

## Operating Procedures for 4" to 24" Double Block and Bleed Test and Isolation Plugs

### WARNING

- ⚠ Pressure testing is inherently dangerous. Strict adherence to these Operating Procedures and industry safe practices could prevent injury to personnel.
- ⚠ All personnel must be clear of the test plug when pressure testing.
- ⚠ For safety, an incompressible liquid such as water should be used as the test medium. Residual air or gas should be removed from the pipe prior to testing.
- ⚠ Failure to use anti-seize may cause an incomplete torque transmittal that may lead to a decrease in the pressure holding capability of the plug.
- ⚠ Failure to apply the installation torque specified in Table 1 could result in unsafe operation or leakage. Installation equipment and tool must be adequately sized to handle installation torque.
- ⚠ Constantly monitor upstream pressure. Immediately discontinue work if an unplanned or unanticipated increase in upstream pressure occurs.

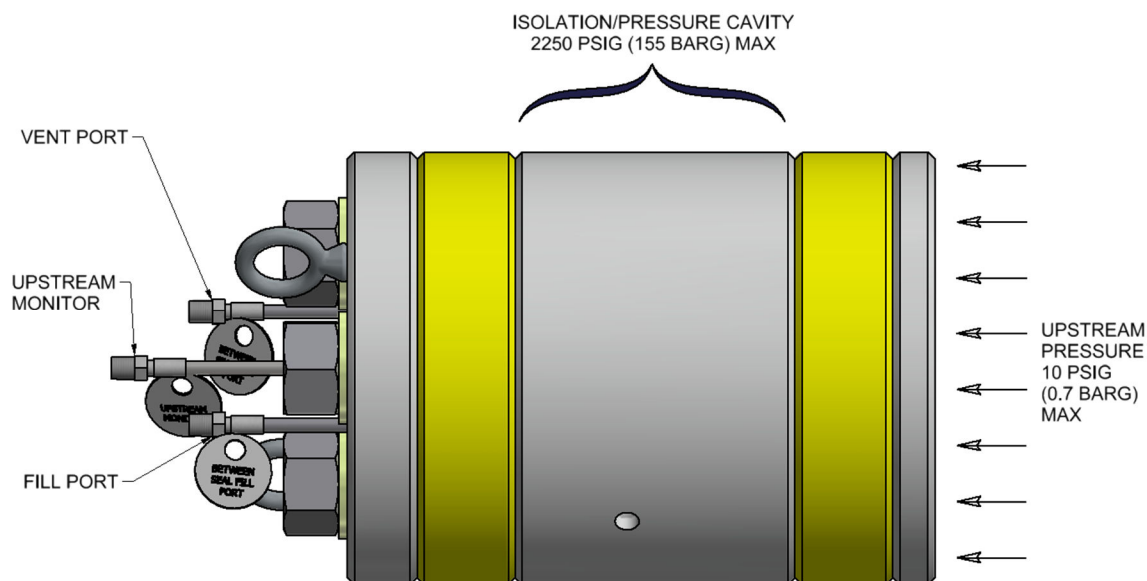


Figure 1: DBB Size Range 4" - 24"

**MAXIMUM PRESSURE BETWEEN SEALS: 2250 PsiG (155 BarG)**

**MAXIMUM UPSTREAM PRESSURE: 10 PsiG (0.7 BarG)**

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



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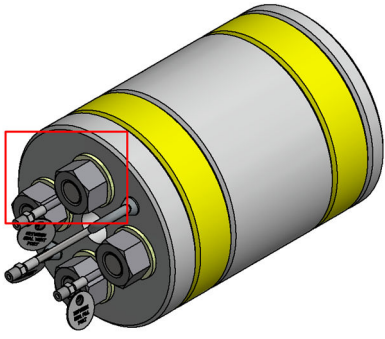
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## 1. Test Preparation

Perform the steps outlined below prior to performing your pressure test.

Step/Action	Additional Action/Information/Result
1.1. Visually inspect the plug for worn or damaged components including any cuts, scores and deformations.	<ul style="list-style-type: none"> <li>Replace worn or damaged components as needed</li> </ul>
	<p><b>NOTE:</b> Inspect the Upstream Monitor Port to ensure there is no debris or blockage.</p>
1.2. Verify that the pipe size and schedule stamped on the plug is equivalent to pipe size you are testing.	<p><b>NOTE:</b> The stamp <b>10P80</b> indicates that the plug is suitable for use in 10" SCH 80 pipe size. See Table 1 for pipe size and schedule of plugs. The seal OD must match the Plug OD listed in Table 1 for the corresponding pipe size.</p>
1.3. Clean and dry the pipe ID.	<ul style="list-style-type: none"> <li>All moisture, debris and excessive scale must be removed from the pipe ID to ensure proper seal is established during the pressure test.</li> </ul>
1.4. Liberally spread antiseize over both sides of the Hardened Washers and threads of the Shafts. Doing this ensures that installation torque is transmitted to the Seal.	
	<p><b>Figure 2: Front Isometric View</b></p>
	<p><b>CAUTION</b></p> <p>Special caution must be taken when applying lubricant and handling the test plug. The lubricant must not come in contact with the seals or tube ID. Failure to properly use antiseize on the Shaft threads and Hardened Washer may cause an incomplete torque transmittal resulting in a decrease in pressure holding capability.</p>
1.5. Complete Site safety standard checklist	

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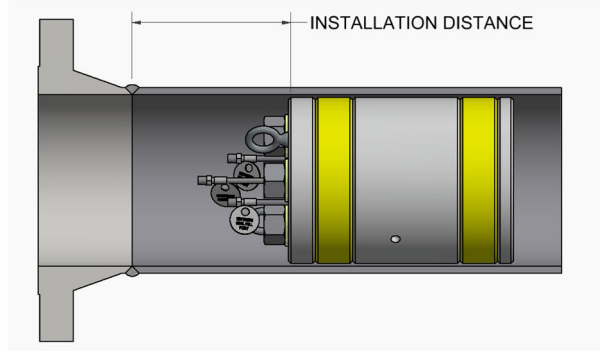
## 2. Installing Plug as an Isolation Barrier

Perform the steps outlined below when using the plugs as isolation barriers.

