Petersen
Products Company

PeteStop™ Inflatable Line Stop, Pipe Plugging System

128 Series

Instruction Manual

Petersen Pipe Plugs

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1. Important Safety Instructions

WARNING

Pressure forces are involved in many Inflatable Line Stop situations that may cause injury or even death. Focus and care is required to ensure the safe use of any Inflatable Line Stop, as pressure forces increase as pressure and pipe diameter increase.

- All pipe plugs shall be restrained adequately in accordance with design of the PeteStop™ Inflatable Line Stop system.
- Debris or protrusions into the pipeline may damage a seal or reduce the pressure rating.
- Do not exceed the pressures on the plug label.
- Petersen Products recommends inflatable devices shall not be used as the primary isolation or protection point for personnel downstream.
- Due to project variability, these general instructions must be adapted by a competent professional for each specific project. Instructions and training must be provided to all PeteStop™ Inflatable Line Stop users and workers on the job.

Personal Safety

CAUTION

Keep all personnel out of the plug end area.

- PPC recommends adequate Personal Protective Equipment (PPE) to be used per operator policy and procedure.
- PPC recommends the operator determine if the area is considered a Confined Space and to refer to Occupational Safety and Health Administration (OSHA) (29CFR 1910.146), Safe Confined Space Entry. Follow all federal, local and site specific codes, standards and regulations.

Piping Review and Assessment for ILS Selection

CAUTION

Polyethylene (HDPE) or new pipelines with remains of grease or agents directly decrease the efficiency and holding strength of the PeteStop™ Inflatable Line Stop.

- Thoroughly inspect the PeteStop™ Inflatable Line Stop, before each use. Refer to Section 12.0.
- PPC recommends to never inflate an inflatable plug, outside of a pipe, above 5 PSI or 5% of rated inflated pressure, whichever is less.
- Verify air line connections and hoses are not damaged or leaking.
- Use two calibrated pressure gauges for measuring the pipeline operating pressure.
- Pressure should be equal on both sides of plug during installation and removal.
- Use two calibrated pressure gauges for monitoring the inflation pressure.

Call Petersen with any questions or suggestions relating to the use of any Petersen product.

2. Pre-Work Inspection

SAFETY

Ensure that all project information and data is accurate. If assumptions are made, please specify and whenever there is doubt contact Petersen Products engineering for application and product technical assistance.

Understand your completeness of application data is paramount to project safety.

It is important to understand what your requirements are and how to deploy the ILS safely. There are many configurations to choose from based on your application. The piping configuration should also be reviewed to ensure pressure or flow differentials are not created or have means to mitigate (e.g. leak downstream of isolation point).

Operator Fill out this Section	
☐ Pipe Size / Wall Thickness / Material / Internal Coating	
☐ Design Pressure / Temperature / Flow Rate	
☐ Operating Pressure / Temperature / Flow Rate	
☐ Product / Service/ Medium	
☐ Plug Inflation Medium	
☐ Piping Design Code	
☐ Duration of Line Stop	
☐ Purpose of Line Stop	
☐ ISO or Piping Drawing Provided	
☐ Obstructions at Isolation Location	
☐ Fitting Type / Requirements / Orientation / Piggable	
☐ Flange Type / Rating	
☐ Fitting Location (Above / Below Ground)	
☐ Service Valve Bore	
☐ Service Fitting Bore	
☐ xpected Inflation Source	
☐ Expected Hot Tap Hole Size	

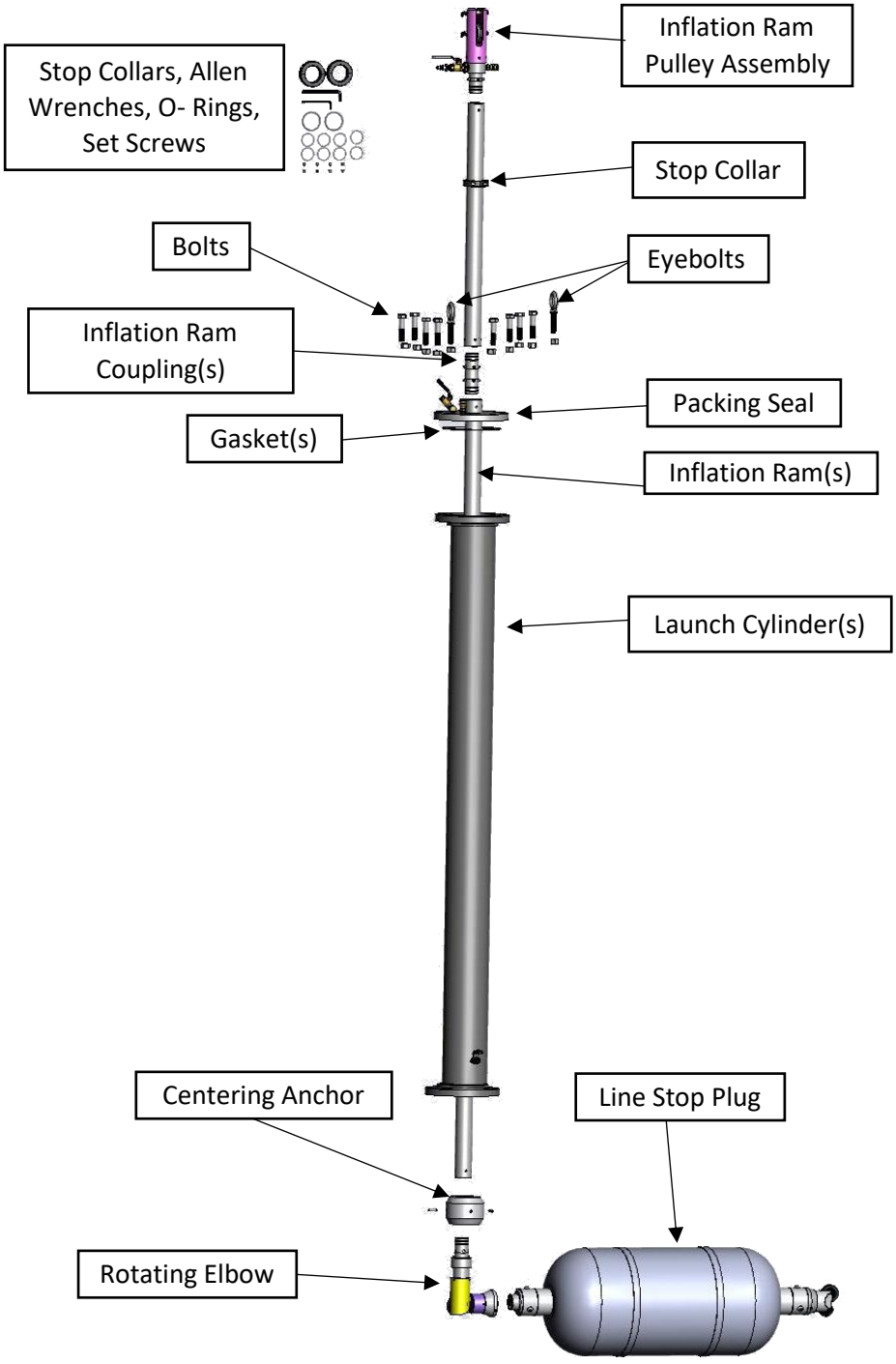
Verify the Yellow Warning Tag attached is the correct plug.

Front of Tag

Back of yellow tag

3. Compare Order Confirmation to Packing List

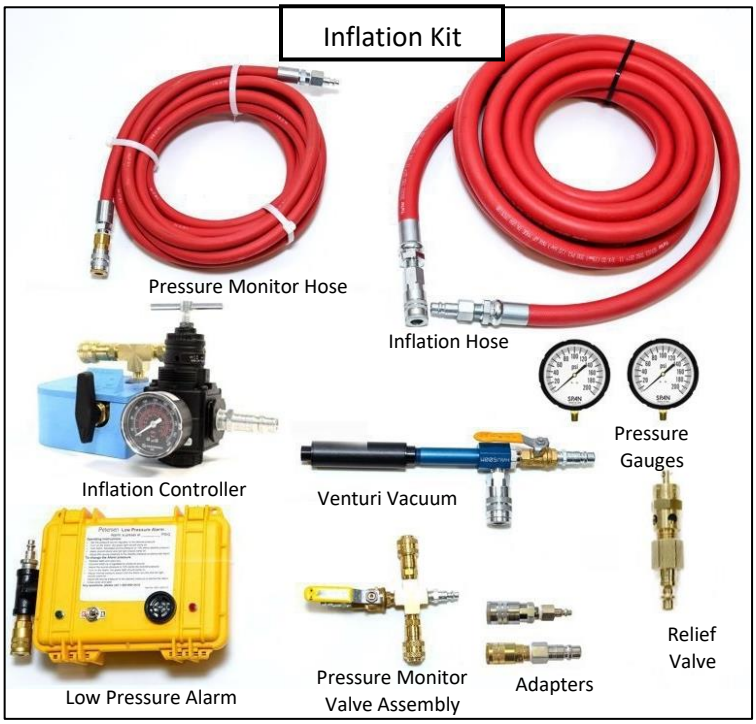
Verify the Line Stop Plug and Launch System components are complete.



Note: Petersen recommends inspecting the line stop plugs after every use. Covers can be damaged when inserting into a hot tap. Often line stop plugs can be refurbished and recertified by Petersen Products to like-new condition or set interval to match quality standards.
Contact Petersen to confirm the suitability of the line stop plug if needed.

Additional Accessories (depending on application)

Inflation Kit



Water/Air Inflation Controller Pump

Retraction Assembly

Strong Back

Hot Tap Sleeve

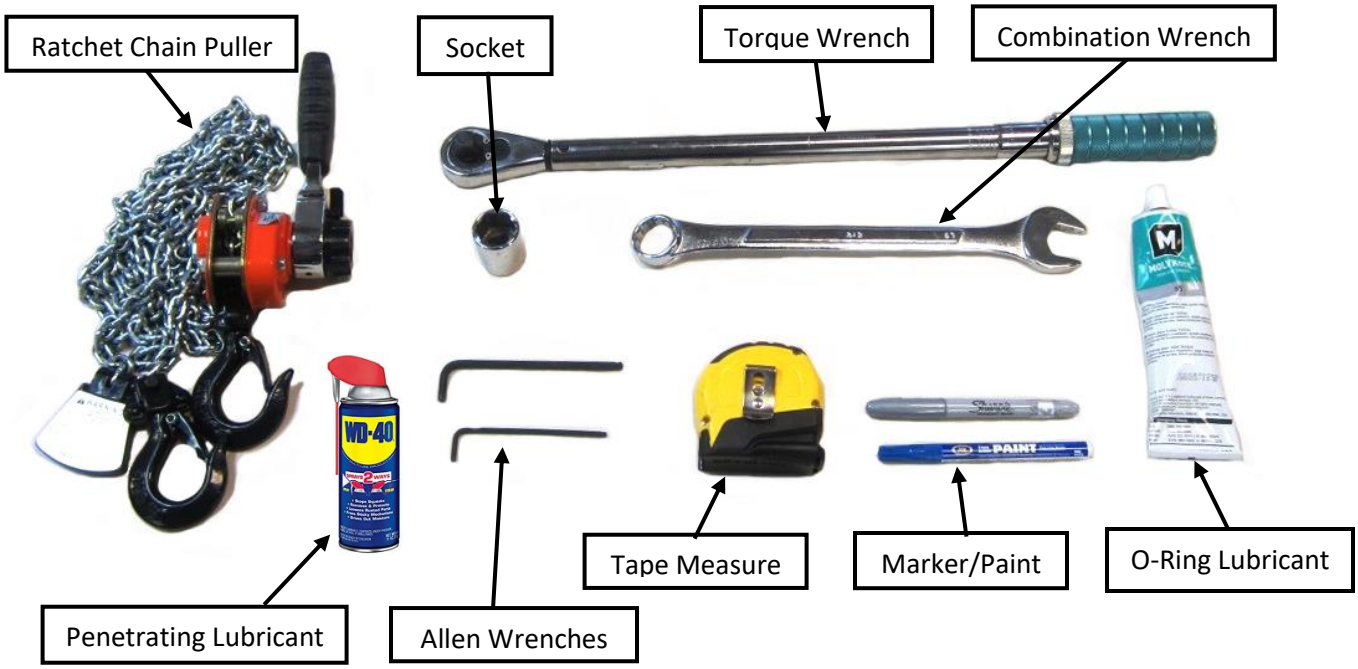
Completion Plug

Retraction Post Base

Hot Tapper System

Line Stop Tool List

The Petersen Hot Tap Insertion System may be used on almost any size pipeline or system and therefore may require a variety of tools to match. This list is intended to assist in determining which tools to prepare for a job but is **not** a replacement for the judgement of an experienced contractor. Different jobs may require specific tools above and beyond what is listed.



