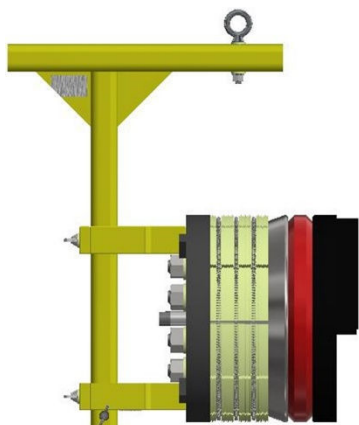


Operating Procedures for Test Plug Lifting Fixture

WARNING

- ⚠ The Test Plug Lifting Fixture is designed for use with 10" thru 24" (DN250-DN600) GripTight Test Plugs, as well as other EST Group Testing and Isolation Plugs. Do not use the Test Plug Lifting Fixture to lift any other objects.
- ⚠ Test Plugs can be extremely heavy. Use caution when maneuvering any Test Plug while attached to the lifting fixture. Never lift any Test Plug heavier than 1500 LBS (680 KGS) with the Test Plug Lifting Fixture. Never position body or extremities under a suspended plug.
- ⚠ Observe industry standard and site specific best lifting and rigging practices at all times.

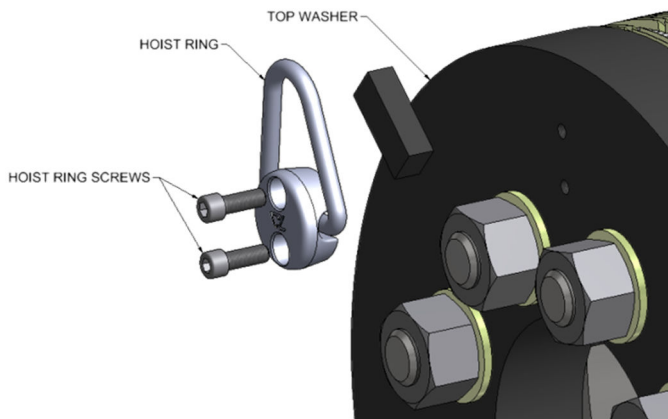


PROCEDURES FOR USE

Use these procedures to attach the Lifting Fixture to your Test Plug and safely insert it into the pipe to be tested.

<i>Step/Action</i>	<i>Additional Action/Information/Result</i>
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1. Remove the Hoist Rings from the Test Plug and set aside.



- Test Plugs have two identical Hoist Rings installed.
- A Hoist Ring is removed by unscrewing and removing the two Hoist Ring Screws.
- Put both Hoist Rings and their hardware aside for reattachment after use of the Lifting Fixture.

Questions? Contact EST Group Customer Service at any of the following locations.



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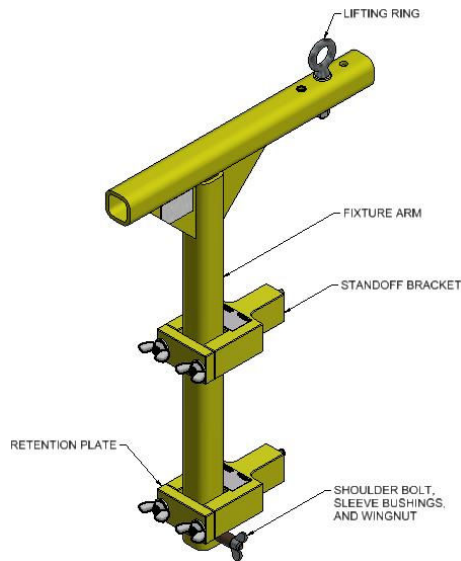
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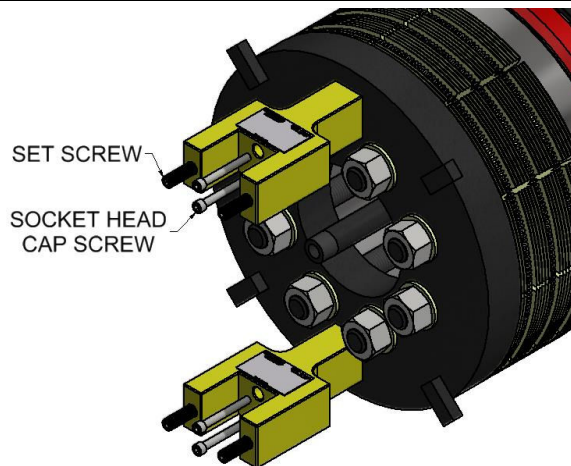
Step/Action	Additional Action/Information/Result
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2. Prepare the Lifting Fixture for attachment to the Test Plug. Inspect the arm, brackets, and hardware for signs of excessive wear or other damage (cracks or bends).



