configure the IP settings for the INTELLIREAM® DD-EIP outside of the standard range are:

1. While connecting directly to the INTELLIREAM® DD-EIP, a static IP address must be assigned to the PC in the same range (first three octets) as the desired IP address to be assigned to the reamer. The subnet mask should be set to 255.255.255.0. The gateway address can be set to 0.0.0.0. Refer to online documentation for the PC and operating system on assigning a static IP.
2. Connect the PC to the INTELLIREAM® DD-EIP through the appropriate networking hardware.
3. Start the Anybus IPconfig application installed on the PC.
4. The network connected to the PC will be scanned for HMS devices. If none are found then double check all of the connections, and the network parameters configured. After correcting any connectivity issues, click the “Scan” button inside the application.

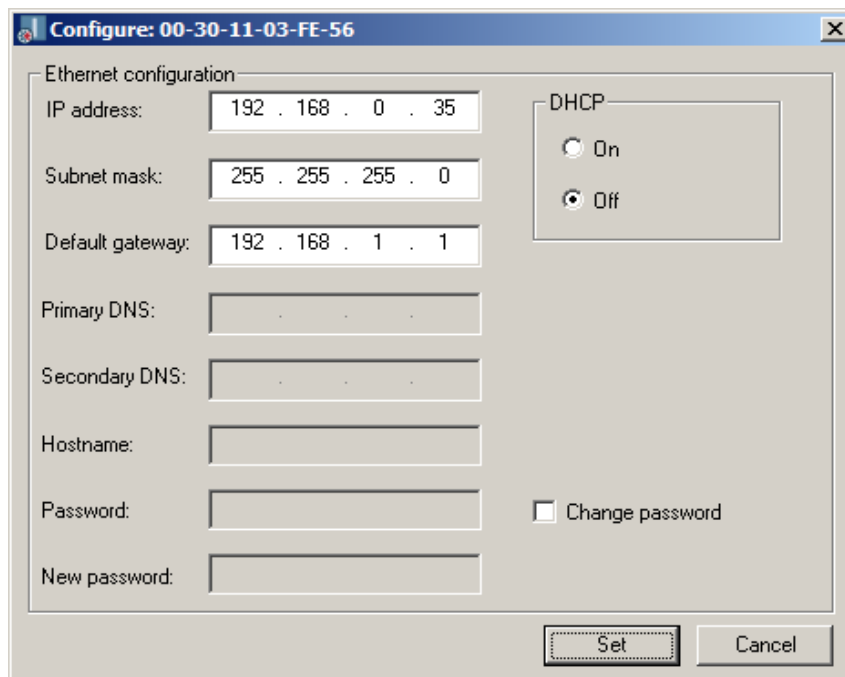


INTELLIREAM® DD-EIP

- Any HMS devices that are discovered will appear in the application window. Select the device to configure, and then right click to open the configuration menu.



- In the configuration dialog box, set the IP address, Subnet mask, and Default gateway as desired. Ensure that DHCP is set to "Off". Click "Set". Note that if configuring the INTELLIREAM® DD-EIP to communicate with a different gateway than the default, 0.0.0.0, communication with the INTELLIREAM® DD-EIP until the PC is reconfigured to operate on the same gateway



- To validate the settings, cycle the 24V power to the INTELLIREAM® DD-EIP. Configure the PC to use the same parameters as the INTELLIREAM® DD-EIP's new configuration. Ensure that the PC and Intelliream® DD-EIP have unique IP addresses. Use the IPconfig tool to ensure that the new settings have been applied correctly by scanning for the device again.

INTELLIREAM® DD-EIP

4.2. Reamer Input Bytes (PLC Output)

Below is the network data that will be exchanged between the PLC and the INTELLIREAM® DD-EIP.

Address	Name								Size (bytes)
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	
0	Command Bits								1
	Unused	Blow-Off	Dry-Run	Reset Error	Wire Cut	Spray	De-Ring	Ream	
1	Automatic Retry Maximum (0-3)								1
2	Post Flow Index (0-3)								1
3	Remote Activation Bits								1
	Unused	Status LED	Fluid Solenoid	Air Spray Solenoid	Air Motor Solenoid	Lift Solenoid	Clamp Solenoid	Remote Mode	
4	Sensor Bypass Bits								1
	Unused	Unused	De-Ringer	Unused	Extended	Retracted	Unused	Opened	
5	Reserved								1
	Reserved	Reserved	Reserved	Unused	Unused	Reserved	Reserved	Reserved	

Input Address 0: Command Bits

b7	b6	b5	b4	b3	b2	b1	b0
Teach NGFS	Blow-Off	Dry-Run	Reset Error	Wire Cut	Spray	De-Ring	Ream
b0	Ream	Activate full ream cycle. This signal can be pulsed for ½ second or maintained. If the signal is pulsed, the reamer will perform a full ream cycle including de-ring and automatic retry with no dwell time at the top of its stroke. If the signal is maintained, the reamer will go to the top of stroke including de-ring and automatic retry and remain there until the ream signal is deactivated.					
b1	De-Ring	A pilot reaming stroke removes the spatter ring that forms on the end of a welding nozzle, followed by a full extension reaming stroke to remove spatter inside the nozzle. Using this technique, the spatter ring is not pushed into the nozzle where it could do more damage.					
b2	Spray	Activate spray cycle (minimum ½ second pulse).					
b3	Wire Cut	Activate the wire cutter (minimum ½ second pulse).					
b4	Reset Error	Reset the current error and return system to "Ready" state (1/2 second pulse).					
b5	Dry-Run	Disable the motor when running a full ream cycle. This is useful when trial running the programmed position (Toggle on/off).					
b6	Blow-Off	Enable the Blow-off feature: The air motor runs for 3 seconds following the spray cycle. The motor exhaust is directed at the welding nozzle in the spray position and serves to blow spatter away and cool the nozzle.					
b7							

INTELLIREAM® DD-EIP

Input Address 1: Automatic retry setpoint

Specify the maximum number of times to retry extending the ream bit when blocked by spatter (0-3).

Input Address 2: Post Flow Index

Post flow keeps the air valve of the spray system active following the spray cycle providing self-cleaning to the spray nozzle. The post flow index (0-3) will set the post flow time according to the following chart.

Index	Post Flow Time (sec)
0	0
1	0.25
2	0.5
3	1.0

Input Address 3: Remote activation bits

b7	b6	b5	b4	b3	b2	b1	b0
Unused	Status LED	Fluid Solenoid	Air Spray Solenoid	Air Motor Solenoid	Lift Solenoid	Clamp Solenoid	Remote Mode
b0	Remote Mode	Enable Remote Mode.					
b1	Clamp Solenoid	Activate clamp solenoid while in remote more (bit 0).					
b2	Lift Solenoid	Activate lift solenoid while in remote mode (bit 0).					
b3	Air Motor Solenoid	Activate air motor solenoid while in remote mode (bit 0).					
b4	Air Spray Solenoid	Activate air spray solenoid while in remote mode.					
b5	Fluid Solenoid	Activate fluid solenoid while in remote mode.					
b6	Status LED	Activate the Status LED on top lid of unit.					

Input Address 4: Sensor bypass bits

b7	b6	b5	b4	b3	b2	b1	b0
Unused	Unused	De-Ringer	Unused	Extended	Retracted	Unused	Opened
b0	Opened	Bypass the opened sensor. The ream cycle will function the same, ignoring the clamp open sensor.					
b2	Retracted	Bypass the retracted sensor. De-ring and Auto-Retry states are timed rather than based on sensor feedback. The ream cycle will function the same, ignoring the clamp open sensor.					
b3	Extended	Bypass the extended sensor. The Auto-Retry state is timed rather than based on sensor feedback. The "Ream" command must be held on for the time required in the extend phase of the reaming sequence (3 seconds recommended).					
b5	De-Ringer	Bypass the retracted sensor, the de-ring function is timed rather than based on sensor feedback.					

Input Address 5: Reserved

INTELLIREAM® DD-EIP

4.3. Reamer Output Bytes (PLC Input)

Below is the network data that will be exchanged between the INTELLIREAM® DD-EIP and the PLC.

Address	Name								Size (bytes)
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	
0	Feedback Bits								1
	Nozzle Gas Flow	Nozzle Detected	Extended	Retracted	Error	Clamp Open	Aux Power	Ready	
1	Error Code								1
2	Status Bits								1
	Change Ream Bit	Refill Fluid	Change Wire Cutter	Unused	Unused	Unused	Local Lockout Mode	Remote mode	
3	Reserved								1

Output Address 0: Feedback Bits

b7	b6	b5	b4	b3	b2	b1	b0
Nozzle Gas Flow	Nozzle Detected	Extended	Retracted	Error	Clamp Open	Aux Power	Ready
b0	Ready	The clamp is open, the ream bit is retracted, and the previous cycle ran without error.					
b1	Aux Power	Auxiliary (Solenoid) power is present and within tolerance (+/- 10%).					
b2	Clamp Open	The clamp is open.					
b3	Error	An error has occurred, see output address 1 for details.					
b4	Retracted	The ream bit is retracted.					
b5	Extended	The ream bit is extended (full depth).					
b6	Nozzle Detected	A nozzle is detected at the inductive proximity sensor.					
b7	Nozzle Gas Flow	Gas flow is detected in the specified range at the Nozzle Gas Flow Sensor.					

Output Address 1: Error Code

An error has occurred in the current ream cycle, the error code value is given at this address. See section 14.1 for details.

INTELLIREAM® DD-EIP

Output Address 2: Status Bits


b7	b6	b5	b4	b3	b2	b1	b0
Change Ream Bit	Refill Fluid	Change Wire Cutter	Unused	Unused	Unused	Local Lockout mode	Remote mode
b0	Remote Mode	Remote mode is active, the reamer will not respond to cycle commands (output byte 0).					
b1	Local Lockout Mode	Local lockout mode is active, the reamer will only respond to commands from the membrane keypad. The reamer will not respond to any commands from the PLC, or robot.					
b5	Change Wire Cutter	The totalized wire cut cycles has reached the maximum setpoint (input address 16).					
b6	Refill Fluid	The totalized spray time has reached the maximum setpoint (input address 12).					
b7	Change Ream Bit	The totalized ream cycle count has reached the maximum setpoint (input address 14).					

Output Address 3: Reserved

5. Reamer

5.1. Automatic Operation

The following diagram shows the 7-step reaming sequence and color of the device status LEDs at each stage. The LEDs show the position of the clamp and lift cylinders on the control module.

<div> <div>CLAMP</div> <div> <div>● OPEN</div> <div>● CLOSED</div> </div> </div> <div> <div>LIFT</div> <div> <div>● TOP</div> <div>● BOTTOM</div> </div> </div>	1	2	3	4	5	6	7
	<div>G</div>	<div>R</div>	<div>R</div>	<div>R</div>	<div>R</div>	<div>R</div>	<div>G</div>
	<div>G</div>	<div>G</div>	<div>Y</div>	<div>R</div>	<div>Y</div>	<div>G</div>	<div>G</div>
	Ready	Clamp Closed	Raising Ream Bit	Ream Bit at Top	Lowering Ream Bit	Ream Bit at Bottom	Clamp Open
"Start" Output		Pulse 0.5s	Off				
"Complete" Input	On	On	Off				
							On

The above chart shows the robot inputs and outputs as the sequence progresses.

Automatic Retry

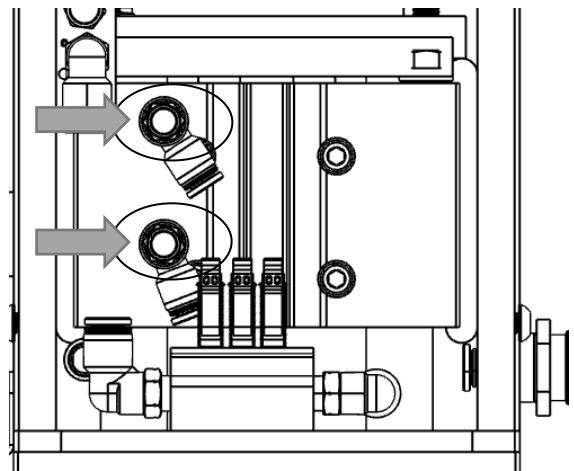
If excessive spatter is built up in the nozzle, or the programmed position of the nozzle is off center not allowing the reaming bit to extend to the full depth inside the nozzle within a specific amount of time, the INTELLIREAM® DD-EIP will automatically perform a single retry.

