USA INDUSTRIES
SINCE 1982

GripSafe® ST

OPERATING MANUAL

Small Double Block & Bleed (DBB) Plug

¾” – 4”*

***For 4” Schedules 120, 160 and XXH only. Additional 4” Schedules Require the GripSafe ST Large DBB Plug**

Manufactured Exclusively by USA Industries, an ISO 9001:2015 Certified Company

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1. Introduction

Thank you for choosing GripSafe ST pipe plugging technology. This manual covers the proper use of this technology to ensure safe operating conditions. All necessary sockets and wrenches to install this equipment are available for rental/purchase from USA Industries, LLC. See **Section 4 Table 2** for sockets.

The information in this manual is intended for the use of a GripSafe ST IIB plug in metallic piping. If the intended use of this plug is for any piping other than metallic piping please contact USA Industries Customer Service Department for technical support.

⚠ **Do not use GripSafe ST equipment before fully reading and comprehending and comprehending this manual**

⚠ **Failure to follow this manual in full may result in injury to personnel and damage to equipment.**

2. Safety

- Failure to follow proper safety requirements may result in the GripSafe® Plug failing, which could lead to personnel injury, material loss, and damage to equipment.
- Wear proper PPE when performing any task with the GripSafe® Plug as defined by site safety rules. Always follow site procedure for safely lifting and operating equipment.
- Never install the GripSafe® Plug in a position where the Gripping Wedge would be located over weld droop or ridge.
- Never install the Seals or Gripping Wedge over a section of pipe that is missing its interior wall; e.g. weldolet, tee, etc.
- Use care in the handling of the Wedge Studs. Never beat, hammer, or pry on the Wedge Studs. Never remove the nut located on the Wedge Studs.
- Pressure testing can be an extremely hazardous operation and safety precautions should be strictly adhered to. Never stand or pass in front of any test plug while installed or while testing is in progress.
- Do not make any adjustments to the plug, safety equipment, or vessel while the plug is under pressure.
- Do not exceed rated pressure stamped on the plug. Plugs are rated for holding pressure in one direction only, never apply pressure on the non-rated side of the plug.
- Backpressure rating on the plug is in reference to the plugs ultimate holding capacity. Never exceed the pressure capacity of the weakest component in a pressurized system. It is imperative that a system's components be studied prior to beginning a pressure test to confirm the maximum test pressure a system can be subjected to in accordance with all applicable industry and site-specific standards.
- It is recommended that water be used as the test medium. Venting all gases from the vessel being pressurized is necessary before pressurizing the system.
- In the event pneumatic testing is required, all attempts to limit potential damage to any personnel or equipment must be made. USA Industries recommends Nitrogen as the medium for pneumatic testing as it does not support combustion. Follow provisions outlined in ASME PCC-2 Repair of Pressure Equipment and Piping when testing pneumatically.
- The Double Block and Bleed GripSafe Plug is designed to hold pressure originating from the vessel side and between the seal area only.
- Careful observation is needed at the location of the pipe where the Wedge Grippers make contact while performing a hydrotest. If any deformation or swelling of the pipe is observed, stop immediately and slowly release the pressure from the system. Contact USA Industries for further assistance.
- At any time during hydrotesting, if a popping or clicking sound is heard, stop immediately and slowly release the pressure from the system. Popping or clicking sounds during hydrotesting could be a sign of the Wedge Gripper slipping, cracking, or plug components failing. Remove the plug from the pipe or fitting and inspect for damage. Contact USA Industries for further assistance.
- Ensure plug is clean of debris, fouling, and contaminants before each use. Each Wedge Grippers should freely slide up and down in its slots with a full range of motion without any resistance. With impeded movement due to debris, dirt, contaminants, or other fouling will cause the plug to not grip on the pipe's inner diameter, which can cause it to eject under pressure, leading to personnel injury or death, material loss, and damage to equipment.
- For any questions or concerns, contact USA Industries for technical assistance.