Step/Action	Additional Action/Information/Result
2.1. Attach hoses to the Fill, Vent, and Upstream Pressure Monitor connections.	<ul style="list-style-type: none"> <li>Upstream Monitor Connection: If upstream vapors are to be vented, a tee fitting should be used such that the hose and the pressure gauge are both connected to the Upstream Monitor Connection. Upstream vapors may be vented by attaching a 50 ft (15m) of hose to the port and locating the open end of the hose well downwind from the hot work area.</li> <li>Pressure Connection: Connect pressure source to Fill connection to pressurize between seals for isolation and/or testing purposes.</li> </ul>
2.2. Place plug so seals are inside the pipe and at least 12" from any Hot Work zone.	<ul style="list-style-type: none"> <li>Ensure the Fill Port is at the six o'clock and Vent Port at the twelve o'clock positions.</li> </ul>

**NOTE:**  
The maximum temperature exposure for urethane seals is 180°F (82°C). It may be necessary to monitor pipe temperatures during hot work to ensure seals are not damaged. It is possible to circulate fluid through the Fill and Vent ports to cool the plug. Contact EST Group Customer Service if high temperature seal materials are needed.

2.3. Tighten the Hex Nuts to remove any slack from the parts.



**Figure 3: Isolation Installed Side View**

- The normal torque values listed in Table 1 should be adequate for most installations, however due to variations within internal pipe finishes, the torque may need to be increased up to the maximum torque values listed in Table 1. Do not exceed maximum torque value.

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Step/Action	Additional Action/Information/Result
<p>2.4. Using a calibrated torque wrench capable of producing the required torque, tighten the Hex Nuts to the normal installation torque (see Table 1). The Hex Nuts must be <b>incrementally</b> tightened in a standard bolt star pattern.</p>	<ul style="list-style-type: none"> <li>Tightening the bottom Hex Nuts first will aid in centering the plug. If the plug spins during tightening, remove the plug from the pipe, then tighten the Hex Nuts to expand the seal slightly and place the plug back into the pipe. This will create a larger contact/friction surface between the plug and the pipe, which should stop the plug from rotating. Once the Seals have fully contacted the pipe ID then the Hex Nuts must be tightened in a star pattern.</li> </ul>
<p>2.5. Remove residual air between the seals, if necessary.</p>	<p><b>NOTE: Once a plug is installed, upstream pressure must be continuously monitored.</b></p>
<p>2.6. Slowly introduce the isolation pressure.</p> <p>2.7. By maintaining a positive pressure between the Seals greater than the potential upstream pressure, you are ensuring that the hot work zone is isolated from any upstream vapors or contaminants.</p>	<ul style="list-style-type: none"> <li>Ensure the ports between the Seals are in the six and twelve o'clock positions and the Hex Nuts have been properly tightened.</li> <li>Apply inert medium through the Fill Port until a small amount of the medium escapes the Vent Port. At this point, the majority of residual air is removed between the seals. Vent Port can be capped or sealed.</li> </ul>
<p>2.8. After testing application is complete, release/vent all pressure from between the Seals. Verify there is no upstream pressure.</p>	<p><b>NOTE:</b> During pressurization, some settling of the plug may occur. If the plug moves more than a total of 0.125" (3 mm) for 4" and 6" (DN100 and DN150) plug sizes or 0.63" (16 mm) for 8" - 24" (DN200 - DN600) during pressurization or testing, then halt your procedure immediately. Inspect the test plug and pipe ID for damage. Review installation steps taken prior to reinstalling the plug and retesting.</p> <p>If situation continues, contact EST Group Customer Service for technical assistance.</p>
<p>2.9. Loosen the Hex Nuts <b>incrementally</b> using the standard bolting pattern until the top of the nuts are at the top of the shaft threads.</p>	<p style="text-align: center;"><b>CAUTION</b></p> <p> Never remove a plug if upstream pressure is present.</p>
<p>2.10. Remove the plug from the tube end.</p>	<ul style="list-style-type: none"> <li>Permanent seal deformation may occur if the Seal is left partially compressed.</li> </ul>

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### 3. Performing the Pressure Test

Perform the steps outlined below when conducting a pressure test.

Step/Action	Additional Action/Information/Result
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3.1. Attach hoses to the Fill, Vent, and Upstream Pressure Monitor connections.

- **Upstream Monitor Connection:** If upstream vapors are to be vented, a tee fitting should be used such that the hose and the pressure gauge are both connected to the Upstream Monitor Connection. Upstream vapors may be vented by attaching a 50 ft (15m) of hose to the port and locating the open end of the hose well downwind from the hot work area.
- **Pressure Connection:** Connect pressure source to Fill connection to pressurize between seals for isolation and/or testing purposes.

3.2. Place plug so both Seals are inside the pipe you are testing.

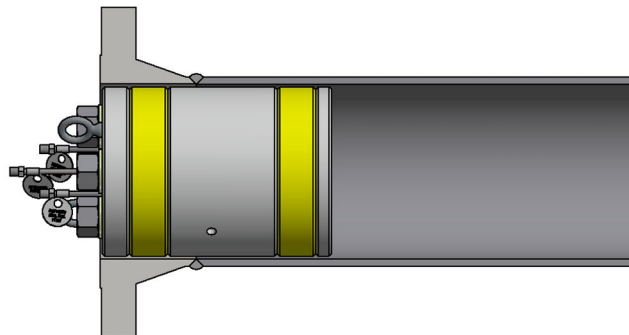
**NOTE:**

The maximum temperature exposure for urethane seals is 180°F (82°C). It may be necessary to monitor pipe temperatures during hot work to ensure seals are not damaged. It is possible to circulate fluid through the Fill and Vent ports to cool the plug. Contact EST Group Customer Service if high temperature seal materials are needed.

If	then
using the plug to test a weld	position the plug so that the Seals straddle the weld or area you are testing.

- Ensure the Fill Port is at the six o'clock and Vent Port at the twelve o'clock positions.

3.3. Tighten the Hex Nuts to remove any slack from the parts.



**Figure 4: Installed Side View**

- The normal torque values listed in Table 1 should be adequate for most installations, however due to variations within internal pipe finishes, the torque may need to be increased up to the maximum torque values listed. Do not exceed maximum torque value.

