

GENERAL INFORMATION

Alpha 2.125 Model FH Hydraulic Setting Tool for 2-7/8 & 3-1/2 Tubing Alpha 2.187 & 2.750 FH SVCR

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P/N 019-2125-200 2.125 OD Model FH Hydraulic Setting Tool
P/N 019-2187-210 2.187 OD Model FH Setting Sleeve Conversion Kit
P/N 005-2187-500 2.187 OD Model FH Sleeve Valve Cement Retainer suitable for 2-7/8 6.4-6.5 PPF Tubing
P/N 019-2750-210 2.750 OD Model FH Setting Sleeve Conversion Kit
P/N 005-2750-500 2.750 OD Model FH Sleeve Valve Cement Retainer suitable for 3-1/2 9.2-9.3 PPF Tubing
Also available with poppet check valve or bridge plug.

General Information:

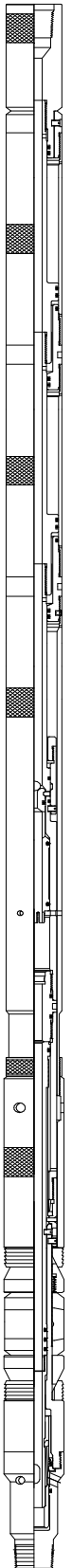
The Alpha 2.125 OD Model FH Hydraulic Setting Tool is designed to run and fully set a 2.187 - 2.750 OD Model FH Sleeve Valve Cement Retainer on coil tubing then squeeze in one trip. No rotation is required. Run the FH-HST/SVCR tool string below the predetermined setting depth, pick-up to remove slack, drop a 1/2" diameter brass ball then, pressure the workstring to establish a 1,000-psi differential at the tool to begin the setting process. Continue pressuring the workstring to establish a 2,000-psi differential at the tool and hold for 5-minutes. This allows the cement retainer packing system to conform to the tubing ID. Continue pressuring the workstring to establish a differential at the tool (see chart below) to shear the cement retainer disconnect.

Size Cement Retainer	Differential Set Pressure @ Tool	Setting Force	Stinger Pinned
2.187 OD FH SVCR	2,500 PSI	10,000 #	2,000#
2.750 OD FH SVCR	3,000 PSI	12,000 #	4,000#

Pick up 1,000# to determine if cement retainer is set. Remain in cement retainer (Stinger pinned 2,000 to 4,000 pounds to body). It is not recommended to pick up out of cement retainer prior to squeezing due to double flapper safety valve may cause HST to become hydraulically locked and prevent re-entry in cement retainer. Set down 4,000 pounds and squeeze 5,000 psi maximum.

How the Model FH Hydraulic Setting Tool works:

The ball lands on the ball seat which diverts the well fluid into the two hydraulic setting chambers. Pressure the workstring to 2,000 psi and hold for 5-minutes to allow the cement retainer packing system to conform to the tubing ID. Continue pressuring the workstring to a predetermined differential pressure (PSI) at the tool shears the disconnect and fully sets the cement retainer. The FH-HST continues to stroke and at the end of its 6" stroke it unlocks the ball seat by shearing (1) 2,000 pound shear screws which positions a undercut over the (2) ball seat locks. These locks are tapered so they cannot enter the cement flow path. The ball seat is now free to move downward, close circulation ports and latch into the tandem sub. The ball seat latch keeps the ball seat from moving upward during the reverse circulation process which keeps the flow path the same as the HST ID. The stinger remains pinned 2,000 or 4,000 pounds in the cement retainer body, unaffected by the setting force because the stroke compensation sleeve moves independently from the stinger. See operational illustration next page.