3. Parts

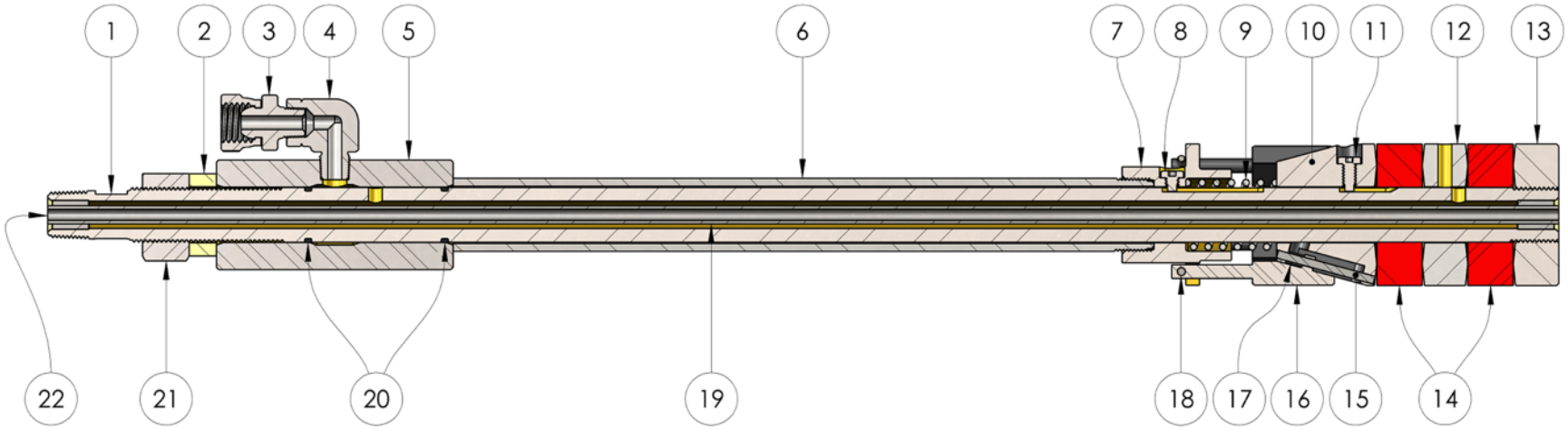

Figure 1: GripSafe ST Double Block and Bleed ¾”-2” (DBB) Diagram

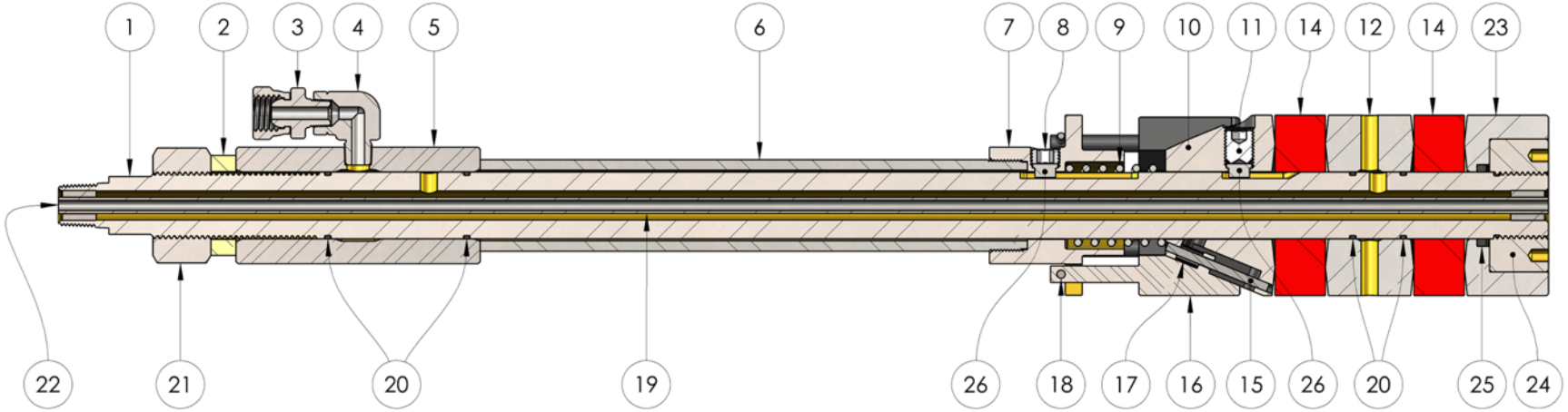

Figure 2: GripSafe ST Double Block and Bleed 2-1/2”- 4” (DBB) Diagram

Table 1: GripSafe® Bill Of Materials

Nominal Pipe Size (in)	Schedule	(1) Shaft	(2) Thrust Washer	(3) Swivel Pipe Union Fitting	(4) Street Elbow Fitting	(5) DBB Pressure Fill Sleeve	(6) Compression Tube	(7) DBB Spring Plate	(8) Spring Plate Alignment Screw	(9) Retraction Spring	(10) Wedge Cone	(11) Wedge Cone Alignment Screw	(12) Mid Ring	(13) Bottom Compression Plate	(14) Seal	(15) Wedge Gripper Retaining Dowel Pin	(16) Wedge Gripper	(17) Wedge Gripper Spring	(18) Wedge Gripper Stem Dowel Pin	(19) DBB Shaft Internal Plumbing	(20) DBB Shaft O-Ring	(21) Compression Hex Nut	(22) Vent Port	(23) Sealing Compression Ring	(24) O-Ring Compression Threaded Insert	(25) Compression Ring O-Ring	(26) Spring Plate and Wedge Cone Alignment Key
3/4	40,STD,40S	1	1	1	1	1	1	1	0	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
	80,XS,80S	1	1	1	1	1	1	1	0	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
1	10	1	1	1	1	1	1	1	0	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	40,STD,40S	1	1	1	1	1	1	1	0	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
	80,XS,80S	1	1	1	1	1	1	1	0	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
	160	1	1	1	1	1	1	1	0	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
1-1/4	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	2	1	1	0	0	0	0
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
	160	1	1	1	1	1	1	1	0	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	XX	1	1	1	1	1	1	1	0	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
1-1/2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	2	1	1	0	0	0	0
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
	160	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	XX	1	1	1	1	1	1	1	0	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	2	1	1	0	0	0	0
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	2	1	1	0	0	0	0
	160	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	2	1	1	0	0	0	0
	XX	1	1	1	1	1	1	1	1	1	1	1	1	1	2	5	5	5	5	1	2	1	1	0	0	0	0
2-1/2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	4	1	1	1	1	1	2
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	4	1	1	1	1	1	2
	160	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	2	1	1	0	0	0	0
	XX	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	2	1	1	0	0	0	0
3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	8	8	8	8	1	4	1	1	1	1	1	2
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	160	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	XX	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
3-1/2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	8	8	8	8	1	4	1	1	1	1	1	2
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	XX	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6	6	6	6	1	4	1	1	1	1	1	2
4	10	1	1	1	1	1	1	1	1	1	1	1	1	1	2	8	8	8	8	1	4	1	1	1	1	1	2
	40,STD,40S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	80,XS,80S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	120	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	160	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2
	XX	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	7	7	7	1	4	1	1	1	1	1	2

