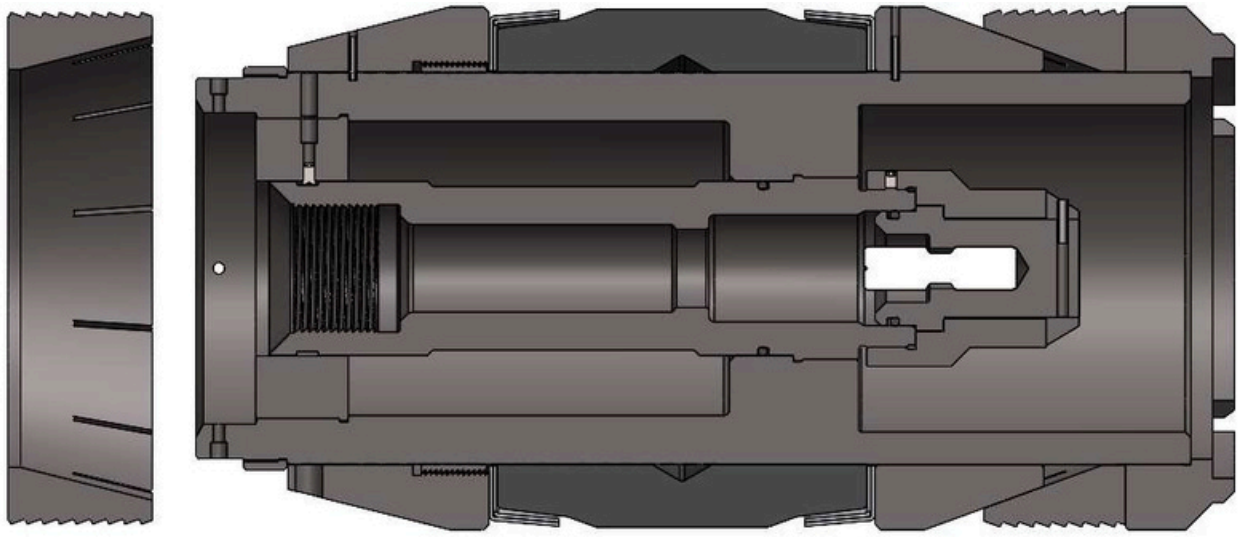
ALPHA B-1 Bridge Plug

Introducing the B-1 Bridge Plug: a top-tier solution offering cost-effective temporary zone isolation for treatments. Designed for versatility, the B-1 plug can be set mechanically or via wireline. With robust construction, the B-1 Bridge Plug maintains integrity under high pressures and temperatures, ensuring reliable performance in demanding environments.

Features:

- Mechanical set. (Part Number: 005-XXXX-001)
- Wireline set. (Part Number: 005-XXXX-003)
- Drillable Cast Iron construction.
- Sets in any grade casing including P-110.
- Form fitting metal back-ups prevent rubber extrusion.
- For permanent service.
- Ratcheting lock ring holds setting force.
- Can be upgraded to 400°F temperature rating upon request.
- Available sizes for setting range from 3.826 to 18.73 in.



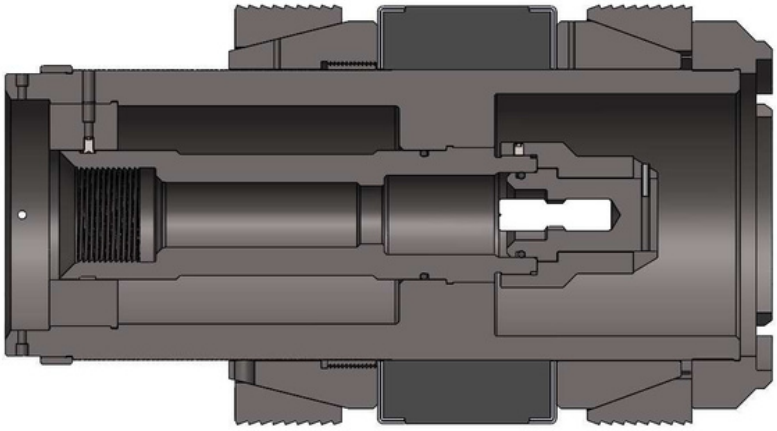
1200 B-1 Bridge Plug Wireline Set illustration.