Cycle Optimization

The lift rate of the reaming bit will determine how many reaming revolutions will occur within the nozzle. This setting should be adjusted based on the amount of spatter buildup in the nozzle between reaming cycles. More spatter buildup will require a slower lift rate. Less spatter buildup will allow a faster lift rate.

To set the lift rate, remove the rear cover and adjust the top needle valve. Turning clockwise will decrease the lift rate (for more spatter removal) and turning counterclockwise will increase the lift rate (for a shorter cycle time).

To set the retracting rate, adjust the bottom needle valve. Turning clockwise will decrease the retracting rate and turning counterclockwise will increase the retracting rate.

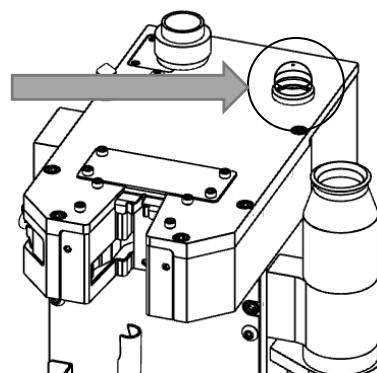


5.2. Status Light

The status light on the top lid of the INTELLIREAM® DD-EIP indicates the current state of operation.

the

Color	Meaning
Off	Ready to cycle
Red	In cycle
Flashing Red	In alarm, flashing error code



5.3. Position Programming

The INTELLIREAM® DD-EIP features a “no trial, no error” position programming technique as described below:

1. Hold the “LIFT” button to raise the reaming bit without spinning.



WARNING: the lift cylinder will operate under this condition. **KEEP HANDS CLEAR** of the operating space of the reaming bit. This device is intended for one-man operation during setup.

Once the reaming bit is at the top position (“LIFT” LED is red), release the “Lift” button.

2. Using the robot, move the torch nozzle into the clamp so the reaming bit is inset to the full depth required inside the nozzle.
3. Press and release the “CLAMP” button to verify the clamp engages the cylindrical body of the nozzle equally, and the nozzle does not change orientation or position when clamped.



WARNING: the clamp will operate under this condition. **KEEP HANDS CLEAR** of the operating space of the clamp and wire cutter. This device is intended for one-man operation during setup.

4. Register this position in the robot controller using a fine position level as the “Ream” position described in the programming chart above.

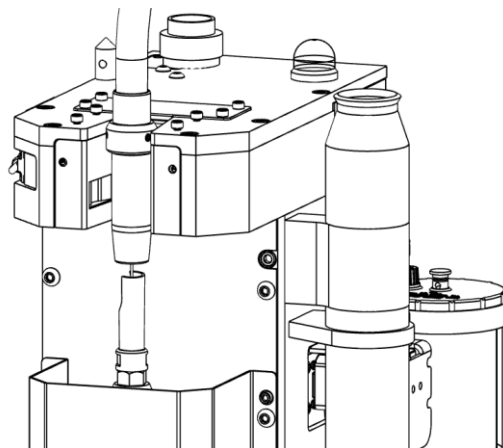
Ream Position

5. Press the “LIFT” button to exit programming mode. The reaming bit will lower without spinning.



WARNING: the lift and clamp will operate under this condition. **KEEP HANDS CLEAR** of the operating space of the reaming bit.

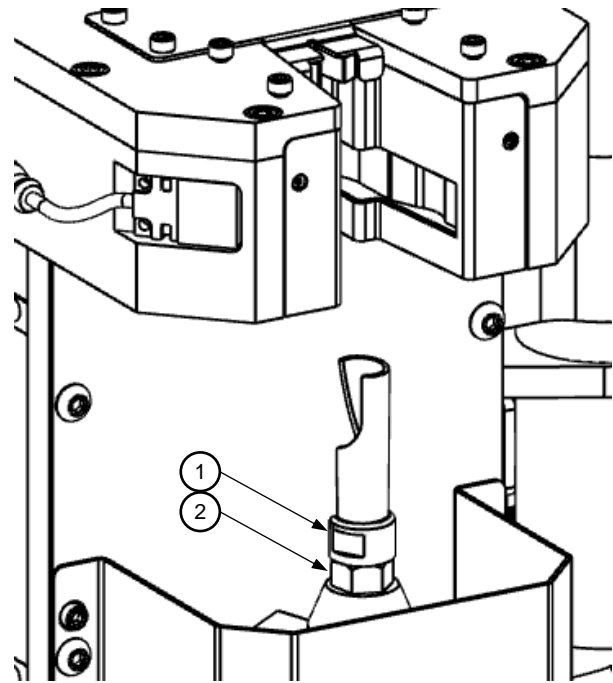
This device is intended for one-man operation during setup.



5.1. Reaming Bit Replacement

⚠ WARNING

- Disconnect air and electrical supply.
- Remove the front ream guard cover (not shown).
- Hold the ream rod, item 2, from rotating with a 5/8" wrench.
- Unfasten the reaming bit, item 1, with a second 5/8" wrench.
- Remove the reaming bit.
- Insert the reaming bit into the ream rod.
- Hold the reaming rod from rotating with a 5/8" wrench.
- Tighten the reaming bit with a second 5/8" wrench.
- Replace the front ream guard cover.
- Reconnect air and electrical supply.



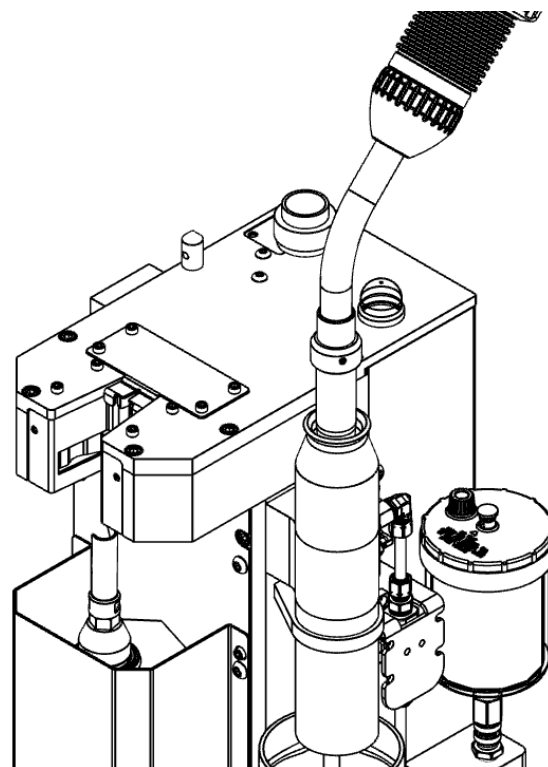
6. Sprayer

The sprayer may use a built-in post flow timer of 0, $\frac{1}{4}$, $\frac{1}{2}$, or 1 second. Airflow from the spray nozzle will be present for the post flow time after the spray output and corresponding fluid valve have been turned off.

The spray containment tube helps to manage overspray from the spray nozzle and maintain a clean robot welding cell.

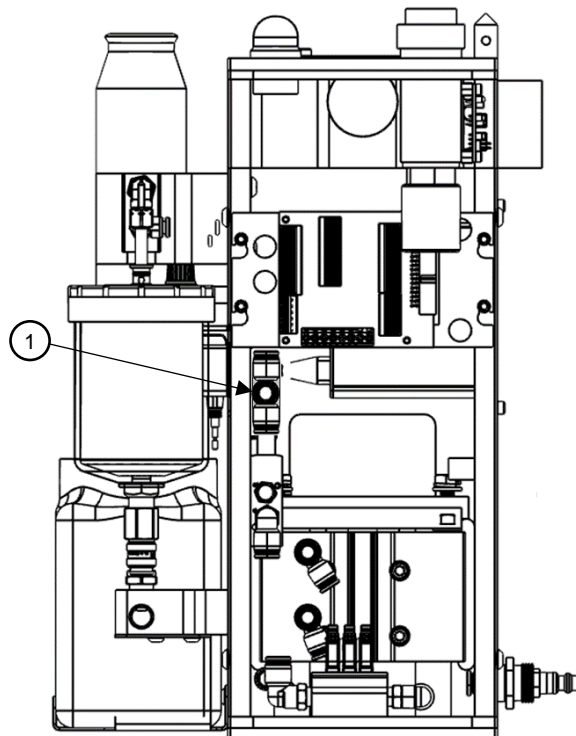
6.1. Spray Position Programming

Center the nozzle $1\frac{1}{2}$ inches above the spray cone. Record this position as the “Spray Approach” position. Move the nozzle into the hole at the top of the spray cone and record this position as the “Spray Target” position. The sprayer has a built-in post flow timer. Airflow from the spray nozzle will be present for set time (0, $\frac{1}{4}$, $\frac{1}{2}$ or 1 second) after the spray output and corresponding fluid valve have been turned off.



6.2. Spray Adjustment

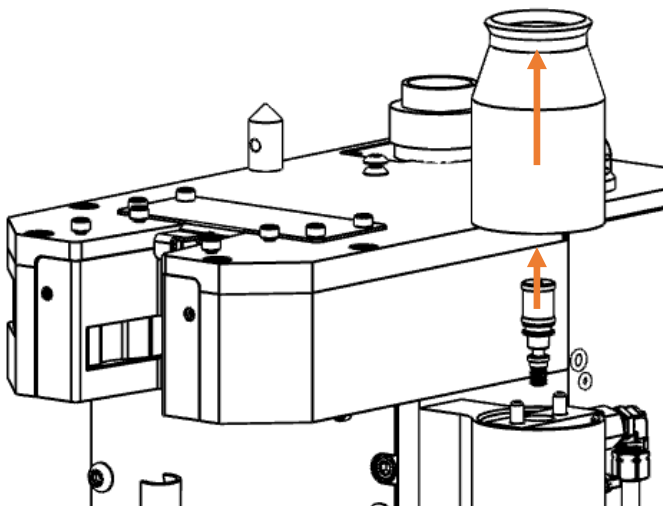
The amount of spray may be adjusted with the needle valve, item 1, located behind the rear cover. Turn clockwise for less spray.