Tool List

☐	Ratchet Chain Puller	For inserting and securing plug and for retraction with retraction kit.
☐	Marker or Paint Stick	For marking on steel, fabric, or painted surfaces.
☐	Tape Measure	To set insertion depth on Inflation Ram or Bundling Sleeve strap lengths.
☐	O-Ring Lubricant	Inflation Ram and Packing Seal O-Rings.
☐	Allen Wrench 1/8"	Set screws for 1 inch and 1-7/8-inch diameter Inflation Ram.
☐	Allen Wrench 3/32"	Set Screws for 1-1/2-inch Inflation Ram.
☐	Allen Wrench 3/16"	Set screws for 2-1/2-inch Inflation Ram, 1-inch stop collar, centering guides.
☐	Allen Wrench 1/4"	Stop Collar for 1-7/8-inch Diameter Inflation Ram.
☐	Allen Wrench 5/16"	Stop Collar for 2-1/2-inch Inflation Ram.
☐	Combination Wrench	Attaching NPT Launch Cylinder and Packing Seal.
☐	Pipe Thread Sealant	Attaching NPT Launch Cylinder and Packing Seal.
☐	Penetrating Lubricant	Lubricate ram sections when sliding on packing seal

Flanged Launch Cylinder

☐	Torque Wrench & Socket	Match the values listed in the table below for the launch cylinder.
☐	Combination Wrench	For reaction force against Torque Wrench (match socket size).

Torque Figures

Note: Sequence the torque in a star pattern. Complete the pattern three times 30%, 70%, 100% to the sequence.

4-BOLTS

8-BOLTS

Torque Figures						
	Class 150 Flanges			Class 300 Flanges		
Size	Bolt	Wrench	Torque	Bolt	Wrench	Torque
3	5/8"	15/16"	110 lbf * ft			
4	5/8"	15/16"	110 lbf * ft			
5	3/4"	1-1/8"	195 lbf * ft			
6	3/4"	1-1/8"	195 lbf * ft	3/4"	1-1/8"	195 lbf * ft
8	3/4"	1-1/8"	195 lbf * ft	7/8"	1-5/16"	310 lbf * ft
10	7/8"	1-5/16"	310 lbf * ft	1"	1-1/2"	465 lbf * ft
12	7/8"	1-5/16"	310 lbf * ft	1-1/8"	1-11/16"	685 lbf * ft
14	1"	1-1/2"	465 lbf * ft.	1-1/8"	1-11/16"	685 lbf * ft
16	1"	1-1/2"	465 lbf * ft	1-1/4"	1-7/8"	960 lbf * ft
18	1-1/8"	1-11/16"	605 lbf * ft			
20	1-1/8"	1-11/16"	605 lbf * ft			
24	1-1/4"	1-7/8"	960 lbf * ft			
30	1-1/4"	1-7/8"	960 lbf * ft			
*Per ASTM torque standard: Torque = Force * Length*						

12-BOLTS

16-BOLTS

WARNING

Immediately before every use re-torque the attachment of the inflation ram to the plug. It is essential to wait 15 minutes between each torque sequence to allow the bolts to stretch and settle with the fabric before applying next torque application.

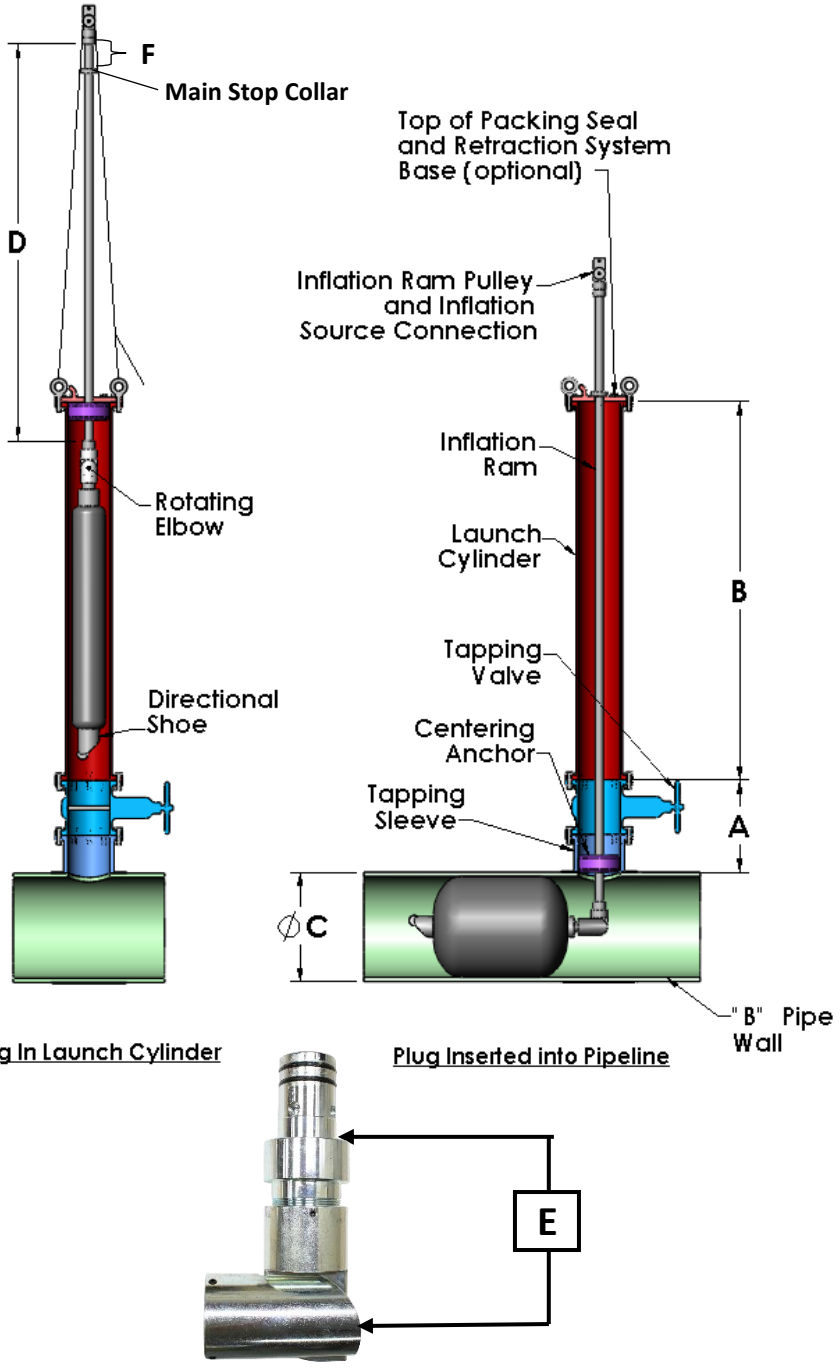
20-BOLTS

24-BOLTS

4. IMPORTANT – Reference Chart

Measurements MUST be made PRIOR to installing plug in Launch Cylinder

A = Distance from the Top of the Valve Gasket to the Top of the Pipe	
B = Distance from the Base of Launch Cylinder to the Top of Packing Seal (Top of Retraction Base, if used)	
C = Pipe OD divided by 2	
D = Total Length of Inflation Ram(s)	
E = Measure the length of the Rotating Elbow to the centerline of the pivot when positioned at a 90 degree angle.	
F = D – (A + B + C – E)	



PeteStop™ ILS system Configurator https://ilsconfigurator.petersenproducts.com/Home/129 will assist in the overall project.

In the field, the IOM and the Measurement card will be closer to tolerance.

All dimensions are assumed field measured with a tape measure an accuracy of +/- 1/32" up to 12 ft. and over 12 ft. +/- 1/16".

Contact PPC with any questions or suggestions relating to the use of any Petersen product.

5. Calculating the Head Pressure

Calculate the required head pressure to confirm effective and safe plugging. Follow these guidelines to calculate the head pressure:

1. F = P * S (2) F = force on the plug, P = pipeline pressure, S = cross-sectional area
    - Force F on the plug is the plug slipping force.
    - Pressure P measured as water column height must be converted to a force over area format for the equation above.
2. The cross-sectional area S is determined by:
    - $S = \pi r 2$
    - Where $\pi = 3.14159$ and r (radius) = ½ the pipe inside diameter.
3. **Example:** Water column 10 m (32.8 ft) high, converts to a back pressure of 98.0 kPa (14.5 psi).
4. The configuration or liquid surface area does not affect pressure, only elevation. The pressure is multiplied by the pipe/plug diameter to arrive at the plug slipping force.
    - Pressures exerted on a plug are the same for liquid, water, or air.
    - 68.9 kPa (10 psi) of water = 98.9 kPa (10 psi) air
    - Pressures from gases (e.g., air, nitrogen) are compressible and more dangerous than water.
    - Gas will expand to its original atmospheric volume upon release. Discharging a slipping plug will have much greater force.

6. Setup and Tapping the Pipe

1. Install line sleeve or saddle and tapping valve (aka service valve) on pipe, according to the manufacturer's instructions.
2. Position the sleeve/saddle so that when the plug is inserted it will not be damaged by the sharp edges.
3. Use a fitting as required for each application taking into account jurisdictional service requirements.

NOTE: *128 series standard configuration is typically launched with sleeve/saddle perpendicular to the line.*
Caution shall be taken when launch equipment is not in standard configuration,
Call engineering about non-standard configurations and their customization

7. Attaching the Rotating Elbow Assembly to the Plug

The Rotating Elbow Assembly is available with Thread and Set Screw type connections for the Inflation Ram Adapter.

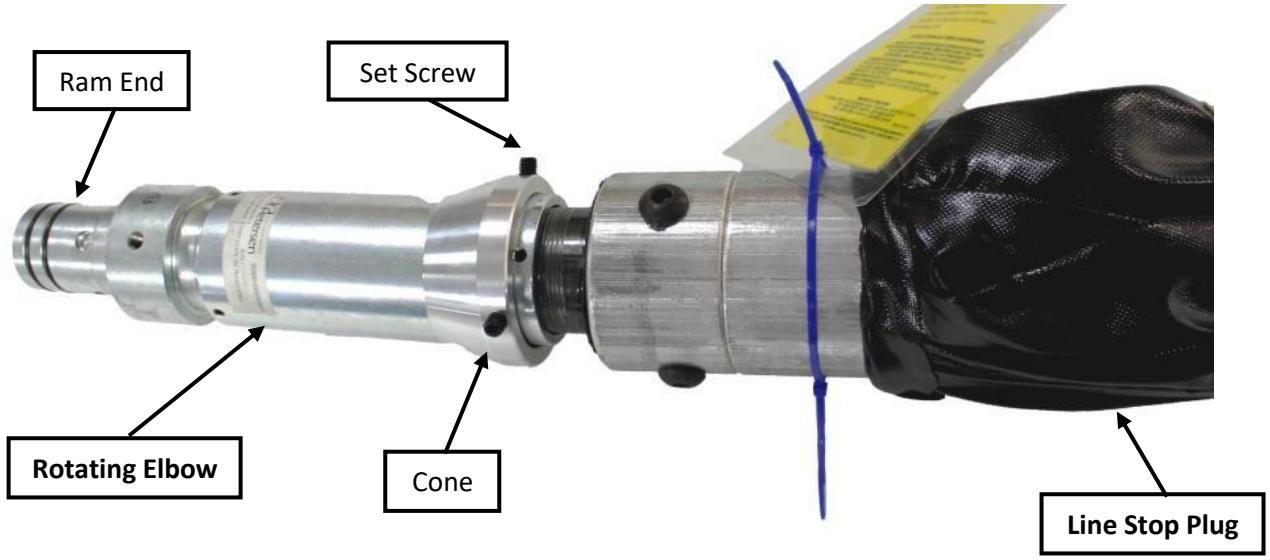
1. Inspect the O-Rings for any possible physical damage. Petersen recommends ordering extra O-Rings.
2. Use the Allen Wrench to loosen the Set Screws on the Cone.
3. Apply O-Ring lubricant to the Ram End on the Rotating Elbow Assembly.

