



Overbalance Surge Valve Technical Manual

2.375 EUE
2.875 EUE
3.500 EUE

MAN-OBSV-GEN (R01)

Owen Oil Tools

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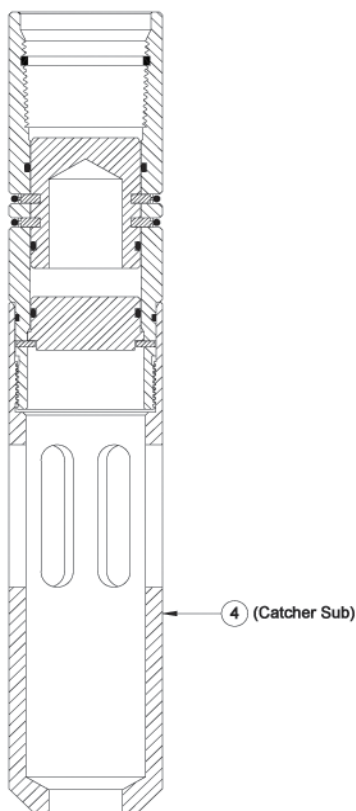
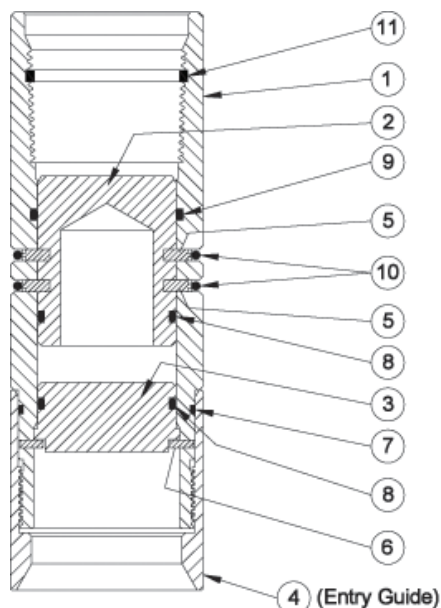
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BOM and Schematics