6.3. Spray Nozzle Replacement

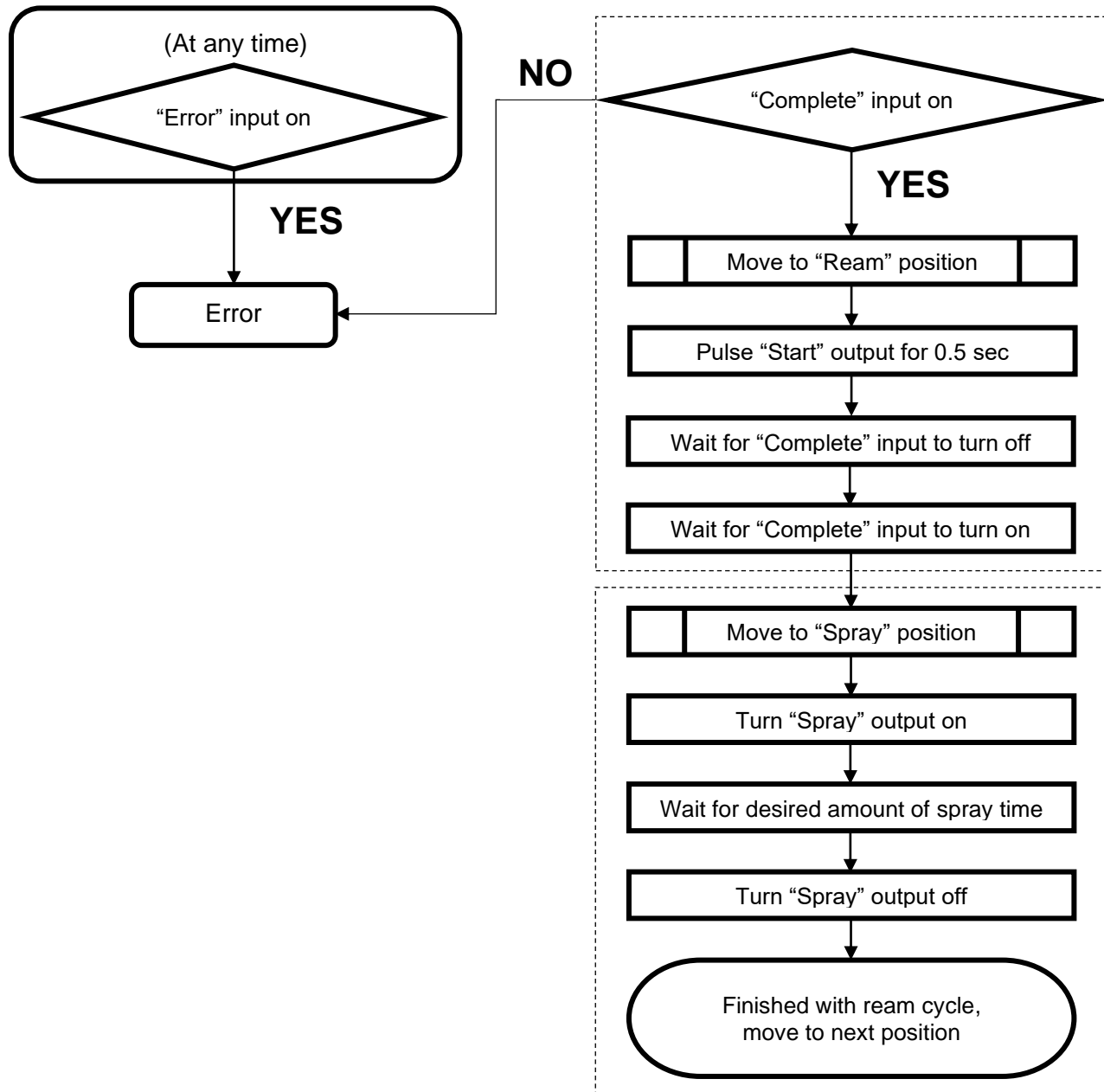
⚠ WARNING

- Disconnect air and electrical supply.
- Lift spray cone straight up to remove.
- Unthread spray nozzle and lift straight up to remove.
- Replace in reverse order.



7. Ream and Spray Sequence Flow Chart

The following flow diagram shows the recommended procedure for the reaming and spraying sequences.



For the optional wire cutter, nozzle detector, and nozzle gas flow sensor see the following sections.

8. Wire Cutter Option

The INTELLIREAM® DD-EIP offers a wire cutter as a factory installed option (IRW010099-00). The wire cutter is used to remove the ball at the end of the wire created by the welding process. It will leave the welding wire with a tapered point at the end of the wire stick-out for improved arc starting.

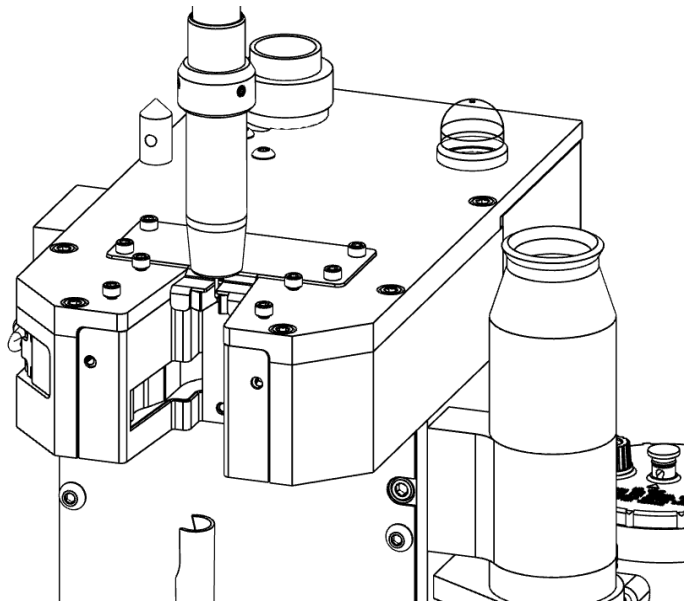
8.1. Wire Cutter Position Programming

To obtain the “Wire Cut” position mentioned in the procedure outlined, center the nozzle at the desired stick-out height above the wire cutter and record this position.

Once a week, the wire cutter should be inspected visually. Look for dullness and possible breakage of the cutting blades, replace if necessary.

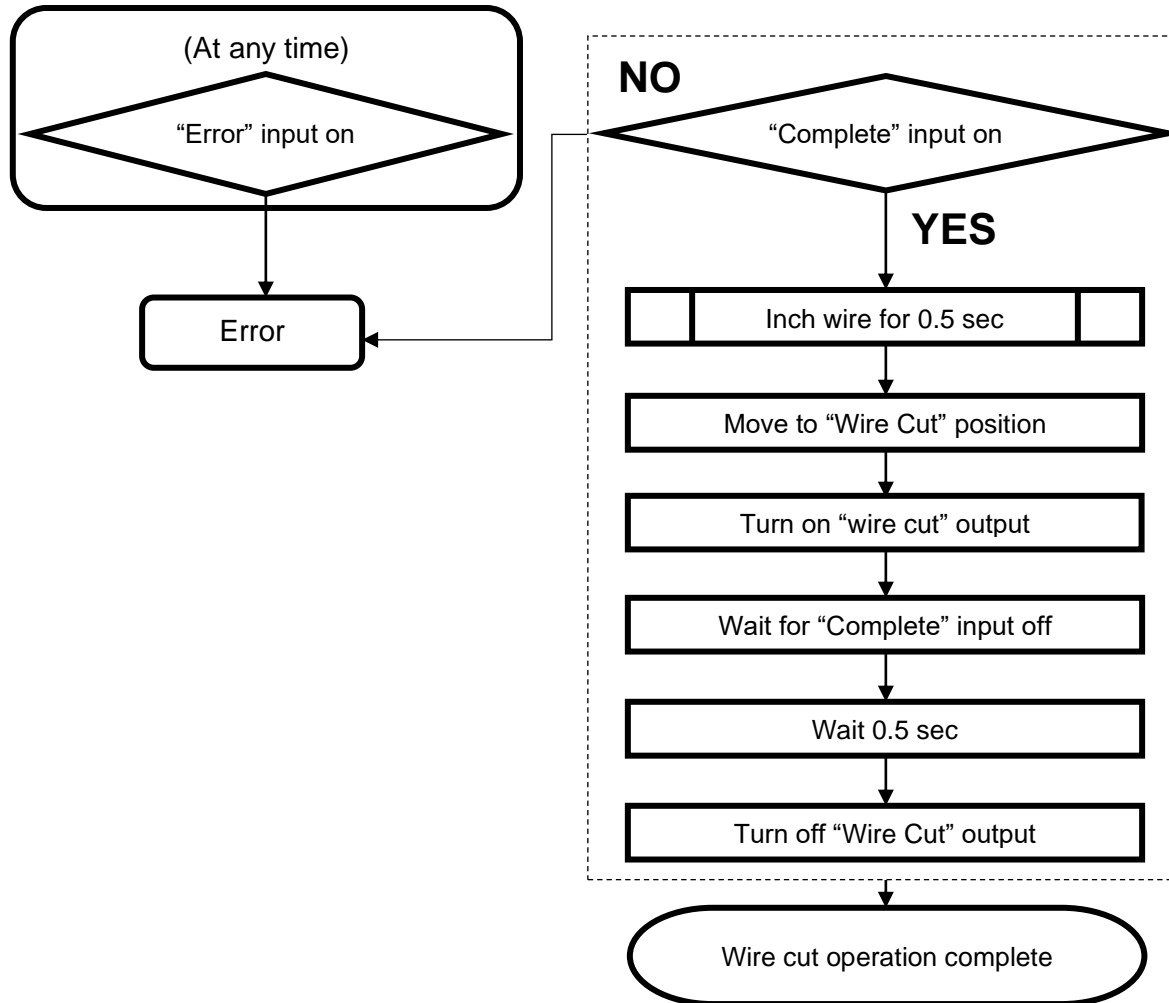


WARNING: Anytime the clamp is closed, the wire cutters will be closed as well. Keep hands clear of the wire cutter area and clamp area.



8.2. Wire Cutter Sequence Flow Chart

The wire cutter utilizes the clamping cylinder and sensor already present on every INTELLIREAM® DD-EIP. Following is the suggested wire cutting program logic.

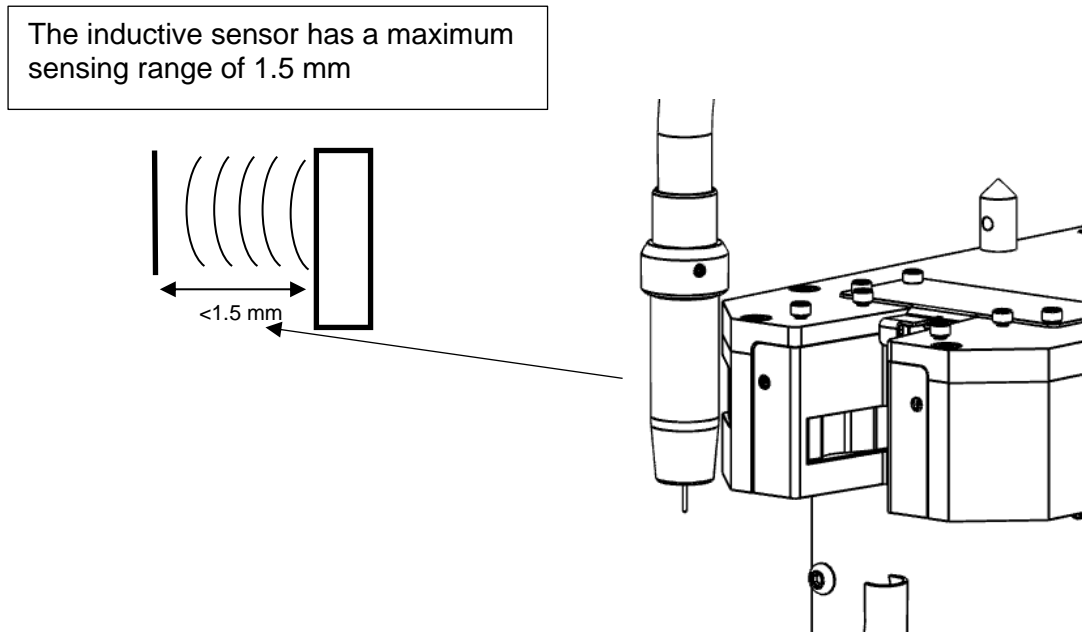


9. Nozzle Detect Sensor Option

The INTELLIREAM® DD-EIP offers a nozzle detect sensor as a factory installed option (IRE120099-02). The integrated nozzle detect sensor is used to validate that the nozzle remains on the torch after the reaming process is complete.

9.1. Nozzle Detect Position Programming

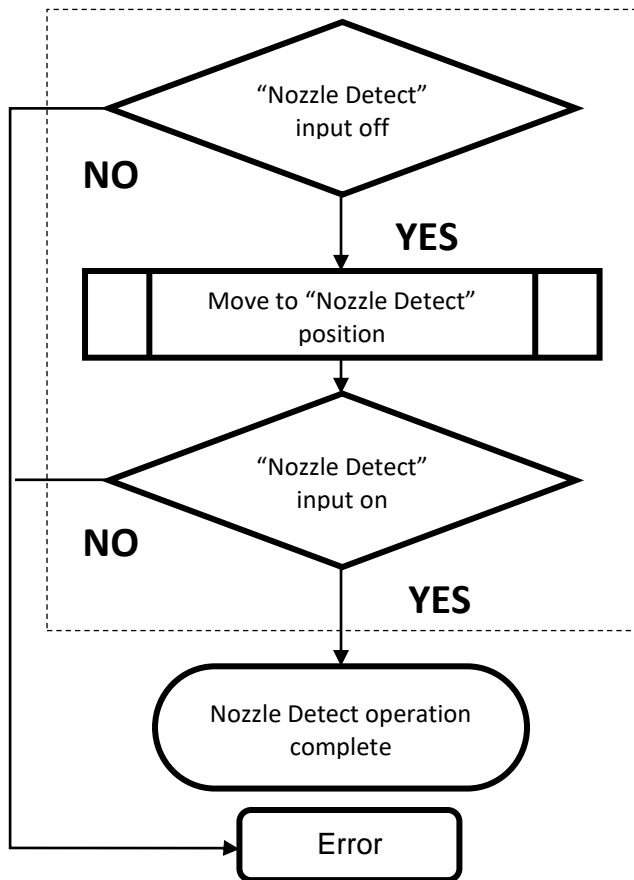
The figure below illustrates the proper nozzle detect position, where the distance between the nozzle wall and the sensor must be less than or equal to 1.5 mm.