B-1 BRIDGE PLUG SIZE CHART

Part Number	Plug OD (in)	Setting Range Min (in)	Setting Range Max (in)	Setting Tool	Max Pressure (psi)
005-3593-001	3.593	3.826	4.090	MST 3593	10,000
005-3593-003	3.593	3.826	4.090	#10	10,000
005-3937-001	3.937	4.184	4.560	MST 3.593	10,000
005-3937-003	3.937	4.184	4.560	#20	10,000
005-4312-001	4.312	4.670	5.012	MST 4312	10,000
005-4312-003	4.312	4.670	5.012	#20	10,000
005-5375-001	5.375	5.625	6.094	MST 5687	10,000
005-5375-003	5.375	5.625	6.094	#20	10,000
005-5687-001	5.687	6.004	6.560	MST 5687	10,000
005-5687-003	5.687	6.004	6.560	#20	10,000
005-6312-001	6.312	6.625	7.025	MST 6312	10,000
005-6312-003	6.312	6.625	7.025	#20	10,000
005-7125-001	7.125	7.511	8.097	MST 7125	8,000
005-7125-003	7.125	7.511	8.097	#20	8,000
005-8125-001	8.125	8.535	9.001	MST 8125	8,000
005-8125-003	8.125	8.535	9.001	#20	8,000
005-9000-001	9.000	9.282	9.660	MST 9000	5,000
005-9437-001	9.437	9.660	10.192	MST 9437	5,000
005-9437-003	9.437	9.660	10.192	#20	5,000
005-9937-001	9.937	10.192	10.772	MST 9937	5,000
005-9937-003	9.937	10.192	10.772	#20	5,000
005-1200-001	12.00	12.347	12.715	MST 1200	3,000
005-1200-003	12.00	12.347	12.715	#20	3,000
005-1425-001	14.25	14.688	15.250	MST 1425	2,000
005-1425-003	14.25	14.688	15.250	#20	2,000
005-1725-001	17.25	17.655	18.730	MST 1725	2,000
005-1725-003	17.25	17.655	18.730	#20	2,000

HOW THE B-1 BRIDGE PLUG WORKS

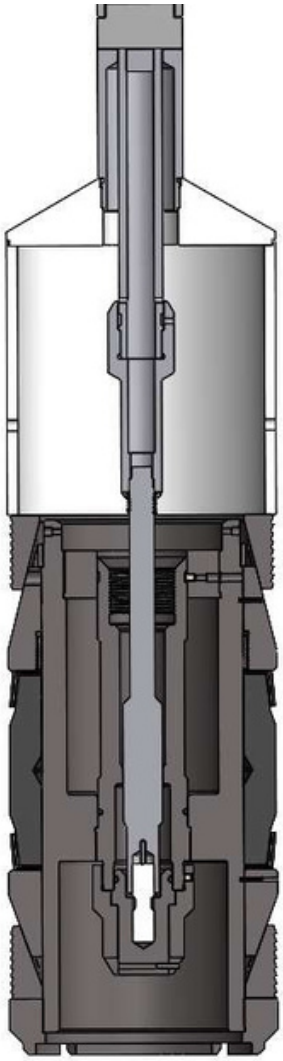
The B-1 bridge plug is run into wellbore on wireline or tubing to the desired depth. The setting mechanism is triggered, causing the cone to push slips outward to grip the wellbore wall and compress the sealing element to form a tight seal. Once set, the plug isolates the wellbore sections below and above it, preventing fluid flow and pressure communication.



