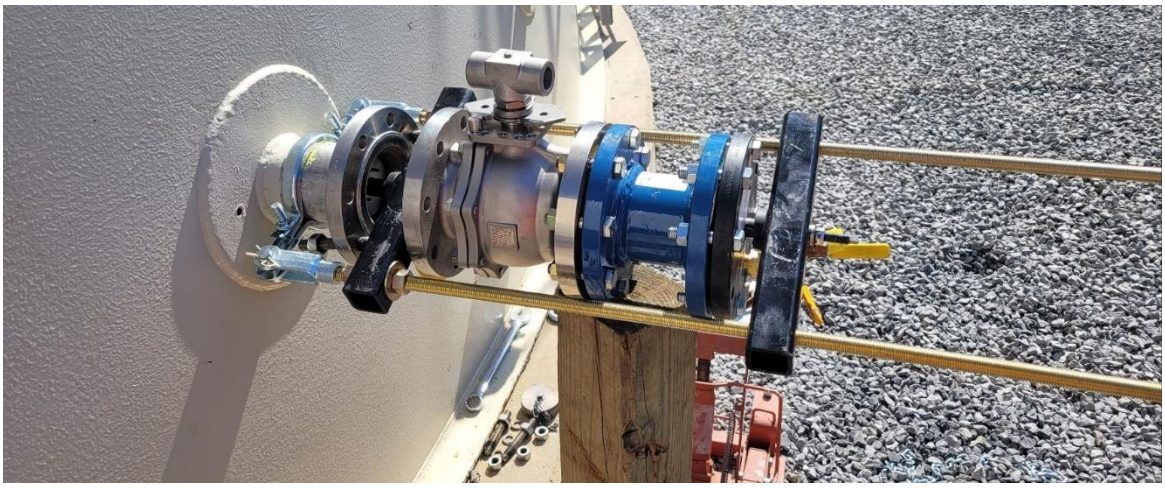
Petersen
Products Company



Mechanical Through the Valve

Petersen Products Company

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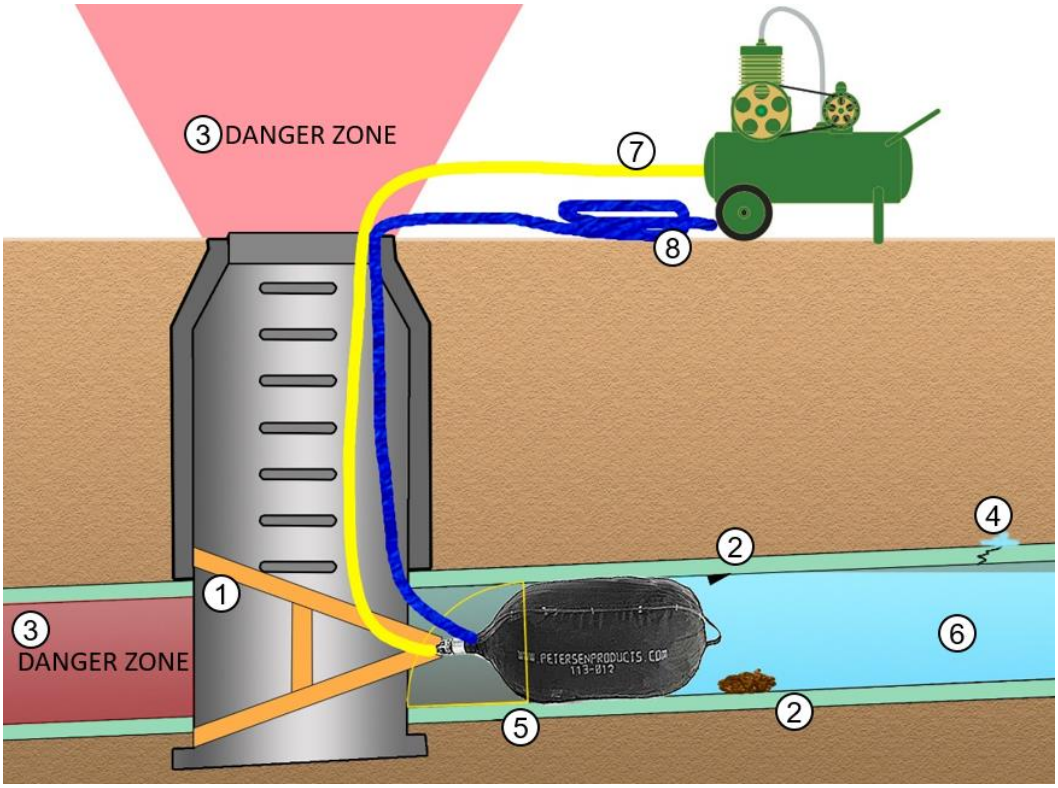
1. Important Safety Instructions

SAFETY IS EVERYONE'S RESPONSIBILITY

WARNING

Very high forces are involved in many pipeline plugging situations that may cause injury or even death. Forces increase dramatically as pressure and pipe diameter increase. Take extreme care to assure the safe use of any Pipe plug.



