

Sponge-Jet® Sponge Blasting System™

Sponge-Jet Feed Unit™ User Manual

Models:

400-HP

400-HP-CE

400-HP-J



Sponge-Jet, Inc.

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IMPORTANT NOTE: While parts, systems, components, operational procedures may be the same between equipment models, the images provided in this manual may vary from model to model.

This manual represents the following models and their approximate working capacity:

Model: Working Capacity:

400-HP 400 liters

400-HP-CE 400 liters

400-HP-J 400 liters

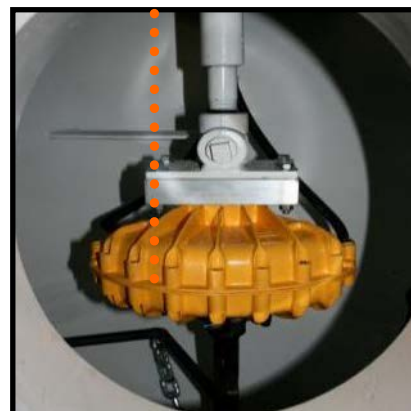
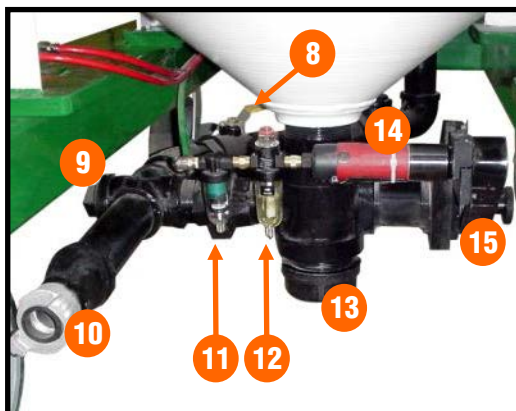
English Language is Original Instructions.

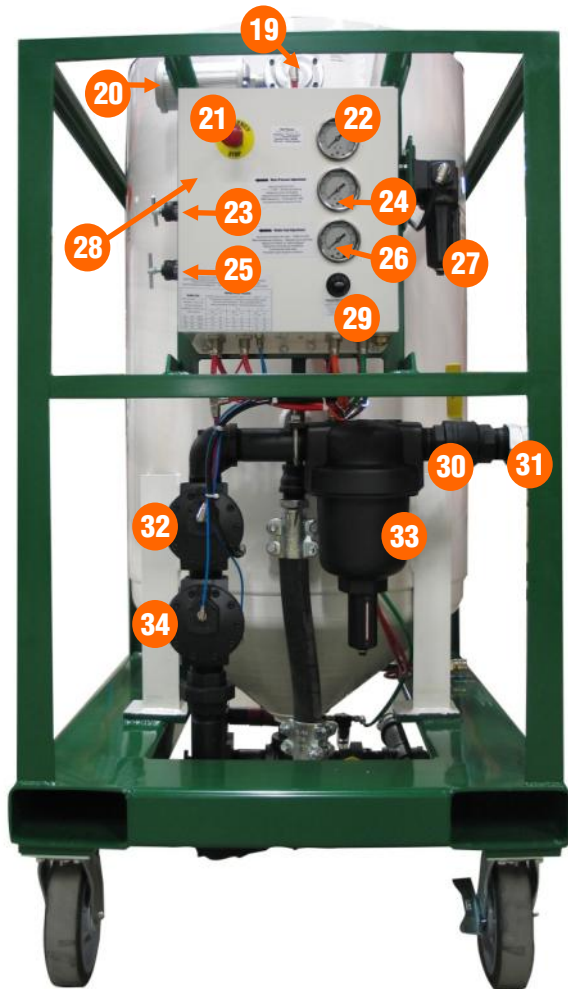
Translated from Original Instructions.

1.0 Introduction

Basic Components

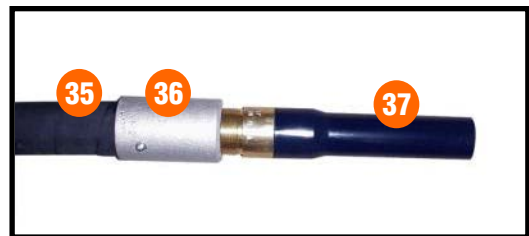
- 1: Hopper Lid (Optional)
- 2: Hopper
- 3: Lifting Eye (on some models)
- 4: Pressure Vessel
- 5: Handhole Cover
- 6: Crab Assembly
- 7: Twinline Quick Connect Fittings
- 8: Choke Valve
- 9: Auger Tunnel End Cap
- 10: Blast Hose Connection
- 11: Air Motor Moisture Separator
- 12: Air Motor Lubricator
- 13: Clean Out Trap
- 14: Air Motor
- 15: Auger Chain Guard and Manual Rotation Knob
- 16: Media Actuator
- 17: Pop-up
- 18: Actuator Tree and Chain