4. Specifications

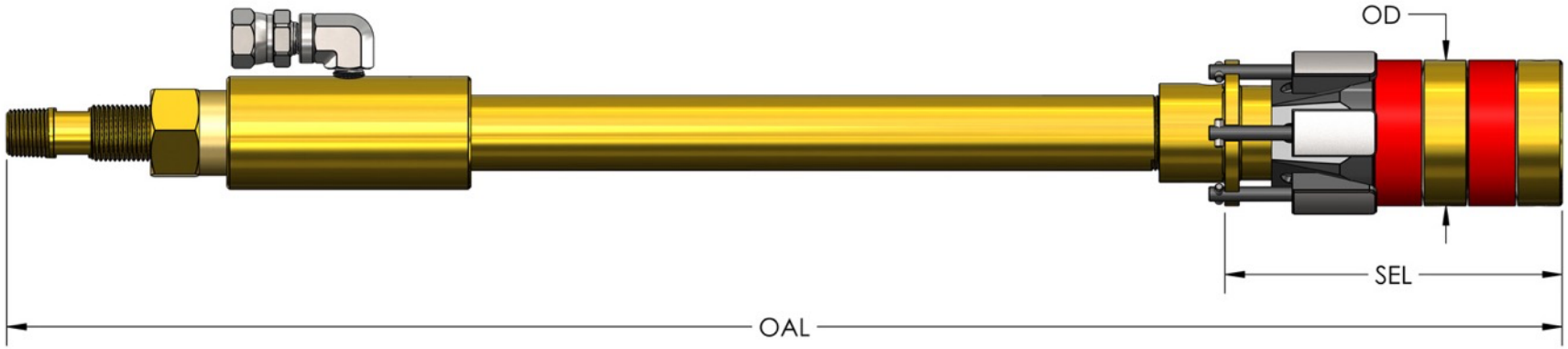

Figure 3: GripSafe ST Double Block and Bleed Diagram (DBB) Dimensions

Table 2: GripSafe ST DBB Plug Specifications

Nominal Pipe Size (in)	Schedule	Part Number	Tool Diameter (in)	Rec. ID Range* (in)	Nominal Pipe ID Clearance (in)	Approx. Tool Weight (lbs)	Tool Length (in)	Torque Range (ft-lbs)		Compression Hex Nut Size (in)	Backup Wrench Size (in)	Fill Port Thread	Back Pressure Vent Thread	Back Pressure Rating (PSI)	Between the Seal Test Pressure (PSI)	SEL Seal End Length
								Norm	Max.							
3/4	40,STD,40S	GSST-D-S-0075-040	0.79	0.80 - 0.87	0.035	1.9	19.00	2.9	4.5	1/2	1/4 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	2.92
	80,XS,80S	GSST-D-S-0075-080	0.71	0.72 - 0.79	0.035	1.9	19.00	2.2	3.5	1/2	1/4 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	2.92
1	10	GSST-D-S-0100-010	1.04	1.06 - 1.16	0.055	2.2	18.63	6.3	9.7	9/16	1/4 Open End	1/4 FNPSM	1/16 MNPT	10000	2500	3.17
	40,STD,40S	GSST-D-S-0100-040	0.99	1.02 - 1.11	0.055	2.2	18.63	5.6	8.7	9/16	1/4 Open End	1/4 FNPSM	1/16 MNPT	10000	2500	3.17
	80,XS,80S	GSST-D-S-0100-080	0.90	0.92 - 1.02	0.055	2.1	18.63	4.5	6.9	9/16	1/4 Open End	1/4 FNPSM	1/16 MNPT	10000	2500	3.17
	160	GSST-D-S-0100-160	0.78	0.79 - 0.85	0.035	1.9	19.00	2.8	4.4	1/2	1/4 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	2.92
1 1/4	10	GSST-D-S-0125-010	1.38	1.39 - 1.54	0.068	3.9	19.00	15	23	3/4	3/8 Open End	1/4 FNPSM	1/8 MNPT	10000	2500	3.59
	40,STD,40S	GSST-D-S-0125-040	1.31	1.33 - 1.48	0.068	3.8	19.00	13	20	3/4	3/8 Open End	1/4 FNPSM	1/8 MNPT	10000	2500	3.59
	80,XS,80S	GSST-D-S-0125-080	1.21	1.23 - 1.38	0.065	3.6	19.00	11	17	3/4	3/8 Open End	1/4 FNPSM	1/8 MNPT	10000	2500	3.59
	160	GSST-D-S-0125-160	1.11	1.12 - 1.22	0.055	2.3	18.63	7.2	11	9/16	1/4 Open End	1/4 FNPSM	1/16 MNPT	10000	2500	3.17
	XX	GSST-D-S-0125-XX	0.86	0.87 - 0.94	0.045	1.9	19.00	3.5	5.5	1/2	1/4 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	2.92
1 1/2	10	GSST-D-S-0150-010	1.60	1.64 - 1.80	0.085	5.2	20.00	24	37	15/16	7/16 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	4.31
	40,STD,40S	GSST-D-S-0150-040	1.53	1.56 - 1.73	0.085	5.0	20.00	21	33	15/16	7/16 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	4.31
	80,XS,80S	GSST-D-S-0150-080	1.42	1.45 - 1.62	0.085	4.8	20.00	18	28	15/16	7/16 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	4.31
	160	GSST-D-S-0150-160	1.27	1.30 - 1.44	0.068	3.7	19.00	12	19	3/4	3/8 Open End	1/4 FNPSM	1/8 MNPT	10000	2500	3.59
	XX	GSST-D-S-0150-XX	1.05	1.08 - 1.16	0.055	2.2	18.63	6.3	9.8	9/16	1/4 Open End	1/4 FNPSM	1/16 MNPT	10000	2500	3.17
2	10	GSST-D-S-0200-010	2.03	2.05 - 2.28	0.130	6.8	20.75	47	75	1-1/8	9/16 Open End	1/4 FNPSM	3/8 MNPT	10000	2500	4.50
	40,STD,40S	GSST-D-S-0200-040	1.94	1.97 - 2.19	0.130	6.6	20.75	42	65	1-1/8	9/16 Open End	1/4 FNPSM	3/8 MNPT	10000	2500	4.50
	80,XS,80S	GSST-D-S-0200-080	1.81	1.84 - 2.06	0.130	6.2	20.75	36	55	1-1/8	9/16 Open End	1/4 FNPSM	3/8 MNPT	10000	2500	4.50