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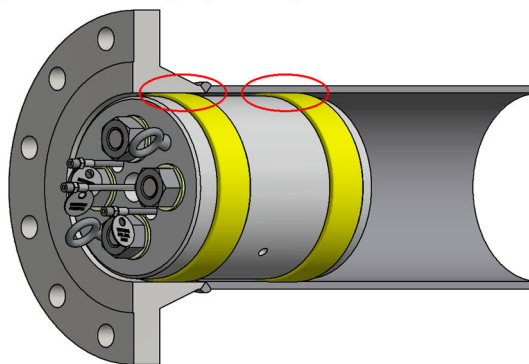
**Step/Action****Additional Action/Information/Result**

3.4. Using a calibrated torque wrench capable of producing the required torque, tighten the Hex Nuts to the normal installation torque (see Table 1). The Hex Nuts must be tightened **incrementally** in a standard bolting star pattern.

- Tightening the bottom Hex Nuts first will aid in centering the plug. If the plug spins during tightening, remove the plug from the pipe. Tighten the Hex Nuts to expand the seal slightly and place the plug back into the pipe. This will create a larger contact/friction surface between the plug and the pipe, which should stop the plug from rotating. Once the seals have fully contacted the pipe ID then the Hex Nuts must be tightened in a star pattern.

**NOTE:** If at the maximum torque the plug still leaks, verify the correct size DBB is being used. Inspect the ID of the pipe for any scale or debris; clean as needed. Reinstall and torque the plug in increasing increments starting at the normal installation torque.

- Complete installation by using a calibrated torque wrench to ensure that the Hex Nuts have been tightened to the proper torque.



**Figure 5: Seals Expanded View**

3.5. Remove residual air between the seals, if necessary.

- Ensure the ports between the seals are in the six and twelve o'clock positions and the Hex Nuts have been properly tightened.
- Apply test medium through the Fill Port until a small amount of the medium escapes the Vent Port. At this point, the majority of residual air is removed between the seals. Seal or cap the Vent Port.

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Step/Action	Additional Action/Information/Result
3.6. Slowly introduce the test pressure.  3.7. If performing a pressure drop test, hold the desired pressure with pump for a minimum of 5 minutes to allow parts to settle prior to closing the isolation valve.	<p><b>NOTE:</b> During pressurization, some settling of the plug may occur. If the plug moves more than a total of 0.125" (3 mm) for 4" and 6" (DN100 and DN150) plug sizes or 0.63" (16 mm) for 8" – 24" (DN200 – DN600) during pressurization or testing, then you must halt testing immediately. Inspect the test plug and pipe ID for damage and review installation steps taken prior to reinstalling the plug and retesting.</p> <p>If situation continues, contact EST Group Customer Service for technical assistance.</p>
3.8. After testing application is complete, release/vent all pressure from between the Seals. Verify there is no upstream pressure.	<p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center;">⚠ Never remove a plug if upstream pressure is present.</p>
3.9. Loosen the Hex Nuts <b>incrementally</b> using the standard bolting pattern until the top of the nuts are at the top of the shaft threads.	<ul style="list-style-type: none"> <li>• Permanent seal deformation may occur if the Seal is left partially compressed.</li> </ul>
3.10. Remove the plug from the tube end.	
3.11. Inspect the plug for wear and replace any worn components.	<ul style="list-style-type: none"> <li>• Visually inspect seals for damage including cuts, scores and deformations.</li> <li>• If present, visually inspect O-rings* for damage including cuts, scores and deformations.</li> <li>• Liberally spread antiseize over both sides of the hardened washer and threads of the shafts. Wipe away any excess.</li> </ul>
	<p><b>*Note</b> O-rings not integrated on all plugs. If no O-rings or O-ring grooves present, then no action is required.</p>
	<p>Contact EST Group Customer Service for replacement of worn or damaged parts identified.</p>

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#### 4. Part Replacement – Disassembly

When performing the steps outlined below, be sure to keep track of the assembly order of component parts. Occasionally a tool may be needed to pry seals away from the support to facilitate removal. If this is the case, be sure not to damage any components while using the tool.