Basic Components *(continued)*

- 19: **Exhaust Valve**
- 20: **Exhaust Muffler**
- 21: **Emergency Stop** Button
- 22: **Line Pressure** Gauge
- 23: **Blast Pressure** Regulator Handle
- 24: **Blast Pressure** Gauge
- 25: **Media Feed Pressure** Regulator Handle
- 26: **Media Feed Pressure** Gauge
- 27: **Control Panel Moisture Separator**
- 28: **Control Panel**
- 29: **Actuation Rate Indicator** Eye
- 30: **Main Air Ball Valve**
- 31: **Supply Line Connection**
- 32: **On/Off Control Valve**
- 33: **Secondary Water Separator**
- 34: **Blast Pressure Regulator**
- 35: **Blast Hose**
- 36: **Nozzle Holder**
- 37: **Nozzle**
- 38: **Twinline**
- 39: **Deadman Handle**



2.0 Safety Checklist

- **ENSURE THE CAPACITY OF THE OVER-PRESSURE RELIEF VALVE EQUALS OR EXCEEDS THE CAPACITY OF THE COMPRESSED AIR SUPPLY.**
- **This Unit is equipped with an Emergency Stop System. Its location and usage should be understood before operation.**
- This Unit is a pressurized system. Only trained operators should adjust, maintain and repair it.
- **Inbound pressure should never exceed 8.6bar (125psi) regardless of model.**
- To prevent electrostatic buildup and possible electric discharge, the unit and work piece must be properly grounded / bonded.
- Operators and people in proximity to blasting should **always wear eye and hearing protection** with appropriate **respiratory equipment** and clothing, which may depend on the type of coating or contaminant being removed.
- **The operator and anyone within 1m (3ft) of the nozzle can be exposed to sound emission in excess of 120 dB(A)**
- **Never** point the **Blast Nozzle** towards yourself or others.
- Use of non-supported Sponge-Jet **Deadman** handles may cause unintentional start-up, unreliable shut down and can result in personal injury.
- **Never** perform maintenance or repairs when the unit is pressurized.
- **Never** operate the machine with any worn or malfunctioning component.
- **Never** weld or make modifications to the pressure vessel as this will void certifications.

Before Feed Unit Pressurization and Operation:

- Verify this Unit is secure and stable.
- All pneumatic lines should be inspected for holes, wear and proper fit.
- The **Handhole Cover** must be in place and secure prior to and during operation.
- Safety pins and restraints should be fitted at all Air Supply Hose and **Blast Hose** couplings to prevent accidental disconnection.
- Do not operate without the **Auger Chain Guard** in place.
- Before all activities (other than normal operation), ensure the entire system is depressurized.

3.0 Requirements

3.1 Air Supply / Compressor

Clean, dry compressed air must be supplied in adequate volume and pressure to accommodate the nozzle size at the desired blast pressure.

Inbound pressure is typically **8.6bar (125psi)**, **minimum 1bar (15psi)**

Note: High humidity environments require additional moisture separators.



(Metric) m³/min Requirements

Nozzle Size		4.1bar	4.8bar	5.5bar	6.2bar	6.9bar	8.3bar
No. 6 9.5mm	Nozzle	3.6	4.0	4.6	4.9	5.5	6.2
	Feed Unit	1.1	1.1	1.1	1.1	1.1	1.1
	Reserve	0.9	1.0	1.1	1.2	1.3	1.5
	Total	5.6	6.2	6.8	7.2	8.0	8.8
No. 7 11mm	Nozzle	4.8	5.5	6.1	6.8	7.2	8.5
	Feed Unit	1.1	1.1	1.1	1.1	1.1	1.1
	Reserve	1.2	1.3	1.5	1.6	1.7	1.9
	Total	7.1	7.9	8.7	9.5	10.0	11.5
No. 8 12.5mm	Nozzle	6.3	7.1	7.9	8.7	9.6	11.1
	Feed Unit	1.1	1.1	1.1	1.1	1.1	1.1
	Reserve	1.5	1.7	1.8	2.0	2.1	2.4
	Total	9.0	9.9	10.9	11.9	12.8	14.7
No. 10 15mm	Nozzle	10.1	11.4	12.8	14.3	15.5	17.3
	Feed Unit	1.1	1.1	1.1	1.1	1.1	1.1
	Reserve	2.2	2.5	2.8	3.1	3.3	3.7
	Total	13.4	15.1	16.7	18.5	20.0	22.1
No. 12 18mm	Nozzle	14.2	16.3	18.4	19.8	22.6	28.6
	Feed Unit	1.1	1.1	1.1	1.1	1.1	1.1
	Reserve	3.1	3.5	3.9	4.2	4.8	5.9
	Total	18.3	20.9	23.4	25.1	28.5	35.7

