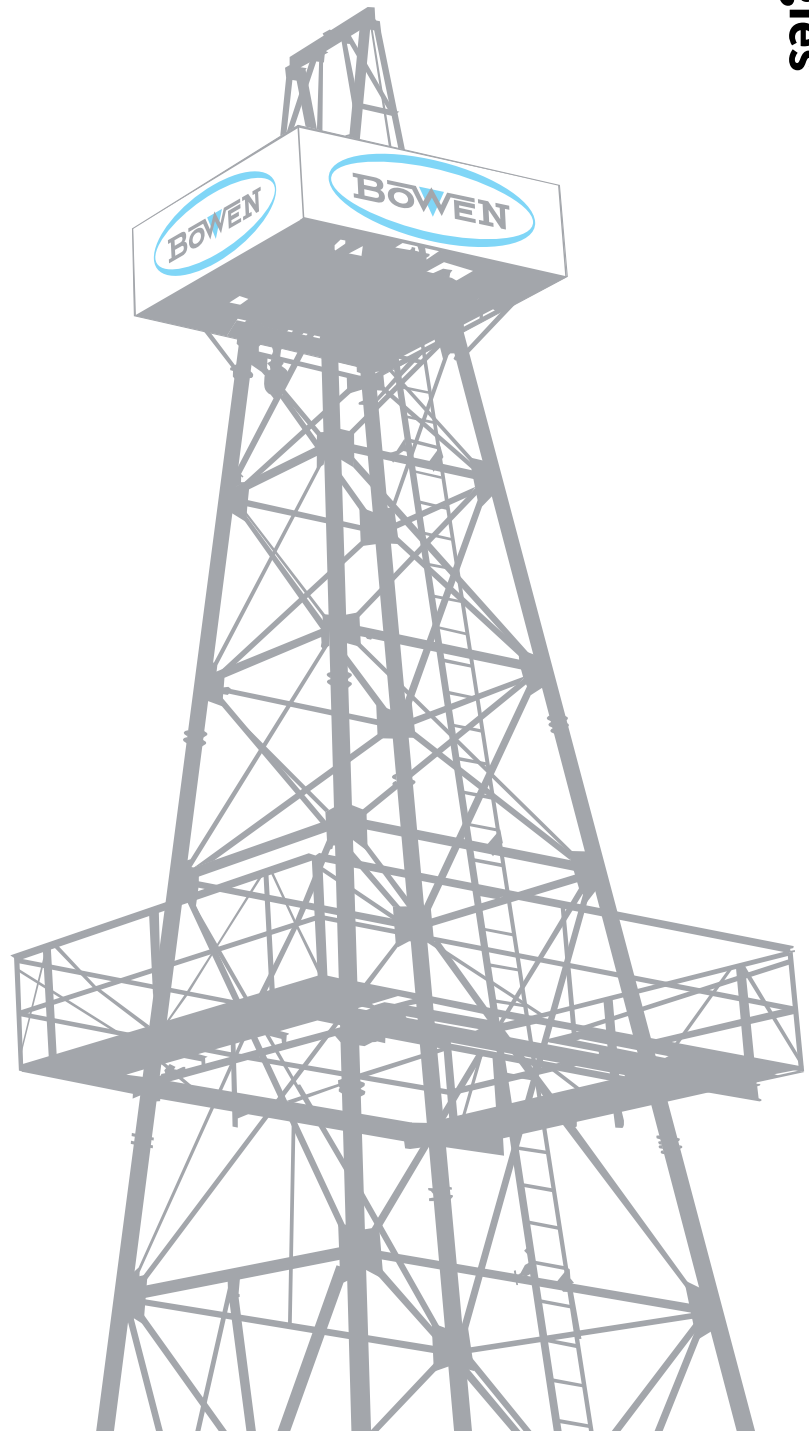


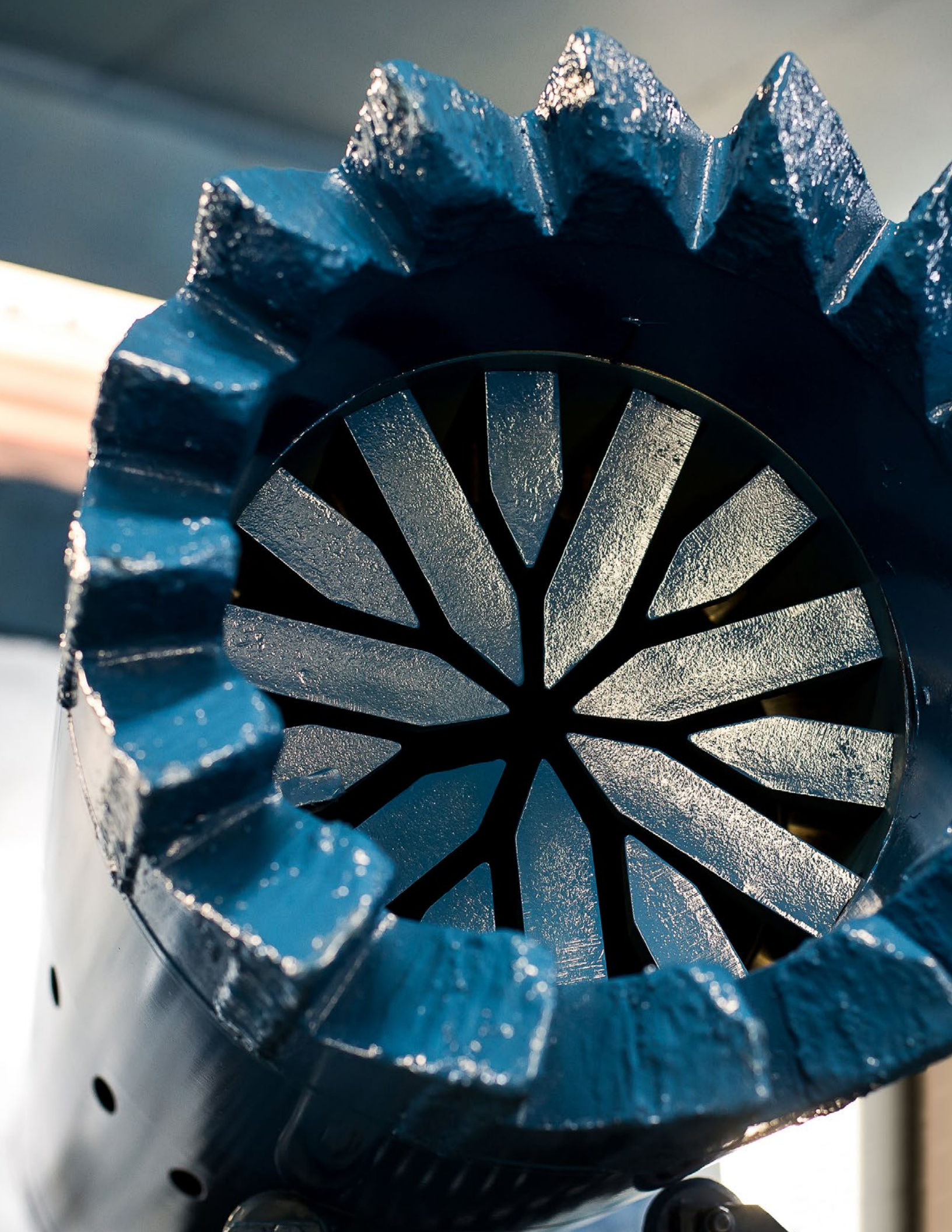
Bowen Reverse Circulation Junk Basket

Instruction Manual 3100

Downhole Technologies

Junk Catcher
Fishing Tools





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The designs and specifications for the tools described in this instruction manual were in effect at the time this manual was approved for printing. NOV, whose policy is one of continuous improvement, reserves the right to discontinue models at any time, or to change designs and specifications without notice or without incurring obligation.

Bowen Reverse Circulation Junk Basket

General Description

The Bowen™ reverse circulation junk basket retrieves all types of small junk objects in wellbores using reverse circulation, eliminating misruns. A drain through the tool eliminates the possibility of pulling a wet string even though the inner barrel is plugged by the core. You may convert the tool into an effective fishing magnet and still retain the reverse circulation feature.

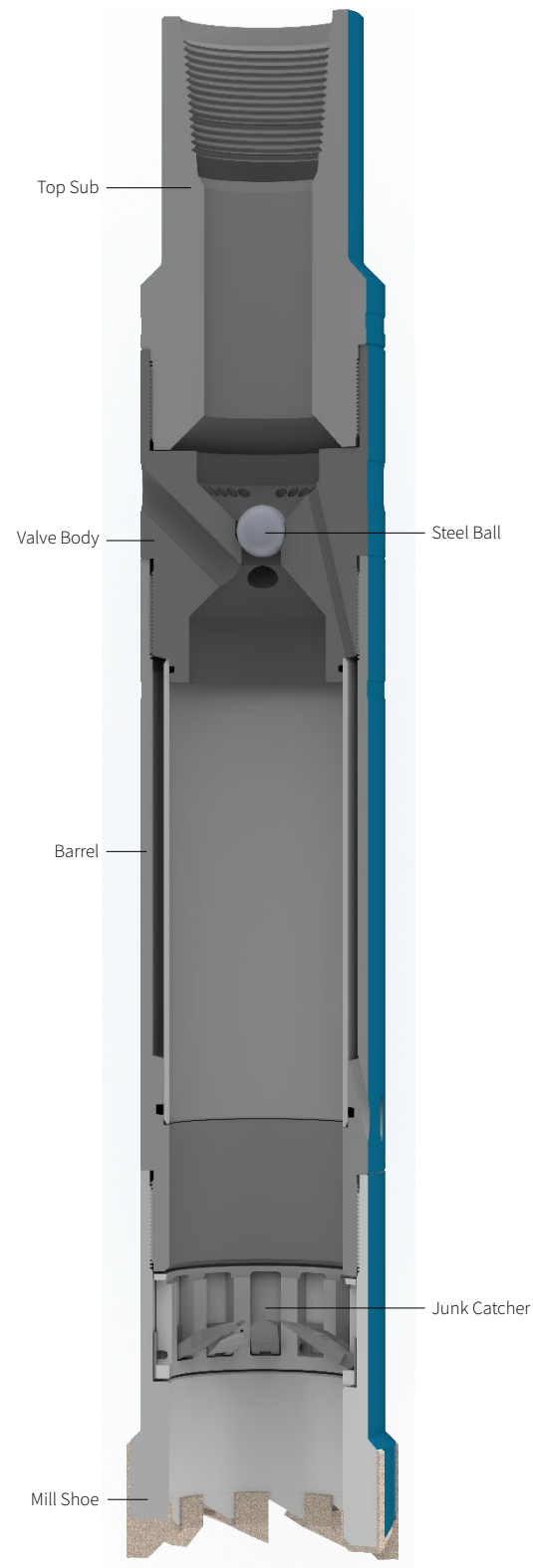
Use

In operation, the reverse circulation junk basket circulates fluid out and down against the full circumference of the hole, where it is deflected in a manner that directs all objects into the long hollow barrel of the basket.

Construction

The Bowen reverse circulation junk basket consists of a top sub, valve body, barrel, junk catcher, and shoe. Pairing the assembly with a lifting sub allows for easy handling of the junk basket and provides a storage place for the steel ball.

The barrel, which is, in effect, a two-bowl assembly, allows reverse circulation. Once the steel ball has settled into the valve body, circulation fluid diverts around the valve and through the inner passages of the barrel, where it jets down and out against the full circumference of the hole. The Venturi effect causes the fluid to flow in a continuous stream up through the barrel and then out the return ports at the upper end of the barrel. (See illustration on page 6).



Bowen Reverse Circulation Junk Basket

Accessories

Mill Shoes

The Bowen reverse circulation junk basket is furnished with a standard Type A mill shoe, which is a hard-faced mill shoe that has side wings. We recommend that you consider Itcoloy-faced mill shoes.

The Type B mill shoe is similar in design to the Type A but is hard-faced with Itcoloy, a material composed of crushed sintered tungsten carbide in an extremely tough matrix which will effectively and rapidly mill up junk during the fishing operation.

The Type C mill shoe is a flat-bottomed shoe, which is hard-faced with Itcoloy on the bottom, inner, and outer face. Effective in milling up junk and is especially effective for cutting cores.

