



Split Shot Cutters

1.375 and 2.000 inch

MAN-REC-SSC (R05)

Owen Oil Tools LP

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Split Shot Cutters 1.375 and 2.000 in.





Overview

Description

Owen's Split Shot Cutters are designed for use where traditional jet cutters are not effective or can not be used.

Operation

Owen's Split Shot Cutters are quick and effective solutions to sever tubing and casing collars to aid in the removal of stuck pipe. These cutters utilize a patent protected assembly of linear shaped charges to focus an explosive jet to cut across the length of a tubular collar. Split Shots utilize manufacturing and packaging processes to allow easy shipment and fast delivery to the customer.

Split Shot Cutters should be used when drill pipe and/or tubing becomes stuck in the well. A combination of the largest possible diameter capable of running in the well and the explosive load for the collar thickness should be chosen to achieve maximum performance. A gauge run is recommended prior to running the tool to prevent any safety concerns like sticking a live cutter in the well or spudding with explosive tools. These tools are often chosen for the fast running capabilities and their slim design that allows them to get past restrictions that a conventional jet cutter could not get through. Owen's Split Shots must be shot in the collar decentralized against the tubular to function properly.

Owen Oil Tools' Split Shot Cutters utilize explosive technology and are designed to explosively sever tubular members when initiated by an Owen's Resistorized Bridge™ Detonator. Owen's electrical detonators adhere to API RP-67 specifications. All safety rules and regulations should be strictly followed when storing, handling, assembling, and using these cutters and/or detonators. Safety precautions should be taken in accordance with your company's safety policies, governmental regulations, and the American Petroleum Institute Recommended Practice 67 (API RP-67).

Owen's Split Shots come standard with RDX [325° F (163° C) for 1 hour] or HMX [400° F (204° C) for 1 hour]. Cutters are also available in HNS [500° F (260° C) - 1 hour] by special order.

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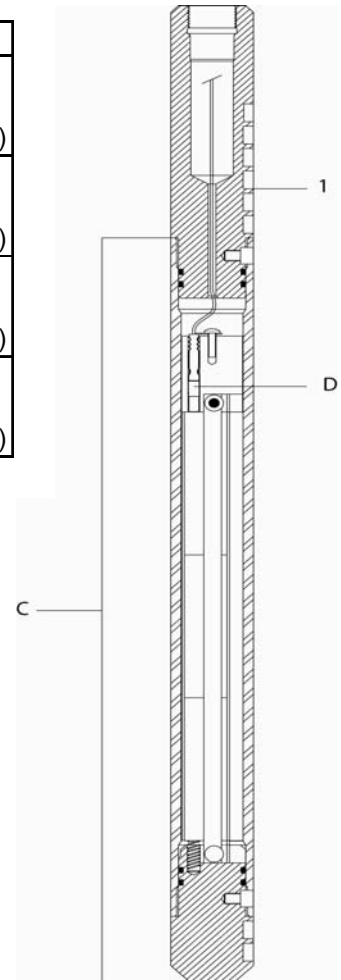


Specifications and Schematics

Item	1	D	C	
Description	Magnetic Top Sub	Detonator	12" Long Assy	18" Long Assy
1 3/8" OD (600gr/ft)	SSC-1375-005	DET-3050-009LS	--	SSC-1375-311 (3 - 6" Segments)
1 3/8" OD (900gr/ft)	SSC-1375-005	DET-3050-009LS	--	SSC-1375-312 (6 - 3" Segments)
2" OD (1200gr/ft)	SSC-2000-010	DET-3050-009LS	--	SSC-2000-312 (6 - 3" Segments)
2" OD (2000gr/ft)	SSC-2000-010	DET-3050-009LS	--	SSC-2000-311 (9 - 2" Segments)

- Top Sub and detonator must be ordered separately from Split Shot Assembly.
- Magnetic Top Sub may be used more than once.
- HMX Split Shots are available by replacing the 3 with a 4, for example SSC-XXXX-4XX.
- HNS Split Shots are available by special order and should be ordered by replacing the 3 with a 5, for example SSC-XXXX-5XX.