4. Remove the End Cap and apply Head Sealant to the threads on the end of the Line Stop Plug.

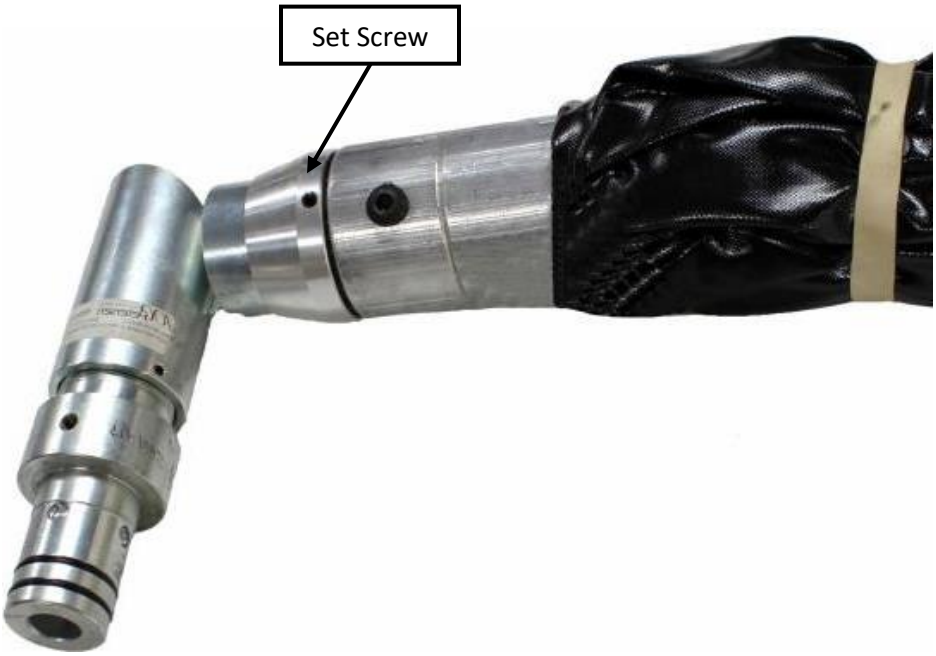
5. Connect the Rotating Elbow to the Line Stop Plug. Tighten 1-½ to 2-½ turns past HAND tight. Verify that the Rotating Elbow is oriented to bend in the same direction as the directional shoe.

6. Tighten the Set Screws on the Rotating Elbow to secure in position on the Line Stop Plug.

7. The bend of the Rotating Elbow should follow the natural curve of the Line Stop Plug. **NOTE**: The elbow direction should match the large diameter wheel on the Directional Shoe when entering the pipeline.



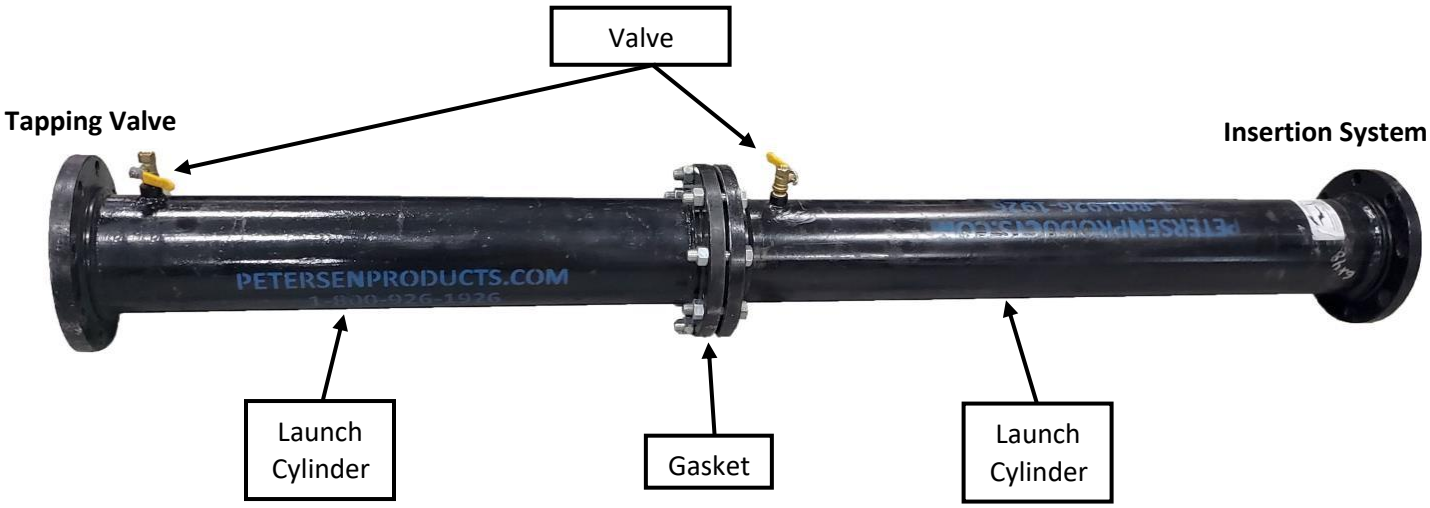
8. Slide the Cone over the Line Stop Plug. Use the Allen Wrench to tighten the Set Screws. Remove and store the tag in a safe space.



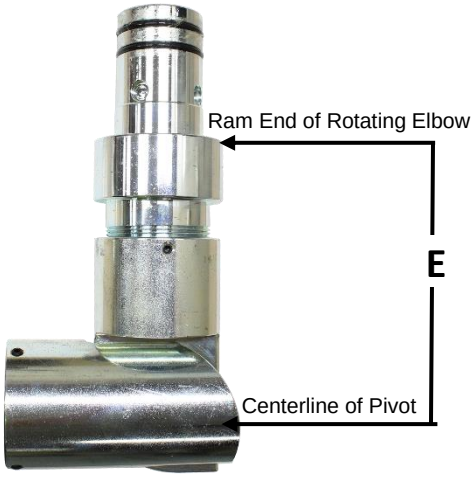
Screw Size	Torque
#10	30 in·lb
1/4″	76 in·lb
3/8″	276 in·lb

8. Assembling the Launch Cylinders

1. Replace the Gasket each time the Launch Cylinders are assembled.
2. Verify that the Valves are oriented at the bottom for draining process fluid when the job is complete.
3. Close each Valve.
4. Insert the Gasket between the Flanges of each Launch Cylinder.
5. Bolt each Launch Cylinder section together. Use a star pattern for balanced torque. Complete the pattern three times 30%, 70%, 100% to the torqueing sequence. See Torque Figures on page 8.



9. Measuring the Assembly



E measurement

1. Measure from the Ram End of the Rotating Elbow to the centerline of the pivot when positioned at a 90 degree angle.

   E = Ram Insertion End to Centerline Pivot of Rotating Elbow

2. **A = Top of Pipe to Top of Valve Gasket**

C = Pipe OD divided by 2

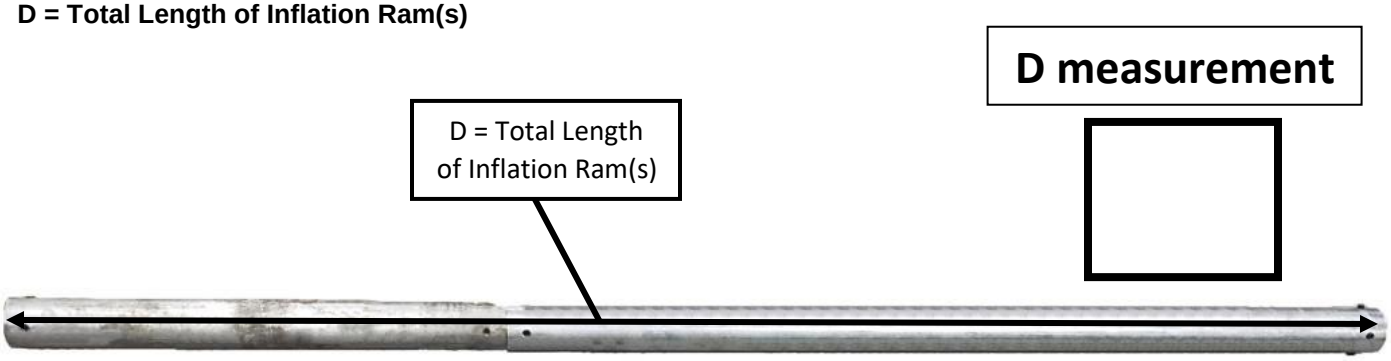
A measurement

C measurement

3. Measure the length of the fully assembled Inflation Ram section(s). Fit the sections together if needed.

D = Total Length of Inflation Ram(s)

D measurement



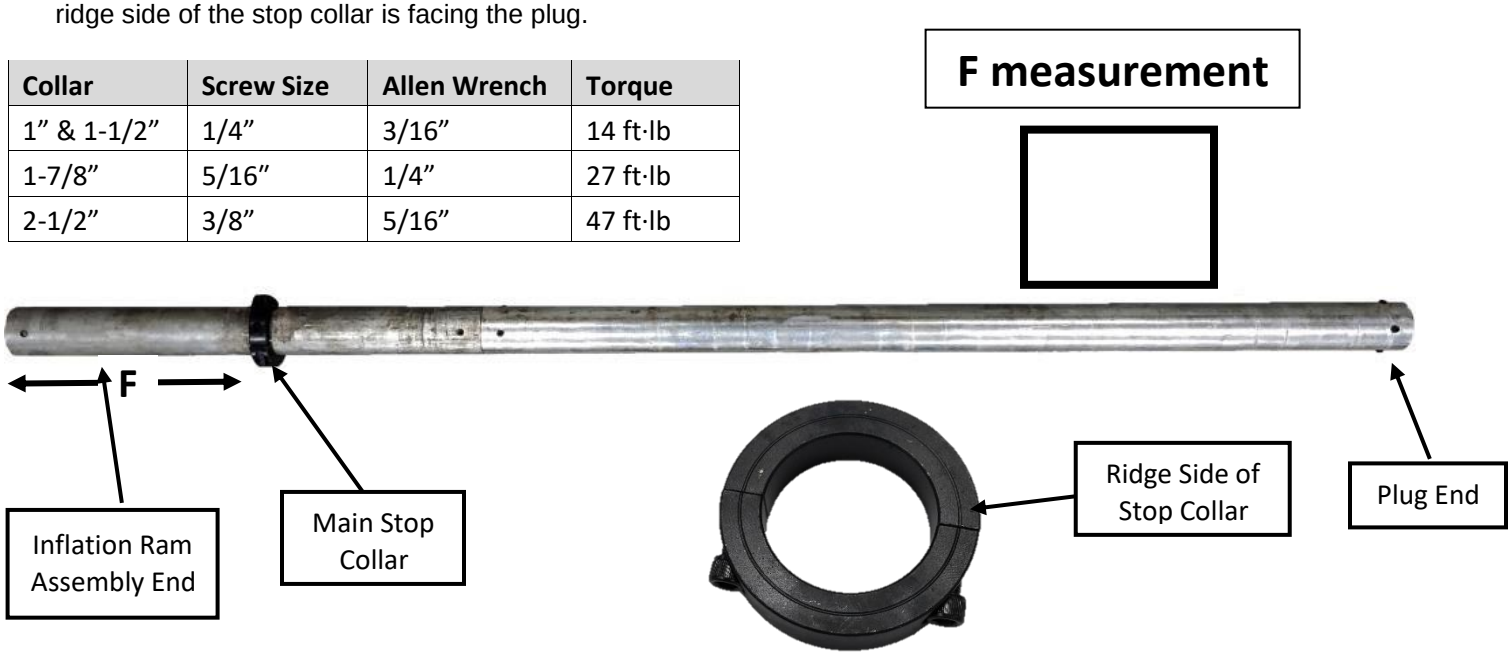
4. Measure the length of the Launch Cylinders, the width of the Packing Seal, Gasket, and the thickness of the Ram Removal Plate (if the Retraction System is used) to determine **B**.

B measurement

10. Attaching the Main Stop Collar

1. **D – (A + B + C – E) = F**
2. Attach the Main Stop Collar at F. Tighten the Socket Head Cap Screws to secure the Main Stop Collar in place. Be sure the ridge side of the stop collar is facing the plug.