1. All pipe plugs must be blocked or anchored adequately against a force equal to the head pressure times the cross-sectional area of the pipe. See Calculation Formulas. Pipelines made of polyethylene, new pipelines with remains of grease or agents, mildew, sand, detergents, etc. directly decrease the coefficient of friction as well as the backpressure values.
2. Debris or protrusions in the pipeline can damage a seal or rupture inflatable plugs. Thoroughly clean the pipeline before insertion of the Pipe plug. Maximum rated pressures assume Pipe plugs are fully inserted into clean dry pipes.
3. NEVER use an inflatable plug when its failure could cause injury or catastrophic damage or as the only means of protection for personnel working downstream. Keep all personnel out of the plug end area – DANGER ZONE – when plug is in use.
4. NEVER use a test pressure greater than the capacity of the weakest pipe or component in the system.
5. Insert the Pipe plug seal surface completely so it is fully supported by the pipeline. Molded rubber pipe plugs expand in diameter and axially, so it must be inserted at least one pipeline diameter beyond the end of the pipe.
6. Stop the pipeline flow before installing any type of Pipe plug.
7. Always attach an inflation extension hose to the Pipe plug so it can be inflated, monitored and deflated at a safe distance outside the danger zone.
8. Use positioning rope or cable to install and remove the Pipe plug. Do not pull on the inflation or pressure monitoring hose to remove the Pipe plug.
9. Do not exceed the pressures on the plug label. Molded rubber plugs must be inflated to the rated pressure shown on plug.

PERSONNEL SAFETY

1. Due to the many possible variables these general instructions must be adapted by a competent professional engineer for each specific project. Instructions and training must be provided to all users and workers on the job.

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2. If your pipe plug has a Safety and User Manual, be sure to read and understand it.
3. Properly wear and use all required Personal Protective Equipment (PPE) and Safety equipment, for your application. Common items include eye protection, hardhat, gloves, safety shoes, hearing protection, and protective clothing.
4. Determine if the area is considered a Confined Space. 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.

2. Basic Rules for Using Any Pipe Plug

A. Select a Pipe plug manufactured for the actual size, pressure, temperature, and chemical requirements of your application. Consult PPC engineering for more information.

B. Release the back pressure or equalize pressure on both sides of the pipe plug before installing, deflating and removing.

C. **NEVER** exceed the maximum rated head pressure for the Pipe plug measured at the pipe invert. See Calculation Formulas.

D. Use accurate calibrated pressure gauges that agree for measuring the pipeline head pressure.

E. Mechanical and Molded Rubber Plugs are generally used for testing because fabricated Multi-Flex® style plugs may allow some seepage unless customized for a positive seal.

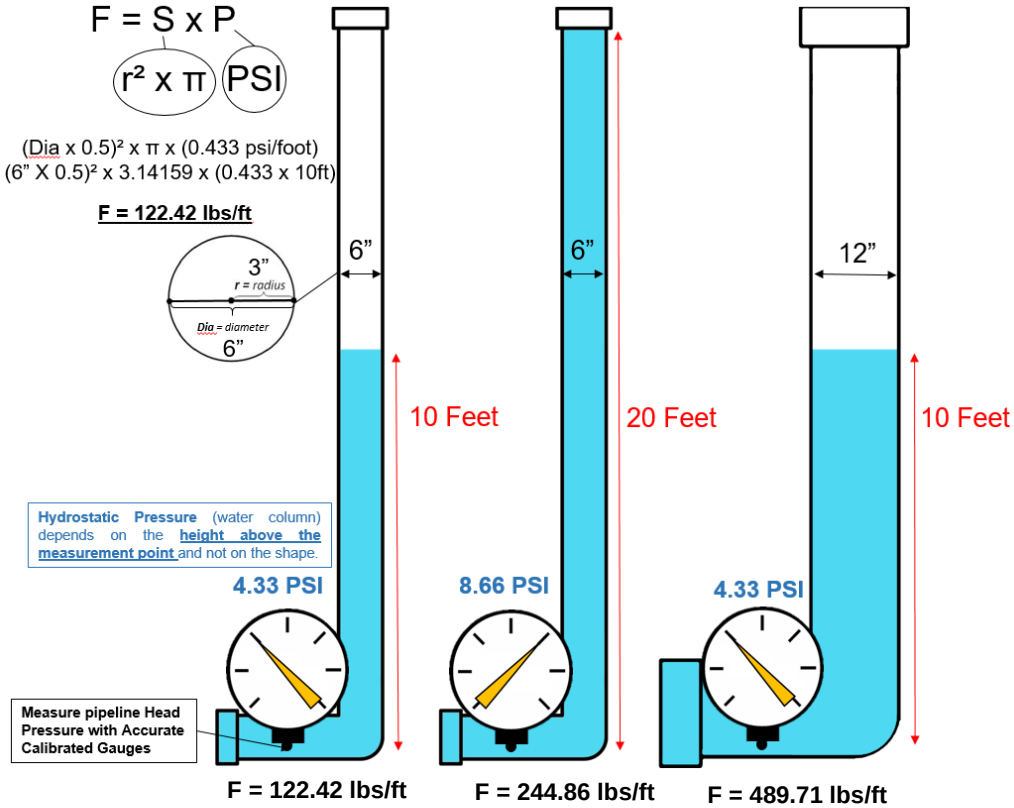
F. Before and after use, thoroughly inspect the Pipe plug for surface tears, cuts or any other damage.