- Remove the Retention Plates from the Standoff Brackets. Put aside Retention Plates and hardware for installation. Take care not to lose the two screws set into each of the Standoff Brackets. These are required to attach the Standoff Brackets to the Test Plug.
- Remove Fixture Arm from the brackets. Set aside.
- Remove the Shoulder Bolt and Sleeve Bushings from the Fixture Arm by unscrewing the Wingnut. Set the Shoulder Bolt and its hardware aside for later use.

3. Attach the Standoff Brackets to the Test Plug by aligning Standoff Brackets with the Hoist Ring holes.



- Attach the Standoff Brackets to the Test Plug using the Socket Head Cap Screws supplied. Torque to 5-8 FT-lbs. (7-10 N-m)

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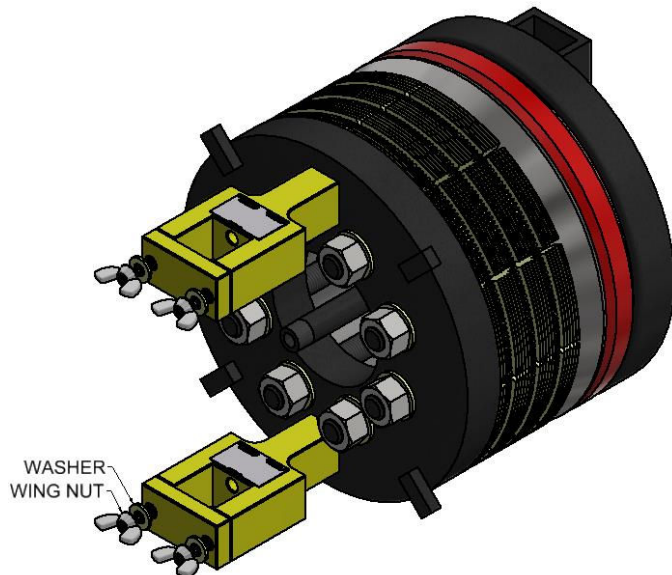
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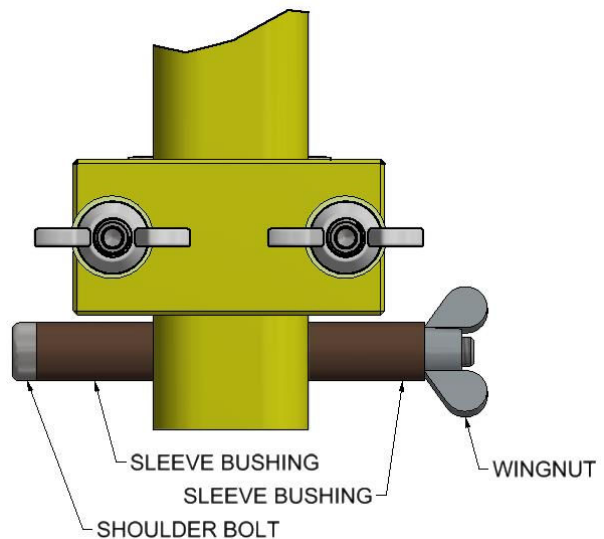
Step/Action	Additional Action/Information/Result
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4. Attach the Retention Plates to the Standoff Brackets.



