BULL DOG® BAILER

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INTRODUCTION

The Bull Dog® Bailer (Patent No. 4,493,383) offers a method to clean out sand and debris from the wellbore or casing without loading the hole and circulating.

The bailer tool assembly consists of a bottom hole tool, float valve, cavity as per weight chart, and the Bull Dog® Bailer. The tool must be run in fluid, so cavity length cannot exceed the column. Reciprocation (5 ft. stroke) of the pump assembly draws fluid and sand in through the bottom hole tool, through the float valve, and up into the cavity tubing chamber. Sand and debris collect in the tubing chamber above the float valve while the fluid goes through the pump assembly and is discharged to the annulus.

The pump rod is hexagonal to permit normal rotation of the entire tubing string. The size and weight of the tubing used between the float valve and the pump assembly to form the chamber may be varied to apply to existing hole conditions and desired operations.

All principal parts of the tool are manufactured from high-strength, heat-treated alloy steel.

The bottom hole tool run with the bailer assembly is dependent upon the particular operation desired. A bit, rotary shoe, cutrite shoe, overshot retrieving tool, etc., may be run to meet the needs of the job. The tool may be used to clean out sand, recover ball sealers, retrieve bridge plugs and packers, clean out caved open holes, fish, drill deeper, etc.

The bailer assembly should be considered for any of the following conditions:

1. Well cannot be circulated.
2. Loading hole with fluid is undesirable or detrimental to pay.
3. Clean-out is more economical than rigging up to circulate hole.

There are four types of clean-out tools currently available. These include sand pump, hydrostatic bailer, reverse unit, and Bull Dog® Bailer. Their limitations and advantages are as follows:

A. Sand Pump

1. Limited amount of recovery per run.
2. High risk of running tool on sand line.
3. Cannot rotate to drill out anything hard.
4. Limited to sand or loose cuttings.

B. Hydrostatic Bailer

1. Possible recovery limited to time required to equalize hydrostatic head.
2. Cannot rotate or even spud with tool.
3. Most effective with a high hydrostatic head. Loading hole to increase hydrostatic head may be undesirable, expensive or impossible.
4. Expensive, time-consuming trips when multiple runs are required to clean out.

C. Reverse Unit

1. Most effective - most expensive.
2. Requires considerable equipment, expensive rental, high move-in costs, one-day setup time.
3. Must load hole to circulate. Could be expensive to haul water, mixing mud and lost-circulation materials.
4. Severe lost circulation increases risk of sticking tools or could make clean-out impossible.
5. High hydrostatic pressure on producing formation from loading hole and circulating pressures could be extremely damaging to pay zone.

D. Bull Dog® Bailer

1. Saves money and time, while also protecting the formation. The bailer assembly is a new tool used for cleaning out sand, debris, and for recovering ball sealers from the wellbore. The biggest advantages of this innovative tool are the savings in rig time and money, while protecting fluid-sensitive formations and low bottom hole pressures. The tool is run on tubing or drill pipe inside the casing. The tool assembly consists of a float valve run on top of the bottom hole tool, a tubing changer to catch the debris, and a pump assembly on top of the tubing cavity.

2. The debris is pulled into the tubing cavity with the fluid being pumped back into the wellbore. For wells that cannot be circulated, this is an excellent tool for drilling out fill or getting debris off of a retrievable bridge plug. An advantage to this tool is that water will not be lost to the formation while cleaning materials out of the hole. The tool will also minimize rig time since a bit, retrieving tool, on-off tool, or any other tool which is needed can be run on bottom without making an extra trip into the hole.

(a) The tool assembly must be spaced to be run below the working fluid level.
(b) Cavity pipe between tool assembly and bottom must be designed to provide sufficient weight to accomplish operation and with sufficient volume to recover material to be cleaned out.
(c) The use of tool assembly drill cavity should be considered to provide needed weight and volume.

The types of jobs that have been completed with the bailer and the variety of tools that can be run on bottom of bailer are listed below:

1. Drill bit to drill fill, cuttings, cement, formation.
2. Wash pipe for wash over job.
3. Junk basket to recover junk or debris in hole.
4. Notched collar to clean out sand.
5. Mill for milling operation.
6. Packer picker.
7. Bridge plug retrieving tool.

It has the advantage of not requiring the hole to be loaded to clean out:

1. Cost of buying, hauling, storing, and pumping water.
2. Possible cost of mixing mud, lost circulation material.
3. Savings in rig time waiting for water, mixing mud, loading hole, swabbing back load.
4. Elimination of risk of wellbore damage to producing interval from circulating fluid and high hydrostatic pressure.

In addition, the bailer assembly is convenient to use:

1. Tools are readily available through the fishing tool company that you wish to use. Inexpensive to get tools to location quickly.
2. High quality equipment. Tool is stronger than your work string.
3. The tool is simple to make up and operate. Field personnel can run tool with a minimum of training.
4. No redressing or inspection charge after using.
5. Available in sizes 2-3/8", 2-7/8", 4-1/2", 5-1/2", and 7" casings.

Two case histories, using the bailer tool assembly are shown below:

1. Lea County, New Mexico.
   Deepened well 40'; ran Hughes 6-1/4" R-4 bit.
   8 4-3/4" O.D. drill collars
   Averaged 3' per hour.