When a nozzle is detected by the sensor, the “Nozzle Detect” input will turn on and the “complete” signal will turn off.

9.1. Nozzle Detect Sequence Flow Chart

The process for checking for nozzle presence is outlined in the diagram below.



10. Nozzle Gas Flow Sensor (NGFS) Option

The INTELLIREAM® DD-EIP offers a nozzle gas flow sensor as a factory installed option (IRE120099-04). The integrated nozzle gas flow sensor measures gas flowing out the end of the torch nozzle. This method is advantageous to an inline flow sensor installed in the gas hose as there may be undetected leaks downstream. By measuring gas flow at the nozzle, the point of use, the system verifies adequate gas coverage for the weld puddle where it is required.

10.1.NGFS Specifications

GAS FLOW SPECIFICATIONS	
Max Pressure: 60 PSI	Flow: 10 - 60 SCFH
For use with CO2, AR, or Mixed gas (AR, CO2, He)	

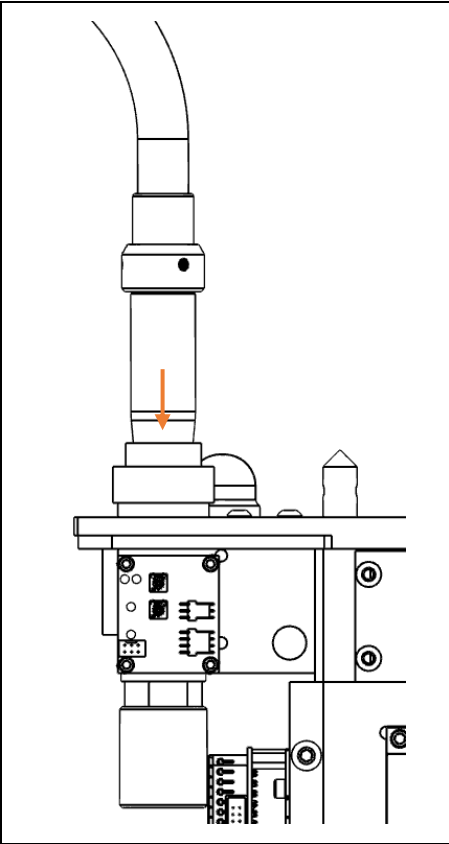
10.2.NGFS Operation

When the welding gas solenoid turns on there is normally a surge of gas before the flow stabilizes to the steady state flow preset by the regulator. The Nozzle Gas Flow Sensor Signal will turn on after 0.5 sec of stable gas flow within a defined window of operation.

10.3.NGFS Setup

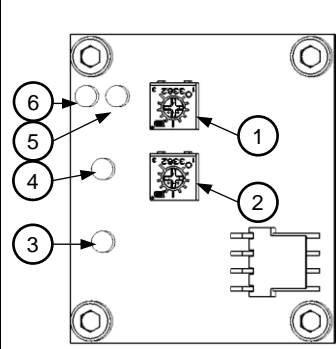
There are two settings available to change the window of operation; (1) Flow Set point and (2) Flow Tolerance Band. The set point adjustment (1) will move the entire band (minimum and maximum) up or down. The tolerance band adjustment (2) will adjust the span between the maximum and minimum levels.

Setup Procedure



- 1. Using an independent measurement device, set the desired welding nozzle gas flow to the desired flow rate.
- 2. Move the robot to bring the nozzle to the target position with the nozzle fully engaged in the flow cone. The module has a small amount of movement built into the spring mounts which will allow the nozzle to fully contact the cone for optimal flow transfer.
- 3. Remove the side plate to expose the circuit board.
- 4. Check for sensor power supply on (LED4 is ON).
- 5. Turn on gas flow through the nozzle at desired flow rate.
- 6. Adjust the Flow Set Point potentiometer (P1) until LED1 and LED2 are flashing equally. If LED1 is flashing alone turn P1 Clockwise, if LED2 is flashing alone turn P1 counterclockwise.
- 7. Check for output signal active (LED3 is ON).
- 8. Turn off gas flow.
- 9. Check that the output signal deactivates (LED3 is OFF) and the High Side (6) / Low Side (5) LEDs are also off.
- 10. Move the robot to bring the nozzle out of the flow cone to the approach position.

Circuit Board Detail

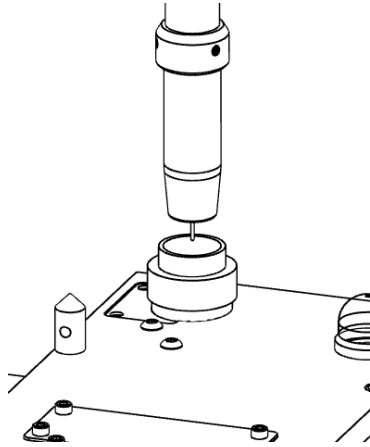


	Designator	Description
1	P1	Flow Set point
2	P2	Tolerance Band
3	LED3	Output Signal Active
4	LED4	Sensor Power Supply
5	LED1	Low Side indicator
6	LED2	High Side indicator

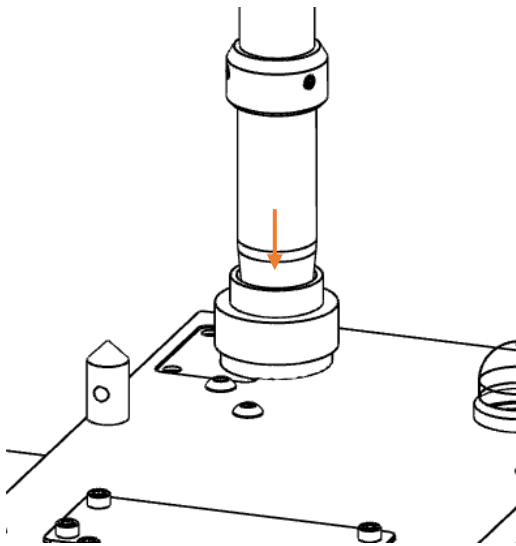
10.4.NGFS Robot Position and Sequence Flow Chart

To properly detect gas flow, the correct robot position must be programmed with the nozzle inserted into the cone of the sensor. An approach position is recommended as the first step followed by the target position inside the cone.

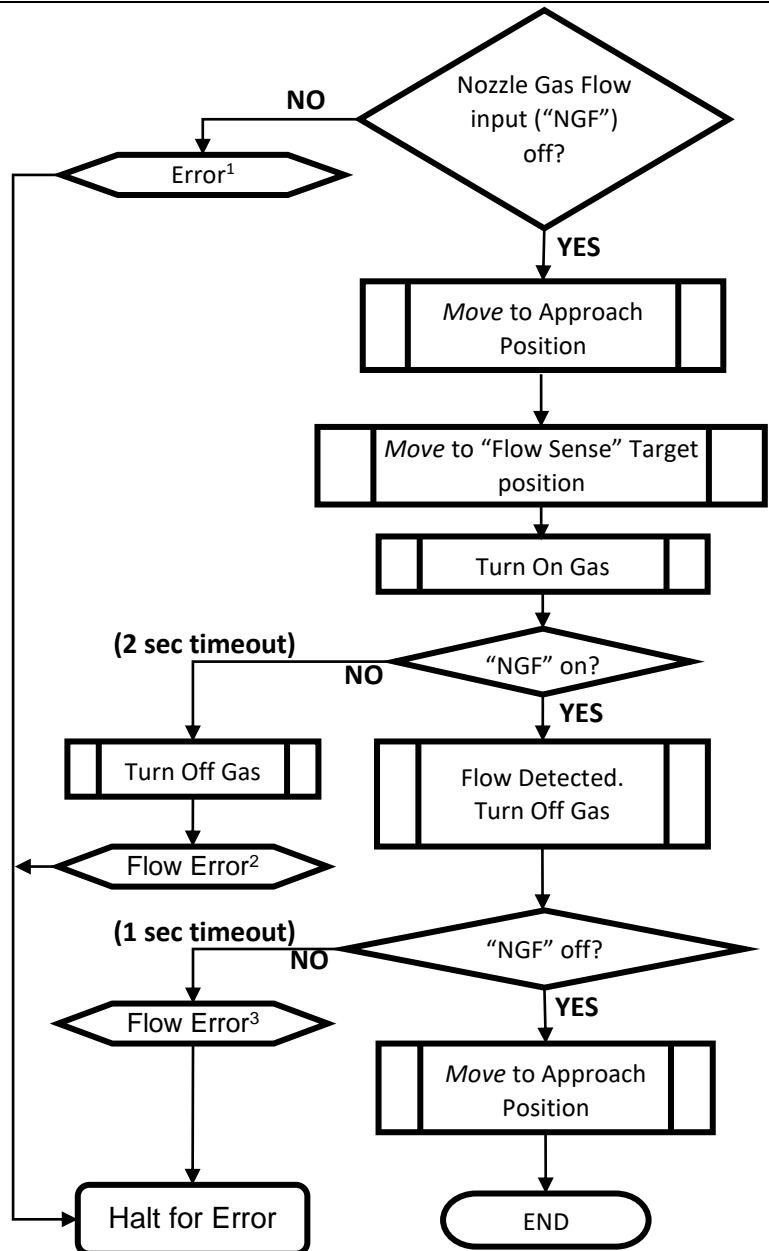
The following figures and flowchart show the recommended programming sequence with nozzle location for the approach and target positions.



Approach Position: the nozzle is in-line with and directly above the cone.



Target Position: The nozzle lightly touches the inside of the cone. The nozzle is vertical.

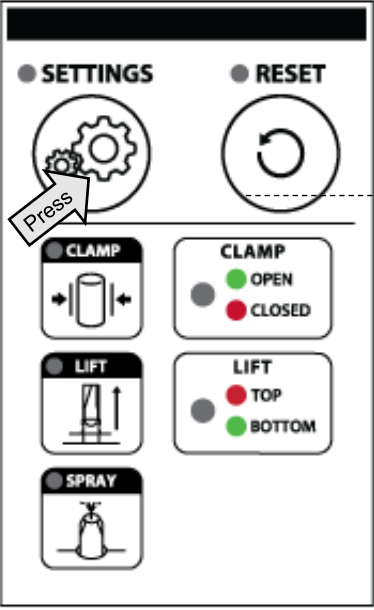


Errors:

1. INTELLIREAM® DD-EIP Error from previous Cycle
2. Gas flow turn-on undetected
3. Gas flow turn-off undetected

11. Settings

Several features may be setup to optimize performance of the INTELLIREAM® DD-EIP. To access the configuration menus, press and hold the settings button for the required time as shown below. The device status LEDs will change their color pattern to indicate the menu that is accessible at a specific time. Release the settings button when the color pattern for the desired configuration menu is shown.

		>3 sec (I/O config)	>5 sec (Spray)	>7 sec (Extras)	>9 sec (Mode)	>11 sec (Diagnostic)	>13 sec
	((Y))						
	((Y))						

Note: The default setting for each configuration is first and last in each sequence.

