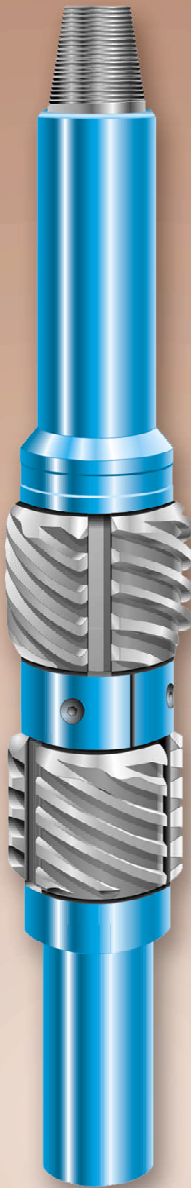


FULL-CIRCLE CASING SCRAPER

Instruction Manual 6255



Full-Circle Casing Scraper

Full-Circle Casing Scraper

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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. National Oilwell Varco, 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.

Sixth Printing, September 2005

General Description

The **Bowen Full-Circle Casing Scraper** is ideal for the removal of mud, cement, bullets, rust, scale, paraffin, perforation burrs and other obstructions from the inside walls of casing.

Maintaining a clean casing I.D. is important when operating drilling, fishing or wireline tools. Likewise, packers, patches, spears and similar tools require clean surfaces to grip. Obstructions on casing walls will frequently cause these tools to fail or become difficult to operate.

Utilizing a simple one-piece mandrel design, the Bowen Full-Circle Casing Scraper is constructed to be rugged, yet simple to operate and maintain.

The Scraper conditions 50% more surface area than any other tool on the market. The full circle blades are so spaced to contact 600° (almost two complete circles) of casing surface at once.

Short and compact, the Scraper also incorporates a long taper on blades for passing through joints without hanging. The Scraper works in vertical or rotary operations and may be run on drill pipe.

Bowen Full-Circle Casing Scrapers are available to condition pipe ranging from 2³/₈-inch tubing to 13³/₈-inch casing.

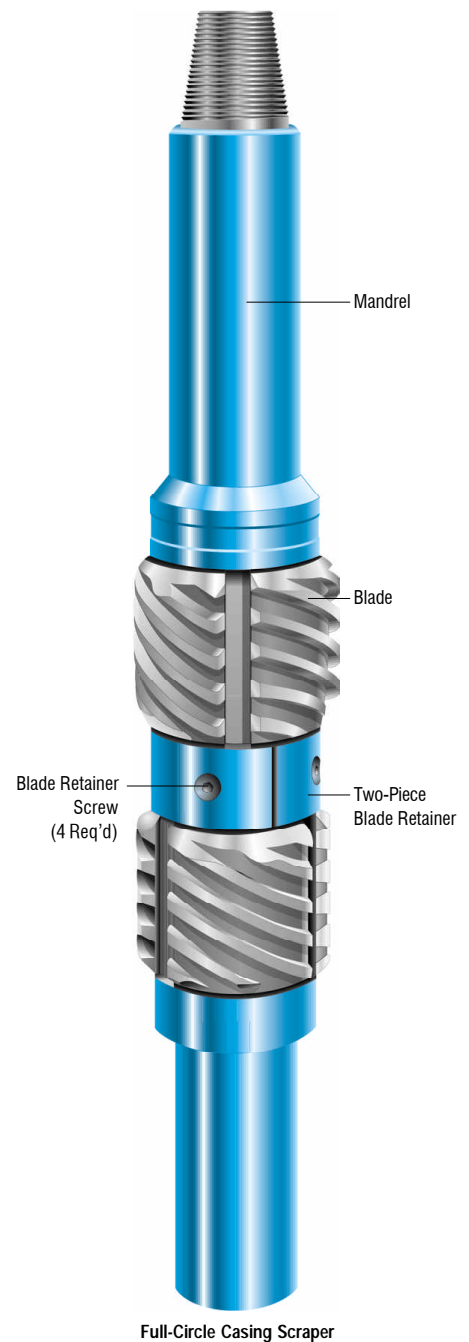
Use

The Bowen Full-Circle Casing Scraper is used to remove any deposits, irregularities or burrs from oil well casing that might be the cause of trouble during later operation, such as running packers and other close tolerance equipment. Some of the main uses are:

- (1) Clean out cement, hardened mud, and paraffin.
- (2) Remove burrs from perforations.
- (3) Remove bullets that become imbedded in the casing.
- (4) Remove burrs and nicks that might have resulted from the running of bits, or fishing tools.
- (5) Remove tight spots that might have been caused by dents in casing as a result of mishandling.