(Imperial) CFM Requirements

Nozzle Size		60psi 4.1bar	70psi 4.8bar	80psi 5.5bar	90psi 6.2bar	100psi 6.9bar	120psi 8.3bar
No. 6 9.5mm 3/8in	Nozzle	126	143	161	173	196	220
	Feed Unit	40	40	40	40	40	40
	Reserve	33	37	40	43	47	52
	Total	199	220	241	256	283	312
No. 7 11mm 7/16in	Nozzle	170	194	217	240	254	300
	Feed Unit	40	40	40	40	40	40
	Reserve	42	47	51	56	59	68
	Total	252	281	308	336	353	408
No. 8 12.5mm 1/2in	Nozzle	224	252	280	309	338	392
	Feed Unit	40	40	40	40	40	40
	Reserve	53	58	64	70	76	86
	Total	317	350	384	419	454	518
No. 10 15mm 5/8in	Nozzle	356	404	452	504	548	611
	Feed Unit	40	40	40	40	40	40
	Reserve	79	89	98	109	118	130
	Total	475	533	590	653	706	781
No. 12 18mm 3/4in	Nozzle	500	575	650	700	800	1,010
	Feed Unit	40	40	40	40	40	40
	Reserve	108	123	138	148	168	210
	Total	648	738	828	888	1,008	1,260

3.2 Air Supply Requirements

Sponge-Jet Feed Units have a 50mm (2in) standard pipe typically fitted with a 50mm (2in) universal crowfoot (4 lug) coupling. The air supply hose should be fitted with a mating connector or replace both connectors as desired.



For supply hose up to 50m (150ft) use a Minimum Air Line Internal Diameter (I.D.) as listed below. For lengths 50 to 90m (150 to 300ft) use a minimum of one diameter size greater than listed below. Larger hoses decrease pressure loss.

NOTE: Occasionally a compressor is equipped with undersized outlets. The compressor air outlet should be no smaller than the recommended Supply diameters below.

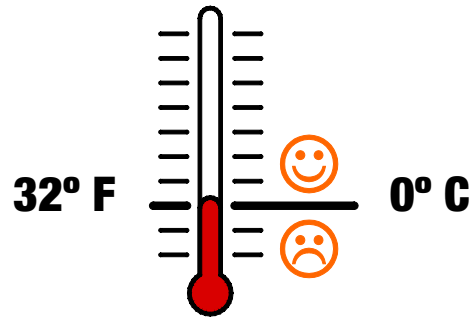
Nozzle Number/Orifice	Minimum Air Line I.D.
#6 / 9.5mm (3/8in)	38mm (1½in)
#7 / 11mm (7/16in)	50mm (2in)
#8 / 12.5mm (1/2in)	50mm (2in)
#10 / 16mm (5/8in)	64mm (2½in)
#12 / 19mm (3/4in)	76mm (3in)

3.3 Blast Hoses

Sponge Media abrasive has been successfully blasted through 90m (300ft) of **Blast Hose**. However, when choosing between long Air Supply Hose or long Blast Hoses, keep the Blast Hoses as short as practical. Below are recommended maximum lengths of Blast Hoses:

- Up to 15m (50ft) use 32mm (1.25in) I.D. Whipline connected to the machine or to a blast hose extension.
- Extensions up to 30m (100ft) must have a minimum 32mm (1.25in) I.D.
- Extensions over 30m (100ft) shall use a minimum 38mm (1.5in) I.D. Blast Hose Extension. Larger hoses decrease pressure loss.

3.4 Ambient Temperature



Ambient temperature should be above 0° Celsius (32° Fahrenheit).

Otherwise:

- a) Use winter grade pneumatic tool oil in lubricator.
- b) Minimize moisture in supply air.
- c) Ice build-up in controls or vessel may require thawing prior to restarting machine. Minimize down time that might result in freezing.