G. **NEVER** use a Pipe plug in a pipe size different from the recommended usage range.

3. Calculating the Total Force that a Pipe Plug must Restrain

F = S x P

F = force on the Pipe plug (lbs. per ft.), pipe plug slipping force
S = (π x r^2) = pipe cross-sectional area (in^2), π = 3.14159, r is the Radius or ½ the diameter (inches)
P = pipeline pressure (psi), water column height must be converted to a force over area



As an example, a 10 foot water column converts to a back pressure of 4.33 psi (29.3 kPa). The configuration or liquid surface area does not affect pressure, only elevation.

Pressures exerted on a Pipe plug are the same for liquid, water or air. Ten (10) psi of water is the same as ten (10) psi of air as one example. **Use extreme caution!** Pressures from gases such as air and nitrogen are compressible and store energy, making them far more dangerous than water. As a result, the Pipe plug has a much greater force when discharging a slipping Pipe plug since gas will expand to its original atmospheric volume upon release.

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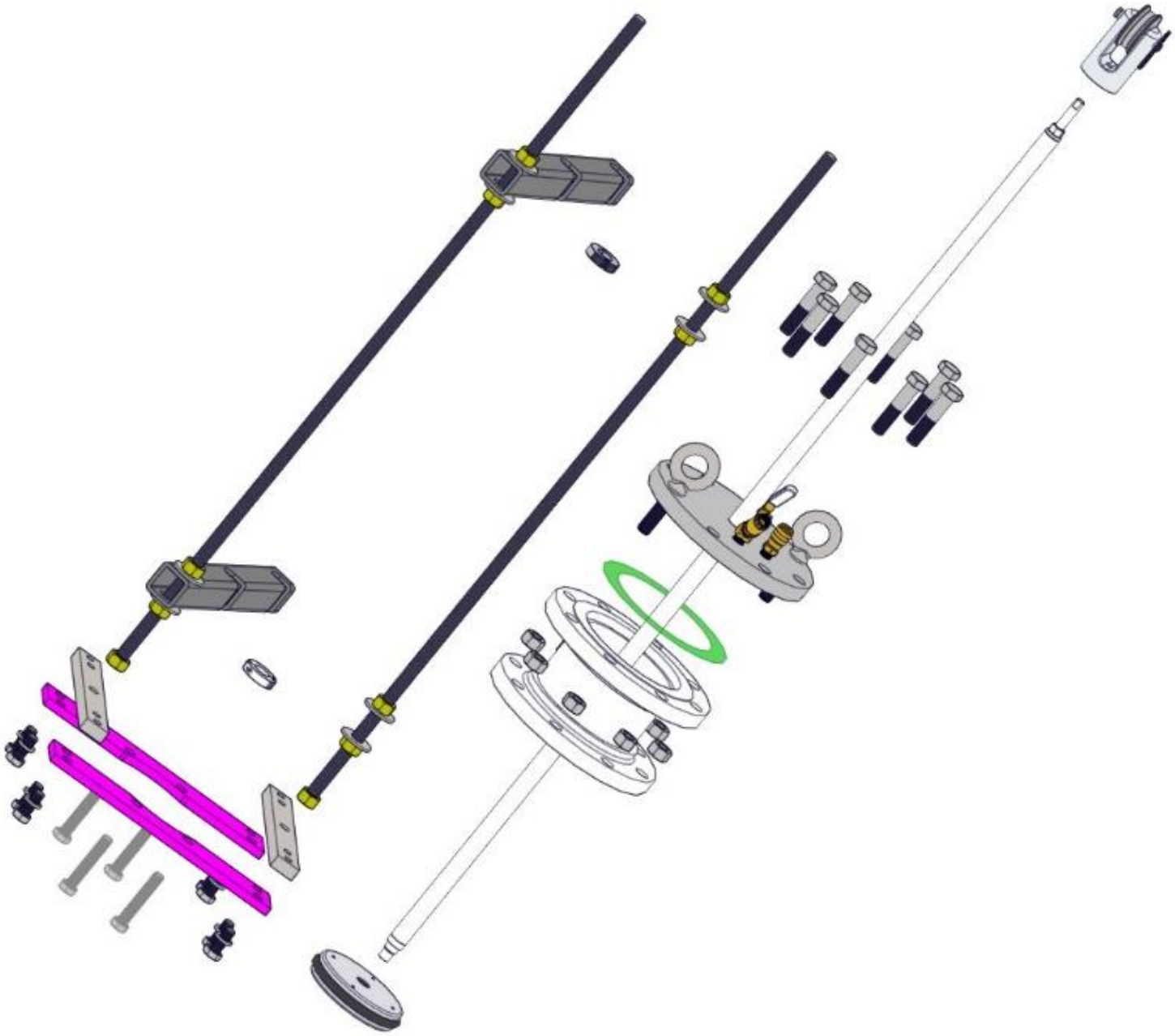
146-9 Mechanical Plug Through the Valve Components with Strong Back