Finger Shoes

When junk is lying loose on the bottom of the well or when it is too large to pass through the catchers, you may install a finger shoe on the bottom of the barrel in place of the mill shoe. When the junk basket engages the fish, combined rotating and lowering causes the long fingers to close in beneath the fish and retain it in the barrel. Finger replacements are easy and inexpensive to replace on the shoe body.

Magnet Inserts

Magnet inserts are available to convert Bowen junk baskets into effective fishing magnets. The magnet insert fits into the recess normally occupied by the catcher. The magnet insert is useful in hard-to-drill formations and for thoroughly cleaning the hole prior to diamond drilling. This arrangement provides a magnet that incorporates the advantages of reverse circulation.



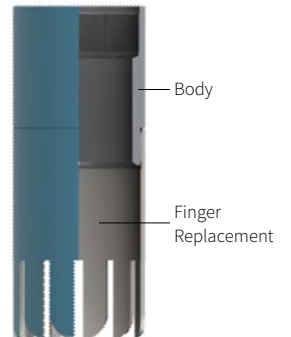
Type A Mill Shoe



Type B Mill Shoe



Type C Mill Shoe



Finger Shoe



Magnet Insert



Junk Catcher



Lifting Sub

Bowen Reverse Circulation Junk Basket

Operation

First, determine that the junk basket is properly assembled and that all of the components are in good working condition.

Selection of Shoe

If the fish is embedded in a hard formation and a core must be cut, the junk basket must be equipped with the proper mill type shoe.

If the fish is lying loosely on the bottom of the hole, the junk basket may be equipped with either the proper mill type shoe or the proper finger type shoe.

Finger type shoes will normally retrieve larger objects than mill type shoes, provided the junk is lying loose on the bottom and a core does not need to be taken.

Itcoloy-faced shoes, with their hard, rugged, and long-lasting qualities, cut away protruding excess metal to allow free entry of the junk into the basket and the retention of that junk, in one run.

Remove the lifting sub and retain it and the steel ball at the derrick floor.

Using the top sub, connect the junk basket to the string and run it in the hole. If small junk particles are very prevalent in the hole, a junk sub should be installed on top of top sub.

Where a window sub is available, install on the top joint of drill pipe and connect the kelly.

To Recover Fish when Basket is Equipped with Mill Type Shoe

When the junk basket is approximately ten feet off bottom, turn on the circulating pumps and maintain circulation for a few minutes to condition the mud. Turn off the circulating pumps. Unscrew the kelly from the string. Drop the steel ball down the drill pipe. Reconnect the kelly. (Where a window sub is available, remove the plug from the sub and drop the steel ball down the drill pipe. Replace the plug in the window sub.)

Turn on the circulating pumps and while maintaining high pressure circulation, rotate the string slowly to the right and lower the junk basket to the bottom of the hole.

Continue righthand rotation and lowering until a core at least ten inches long has been cut.

NOTE: When using the Itcoloy-faced shoes, maintain one ton of weight on the shoe and rotate the basket 50–150 rpm to ensure proper milling.

Stop rotation and circulation and pull the junk basket from the hole.

To Recover Fish when Basket is Equipped with Finger Type Shoe

When the junk basket is approximately ten feet off bottom, turn on the circulating pumps and maintain circulation for a few minutes to condition the mud. Turn off the circulating pumps.

Unscrew the kelly from the string. Drop the steel ball down the drill pipe. Reconnect the kelly. (Where a window sub is available, remove

the plug from the sub and drop the steel ball down the drill pipe. Replace the plug in the window sub.)

Turn on the circulating pumps and while maintaining high pressure circulation, rotate the string slowly to the right and lower it until approximately two tons of weight rest against the bottom of the hole.

Stop rotation and circulation and pull the junk basket from the hole.

To Remove the Fish or Core

Unscrew the mill type shoe or the finger type shoe from the junk basket and wash out the barrel.

Precautions

Make sure that the inside diameters of the tool joints in the string are large enough to pass the steel ball.

Be sure to retain the steel ball at the surface while the junk basket is being lowered into the hole.



Flow Path Diagram

Bowen Reverse Circulation Junk Basket

Explanation of Mechanism

The Bowen reverse circulation junk basket retrieves all types of small objects such as bit cones, tong pins, hammers, mill cuttings, and similar junk. Its unique principle of reverse fluid circulation ensures more complete recovery of junk in the hole and eliminates misruns.

Function of Junk Basket in Recovering Fish with Mill Type Shoe

1. Turning on the circulation pumps and forcing circulation through the junk basket for a few minutes before dropping the steel ball flushes out any mud that may have gathered in the barrel during the run in.
2. After the steel ball has been dropped down the drilling pipe, its downward progress will not be halted until it encounters the valve body in the junk basket. Thereafter, when circulation is resumed, the fluid flows through the inner passages of the barrel and jets outwardly and downwardly against the full circumference of the hole, where it is deflected in a manner that flushes all objects toward center. The fluid then flows in a continuous stream to the center of the junk basket and up through it and out the return ports in the upper end of the barrel, thus giving a reverse circulation action.
3. Cutting a length of core allows the fish to ride past the junk catcher. The fingers on the junk catcher fold back while the core and fish are entering.
4. Pulling up the junk basket causes the fingers in the junk

catcher to dig in and cut off a section of core, thus holding the fish and core securely in the junk basket barrel.

Function of Junk Basket in Recovering Fish with Finger Type Shoe

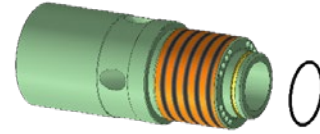
1. Turning on the circulating pump and forcing circulation through the junk basket for a few minutes before dropping the steel ball flushes out any mud that may have gathered in the barrel during the run in.
2. After the steel ball has been dropped down the drill pipe, its downward progress will not be halted until it encounters the valve seat in the junk basket. Then, when circulation resumes, the fluid flows through the inner passages of the barrel and jets outwardly and downwardly against the full circumference of the hole where it is deflected in a manner that flushes all objects toward center. The fluid then flows in a continuous stream to the center of the junk basket and up through it and out the return ports in the upper end of the barrel, thus giving a reverse circulation action.
3. Rotating to the right and lowering the junk basket to bottom causes the fingers of the finger type shoe to close in beneath the fish.