* Pressure Ratings are based on 1 hour exposure. For durations exceeding 1 hour, please contact Owen Engineering. Refer to the "Time vs Temperature Chart for Explosives" for allowable operating temperatures



Tool	1-3/8 in.		1-3/8 in.		2 in.		2 in.	
	1-3/8 in.	34.9 mm	1.375 in.	34.9 mm	2.000 in.	50.8 mm	2.000 in.	50.8 mm
Housing Material	Aluminum		Aluminum		Aluminum		Aluminum	
Explosive Length	18, 24 in.		18, 24 in.		18, 24, 48 in.		18, 24, 48 in.	
	45.7, 70.0 cm		45.7, 70.0 cm		45.7, 70.0, 122.0 cm		45.7, 70.0, 122.0 cm	
Explosive Load	600 grain/ft		900 grain/ft		1200 grain/ft		2000 grain/ft	
Minimum Running Restriction	1.775 in.	45.1 mm	1.775 in.	45.1 mm	2.625 in.	66.7 mm	2.625 in.	66.7 mm
Recommended Tubing / Casing Applications	2.375 to 2.875 in.		2.875 to 4.500 in.		3.500 to 7.000 in.		5.500 to 16.000 in.	
	60.3 to 73.0 mm		73.0 to 114.3 mm		88.9 to 177.8 mm		139.7 to 406.4 mm	
Maximum Pressure	psi	MPa	psi	MPa	psi	MPa	psi	MPa
up to 200°F (93°C)	14,000	96.5	14,000	96.5	11,700	80.7	11,700	80.7
200°F to 325°F (93°C to 163°C)	13,250	91.4	13,250	91.4	11,000	75.8	11,000	75.8
325°F to 400°F (163°C to 200°C)	11,800	81.4	11,800	81.4	9,850	67.9	9,850	67.9

1.0 Assembly of Split Shot Cutters - except SSC-2000-311, SSC-2000-321 and SSC-2000-341

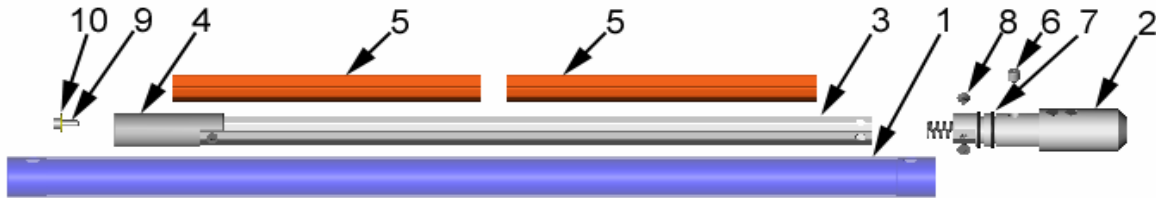


Figure 1: Split Shot Cutter Assembly with Trough - Exploded View

- 1.1** Unpack the hardware and explosive Segments. The Segments will be numbered in sequential order for assembly.
- 1.2** Remove the Screw (item #6) securing the Housing (item 1#) to the Bottom Sub (item #2). Remove the Bottom Sub and attached assembly from Housing.
- 1.3** Remove the Cap Screw (item #9) and Washer (item #10) from the detonator Sub (item #4).
- 1.4** Remove the Screws (item #6) that secure the Charge Trough (item #3) to the Bottom Sub.
- 1.5** Remove the O-rings (item #7) from their package and visually inspect them for cuts or cracks. Lightly lubricate the O-rings with grease and install them onto the Bottom Sub (item #2).
- 1.6** Re-install the Charge Trough onto the Bottom Sub and secure it in place with the screws.

1.7 Starting with Segment #1, install the Segment (item #5) into the Charge Trough. The Segment should fit next to the Spring and down into the Charge Trough with the inner angle facing outward, see Figure 2.



Figure 2

1.8 Repeat installation of Segments with the consecutive number Segment in a linear direction until all the Segments are in the Charge Trough. All of the Segments should fit tightly in the Charge Trough without gaps.

1.9 Insert the assembly into the Housing. Be careful to line up the explosive Segments with the window on the Housing. Secure the Housing to the Bottom Sub with the Screw (item #6).