Collar	Screw Size	Allen Wrench	Torque
1” & 1-1/2”	1/4”	3/16”	14 ft·lb
1-7/8”	5/16”	1/4”	27 ft·lb
2-1/2”	3/8”	5/16”	47 ft·lb

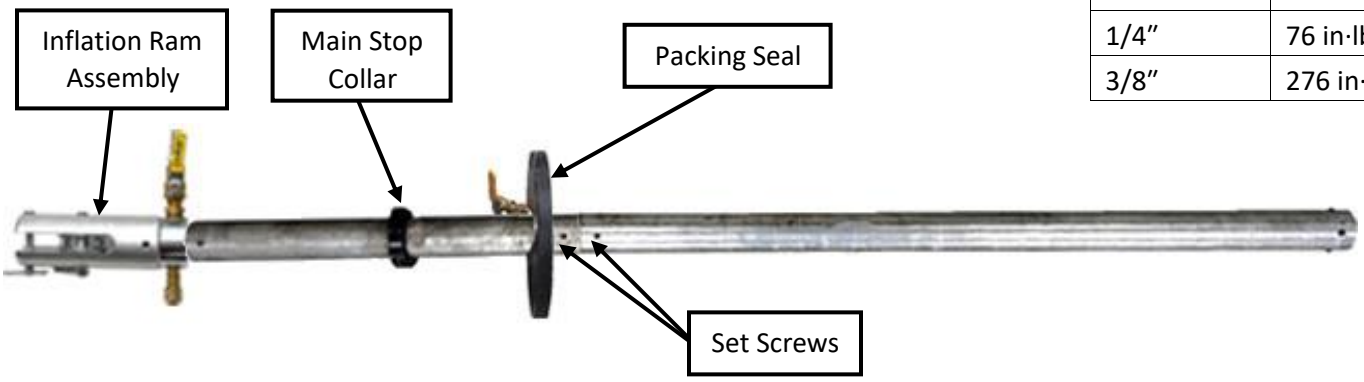


11. Assembling the Insertion System

3.1 Height Clearance NO Issue

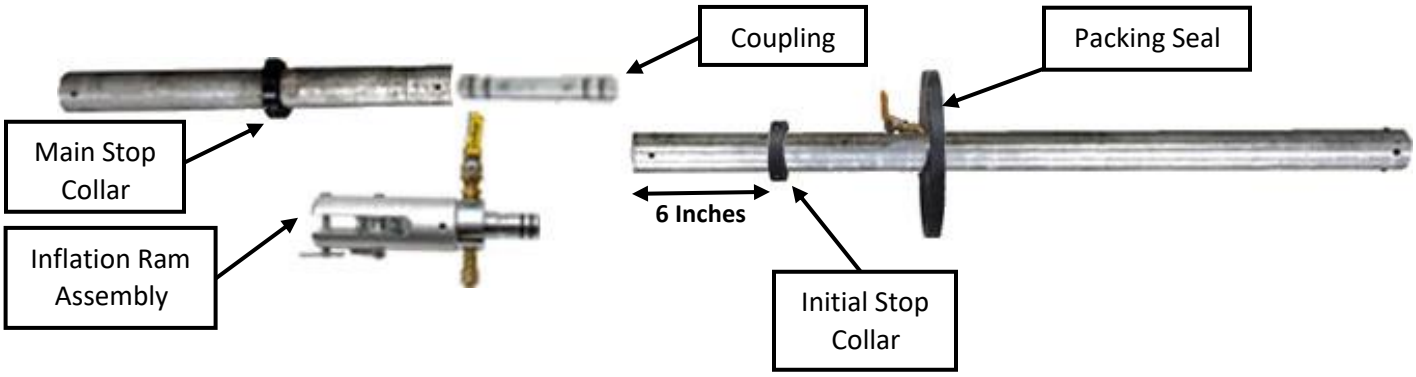
1. Apply O-Ring lubricant to O-rings on the Inflation Ram Couplings. Connect each ram section together.
2. Fully assemble Inflation Ram, tightening Set Screws to secure each Ram section to the Inflation Ram Couplings.
3. Attach Packing Seal (apply O-Ring lubricant if necessary). Insert Inflation Ram Assembly (to end near Main Stop Collar) tightening with Set Screws. Go to Step 4.

Screw Size	Torque
#10	30 in·lb
1/4”	76 in·lb
3/8”	276 in·lb

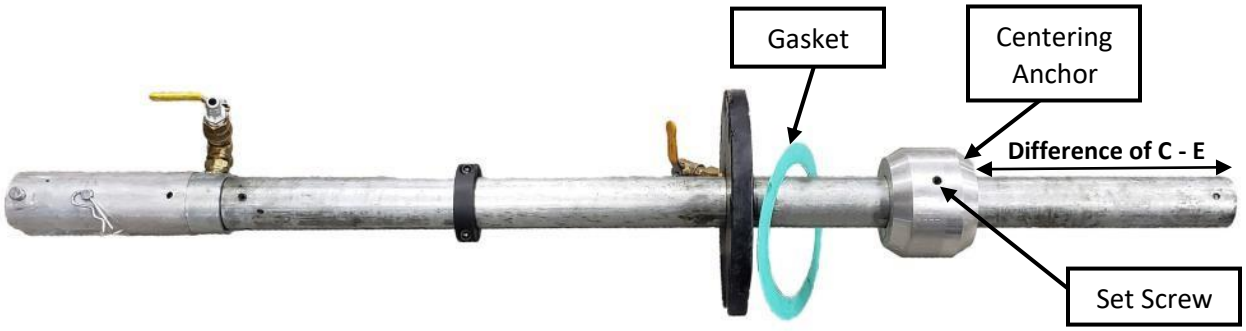


3.2 Height Clearance is an Issue

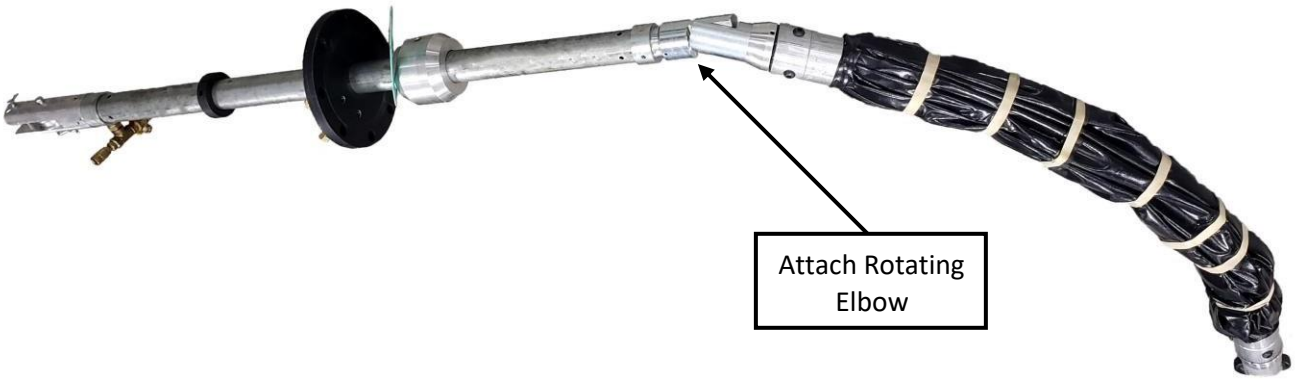
1. Separate the Inflation Ram section with the Main Stop Collar from the rest of the Inflation Ram.
2. Remove as many Inflation Ram sections as required to fit within the available working space.
3. Attach the Packing Seal and Inflation Ram Assembly to the remaining section of the Inflation Ram, which will be the bottom Ram.
4. Attach an Initial Stop Collar approximately 6” below the Inflation Ram Assembly, but above the Packing Seal. **Note:** Apply O-Ring lubricant to the Packing Seal if needed.



4. Slide a Gasket and the Centering Anchor on the Ram below the Packing Seal. C measurement – E measurement is the distance from the end of the Ram where you position the Centering Anchor. Tighten the set screws.



5. Apply O-Ring lubricant to the O-Rings on the Rotating Elbow Assembly. Attach the Rotating Elbow to the end of the Inflation Ram. Tighten the Set Screws to secure the Inflation Ram to the Rotating Elbow.



12. Attaching the Insertion System

1. Use a Marker or Paint Stick on the Inflation Ram to mark the orientation of the Rotating Elbow and Plug. The Orientation Line should align with the curvature of the Plug and direction of insertion. Use the mark as a guide when lowering the Plug into the Pipe.

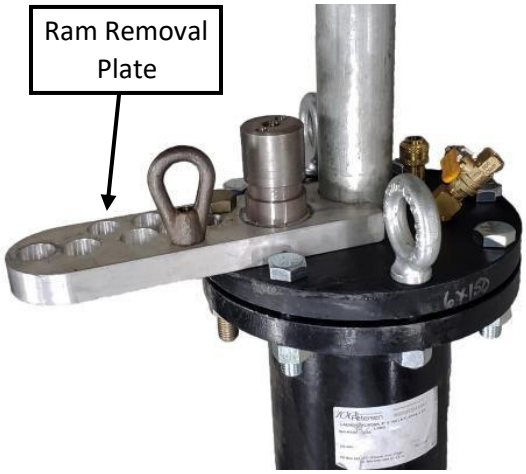
   Note: Use the Orientation Line and measurements to verify where the Plug inserts in the center of the Pipe.

2. Insert the Plug and the Inflation Ram into the Launch Cylinder. Hand-tighten the bolts to secure the Packing Seal to the Launch Cylinder.

   Note: The rubber bands must remain on the Line Stop Plug for effective insertion.

3. Add the Eyebolts to the Packing Seal, positioned 180° apart. Orient the Eybolts so that they are parallel, not perpendicular. See image on Page 16 if needed.

4. If using the Retraction System, attach the Ram Removal Plate to the Packing Seal. Hand-tighten the bolt to secure the Ram Removal Plate to the Packing Seal.



5. Tighten each bolt. Use a star pattern for balanced torque. Complete the pattern three times 30%, 70%, 100% to the torqueing sequence.

   Note: See Torque Figures on Page 9.

6. Pull the Line Stop Plug into the Launch Cylinder so that no part extends past the end of the Launch Cylinder. Attach a temporary Stop Collar to the Inflation Ram flush with the top of the Packing Seal to secure the Line Stop Plug in position.

7. If installing vertically, connect the hoist end to the Eyebolts on the Packing Seal. If installing horizontally, wrap slings around the Launch Cylinder.

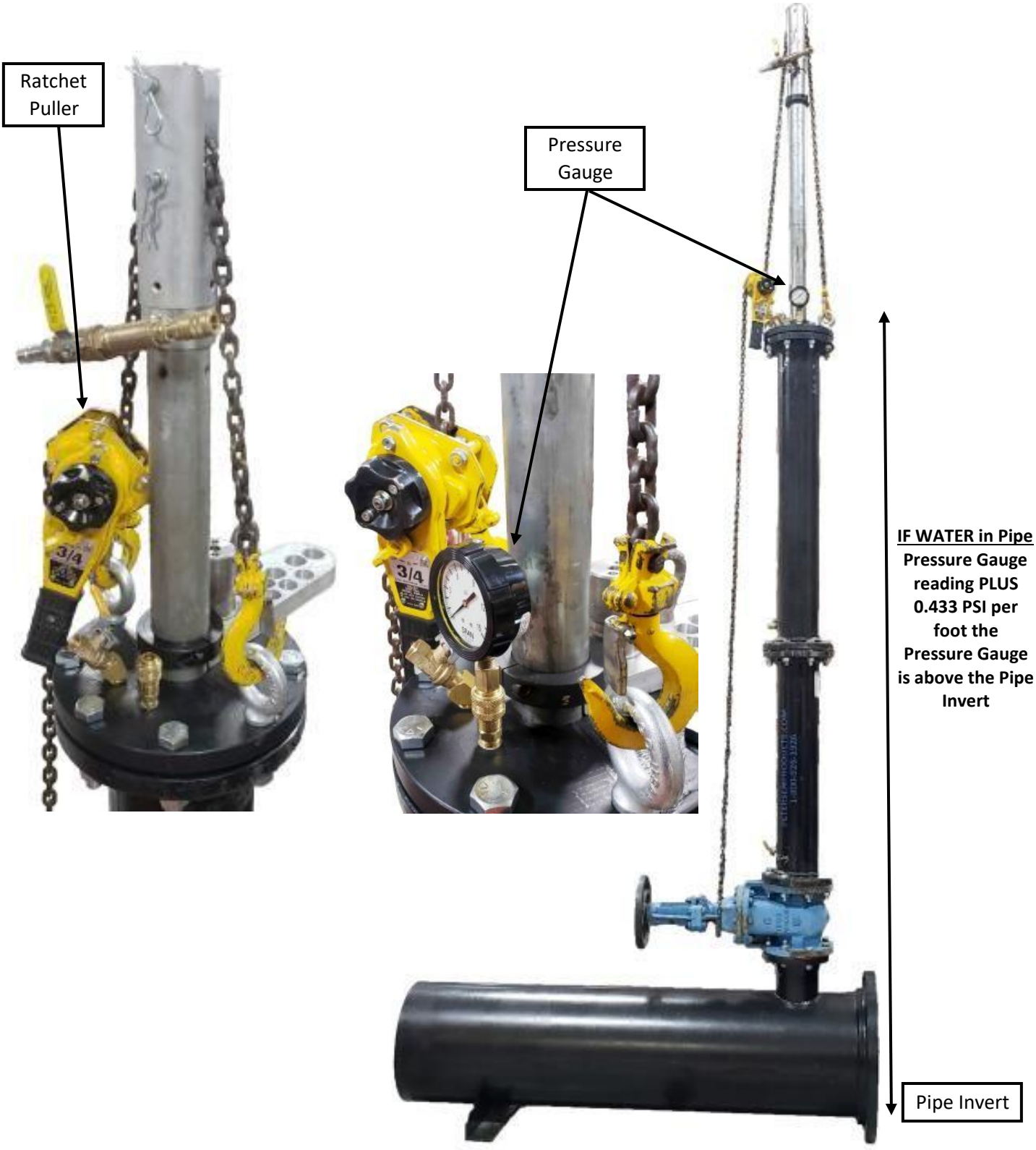
8. Use a hoist to lift the Launch Cylinder assembly onto the flange of the Tapping Valve. Install a gasket in between the Tapping Valve and the Launch Cylinder.