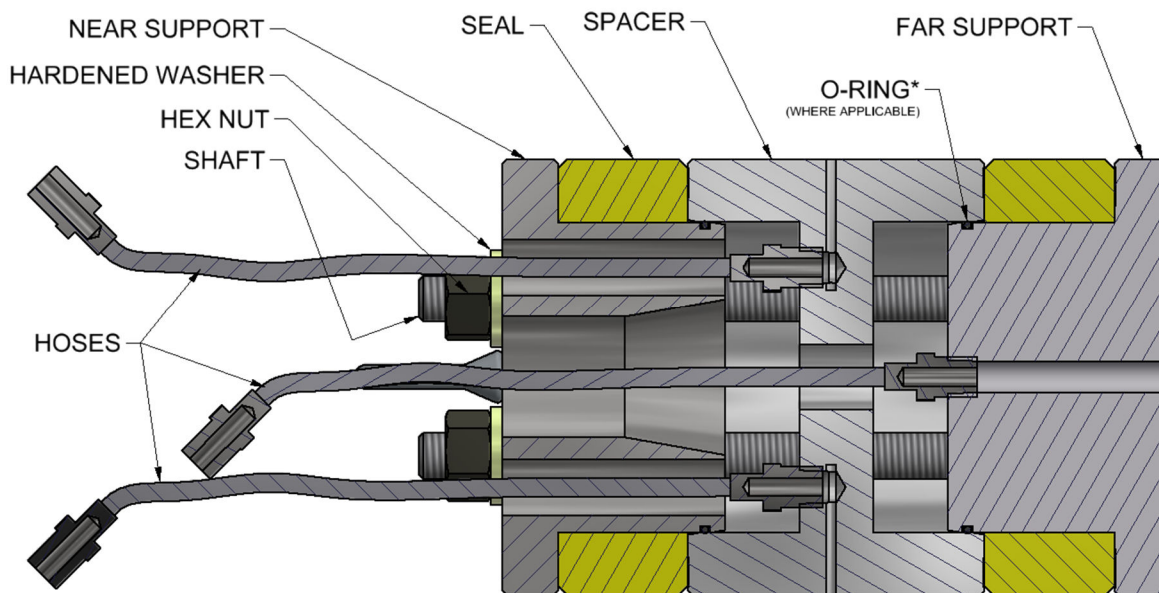


Figure 6: Double Block and Bleed Isolation Plug 4" - 6" Plug Components

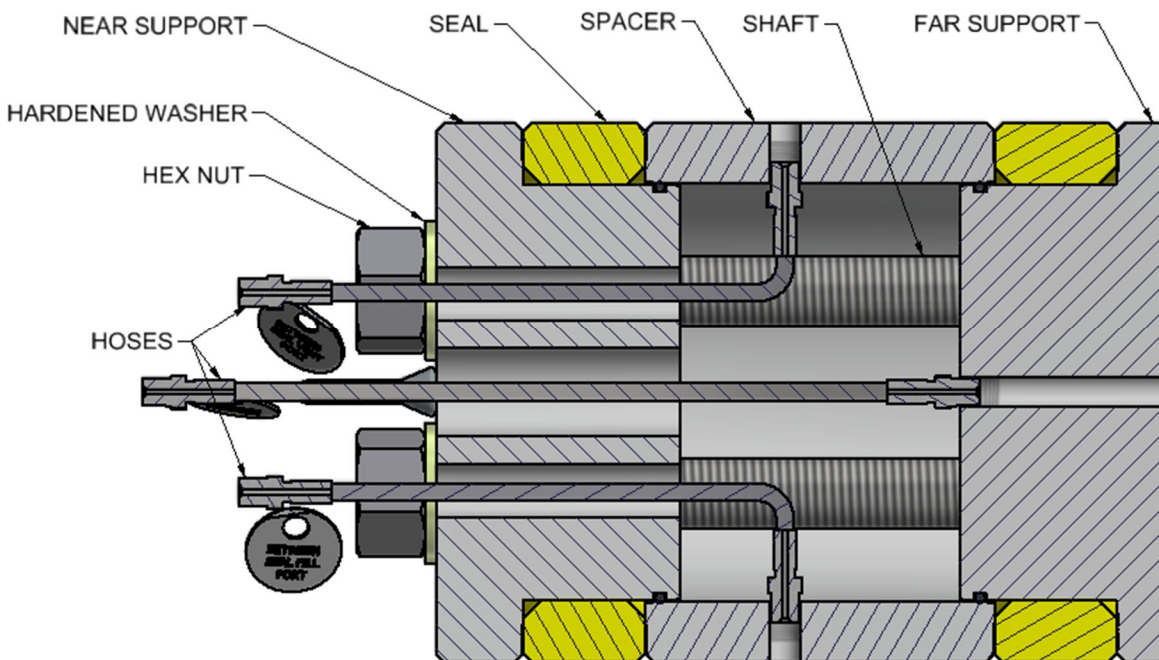


Figure 7: Double Block and Bleed Isolation Plug 8" Plug Components

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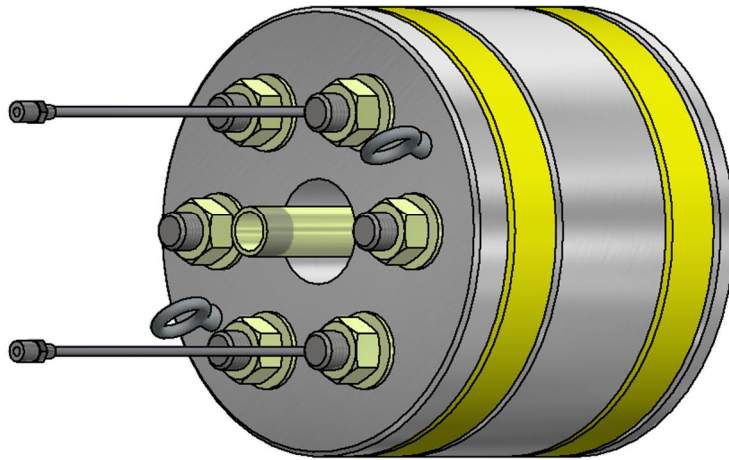


Figure 8: 10" - 12" DBB with 1" NPT Upstream Port

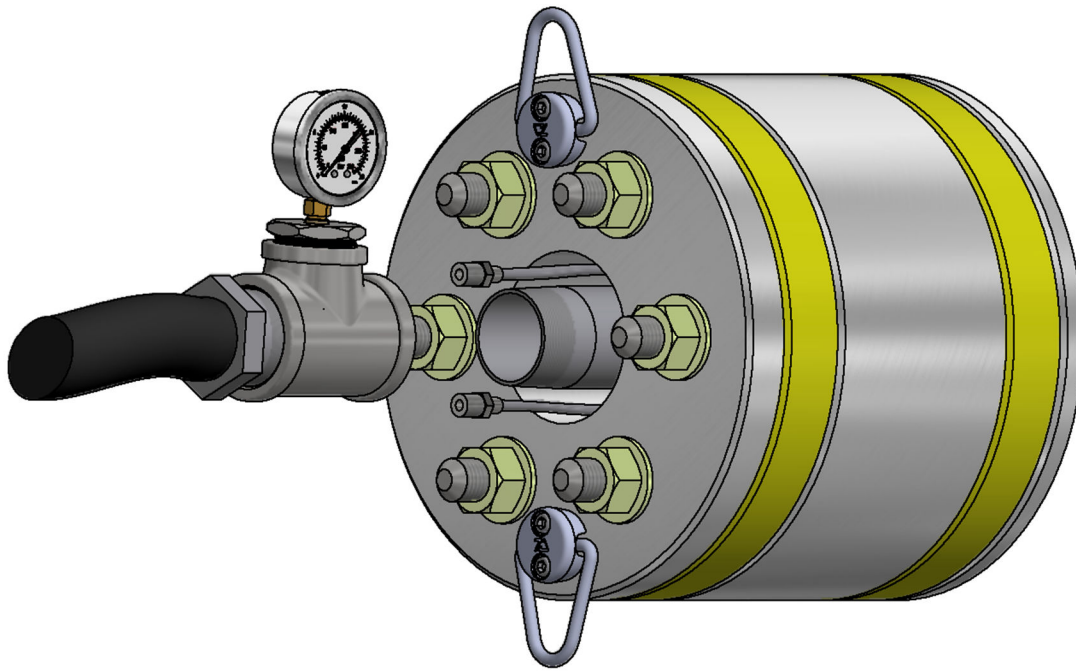


Figure 9: 14" - 24" with 2" NPT Upstream Port  
with Tee and Gauge (Not included) in possible vent monitoring configuration