- Align both Retention Plates onto their respective bolts on the Standoff Brackets.
- Attach the Retention Plates to the Standoff Brackets using the supplied Wing Nuts and Washers.

5. Slip the Fixture Arm through the Standoff Brackets and install the Shoulder Bolt assembly.



- Install the Shoulder Bolt, Sleeve Bushings, and Wingnut. One Sleeve Bushing goes on either side of the Fixture Arm, and the Shoulder Bolt passes through all three parts.
- Securely tighten the Wingnut onto the Shoulder Bolt.

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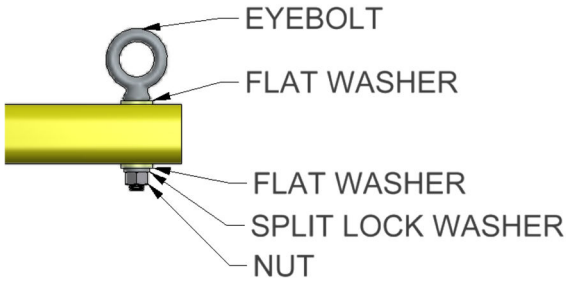
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Step/Action	Additional Action/Information/Result
<p>6. Position the Lifting Ring to be above the center of gravity of the Test Plug. Generally, for GripTight Test Plugs, the approximate center of gravity is located at the far end of the Grippers.</p> <p>For Double Block and Bleed Test & Isolation Plugs, the approximate center of gravity is located about the Between the Seals Fill Port.</p> <p>For GripTight Isolation Plugs, the approximate center of gravity is located at the center of the bottom seal.</p> <p>See page 7 for additional information.</p>	 <ul style="list-style-type: none"> • For the Test Plug to properly hang horizontally, or nearly horizontally, the Eyebolt must be adjusted to the correct location. • Remove the Nut, Split Lock Washer, and Flat Washer. Remove the Eyebolt from its hole. Make sure the second Flat Washer is kept with it.
<p>7. Install the Eyebolt into its position.</p>	<ul style="list-style-type: none"> • Replace the lower Flat Washer, Lock Washer and Nut. Tighten the Eyebolt Nut and torque to 45-50 FT-lbs. (61-68 N-m)
<p>8. Connect the lifting mechanism (hoist, lift, crane, etc.) to the Eyebolt.</p>	<ul style="list-style-type: none"> • Carefully begin to raise the Test Plug and Lifting Fixture assembly. Use caution while lifting the assembly, using best rigging and lifting practices. • Always lift slowly and in a gradually increasing manner. • If the Lifting Fixture was attached to the Test Plug while it was lying on its bottom (in a vertical / shipping orientation), it will be necessary to stabilize the plug as it leaves the ground and orients to a horizontal position. Keep personnel clear of any shifting plug and extremities from any potential pinch points.
<p>9. Position the Test Plug inside the pipe to be tested.</p>	<ul style="list-style-type: none"> • Carefully maneuver the Test Plug into the pipe to be tested. Gentle use of a lever arm or crowbar in the rear of the horizontal portion of the fixture arm may aid in positioning. • Fully push the Test Plug into pipe. GripTight Test Plugs shall be inserted until the Tabs on the Top Washer contact pipe end. Double Block and Bleed and GripTight Isolation and Test Plugs should be fully inserted into the pipe. • Slowly lower the Lifting Fixture and Test Plug until the Test Plug rests inside the pipe. Use caution to not allow GripTight Test Plugs to move once they are seated within pipe. Allow the Fixture Arm to slip down low enough to rest on the pipe.

