

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.

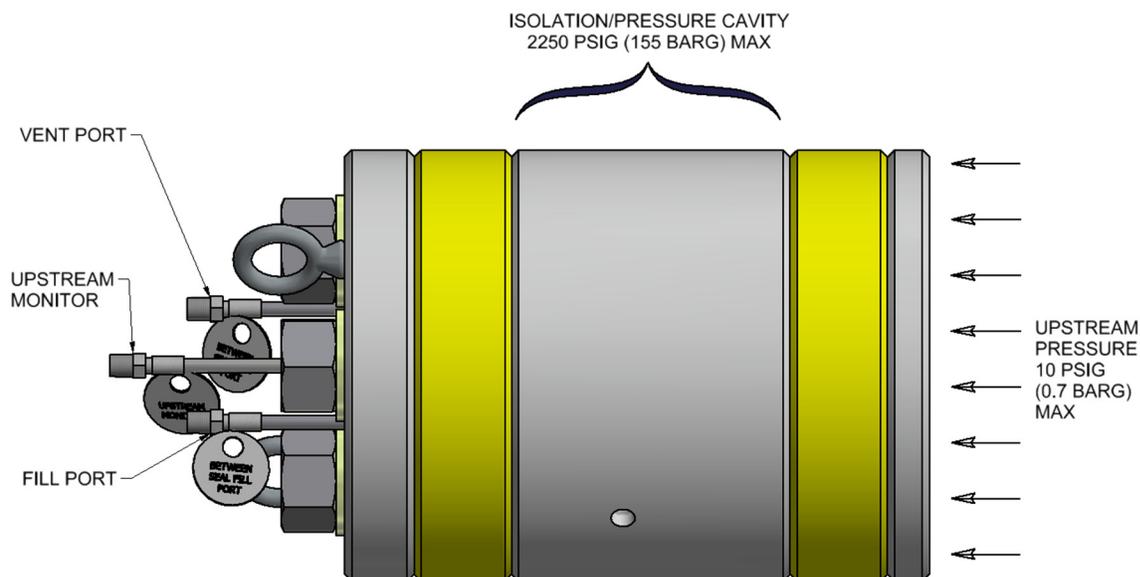


Figure 1: DBB Size Range 4" - 24"

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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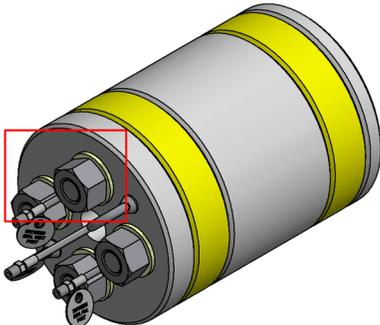
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1. Test Preparation

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"> Replace worn or damaged components as needed <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: Inspect the Upstream Monitor Port to ensure there is no debris or blockage.</p> </div>
1.2. Verify that the pipe size and schedule stamped on the plug is equivalent to pipe size you are testing.	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: The stamp 10P80 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> </div>
1.3. Clean and dry the pipe ID.	<ul style="list-style-type: none"> All moisture, debris and excessive scale must be removed from the pipe ID to ensure proper seal is established during the pressure test.
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>Figure 2: Front Isometric View</p>
	<div style="border: 2px solid red; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;">CAUTION</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> </div>
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"> 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.
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"> Ensure the Fill Port is at the six o'clock and Vent Port at the twelve o'clock positions. <div data-bbox="711 804 1419 1073" style="border: 1px solid black; padding: 5px;"> <p>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.</p> </div>
2.3. Tighten the Hex Nuts to remove any slack from the parts.	<div data-bbox="764 1094 1365 1444" style="text-align: center;"> </div> <p>Figure 3: Isolation Installed Side View</p> <ul style="list-style-type: none"> 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 incrementally tightened in a standard bolt star pattern.</p>	<ul style="list-style-type: none"> 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.
<p>2.5. Remove residual air between the seals, if necessary.</p>	<p>NOTE: Once a plug is installed, upstream pressure must be continuously monitored.</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"> Ensure the ports between the Seals are in the six and twelve o'clock positions and the Hex Nuts have been properly tightened. 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.
<p>2.8. After testing application is complete, release/vent all pressure from between the Seals. Verify there is no upstream pressure.</p>	<p>NOTE: 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 incrementally 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;">CAUTION</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"> Permanent seal deformation may occur if the Seal is left partially compressed.