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Step/Action	Additional Action/Information/Result						
4.1. Visually inspect component parts for damages.	<table border="1"> <thead> <tr> <th style="background-color: #4F81BD; color: white;"><i>If</i></th> <th style="background-color: #4F81BD; color: white;"><i>then</i></th> </tr> </thead> <tbody> <tr> <td>damaged components are identified,</td> <td>contact EST Group Customer Service for replacement parts.</td> </tr> <tr> <td>no damaged components are identified,</td> <td>go to the next step.</td> </tr> </tbody> </table>	<i>If</i>	<i>then</i>	damaged components are identified,	contact EST Group Customer Service for replacement parts.	no damaged components are identified,	go to the next step.
	<i>If</i>	<i>then</i>					
damaged components are identified,	contact EST Group Customer Service for replacement parts.						
no damaged components are identified,	go to the next step.						
4.2. To disassemble the plug and service the seal, disassemble plug assembly in this order:	<p>Component parts of the plug must be removed in the following order:</p> <ul style="list-style-type: none"> <li>• Hex Nut</li> <li>• Hardened Washer</li> <li>• Near Support</li> <li>• Front Seal</li> <li>• Spacer</li> <li>• Rear Seal</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note</b> Occasionally a tool is required to pry seals away from mating face to facilitate removal. If this is the case be sure not to damage any components while using the tool.</p> </div>						
4.3. Reassemble plug as shown.	<div style="border: 1px solid black; padding: 5px;"> <p><b>Note</b> O-rings are not integrated on all plugs. If o-rings present, ensure o-rings are properly seated in grooves when reassembling plug. If no O-rings or O-ring grooves present, then no action is required</p> </div>						

## 5. Storage

Prior to storing, clean and dry the plug. Re-lubricate the shaft threads and between the hex nut and mating surface as previously described. Store plug in an area out of direct exposure to sun, UV light or temperature extremes. Excessive heat or UV light will damage and prematurely degrade the seal elements.

Store these instructions with the plug.

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Table 1: Double Block &amp; Bleed Installation Torque Specifications, Sizes 4" to 24"

Sales Part Number	Nominal Pipe Size	Pipe Schedule	Plug OD		Clearance Between Plug & Pipe		Length		Fill/Vent	Upstream Monitor	Approx. Shipping Weight		Distance Between Seals		Normal Install. Torque		Maximum Install. Torque		Deep Socket Size [in]
			inch	mm	inch	mm	inch	mm			NPT	NPT	lbs	kg	inch	mm	ft-lbs	N-m	
DBB-4PXXS	4"	XXS	3.00	76.2	0.15	3.8	6- 1/2	165	1/8	1/8	4	1.8	3- 1/2	89	10	14	15	20	11/16
DBB-4P160	4"	160	3.29	83.6	0.15	3.8	6- 1/2	165	1/8	1/8	5	2.3	3- 1/2	89	15	20	25	34	11/16
DBB-4P120	4"	120	3.48	88.4	0.15	3.8	6- 1/2	165	1/8	1/8	5	2.3	3- 1/2	89	20	27	30	41	11/16
DBB-4P80	4"	80	3.63	92.2	0.20	5.1	6- 1/2	165	1/8	1/8	5	2.3	3- 1/2	89	20	27	30	41	11/16
DBB-4P40	4"	40	3.83	97.3	0.20	5.1	6- 1/2	165	1/8	1/8	6	2.7	3- 1/2	89	20	27	30	41	11/16
DBB-4P10	4"	10	4.06	103	0.20	5.1	6- 1/2	165	1/8	1/8	7	3.2	3- 1/2	89	20	27	30	41	11/16
DBB-4P5	4"	5/5S	4.13	105	0.20	5.1	6- 1/2	165	1/8	1/8	10	4.6	3- 1/2	89	20	27	30	41	11/16
DBB-6PXXS	6"	XXS	4.70	119	0.20	5.1	9	229	1/4	1/4	13	5.9	4	102	70	95	110	149	1- 1/16
DBB-6P160	6"	160	4.99	127	0.20	5.1	9	229	1/4	1/4	16	7.3	4	102	70	95	110	149	1- 1/16
DBB-6P120	6"	120	5.30	135	0.20	5.1	9	229	1/4	1/4	18	8.2	4	102	80	108	120	163	1- 1/16
DBB-6P80	6"	80	5.56	141	0.20	5.1	9	229	1/4	1/4	19	8.6	4	102	80	108	130	176	1- 1/16
DBB-6P40	6"	40	5.87	149	0.20	5.1	9	229	1/4	1/4	21	9.5	4	102	90	122	140	190	1- 1/16
DBB-6P10	6"	10	6.16	157	0.20	5.1	9	229	1/4	1/4	23	10.4	4	102	90	122	140	190	1- 1/16
DBB-6P5	6"	5/5S	6.21	158	0.20	5.1	9	229	1/4	1/4	24	10.9	4	102	90	122	140	190	1- 1/16
DBB-8P160	8"	160	6.56	167	0.25	6.4	9- 1/2	241	1/4	1/4	29	13.2	4	102	125	169	200	271	1- 7/16
DBB-8PXXS	8"	XXS	6.63	168	0.25	6.4	9- 1/2	241	1/4	1/4	30	13.6	4	102	125	169	200	271	1- 7/16
DBB-8P140	8"	140	6.75	171	0.25	6.4	9- 1/2	241	1/4	1/4	31	14.1	4	102	125	169	200	271	1- 7/16
DBB-8P120	8"	120	6.94	176	0.25	6.4	9- 1/2	241	1/4	1/4	32	14.5	4	102	125	169	200	271	1- 7/16
DBB-8P100	8"	100	7.19	183	0.25	6.4	9- 1/2	241	1/4	1/4	34	15.4	4	102	125	169	200	271	1- 7/16
DBB-8P80	8"	80/XS/80S	7.38	187	0.25	6.4	9- 1/2	241	1/4	1/4	36	16.3	4	102	150	203	225	305	1- 7/16