Maintenance

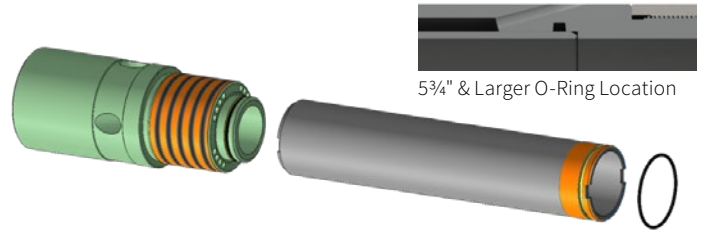
To guard against misruns and to prolong the life of the tool, dismantle and thoroughly cleanse the junk basket after each job.

Assembly

1. Install O-Ring (Greased) on Valve Body and coat threads with thread dope.

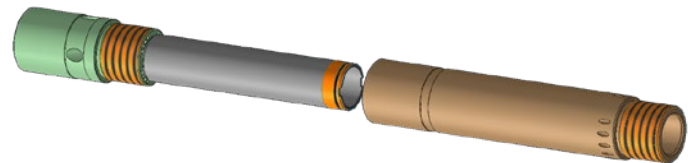


2. Install O-Ring (Greased) on the Inner Barrel. Note: Sizes 5¾" and larger have the O-Ring installed on the ID of the Outer Barrel.

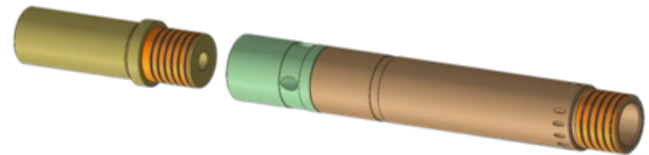


5¾" & Larger O-Ring Location

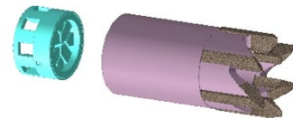
3. Assemble the Inner Barrel between Valve Body and Outer Barrel and thread the Outer Barrel to the Valve Body. Install the Inner Barrel on the Valve Body and then thread the sub assembly to the Outer Barrel.



4. Apply thread dope to Top Sub threads and Install Top Sub to Valve Body



5. Install the Junk Catcher Assembly to the Shoe (Mill Type A, B, C, or Finger Type). Note: Finger Shoe Assembly consists of a Body and Finger Replacement. Note: Magnet Insert can be installed in place of the Catcher if required.

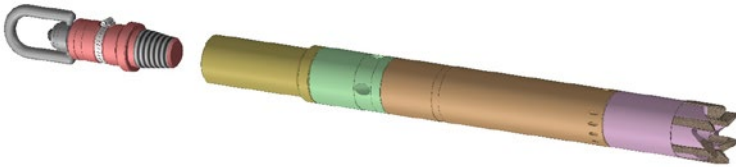


6. Apply thread dope to the bottom threads of the Outer Barrel and install the Shoe.

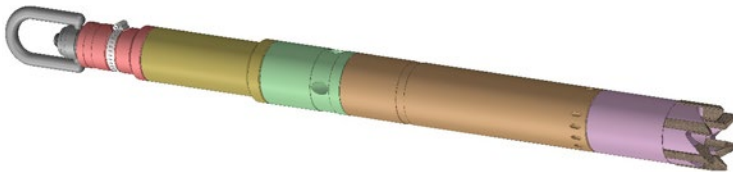


Bowen Reverse Circulation Junk Basket

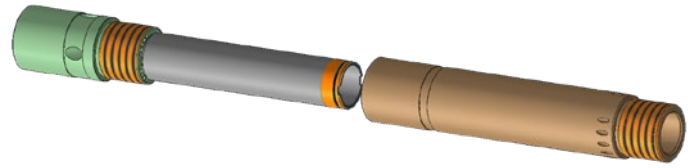
7. Install Lifting Sub to the Top Sub.(Prior to using Lifting Sub, ensure Lifting Eye Bolt is torqued to manufacturer's recommendation)



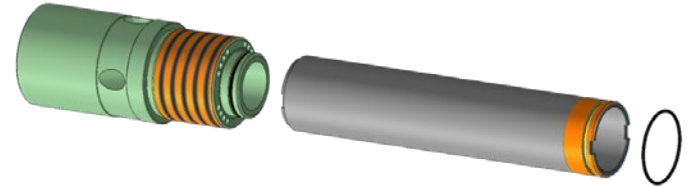
8. Complete Assembly. See Table on Page 14 for Torque Specs. and Recommended Vise Locations.



5. Unthread and remove Valve Body from Outer Barrel.



6. Remove Inner Barrel from Valve Body.



7. Thoroughly clean the tool after use. Wash out all circulation holes of the Valve Body and Outer Barrel, ensuring that they are clean and free of debris.

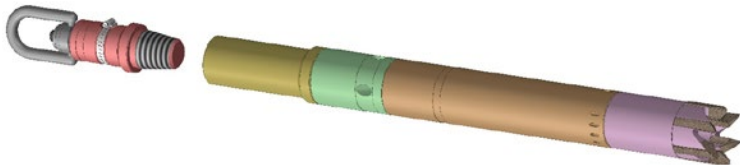
8. Check all parts carefully. Replace damaged parts with new ones.

9. To prevent rust, apply either paint or grease.

10. Store the Steel Ball in the Lifting Sub if applicable.

Disassembly

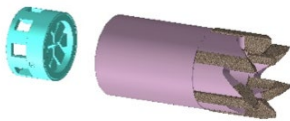
1. Unthread and remove the Lifting Sub from the tool. Remove the Steel Ball.



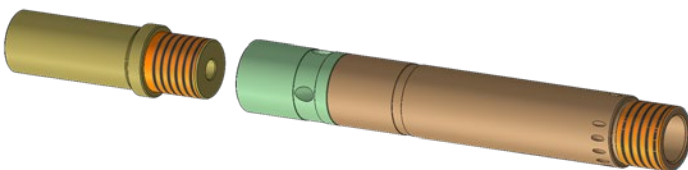
2. Unthread and remove the Shoe from the Outer Barrel. **Note:** For tools with a Finger Type Shoe, remove the Finger Type Shoe Replacement from the Finger Type Shoe Body.



