

3.500 inch Vertical Shock Absorber

TC-300-3500-238

MAN-TC-300-3500 (R02)

OWEN OIL TOOLS

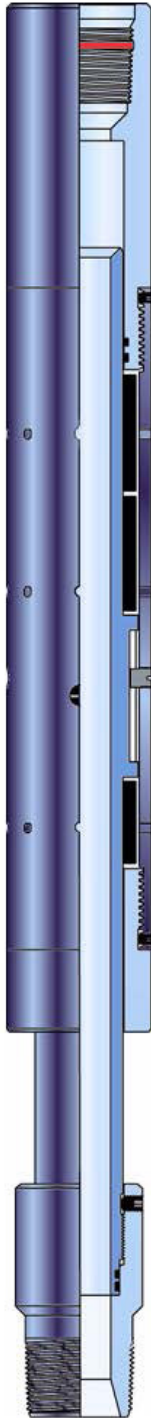
12001 Cr 1000
Godley, Texas, 76044, USA
Phone: +1 (817) 551-0540
Fax: +1 (817) 551-1674
www.corelab.com/owen

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TECHNICAL INFORMATION:



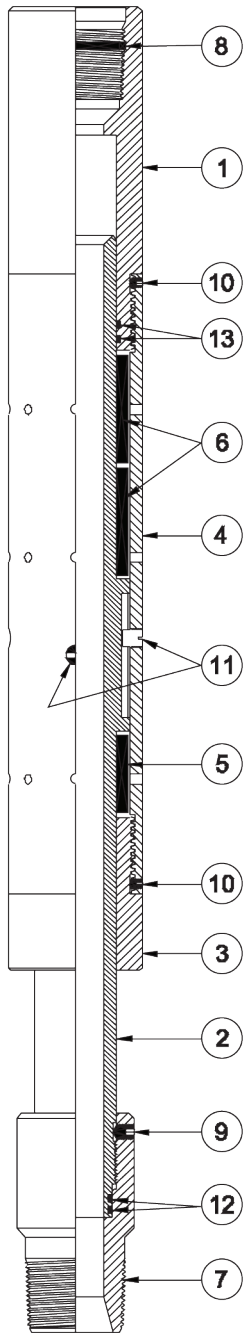
The 3-1/2" Vertical Shock Absorber is designed to run between the Packer and TCP guns. The purpose of the VSA is to protect delicate electronic gauges and mechanical tools from the severe shocks associated with the detonation of the TCP guns.

ADVANTAGES:

- Protects Electronic Pressure Gauge
- Protects Mechanical Pressure Gauge
- Tool is rigid until guns fire
- Sealed design

SPECIFICATIONS:

THREAD CONN.	2-3/8" EUE	
O.D.	3.5"	89 mm
I.D.	1.5"	38.1 mm
Made - up Length	33.0"	838.2 mm
Max. Hydrostatic	20,000 psi	137.9 MPa
Max. Differential	15,000 psi	103.4 MPa
Tensile	100,000 lb	44 482 daN
Temperature	250°F	120°C