	160	GSST-D-S-0200-160	1.60	1.64 - 1.80	0.085	5.2	20.00	24	37	15/16	7/16 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	4.31
	XX	GSST-D-S-0200-XX	1.42	1.45 - 1.62	0.085	4.8	20.00	18	28	15/16	7/16 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	4.31
2 1/2	10	GSST-D-S-0250-010	2.51	2.57 - 2.77	0.125	10.6	21.38	85	135	1-5/16	9/16 Open End	1/4 FNPSM	3/8 MNPT	8000	2500	6.09
	40,STD,40S	GSST-D-S-0250-040	2.34	2.38 - 2.61	0.125	9.9	21.38	75	115	1-5/16	9/16 Open End	1/4 FNPSM	3/8 MNPT	8000	2500	6.09
	80,XS,80S	GSST-D-S-0250-080	2.20	2.24 - 2.46	0.125	9.4	21.38	65	100	1-5/16	9/16 Open End	1/4 FNPSM	3/8 MNPT	8000	2500	6.09
	160	GSST-D-S-0250-160	2.00	2.06 - 2.25	0.125	6.8	20.75	46	70	1-1/8	9/16 Open End	1/4 FNPSM	3/8 MNPT	10000	2500	4.50
	XX	GSST-D-S-0250-XX	1.69	1.74 - 1.89	0.085	5.4	20.00	27	42	15/16	7/16 Open End	1/4 FNPSM	1/4 MNPT	10000	2500	4.31
3	10	GSST-D-S-0300-010	3.07	3.10 - 3.44	0.193	15.1	22.13	150	230	1-1/2	3/4 Box End	1/4 FNPSM	3/8 MNPT	8000	2500	6.56
	40,STD,40S	GSST-D-S-0300-040	2.88	2.92 - 3.25	0.193	14.1	22.13	130	200	1-1/2	3/4 Box End	1/4 FNPSM	3/8 MNPT	8000	2500	6.56
	80,XS,80S	GSST-D-S-0300-080	2.71	2.75 - 3.09	0.190	13.2	22.13	110	175	1-1/2	3/4 Box End	1/4 FNPSM	3/8 MNPT	8000	2500	6.56
	160	GSST-D-S-0300-160	2.50	2.56 - 2.76	0.125	10.5	21.38	85	130	1-5/16	9/16 Open End	1/4 FNPSM	3/8 MNPT	8000	2500	6.09
	XX	GSST-D-S-0300-XX	2.18	2.24 - 2.42	0.125	9.3	21.38	55	85	1-1/8	9/16 Open End	1/4 FNPSM	3/8 MNPT	8000	2500	6.09
3 1/2	10	GSST-D-S-0350-010	3.56	3.61 - 3.96	0.204	20.4	22.75	225	350	1-11/16	7/8 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.22
	40,STD,40S	GSST-D-S-0350-040	3.34	3.39 - 3.75	0.204	19.0	22.75	195	305	1-11/16	7/8 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.22
	80,XS,80S	GSST-D-S-0350-080	3.16	3.21 - 3.56	0.208	17.7	22.75	175	270	1-11/16	7/8 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.22
	XX	GSST-D-S-0350-0XX	2.60	2.66 - 2.86	0.125	10.9	21.38	95	145	1-5/16	9/16 Open End	1/4 FNPSM	3/8 MNPT	8000	2500	6.09
4	10	GSST-D-S-0400-010	4.04	4.10 - 4.51	0.220	27.9	23.25	325	505	1-7/8	15/16 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.97
	40,STD,40S	GSST-D-S-0400-040	3.81	3.87 - 4.28	0.220	25.9	23.25	285	445	1-7/8	15/16 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.97
	80,XS,80S	GSST-D-S-0400-080	3.61	3.67 - 4.08	0.220	24.2	23.25	255	395	1-7/8	15/16 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.97
	120	GSST-D-S-0400-120	3.42	3.52 - 3.83	0.205	19.5	22.75	205	320	1-11/16	7/8 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.22
	160	GSST-D-S-0400-160	3.23	3.33 - 3.64	0.205	18.3	22.75	185	285	1-11/16	7/8 Box End	1/4 FNPSM	1/2 MNPT	6000	2500	7.22
	XX	GSST-D-S-0400-XX	2.96	2.99 - 3.34	0.193	14.4	22.13	135	215	1-1/2	3/4 Box End	1/4 FNPSM	3/8 MNPT	8000	2500	6.56

5. Preparing the GripSafe ST DBB Plug for Installation

5.1 The GripSafe ST DBB plug should be in the retracted position (not ready to install) when received from the factory. Refer to Figure 4 for clarification.