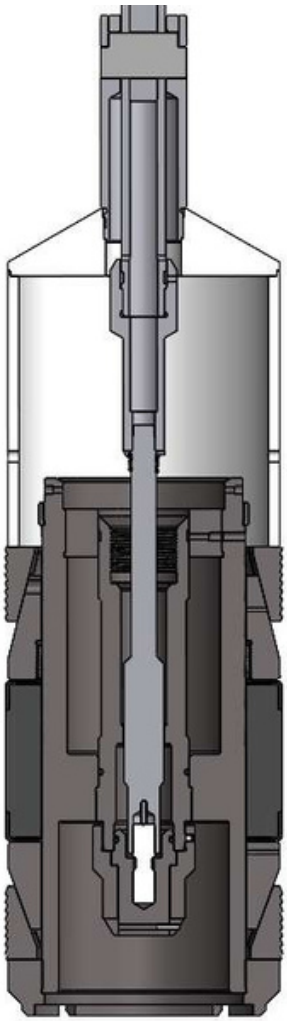
1200 B-1 Bridge Plug (wireline set) in Set Position illustration.

Once the B-1 bridge plug is securely installed and on setting depth, initiate the set via wireline (or hydraulic) setting tool to fracture the stud or rotate to fracture the shear screws (mechanical set) and detach the setting tool from the plug. The slips and the lock ring will ensure that the packing element remains compressed.

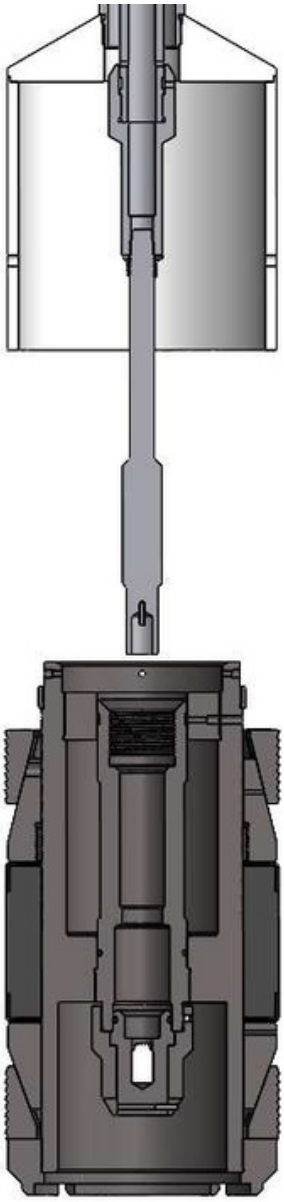
RUNNING GUIDELINES (wireline set)