Removing obstructions from the inside of casing offers many advantages to the operator. Packers can be run easily and without damage to the sealing element. Packer seating and sealing is positive in clean, burr-free casing. If a casing swab is run, damage to the expensive swab rubbers is held to a minimum and rubber life is greatly increased.

The Bowen Full-Circle Casing Scraper may be run either with the pin up or the pin down. It may be rotated or spudded. In all cases, interior casing scraping is assured due to the arrangement of the blades. Yet, this same arrangement and the contour of the blades permits passage through casing couplings and easy reentry at the bottom, in the event the scraper passes out through the bottom of the casing.



Construction

The Bowen Full-Circle Casing Scraper is composed of a rugged one-piece mandrel design with a two-piece split ring retained by four screws in the center. Blades are spring loaded and are designed to scrape a full range of common casing weights with only one size of blade for each different casing O.D.

The blades are precision cast from high-quality wear-resistant tool steel. They are very tough, but not brittle. They tend to work-harden slightly in service, which prevents wear very effectively. The blades are designed to fit closely over the spring housing welded to the mandrel, so that lateral movement is kept to an absolute minimum.

Springs are made of corrosion resistant 302 stainless and are totally enclosed between the blade and spring housing. Accidental loss down hole is virtually impossible.

The mandrel is made from heat treated alloy steel and has a pin by box connection. Both ends have a suitable fishing neck to allow fishing out of the well if required.

Operation

The Bowen Full-Circle Casing Scraper is usually run with the pin connection up. It can be run either way at the convenience of the operator. The scraping action of the blades is identical in either case.

The configuration of the blades is such that the area scraped by the top row is overlapped by the row on the bottom.

The tool is made up on the string, and usually a bit is installed on the bottom. The Scraper is run in and the scraping operation begun, rotating or spudding as desired.

When a blade encounters an abrupt obstruction, such as a perforation burr or a fragment of cement, it is held firmly in its close-fitting slot by the mandrel and two-piece retainer ring.

Very slight or very gradual changes in casing internal diameters are passed over without damage to the casing, since the blades move in or out adjusting itself to the irregularities. The blades are simply held in contact with the clean surface of the casing without cutting the metal.

Maintenance

Good maintenance will prolong the life of the tool and prevent misruns. After each use, the tool should be completely disassembled and thoroughly cleaned. Any worn or damaged parts should be replaced as this time. See Disassembly and Assembly below.

Disassembly

1. Clamp the mandrel in a suitable vise, near one end.
2. Remove four (4) socket head screws from split ring.
3. Remove all blades and springs from tool.
4. Thoroughly clean all the parts, and examine each for wear or damage. Replace any badly worn or damaged parts.

Assembly

1. Clamp the mandrel in a vise near one end.
2. Insert springs into slots provided on mandrel and hold in place with thick grease.
3. Place one row of blades in position and using banding tool, compress blades against the mandrel.
4. Secure Band and remove banding tool.
5. Place second row of blades in position and using banding tool compress blades against the mandrel.
6. Install split ring between the blades and secure ring with four (4) socket head screws. Coat threads with LOC-TITE #242 (blue).
7. Remove banding tool and steel band from first row of blades. The Bowen Full-Circle Casing Scraper is now ready for use.