Figure 4: Not Ready to Install State (Retracted)

Figure 5: Ready to Install State (Compressed)

5.2 Tighten the **Compression Hex Nut (21)** until the DBB **Spring Plate (3)** is flush with the **Wedge Cone (10)**. Refer to Figure 5 for guidance.

- Avoid over-tightening or torquing the **Compression Hex Nut (21)** to the extent that the **Seals (14)** begin to swell or protrude beyond the outer diameter of the plug.
- In the compressed state, as illustrated in Figure 5, the GripSafe Plug will securely grip the pipe upon insertion.

CHECK: Before each use, ensure that the plug is free of debris, fouling, and contaminants. Each **Wedge Gripper (16)** must move freely up and down in its slot, allowing for a full range of motion without any resistance. If the movement of **Wedge Gripper (16)** is obstructed by debris, dirt, or other contaminants, the plug may fail to grip the pipe's inner diameter properly. This can result in the plug ejecting under pressure, posing serious risks of personnel injury or death, material loss, and equipment damage.

6. Installing the GripSafe ST DBB Plug

CAUTION: Ensure that the pipe's inner diameter (I.D.) is clean. All debris, pipe scaling, and rust layers must be removed to the deepest point where the plug will be installed. If the pipe is lined or contains irremovable product, **STOP** and contact USA Industries for assistance before proceeding. Neglecting this step may hinder the wedge's ability to grip and could lead to the plug ejecting under pressure. Always wear appropriate PPE and adhere to all site guidelines.

6.1 Inserting the GripSafe ST DBB plug into the pipe.

- See Table 2 for clearance requirements and ensure the pipe ID falls within the Internal Diameter Range.

6.2 Slowly push the plug into the pipe.

6.3 A slight rocking motion will aid in the installation.

- Once the **Wedge Grippers (16)** contact the inner diameter of the pipe, they will automatically grip, making removal of the plug impossible at this stage. Refer to Section 8 for instructions on plug removal if necessary.

6.4 For pipe installation, insert the GripSafe ST DBB plug to the desired depth, ensuring the DBB **Spring Plate's (7)** slotted section is flush with the pipe's face. See Figure 6 for proper installation and Figure 7 for improper installation. If needed, the slotted section can be pushed further into the pipe. For welding neck installation, refer to Section 7.

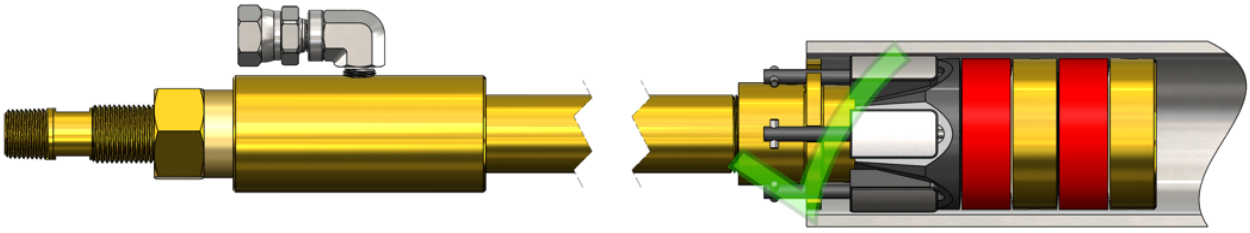

Figure 6: GripSafe ST DBB Minimum Insertion Depth in a Sectioned Pipe

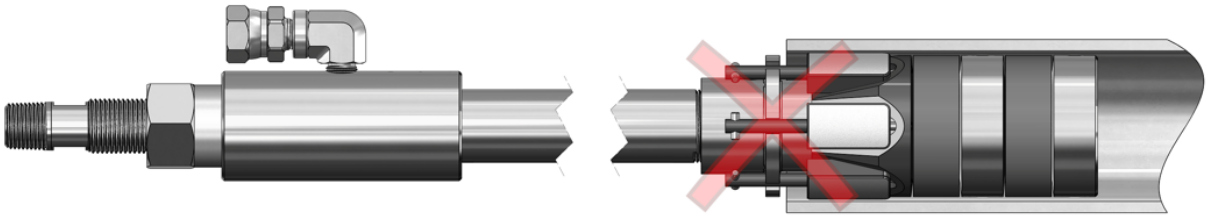

Figure 7: GripSafe ST DBB incorrect Insertion Depth in a Sectioned Pipe

6.5 Attach a crow's foot to a torque wrench to torque the **Compression Hex Nut (21)**. Hold the Backup Hex or flats on the **Shaft (1)** stationary with a wrench until the Minimum Compression Torque specified in Table 2 is achieved.

TEMPERATURE NOTE: If welding on the pipe with the plug installed, ensure the **Seal (14)** is at least 6" from the center of the weld to avoid degradation. For post-weld heat treatments, the **Seal (14)** must be at least 12" from the heating element, and the temperature at the plug's installation depth should not exceed 220°F. For high-temperature bake-outs (400°F or higher), increase the installation depth as much as possible. Always monitor pressure behind the plug (ORB) and between the seals (DBB), stopping work immediately if a pressure drop occurs. Additionally, monitor the pipe's external surface temperature near the seal to prevent damage.