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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
3.1. Attach hoses to the Fill, Vent, and Upstream Pressure Monitor connections.	<ul style="list-style-type: none"> 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.

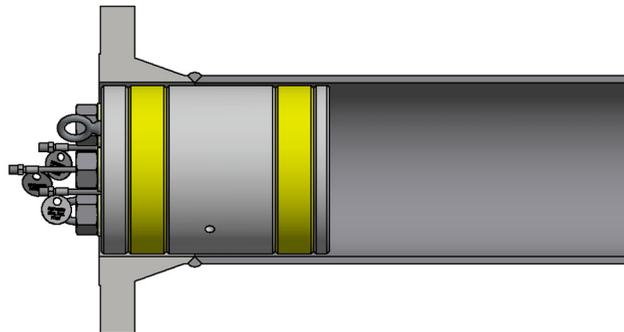


Figure 4: Installed Side View

- 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.

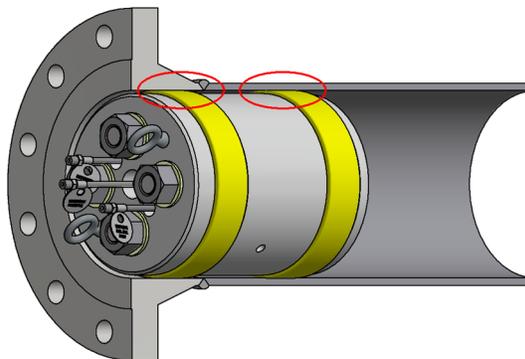


Figure 5: Seals Expanded View

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
<p>3.6. Slowly introduce the test pressure.</p> <p>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>	<p>NOTE: 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>
<p>3.8. After testing application is complete, release/vent all pressure from between the Seals. Verify there is no upstream pressure.</p>	<p style="text-align: center;">CAUTION</p> <p style="text-align: center;">⚠ Never remove a plug if upstream pressure is present.</p>
<p>3.9. Loosen the Hex Nuts incrementally using the standard bolting pattern until the top of the nuts are at the top of the shaft threads.</p>	<ul style="list-style-type: none"> • Permanent seal deformation may occur if the Seal is left partially compressed.
<p>3.10. Remove the plug from the tube end.</p>	<hr/>
<p>3.11. Inspect the plug for wear and replace any worn components.</p>	<ul style="list-style-type: none"> • Visually inspect seals for damage including cuts, scores and deformations. • If present, visually inspect O-rings* for damage including cuts, scores and deformations. • Liberally spread antiseize over both sides of the hardened washer and threads of the shafts. Wipe away any excess.
	<p>*Note 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> <hr/>

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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.

