ALPHA MODEL “A” Ball Check Cement Retainer

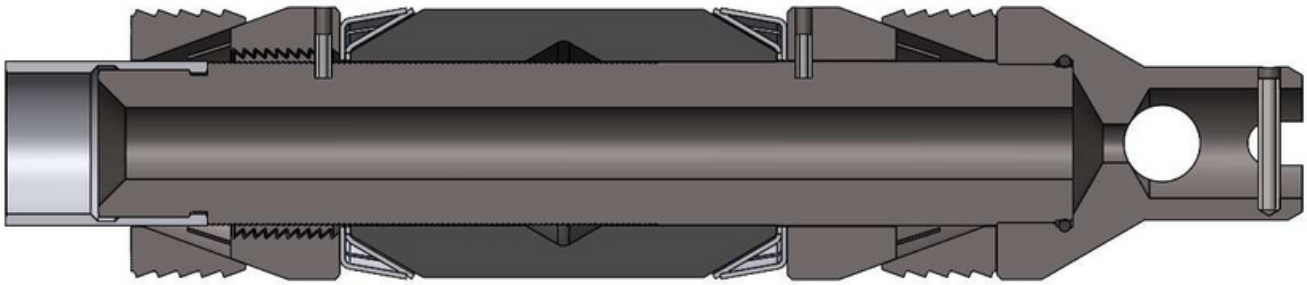
Introducing the Model “A” Ball Check Cement Retainer: a blend of exceptional features and straightforward design. Engineered with a compact profile and small outer diameter, it ensures swift installation. The Model “A” Ball Check Cement Retainer stands out for its affordability, reliability, and unmatched performance in its category.

Free from springs, latches, or sliding valves, its operation remains simple yet effective. A single ball-check functions as a one-way valve, preventing the backflow of fluids from the formation up the wellbore.

Internally, the retainer boasts a finished surface to accommodate a seal nipple if desired, but not required for cementing purposes. Positioned at the bottom, the ball-check valve closes with pressure from below, ensuring dependable performance in demanding conditions.

Features:

- Wireline set. (Baker or GO)
- Drillable Cast Iron construction.
- Sets in any grade tubing including P-110.
- Form fitting metal back-ups prevent rubber extrusion.
- Permanent service.
- Ratcheting lock ring holds setting force.
- Can be upgraded to 400°F temperature rating upon request.
- Available sizes for setting range from 1.867 to 3.548 in.



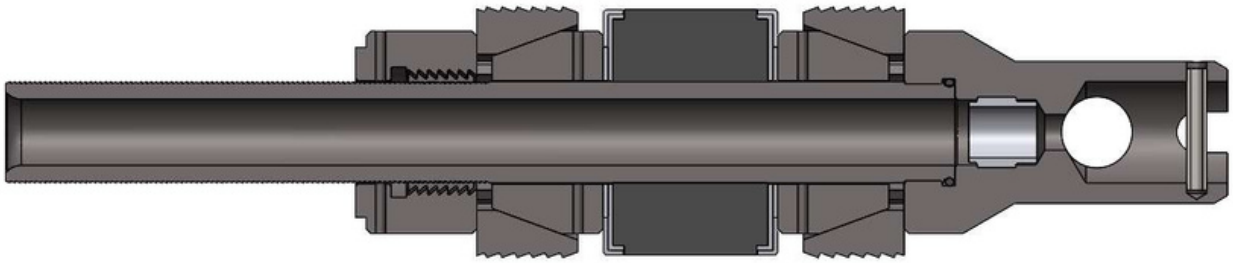
3120 Model A Ball Check Cement Retainer illustration.