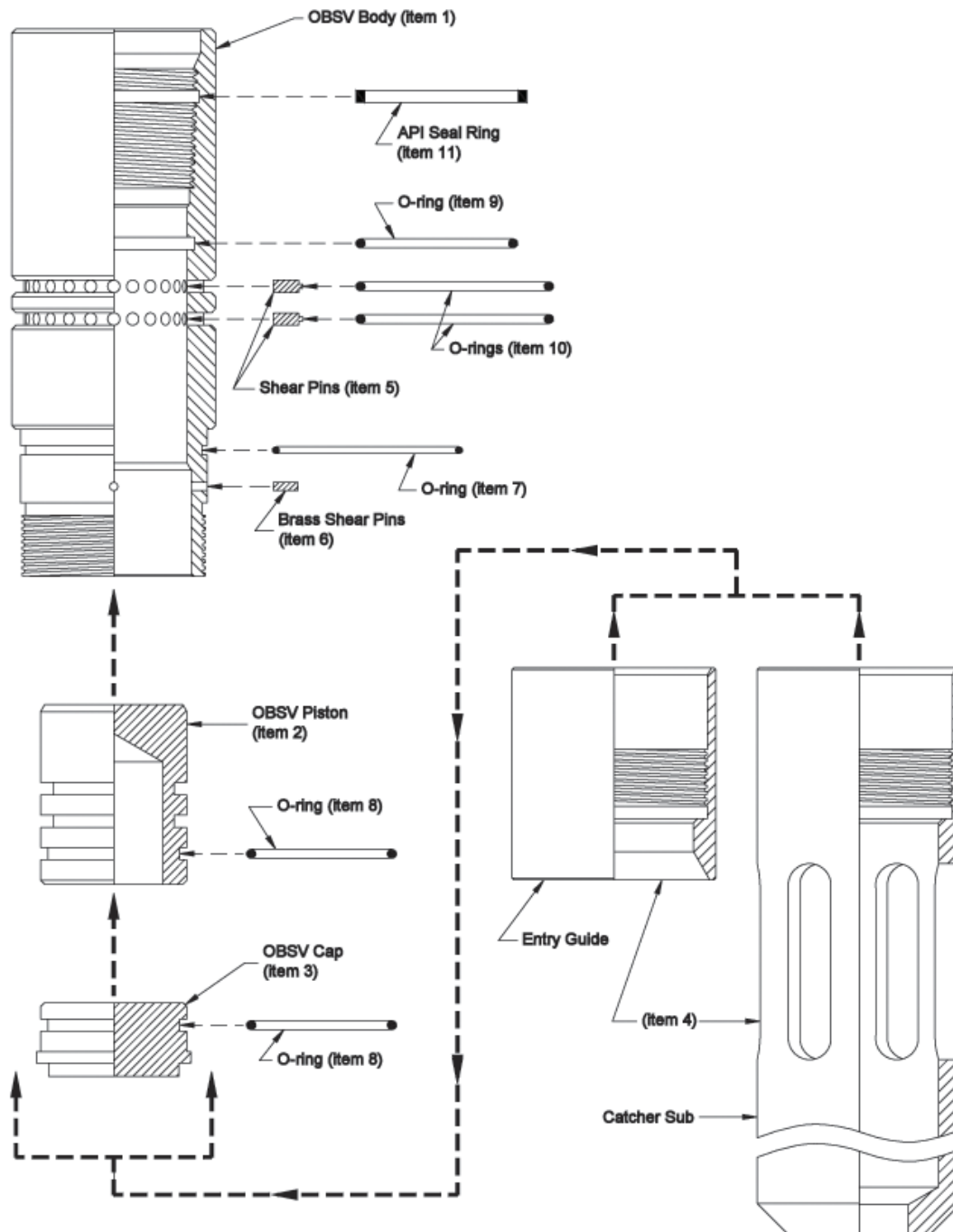


2-3/8 EUE OBSV / TCP-0114-000 / TCP-0114-040			
Item	Part No.	Qty	Description
1	TCP-0114-001	1	Body, 2-3/8" OB Surge Valve
2	TCP-0114-002	1	Piston, 2-3/8" OB Surge Valve
3	TCP-0114-003	1	Cap, 2-3/8" OB Surge Valve
4	TCP-0114-034 TCP-0114-035	1	Entry Guide, OBSV / TCP-0114-000 Catcher Sub, OBSV / TCP-0114-040
5	SF-010-0189-045	48	Shear Pins
6	TCP-0100-122	4	Brass Pins
7	OOO-N569-147	1	O-Ring, Nitrile
8	OOO-N569-226	2	O-Ring, Nitrile
9	OOO-N569-228	1	O-Ring, Nitrile
10	OOO-N569-231	2	O-Ring, Nitrile
11	MI-305-2375-000	1	API Seal Ring
--	TCP-0114-036	--	Redress Kit - 2-3/8" OB Surge Valve
--	MAN-OBSV-GEN	--	Assembly Manual

2-7/8 EUE OBSV / TCP-0114-010 / TCP-0114-032			
Item	Part No.	Qty	Description
1	TCP-0114-011	1	Body, 2-7/8" OB Surge Valve
2	TCP-0114-012	1	Piston, 2-7/8" OB Surge Valve
3	TCP-0114-013	1	Cap, 2-7/8" OB Surge Valve
4	TCP-0114-030 TCP-0114-031	1	Entry Guide, OBSV / TCP-0114-010 Catcher Sub, OBSV / TCP-0114-032
5	SF-010-0189-045	48	Shear Pins
6	TCP-0100-122	4	Brass Pins
7	OOO-N569-150	1	O-Ring, Nitrile
8	OOO-N569-228	2	O-Ring, Nitrile
9	OOO-N569-230	1	O-Ring, Nitrile
10	OOO-N569-233	2	O-Ring, Nitrile
11	MI-305-2875-000	1	API Seal Ring
--	TCP-0114-037	--	Redress Kit - 2-7/8" EUE OBSV
--	MAN-OBSV-GEN	--	Assembly Manual

3-1/2 EUE OBSV / TCP-0114-015 / TCP-0114-016			
Item	Part No.	Qty	Description
1	TCP-0114-017	1	Body, 3-1/2" OB Surge Valve
2	TCP-0114-018	1	Piston, 3-1/2" OB Surge Valve
3	TCP-0114-019	1	Cap, 3-1/2" OB Surge Valve
4	TCP-0114-020 TCP-0114-021	1	Entry Guide, OBSV / TCP-0114-015 Catcher Sub, OBSV / TCP-0114-016
5	SF-010-0189-045	48	Shear Pins
6	TCP-0100-122	4	Brass Pins
7	OOO-N569-151	1	O-Ring, Nitrile
8	OOO-N569-232	2	O-Ring, Nitrile
9	OOO-N569-234	1	O-Ring, Nitrile
10	OOO-N569-237	2	O-Ring, Nitrile
11	MI-305-3500-000	1	API Seal Ring
--	TCP-0114-022	--	Redress Kit - 3-1/2" EUE OBSV
--	MAN-OBSV-GEN	--	Assembly Manual

Exploded View



1.0 Pre-Assembly



Warning: *Be sure to follow safe operating practices as found in API RP-67 in accordance with governmental regulations, company policies and manufacturer's recommendations!*