3. Remove the Junk Catcher from the Shoe.



4. Unthread and remove the Top Sub from the Valve Body.

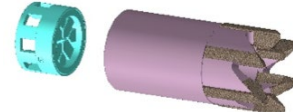


Magnet Insert Assembly Installation

1. Remove Shoe from Outer Barrel of the Junk Basket.

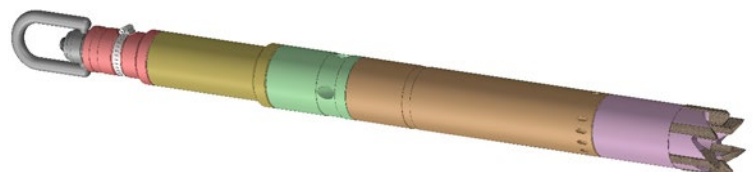


2. Remove Catcher from the Shoe.



3. Install Magnetic Insert into the Catcher recess.

4. Reassemble the Junk Basket.



Maintenance

1. Thoroughly clean after use; make sure circulation hole is clean and free of debris.
2. Store with Keeper in place to preserve magnetism.

Bowen Reverse Circulation Junk Basket

Specifications and Replacement Parts

Specifications

Hole size		3¼ in. to 4 in.	4¼ in. to 4½ in.	4½ in. to 5 in.	5½ in. to 5½ in.	5½ in. to 6 in.	6½ in. to 6½ in.	6½ in. to 7½ in.	7½ in. to 8¼ in.
O.D. Of barrel		3½ in.	4 in.	4½ in.	4½ in.	5½ in.	5½ in.	6½ in.	7 in.
Maximum diameter of fish		2¼ in.	2½ in.	3½ in.	3½ in.	3¼ in.	4½ in.	4½ in.	5½ in.
Top connection		NC26	NC31	NC31	NC38	NC38	NC38	NC38	NC50
Number of teeth on mill		6	6	8	8	8	8	8	8
Complete assembly	Part no.	6635N	7295N	4448N	4572N	2618N	2670N	2677N	2554N
	Weight	85 lbs	98 lbs	108 lbs	128 lbs	142 lbs	185 lbs	238 lbs	293 lbs

Replacement Parts

Top sub	Part no.	6636	7296	4449	4573	2619	2671	2678	2493
	Weight	24 lbs	29 lbs	25 lbs	42 lbs	57 lbs	74 lbs	99 lbs	113 lbs
Barrel - Sub Assembly	Part no.	509056	509061	509066	509071	509076	509081	509086	509091
	Weight	48 lbs	51 lbs	54 lbs	57 lbs	62 lbs	85 lbs	108 lbs	136 lbs
Consisting of: Barrel - Valve Body	Part no.	509057	509062	509067	509072	509077	509082	509087	509092
	Weight								
Barrel - Outer Barrel	Part no.	509058	509063	509068	509073	509078	509083	509088	509093
	Weight								
Barrel - Inner Barrel	Part no.	509059	509064	509069	509074	509079	509084	509089	509094
	Weight								
Barrel - Upper O-Ring	Part no.	568138	568141	568150	568152	568153	568155	568157	568159
	Weight								
Barrel - Lower O-Ring	Part no.	568147	568151	568153	568155	568156	568158	568160	568162
	Weight								
Steel ball	Part no.	6640	6640	4453	4453	2623	2623	2623	2572
	Diameter	1½ in.	1½ in.	1½ in.	1½ in.	1½ in.	1½ in.	1½ in.	1½ in.
	Weight	¾ lb	¾ lb	¾ lb	¾ lb	½ lb	½ lb	½ lb	¾ lb
Junk catcher assembly*	Part no.	21795W	21855W	21780W	18940W	21735W	28349W	21750W	21725W
	Weight	1¼ lbs	1½ lbs	2 lbs	3 lbs	3 lbs	4½ lbs	4½ lbs	7 lbs
Mill shoe type A	Part no.	6642	7299	4455	4576	2625	2676	2683	2556
	Weight	8 lbs	10 lbs	12 lbs	13 lbs	14 lbs	16 lbs	18 lbs	28 lbs
Lifting sub	Part no.	509193	509193	509193	509193	509194	509194	509194	509194
	Weight	9 lbs	9 lbs	12 lbs	12 lbs	17 lbs	18 lbs	45 lbs	45 lbs

Mill Shoes

Mill shoe type B	Part no.	6642	7299	4455	4576	2625	2676	2683	2556
	Weight	8 lbs	10 lbs	12 lbs	13 lbs	14 lbs	16 lbs	18 lbs	28 lbs
Mill shoe type C	Part no.	6642	7299	4455	4576	2625	2676	2683	2556
	Weight	9 lbs	11 lbs	14 lbs	15 lbs	16 lbs	19 lbs	21 lbs	31 lbs

Finger Shoes

Maximum diameter of fish		3¼ in.	3¼ in.	4¼ in.	4½ in.	4½ in.	5½ in.	5½ in.	6½ in.
Complete assembly	Part no.	6643	7300	4456	4577	22208	22218	2739	2740
	Weight	16 lbs	20 lbs	24 lbs	27 lbs	30 lbs	36 lbs	42 lbs	60 lbs
Consisting of: Body	Part no.	6643-2	7300-2	4456-2	4577-2	22208-2	22218-2	2739-2	2740-2
	Weight	10 lbs	10 lbs	14 lbs	15 lbs	14 lbs	14 lbs	14 lbs	28 lbs
Replacement fingers	Part no.	6643-1	7300-1	4456-1	4577-1	22208-1	22218-1	2739-1	2740-1
	Weight	6 lbs	8 lbs	10 lbs	12 lbs	16 lbs	22 lbs	28 lbs	32 lbs

Magnet Insert

To fit assembly no.		6635	7295	4448	4572	2618	2670	2677	2554
Total pull in lbs		45 to 55	45 to 55	45 to 55	80 to 100	80 to 100	125 to 145	180 to 205	250 to 290
Magnet insert assembly	Part no.	61836	61848	61840	61850	61852	61866	61872	61876
	Weight	16 lbs	19 lbs	20 lbs	34 lbs	35 lbs	48 lbs	57 lbs	77 lbs
Consisting of: Magnetic assembly	Part no.	61810	61812	61812	61814	61814	61816	61818	61820
	Weight	4 lbs	5 lbs	6 lbs	6 lbs	7 lbs	8 lbs	10 lbs	14 lbs
Adapter	Part no.	61837	61849	61841	61851	61853	61867	61873	61948
	Weight	12 lbs	14 lbs	14 lbs	28 lbs	28 lbs	40 lbs	47 lbs	63 lbs



How to Order

- Specify:
- (1) Name and number of assembly or part
 - (2) OD and type of shoe
 - (3) Top connection desired



Recommended Spare Parts:

- (1) 2 Junk catchers
- (2) 2 Mill shoes
- (3) 1 Steel ball

Recommended Accessories

- (1) 2 Finger shoes
- (2) 4 Finger shoe replacements
- (3) 1 Magnet insert

NOTE: Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified. * See catcher assembly tables for parts breakdown.