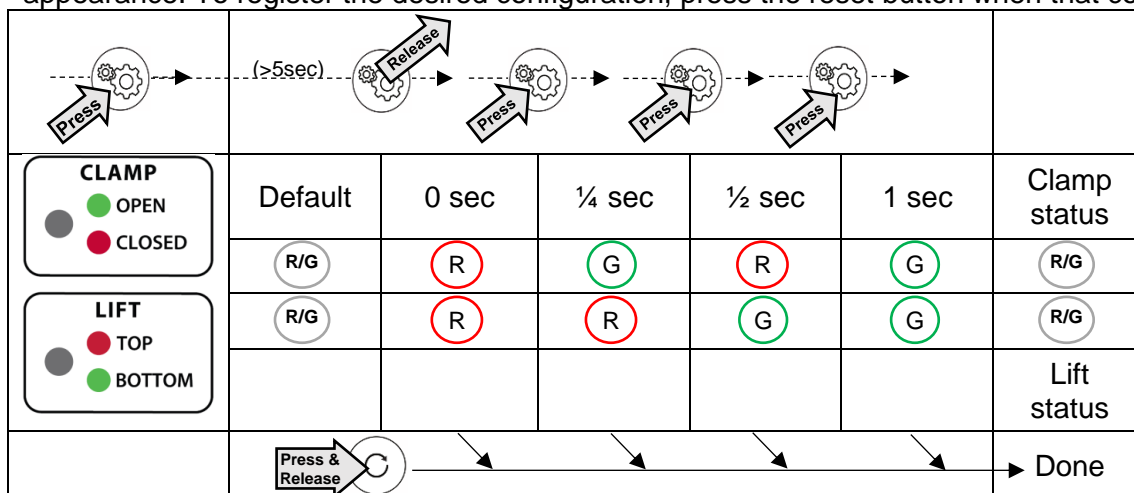
11.1.I/O Configuration

The discrete I/O configuration is not applicable to the INTELLIREAM® DD-EIP

11.2.Spray

The sprayer has a built-in post flow timer. Airflow from the spray nozzle will be present for set time (0, ¼, ½ or 1 second) after the spray output and corresponding fluid valve have been turned off, the default is 0 (disabled).

Follow the steps outlined in section 0 to access the spray settings menu. Upon releasing the settings button, the LEDs will show the current spray setting. This is the first in the sequence of teachable configurations. Subsequent pressing and releasing of the setting button will sequence the following configurations in order of appearance. To register the desired configuration, press the reset button when that configuration is displayed.



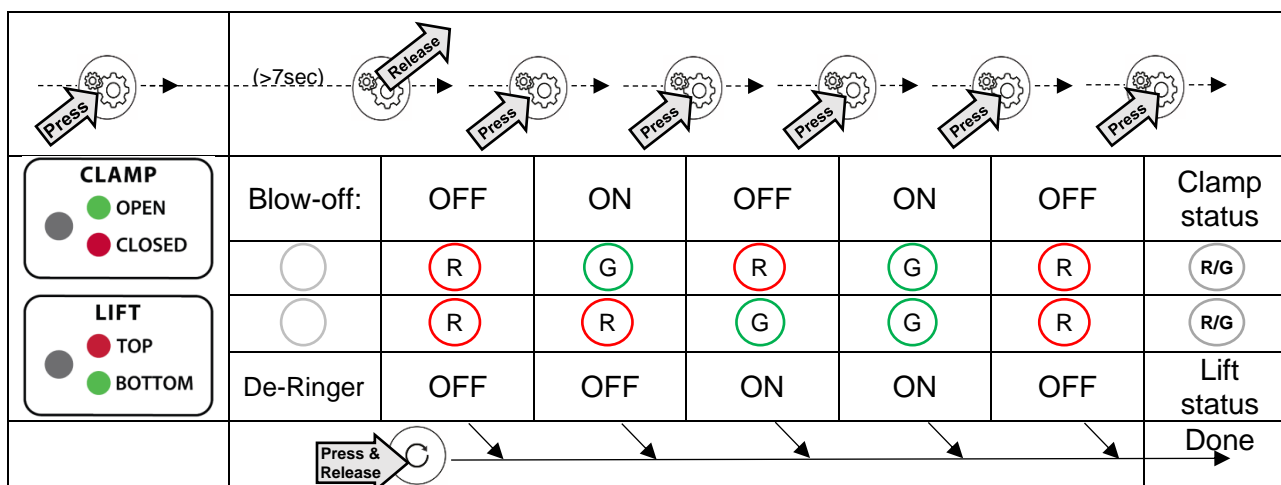
11.3.Extras

1. Blow-off: The motor spins and exhausts (blowing off over spray) for two seconds after spraying.
2. De-Ringer: A pilot reaming stroke removes the spatter ring that forms on the end of a welding nozzle, followed by a full extension reaming stroke. Using this technique, the spatter ring is not pushed into the nozzle where it may become lodged.

The features in the “extras” menu can be configured by the following procedure:

Follow the steps outlined above to access the “extras” configuration menu. Upon releasing the settings button, the LEDs will flash red on top and bottom. This is the first in the sequence of teachable configurations.

Subsequent pressing and releasing of the settings button will sequence the following configurations in order of appearance. To register the desired configuration, press the reset button when that configuration is displayed.



11.4. Running Mode

Several running modes are available to select from.

Automatic: Every aspect of the cycle is commanded, monitored, and checked by the control module.

Dry Run: The motor and fluid solenoid are disabled.

Timed: Bypass the "extended" sensor on the lift cylinder. The robot must hold the start signal on for the reaming time. Auto Retry is disabled in this and the following modes:

Open: Bypass the "extended" and "retracted" sensor. The robot must hold the start signal on for the reaming time and hold the robot in the clamp until the reaming bit is fully retracted.

Blind: Bypass all sensors. The robot must hold the start signal on for the ream time and hold the torch in the jaws until the reaming bit is fully retracted and the clamp is fully opened.

Mode configuration: A specific running mode can be configured by the following procedure.

Follow the steps outlined above to access the mode configuration menu. Upon releasing the settings button, the LEDs will flash green on top and bottom. This is the first in the sequence of teachable configurations.

Subsequent pressing and releasing of the settings button will sequence the following configurations in order of appearance. To register the desired configuration, press the reset button when that configuration is displayed.

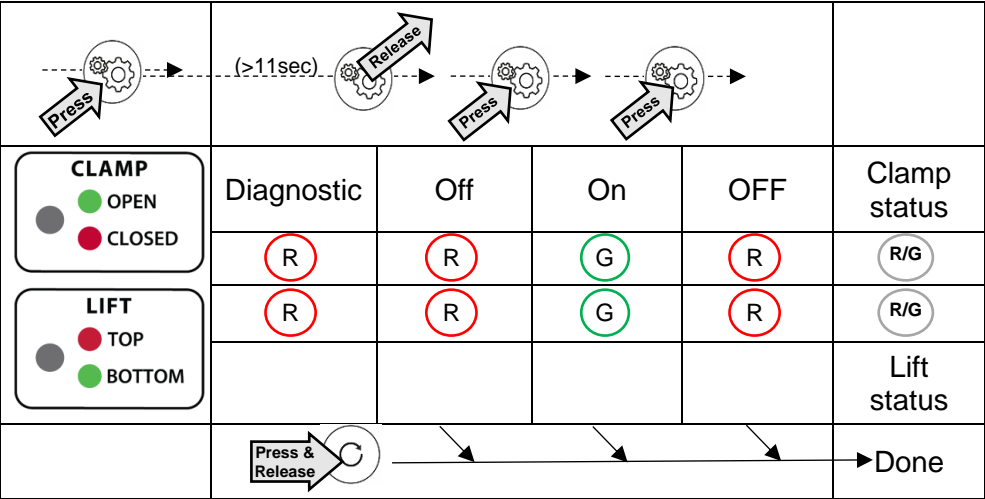
Mode

<div>CLAMP</div> <div>● OPEN</div> <div>● CLOSED</div> <div>LIFT</div> <div>● TOP</div> <div>● BOTTOM</div>	Mode	Automatic	Dry Run	Timed	Open	Blind	Auto	Clamp status
		G	Y	G	G	R	G	R/G
	G	G	G	Y	R	R	G	R/G
								Lift status
								Done

11.5.Motor Diagnostic

This feature allows a service technician to test the air motor function manually.

Follow the steps outlined below to access the motor diagnostic configuration menu. Upon releasing the settings button, the LEDs will flash red on top and bottom. This is the first in the sequence of teachable configurations. Subsequent pressing and releasing of the settings button will sequence the following configurations in order of appearance. To register the desired configuration, press the reset button when that configuration is displayed.



Motor Diagnostic Configurations:

Off: This feature is disabled.

On: This feature is enabled.

Note: Running the motor diagnostic will disable the feature so that it can only be run once each time it is enabled.

Motor Diagnostic Operation: Once the reset button is released, the unit will display the power-up sequence. Follow this procedure to test the air motor manually:

1. LIFT function: Press and hold the “LIFT” button to raise the reaming bit (without spinning) until it reaches the top position. Check that the “LIFT” LED on the control module is green.

WARNING: the lift will operate under this condition. **KEEP HANDS CLEAR** of the operating space of the reaming bit. This device is intended for one-man operation during test.



Once the INTELLIREAM® DD-EIP is at the top position (“LIFT” LED is green), release the “LIFT” button and the reaming bit will maintain its position.

2. CLAMP function: Press the “CLAMP” button to close and open the clamp. Check that the “CLAMP” LED on the control module changes from green to red when the clamp is closed.



WARNING: the clamp will operate under this condition. KEEP HANDS CLEAR of the operating space of the clamp and wire cutter. This device is intended for one-man operation during test.

Note: The LEDs on the control module will flash red from this point on in the sequence to indicate **CAUTION** for the operating devices being tested.

3. MOTOR function: With the reaming bit raised, press both the “CLAMP” button and “LIFT” button to test the “Motor” solenoid.



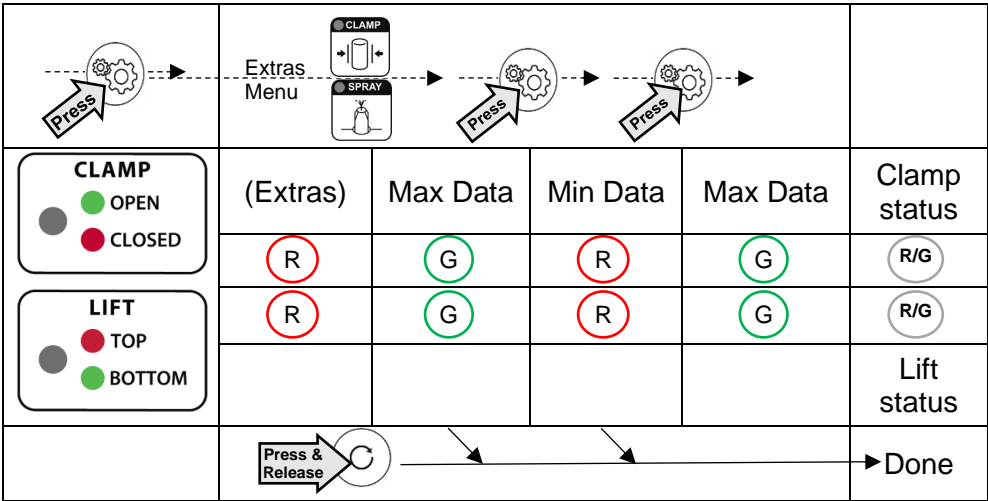
WARNING: the motor will operate under this condition. KEEP HANDS CLEAR of the operating area of the reaming bit. Do not operate with exposed long hair, jewelry, or loose clothing. This device is intended for one-man operation during test.

11.6. Network Data Size and Webserver Disable

In some cases it may be desirable to minimize the data map size to the minimum required. The number of PLC input bytes can be changed from the default 128 to 4 and the number of PLC output bytes can be changed from the default 128 to 6. Note: the adjustment should be made to the reamer before configuring the robot/plc or a major fault may occur.

Note: performing this action will also disable the web server data.

To access this configuration follow the steps to access the “EXTRAS” menu (section 11.3). The clamp and lift status LEDs should both be blinking red. Press and release both “Clamp” and “Spray” pushbuttons at the same time and the clamp and lift status buttons will change to blinking green.




12. Web Server Interface (DD-EIP version only)

The INTELLIREAM® DD-EIP features a Web Server Interface for enhanced setup and configuration. Any modern web browser can be used to view the interface at the IP address chosen (see section 4.1). The browser must be connected and communicating on the same LAN as the INTELLIREAM® DD-EIP.

The web server interface is divided into four screens; **Interface**, **Settings**, **Statistics** and **Consumables**. The screen names appear in the header and may be selected by clicking on each. The current operating mode of the web server is shown in the footer. If either these disappear then simply click on any blank space on the page and they re-appear.

12.1.Interface Screen

The Interface screen is used for remote monitoring and control. Each output status from the Intelliream® DD-EIP is shown as being active or inactive with the indicator beside each label.

INTELLIREAM® EIP

Info

Interface

Settings


Statistics

Consumables

Output Status	
Ready	<div></div>
Aux Power	<div></div>
Opened	<div></div>
Retracted	<div></div>
Extended	<div></div>
Nozzle Detected	<div></div>
Nozzle Flow Status	<div></div>
Local Lockout	<div></div>
Remote Operations Active	<div></div>
Error Status	<div></div>
Error Code	0

Operating Mode: READ / WRITE

Below the Output Status section, several inputs can be set from the Web Browser when in READ/WRITE mode.