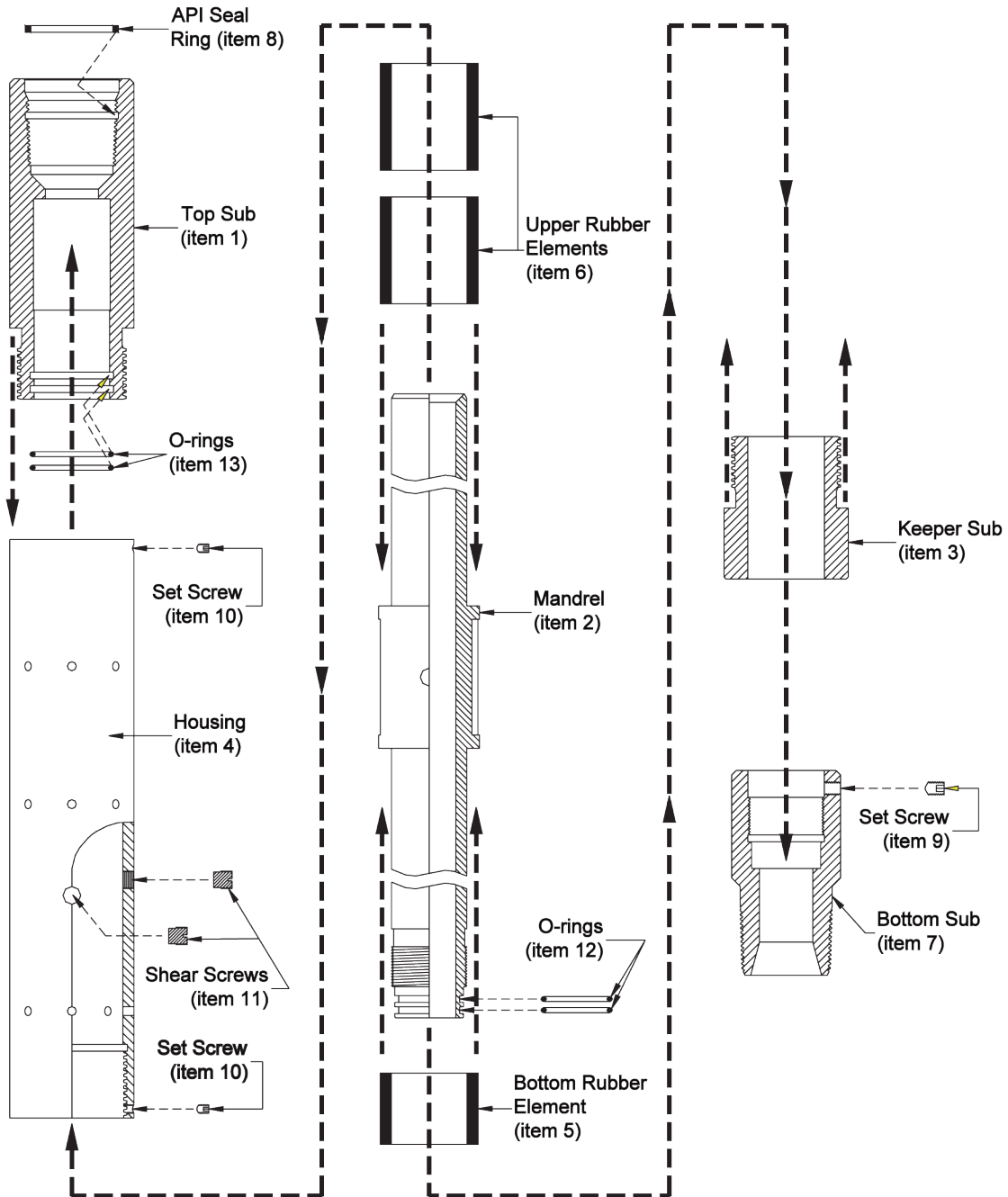


BOM

ITEM	PART NO.	QTY	DESCRIPTION
--	TC-300-3500-238	--	Vertical Shock Absorber, 3-1/2 in. OD
1	TC-300-0004-000	1	Top Sub w/ 2-3/8 EUE Box
2	TC-300-0001-000	1	Mandrel
3	TC-300-0002-000	1	Keeper Sub
4	TC-300-0003-000	1	Housing
5	TC-300-0005-000	1	Bottom Rubber Element, 3-1/2 VSA
6	TC-300-0006-000	2	Upper Rubber Element 3-1/2 VSA
7	TC-300-0000-000	1	Bottom Sub w/ 2-3/8 EUE pin
8	MI-305-2375-000	1	2-3/8" API Seal Ring
9	PF-001-0043-000	1	Set Screw Bottom Sub
10	PF-001-0044-000	2	Set Screw Housing
11	SET-3500-022	4	Shear Screws
12	OOO-N569-223	2	O-Ring, N-90
13	OOO-N569-227	2	O-Ring, N-90
--	TC-300-3500-099	--	Re-dress Kit, 3-1/2" VSA
--	MAN-TC-300-3500-238	--	Assembly Manual, 3-1/2 VSA

ITEM	PART NO.	QTY	DESCRIPTION
--	TC-300-3500-099	--	Re-dress Kit, 3-1/2" VSA
5	TC-300-0005-000	1	Bottom Rubber Element, 3-1/2 VSA
6	TC-300-0006-000	2	Upper Rubber Element 3-1/2 VSA
8	MI-305-2375-000	1	2-3/8" API Seal Ring
9	PF-001-0043-000	1	Set Screw Bottom Sub
10	PF-001-0044-000	2	Set Screw Housing
11	SET-3500-022	4	Shear Screws
12	OOO-N569-223	2	O-Ring, N-90
13	OOO-N569-227	2	O-Ring, N-90

Exploded View





Note: Check all items against the parts list to be sure of having the correct parts and quantities.