3.5 Containment

Containment is an integral part of the Sponge-Jet process, as Sponge-Jet Sponge Media is recyclable. To take advantage of this, containment must be used to capture and recycle Sponge Media.

Sponge-Jet is easily containable with light plastic sheeting or mesh. Projects involving hazardous materials, high wind load or other conditions may require more complex containment and negative air dust collection.

Pre-cleaning of the area will minimize both dust and debris which can also cause equipment malfunctions.

Always follow local, state and federal guidelines concerning proper containment, containment ventilation and monitoring procedures.

4.0 Operation

Before Feed Unit Pressurization and Operation:

- Verify the Feed Unit is secure and stable.
- All pneumatic lines should be inspected for holes, wear and proper fit.
- The **Handhole Cover** must be in place and secure prior to and during operation.
- Safety pins and restraints should be fitted at all Air Supply Hose and **Blast Hose** couplings to prevent accidental disconnection.
- Do not operate without the **Auger Chain Guard** in place.
- Before all activities (other than normal operation), ensure the entire system is depressurized.

4.1 Operation of the Feed Unit

Verify that the machine is secured in an appropriate manner for operation.

Inspect all **Blast Hose** and connections. Repair or replace worn or damaged components. Ensure all couplings are equipped with coupling gaskets, safety pins and hose restraints. Confirm all are properly installed.

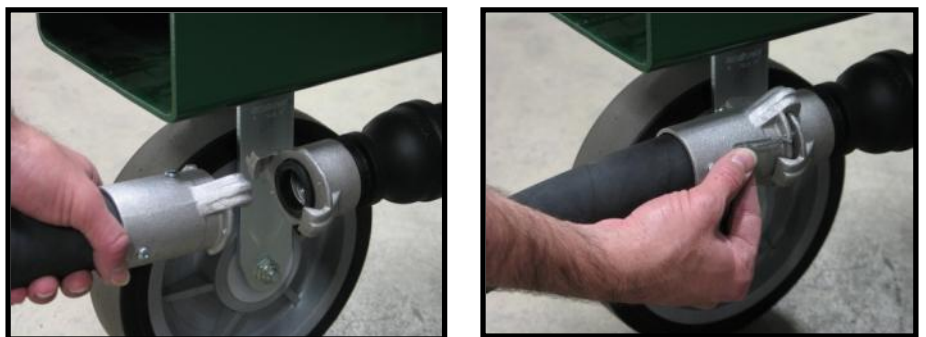
Connect compressor to **Supply Line Connection** and secure safety pins and restraints.



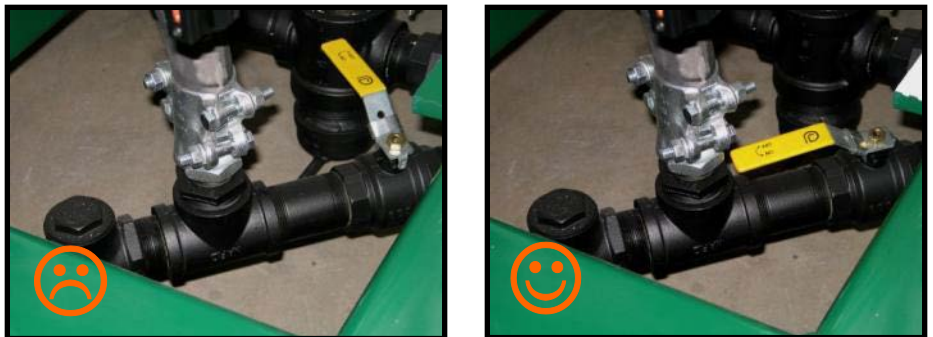
Attach **Handhole Cover** with gasket in place.



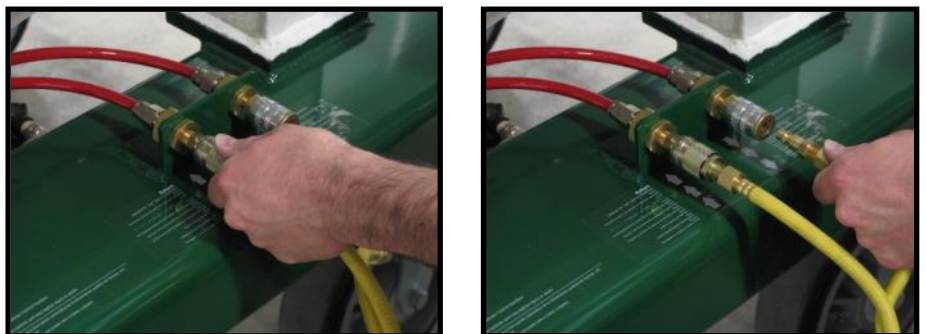
Connect **Blast Hose** and secure with safety pins.