INTELLIREAM® EIP

Info

Interface

Settings

Statistics

Consumables

Set Inputs

Ream	<div>Off</div> <div>On</div>
De-Ring	<div>Off</div> <div>On</div>
Spray	<div>Off</div> <div>On</div>
Wire Cut	<div>Off</div> <div>On</div>
Dry Run Mode	<div>Off</div> <div>On</div>
Spray Blow Off	<div>Off</div> <div>On</div>
Reset Error	<div>Reset</div>

Network Status LEDs

Module Status	Green
Network Status	Green, flashing
Data Rate	Green
Link/Activity	Off

Operating Mode: READ / WRITE

The Status of the Network LEDs is shown for information or troubleshooting communications.

When a PLC or robot controller is communicating with the Intelliream® DD-EIP via Ethernet/IP then the webserver is placed into “Read Only Mode”. The lower banner reflects the current status of the read/write access.

Operating Mode: READ ONLY

If any of the command buttons or controls are attempted while in READ ONLY mode, a popup will alert the user that it is not possible to send commands to the Intelliream® DD-EIP at this time.

Warning


The network controller is writing commands to the device.
No commands may be issued by the webserver at this time. (READ ONLY)

✓


OK

12.2.Settings Screen

All of the configurations for the INTELLIREAM® DD-EIP are made available at the top of the Settings screen. Enter the new setpoint in the numerical entry text box. If a setpoint must be written to non-volatile (EEprom) memory then the corresponding button will become enabled once a number is entered in the setpoint field. Click the button to reset the INTELLIREAM® DD-EIP, the new setting will take effect at reboot.



INTELLIREAM® EIP

 Info

Interface

Settings

Statistics

Consumables

Configuration Data	
<u>Retry Limit</u>	0
New Setpoint:	<input type="text" value="0"/>
<u>Postflow Time Index</u>	0
New Setpoint:	<input type="text" value="0"/>
<u>IO configuration</u>	0
New Setpoint:	<input type="text" value="0"/>
<u>Running Mode</u>	0
New Setpoint:	<input type="text" value="0"/>
<u>Extra Functions</u>	0
New Setpoint:	<input type="text" value="0"/>

Operating Mode: READ / WRITE

INTELLIREAM® DD-EIP

Below the configuration data, several reamer inputs may be set to remotely operate individual valves and LEDs on the membrane interface. Enable remote operation by toggling the “Remote Enable” switch. The reamer will no longer respond to other commands while “Remote Enable” is on.

INTELLIREAM® EIP		Info
Interface	Settings	Statistics
Consumables		
Remote Operations		
Remote Enable	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Close Top Clamp	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Lift Ream Bit	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Spin Ream Bit	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Air Spray Valve	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Fluid Spray Valve	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Status LED	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Input / Output 1	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Input / Output 2	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Settings Button / LED	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Reset Button / LED	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Clamp Button / LED	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Lift Button / LED	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Spray Button / LED	<input type="radio"/> <input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Bicolour 1 Red	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Bicolour 1 Green	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Bicolour 2 Red	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	
Bicolour 2 Green	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On	

Operating Mode: READ / WRITE

12.3.Statistics Screen

The Statistic screen shows the current operations timing for the previous cycle, counts for all processes and the Error log for the previous two occurrences.

INTELLIREAM® EIP

Info

Interface

Settings

Statistics

Consumables

System Statistics

Cycle Time ~(sec)	0.00
Clamp Time ~(ms)	0
Extend Time ~(ms)	0
Retract Time ~(ms)	0
Ream Cycle Count	0
Nozzle Present Count	7
Nozzle Gas Flow Count	11
Auto Retry Count	0
Cycle Error Count	0
Last Error	0
Cycle Count Last Error	0
2nd Last Error	0
Cycle Count 2nd Last Error	0

Operating Mode: READ / WRITE

INTELLIREAM® DD-EIP

12.4. Consumables Screen

The Consumables screen shows the current usage of fluid, ream bit and wire cutter. Each consumable section displays an alert (also mapped to an I/O bit) and the accumulated amount. The accumulated value may be reset with a button and the alert setpoint may be changed for each item.

NASARC INTELLIREAM® EIP Info

Interface **Settings** **Statistics** **Consumables**

Anti-Spatter Fluid

Refill Fluid	<input type="radio"/>
Total Spray Time	0 (s)
Reset Spray Time	Reset
<u>Current Refill Fluid Setpoint</u>	1000 (s)
New Setpoint:	0

Ream Bit

Replace Ream Bit	<input type="radio"/>
Ream Bit Cycles	0
Reset Ream Bit Count	Reset
<u>Current Reambit Setpoint</u>	50000
New Setpoint:	0

Wire Cutter

Replace Wire Cutter	<input type="radio"/>
Wire Cut Count	0
Reset Wire Cut Count	Reset
<u>Current Wire Cut Setpoint</u>	100000
New Setpoint:	0

Operating Mode: READ / WRITE

The firmware version of the process software is shown in the info screen.

NASARC INFORMATION ←

Firmware Version

Variant	0
Major	1
Minor	2

Operating Mode: READ / WRITE

12.5.IP address configuration

An isolated screen is available to change the IP address configuration.

Enter the IP address of the INTELLIREAM® DD-EIP followed by '/secure/EtnConfig.shtm' for example 192.168.0.21/secure/EtnConfig.shtm.

If asked for a password then use the following- User:nasarc, Pass:intelliream

Network Settings


IP Address:


Subnet Mask:


Gateway Address:

DHCP Enabled:


Email Settings


SMTP Server Address: 

SMTP User Name: 

SMTP Password: 

Email Setup

Recipient Address: 

Sender Address: 

IP address: A unique string of four numbers (0 – 255) separated by decimals that identifies the INTELLIREAM® DD-EIP on the network.

Subnet Mask: A string of four numbers (0 – 255) separated by decimals that masks an IP address and divides the IP address into network address and host address.

Gateway Address (optional): The IP address of the router (if used) on the network.

SMTP Server (optional): The IP address of the e-mail server of the sender. Add credentials if necessary.

Press “Save” when complete. Note: the unit must be rebooted for the settings to take effect. A reboot may be done by power cycling the Intelliream® DD-EIP or clicking “Reboot” at the bottom of the Communications page.

Recipient Address: The email address of the person or account who should receive email alarm notifications from the Intelliream® DD-EIP.

Sender Address: The email address of the person or account who will appear in the “from” field of the email alarm notifications.

Press “Submit” to save these settings; a confirmation pop-up will notify of success.

13. Preventative Maintenance

The INTELLIREAM® DD-EIP will require periodic maintenance to ensure a dependable service life. The following schedule is recommended.

Shut off the air supply and disconnect the power cable before making adjustments.

DAILY

- Check the fluid level in spray reservoir.
- Check the reaming bit visually.

WEEKLY

- Dump the spatter accumulated in the drawer of the mounting box or customer supplied catchment below the reamer.
- Check airlines for leaks and robot control cable for splits or cracks.
- Clean clamp gripping surfaces to ensure optimal nozzle gripping.

SPRAY CONTAINMENT UNIT (weekly)

- Remove and clean out spray cone and drain.
- Check collection jug.

NGFS (weekly)

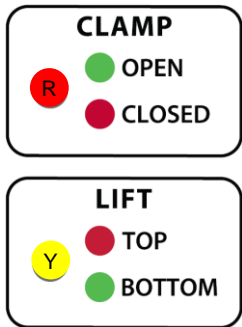
- Clean the inside face of the flow cone to remove surface buildup.
- Clean debris from the main cavity by removing the plug at the bottom.
- Check the mesh filter of debris. Clean or replace as required.

14. Troubleshooting

Problem	Possible Cause	Solution
No device status LEDs on	<ul style="list-style-type: none"> -Power is off -Fuse is blown (controller cabinet) -Reset button defective -Circuit board defective 	<ul style="list-style-type: none"> -Turn power on -Replace fuse -Replace reset button -Replace circuit board
Clamp/Motor/Lift/Cutter not working	<ul style="list-style-type: none"> -Insufficient air supply -Air line cut, disconnected, or twisted -INTELLIREAM® DD-EIP in setup mode -Excessive spatter buildup -Dry run mode selected -Defective solenoid -Check error codes 	<ul style="list-style-type: none"> -Set to 80 PSI, 15 SCFM -Replace or re-connect airline -Reset INTELLIREAM® DD-EIP -Ream more often -Select automatic mode -Replace necessary valves -Check cable wiring -Perform a visual inspection of the equipment
Ream bit does not retract	<ul style="list-style-type: none"> -Ream bit jammed in nozzle -Extended sensor defective -“Start” output held on -Lift cylinder defective -Check error codes 	<ul style="list-style-type: none"> -Replace damaged parts -Replace extended sensor -Pulse “Start” output for 0.5 sec -Replace lift cylinder
Controller cannot start a cycle or controller cannot complete a cycle	<ul style="list-style-type: none"> - “Complete” input signal not responding 	<ul style="list-style-type: none"> -Check error codes -Reset INTELLIREAM® DD-EIP
No anti-spatter liquid and/or no air flow from sprayer	<ul style="list-style-type: none"> -Low anti-spatter volume -Reservoir not vented -Fluid line blocked -Insufficient air supply -Solenoid valve defective -Spray nozzle clogged 	<ul style="list-style-type: none"> -Refill anti-spatter reservoir -Open vent if closed -Clean or repair fluid line -Set to 80 PSI -Replace solenoid valve -Clean or replace spray nozzle *HAND TIGHTEN ONLY
Wire cutter won’t cut wire, but the cutter closes	<ul style="list-style-type: none"> -Insufficient air supply -Cutters are worn or damaged -Wire diameter too large 	<ul style="list-style-type: none"> -Set to 80 PSI -Replace damaged components -Check wire diameter

14.1.Error Codes

The INTELLIREAM® DD-EIP reports errors using the status light. When an error is reported, the status light flashes at a rate of 2 flashes per second.



When an error occurs during the reaming process, the clamp opens, the lift retracts, and the diagnostic report is shown with the top sensor LED in red. The LED will flash a certain number of times, pause, then repeat. The error count begins at 2.

Count the number of flashes between the pause and use the following chart to find the cause of the problem.

2: Closing Fault: The clamp took too long to close.

- Check air inlet pressure
- Check clamp sensor
- Check clamp air lines
- Check clamp solenoid
- Check clamp cylinder

3: Raising Fault: The lift cylinder took too long to extend from the retracted sensor.

- Check air inlet pressure
- Check extending needle valve (top needle valve on lift cylinder)
- Check retracted sensor (bottom)
- Check lift air lines
- Check lift solenoid
- Check lift cylinder

4: Extending Fault: The lift took too long to fully extend.

- Automatic retry; excessive spatter build up in the nozzle (ream more often), or incorrect programmed position of the nozzle not allowing the reaming bit to extend to full depth
- Check air inlet pressure
- Check extending needle valve (top needle valve on lift cylinder)
- Check extended sensor (top)
- Check lift air lines
- Check lift solenoid
- Check lift cylinder

5: Lowering Fault: The lift cylinder took too long to retract from the top while lowering.

- Check air inlet pressure
- Check retracting needle valve (bottom needle valve on lift cylinder)
- Check extended sensor (top)
- Check lift airlines
- Check lift solenoid
- Check lift cylinder

6: Retracting Fault: The lift cylinder took too long to fully retract.

- Check air inlet pressure
- Check retracting needle valve (bottom needle valve on lift cylinder)
- Check retracted sensor (bottom)
- Check lift airlines
- Check lift solenoid
- Check lift cylinder

7: Opening Fault: The clamp took too long to open.

- Check air inlet pressure
- Check clamp sensor
- Check clamp airlines
- Check clamp solenoid
- Check clamp cylinder

8: Short Circuit Fault: The output is short circuited.

- Check wiring to robot or PLC controller

9: Solenoid Voltage Fault: The voltage to actuate the solenoids is too low.