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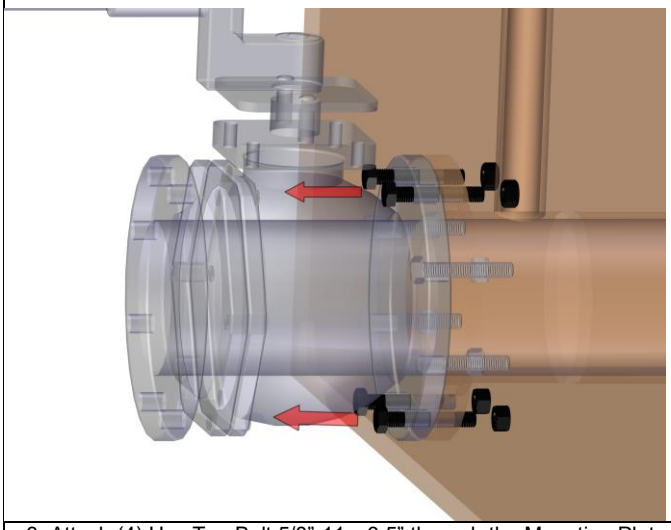
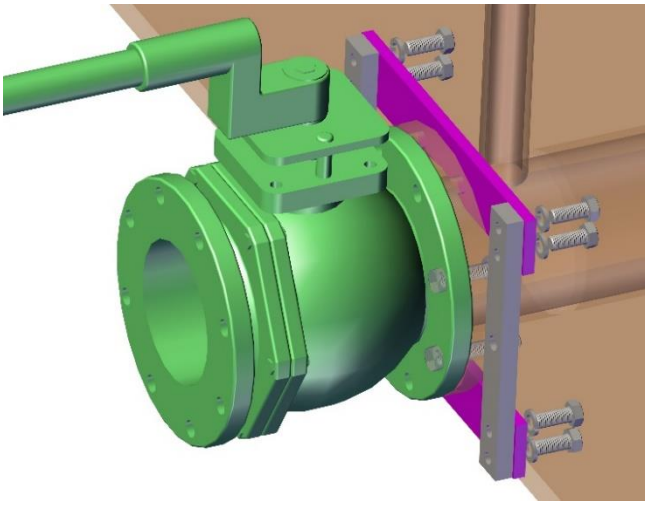
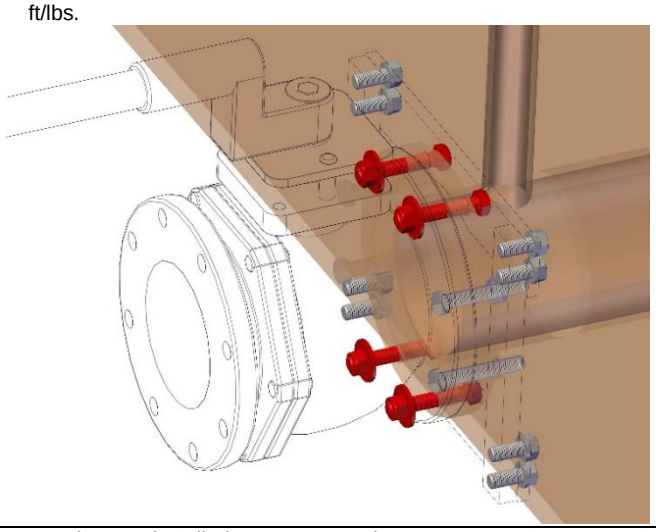
1. Remove top two and bottom two Bolts and Nuts on current valve