9. Verify that the Inflation Ram Assembly, Launch Cylinders, and Line Stop Plug are aligned with the direction of the plug insertion. Verify each valve on each Launch Cylinder is closed.

10. Tighten the bolts to secure the Assembly in place. Use a star pattern for balanced torque. Complete the pattern three times 30%, 70%, 100% to the torqueing sequence. See Torque Figures on Page 9.

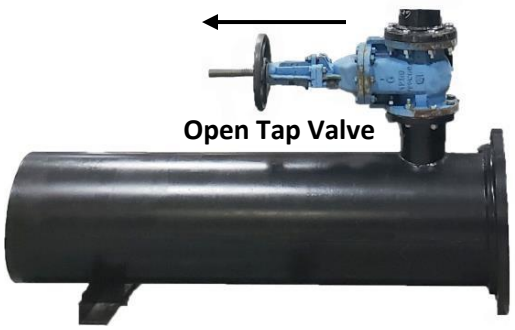
11. Attach the ratchet puller. Loop the chain over the Inflation Ram. Connect each end to the Eyebolts.

12. Insert Pressure Gauge into the quick connect port on the Packing Seal to monitor the head pressure.



13. Inserting the Plug

1. Open the Tapping Valve and allow pressure equalization in the Launch Cylinder (if necessary, carefully open the purge valve on the Launch Cylinder).



2. Inspect the Head Pressure on the Gauge on the Packing Seal. If the Pipeline is filled with water, add 0.433 psi per foot the Gauge is above the Pipeline invert (see previous page). Fix any possible leaks. Verify that the pipeline operating pressure is less than half the plug rated inflation pressure.
3. Remove the Temporary Stop Collar. **CAUTION: If there is LITTLE TO NO PRESSURE, the inflation ram MAY FALL once the temporary stop collar is removed. It is recommended to secure the ram during this operation.**
4. Lower the Inflation Ram and Plug into the pipe. If necessary, use the Ratchet Assembly.

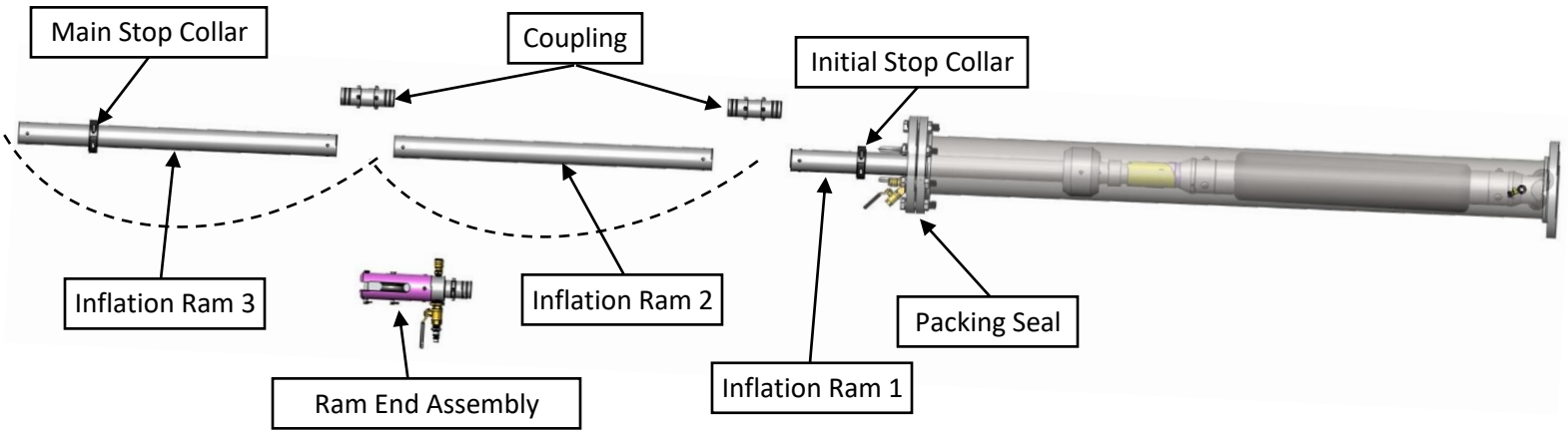
5.1 Inflation Ram Sections in One Piece

- If the Inflation Ram Sections are all in one piece, lower the Ram until the Main Stop Collar makes contact with the Packing Seal. Use O-Ring lubricant if needed. Skip to Step 6. **Note:** Maintain correct plug orientation during insertion.

5.2 Inflation Ram in Sections

- If the Inflation Ram is in sections, lower the Inflation Ram until the Initial stop collar reaches the Packing Seal or Retraction Post Base. Note: Maintain correct plug orientation during insertion.
- Remove the Ram End Assembly. Install the remaining ram section(s) with a temporary stop collar, installing the Inflation Ram with the Main Stop Collar last. Tighten the Set Screws to secure the Ram sections together. Loosen the Set Screws and remove the Initial Stop Collar. Slowly lower the Plug. Maintain correct orientation. Use the Mark on the Inflation Ram to confirm correct orientation.
- Lower the inflation Ram until the Main Stop Collar reaches the Packing Seal. Use O-Ring lubricant if needed.

6. Anchor the plug in place with the Ratchet Puller.



14. Inflation of the Plug

Determine Inflation Medium – Air, Nitrogen, Water, Grout or other

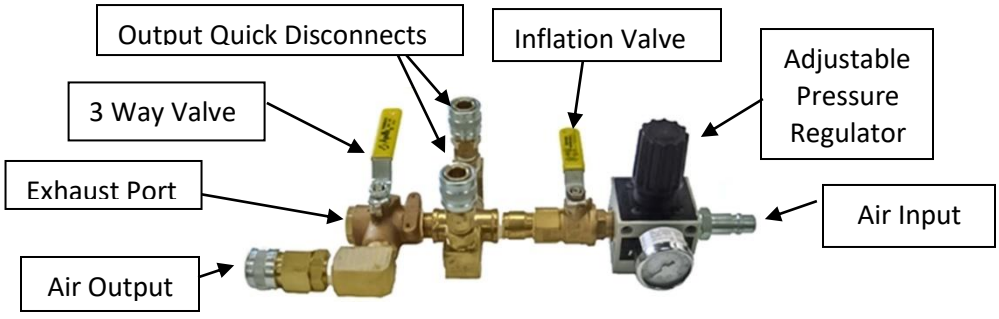
1. What is the Application?
2. What pressure is required to fill the plug and what source will this come from?
3. Will water, or other fluid be used to fill the plug, and approved by client?
4. If the plug were to burst, can the fluid come in contact with pipeline service?
5. High Pressure plugs are, by standard, water filled and pressurized with air or nitrogen.
6. Medium used is also determined by size of inflatable, pressure, temperature, service.

USE Water when:

- ☐ High Pressure (fill with water until full then top off with air or nitrogen to reach desired pressure)
- ☐ Pipes larger than 12” – water is recommended
- ☐ Pipe more than half full of liquid
- ☐ Pipe less than half full of liquid (fill with air to take shape then fill with water).

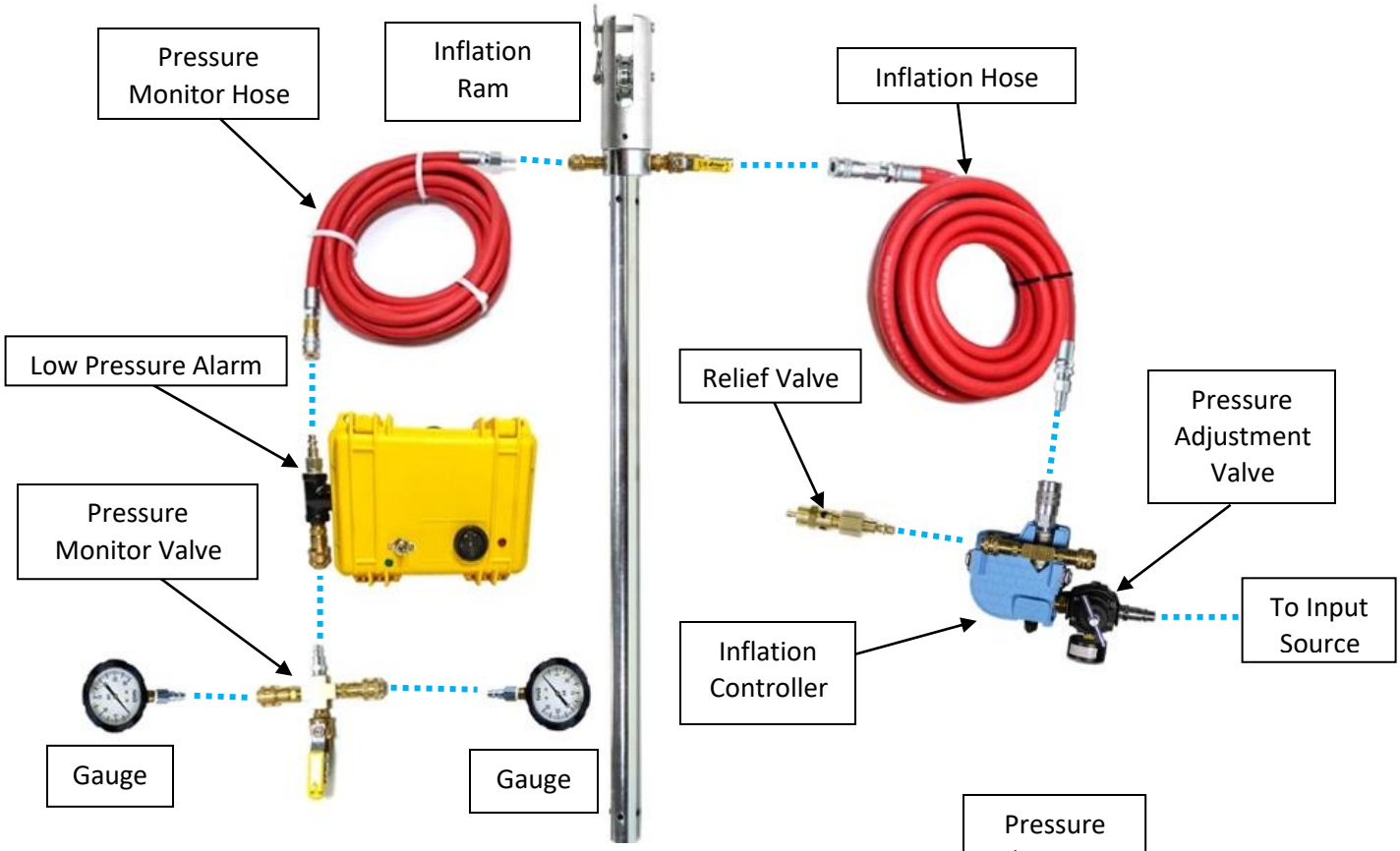
Air/Water Inflation Kit

			
Pressure Relief Valve	**Low Pressure Alarm**	**Inflation Hose**	**Pressure Monitor Hose**
			
Pressure Monitor Valve Assembly	**Inflation Controller**	**Venturi Vacuum**	**Pressure Gauges**



Previous Inflation Controller

1. Assemble the Inflation Kit. See Steps A-H for assembly.

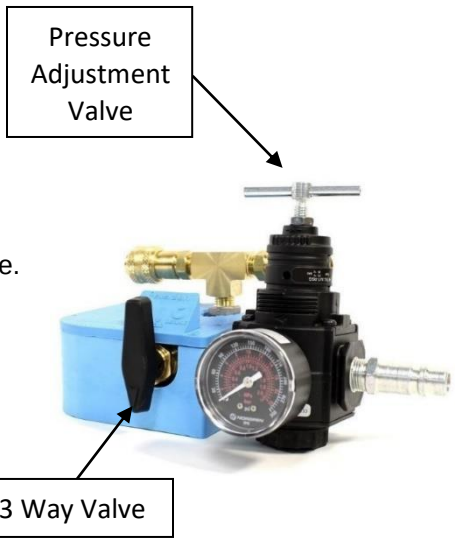


Pressure Monitor Hose Side

- **A)** Connect the Pressure Monitor Hose to Inflation Ram Assembly.
- **B)** Connect Pressure Monitor Hose to the Low Pressure Alarm.
- **C)** Connect Pressure Monitoring Valve Assembly to Low Pressure Alarm
- **D)** Attach Gauges to the Pressure Monitoring Valve Assembly and close valve.