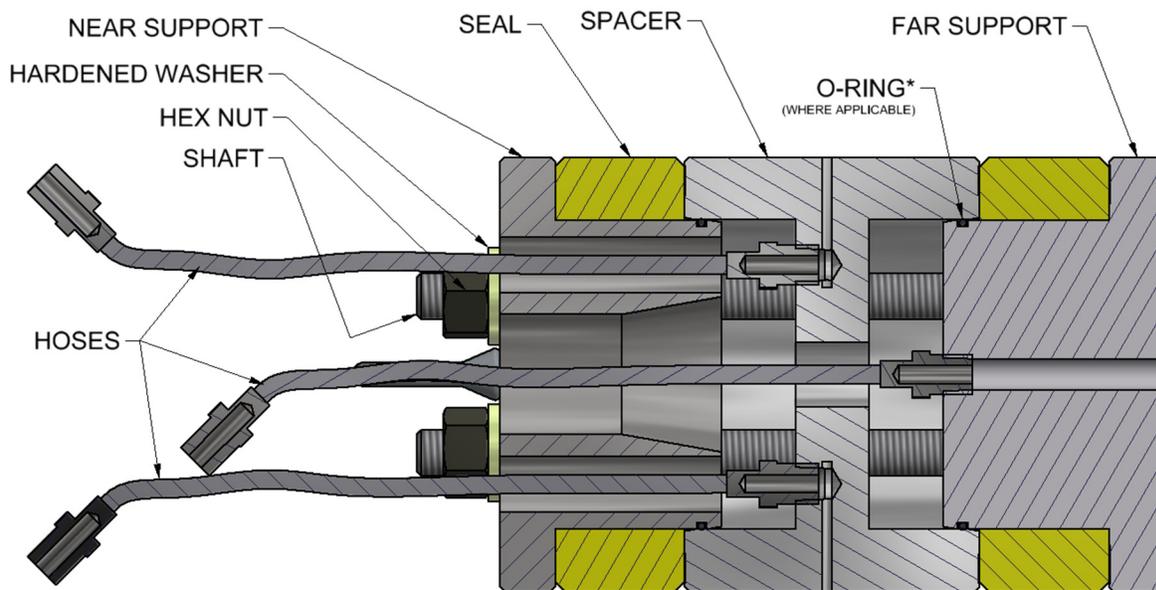


Figure 6: Double Block and Bleed Isolation Plug 4" - 6" Plug Components

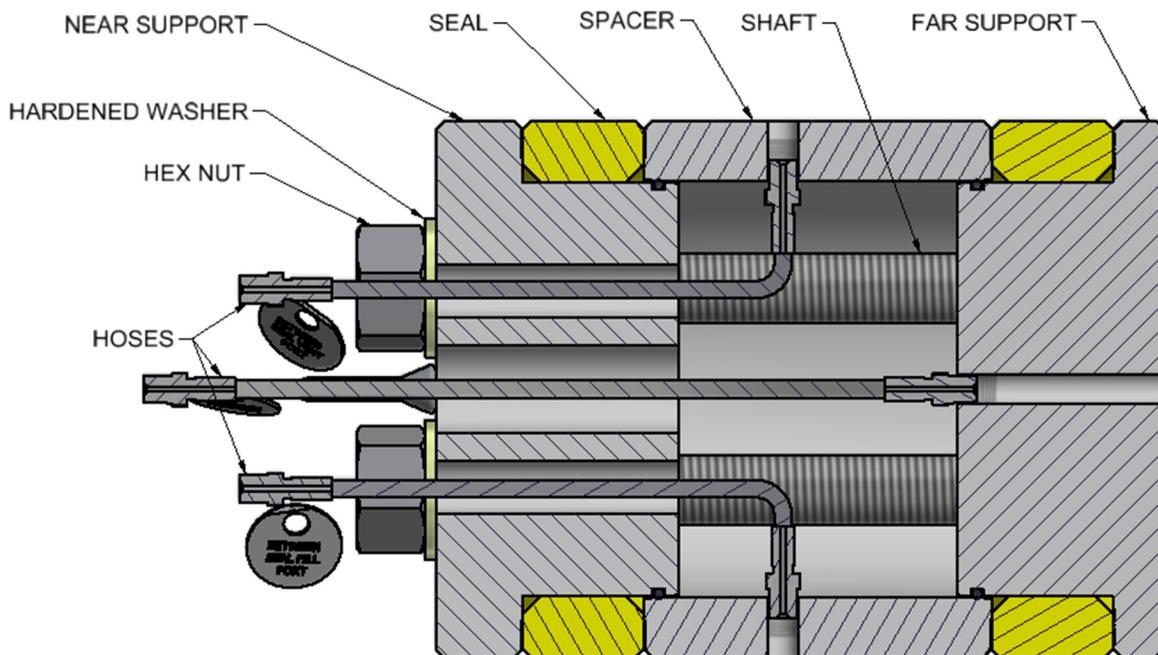


Figure 7: Double Block and Bleed Isolation Plug 8" Plug Components

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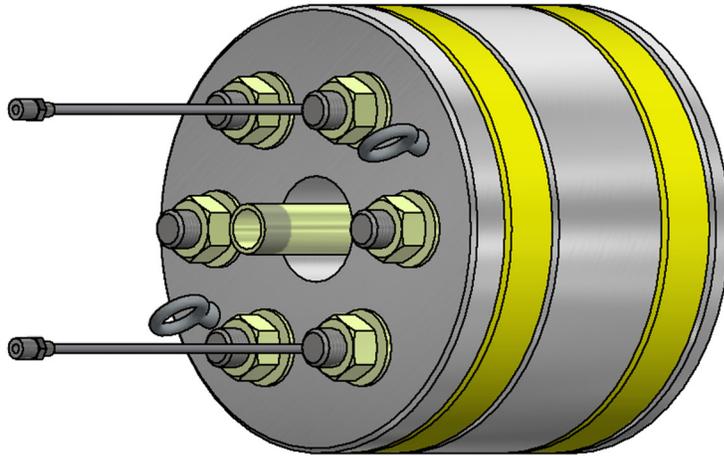


Figure 8: 10" - 12" DBB with 1" NPT Upstream Port

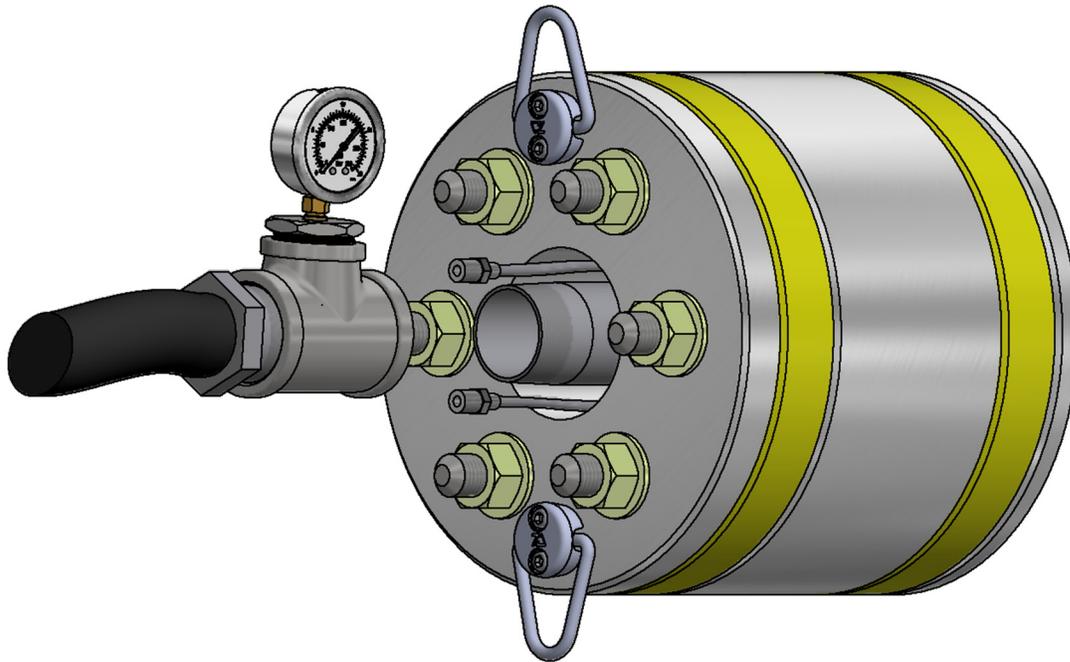


Figure 9: 14" - 24" with 2" NPT Upstream Port and Optional T and Gauge

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Step/Action	Additional Action/Information/Result
4.1. Visually inspect component parts for damages.	If
	then
	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:	Component parts of the plug must be removed in the following order:
	<ul style="list-style-type: none"> • Hex Nut • Hardened Washer • Near Support • Front Seal • Spacer • Rear Seal
	<p>Note 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>
4.3. Reassemble plug as shown.	<p>Note 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>

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 & Bleed Installation Torque Specifications, Sizes 4" to 24"