2. Spraberry: Regan County, Texas.
   Cleaned out 350' of sand in 4-1/2" casing
   with 2-3/8" tubing in one run.

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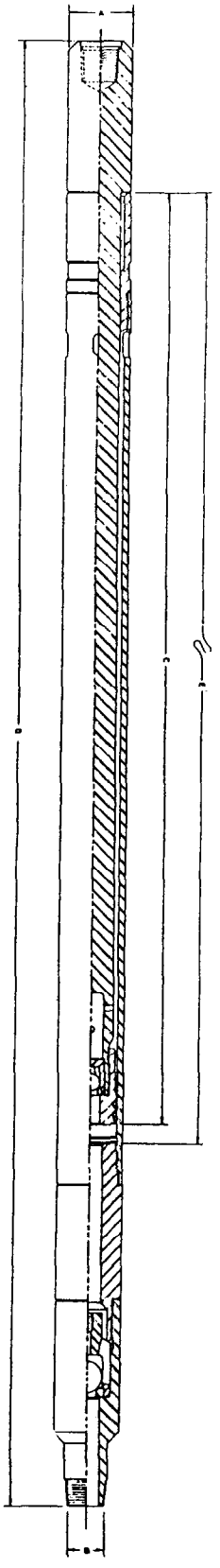
Patent No. 4,493,383



SPECIFICATIONS

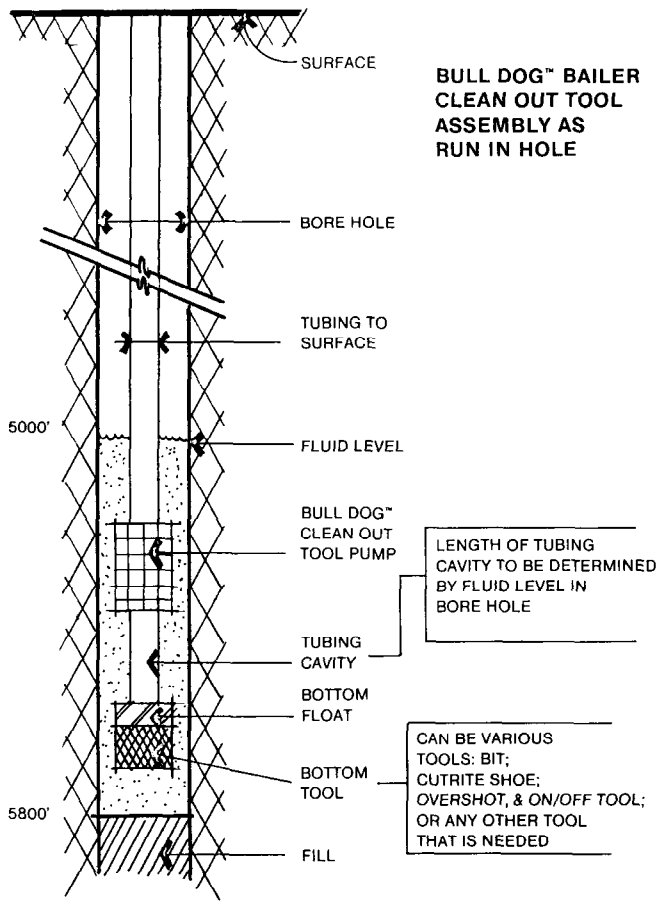
DIMENSIONS

A	B	C	D			E
SIZE	CONN SIZE	LENGTH OF STROKE	LENGTH OF TOOL	TORQUE RATING	TENSIL STRENGTH	Displacement (Gal Per Stroke)
1.883" FOR 2⅛" TUBING	1 13/16" W.F.J.	4'	7.65'	1440 FT. LBS.	80,250 PSI	.22
2¼" O.D. FOR 2⅞" CASING	1½" 10 RD NON-UPSET	4'	7.87'	2,760 FT. LBS.	132,000 PSI	.3
3⅛" O.D. FOR 4½" CASING	2⅜" EUE 8 RD	5'	9.35'	8,600 FT. LBS.	166,500 PSI	1.4
3¾" O.D. FOR 5½" CASING	2⅜" EUE 8 RD	5'	9.35'	12,470 FT. LBS.	288,000 PSI	2.0
4⅛" O.D. FOR 7" CASING	2⅜" EUE 8 RD	5'	9.60'	30,000 FT. LBS.	476,700 PSI	3.1

FLOAT SUB

TENSIL STRENGTH AND TORQUE TO BE SAME AS BULL DOG® BAILER

O.D.	I.D.	LENGTH
1.883"	⅝"	1.74'
2¼"	1⅛"	1.75'
3⅛"	1¼"	1.80'
3¾"	1½"	1.80'
4⅛"	2 3/16"	1.80'



BULL DOG™ BAILER CLEAN OUT TOOL ASSEMBLY AS RUN IN HOLE

	TOOL SIZE				
FLUID LEVEL	1.883" O.D.	2¼" O.D.	3⅛" O.D.	3¾" O.D.	4⅝" O.D.
100'	78 lbs.	116 lbs.	262 lbs.	359 lbs.	573 lbs.
200'	155	233	525	718	1146
300'	233	348	787	1078	1719
400'	311	464	1050	1437	2292
500'	390	580	1310	1795	2865
750'	586	870	1965	2692	4297
1000'	780	1160	2620	3590	5730
1250'	978	1457	3275	4487	7162
1500'	1170	1740	3930	5385	8595
2000'	1560	2320	5240	7180	11460
3000'	2340	3480	7860	10770	17190

Chart reads weight required below
Bull Dog® Bailer for maximum efficiency.