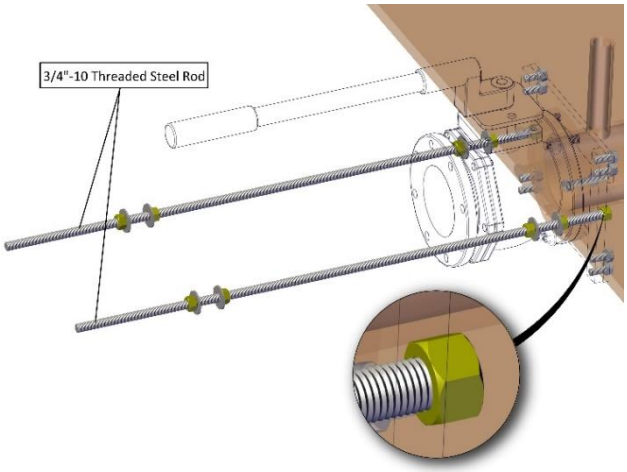
2. Attach (8) 1.5” Hex Tap Bolts GR 8 with lock washers through the Mounting Plate – Valve to the Mounting Plate Threaded Rod at 160ft/lbs.



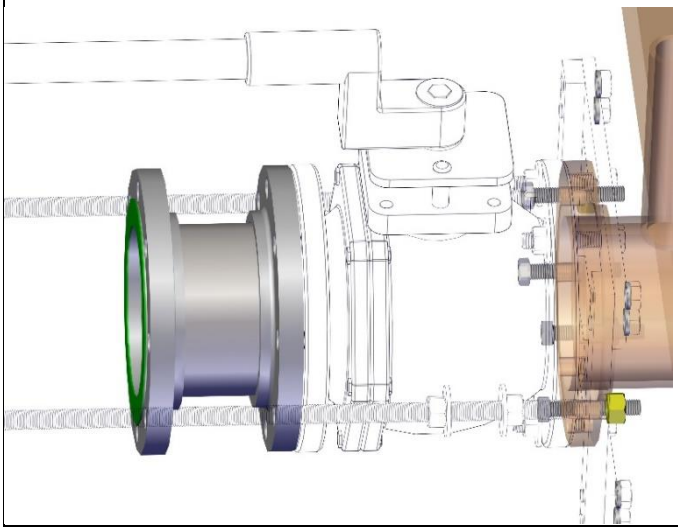
3. Attach (4) Hex Tap Bolt 5/8”-11 x 3.5” through the Mounting Plate Valve and current valve to Flat Washer and 5/8” Hex Nuts to 160 ft/lbs.



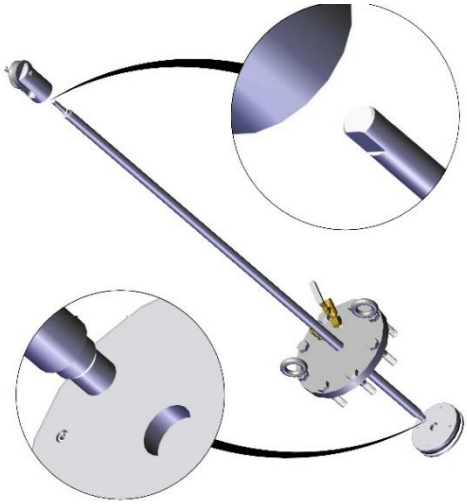
4. Insert the (2) ¾”-10 Threaded Steel Rod through the Mounting Plate Threaded Rod using ¾” Hex Nuts.



5. Attach Launch Cylinder to current valve.



6. Apply Loctite 271 to threads on Mech Plug Stem and screw on to Mechanical Plug until tight using notch at opposite end of Mech Plug Stem. Slide on Packing Seal to Mechanical Plug Sleeve, then screw on Pulley Assembly to end of Mech Plug Stem.