CAUTION: Using an impact wrench is not recommended as it can damage both the ***Spring Plate Alignment Screw(8)*** and ***Wedge Cone Alignment Screw(11)*** for sizes ¾" – 2" or ***Spring Plate and Wedge Cone Alignment Key(26)*** for sizes 2-1/2" and above.

CAUTION: Failure to use a backup wrench to keep the shaft stationary will place excessive stress on the ***Wedge Cone Alignment Screw(11)*** for sizes ¾" – 2", or ***Spring Plate and Wedge Cone Alignment Key(26)*** for sizes 2-1/2" and above, which could cause failure, resulting in a stuck plug and/or cause it to eject under pressure.

6.6 Verify the integrity of the **Seals (14)**

6.7 Install a manual hydrotest pump to the **Swivel Pipe Union Fitting (3)** using the appropriate fittings.

- Pressurize to 500 psig or 75% of the target pressure for 10 minutes to ensure both **Seals (14)** are properly seated. Afterward, proceed to the desired pressure. Note that a pressure drop may not necessarily indicate a leak, as USA Industries **Seals (14)** will creep under pressure until fully seated, increasing the pressure test volume. For smaller test volumes, a gradual pressure loss may be noticeable during this phase. To achieve stable sealing, reapply pressure until it stabilizes. This creep behavior can also occur at full pressure, and the resolution remains the same during integrity verification.

6.8 The GripSafe ST DBB plug is now securely installed to handle the specified hydrotest and backpressure levels.

For safety, consider attaching a gauge and vent hose assembly, along with a backpressure monitoring tee, to the backpressure **Vent Port (22)** to safely release any backpressure. The hose should be long enough to direct any vapor away from personnel. A valve can also be added to facilitate safe backpressure removal during plug extraction (see Section 8). If using a backpressure monitoring tee, it's beneficial to install a pressure gauge on the bull side and connect the run side to the backpressure **Vent Port (22)** with a ball valve. Additionally, connecting a hose to the ball valve and routing it to a safe location can further enhance safety for nearby workers.

CAUTION: Rapidly flowing gases or liquids through hoses can lead to hose whip. Exercise caution to prevent this, as failure to do so may result in personnel injury or equipment damage.

CAUTION: Always avoid standing directly in front of the GripSafe ST Double Block and Bleed. Treat installed plugs this way, regardless of whether they have backpressure.

CAUTION: If backpressure occurs, continuously monitor pressure using an attached gauge and visually inspect the pipe for integrity. Signs of bulging, enlargement, or tapering indicate overpressure. The Backpressure Rating in Table 2 reflects the GripSafe ST Double Block and Bleed's pressure-holding capacity, which may exceed the system's design limitations during testing.

7. Positioning for Between the Seal Hydrotesting

7.1 To hydrostatically test a weld, ensure the proper Depth of Insertion using the following method:

1. Measure the **Weld Zone Depth**, which is the distance from the pipe or fitting end to the center of the weld area being tested.
2. Measure the center distance of the **Mid Ring (12)**, which is the distance from the top of the **Compression Hex Nut (21)** to the center of the **Mid Ring (12)**. ***Note:*** Ensure the plug is in the Compressed state, as shown in Figure 5, when taking this measurement.
3. Subtract the Weld Zone Depth from the **Mid Ring's (12)** center distance.
4. Insert the plug, measuring from the pipe or fitting end to the top of the **Compression Hex Nut (21)**. Stop inserting once the measurement matches the difference calculated in step 3 of this section.

   Example:

   Mid Ring's (12) Center Distance = 17.25"z

   Weld Zone Depth = 2.53"

   Mid Ring's (12) Center Distance – **Weld Zone Depth** = 17.25" – 2.53" = 14.72"