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Sales Part Number	Nominal Pipe Size	Pipe Schedule	Plug OD		Clearance Between Plug & Pipe		Length		Fill/Vent	Upstream Monitor	Approx. Shipping Weight		Distance Between Seals		Normal Install. Torque		Maximum Install. Torque		Deep Socket Size
			inch	mm	inch	mm	inch	mm			NPT	NPT	lbs	kg	inch	mm	ft-lbs	N-m	
DBB-8P60	8"	60	7.56	192	0.25	6.4	9- 1/2	241	1/4	1/4	39	17.7	4	102	175	237	250	339	1- 5/8
DBB-8P40	8"	40/STD/40S	7.73	196	0.25	6.4	9- 1/2	241	1/4	1/4	40	18.1	4	102	175	237	250	339	1- 5/8
DBB-8P30	8"	30	7.82	198	0.25	6.4	9- 1/2	241	1/4	1/4	40	18.1	4	102	175	237	250	339	1- 5/8
DBB-8P20	8"	20	7.88	200	0.25	6.4	9- 1/2	241	1/4	1/4	41	18.6	4	102	175	237	250	339	1- 5/8
DBB-8P10	8"	10 / 10S	8.08	205	0.25	6.4	9- 1/2	241	1/4	1/4	43	19.5	4	102	175	237	250	339	1- 5/8
DBB-8P5	8"	5 / 5S	8.16	207	0.25	6.4	9- 1/2	241	1/4	1/4	43	19.5	4	102	175	237	250	339	1- 5/8
DBB-10P160	10"	160	8.25	210	0.25	6.4	9- 1/2	241	1/4	1/4	43	19.6	4	102	225	305	300	407	1- 5/8
DBB-10P140	10"	140/XXS	8.50	216	0.25	6.4	9- 1/2	241	1/4	1/4	46	20.9	4	102	200	271	275	373	1- 5/8
DBB-10P120	10"	120	8.81	224	0.25	6.4	9- 1/2	241	1/4	1/4	49	22.3	4	102	200	271	275	373	1- 5/8
DBB-10P100	10"	100	9.06	230	0.25	6.4	9- 1/2	241	1/4	1	52	23.6	4	102	200	271	275	373	1- 5/8
DBB-10P80	10"	80	9.31	236	0.25	6.4	9- 1/2	241	1/4	1	54	24.5	4	102	200	271	275	373	1- 5/8
DBB-10PXS	10"	60/XS/80S	9.50	241	0.25	6.4	9- 1/2	241	1/4	1	56	25.4	4	102	200	271	275	373	1- 5/8
DBB-10P40	10"	40/STD/40S	9.77	248	0.25	6.4	9- 1/2	241	1/4	1	58	26.3	4	102	225	305	300	407	1- 5/8
DBB-10P30	10"	30	9.89	251	0.25	6.4	9- 1/2	241	1/4	1	60	27.3	4	102	225	305	300	407	1- 5/8
DBB-10P20	10"	20	10.00	254	0.25	6.4	9- 1/2	241	1/4	1	61	27.8	4	102	225	305	300	407	1- 5/8
DBB-10P10	10"	10 / 10S	10.17	258	0.25	6.4	9- 1/2	241	1/4	1	62	28.1	4	102	225	305	300	407	1- 5/8
DBB-10P5	10"	5 / 5S	10.23	260	0.25	6.4	9- 1/2	241	1/4	1	66	30.0	4	102	225	305	300	407	1- 5/8
DBB-12P160	12"	160	9.75	248	0.38	9.7	9- 1/2	241	1/4	1	60	27.3	4	102	225	305	275	373	1- 5/8
DBB-12P140	12"	140	10.12	257	0.38	9.7	9- 1/2	241	1/4	1	65	29.6	4	102	225	305	300	407	1- 5/8
DBB-12P120	12"	120/XXS	10.37	263	0.38	9.7	9- 1/2	241	1/4	1	68	30.9	4	102	225	305	300	407	1- 5/8
DBB-12P100	12"	100	10.69	272	0.38	9.7	9- 1/2	241	1/4	1	72	32.8	4	102	200	271	250	339	1- 5/8
DBB-12P80	12"	80	11.00	279	0.38	9.7	9- 1/2	241	1/4	1	75	34.0	4	102	200	271	250	339	1- 5/8