Note: Check for any damage to the parts which would prevent the part from being assembled correctly, easily and safely.

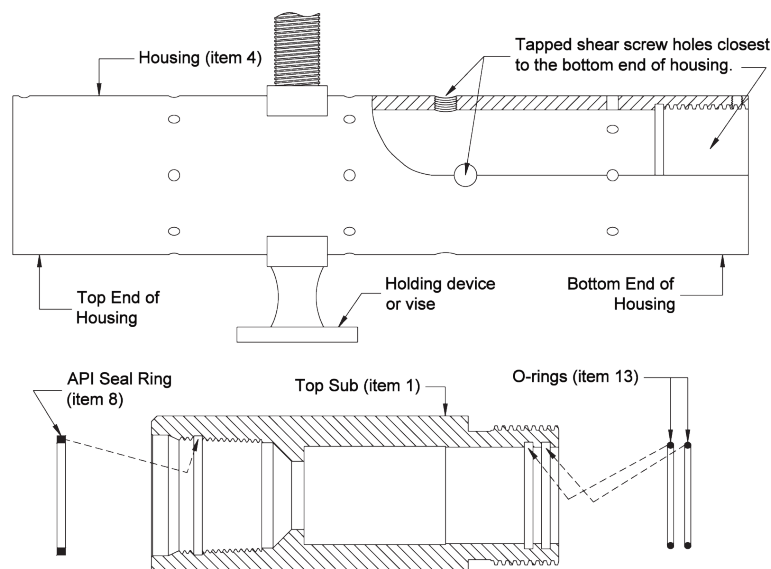
1.0 Assembly

- 1.1 Secure Shock Absorber Housing (item #4) into a large holding device or Baker style type vise. The holding device must be able to support the total weight of the assembled tool. When securing the housing, make sure to let the shear screw holes remain visible and unobstructed. Leave the tool in the holding device during the full assembly process.
- 1.2 Install the two (2) internal O-rings (item #13) into the Top Sub's (item #1) O-ring grooves, and install the API Seal Ring (item #8) in the EUE threads. Apply grease to the O-rings and internal O-ring surface. Apply a thin coat of grease to the exterior threads of the Top Sub and the internal threads of the housing, both ends

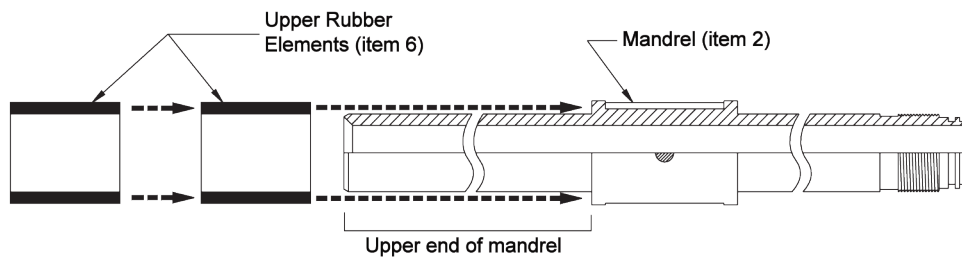


Note: The housing had a specific top end and a bottom end. The tapped shear screw holes are closest to the bottom end of the housing.

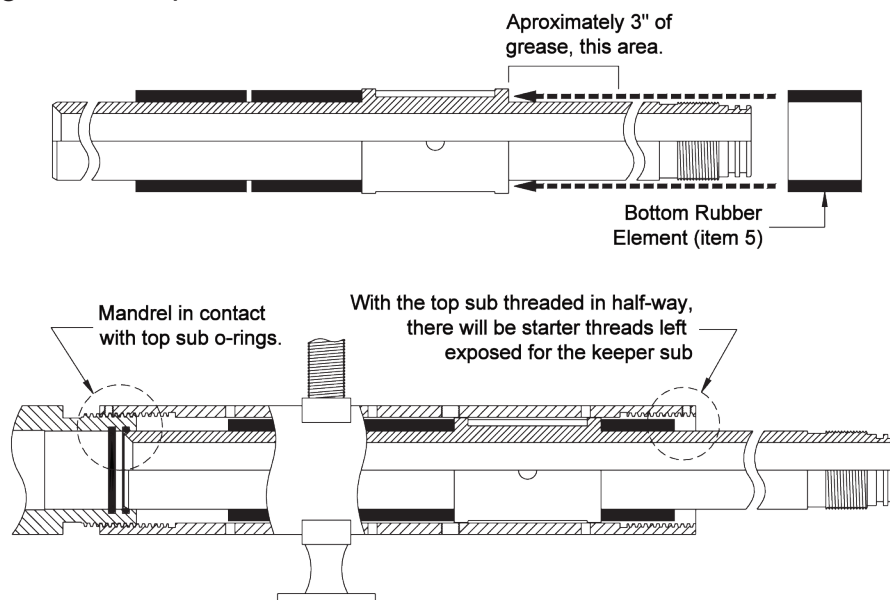
Thread the top sub into the top end of the housing just about half-way. It will be tightened up later in the assembly procedure.