Bowen Reverse Circulation Junk Basket

Specifications and Replacement Parts

Specifications

Hole size		8 3/4 in. to 9 1/2 in.	9 5/8 in. to 10 1/8 in.	10 3/8 in. to 11 1/8 in.	11 1/4 in. to 12 1/2 in.	12 1/2 in. to 13 3/8 in.	13 3/4 in. to 16 in.	16 in. to 17 1/2 in.	22 in. to 26 in.
O.D. Of barrel		7 7/8 in.	9 1/8 in.	10 1/8 in.	11 in.	11 7/8 in.	13 in.	14 7/8 in.	21 in.
Maximum diameter of fish		6 1/16 in.	7 1/16 in.	7 3/8 in.	8 1/8 in.	8 1/2 in.	9 1/16 in.	11 in.	16 in.
Top connection		NC50	NC50	6 5/8 REG	6 5/8 REG	6 5/8 REG	6 5/8 REG	6 5/8 REG	7 5/8 REG
Number of teeth on mill		8	10	10	12	12	14	16	16
Complete assembly	Part no.	2567N	2659N	2684N	2690N	2696N	2702N	2708N	505164N
	Weight	374 lbs	441 lbs	576 lbs	665 lbs	797 lbs	932 lbs	1563 lbs	3750 lbs

Replacement Parts

Top sub	Part no.	2568	2660	2685	2691	2697	2703	2709	505165
	Weight	154 lbs	179 lbs	203 lbs	226 lbs	257 lbs	286 lbs	530 lbs	1090 lbs
Barrel - Sub Assembly	Part no.	509096	509101	509106	509111	509116	509121	509126	505166
	Weight	166 lbs	193 lbs	279 lbs	322 lbs	399 lbs	462 lbs	734 lbs	679 lbs
Consisting of: Barrel - Valve Body	Part no.	509097	509102	509107	509112	509117	509122	509127	509132
	Weight								
Barrel - Outer Barrel	Part no.	509098	509103	509108	509113	509118	509123	509128	509133
	Weight								
Barrel - Inner Barrel	Part no.	509099	509104	509109	509114	509119	509124	509129	509134
	Weight								
Barrel - Upper O-Ring	Part no.	568162	568363	568366	568368	568370	568375	568378	568460
	Weight								
Barrel - Lower O-Ring	Part no.	568165	568367	568370	568373	568374	568379	568381	568464
	Weight								
Steel ball	Part no.	2572	2665	2665	2665	2665	2665	2665	2665
	Diameter	1 1/16 in.	2 1/4 in.	2 1/4 in.	2 1/4 in.	2 1/4 in.	2 1/4 in.	2 1/4 in.	2 1/4 in.
	Weight	3/4 lb	2 lb	2 lb	2 lb	2 lb	2 lb	2 lb	2 lbs
Junk catcher assembly*	Part no.	18725W	14633W	21755W	21760W	21840W	21770W	21775W	47348
	Weight	7 1/2 lbs	9 lbs	16 lbs	20 lbs	25 lbs	40 lbs	90 lbs	145 lbs
Mill shoe type A	Part no.	2574	2668	2689	2695	2701	2707	2713	505167
	Weight	36 lbs	43 lbs	61 lbs	78 lbs	94 lbs	124 lbs	218 lbs	-
Lifting sub	Part no.	509194	509195	509195	509195	509195	509195	509195	509195
	Weight	55 lbs	79 lbs	79 lbs	79 lbs	79 lbs	79 lbs	79 lbs	79 lbs

Mill Shoes

Mill shoe type B	Part no.	2574	2668	2689	2695	2701	2707	2713	505167
	Weight	36 lbs	43 lbs	61 lbs	78 lbs	94 lbs	124 lbs	218 lbs	-
Mill shoe type C	Part no.	2574	2668	2689	2695	2701	2707	2713	505167
	Weight	39 lbs	48 lbs	68 lbs	83 lbs	102 lbs	131 lbs	225 lbs	735 lbs

Finger Shoes

Maximum diameter of fish		7 3/32 in.	9 in.	9 1/16 in.	11 in.	11 7/8 in.	13 in.	15 1/4 in.	16 in.
Complete assembly	Part no.	2741	2742	2743	2744	2745	2746	2747	-
	Weight	81 lbs	102 lbs	135 lbs	154 lbs	213 lbs	276 lbs	351 lbs	-
Consisting of: Body	Part no.	2741-2	2742-2	2743-2	2744-2	2745-2	2746-2	2747-2	-
	Weight	37 lbs	50 lbs	64 lbs	83 lbs	124 lbs	154 lbs	191 lbs	-
Replacement fingers	Part no.	2741-1	2742-1	2743-1	2744-1	2745-1	2746-1	2747-1	-
	Weight	44 lbs	52 lbs	64 lbs	71 lbs	89 lbs	122 lbs	160 lbs	-

Magnet Insert

To fit assembly no.		2567	2659	2684	2690	2696	2702	2708	-
Total pull in lbs		310 to 360	620 to 720	620 to 720	930 to 1080	930 to 1080	1265 to 1440	1740 to 2050	-
Magnet insert assembly	Part no.	61953	61961	61963	61973	61975	61981	61985	-
	Weight	97 lbs	174 lbs	186 lbs	266 lbs	281 lbs	348 lbs	485 lbs	-
Consisting of: Magnetic assembly	Part no.	61822	61826	61826	61828	61828	61830	61832	-
	Weight	18 lbs	24 lbs	36 lbs	45 lbs	60 lbs	82 lbs	131 lbs	-
Adapter	Part no.	61954	61966	61968	61974	61976	61982	61986	-
	Weight	79 lbs	150 lbs	150 lbs	221 lbs	221 lbs	266 lbs	354 lbs	-



How to Order

Specify:

- (1) Name and number of assembly or part
- (2) OD and type of shoe
- (3) Top connection desired



Recommended Spare Parts:

- (1) 2 Junk catchers
- (2) 2 Mill shoes
- (3) 1 Steel ball

Recommended Accessories

- (1) 2 Finger shoes
- (2) 4 Finger shoe replacements
- (3) 1 Magnet insert

NOTE: Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified. * See catcher assembly tables for parts breakdown.