- Check the voltage between the solenoid voltage and 0V and adjust power supply as needed
- Check the wiring of the solenoid voltage/emergency stop circuit

INTELLIREAM® DD-EIP

Note: Clearing Errors – If an error has occurred with the INTELLIREAM® DD-EIP, indicated by the “Error” input being turned on, it is possible to clear errors so that an operator is not required to enter the robotic welding cell. For example, if the air supply was not turned on and a ream cycle is required, the operator can simply turn on the air supply, and clear the error from outside the cell. This can be done by pulsing the “Start” output from the controller/teach pendant.

14.2.Advanced Troubleshooting

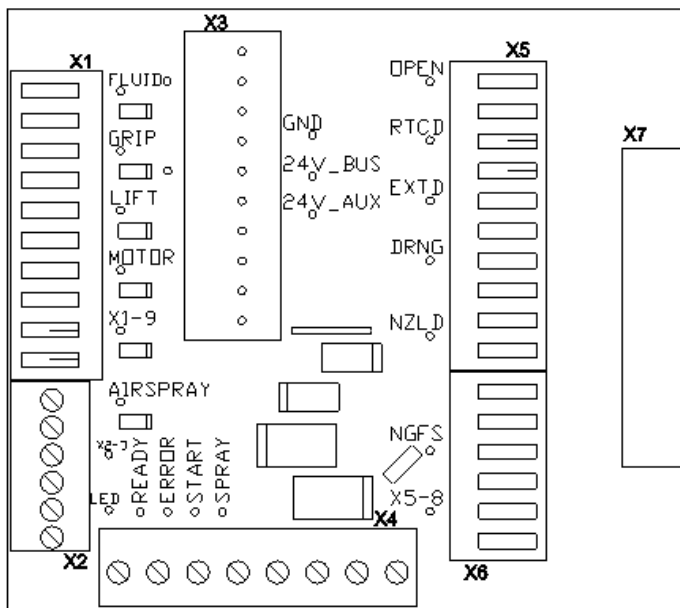
Use the test points in the following table to take readings with a voltmeter. Connect the (+) lead to the first test point and the (-) lead to the second test point.

Refer to the diagram below for test point locations.

(+) Lead Point	(-) Lead Point	Description	“On” Voltage	“Off” Voltage
24V_AUX	FLUID	Fluid Solenoid	24 V	0 V
24V_AUX	GRIP	Grip Solenoid	24 V	0 V
24V_AUX	LIFT	Lift Solenoid	24 V	0 V
24V_AUX	MOTOR	Motor Solenoid	24 V	0 V
24V_AUX	AIRSPRAY	Air Spray Solenoid	24 V	0 V
DRNG	GND	De-ringer Sensor	24 V	0 V
EXTD	GND	Extended Sensor	24 V	0 V
RTCD	GND	Retracted Sensor	24 V	0 V
GND	GND	Clamp Sensor	24 V	0 V
24V_BUS	GND	+24 VDC	24 V	0 V
SPRAY	GND	N/A for DD-EIP		
START	GND	N/A for DD-EIP		
READY	GND	N/A for DD-EIP		
ERROR	GND	N/A for DD-EIP		
24V_BUS	LED	Status Light	24 V	0 V

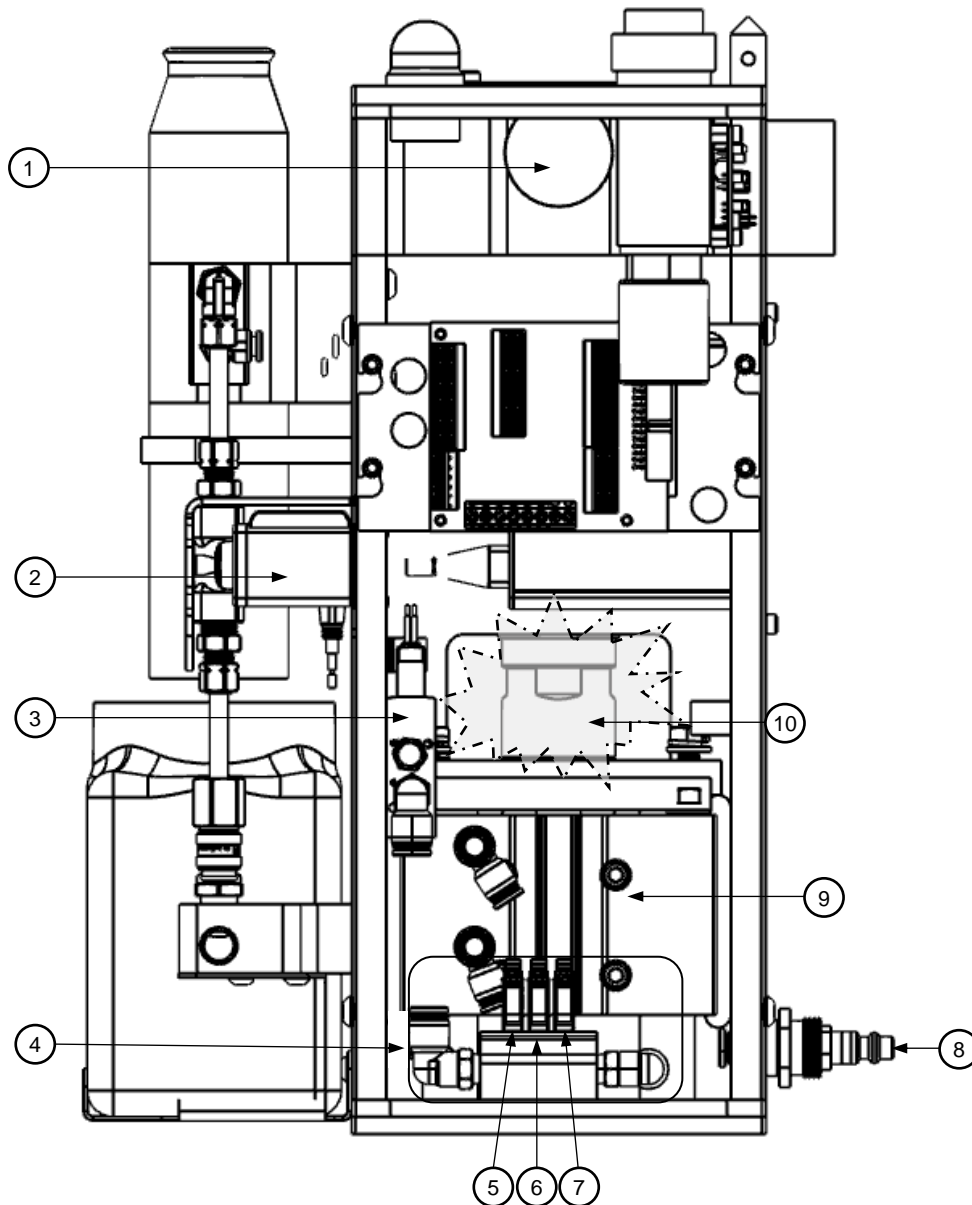
*A trace value of 6V is measured prior to activation

Note: all voltage readings +/- 10%



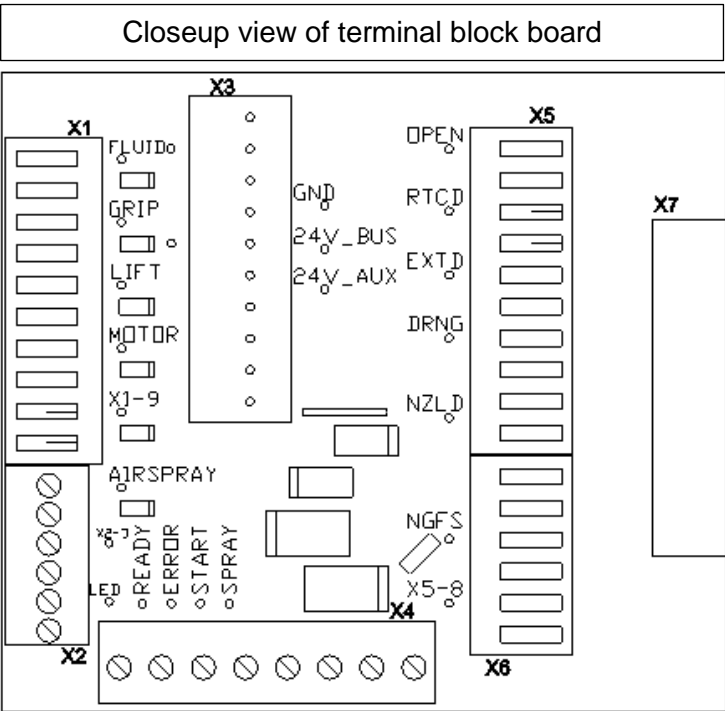
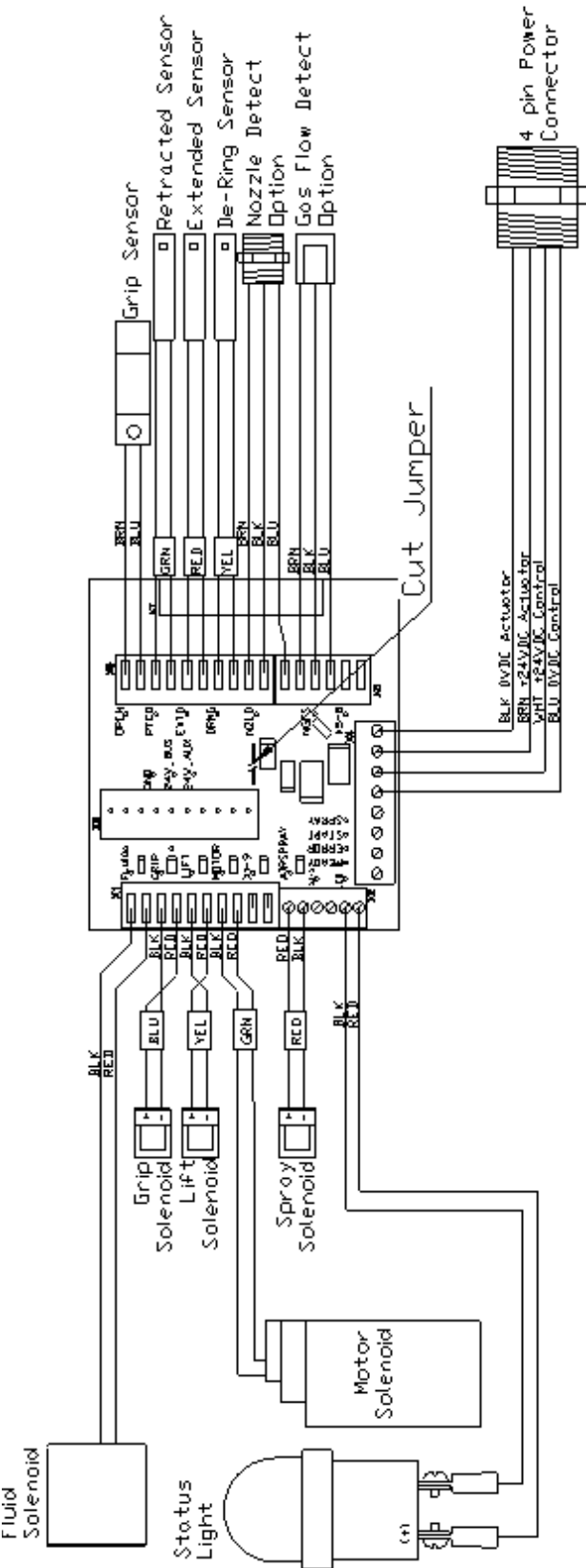
15. Pneumatic Components

The figure below shows the location for each pneumatic component.