2.0 Assembly of Split Shot Cutters - only SSC-1375-322, SSC-2000-311, SSC-2000-321 and SSC-2000-341

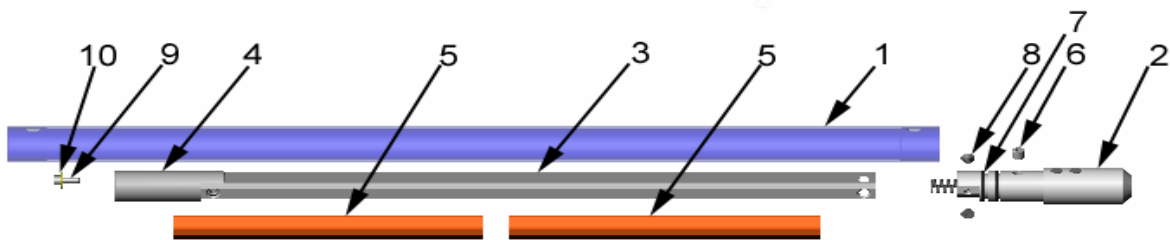


Figure 3: Split Shot Cutter Assembly with Rails - Exploded View.

2.1 Unpack the hardware and explosive Segments. The Segments will be numbered in sequential order for assembly.

2.2 Remove the Screw (item #6) securing the Housing (item #1) to the Bottom Sub (item #2). Remove the Bottom Sub and attached assembly from Housing.

2.3 Remove the Cap Screw (item #9) and Washer (item #10) from the detonator Sub.

2.4 Remove the Flat Head Screws (item #8) that secure the Charge Rails (item #3) to the Bottom Sub.

2.5 Remove the O-rings (item #7) from their package and visually inspect them for cuts or cracks. Lightly lubricate the O-rings with grease and install them onto the Bottom Sub (item #2).

2.6 Re-install the Charge Rails onto the Bottom Sub securing it in place with the Flat Head Screws.

2.7 Start with Segment #1; install the Segment (item #5) into the Charge Rails with the inner angle first until it contacts the internal step. The Segment should fit next to the Spring and between the Charge Rails with the inner angle facing outward, see Figure 4.

2.8 Repeat installation of Segments with the consecutive number Segment in a linear direction until the all the Segments are in the Charge Rails. All of the Segments should fit tightly in Charge Trough without gaps.

2.9 Insert the assembly into the Housing. Be careful to line up the explosive Segments with the window on the Housing. Secure the Housing to the Bottom Sub with the Screw (item #6).

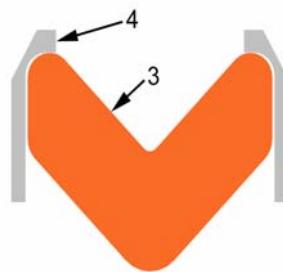


Figure 4

3.0 Arming Split Shot Cutters



Warning: Only use DET-3050-009LS!



Warning: Always follow API RP - 67 guidelines when arming electrical detonators!

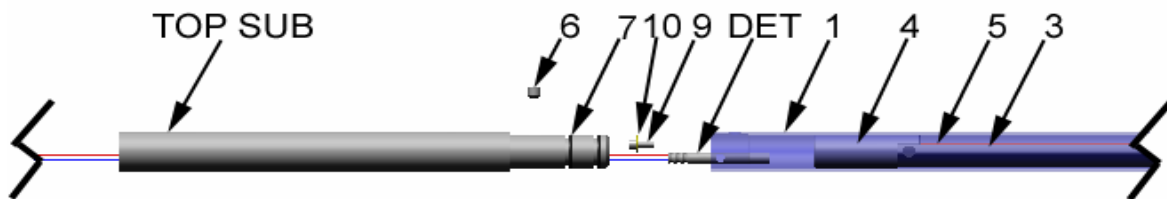


Figure 5: Split Shot Cutter Method of Arming

3.1 Remove the detonator from its package.

3.2 Insert the detonator into a safety shield.

3.3 Measure the resistance of the detonator between the two lead wires with a blaster's multimeter. The detonator should read 51 Ohms \pm 5 Ohms.

3.4 Remove the O-rings (item #7) from their package and visually inspect them for cuts or cracks. Lightly lubricate the O-rings with grease and install them onto the Top Sub.

3.5 Insert the detonator leadwires through the hole in the Top Sub.

3.6 Electrically connect the detonator leadwires to the wireline or toolstring.

3.7 Mechanically connect the Top Sub to the wireline toolstring.

3.8 Insure the wireline is shunted through the shooting panel.

3.9 Remove the detonator from the safety shield.



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3.10 Insert the detonator, output end first, into the detonator Sub (item #4) inside the Housing.

3.11 Secure the detonator in place with a Cap Screw (item #9) and Washer (item #10).

3.12 Insert the Top Sub into the Split Shot Housing. Secure the Housing to the Bottom Sub with the Screw (item #6).

3.13 The tool is armed and ready to run in hole.

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