Note: *Check all items against the parts list to be sure of having the correct parts and quantities. Inspect for any damage to the parts which would prevent the parts from being assembled correctly, easily, and safely. Do not force any parts together.*



Note: *Carefully read through this manual before attempting to assemble this tool.*



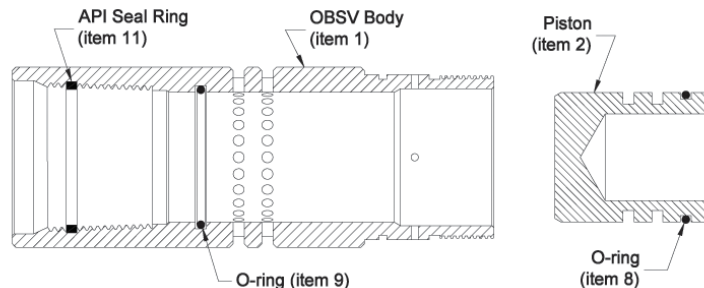
Note: *The following procedures apply to all 3 sizes of Surge Valves. The only difference between the 3-1/2 EUE assembly and the other 2 assemblies, is that the 3-1/2 EUE has 3 rows of Shear Pins instead of 2.*

Pin Calculations

It is good practice to calculate the correct number of shear pins that need to be installed prior to assembly. Obtain the pin's shear value from the label attached to the pin's shipping package and then use the Temperature Correction Chart and formulas (last page of this manual) to calculate the number of pins required per job.

2.0 Assembly

2.1 Install the API Seal Ring (item #11) and the internal O-ring (item #9) into the Body (item #1). Install the O-ring (item #8) on the Piston (item #2). Apply a thin layer of grease to the internal O-ring in the Body and the Piston O-ring and bore.

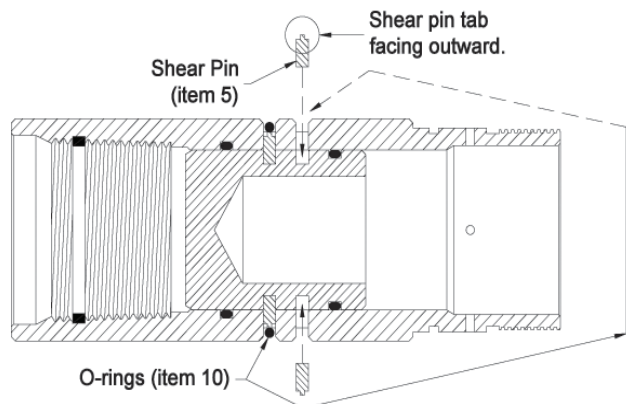


2.2 Insert the Piston into the Body until the shear grooves on the piston are aligned with the Shear Pin holes of the Body.

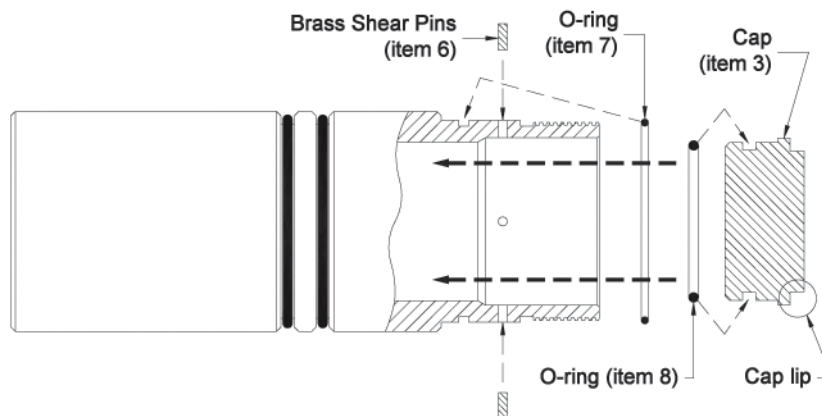


Note: Only insert the Piston into the Body from the bottom of the tool. Be careful not to insert too far into the Body, because damage to the O-ring will occur.