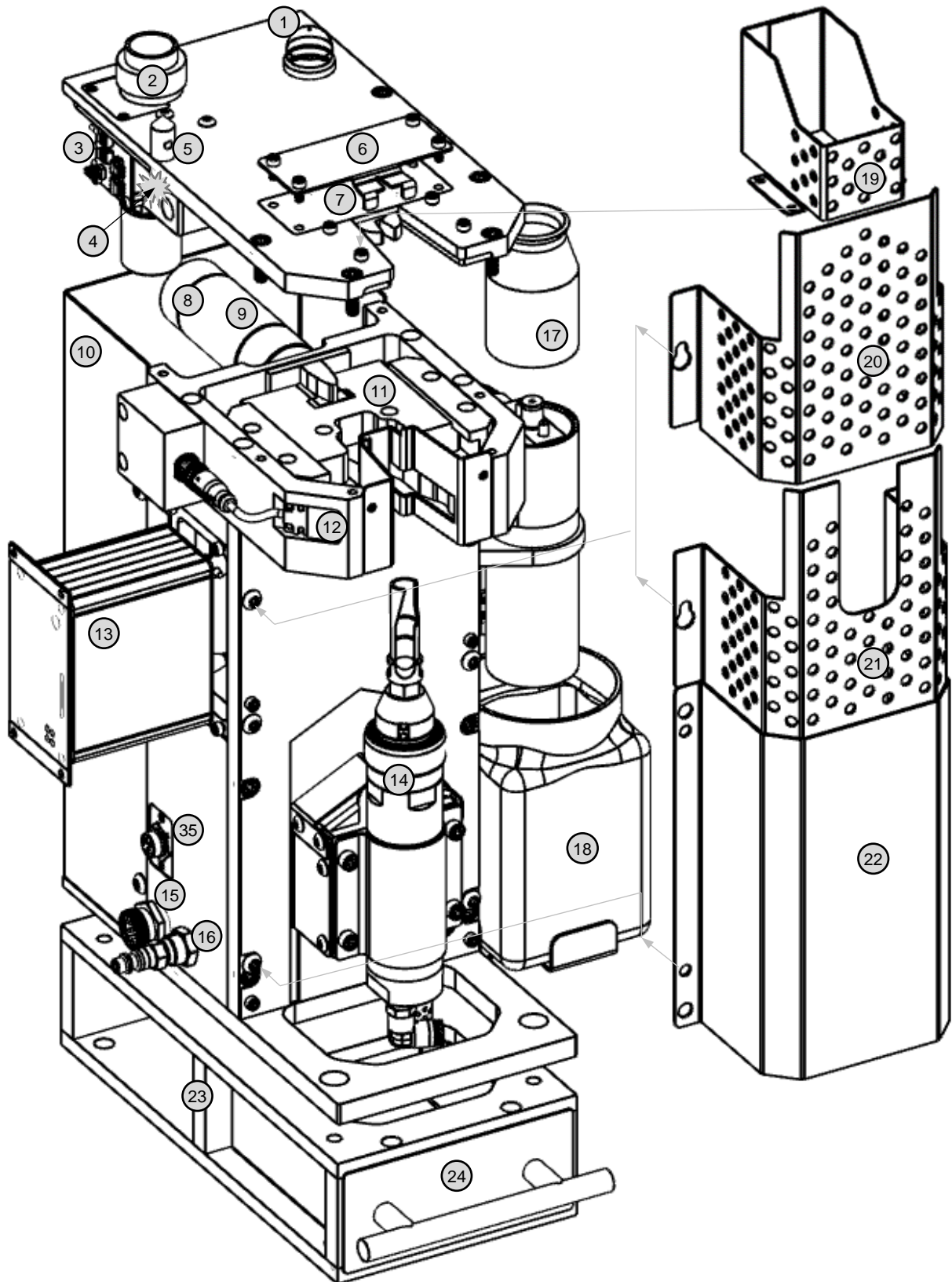


1	CLAMP CYLINDER
2	FLUID SOLENOID
3	MOTOR SOLENOID
4	MANIFOLD ASSEMBLY
5	SPRAY SOLENOID
6	CLAMP SOLENOID
7	LIFT SOLENOID
8	PNEUMATIC INLET
9	LIFT CYLINDER
10	AIR MOTOR (other side)

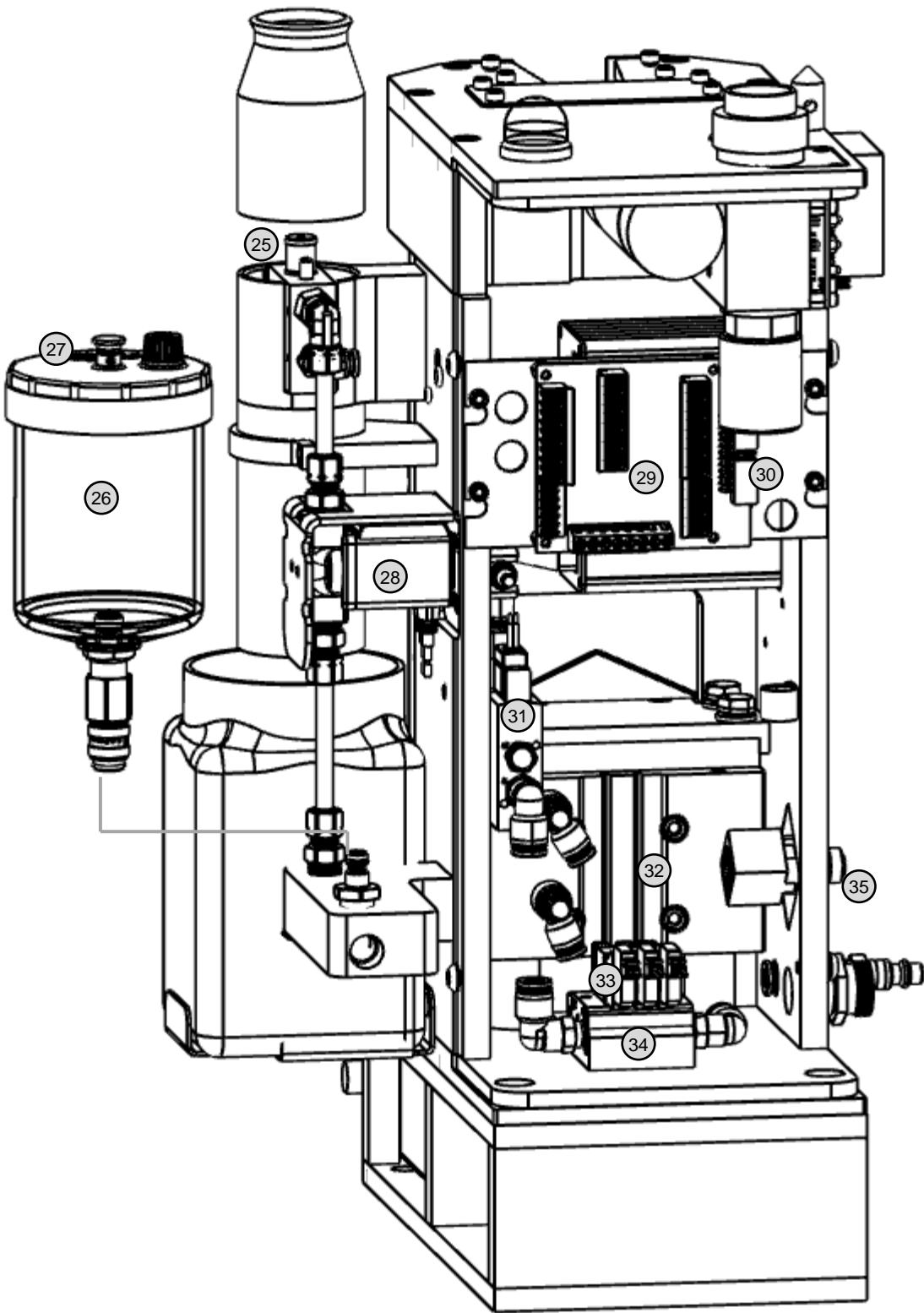
16. Electrical Diagram



17. Replacement Parts List



ITEM	PART #	DESCRIPTION
1	IRE020099-09	STATUS LIGHT ASSEMBLY
2	NAC40-3R	GAS FLOW TUBE REPLACEMENT ASSEMBLY
3	IRE060007-00	NGFS CIRCUIT BOARD + CABLE
4	NAC40-2R	NGFS SENSOR ASSEMBLY
5	IRW010008-00	TCP CHECK PIN
6	IRW010007-03	WIRE CUTTER GUARD (option)
7	IRW010099-00	WIRE CUTTER ASSEMBLY (option)
8	IRE020099-04	OPEN SENSOR ASSEMBLY
9	IRP120099-00	CLAMP CYLINDER ASSEMBLY DD
10	IRF120003-00	BACK COVER DD
11	IRG010099-00	CLAMP ASSEMBLY
12	IRE020099-13	NOZZLE DETECT SENSOR replacement
13	IRE070099-02	RCM-2N CONTROL MODULE COMPLETE
	•IRE070099-06	RCM-2N Membrane Enclosure
	•IRE070001-02	PC BOARD (RCM-2N)
14	NTP32R	REAM MOTOR ASSEMBLY
15	IRE010010-00	ROBOT CONNECTOR
16	IRP010006-02	PNEUMATIC FITTING 1/4in
17	NAC30-3	SPRAY CONE
18	NST-5	32OZ PLASTIC CONTAINER
19	IRG120002-00	TOP GUARD DD
20	IRF120008-00	REAMING BIT GUARD FULL DD
21	IRF120010-00	REAMING BIT GUARD OPEN DD
22	IRF120099-00	FRONT COVER DD
23	IRX120099-00	MOUNTING BOX DD with Tray (option)
24	•IRX120099-01	BOX TRAY DD



ITEM	PART #	DESCRIPTION
25	NAC30-2R	SPRAY NOZZLE REPLACEMENT ASSEMBLY
26	IRS120099-03	FLUID RESERVOIR ASSEMBLY DD
27	IRS010005-01	FLUID RESERVOIR LID
28	IRP120099-01	FLUID SOLENOID ASSEMBLY DD
29	IRE080001-01	TERMINAL BLOCK BOARD
30	IRE020099-08	RIBBON CABLE ASSEMBLY
31	IRP120099-03	MOTOR SOLENOID ASSEMBLY DD
32	IRE010012-00	LIFT SENSOR
33	IRP120002-00	5-WAY SOLENOID (cylinders, spray)
34	IRP120099-02	MANIFOLD ASSEMBLY DD
35	IRE010014-00	M12 ETHERNET RECEPTACLE

Accessories

PART #	DESCRIPTION
IRB010500-00	REAMING BIT, 1/2" (W/WASHER)
IRB010501-00	REAMING BIT, BOTTLENECK, 1/2" (W/WASHER)
IRB01M155-00	REAMING BIT, 15.5mm (W/WASHER)
IRB020625-00	REAMING BIT, 5/8" (W/WASHER)
IRB010750-00	REAMING BIT, 3/4" (W/WASHER)
IRE010090-20	ROBOT CABLE, 90 Degree 20FT
IRE010090-30	ROBOT CABLE, 90 Degree 30FT
IRT020001-00	TEST BOX
IRX120099-30	FLOOR MOUNT STAND, 30" DD with Tray
•IRX120009-00	STAND TRAY DD

INTELLIREAM® DD-EIP

Warranty

NASARC Cert-Equip WARRANTY POLICY

INTELLIREAM® DD-EIP is warranted by **NASARC** to the original commercial or institutional end user/owner against defects in materials and workmanship as follows:

Motor, Solenoids, circuit board, cylinders – 1 year

External parts, INTELLIREAM® DD-EIP, spray nozzle, cables, and accessories – 90 days

The warranty becomes effective on the date of purchase. During the warranty period, equipment covered by the warranty and found to be defective will be repaired or replaced at the manufacturer's discretion without charge. The manufacturer's responsibility is limited to repair or replacement of damaged or defective parts. The equipment must be returned, transportation charges prepaid with proof of purchase date, to an authorized service center or to **NASARC**. If a product warranty card has not been completed or proof of purchase is not available, the warranty will be deemed to become effective at the time the product leaves the factory authorized **NASARC** warehouse. Warranty repair service does not extend the period of warranty beyond the original period. The warranty is not transferable.

This warranty does not cover defects in the equipment caused by ordinary wear and tear, abuse, misuse, accident, or any other cause that is not the result of defective materials or workmanship.

Repair or replacement is the exclusive remedy for defective equipment under this warranty. This warranty is in lieu of all other warranties written and implied, including any implied warranty of fitness for a particular purpose of this equipment. **NASARC** shall not be liable for any consequential or incidental damages for breach of any express or implied warranty of this equipment.

The month of manufacture can be found on the serial plate

```
+----- yy:  Year
| +----- mm:  Month (01 .. 12)
| | +---- nnn: Unit number within the month (001..999)
| | |
IRyyymmnnn
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For example, IR2208033 is the 33rd unit manufactured in August (08) of 2022 (22)