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Sales Part Number	Nominal Pipe Size	Pipe Schedule	Plug OD		Clearance Between Plug & Pipe		Length		Fill/Vent	Upstream Monitor	Approx. Shipping Weight		Distance Between Seals		Normal Install. Torque		Maximum Install. Torque		Deep Socket Size
			inch	mm	inch	mm	inch	mm	NPT	NPT	lbs	kg	inch	mm	ft-lbs	N-m	ft-lbs	N-m	[in]
DBB-12P60	12"	60	11.25	286	0.38	9.7	9- 1/2	241	1/4	1	79	35.9	4	102	225	305	275	373	1- 5/8
DBB-12PXS	12"	XS / 80S	11.37	289	0.38	9.7	9- 1/2	241	1/4	1	81	36.9	4	102	225	305	275	373	1- 5/8
DBB-12P40	12"	40 STD	11.62	295	0.32	8.1	9- 1/2	241	1/4	1	83	37.6	4	102	225	305	275	373	1 5/8
					0.38	9.7													
DBB-12P30	12"	30	11.71	297	0.38	9.7	9- 1/2	241	1/4	1	86	39.1	4	102	225	305	275	373	1- 5/8
DBB-12P20	12"	20	11.88	302	0.38	9.7	9- 1/2	241	1/4	1	88	40.0	4	102	225	305	275	373	1- 5/8
DBB-12P10	12"	5S/10S/10	12.02	305	0.38	9.7	9- 1/2	241	1/4	1	90	41.0	4	102	225	305	275	373	1- 5/8
DBB-14P160	14"	160	10.81	275	0.38	9.7	9- 1/2	241	1/4	1	73	33.2	4	102	200	271	250	339	1- 5/8
DBB-14P140	14"	140	11.12	282	0.38	9.7	9- 1/2	241	1/4	1	78	35.5	4	102	225	305	275	373	1- 5/8
DBB-14P120	14"	120	11.44	291	0.38	9.7	9- 1/2	241	1/4	1	82	37.3	4	102	225	305	300	407	1- 5/8
DBB-14P100	14"	100	11.75	299	0.38	9.7	11	279	1/4	1	86	39.1	5- 1/2	140	275	373	325	441	1- 5/8
DBB-14P80	14"	80	12.12	308	0.38	9.7	11	279	1/4	2	94	42.6	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14P60	14"	60	12.43	316	0.38	9.7	11	279	1/4	2	96	43.7	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14PXS	14"	XS / 80S	12.62	321	0.38	9.7	11	279	1/4	2	97	44.1	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14P40	14"	40	12.74	324	0.38	9.7	11	279	1/4	2	98	44.5	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14PSTD	14"	30/STD/40S	12.87	327	0.38	9.7	11	279	1/4	2	103	46.7	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14P20	14"	20	13.00	330	0.38	9.7	11	279	1/4	2	105	47.8	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14P10	14"	10 / 10S	13.12	333	0.38	9.7	11	279	1/4	2	107	48.7	5- 1/2	140	225	305	275	373	1- 5/8
DBB-14P5	14"	5 / 5S	13.31	338	0.38	9.7	11	279	1/4	2	110	50.1	5- 1/2	140	250	339	275	373	1- 5/8
DBB-16P160	16"	160	12.43	316	0.38	9.7	11	279	1/4	2	96	43.7	5- 1/2	140	225	305	275	373	1- 5/8
DBB-16P140	16"	140	12.74	324	0.38	9.7	11	279	1/4	2	98	44.6	5- 1/2	140	225	305	275	373	1- 5/8
DBB-16P120	16"	120	13.18	335	0.38	9.7	11	279	1/4	2	107	48.7	5- 1/2	140	225	305	275	373	1- 5/8

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Sales Part Number	Nominal Pipe Size	Pipe Schedule	Plug OD		Clearance Between Plug & Pipe		Length		Fill/Vent	Upstream Monitor	Approx. Shipping Weight		Distance Between Seals		Normal Install. Torque		Maximum Install. Torque		Deep Socket Size
			inch	mm	inch	mm	inch	mm			NPT	NPT	lbs	kg	inch	mm	ft-lbs	N-m	
DBB-16P100	16"	100	13.56	344	0.38	9.7	11	279	1/4	2	114	51.9	5- 1/2	140	200	271	250	339	1- 5/8
DBB-16P80	16"	80	13.93	354	0.38	9.7	11	279	1/4	2	120	54.4	5- 1/2	140	200	271	250	339	1- 5/8
DBB-16P60	16"	60	14.31	364	0.38	9.7	11	279	1/4	2	124	56.4	5- 1/2	140	225	305	275	373	1- 5/8
DBB-16P40	16"	40/XS/80S	14.62	371	0.38	9.7	11	279	1/4	2	126	57.2	5- 1/2	140	225	305	275	373	1- 5/8
DBB-16PSTD	16"	30/STD/40S	14.87	378	0.38	9.7	11	279	1/4	2	135	61.2	5- 1/2	140	250	339	300	407	1- 5/8
DBB-16P20	16"	20	15.00	381	0.38	9.7	11	279	1/4	2	138	62.8	5- 1/2	140	250	339	300	407	1- 5/8
DBB-16P10	16"	10	15.12	384	0.38	9.7	11	279	1/4	2	140	63.7	5- 1/2	140	250	339	300	407	1- 5/8
DBB-16P5	16"	5 / 5S	15.29	388	0.38	9.7	11	279	1/4	2	161	73.3	5- 1/2	140	250	339	300	407	1- 5/8
DBB-18P160	18"	160	14.06	357	0.38	9.7	11	279	1/4	2	122	55.5	5- 1/2	140	225	305	275	373	1- 5/8
DBB-18P140	18"	140	14.50	368	0.38	9.7	11	279	1/4	2	129	58.7	5- 1/2	140	225	305	275	373	1- 5/8
DBB-18P120	18"	120	14.87	378	0.38	9.7	11	279	1/4	2	135	61.4	5- 1/2	140	250	339	300	407	1- 5/8
DBB-18P100	18"	100	15.31	389	0.38	9.7	11	279	1/4	2	143	65.1	5- 1/2	140	250	339	300	407	1- 5/8
DBB-18P80	18"	80	15.74	400	0.38	9.7	11	279	1/4	2	149	67.6	5- 1/2	140	250	339	300	407	1- 5/8
DBB-18P60	18"	60	16.12	409	0.38	9.7	11	279	1/4	2	154	70.1	5- 1/2	140	250	339	300	407	1- 5/8
DBB-18P40	18"	40	16.50	419	0.38	9.7	11	279	1/4	2	156	70.8	5- 1/2	140	250	339	300	407	1- 5/8
DBB-18PXS	18"	XS	16.62	422	0.38	9.7	11	279	1/4	2	168	76.4	5- 1/2	140	275	373	325	441	1- 5/8
DBB-18P30	18"	30	16.74	425	0.38	9.7	11	279	1/4	2	168	76.4	5- 1/2	140	275	373	325	441	1- 5/8
DBB-18PSTD	18"	STD	16.87	428	0.38	9.7	11	279	1/4	2	169	76.7	5- 1/2	140	275	373	325	441	1- 5/8
DBB-18P20	18"	20	17.00	432	0.38	9.7	11	279	1/4	2	170	77.4	5- 1/2	140	275	373	325	441	1- 5/8
DBB-18P10	18"	10/10S/5	17.24	438	0.38	9.7	11	279	1/4	2	180	81.9	5- 1/2	140	275	373	325	441	1- 5/8
DBB-20P160	20"	160	15.68	398	0.38	9.7	11- 1/2	292	1/4	2	150	68.3	5- 1/2	140	250	339	300	407	1- 5/8
DBB-20P140	20"	140	16.12	409	0.38	9.7	11- 1/2	292	1/4	2	158	71.9	5- 1/2	140	250	339	300	407	1- 5/8