FH CR SHOWN
W/ PIN DOWN

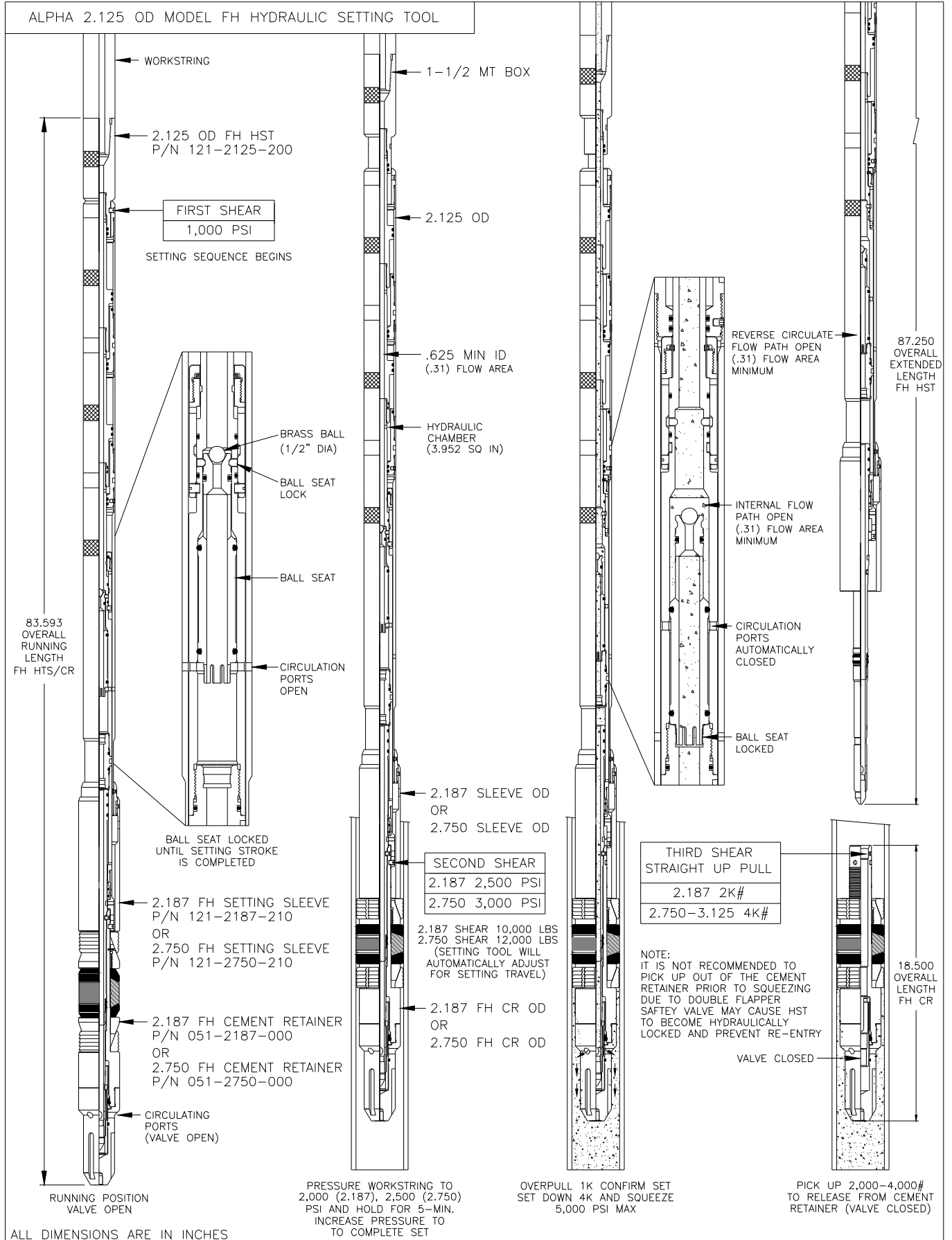
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Alpha 2.125 Model FH Hydraulic Setting Tool for 2-7/8 & 3-1/2 Tubing
Alpha 2.187 & 2.750 FH SVCR