Confirm **Choke Valve** is open.



Connect Return and Supply **Twinline Quick Connect Fittings**.



Fill Feed Unit through **Hopper**.



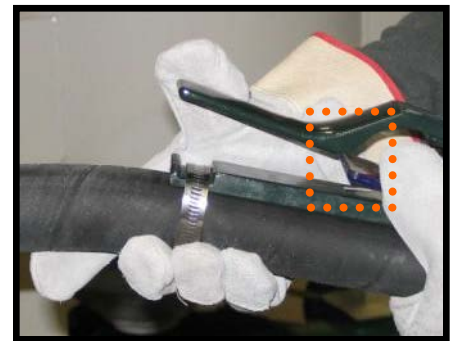
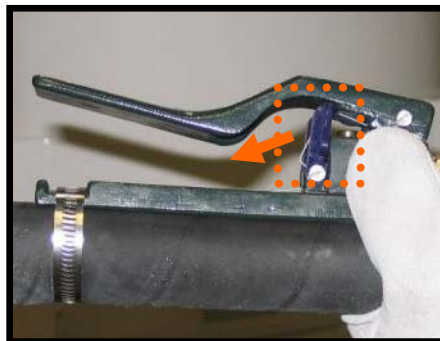
Check **Main Air Ball Valve** is in closed position then charge supply line.



Open **Main Air Ball Valve**.



To begin blasting, unlock **Deadman Handle** by depressing safety flap.



Depress **Deadman Handle** and wait 15 to 30 seconds for Sponge Media to flow.

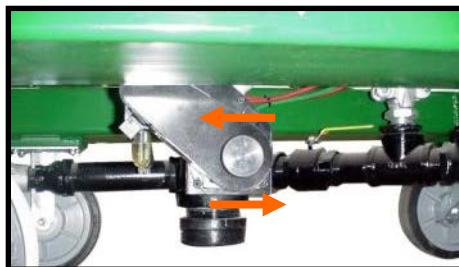


Adjust **Blast Pressure** and **Media Feed Pressure** to the desired levels.



Nozzle Size		Typical Media Feed Pressures					
		Sponge Media Recycles 1 - 3		4 - 6		7-12	
		BAR / PSI		BAR / PSI		BAR / PSI	
#7	10mm 7/16in	2.0	30	1.5	20	0.7	10
#8	12mm 1/2in	2.8	40	2.0	30	1.5	20
#10	15mm 5/8in	3.4	50	2.8	40	2.0	30
#12	18mm 3/4in	4.1	60	3.4	50	2.8	40

Confirm **Manual Rotation Knob** is rotating, air motor lubricator rate is 1-2 drops per minute and **Actuation Rate Indicator** eye is functioning - by seeing it cycle between black and green. Prepare surface to desired condition.



4.2 Shutdown of the Feed Unit

Normal shutdown during operation is by releasing **Deadman Handle**.
Alternatively the **Emergency Stop** Button may be used.

Note: During inspection, maintenance or any non-operational activity, always shut off (push in) **Emergency Stop Valve**.



Close **Main Air Ball Valve**, shut down compressor and close compressor supply line ball valve.



After compressor has completely shutdown, open **Main Air Ball Valve**.

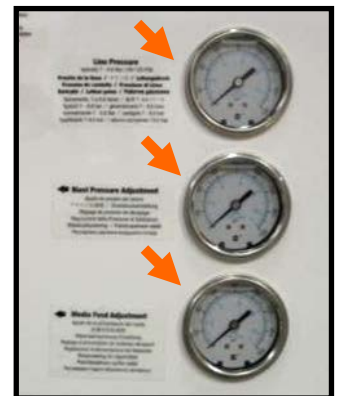


Point **Blast Nozzle** at the working substrate (away from people) and depress safety flap and then **Deadman Handle**.

Keep **Deadman Handle** depressed until all remaining air is vented.



Once all **Control Panel** gauges read “0”psi, confirm that the supply line from the compressor is depressurized.