RUN IN POSITION



INCREASE PRESSURE IN SETTING TOOL TO SET BRIDGE PLUG

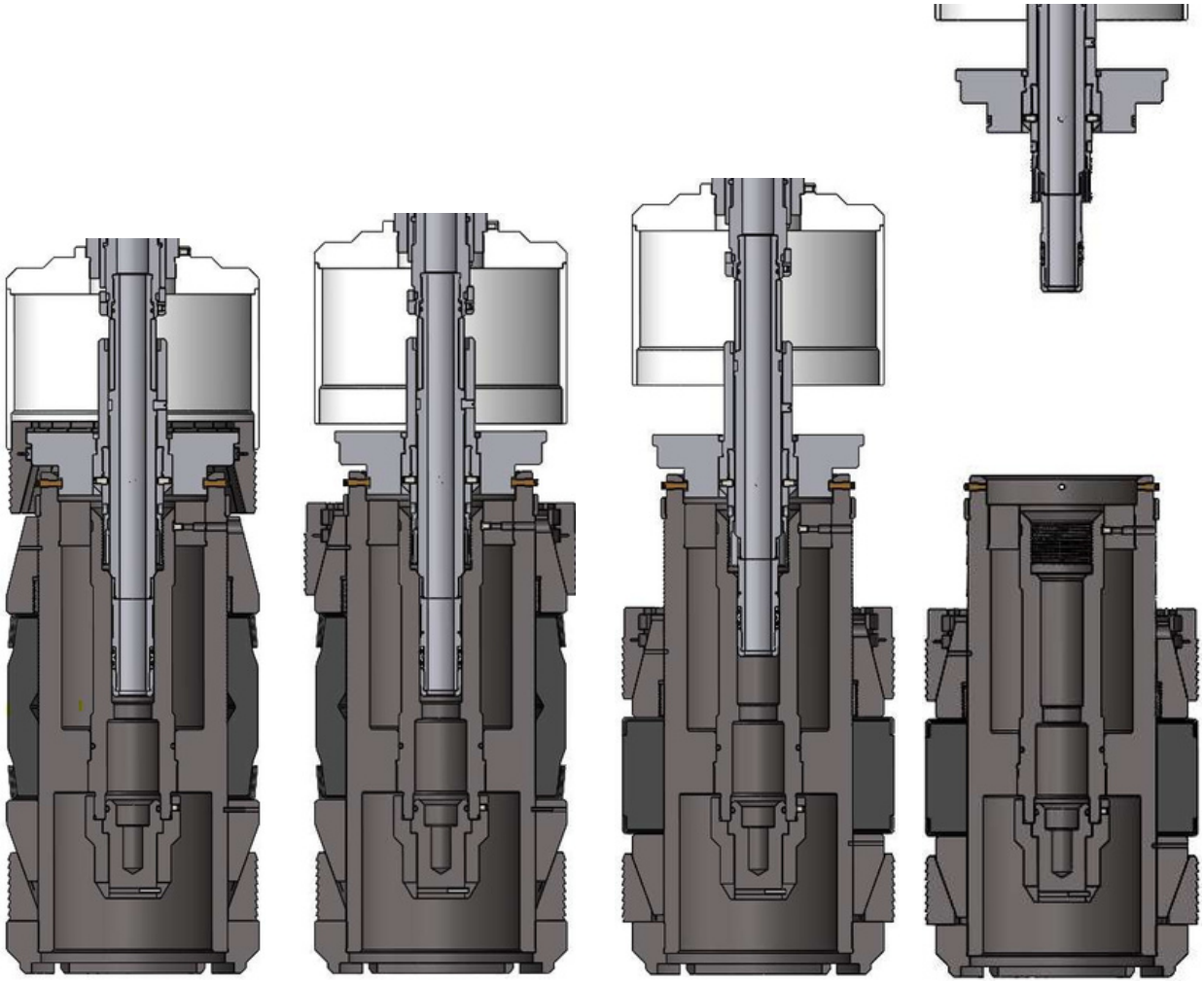


SHEAR STUD FRACTURES AND RELEASES THE SETTING TOOL FROM BRIDGE PLUG

GUIDELINES FOR RUNNING B-1 BRIDGE PLUG (wireline set)

1. Use casing scraper before running any equipment in the well to remove scale and other materials from the casing wall. Any tool that is expected to grip the casing wall has to first reach the casing wall. Follow scraper with gage ring and junk basket.
2. Always follow cleaning, redressing and operational procedures on the setting tool. Make certain oil levels in pressure setting tool are correct for the well environment involved. Take into consideration the heat expansion of the oil in your manufacturers guidelines that should be supplied with your pressure setting tool.
3. Use the correct bridge plug for the temperature, pressure, casing size, casing weight and environment.
4. Casing should have 100% cement bond before running plug in the well.
5. Do not overtighten bridge plug onto setting tool. This action causes the slips to crack which leads to premature setting. Snug tight is sufficient for a bridge plug. The lock spring or nut, depending on make of setting tool, must accompany the tension mandrel to prevent plug from backing off.
6. Do not allow the setting tool weight to rest on the bridge plug after making up. This can cause the slips to crack.
7. Help guide the setting tool and bridge plug through lubricators, wellhead and blowout preventer. When running under pressure raise tools to the top of lubricator before equalizing the pressure into lubricator.
8. Running speed should not exceed 300 feet per minute to avoid fluid displacement cutting on elastomer. Should setting tool misfire, retrieve equipment no faster than it went in. Slow down for liners and other restrictions.
9. Never set plug in casing collar or where milling has occurred.
10. Always set plugs in static well conditions (no fluid or gas movement).
11. Shock to the plug can result in failure. Warn service companies of the plug depth to avoid high impact collisions. When using the plug for locating purposes, be gentle and ease tools onto plug. Never place tubing weight on plug.
12. Pressure setting tool failure can result from several causes (ex: out of date power charge or bad O-ring). In the event that a pressure setting tool does not shear off of the bridge plug and you have to pull out of the rope socket, the shear stud will still part in a normal manner when the setting tool is fished out. This happens most commonly because the power charge did not put up sufficient pressure to shear the stud in the plug. The Alpha studs are made to shear correctly and are held to high standards of accuracy. When the fishing tool goes in to retrieve the setting tool, you can watch the accuracy of the shear stud when it shears, assuming that the weight indicator is not out of calibration.
13. When perforating, bridge plug should be protected with a minimum of ten feet of cement dumped directly on top of plug. Cement should be given sufficient time to set up before perforating.
14. Perforating should not be done closer than fifty feet of bridge plug.
15. Always remove security roll pin (above top slip) when installing Bridge Plug on the Setting Tool.