Bowen Reverse Circulation Junk Basket

Replacement Parts - Bowen Junk Basket Catchers

Bowen Junk Basket Catchers

Number of junk basket it will fit		6635N	7295N	4448N	4572N	2618N	2670N	2677N
Complete assembly	Part no.	21795W	21855W	21780W	18940W	21735W	28349W	21750W
	Weight	1¼ lbs	1½ lbs	2 lbs	3 lbs	3 lbs	4½ lbs	4½ lbs

Replacement Parts

Body	Part no.	56357	68366	45591	45579	45559	45511	45584
	Weight	¼ lb	¼ lb	½ lb	¾ lb	¾ lb	1 lb	1¼ lbs
Finger retainer	Part no.	56358	68367	45592	45580	45560	45519	45585
	Weight	⅙ lb	⅙ lb	⅙ lb	⅙ lb	¼ lb	¼ lb	¼ lb
Short finger	Part no.	68368	68368	45574	45581	45558	45517	45517
	Weight	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb
	No. Req'd.	4	4	5	6	5	8	8
Medium finger	Part no.	-	-	-	-	-	-	-
	Weight	-	-	-	-	-	-	-
	No. Req'd.	-	-	-	-	-	-	-
Long finger	Part no.	68389	68389	45575	45582	45561	45516	45516
	Weight	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb	¼ lb	¼ lb
	No. Req'd.	4	4	5	6	5	4	6
Pivot pin	Part no.	45583	45583	45583	45583	-	-	-
	Weight	½ lb	½ lb	½ lb	½ lb	-	-	-
	No. Req'd.	8	8	10	12	-	-	-
Torsion spring	Part no.	45571	45571	45571	45571	45520	45520	45520
	Weight	½ lb	½ lb	½ lb	½ lb	⅙ lb	⅙ lb	⅙ lb
	No. Req'd.	8	8	10	12	10	12	12
Retainer screw	Part no.	42257	42257	42257	42257	42257	42257	42257
	Weight	½ lb	½ lb	½ lb	½ lb	½ lb	½ lb	½ lb
	No. Req'd.	2	2	2	2	2	2	2

Bowen Junk Basket Catchers

Number of junk basket it will fit		2554N	2567N	2659N	2684N	2690N	2696N	2702N
Complete assembly	Part no.	21725W	18725W	14633W	21755W	21760W	21840W	21770W
	Weight	7 lbs	7 lbs	9 lbs	16 lbs	20 lbs	25 lbs	40 lbs

Replacement Parts

Body	Part no.	45550	45505	45521	68116	45576	45593	64810
	Weight	2½ lbs	2½ lbs	3 lbs	6½ lbs	7 lbs	9 lbs	12½ lbs
Finger retainer	Part no.	45551	45506	45530	68117	45578	45594	64811
	Weight	½ lb	½ lb	¾ lb	1½ lb	1½ lb	2 lb	2½ lb
Short finger	Part no.	45557	45508	45588	45507	45525	45507	666
	Weight	¼ lb	¼ lb	¾ lb	¾ lb	½ lb	¾ lb	1¼ lb
	No. Req'd.	6	6	6	6	8	8	8
Medium finger	Part no.	-	-	-	-	45510	45510	-
	Weight	-	-	-	-	¾ lb	¾ lb	-
	No. Req'd.	-	-	-	-	4	4	-
Long finger	Part no.	45518	45507	45589	70277	45526	45526	667
	Weight	¼ lb	¾ lb	½ lb	¾ lb	⅙ lb	1¼ lb	1½ lb
	No. Req'd.	6	6	6	6	4	4	8
Pivot pin	Part no.	-	-	-	-	-	-	45603
	Weight	-	-	-	-	-	-	⅙ lb
	No. Req'd.	-	-	-	-	-	-	16
Torsion spring	Part no.	45520	45509	45549	45509	45509	45509	45604
	Weight	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb	⅙ lb
	No. Req'd.	12	12	12	12	16	16	16
Retainer screw	Part no.	42257	42257	42257	42257	42257	42257	42257
	Weight	½ lb	½ lb	½ lb	½ lb	½ lb	½ lb	½ lb
	No. Req'd.	2	2	2	2	2	2	2

Bowen Reverse Circulation Junk Basket

Replacement Parts - Bowen Junk Basket Catchers (Continued)

Bowen Junk Basket Catchers

Number of junk basket it will fit		2708N
Complete assembly	Part no.	21775W
	Weight	90 lbs

Replacement Parts

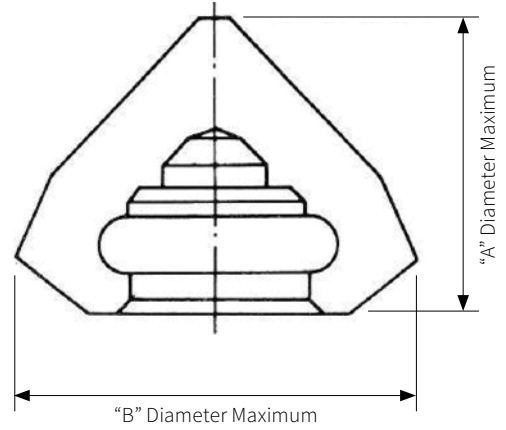
Body	Part no.	45605
	Weight	20 lbs
Finger retainer	Part no.	45606
	Weight	3¼ lbs
Short finger	Part no.	45607
	Weight	3 lbs
	No. Req'd.	8
Medium finger	Part no.	-
	Weight	-
	No. Req'd.	-
Long finger	Part no.	45608
	Weight	5 lbs
	No. Req'd.	8
Pivot pin	Part no.	45609
	Weight	⅓ lb
	No. Req'd.	3
Torsion spring	Part no.	45610
	Weight	⅓ lb
	No. Req'd.	16
Retainer screw	Part no.	42257
	Weight	⅓ lb
	No. Req'd.	1