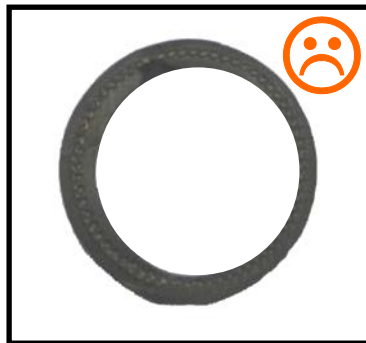


5.0 Maintenance

Routine maintenance is required to provide long and reliable equipment life. The Feed Unit must be shut down and fully depressurized prior to any maintenance.

Prior to each use:

- Inspect **Blast Nozzle** for wear.
Once nozzle throat has worn 1.5mm (1/16in) beyond its original intended diameter, it should be replaced.
- Thoroughly inspect **Blast Hose** components and connections.
Replace hose. Ensure all couplings are properly equipped with coupling gaskets, safety pins and hose restraints.



- Inspect and clean **Exhaust Muffler**. Replace when exhaust is slow.



Remove any accumulated media in **Exhaust Muffler** and reinstall.

WARNING: Do not operate equipment without **Exhaust muffler** in place.

- Confirm adequate pneumatic tool oil is present in **Air Motor Lubricator**.

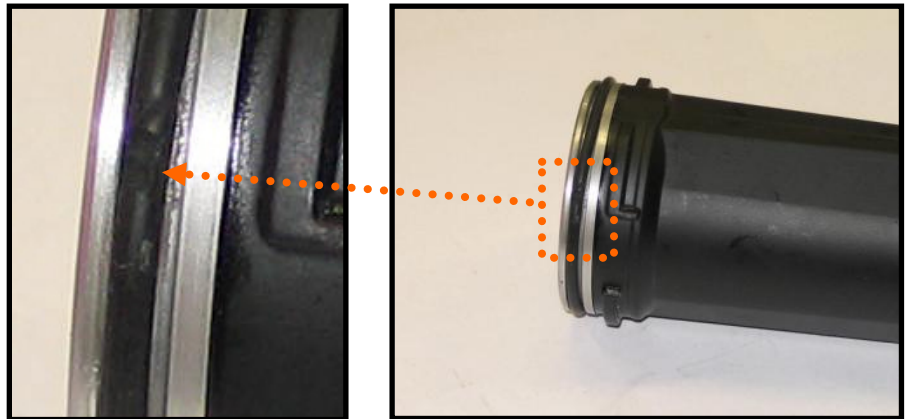


USE SAE 5W (ISO 32)
NON-DETERGENT OIL ONLY

To be performed after every 80 hours of operation:

Remove the lower, threaded portion of the **Secondary Water Separator**, **Control Panel Moisture Separator** and **Air Motor Moisture Separator** and inspect the interior and O-Ring.

Remove any contaminants; replace O-Ring if needed and reinstall.



Performed monthly (or as needed):

- Remove **Auger Chain Guard** and inspect the **Auger Drive Chain**. Apply lightweight lubricating oil as necessary then replace **Auger Chain Guard**.



6.0 Troubleshooting

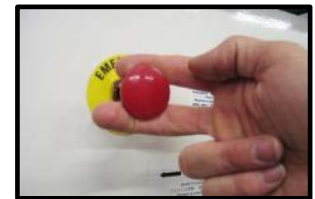
Unit does not operate when Deadman Handle is depressed



Check **Main Air Ball Valve** is open.



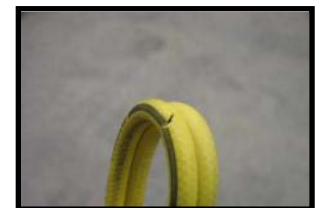
Check **Emergency Stop** Button is pulled out.



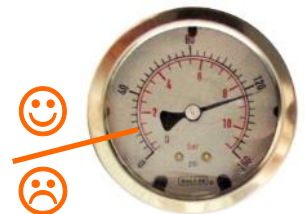
Check **Twinline Quick Connect Fittings** are connected and secure.



Check for damage to **Twinline**.



Check **Line Pressure** is above 1bar(15psi) when **Deadman** is depressed.



Unit does not operate when Deadman Handle is depressed
(Continued)

Remove red air line from **Exhaust Valve**; hold it securely, then depress **Deadman Handle**.



IF no air is felt exiting red air line, trace air flow operation through **Twinline** and **Deadman Handle** checking for obstructions or leaks.



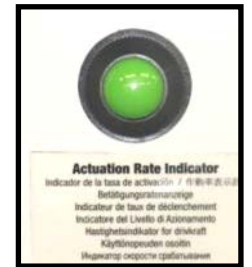
IF air is felt exiting red air line, place thumb on opening of red air line and depress **Deadman Handle**.