RUNNING GUIDELINES (mechanical set)



RUN IN POSITION	ROTATE TUBING. TOP SLIPS ARE RELEASED AND TOUCH CASING	TUBING STRING PULLS. 1ST SHEAR. BRIDGE PLUG FULLY SET.	ROTATE RIGHT. SHEAR SCREWS. RELEASE TOOL FROM PLUG

GUIDELINES FOR RUNNING B-1 BRIDGE PLUG (mechanical set)

1. At the desired setting depth pick-up 2 feet. The Mechanical Setting Assembly is actuated by rotating the tubing to the right ten turns.
2. Lower the tubing back down 2 feet. The top slips are released to make contact with the casing.
3. Next an upstrain on the tubing string pulls the body of the Bridge Plug up with respect to the top slip setting and packing-off the Plug. When desired force is stored in the Plug (refer to the chart for acceptable setting force) going by tubing stretch charts lock down tubing for a few minutes and allow packoff to set. Use 10,000 lbs. slackoff weight to verify the tool is securely set. If not set, repeat overpull step. Verify overpull by calculating pipe stretch.
4. Release setting tool from Bridge Plug by placing an upstrain on tubing of 800 lbs. and rotating to the right initially breaking torque screws. Continuing with ten turns to the right.

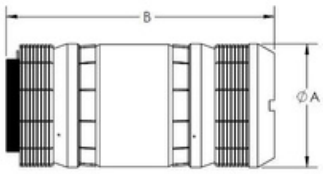
TUBING SETTING FORCES

Plug O.D.	Minimum Strain	Maximum Strain
3.593-4.312	22,000 lbs.	30,000 lbs.
5.375 - 5.687	30,000 lbs.	45,000 lbs.
6.312 - 17.25	35,000 lbs.	48,000 lbs.

NOTE: If desired, the setting tool may be released from plug with four to five right-hand turns at the tool and 8,000 to 10,000 lbs. upstrain. This is accomplished by unscrewing the top portion of the threads on the control latch and collapsing the threads on the lower end.

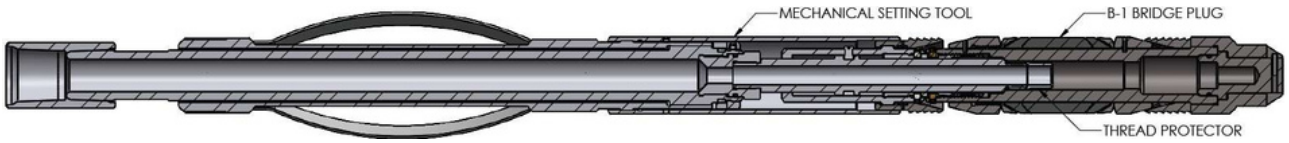
After releasing from the plug, a set down weight of 3,000 to 5,000 lbs. will re-latch the setting tool and an 8,000 to 10,000 lbs. upstrain will remove it.