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<i>Step/Action</i>	<i>Additional Action/Information/Result</i>
10. Remove Lifting Fixture from plug.	<ul style="list-style-type: none"> Remove the Shoulder Bolt and its associated hardware from the Lifting Fixture Arm and put aside. Remove the Lifting Fixture Arm from the Standoff Brackets. If the Standoff Brackets interfere with plug installation: Remove the Retention Plates from the Standoff Brackets. Remove the Standoff Brackets from the Test Plug. Put Standoff Brackets, Retaining Plates, and all associated hardware aside. <div data-bbox="662 533 1382 688" style="border: 1px solid black; padding: 5px;"> <p>NOTE: Depending on installation depth, reinstalling the Hoist Rings may aid in removing Double Block & Bleed Isolation and Test Plugs and GripTight Isolation Plugs.</p> </div>
11. Install Test Plug.	<ul style="list-style-type: none"> Install Test Plug. Carefully follow installation instructions supplied with each Test Plug.
12. After test is complete, reinstall Standoff Brackets, Retaining Plates, and Fixture Arm. Once installed, the Test Plug can be removed from the open pipe end.	<ul style="list-style-type: none"> Uninstall the Test Plug following its supplied instructions. Install Standoff Brackets, Retention Plates, Fixture Arm, and Shoulder Bolt hardware. Carefully lift Test Plug to slide out of pipe. Care must be taken to not apply excessive lifting force while the Test Plug is still within the open pipe end. This can apply excessive force to the Test Plug and Lifting Fixture.
13. After the Test Plug has been removed and stored in accordance with the Test Plugs operating procedures, the Lifting Fixture can be removed from the Test Plug.	<ul style="list-style-type: none"> Reverse the installation steps given above.

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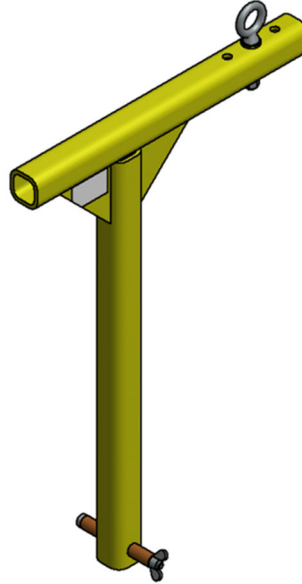
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Step/Action	Additional Action/Information/Result
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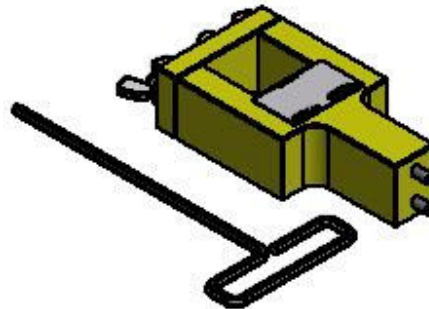
14. Inspect all Lifting Fixture components for damage. If any damage is found, do not continue to use the Lifting Fixture. Contact EST Group Customer Service for replacement parts. Store the Lifting Fixture assembled to prevent loss of parts.

TP-LIFT-1024 Replacement Parts:

- Arm and Hardware: TP-LIFT-1024-ARM



- Bracket, Tools, and Hardware: TP-LIFT-1024-BRACKET



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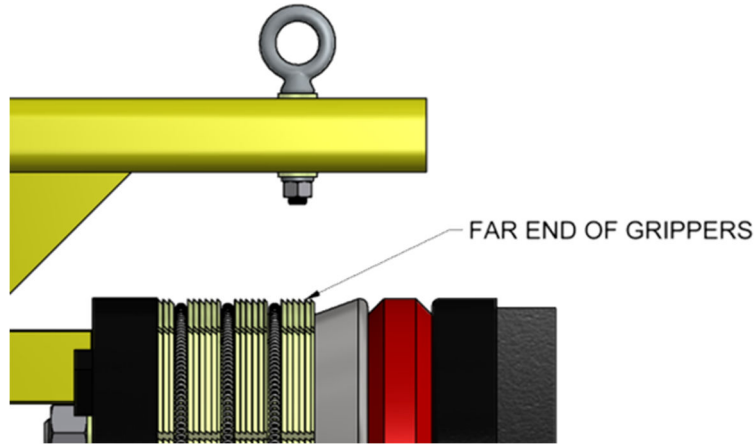