Inflation Hose Side

- **E)** Connect Inflation Hose to the Inflation Ram Assembly.
- **F)** Connect the Inflation Hose to the Inflation Controller.
- **G)** Connect the Relief Valve to the Inflation Controller.
- **H)** Connect the Inflation Source Line to the Inflation Controller Input.



2. If using a Low Pressure Alarm, set the alarm to 10% below desired pressure.
3. Adjust the pressure using the Pressure Adjustment Valve (Clockwise to inflate, counter clockwise to deflate) on the Inflation Controller. Do not over inflate the plug. **CAUTION: Maintain pressure at 2X the pipeline pressure, but less than maximum rated plug pressure.**
4. Inflate the Plug. Monitor pressure with the Gauges on the Pressure Monitor Valve Assembly as it generally takes 10-20 minutes for the plug to stabilize (time will vary due to temperature, size, pipe conditions, medium, etc.).
5. Once inflated, turn on the Low Pressure Alarm to warn you of a drop in pressure.

15. Plug Deflation for Inflated Plugs

Air or Gas

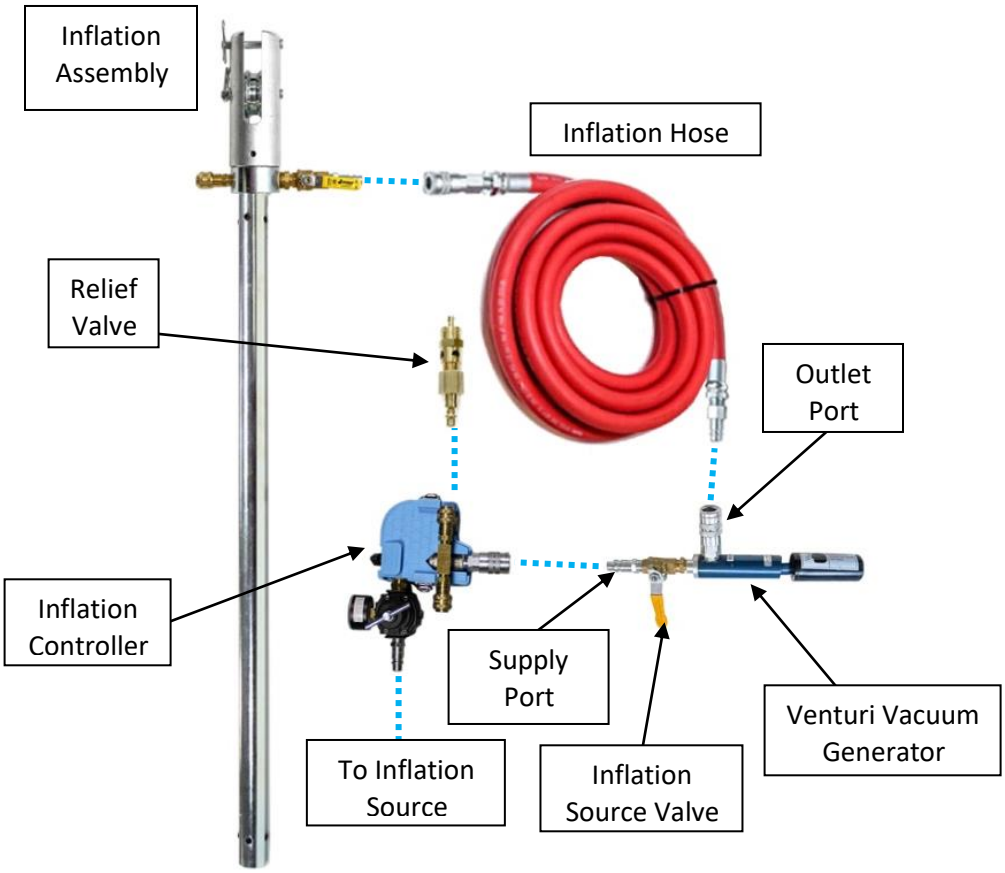
1. Equalize the pressure on both sides of the plug by opening the valve on the pressure monitor assembly.
2. Disconnect the Inflation Hose.

CAUTION

You can damage the plug if it is not fully deflated before removing from pipe.

Deflating with the Venturi Vacuum Generator

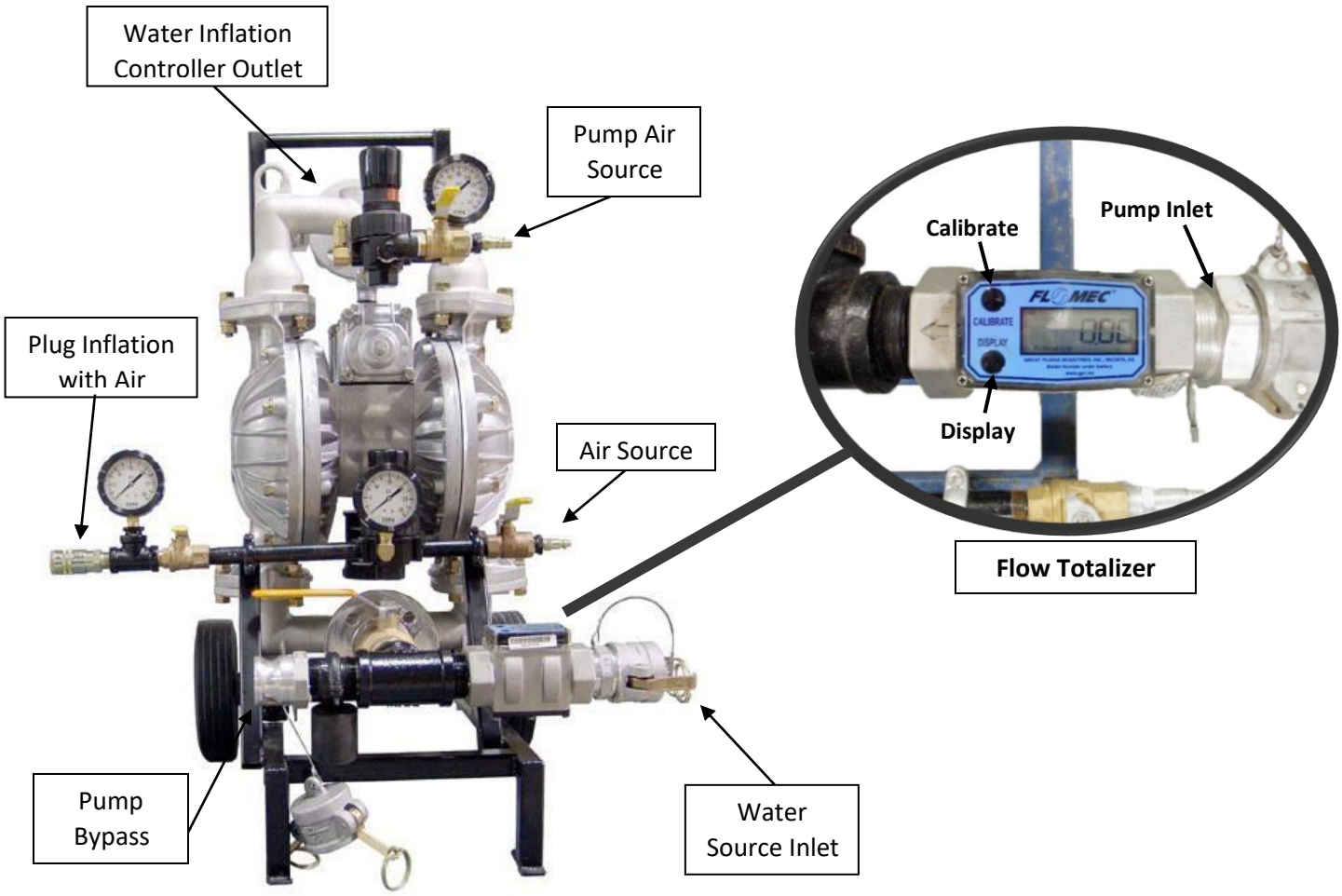
1. Connect the Inflation Hose to the Venturi Outlet Port Coupler.
2. Close Inflation Source Valve.
3. Connect the Supply Port Input on the Venturi Vacuum Generator to the Outlet Valve on the Inflation Controller.
4. Increase pressure to the Venturi Vacuum Generator. Do not exceed 100 psi.
5. Open the Inflation Source Valve.
6. You will hear an audible change in sound when the vacuum pressure increases, indicating the inflatable device is fully deflated.



Go to Step 17.

16. Water Inflation Controller

The 1.5” Port Pump is rated for 100 gpm max flow and 100 psi max air source. If more pressure is needed for plug, top off with Nitrogen or Air.