Bowen Reverse Circulation Junk Basket

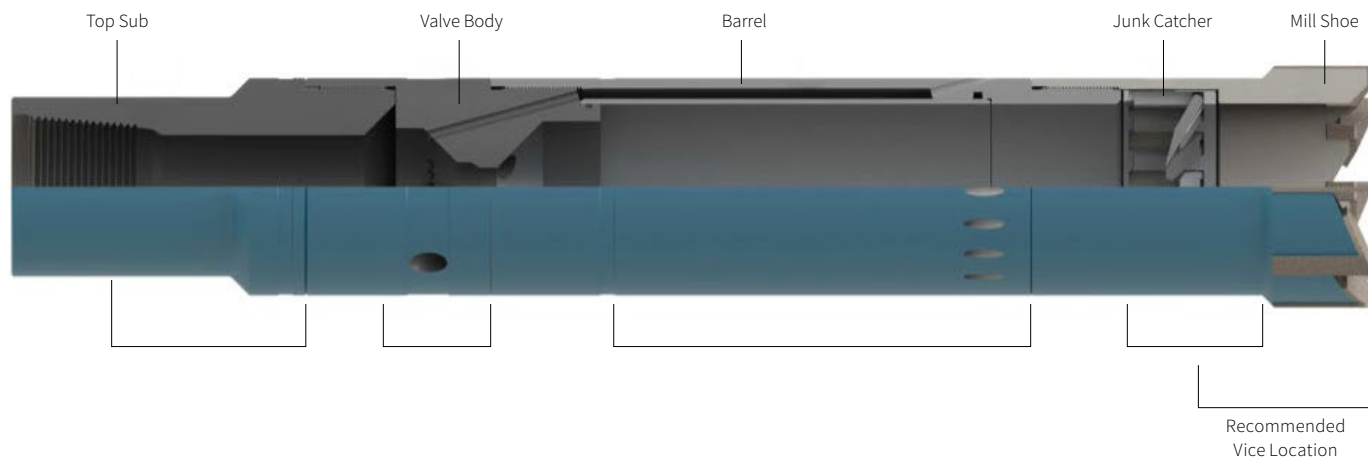
Rock Bit Cone Dimensions

2 Cone bits		Size	3 Cone bits	
A	B		A	B
		3¾ in. to 4½ in.	1¾½ in.	2¼¾ in.
		4¼ in. to 4½ in.	2¼¾ in.	2¾¾ in.
		4¾ in. to 5 in.	2½½ in.	3¼¾ in.
		5½ in. to 5½ in.	2¾¾ in.	3½¾ in.
		5¾ in. to 6 in.	3½ in.	4¾¾ in.
		6½ in. to 6½ in.	3¾¾ in.	4¾¾ in.
		6¾ in. to 7 in.	3¾¾ in.	4¾¾ in.
		7½ in. to 7½ in.	3¾¾ in.	4¾¾ in.
3¾¾ in.	5½½ in.	7¾ in. to 8 in.	3¾¾ in.	5¼¾ in.
4¼½ in.	6¾¾ in.	8½ in. to 8½ in.	4¾ in.	5¾¾ in.
4¼½ in.	6¾¾ in.	8¾ in. to 9 in.	4¾½ in.	6¼½ in.
		9½ in. to 9½ in.	4¾½ in.	6¼½ in.
4¾ in.	7 in.	9¾ in. to 9¾ in.	4¾½ in.	6¼¾ in.
5¾¾ in.	7¼½ in.	10½ in. to 11½ in.	5¾¾ in.	7¾½ in.
5¾¾ in.	8¾¾ in.	11¾ in. to 12½ in.	6¾ in.	7¾¾ in.
		12¾ in. to 13¾ in.	6¾ in.	8¾¾ in.
		13½ in. to 14¼ in.	7¾ in.	8¾¾ in.
		14½ in. to 15 in.	7¾¾ in.	9¼½ in.
		16 in.	9¾½ in.	10¾ in.
		17 in. to 17½ in.	8¾¾ in.	11¼¾ in.
		18½ in. to 18¾ in.	8¾¾ in.	11¾¾ in.
		20 in.	9½ in.	11¾ in.
		22 in.	10¼½ in.	14¼¾ in.
		24 in.	10¼½ in.	14¾¾ in.
		26 in.	12¼¾ in.	14¾¾ in.

The cone sizes shown are the nominal Hughes Christensen Company cone dimensions and are the maximum for the size indicated in the middle column. They may be used as a guide in junk fishing operations.



Bowen Reverse Circulation Junk Basket



O.D. of Barrel	Part Numbers				Makeup Torque Top Sub to Valve Body Valve Body to Barrel	Makeup Torque Barrel to Mill Shoe
	Assembly	Top sub	Barrel	Shoe	(ft-lbs)*	(ft-lbs)*
3½ in.	6635N	6636	509058	6642	2,100	2,400
4 in.	7295N	7296	509063	7299	2,500	4,200
4½ in.	4448N	4449	509068	4455	2,700	5,100
4¾ in.	4572N	4573	509073	4576	4,000	6,200
5½ in.	2618N	2619	509078	2625	4,400	4,000
5¾ in.	2670N	2671	509083	2676	5,500	7,200
6¼ in.	2677N	2678	509088	2683	7,500	9,700
7 in.	2554N	2493	509093	2556	9,400	7,800
7¾ in.	2567N	2568	509098	2574	11,100	11,500
9½ in.	2659N	2660	509103	2668	25,300	26,100
10½ in.	2684N	2685	509108	2689	33,700	47,000
11 in.	2690N	2691	509113	2695	44,200	42,500
11¾ in.	2696N	2697	509118	2701	69,300	64,100
13 in.	2702N	2703	509123	2707	69,700	39,500
14¾ in.	2708N	2709	509128	2713	77,300	41,800
21 in.	505164N	505165	509133	505167	292,000	292,000

* These values are the maximum torque values recommended and are set at 50% of yield. These torques are not required for all fishing jobs and lower torques will work with less wear and tear to the threads. It is also assumed that the torque is applied to the OD's evenly so as to not collapse the OD. Torque is measured in ft-lbs



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