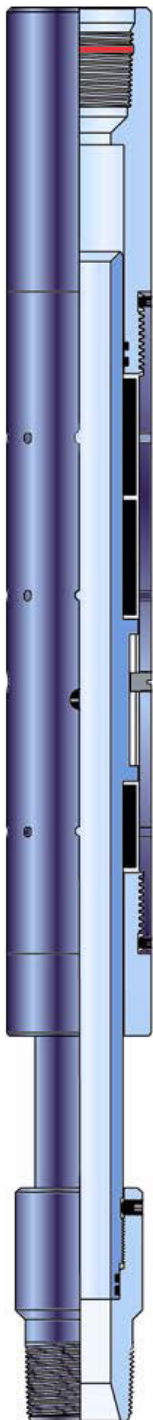


TECHNICAL INFORMATION:



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.

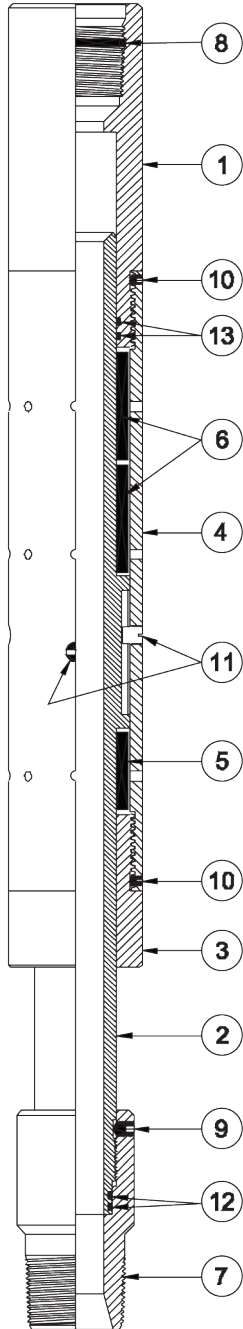
ADVANTAGES:

- 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

TECHNICAL INFORMATION:



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