MODEL A BALL CHECK CEMENT RETAINER SIZE CHART

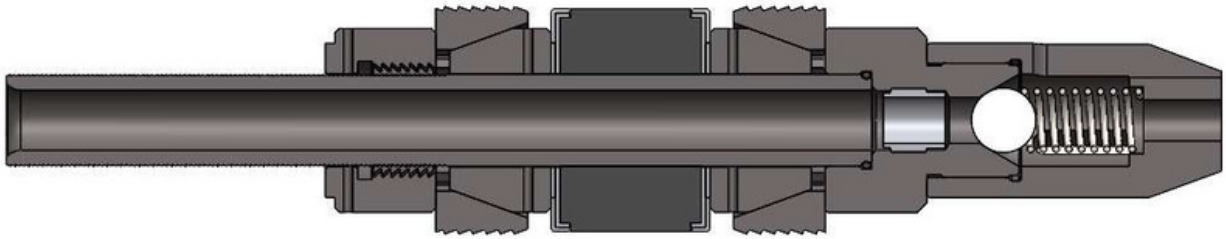
Part Number	OD (in)	Setting Range Min (in)	Setting Range Max (in)	Setting Tool	Max Pressure (psi)
004-1710-000	1.710	1.867	2.107	GO	10,000
004-1710-002	1.710	1.867	2.107	#5	10,000
004-2100-000	2.100	2.373	2.494	GO	10,000
004-2100-002	2.100	2.373	2.494	#5	10,000
004-2500-000	2.500	2.640	2.992	GO	10,000
004-2500-002	2.500	2.640	2.992	#5	10,000
004-2750-000	2.750	2.922	3.068	GO / #10	10,000
004-2750-002	2.750	2.922	3.068	#5	10,000
004-3120-002	3.120	3.340	3.548	GO / #10	10,000

HOW THE MODEL A BALL CHECK CEMENT RETAINER WORKS

The Model A Ball Check Cement Retainer is run into wellbore on wireline 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 the slips are fully anchored and the packing element is compressed, the lock ring will secure the retainer in place. The Model A Ball Check Cement Retainer is equipped with a ball that allows the squeezing operation and functions as a one-way check valve, preventing backflow from the formation up the wellbore. The ball in the Model A Cement Retainer can be secured using a pin, a spring, or a pin with a pump out plug.