B-1 BRIDGE PLUG
DIMENSIONAL DATA

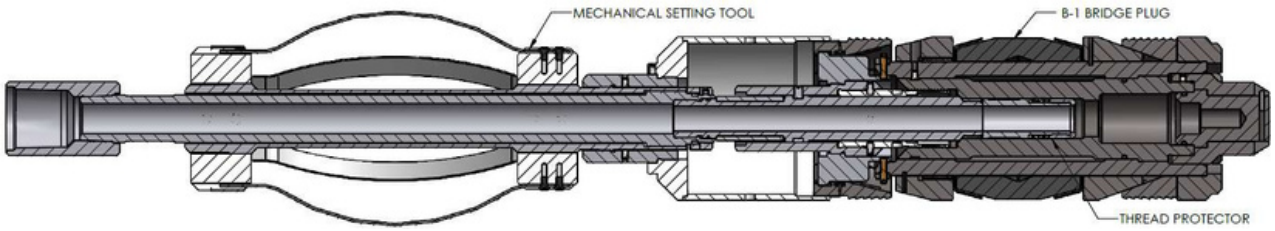


Part Number	Dim. "A"	Dim. "B"	Setting Sleeve	Thread Protector (*)	Shear Stud Value (lbs.)
005-3593-001	3.593	16.75	N/A	017-3593-050	N/A
005-3593-003	3.593	16.75	005-3593-200	N/A	30,000 - 35,000
005-3937-001	3.937	16.75	N/A	017-3593-050	N/A
005-3937-003	3.937	16.75	005-3937-200	N/A	30,000 - 35,000
005-4312-001	4.312	16.75	N/A	017-3593-050	N/A
005-4312-003	4.312	16.75	005-3937-200	N/A	30,000 - 35,000
005-5375-001	5.375	18.91	N/A	017-5687-050	N/A
005-5375-003	5.375	18.91	005-5687-200	N/A	50,000 – 55,000
005-5687-001	5.687	18.91	N/A	017-5687-050	N/A
005-5687-003	5.687	18.91	005-5687-200	N/A	50,000 – 55,000
005-6312-001	6.312	19.00	N/A	017-5687-050	N/A
005-6312-003	6.312	19.00	005-6312-200	N/A	50,000 – 55,000
005-7125-001	7.125	19.00	N/A	017-5687-050	N/A
005-7125-003	7.125	19.00	005-7125-200	N/A	50,000 – 55,000
005-8125-001	8.125	19.72	N/A	017-5687-050	N/A
005-8125-003	8.125	19.72	005-8125-200	N/A	50,000 – 55,000
005-9000-001	9.000	19.72	N/A	017-5687-050	N/A
005-9437-001	9.437	21.88	N/A	017-5687-050	N/A
005-9437-003	9.437	21.88	005-9437-200	N/A	50,000 – 55,000
005-9937-001	9.937	21.88	N/A	017-5687-050	N/A
005-9937-003	9.937	21.88	005-9937-200	N/A	50,000 – 55,000
005-1200-001	12.00	23.84	N/A	017-5687-050	N/A
005-1200-003	12.00	23.84	000-1200-200	N/A	50,000 – 55,000
005-1425-001	14.25	25.50	N/A	017-5687-050	N/A
005-1425-003	14.25	25.50	000-1425-200	N/A	50,000 – 55,000
005-1725-001	17.25	24.07	N/A	017-5687-050	N/A
005-1725-003	17.25	24.07	000-1725-200	N/A	50,000 – 55,000

*For mechanical set B-1 Bridge Plugs a Thread Protector is needed on Mechanical Setting Tool before installing the plug. **For sizes from 3.593 to 4.312** Shifter Sub, Molded Seal and Seal Sub on the Mechanical Setting Tool needs to be removed and replaced with the Thread Protector. **For sizes from 5.375 to 17.25** Shifter Sub on the Mechanical Setting Tool needs to be removed and replaced with the Thread Protector. Illustration on next page.