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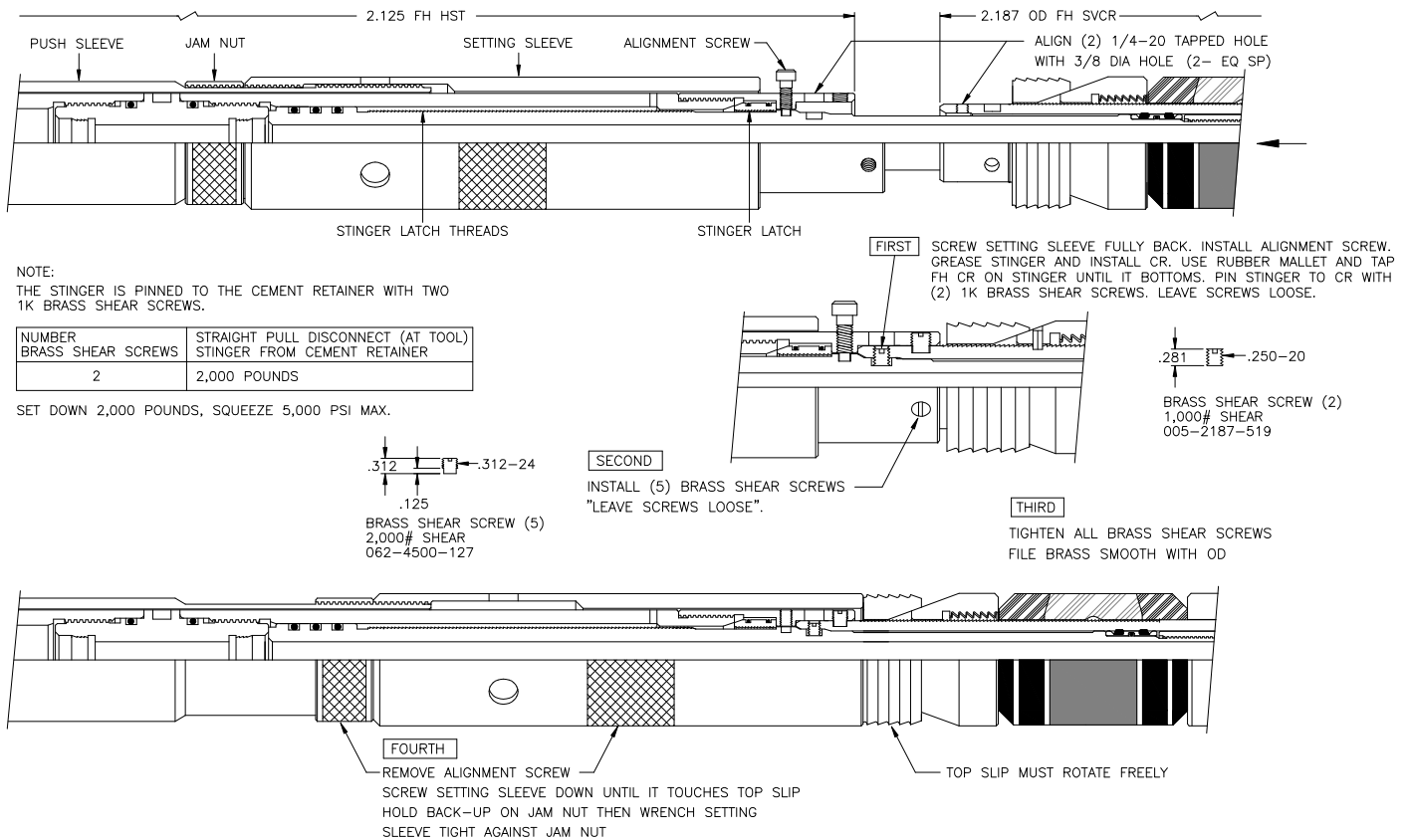
FIELD ASSEMBLY & OPERATIONAL PROCEDURE :
Alpha 2.125 Model FH Hydraulic Setting Tool for 2-7/8" Tubing
Alpha 2.187 Model FH SVCR

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FIELD ASSEMBLY PROCEDURE :

1. Position HST in vise at the lower connector (do not place Cylinder in vise). Screw Jam Nut and Setting Sleeve fully on Adjuster Sleeve then push back against shoulder. Rotate HST in vise until 3/8-diameter hole in Latch Housing is facing up. Install alignment screw.
2. Lubricate CR Seal Bore and HST Stinger. Slide CR on Stinger then align 1/4-20 tapped holes in CR Body with 3/8 diameter holes in Latch Housing. Install two Brass Shear Screw through Latch Housing and into Stinger (Stroke Compensation Piston). Leave screw(s) loose. Install remaining (5) Brass Shear Screws loose then tighten.
3. Remove alignment screw. Screw Setting Sleeve down until it touches CR Top Slip. Screw Jam Nut down until it touches Setting Sleeve. Hold back-up on Jam Nut then back Setting Sleeve tight against Jam Nut. Top Slip must rotate freely.