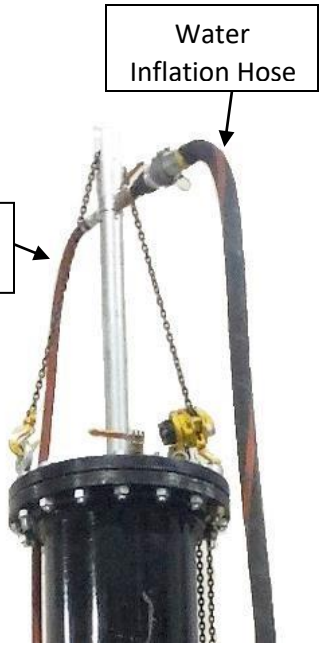


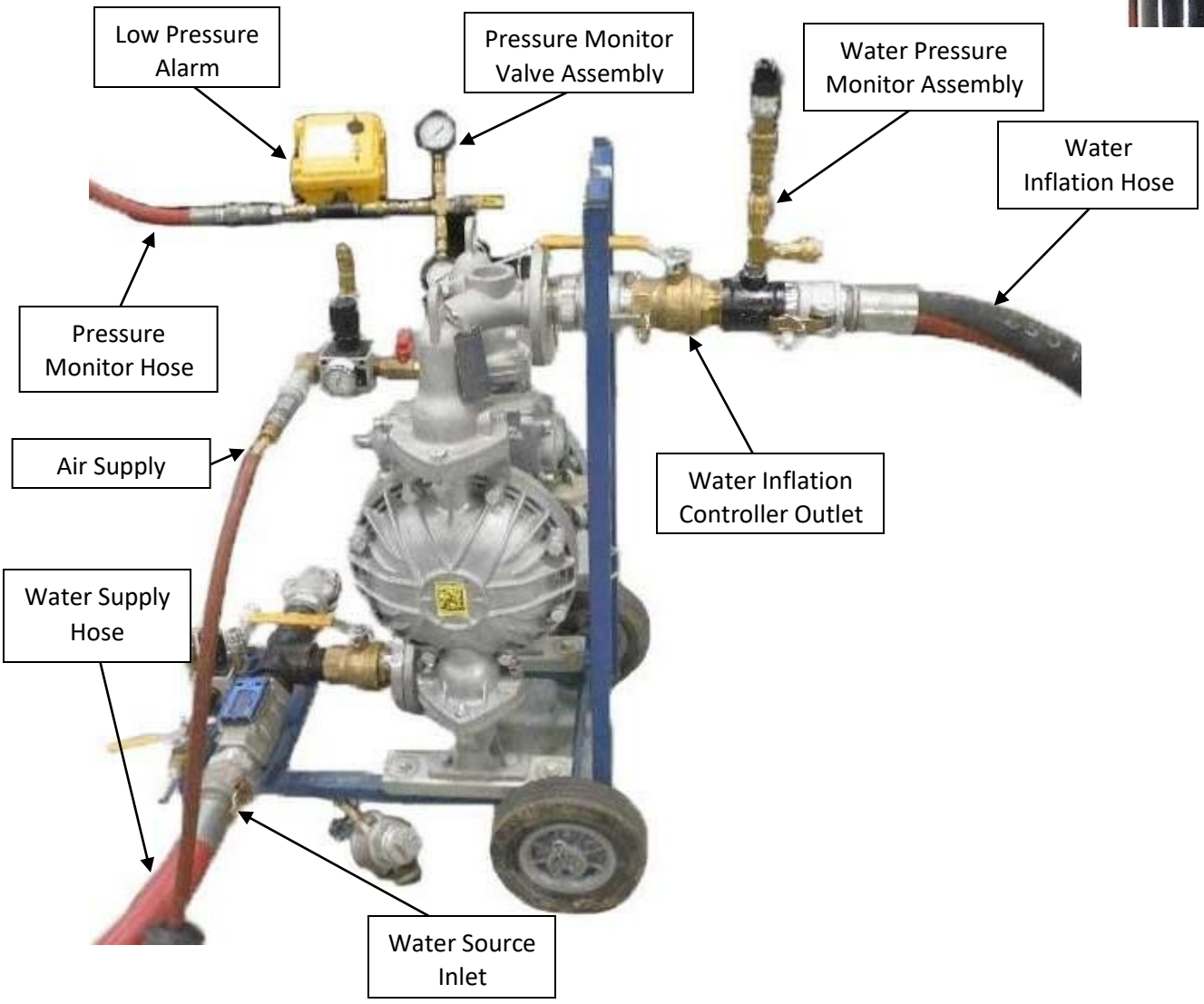
Operating the Water Flow Totalizer:

- Press the **Display** button **once** to display the total volume of water ever used by this pump.
- Press the **Display** button **again** to display the Batch (amount of water used).
- Press the **Display** button **again** to show Flow Rate.
- To reset the Batch to Zero to track the quantity of water:
  display the **Batch** then press and hold the **Display** button.
- To change units from gallons to liters: hold the **Calibrate** button and press the **Display** button.

Assembling the Water Hoses and Pressure Monitoring Lines

1. Attach the Water Inflation Hose and Pressure Monitor Hose to the Inflation Ram Pulley Assembly.
2. Attach the other end of the Pressure Monitor Hose to the Low Pressure Alarm.
3. Attach Pressure Monitor Valve Assembly to the Low Pressure Alarm.
4. Attach the two Gauges to the Pressure Monitor Valve Assembly.
5. Attach the Water Inflation Hose to the Water Pressure Monitor Assembly and to the Water Inflation Controller outlet.
6. Attach the water supply line to the Water Source Connection of the Water Inflation Controller.
7. Connect the Air Supply line to the Pump Air Source Connection of the Water Inflation Controller.





Inflating the Line Stop Plug with Water

CAUTION

Do Not inflate more than 20% over the pipeline pressure until the Inflation Ram is anchored into the correct position.

For maximum safety, remove as much air as possible, by venting through the Inflation Ram with the Pressure Monitor Valve Assembly.

The maximum rated pressure assumes the plug is fully inserted into a proper sized pipe.

Do Not exceed the maximum rated pressure.

NOTE: Add 0.433psi for every foot the pressure gauge is above** the bottom of the pipe (pipe invert). **Remove 0.433psi for every foot the pressure gauge is below the invert of the pipe (ONLY if filled with water).

1. Zero the Batch Counter on the Flow Totalizer.
2. Inflate the plug with water.
3. Open the valve at the Pressure Monitor Assembly to release any air.

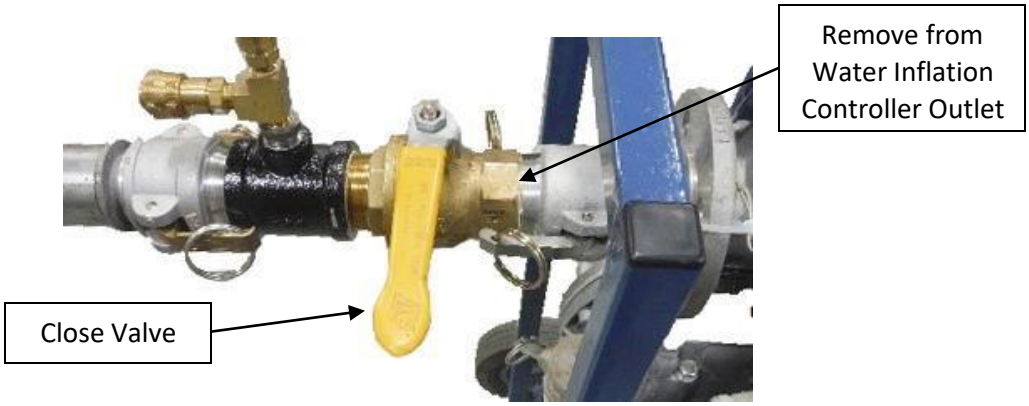
NOTE

Do not allow the pressure to drop below 5 psi from 5% of the line pressure.

4. When the pressure in the plug climbs close to the maximum rated pressure or the pump flow rate drops too far, stop the pump and then close the Inflation Valve. Open the valve at the Pressure Monitor Assembly to release any air. Close the Pressure Monitor Valve. Repeat multiple times until the Pressure Monitor Valve is releasing only water.
5. High pressure plugs can be topped off with air or nitrogen after they are filled with water.
6. Turn on the Low Pressure Alarm. If the pressure drops below the alarm set point then the alarm will sound.

Deflating Water from the Line Stop Plugs

1. Close the valve on the Plug Water Inflation Hose. Remove from the Water Inflation Controller Outlet.

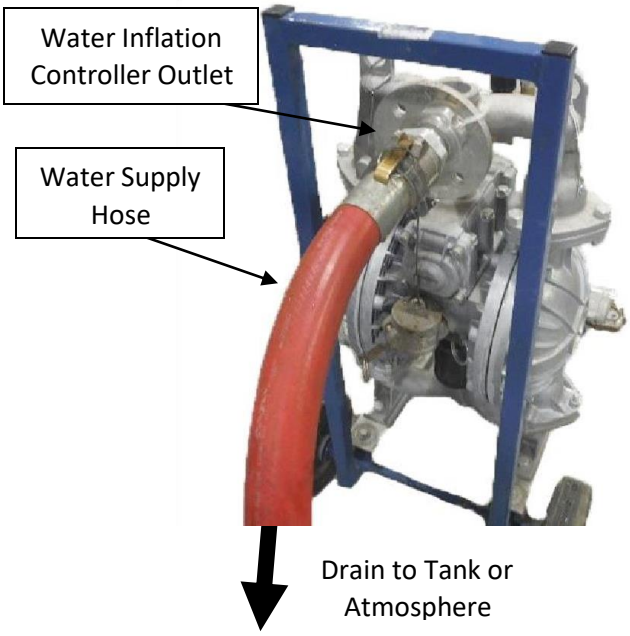


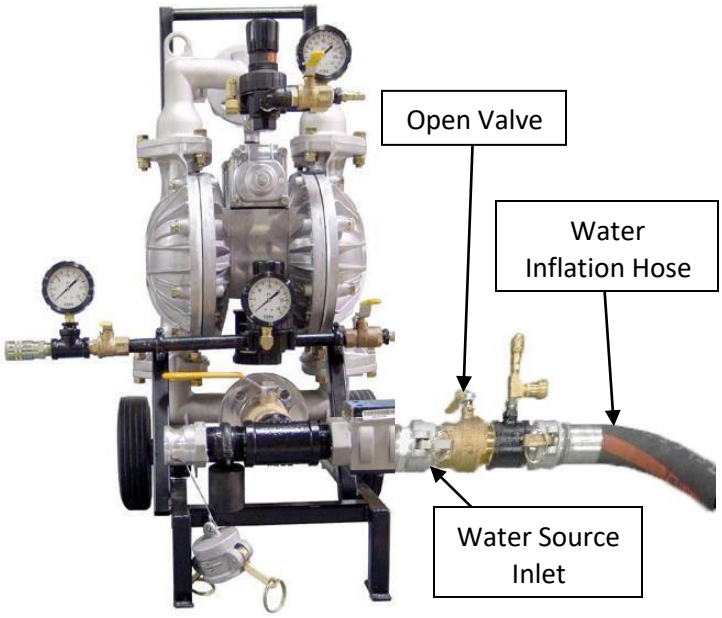
2. Switch the Water Hoses to the other connection ports. Connect the Water Inflation Hose to the Water Source Inlet. Connect the Water Supply Hose to the Water Inflation Controller Outlet.
3. Verify that the Water Pump Outlet hose drains into a tank or area that can collect the water pumped out of the line stop plug.
4. Zero the batch counter to track the output.

NOTE

The pipeline pressure can trap water and deflate the line stop plug. Re-inflate the plug to purge the water as needed.

5. Open the valves on the Water Inflation Hose and begin deflating the Line Stop Plug.
6. Continue pumping until water completely stops trickling.





NOTE

Maximum vertical lift from the pipe invert is 18 ft. The Pump will only lift water 18 ft on the inlet side. Pipeline pressure can assist with water deflation. If needed, Petersen can make line stop plugs that displace water with air for lifts over 18 ft. Never exceed the pressure rating of the Line Stop Plug when displacing water. Stop adding air when water no longer discharges from Pump outlet. Continue deflating until all air is out of the Line Stop Plug.

NOTE

As the water is displaced with air the Line Stop Plug may float if submerged and the water and air will be evacuated by the Pump. Remove the Line Stop Plug only after it is deflated completely.

17. Removing the Line Stop Plug

1. Remove the Inflation and Pressure Monitor Hoses from the Inflation Ram.
2. Open valve on Inflation Ram Pulley Assembly to allow air to vent when removing the line Stop Plug from the pipe.
3. Relax the Ratchet Assembly. Disconnect the Ratchet Assembly from the Eyebolts on the Packing Seal.
4. Loosen the set screws to remove the top of the Inflation Ram.

NOTE

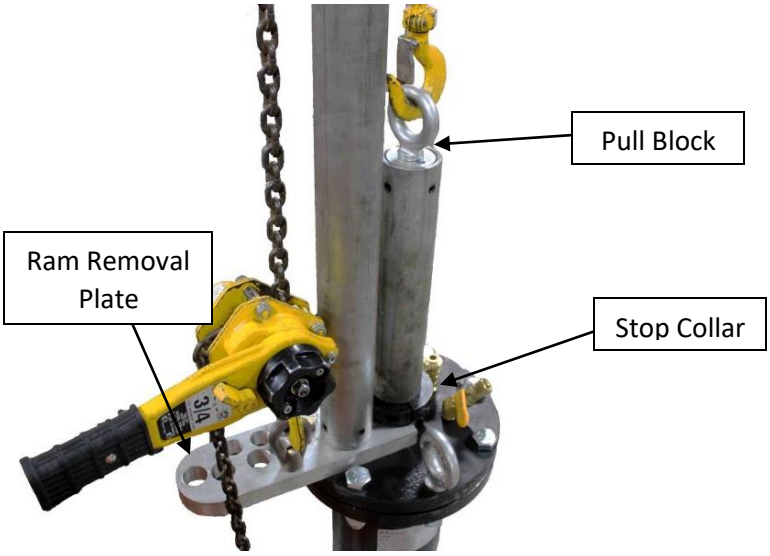
The stop collar must be on the Inflation Ram at all times.