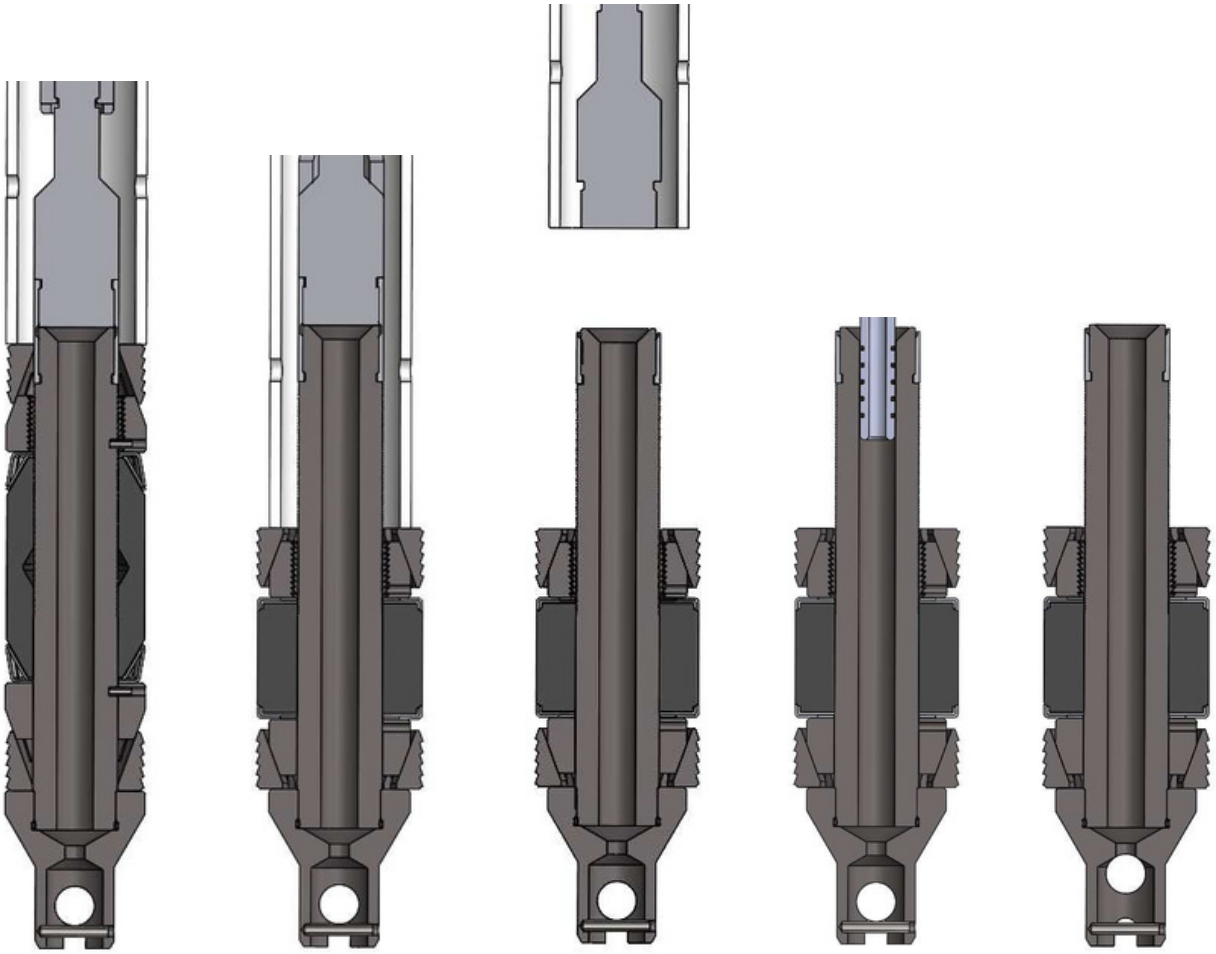


2500 Model A Ball Check Cement Retainer in Set Position illustration.
(004-2500-000)



2500 Model A Poppet Valve Cement Retainer in Set Position illustration.
(004-2500-001)

RUNNING GUIDELINES



RUN IN POSITION	INCREASE PRESSURE IN SETTING TOOL TO SET CEMENT RETAINER	STUD OR RING SHEARS & RELEASE SETTING TOOL FROM CEMENT RETAINER	INSERT STINGER ASSY. & START SQUEEZING OPERATION	REMOVE STINGER ASSY. BALL CHECK WILL CLOSE IF THERE IS ANY UPSTREAM FLOW

GUIDELINES FOR RUNNING A MODEL CEMENT RETAINER (wireline set)

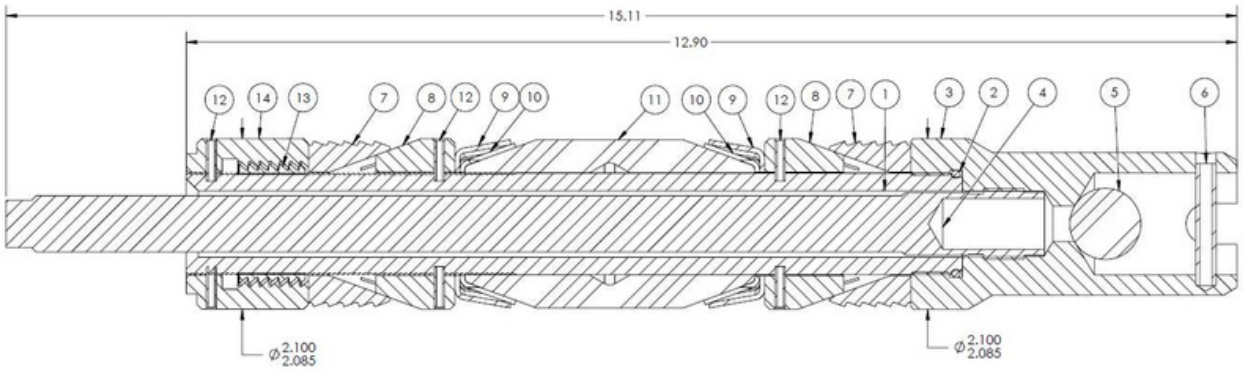
1. Use casing scraper before running any equipment in the well to remove scale and other materials from the casing wall. Any tool that is expected to grip the casing wall has to first reach the casing wall. Follow scraper with gage ring and junk basket.
2. Always follow cleaning, redressing and operational 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 cement retainer for the temperature, pressure, casing size, casing weight and environment.