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			inch	mm	inch	mm	inch	mm	NPT	NPT	lbs	kg	inch	mm	ft-lbs	N-m	ft-lbs	N-m	[in]
DBB-20P120	20"	120	16.62	422	0.38	9.7	11- 1/2	292	1/4	2	168	76.4	5- 1/2	140	250	339	300	407	1- 5/8
DBB-20P100	20"	100	17.06	433	0.38	9.7	11- 1/2	292	1/4	2	176	80.1	5- 1/2	140	275	373	325	441	1- 5/8
DBB-20P80	20"	80	17.56	446	0.38	9.7	11- 1/2	292	1/4	2	196	88.9	5- 1/2	140	225	305	275	373	1- 5/8
DBB-20P60	20"	60	18.00	457	0.38	9.7	11- 1/2	292	1/4	2	197	89.6	5- 1/2	140	195	264	280	380	1- 5/8
DBB-20P40	20"	40	18.43	468	0.38	9.7	11- 1/2	292	1/4	2	209	94.8	5- 1/2	140	175	237	225	305	1- 5/8
DBB-20PXS	20"	30/XS	18.62	473	0.38	9.7	11- 1/2	292	1/4	2	210	95.6	5- 1/2	140	225	305	275	373	1- 5/8
DBB-20PSTD	20"	20/STD	18.87	479	0.38	9.7	11- 1/2	292	1/4	2	214	97.4	5- 1/2	140	225	305	275	373	1- 5/8
DBB-20P10	20"	10	19.12	486	0.38	9.7	11- 1/2	292	1/4	2	220	100	5- 1/2	140	250	339	325	441	1- 5/8
DBB-20P5	20"	5	19.25	489	0.38	9.7	11- 1/2	292	1/4	2	222	101	5- 1/2	140	250	339	325	441	1- 5/8
DBB-22P160	22"	160	17.37	441	0.38	9.7	11- 1/2	292	1/4	2	183	83.3	5- 1/2	140	225	305	275	373	1- 5/8
DBB-22P140	22"	140	17.87	454	0.38	9.7	11- 1/2	292	1/4	2	193	87.8	5- 1/2	140	225	305	275	373	1- 5/8
DBB-22P120	22"	120	18.37	467	0.38	9.7	11- 1/2	292	1/4	2	203	92.4	5- 1/2	140	225	305	275	373	1- 5/8
DBB-22P100	22"	100	18.87	479	0.38	9.7	11- 1/2	292	1/4	2	214	97.4	5- 1/2	140	225	305	275	373	1- 5/8
DBB-22P80	22"	80	19.37	492	0.38	9.7	11- 1/2	292	1/4	2	225	102.4	5- 1/2	140	275	373	325	441	1- 5/8
DBB-22P60	22"	60	19.87	505	0.38	9.7	11- 1/2	292	1/4	2	236	107.4	5- 1/2	140	250	339	300	407	1- 5/8
DBB-22PXS	22"	30/XS	20.62	524	0.38	9.7	11- 1/2	292	1/4	2	254	115.6	5- 1/2	140	250	339	300	407	1- 5/8
DBB-22PSTD	22"	20/STD	20.87	530	0.38	9.7	11- 1/2	292	1/4	2	260	118.3	5- 1/2	140	250	339	300	407	1- 5/8
DBB-22P10	22"	10 / 10S	21.18	538	0.38	9.7	11- 1/2	292	1/4	2	267	121.5	5- 1/2	140	275	373	325	441	1- 5/8
DBB-22P5	22"	5	21.25	540	0.38	9.7	11- 1/2	292	1/4	2	269	122.4	5- 1/2	140	275	373	325	441	1- 5/8
DBB-24P160	24"	160	18.93	481	0.38	9.7	11- 1/2	292	1/4	2	215	97.8	5- 1/2	140	225	305	275	373	1- 5/8
DBB-24P140	24"	140	19.50	495	0.38	9.7	11- 1/2	292	1/4	2	228	103.7	5- 1/2	140	250	339	300	407	1- 5/8
DBB-24P120	24"	120	20.00	508	0.38	9.7	11- 1/2	292	1/4	2	239	108.7	5- 1/2	140	250	339	300	407	1- 5/8

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



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Sales Part Number	Nominal Pipe Size	Pipe Schedule	Plug OD		Clearance Between Plug & Pipe		Length		Fill/Vent	Upstream Monitor	Approx. Shipping Weight		Distance Between Seals		Normal Install. Torque		Maximum Install. Torque		Deep Socket Size
			inch	mm	inch	mm	inch	mm			NPT	NPT	lbs	kg	inch	mm	ft-lbs	N-m	
DBB-24P100	24"	100	20.56	522	0.38	9.7	11- 1/2	292	1/4	2	252	114.7	5- 1/2	140	250	339	300	407	1- 5/8
DBB-24P80	24"	80	21.18	538	0.38	9.7	11- 1/2	292	1/4	2	272	123.4	5- 1/2	140	275	373	325	441	1- 5/8
DBB-24P60	24"	60	21.68	551	0.38	9.7	11- 1/2	292	1/4	2	280	127.4	5- 1/2	140	300	407	350	475	1- 5/8
DBB-24P40	24"	40	22.24	565	0.38	9.7	11- 1/2	292	1/4	2	287	130.2	5- 1/2	140	300	407	350	475	1- 5/8
DBB-24P30	24"	30	22.50	572	0.38	9.7	11- 1/2	292	1/4	2	300	136.5	5- 1/2	140	275	373	325	441	1- 5/8
DBB-24PXS	24"	XS	22.62	575	0.38	9.7	11- 1/2	292	1/4	2	304	138.3	5- 1/2	140	275	373	325	441	1- 5/8
DBB-24PSTD	24"	20/STD	22.87	581	0.38	9.7	11- 1/2	292	1/4	2	308	139.7	5- 1/2	140	275	373	325	441	1- 5/8
DBB-24P10	24"	10	23.12	587	0.38	9.7	11- 1/2	292	1/4	2	317	144.2	5- 1/2	140	300	407	350	475	1- 5/8
DBB-24P5	24"	5	23.18	589	0.38	9.7	11- 1/2	292	1/4	2	318	144.7	5- 1/2	140	300	407	350	475	1- 5/8

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

**CURTISS-  
WRIGHT**

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