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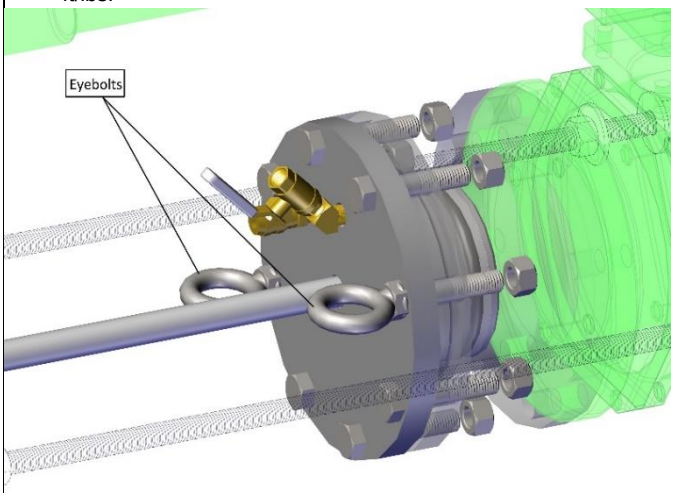
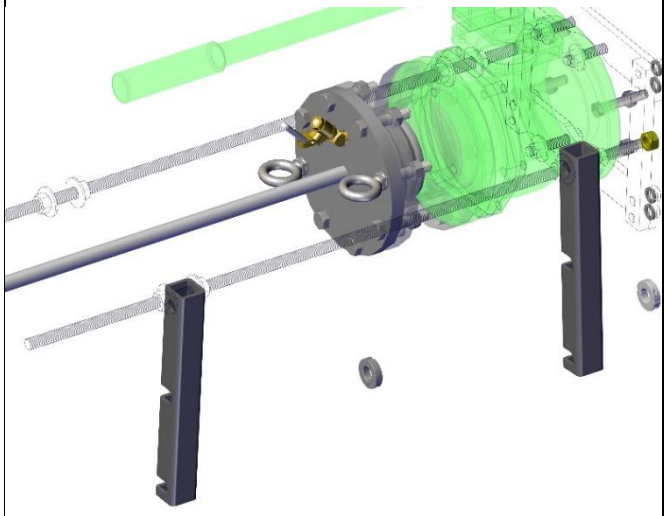
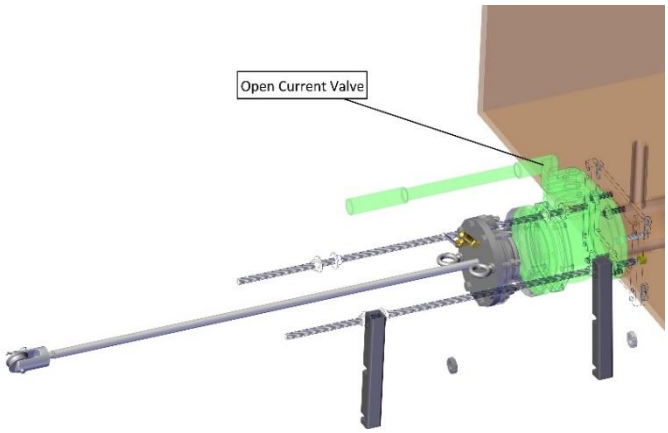
7. Attach Packing Seal to Launch Cylinder being sure to insert Eyebolts so they are opposite each other and perpendicular to Valve and Quick Disconnect. Tighten Nuts and Bolts to 195 ft/lbs.



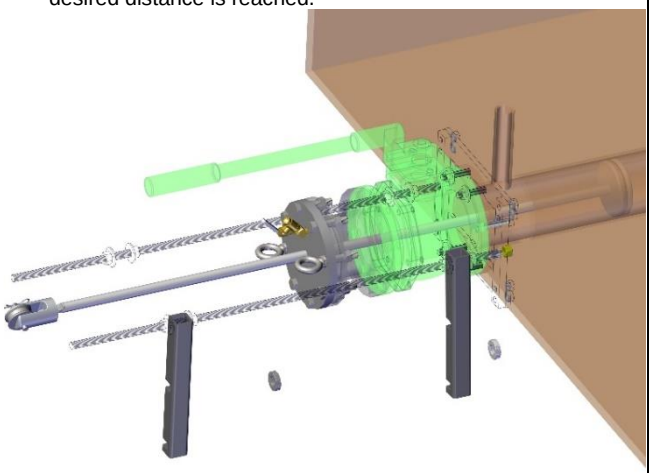
8. Attach Strong Backs to Threaded Steel Rod.



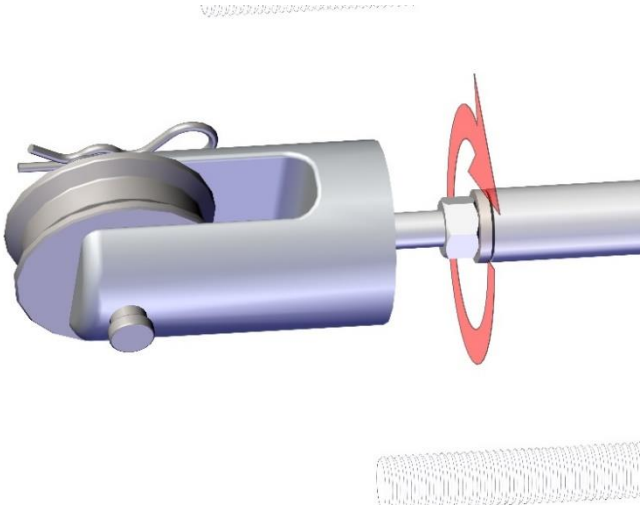
9. Open the current valve and check for leaks. Attach pressure gauge to QD on Packing Seal.