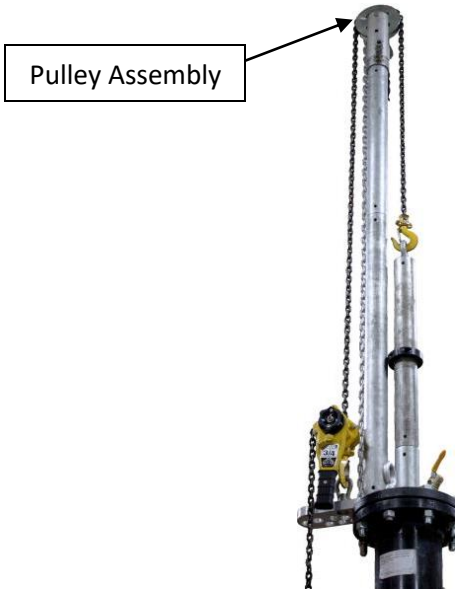
5. Attach the Pull block to the Inflation Ram. Tighten the Set Screws to secure the Pull Block to the Inflation Ram.
6. Attach the Ram sections to the Ram Removal Plate. Tighten the Set Screws to secure the Ram Sections in place.
7. Attach the Pulley Assembly to the Ram Sections. Tighten the Set Screws to secure the Pulley Assembly in place.

NOTE

The Ram Removal Plate is rated for 5 feet of Ram in a vertical position.

8. Loop the chain around the Pulley Assembly and connect the Ratchet Puller to the Pull Block and Ram Removal Plate.





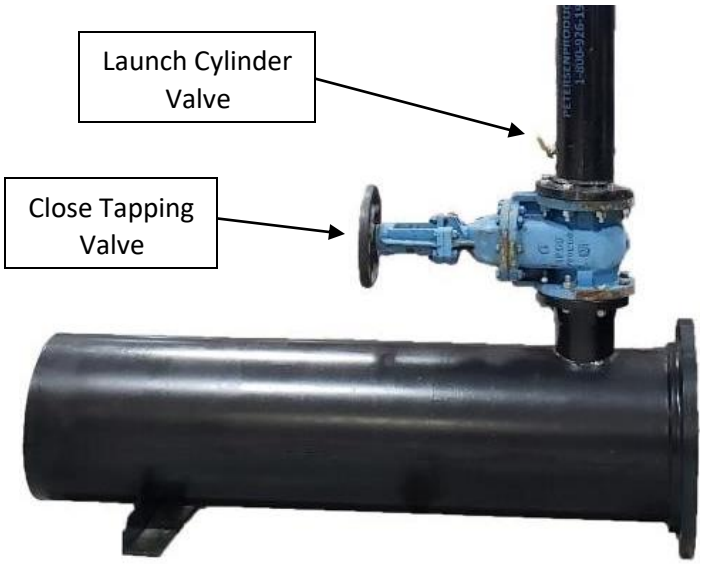
9. After one section of the Inflation Ram is retracted, attach a Stop Collar at the lower Ram section to prevent the Ram from falling back down into the pipe.
10. Remove the Inflation Ram one section at a time. Move the Pull Block down each time.

11. Repeat until the Line Stop Plug is fully in the Launch Cylinder. Use Measurement B from the stop collar to verify that the Inflation Ram is fully retracted. See B on Reference Chart from Page 9.
12. Once the Line Stop Plug is fully retracted, close the Tapping Valve.

NOTE

Use a Catch Pan or Drain Hose when opening the Valves on the Launch Cylinders

13. Open the bottom Valve on the Launch Cylinder to release the pressure



18. Maintenance and Care

It is important before and after every use you carefully inspect for abrasions, tears, movement of clamps, air leaks or any other signs of deterioration or defect.

Clean with mild soap and water, disinfect if necessary*.

NEVER clean with solvents or petroleum products. Contact PPC with any questions or concerns about disinfectant and cleaner use.

Large plugs may be leak tested in smaller pipes.

The plug may be inflated for cleaning and inspection. **CAUTION: Do not exceed 5% of the plugs rated pressure when outside of a pipe.**

Do not allow the plug to remain in sunlight for long periods to prevent damage.

Verify that the plug is empty of water and dry prior to storage in a dry location.

Keep the instructions and the yellow Warning Tag with the plug.

NOTE: You can send your plug to Petersen Products to be Refurbished and for Recertification.

19. Troubleshooting

Pro Tips:

- Rubber bands may slide or snap off. This is normal and the rubber bands do not affect the operation of the plug.
- Rubber bands are standard. If stringent foreign material exclusion (FME) procedures are in place, the rubber bands may be replaced with insertion sleeves.
- The deflated length of the plug is always longer than the pipe ID dimension. In most cases, there is some force required to press the plug into the pipe to the correct set-dimensions noted by the inflation ram stop collar.
- The location of the stop collar is of critical importance. The top of the plug must seat at the pipe ID.
- Caution shall be used when deflating the plug. Watch for water/air locks if excessive force is required to lift the plug.
- Fluids may become trapped between plies and cause the plug to require more force to lift out of service.
- Always check plug for damage after use and clean prior to storage/recertification.
- The plug will provide a “workable” seal. The exact site conditions vary and pipe wasting, pipe tolerances, scaling, solids, etc. may be present in the line. Always consider mitigation techniques for a small amount of leak by such as using double block and bleed. When the highest quality seal is required sealing rings and other methods may be required to minimize leak by the plug.
- Plugs work great in less than 0.5ft/s flow.
- Plugs work best with friction in the pipeline, solids, metal shavings, imperfections in pipe, out of roundness, scaling, are typically not a problem.
- The ratchet puller should be left engaged when the plug is in operation.

Safety Tips:

- Always check alignment between fittings and launch equipment and use.
- Always follow safe rigging practices.
- Always follow site-specific safety requirements.
- Always wear appropriate PPE.
- Adhere to all local jurisdictional requirements.

PROBLEM	POSSIBLE CAUSES	ACTION
Plug tears off ram	Damage from hot tapped edge High Flow Application Pressure not equalized	**Contact PPC IMMEDIATELY**
Not a workable seal	Application requirements or project specifications Piping inside condition – build up, debris, troughing Piping geometry or service inside piping Folds creases of inflatable	**Contact PPC IMMEDIATELY**

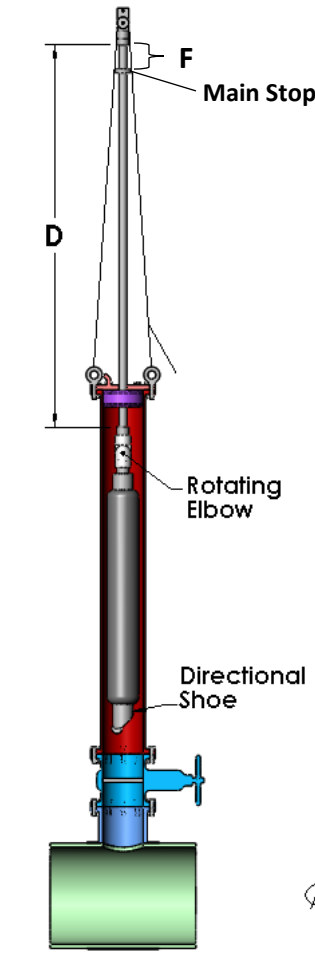
PROBLEM	POSSIBLE CAUSES	ACTION
Received visibly damaged inflatable	Shipping	Inspect per PPC guidance Contact PPC
Threaded or flanged connection issue	Shipping	Contact PPC
Lift point issue	Lift device location Obstruction of lift device Lift point rating	Seek Rigging Competency Contact PPC
Equipment stack up too long for work area	Cylinder spool length Cylinder ram length Bundled length of inflation	Request multi-piece assembly Request bundled length reduction Contact PPC
Inflatable not going into bore (valve, nozzle, hot tapped) Anchor size issues	Diameter of bundled inflatable or anchor larger than the valve or hot tapped diameter	Contact PPC
Pressure test issues with equipment	Gasket bolted connections not adequately aligned or torqued Threaded connections not adequately engaged	Inspect bolted connections Inspect threaded connections Contact PPC
Equipment packing seal leaking	Scoring on inflation ram Packing fell out/missing Debris on inflation ram/packing Packing used too many times	Check ram for obvious scoring or damage. Repair or replace ram section. Replace missing or damaged packing Wipe clean and re-lubricate Replace packing and re-lubricate
Equipment vent valve issue	Debris in the valve seat Bolted or threaded connection issue Not rated for application	Flush out valve Inspect Replace with rated valve Contact PPC
Loose flange connection	Time between installation Handling	Re-Torque, refer to page 8
Inflatable not inflating or Inflatable not holding pressure	Inflation medium supply issue Loose ram connections Inflatable integrity lost	Inspect all fittings and connections for leaks Inspect for missing O-rings and tighten any loose connections Inspect for damage or excessive wear and tear Contact PPC

PROBLEM	POSSIBLE CAUSES	ACTION
Plug not going to set position	Dimensional error Debris in the pipeline or hot tap Flow in pipeline greater Hot tapped diameter too big or too small	Double check using ref. Using manual or procedure Discuss with piping owner Discuss with piping owner for root causes and PPC Discuss with Contractor. Always specify proposed hot tap hole to PPC in the RFQ Contact PPC
Sealing strips rip off	Damage from hot tapped edge High flow Piping inside surface condition	Contact PPC Plug sometimes may be used without rings or refurbished
Flow Stop Issue	Application issue	Contact PPC
DBB Issue	Application issue	Contact PPC
Not able to equalize pressure	Open ended pipe downstream of inflatables No equalization point upstream or downstream of inflatable Non looped system	Contact PPC
Retraction issue - (Inflatable depressurization), binding, Valve issue	Fluid in plug Fluid trapped between plies Inflation ram bent Water lock.	Remove as much fluid as possible prior to lifting Verify other causes are not at work and use more force Evaluate safe ways to remove by force Bleed-off launch tube
Depressurization of inflatable equipment	Service valve leaking/ malfunctioning Vent valve malfunction	Contact owner of service valve Contact owner of vent valve or PPC

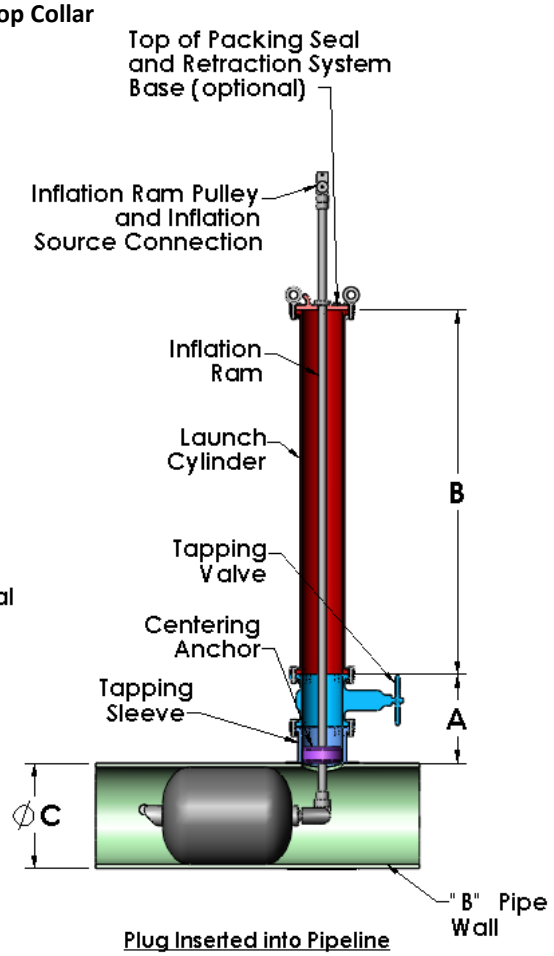
Measurement Card (https://ilsconfigurator.petersenproducts.com/Home/128)

Measurements MUST be made PRIOR to installing plug in Launch Housing

	Measurement (maintain units)
A Distance from the Top of the Valve Gasket to the Top of the Pipe	
B Distance from the Base of Launch Cylinder to the Top of Packing Seal (Top of Retraction Base, if used)	
C Pipe OD divided by 2	
D Total Length of Inflation Ram(s)	
E Measure the length of the Rotating Elbow to the centerline of the pivot when positioned at a 90 degree angle.	
F **D – (A + B + C – E)**	



Plug In Launch Cylinder



Plug Inserted into Pipeline

All dimensions are assumed field measured with a tape measure (or laser) and an accuracy of +/- 1/4” up to 12 ft. and over 12 ft. +/- 1/2”.