3.593 B-1 Mechanical Set Bridge Plug with Mechanical Setting Tool Illustration



8.125 B-1 Mechanical Set Bridge Plug with Mechanical Setting Tool Illustration

Elastomer Compatibility Guideline Table:

Elastomer Type	Nitrile (NBR)	Hydrogenated Nitrile (HNBR / HSN)	Viton / Fluoroelastomer (FKM)	Aflas (TFE/P)
Low Temp Resistance, °F	-4	-4	5	100
Maximum Heat Resistance, °F	250	300	350	400
H_2S	Very Poor (<0.5%)	Poor (<1%)	Fair (<2%)	Very Good (<20%)
CO_2	Poor (<1%)	Fair (<2%)	Very Good (Unrestricted)	Very Good (Unrestricted)
Amine Inhibitors	Very Poor (Not Recommended)	Very Poor (Not Recommended)	Very Poor (Not Recommended)	Very Good (Unrestricted)
Zn & Ca Bromides	Very Poor (Not Recommended)	Very Poor (Not Recommended)	Very Good (Unrestricted)	Good
Xylene	Very Poor (Not Recommended)	Very Poor (Not Recommended)	Fair	Very Poor (Not Recommended)
HCl & HF Acid	Very Poor (Not Recommended)	Very Poor (Not Recommended)	Fair	Good
Toluene	Very Poor (Not Recommended)	Poor	Fair	Very Poor (Not Recommended)
Sulfuric Acid	Very Poor (Not Recommended)	Poor	Good	Good
Steam	Very Poor (Not Recommended)	Poor	Poor	Poor
Crude Oil	Very Good (Unrestricted)	Very Good (Unrestricted)	Very Good (Unrestricted)	Very Good (Unrestricted)
Methane	Very Good (Unrestricted)	Very Good (Unrestricted)	Very Good (Unrestricted)	Very Good (Unrestricted)
KCl & Salt Water	Very Good (Unrestricted)	Very Good (Unrestricted)	Very Good (Unrestricted)	Very Good (Unrestricted)

Recommended Drillout/Millout of Cast Iron Bridge Plugs or Cement Retainers

General

Preferred method is drilling with medium steel tooth tri-cone bit as it is usually faster than mill- out time for same bridge plug or cement retainer. Drilling results in a chiseling effect, where milling is more of a grinding or shaving effect of the targeted tool. Milling out also results in more debris that can hinder penetration as well as circulation to clear the targeted tool face. History has shown that utilizing a short to medium tooth hard formation rock bit to yield the best results.

Suggested Drilling Techniques

While best methods vary based on equipment, depth of objective, or other factors, Alpha Oil Tools suggests rock bit as suggested above with a rotary speed 75-120 RPM. Use drill collars as required to maintain necessary weight and bit stabilization.

To drill the bridge plug or cement retainer:

1. Apply 5000-7000 pounds until the top end of the retainer/plug mandrel is drilled (4-5 inches).
2. Increase weight to 2000-3000 pounds per inch of bit diameter to complete the drill out. For example, apply 9500 up to 14,250 pounds when using a 4.75-inch bit.

When circulating normally, place a junk basket above the bit. If using reverse circulation, any casing scraper or other equipment above the bit should have an inside fluid passage at least as large as that through the bit so as to allow any/all cuttings to be circulated clear. Utilize varying RPM's and weight on bit to optimize drill out, especially if getting indications that penetration by the bit has slowed or stopped. Loss of penetration may occur by "bit tracking" usually caused by too little weight on the bit. Besides changing weight and RPM's, bit tracking can be overcome by picking up the bit above the retainer, then re-engaging the objective while maintaining same RPM's as before.

Drilling times are directly related to tool size, bit stability, bit type, weight/RPM's on bit, wellbore fluids, and pump rate/pressure. High viscosity fluids combined with high pump rates may result in sufficient hydraulic force and cause the bit to lift off the objective.

Suggested Milling Technique

If conditions mandate milling be used as the preferred removal method, it is recommended to use a concave junk mill, 60-150 RPM maintaining 5000-8000 pounds on the mill. Use a mud viscosity 60 cps with a minimum annular velocity of 120 ft/min for cuttings removal.

When ready to begin milling, start the mill above the target then slowly lower to the objective. Do not apply excess weight since this can cause "chunking" which will not allow cuttings removal and then slow the millout. If chunking does occur, it will be necessary for a bailer or junk basket to remove chunked debris before milling can resume. A constant milling rate will require added weight as milling progresses.