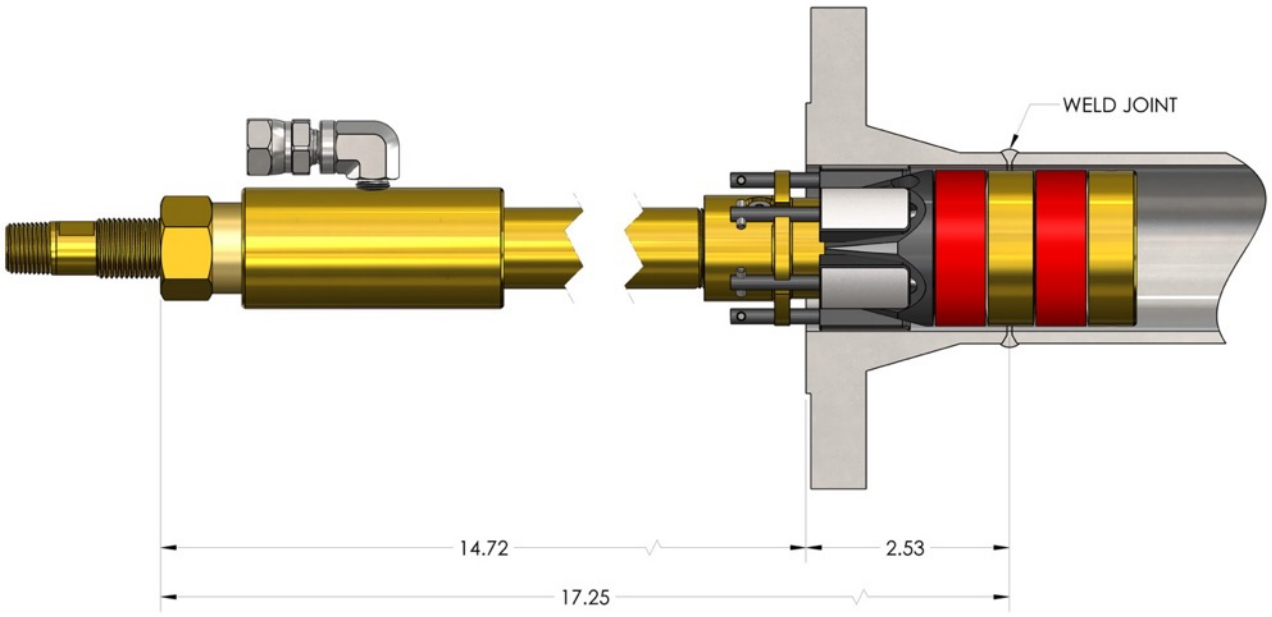

Figure 8: Insertion Depth for Testing Weld

5. Based on the calculation and as illustrated in Figure 8, the plug should be inserted into the fitting until the distance from the top of the **Compression Hex Nut (21)** to the end of the fitting measures 14.72".

CAUTION: Gripping failure may occur if the **Gripping Wedges (16)** are not fully inserted into the pipe or fitting. If any part of the **Wedge Gripper (16)** is visible beyond the pipe or fitting end (see Figure 10), the GripSafe plug may not hold backpressure. Ensure the plug is advanced so no Wedge Gripper surface is visible (see Figure 9). Be careful not to cover the weld area with the **Seal (14)** to avoid false hydrotest results.

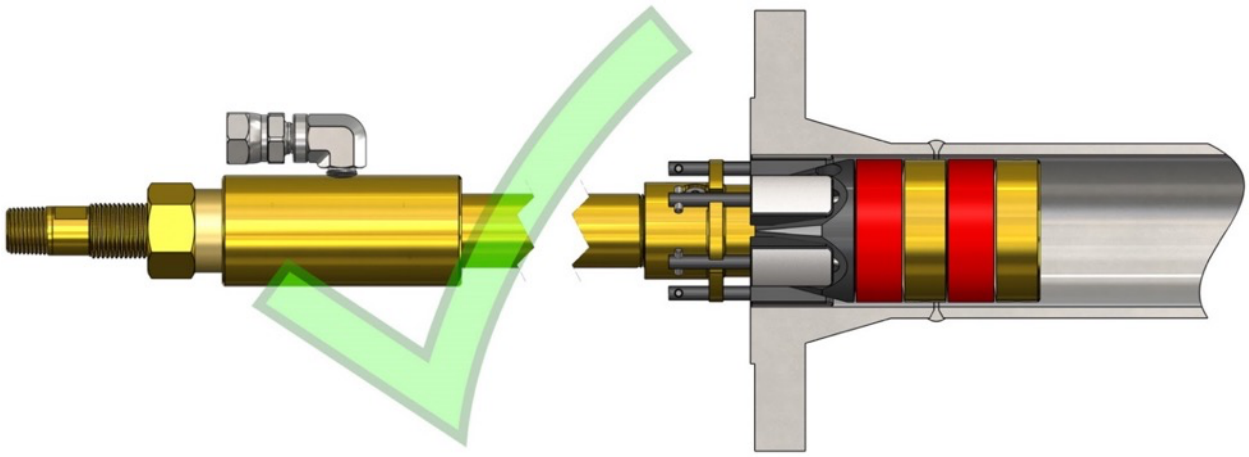

Figure 9: Permissible Insertion Depth with Backpressure Rating

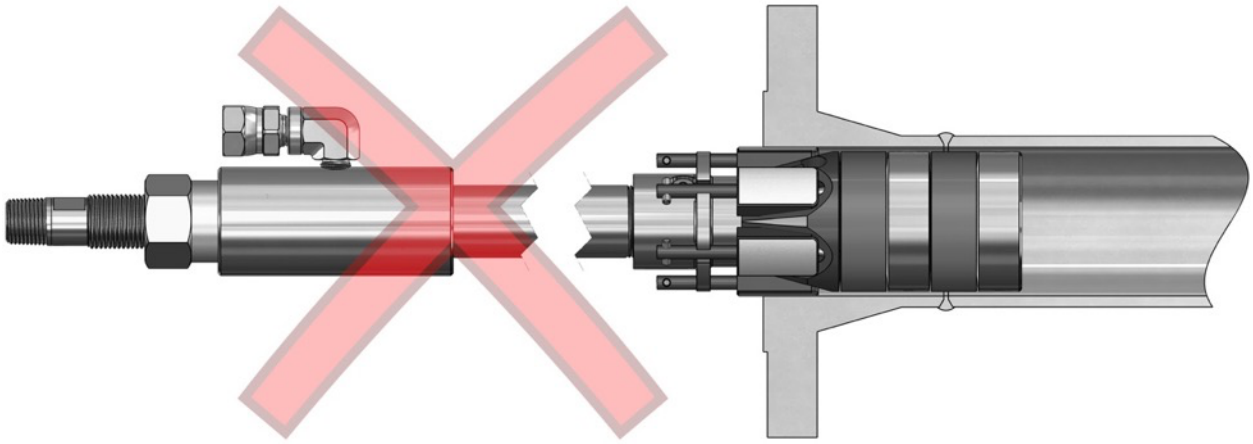

Figure 10: Impermissible Insertion Depth with No Backpressure Rating

8. Removal of GripSafe ST DBB Plug

8.1 Depressurize the system using the bleed-off valve on the hydrotest pump.

8.2 Remove the hydrotest equipment from the **Swivel Pipe Union Fitting (3)**.

NOTE: Take care to prevent the **Swivel Pipe Union Fitting (3)** from becoming unthreaded or loosened during the removal of hydrotesting equipment. Failure to do so may cause leaks during future use of the plug. Use fixed-size wrenches, not adjustable wrenches, to ensure a secure fit.