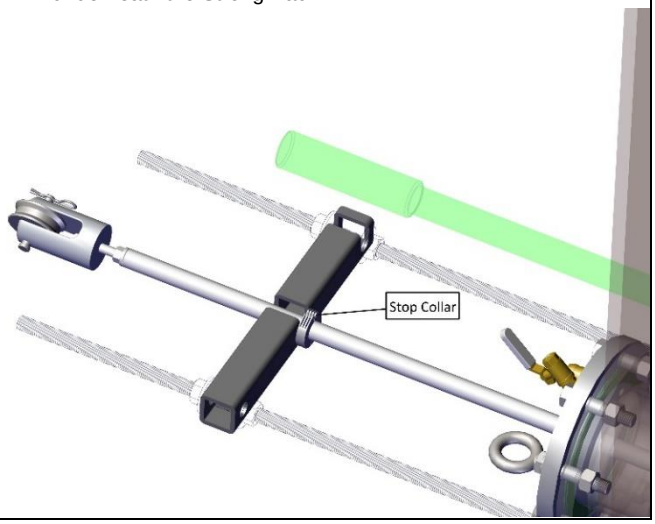
10. Attach ratchet puller chain ends to each of the eyebolts and over the pulley assembly. Ratchet the plug in to the pipe until desired distance is reached.



11. Tighten the Nut on the Mech Plug Sleeve clockwise until you reach 25 ft/lbs to secure Mechanical Plug in pipe.



12. Tighten Strong Back on threaded rods using nuts and washers. Attach stop collar to the Mech Plug Sleeve underneath the Strong Back.



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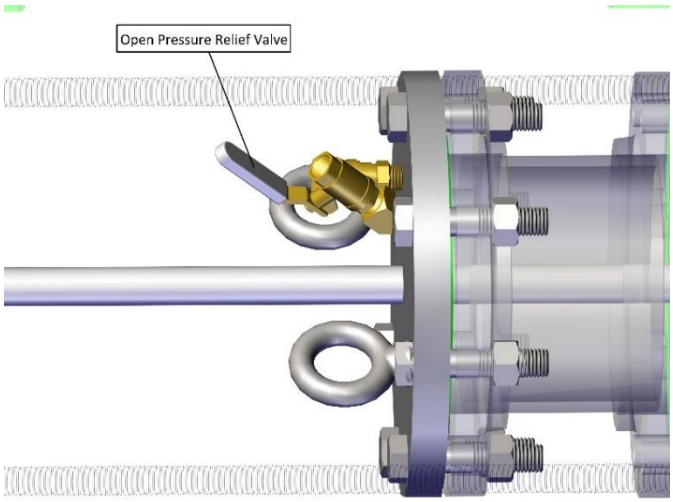
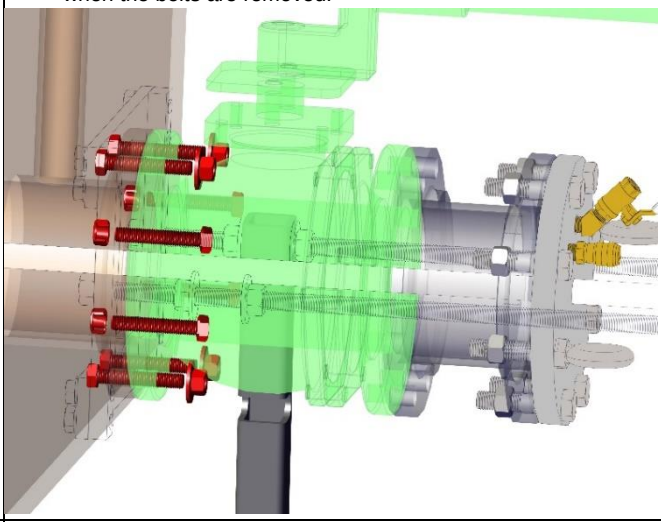
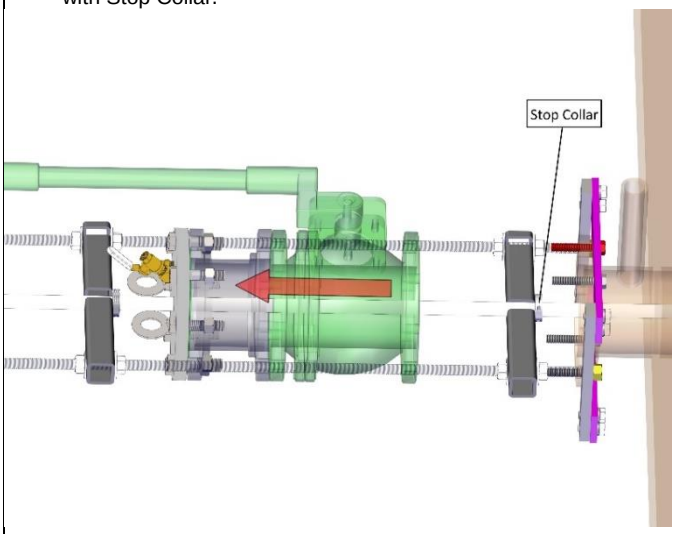
13. Check Pressure Gauge and open Pressure Relief valve on Packing Seal.