Sales Part Number	Nominal Plug Size	SCH	Plug OD [in (mm)]	Clearance Between Plug & Pipe [in (mm)]	Length [in (mm)]	Fill/Vent NPT	Upstream Monitor NPT	Approx. Shipping Weight [lbs (kg)]	Distance Between Seals [in (mm)]	Normal Install. Torque [ft-lbs (N-m)]	Maximum Install. Torque [ft-lbs (N-m)]	Deep Socket Size [in]	Maximum Pressure Between Seals [PsiG (BarG)]	Maximum Upstream Pressure [PsiG (BarG)]
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-4P10	4"	10	4.06 (103.1)	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	2250 (155)	10 (0.7)
DBB-6P160	6"	160	4.99 (126.7)	0.20 (5.1)	9 (229)	1/4	1/4	16 (7.3)	4 (102)	70 (95)	110 (149)	1-1/16	2250 (155)	10 (0.7)
DBB-6P120	6"	120	5.30 (134.6)	0.20 (5.1)	9 (229)	1/4	1/4	18 (8.2)	4 (102)	80 (109)	120 (163)	1-1/16	2250 (155)	10 (0.7)
DBB-6P80	6"	80	5.56 (141.2)	0.20 (5.1)	9 (229)	1/4	1/4	19 (8.6)	4 (102)	80 (109)	130 (176)	1-1/16	2250 (155)	10 (0.7)
DBB-6P40	6"	40	5.87 (149.1)	0.20 (5.1)	9 (229)	1/4	1/4	21 (9.5)	4 (102)	90 (122)	140 (190)	1-1/16	2250 (155)	10 (0.7)
DBB-6P10	6"	10	6.16 (156.5)	0.20 (5.1)	9 (229)	1/4	1/4	23 (10.4)	4 (102)	90 (122)	140 (190)	1-1/16	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)

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Sales Part Number	Nominal Plug Size	SCH	Plug OD [in (mm)]	Clearance Between Plug & Pipe [in (mm)]	Length [in (mm)]	Fill/Vent NPT	Upstream Monitor NPT	Approx. Shipping Weight [lbs (kg)]	Distance Between Seals [in (mm)]	Normal Install. Torque [ft-lbs (N-m)]	Maximum Install. Torque [ft-lbs (N-m)]	Deep Socket Size [in]	Maximum Pressure Between Seals [PsiG (BarG)]	Maximum Upstream Pressure [PsiG (BarG)]
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-8P80	8"	80	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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-8P40	8"	40/STD	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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-8P10	8"	10	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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-10PXS	10"	60/XS	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	2250 (155)	10 (0.7)
DBB-10P40	10"	40/STD	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	2250 (155)	10 (0.7)
DBB-10P10	10"	10	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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-12P40	12"	40 STD	11.62 (295)	0.32 (8.1) 0.38 (9.7)	9-1/2 (241)	1/4	1	83 (37.6)	4 (102)	225 (305)	275 (373)	1-5/8	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)

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Sales Part Number	Nominal Plug Size	SCH	Plug OD [in (mm)]	Clearance Between Plug & Pipe [in (mm)]	Length [in (mm)]	Fill/Vent NPT	Upstream Monitor NPT	Approx. Shipping Weight [lbs (kg)]	Distance Between Seals [in (mm)]	Normal Install. Torque [ft-lbs (N-m)]	Maximum Install. Torque [ft-lbs (N-m)]	Deep Socket Size [in]	Maximum Pressure Between Seals [PsiG (BarG)]	Maximum Upstream Pressure [PsiG (BarG)]
DBB-14PSTD	14"	30/STD	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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-16P40	16"	40/XS	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	2250 (155)	10 (0.7)
DBB-16PSTD	16"	30/STD	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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
DBB-20PSTD	20"	20/STD	18.87 (479)	0.38 (9.7)	11-1/2(292)	1/4	2	220 (99.8)	5-1/2 (140)	225 (305)	275 (373)	1-5/8	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)
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	2250 (155)	10 (0.7)

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