BALL CHECK CEMENT RETAINER	PRESSURE	TEMPERATURE (depends on elastomer choice)
1.710 – 3.120 MODEL A	10,000 psi	250°F - 400°F

4. Do not overtighten cement retainer onto setting tool. This action causes the slips to crack which leads to premature setting. Snug tight is sufficient for a cement retainer. The lock spring or nut, depending on make of setting tool, must accompany the tension mandrel to prevent plug/retainer from backing off.
5. Do not allow the setting tool weight to rest on the cement retainer after making up. This can cause the slips to crack.
6. Help guide the setting tool and cement retainer through lubricators, wellhead and blowout preventer. When running under pressure raise tools to the top of lubricator before equalizing the pressure into lubricator.
7. 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.
8. Never set retainer in casing collar or where milling has occurred.
9. Always set retainers in static well conditions (no fluid or gas movement).
10. Shock to the retainers can result in failure. Warn service companies of the retainer depth to avoid high impact collisions. Never use a cement retainer for a reference point (tagging) before cement job is completed.
11. 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 cement retainer 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 retainer. 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.
12. When perforating, cement retainer should be protected with a minimum of ten feet of cement dumped directly on top of the retainer. Cement should be given sufficient time to harden before perforating. Perforating should not be done closer than fifty feet of bridge plug.
13. Perforating should not be done closer than fifty feet of cement retainer without putting a minimum of 10 ft. of hard cement on top of retainer.
14. Make seal nipple up on a 4 ft. tubing sub (if available); if not, use stop collar to prevent centralizer from moving up the full length of tubing joint. Centralizer should not be more than 10 ft. from top of seal nipple. Go in hole at normal speed. Be sure and strap the tubing and keep accurate measurements. When the seal nipple assembly has been lowered to approximately 200 ft. above cement retainer, slow down and ease tubing in the hole, being careful not to run into cement retainer. After top of cement retainer has been tagged with seal nipple assembly, lower seal nipple into retainer until 10,000 lbs. down force has been applied. To test tubing, raise tubing until all

tubing weight is picked up and a slight pull-on tubing is encountered. Pressure can be applied to tubing for tubing test. After test is completed release pressure.

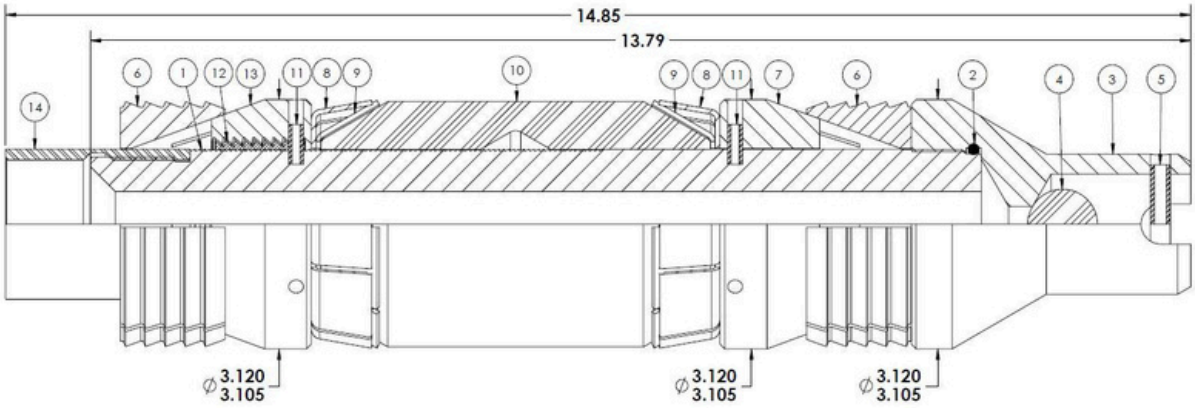
MODEL A BALL CHECK CEMENT RETAINER PLUG PARTS LIST



2100 A BALL CHECK CEMENT RETAINER ILLUSTRATION (004-2100-000)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	004-2100-006	BODY	1
2	000-122N-090	122 O-RING	1
3	004-2100-007	SHOE	1
4	004-2100-014	SHEAR STUD 2.10 BCCR	1
5	004-2100-050	.875 BALL	1
6	RP0250X150	ROLL PIN	1
7	000-2100-011	SLIP	2
8	000-2100-009	CONE	2
9	000-2100-016	OUTER METAL BACK-UP	2
10	000-2100-015	INNER METAL BACK-UP	2
11	000-2100-034	PACKING ELEMENT	1
12	RP0125X50	ROLL PIN	6
13	000-2100-013	LOCK RING	1
14	000-2100-012	LOCK RING BACK-UP	1