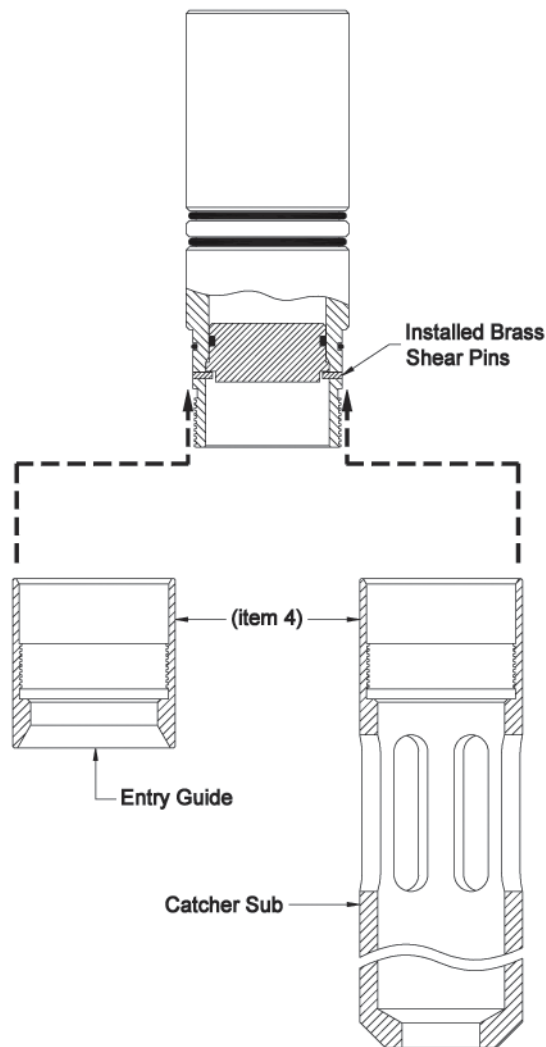
Once the grooves and the holes are aligned, install the calculated number of Shear Pins required. Insert the Shear Pins (item #5) with the small tab facing outward for easy removal (if necessary). Install the top row of pins first and space the pins as evenly as possible around the tool. With the pins installed, secure in place by placing the O-rings (item #10) into the grooves above the Shear Pins.



2.3 Install an O-ring (item #8) on the Cap (item #3) and apply grease to the O-ring. Insert the Cap into the Body until it's seated in the tool and the 4 shear holes are clear of the Cap lip. Insert the 4 Brass Shear Pins (item #6) into the holes, securing the cap in place. Install the O-ring (item #7) into the groove on the pin-end of the Body.



2.4 The operation or job requirements will determine which Bottom Sub to install. It will either be the Wireline Entry Guide or the Catcher Sub (both item \$4). Apply grease to the O-ring and threads of Body pin, then thread the required sub on the Body and tighten.



3.0 Temperature Correction Tables and Formulas

	Correction		Correction		Correction		Correction
Deg. F / C	Factor	Deg. F / C	Factor	Deg. F / C	Factor	Deg. F / C	Factor
70° / 21°	1.00000	180° / 82°	0.9440	290° / 143°	0.9025	400° / 204°	0.8820
80° / 27°	0.9950	190° / 88°	0.9395	300° / 149°	0.8980	410° / 210°	0.8840
90° / 32°	0.9880	200° / 93°	0.9350	310° / 154°	0.8970	420° / 216°	0.8850
100° / 38°	0.9825	210° / 99°	0.9315	320° / 160°	0.8945	430° / 221°	0.8860
110° / 43°	0.9775	220° / 104°	0.9275	330° / 166°	0.8925	440° / 227°	0.8880
120° / 49°	0.9725	230° / 110°	0.9235	340° / 171°	0.8900	450° / 232°	0.8900
130° / 54°	0.9675	240° / 116°	0.9195	350° / 177°	0.8880	460° / 237°	0.8940
140° / 60°	0.9620	250° / 121°	0.9165	360° / 182°	0.8870	470° / 243°	0.9000
150° / 66°	0.9570	260° / 127°	0.9125	370° / 188°	0.8860		
160° / 71°	0.9530	270° / 132°	0.9090	380° / 193°	0.8845		
170° / 77°	0.9485	280° / 138°	0.9060	390° / 199°	0.8835		

Use the following formulas to determine the required number of pins and their corrected shear values

1. Obtain the shear pin value for your particular tool from the label attached to the pins shipping package or the tool body. _____(pin value) @ 72°F/ 22.2°C
2. Now using the charts above, correct for Bottom Hole Temperature (BHT).
_____ deg. F/C correction factor= _____
3. Calculate the actual shear value at BHT
_____ (Step 1) psi/pin X _____ (Correction Factor) = _____ psi/pin @ BHT
4. Calculate the required number of pins for the total shear value of the tool.
_____ (Proposed Shear Value) psi ÷ _____ (Step 3) psi/pin = _____ pins
5. Either round the number of pins up or down, depending upon operational conditions
6. Calculate the **average**, the **high** and the **low** operational pressures. There is ± 5% operating tolerance on the shear pins.

Average: _____ pins X _____ psi/pin = _____ psi

High: 1.05 X _____ (Average psi) = _____ psi

Low: .95 X _____ (Average psi) = _____ psi