Bowen Full-Circle Casing Scrapers

Designed to Scrape – inches*	4-1/2 OD 9.5-13.5#	5-1/2 OD 14.0-23.0#	7 OD 17.0-38.0#	9-5/8 OD 32.3-64.9#	10-3/4 OD 32.75-79.2#	13-3/8 OD 48.0-98.0#
Can be Dressed with	—	6-5/8 OD	7-5/8 OD	—	—	—
Blades to Scrape – inches*	—	20.0-33.0#	24.0-47.1#	—	—	—
Tool Joint Connection – inches	2-3/8 API Reg	2-7/8 API Reg	3-1/2 API Reg	4-1/2 API Reg	6-5/8 API Reg	6-5/8 API Reg
OD of Fishing Neck – inches	3-1/8	3-3/4	4-1/4	5-1/2	7-3/4	7-3/4
Tool ID – inches	13/16	1-1/4	1-1/2	2-1/4	3-1/2	3-1/2
Tool OD – inches	3-5/8	4-3/8	5-1/2	8-1/8	9-3/16	11
Complete Assembly	150032	149088	149335	150025	150418	150034

* See table below for recommended minimum and maximum casing ID ranges

Replacement Parts

	Qty.						
Mandrel	1	150041	149089	149336	150026	152004	150035
Blade		150361 (6)	149090 (6)	149338 (6)	150028 (8)	152007 (8)	150037 (8)
Optional Blade		—	150564	150017	—	—	—
Spring		150045 (24)	149888 (24)	149340 (18)	150030 (24)	152016 (24)	150039 (24)
Blade Retainer (2 Pieces)	1	150042	149091	149337	150027	152005	150036
Screw	4	150903	150904	150904	23230	23230	23231

Required Accessory

Blade Installation Tool	149267	149267	149267	149267	149267	149267
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Recommended Minimum and Maximum Casing ID Ranges for Full-Circle Casing Scrapers

Assembly	150032	149088	150564	149335	150017	150025	150418	150034
Blade	150361	149090	150564	149338	150017	150028	152007	150037
Maximum Casing ID	4.622	5.250	6.188	6.688	7.188	9.188	10.412	13.238
Minimum Casing ID	3.886	4.662	5.600	5.850	6.308	8.224	9.22	11.911
Recommended Casing Sizes (inches) and Weights (lbs)*	4-1/2 OD 9.5 – 13.5	5-1/2 OD 14.0 – 23.0	6-5/8 OD 20.0 – 33.0	6-5/8 OD 20.0 – 24.0	7 OD 17.0 – 23.0	9-5/8 OD 32.3 – 64.9	10-3/4 OD 32.75 – 79.2	13-3/8 OD 48.0 – 98.0
	5 OD 11.5 – 24.2	6 OD 23.0 – 26.0	7 OD 29.0 – 46.4	7 OD 17.0 – 38.0	7-5/8 OD 24.0 – 47.1	9-3/4 OD 59.2	11-3/4 OD 80.5 – 87.2	13-1/2 OD 81.4
	5-1/2 OD 26.0 – 38.0	6-5/8 OD 43.7 – 56.8	7-5/8 OD 55.3 – 70.7	7-5/8 OD 39.0 – 63.2	7-3/4 OD 46.1 – 48.6	9-7/8 OD 62.8	—	13-5/8 OD 88.2
	6-5/8 OD 62.9 – 71.3	7 OD 57.1 – 70.3	—	7-3/4 OD 46.1 – 48.6	8-5/8 OD 63.5 – 77.1	10-3/4 OD 85.3 – 109	—	14 OD 92.68 – 119.38
	7 OD 76.3	7-5/8 OD 82.1 – 84.8	—	—	—	—	—	—

*Based on nominal casing IDs and recommended ID ranges

How to Order

Specify:

- (1) Name and number of assembly or part
- (2) Size and weight of casing
- (3) Tool joint connection

RECOMMENDED SPARE PARTS:

- (1) 1 Set of Blades
- (2) 1 Set of Springs

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* Denotes Manufacturing and Engineering facilities

Downhole Solutions

Drilling Solutions

Engineering and Project Management Solutions

Lifting and Handling Solutions

Production Solutions

Supply Chain Solutions

Tubular and Corrosion Control Solutions

Well Service and Completion Solutions