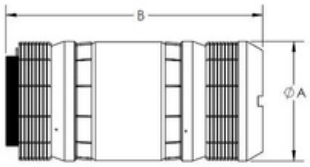
3.120 model is equipped with shear ring instead of shear stud.



3.120 A BALL CHECK CEMENT RETAINER ILLUSTRATION (004-3120-002)

ITEM NO.	PART NUMBER	PART NAME	QTY.
1	004-3120-006	BODY	1
2	000-224-090	224 O-RING	1
3	004-3120-007	SHOE	1
4	004-2100-050	.875 BALL	1
5	RP0250X150	ROLL PIN	1
6	000-3120-011	SLIP	2
7	000-3120-009	CONE	1
8	000-3120-016	OUTER METAL BACK-UP	2
9	000-3120-015	INNER METAL BACK-UP	2
10	000-3120-034	PACKING ELEMENT	1
11	RP0187X500	ROLL PIN	6
12	000-3120-013	LOCK RING	1
13	000-3120-031	TOP CONE	1
14	004-3120-014	SHEAR RING	1

MODEL A BALL CHECK CEMENT RETAINER DIMENSIONAL DATA



Part Number	Dim. "A"	Dim. "B"	Setting Sleeve	Shear Stud/Ring Value (lbs.)
004-1710-000	1.710	14.78	000-1710-101 (GO 1687)	8,000 – 9,000
004-1710-001	1.710	16.16	000-1710-101 (GO 1687)	8,000 – 9,000
004-1710-002	1.710	18.49	000-1710-200 (#5)	8,000 – 9,000
004-1710-002B	1.710	20.48	000-1710-200 (#5)	8,000 – 9,000
004-2100-000	2.100	15.11	000-2100-101 (GO 1687) 000-2100-102 (GO 2125)	11,000 – 12,000
004-2100-001	2.100	16.49	000-2100-101 (GO 1687) 000-2100-102 (GO 2125)	11,000 – 12,000
004-2100-002	2.100	19.11	000-2100-200 (#5)	11,000 – 12,000
004-2100-002B	2.100	21.11	000-2100-200 (#5)	11,000 – 12,000
004-2500-000	2.500	17.29	000-2500-101 (GO 1687) 000-2500-102 (GO 2125)	12,000 – 13,000
004-2500-001	2.500	18.69	000-2500-101 (GO 1687) 000-2500-102 (GO 2125)	12,000 – 13,000
004-2500-002	2.500	21.25	000-2500-200 (#5)	12,000 – 13,000
004-2500-002B	2.500	23.25	000-2500-200 (#5)	12,000 – 13,000
004-2750-000	2.750	17.12	000-2750-210 (#10) 000-2750-101 (GO 1687) 000-2750-102 (GO 2125)	11,000 – 12,000
004-2750-002	2.750	20.65	000-2750-200 (#5)	11,000 – 12,000
004-2750-002B	2.750	22.96	000-2750-200 (#5)	11,000 – 12,000
004-2750-003	2.750	22.02	000-2750-200 (#5)	11,000 – 12,000
004-3120-002	3.120	14.85	000-3120-200 (#10) 000-3120-100 (GO 2125)	24,000 – 26,000

MODEL A BALL CHECK CEMENT RETAINER NOMENCLATURE

004-XXXX-000: BALL CHECK FOR GO/BAKER SETTING TOOL.
004-XXXX-001: POPPET VALVE FOR GO SETTING TOOL.
004-XXXX-002: BALL CHECK FOR BAKER SETTING TOOL.
004-XXXX-002B: BALL CHECK WITH PUMP-OUT PLUG FOR BAKER SETTING TOOL.
004-XXXX-003: POPPET VALVE FOR BAKER SETTING TOOL.

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.