- 1.3 Next install the two (2) Upper Rubber Elements (item #6) onto the upper end of the Mandrel (item #2). Apply a thin coating of grease on the upper section of the Mandrel and slide the two (2) elements onto the upper end of the Mandrel. The upper end is not threaded.



- 1.4 Apply a thin coat of grease to the lower end of the Mandrel just below the large OD area (approximately 3 in.) and slide on the Bottom Rubber Element (item #5). Then insert the Mandrel and rubber elements into the housing until the top end of the Mandrel makes contact with the O-rings of the Top Sub.

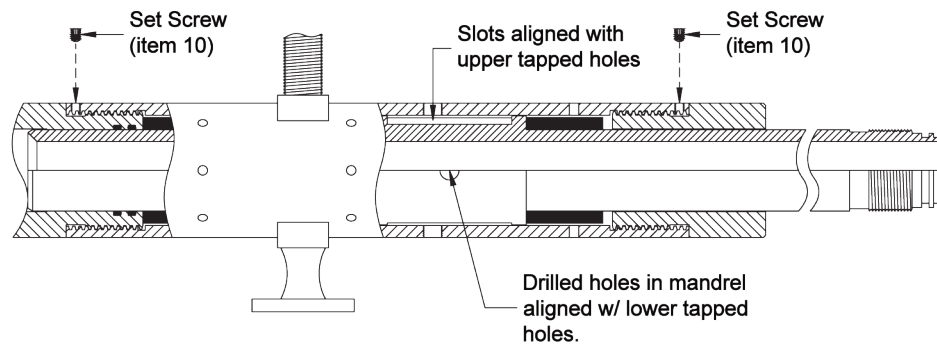
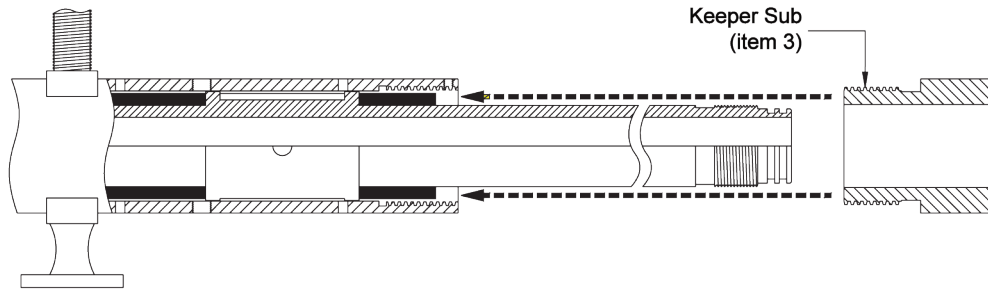


- 1.5 Apply grease to the threads of the Keeper Sub (item #3), thread it into the bottom of the housing and tighten. Threading in the Keeper Sub also pushes the Mandrel through the Top Sub's O-rings.



Note: Use a back-up wrench on the Top Sub to prevent it from backing out while tightening the Keeper Sub.

With the Keeper Sub tight, place a back-up wrench on the Keeper Sub, then thread the Top Sub all the way into the housing and tighten. Now thread in the two (2) locking Set Screws (item #10) in each end of the housing and tighten. The slots and drilled holes of the Mandrel must be aligned with the tapped holes in the housing. Rotate the Mandrel until the slots are aligned with the upper tapped holes and the Mandrel's countersunk holes are aligned with the lower set of tapped holes.



- 1.6 Install the O-rings (item #12) into the O-ring grooves on the bottom of the Mandrel. Apply grease to the O-rings and threads, then thread on the Bottom Sub (item #7) and tighten.



Note: Place a back-up wrench on exposed mandrel as to not shear the screws in the housing.

Insert and thread in the Set Screw (item 9) into the tapped hole of the bottom sub, thus locking the bottom sub in place. The 3-1/2 in. Vertical Shock Absorber is now completely assembled.