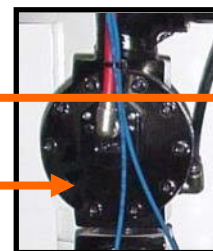
IF unit starts (air exits nozzle) depressurize unit and replace **Exhaust Valve Diaphragm**.



IF unit does not start, with thumb still blocking red air line, check **Actuation Rate Indicator** Eye is cycling.



IF cycling, troubleshoot, repair or replace **Blast Pressure Regulator**.



IF not cycling, replace **On/Off Control Valve**.



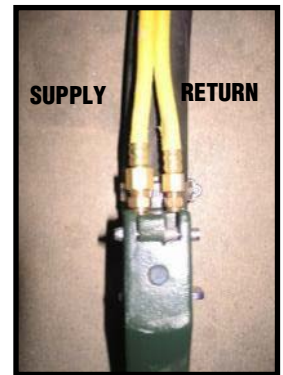
Air will not stop exiting nozzle when Deadman Handle is released

Push **Emergency Stop** Button (in).



If unit stops, likely problems are:

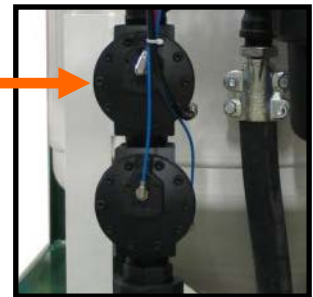
1. Incorrect **Deadman**. Replace with **Sponge-Jet Deadman**.
2. **Twinline** air lines from unit to **Deadman** have been reversed.



3. **Deadman** is broken; replace with **Sponge-Jet Deadman**.

If Unit does not stop, likely problems are:

1. **On/Off Control Valve** is malfunctioning.



2. **Exhaust Valve Diaphragm** is damaged.



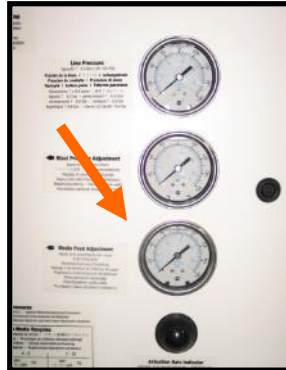
Air Motor sticks during startup; becomes sluggish at lower Media Pressures

Check **Air Motor Lubricator** oil level and oil lubrication rate.



Auger will not begin rotating

Confirm **Media Feed Pressure** Gauge reads consistently with “Typical Media Feed Pressure” chart on **Control Panel**



Turn **Manual Rotation Knob** Regulator Handle clockwise to start the rotation.

If excessive force is required, clear obstruction (see next section).



Auger stops rotating during normal operation

1. Release **Deadman Handle** and depressurize unit.



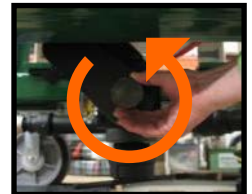
2. Close **Main Air Ball Valve**.



3. Depress **Emergency Stop** Button.



4. Remove **Clean Out Trap**; rotate **Manual Rotation Knob** clockwise and counter-clockwise until obstruction falls out. **Auger** should move smoothly. Replace **Clean Out Trap**.



5. If obstruction cannot be cleared:

a. Remove **Auger Chain Guard and Chain**.

b. Remove four screws, pull **Auger** from shaft and remove obstruction.



c. Reassemble **Auger**; test for smooth rotation.

d. Re-install **Auger Chain Guard and Chain**.

Air flow through nozzle suddenly stops

1. Do not restart. Depress **Emergency Stop** Button immediately. Depressurize unit and close **Main Air Ball Valve**.



2. Remove **Blast Nozzle** from **Blast Hose**; inspect for and remove obstructions.



3. Disconnect all **Blast Hose** connections; inspect for and remove obstructions.
4. Remove **Auger Tunnel End Cap**; check for and remove obstructions. Replace **Auger Tunnel End Cap**.



5. If obstruction was from Sponge Media, turn **Media Feed Pressure** to 0bar(0psi). Check **Choke Valve** is in full open position; or parallel to pipe. Resume blasting. When stream of air without Sponge Media is achieved, slowly return **Media Feed Pressure** Gauge to desired pressure.



Too much Sponge Media exits Nozzle or is pulsing

1. Check **Choke Valve** is in full open position; or parallel to pipe.
2. Check **Media Feed Pressure** Gauge below 3.4bar (50psi). Resume Blasting.