8.3 Ensure there is no backpressure on the GripSafe ST DBB plug.

CAUTION: SLOWLY open **Vent Port (22)** to relieve backpressure. Use caution when opening valves or loosening fittings, as any unintended backpressure can result in dangerous pressure release or fittings becoming projectiles. If using a backpressure monitoring tee, fast-flowing gases or liquids may cause hose whip, which can lead to injury or equipment damage.

8.4 Loosen the **Compression Hex Nut (21)**.

- Once the seal breaks free from the pipe's inner diameter, water may flow out. Be prepared to capture it if needed. Continue loosening the Compression **Hex Nut (21)** until the **Wedge Grippers (16)** are fully relaxed.

NOTE: Do not remove the **Compression Nut (21)** from the **Shaft (1)**. If this happens, immediately reinstall the component.

8.5 Remove the GripSafe ST DBB plug from the pipe.

- Clean and store for later use or return to USA Industries.
- The texture of the **Wedge Grippers (16)** may get clogged with pipe scale and rust after several uses. Inspect this surface after each use to maintain optimal gripping strength. To clean, use mild dish soap and a stiff stainless-steel brush, such as a welding brush. For persistent plugging, a household rust remover combined with the brush should suffice. Rinse the plug thoroughly with tap water and dry it completely.
- Inspect the **Wedge Grippers (16)** for free movement. Each Wedge Gripper (16) should slide smoothly up and down in its slot, with full motion and no resistance.
- Store in a cool, shaded area away from direct sunlight and temperatures above 150°F, as UV light and heat can degrade the **Seal (14)** over time.

9. Installing and Using Safety Gag

NOTE: While **Safety Gags** are not mandatory, they are recommended to offer an additional layer of protection against the unlikely event of plug discharge.

9.1 Slide the loosely assembled Safety Gag over the pipe before inserting the plug.

9.2 Follow the plug installation instructions in Sections 5-7 to install the GripSafe ST DBB before continuing to step 8.4.

9.3 Place the pear-shaped link over the **Back Pressure Vent Port (22)**.

9.4 Move the clamp further down the pipe to eliminate any slack in the chain. Make sure the chain is straight, free of snags, twists, or knots, and remains tight between the gag bolt and the pear-shaped link.

9.5 Begin by snugging all the bolts on the clamp, starting with the two closest to the pipe. For these two bolts, make an additional 1/3 to 1/2 turn.

- The **Safety Gag** should be securely clamped and must not rotate, slide, or tilt in any direction when pushed or pulled if installed correctly.
- See Figure 9 for an example of a properly installed Safety Gag.

9.6 Reverse steps 9.1-9.5 to uninstall.

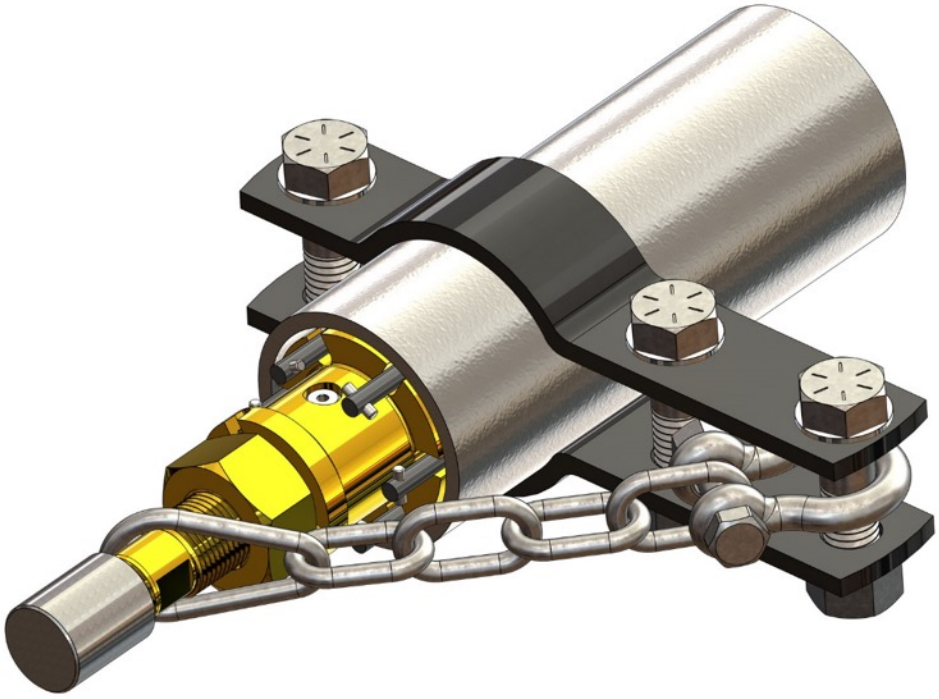

Figure 10: Properly Installed Safety Gag on Pipe

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