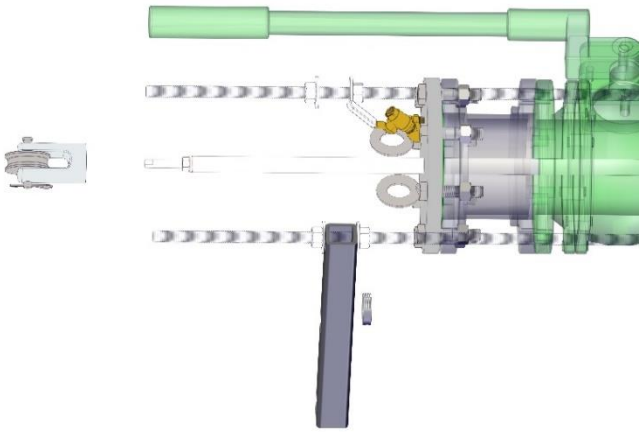
14. Remove the nuts and bolts holding the current valve to the flange. Be sure to secure the current valve so it doesn't fall when the bolts are removed.



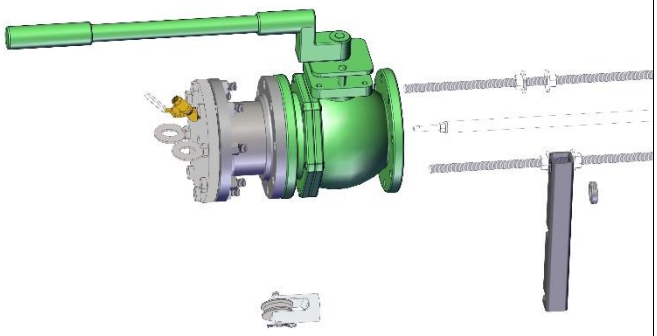
15. Slide Packing Seal, Launch Cylinder and current valve along the Mech Plug Sleeve. Lock lower Strong Back in place and secure with Stop Collar.



16. Remove Stop Collar on upper Strong Back, loosen nuts on Strong Back to rotate out of the way and unscrew pulley assembly from Mech Plug Stem.



17. Remove Packing Seal, Launch Cylinder and current valve from Mech Plug Sleeve. Replace current valve with New Valve. Assemble in reverse order.



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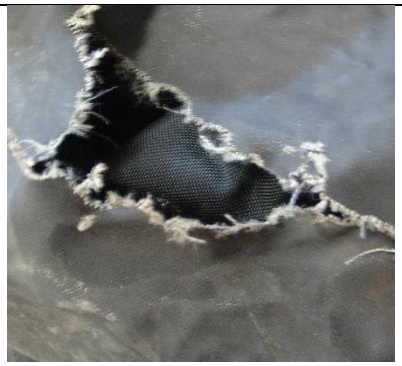
4. MAINTENANCE AND CARE

a) Deflate the plug completely. If water inflation is used pump out the water or hang vertically and drain. Water will not damage the plug but it will make it harder to reuse.
b) Clean the plug. Use laundry type detergent if necessary and rinse with clean water.
c) Store in a clean dry area out of sunlight.
d) SBR molded rubber plugs may be sprayed with silicone to help slow deterioration over time. Natural rubber components are especially susceptible to deterioration from aging.
e) Multi-Flex® Plugs use synthetic materials that have a much longer life in normal atmosphere.
f) Multi-Flex® Plugs may be inflation tested outside of a pipeline for leaks to no more than 5% of the rated inflation pressure or 5 psi, whichever is less.
g) Multi-Flex® Plugs may have air trapped between their multiple plies thus while a soap bubble test may indicate a leak in pipe or hose connection, bubbles on the outer ply may indicate air escaping between the plies immediately after inflation.
h) Multi-Flex® Plug leak test requires monitoring the inflation pressure over time after the pressure has stabilized.

INSPECT PLUG FOR SIGNIFICANT WEAR OR DAMAGE



CUTS

ABRASIONS

PUNCTURES

BULGES

LOOSE OR DAMAGED FITTINGS

COMPONENTS AND LEAKS

Do Not Use the Product if there is significant wear or damage. Return to Petersen for evaluation.
Petersen has the equipment for inflation, deflation, and pressure monitoring for all Inflatable Pipe plug Systems
Contact Petersen with any questions or suggestions about the use of any Petersen Product.

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