Blast Pressure increases and decreases continuously or Unit exhausts intermittently while blasting

1. Check for damage to **Twinline** and for air leaks at all fittings and connections. Repair, replace or tighten as necessary.



2. Remove **Exhaust Valve Cover**, inspect for and remove obstructions. Check **Exhaust Diaphragm** for rips or small holes. Clean or replace as necessary.



Air flows through Nozzle without Sponge Media while Auger is rotating

After depressing **Deadman**, Sponge Media flow through **Nozzle** can take up to ±15 seconds with normal hose length. Stabilized Sponge Media flow can take up to ±4 minutes.

1. Check for adequate Sponge Media amount in **Pressure Vessel**.
2. Check **Actuation Rate Indicator** Eye is cycling between black and green every few seconds while machine is pressurized and **Deadman Handle** is depressed.

If Actuation Rate Indicator Eye is cycling, depressurize unit, open **Handhole Cover** and check **Media Actuator** and **Actuator Tree and Chain** are attached. Reconnect if necessary and look for obstruction in bottom of **Pressure Vessel**.

If Actuation Rate Indicator Eye is not cycling, enter **Diagnostic Mode**.

Diagnostic Mode:

1. Turn **Blast Pressure** Regulator Handle “off” by rotating until it removes from **Control Panel**.
2. Turn **Media Feed Pressure** Regulator Handle “off” by rotating until it removes from **Control Panel**.
3. Remove **Handhole Cover** and Sponge Media so **Actuator Tree and Chain** are visible.
4. Depress **Deadman Handle**
5. **Actuator Tree and Chain** should be alternating <90° every 2-4 second - depending on initial setting.



If Actuator Tree and Chain are cycling, then **Actuation Rate Indicator** Eye may need replacement – but should not effect overall operation.

Shut off unit and inspect for obstructions in the bottom of Pressure Vessel and pipe feeding **Auger**.



If Actuator Tree and Chain are not cycling, then...

Remove top orange output airline on **Desiccant Filter**, depress **Deadman Handle**; check top of **Desiccant Filter** for continuous airflow.



Air flows through Nozzle without Sponge Media while Auger is rotating
(Continued)

If no airflow is felt from the top of **Desiccant Filter**, replace **Desiccant Filter** matching airline positions prior to removal. It is necessary to switch airline fittings from old filter to new. Re-check top of **Desiccant Filter** for continuous airflow.

Check cycling of **Actuation Rate Indicator** Eye and for light pulse of air exiting **Timer**. Confirm **Timer** is set to 2.



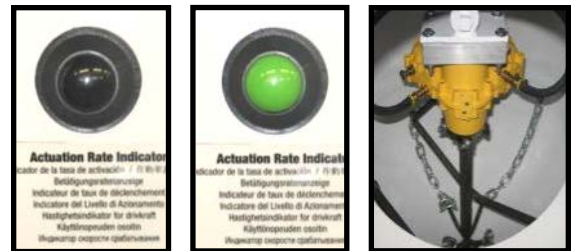
If Actuation Rate Indicator Eye and Timer test successfully, resume blasting.

If no light pulse of air is exiting top of Timer, then...

Remove two nuts from **Timer** base, then remove screws from **Timer** face; replace the **Timer**, matching airline positions prior to removal.



Confirm proper motion of **Actuation Indicator** Eye and **Actuator Tree Assembly**.



EC Declaration of Conformity

We Of:

Sponge Jet Inc.
14 Patterson Lane,
Newington, N.H. 03801
Telephone Inquiries to: 1-603-610-7950
Email: sjadmin@spongejet.com



Hereby declare that:

Equipment: Sponge-Jet Feed Unit Vessel
Model: 400-HP-CE
Serial Number: XXXX
Year of construction: XXXX

Is in conformity with the applicable requirements of the following standard documents

The Directives covered by this Declaration:

European Pressure Vessels Directive: (PED) 97/23/EC
Machinery Directive: 2006/42/EC (Formerly 98/37/EC)


The PED Directive 97/23/EC Standards:

EN-288 - (Approval of Welding Procedure)

The Machinery Directive 2006/42/EC Standards:

EN-792-10:2000+A1:2008 - (Hand Held Non-Electric Power Tools)
EN ISO 14121-1-2007 - (Safety of Machinery—Risk Assessment)

I hereby declare that the equipment named above has been designed to comply
With the relevant sections of the above referenced specifications. The unit complies
With all applicable Essential Requirements of the Directives.

Signed: 
Name: Michael T Merritt
Position: President
On This Date: XX/XX/XXXX

Authorised Representative:

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