Figure 1: Approximate Center of Gravity for GripTight Test Plugs

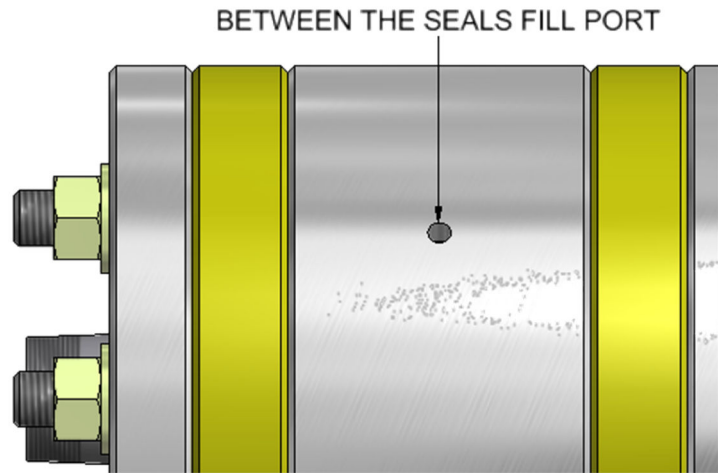


Figure 2: Approximate Center of Gravity for Double Block & Bleed Isolation Plugs

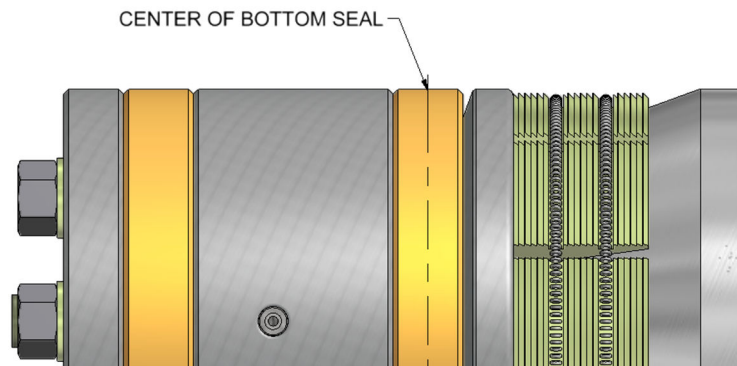


Figure 3: Approximate Center of Gravity for GripTight Isolation Plugs

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August 5, 2014

CERTIFICATION

Part #: TP-LIFT-1024

Description: Test Plug Lifting Fixture manufactured by EST Group, Hatfield, PA USA

EST certifies that the TP-LIFT-1024, Test Plug Lifting Fixture manufactured by EST Group, when properly used meets or exceeds a design safety factor of 2 to 1 based on a 1,500 lbs. (680 kg) maximum working load rating. Strict adherence to the operating procedures provided by EST Group with the lifting fixture, as well as adherence to industry standards best lifting practices including, but not limited to, OSHA 29 CFR 1926.251 and/or ASME B30.20 is required.

The TP-LIFT-1024 is manufactured from ASTM A108 grade 1018 bar, formed tubing that conforms to ASTM A500 Grade B or C, and utilizes standard commercially available hardware. The material properties and quality provide assurance that when used in the correct configuration and in accordance with EST Group operating procedures it meets or exceeds the Test Plug Lifting Fixture design safety factor.

The TP-LIFT-1024 is manufactured under EST Group's certified ISO 9001-2008 Quality Assurance Program.

The user is reminded that, in spite of the design safety factor, the maximum work load rating should never be exceeded, and the TP-LIFT-1024 should only be used in accordance with the operating procedures to lift EST Group approved test plugs.

Alex Kotlyar
Engineering Manager - EST Group

Contact EST Group Customer Service at any of the following locations with questions:

- In USA and Canada: tel: 800-355-7044, 215-721-1100; e-mail: est-info@curtisswright.com
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- On the Internet: <http://estgroup.cwfc.com>

EST Group provides a complete range of repair products, services, and replacement parts covering the life cycle of heat exchangers and condensers; additionally EST Group provides products and services to facilitate pressure testing pipe, piping systems, pressure vessels, and their components. Visit EST Group on the Internet at <http://estgroup.cwfc.com>.

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