4. Screw Alpha 2.125 OD Model FH Hydraulic Setting Tool on end of workstring. Hold back-up on HST Top Sub and thread workstring connector in power tight. Carefully rotate HST / CR tool string during make-up. Incorporate in workstring a Hydraulic Disconnect and Tubing Centralizer above HST. The 2.125 OD Model FH Hydraulic Setting Tool uses a 1/2 diameter Brass Ball to activate the CR.



OPERATIONAL PROCEDURE :

1. Run the Alpha Model FH Hydraulic Setting Tool and Cement Retainer several feet below the setting depth. The FH-HST circulation ports located below the ball seat allows the tubing to fill going in the hole.
2. Pick up slowly to setting depth to remove slack from tubing string.
3. Drop a 1/2" diameter brass ball and slowly pump down until it has seated (pressure increase).
4. Slowly pressure workstring to establish a 1,000 psi (1,500 psi max) differential pressure inside the tubing "at the tool" to begin the setting sequence.
5. Continue pressuring workstring to establish a 2,000 psi differential pressure inside the tubing "at the tool" to anchor the cement retainer against the casing wall. Hold pressure for 5 minutes.
6. Continue pressuring workstring to establish a 2,500 psi (3,000 psi max) differential pressure inside the tubing "at the tool" to complete the set (weight indicator will drop off). Pressure workstring again to 500 psi differential pressure inside the tubing "at the tool" to unlock ball seat (pressure will bleed off on its own).
7. Determine if cement retainer is set. Pick up 1,000 pounds over tubing weight. Stinger pinned 2,000 pounds.
7. Remain in cement retainer, set down 4,000 pounds and squeeze 5,000 psi Max (stinger pinned). Pull 2,000 pounds over tubing weight to disconnect from cement retainer then reverse circulate through workstring.



TROUBLE SHOOTING :

1. If HST does not set CR.

Pressure workstring to establish a 2,530 psi (3,000 max) differential pressure inside the tubing “at the tool” to release from cement retainer.

If unsuccessful, then bleed off pressure and reverse circulate capacity of the tubing (+10 BBL) to remove debris that may be inside the tubing and tool. Circulate Ball back to the Ball Seat and attempt pressuring tubing again to 3,000 psi max. Note: The Ball Seat cannot be pumped out until the setting stroke has been completed.

Carefully remove workstring from well.

2. If HST does not disconnect from CR

Pull 1,000 pounds over tubing weight and pressure workstring to establish a 2,530 psi (3,000 max) differential pressure inside the tubing “at the tool” to release from cement retainer.

If unsuccessful, then bleed off pressure, return tubing to the neutral point and reverse circulate capacity of the tubing (+10 BBL) to remove debris that may be inside the tubing and tool. Circulate Ball back to the Ball Seat and attempt pressuring tubing again to 3,000 psi max. Note: The Ball Seat cannot be pumped out until the setting stroke has been completed.

Pull 10,000 pounds (CR disconnect valve) over tubing weight.

SPECIFICATION & GUIDELINES FOR RUNNING :
Alpha 2.125 Model FH Hydraulic Setting Tool for 2-7/8 & 3-1/2 Tubing

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GENERAL INFORMATION :

1. Use tubing casing scraper or brush before running any equipment in the well to remove scale and other materials from the tubing/casing wall. The bridge plug / cement retainer must grip the tubing/casing wall.
2. Circulate well to clean well of debris and junk.
3. Drift tubing/casing ID 80-100 feet below setting depth with full OD gage ring and junk basket to insure no restrictions or debris exist.
4. Use the correct FH SVCR for the temperature, pressure, tubing size, tubing weight and environment:

FH HST	Part Number	Pressure	Temperature
2.125 OD Model FH HST	019-2125-200	5,000 psi	325°
2.187 OD FH Setting Sleeve Conversion Kit	019-2187-210	NA	NA
2.750 OD FH Setting Sleeve Conversion Kit	019-2750-210	NA	NA
3.125 OD FH Setting Sleeve Conversion Kit	019-3125-210	NA	NA

FH SVCR	Part Number	Pressure	Temperature
2.187 OD Model FH Sleeve Valve Cement Retainer Suitable for 2-7/8 6.4 - 6.5 PPF Tubing (2.441 ID)	005-2187-500	5,000 psi	325° F
2.187 OD Model FH Bridge Plug Suitable for 2-7/8 6.4 - 6.5 PPF Tubing (2.441 ID)	005-2187-503	5,000 psi	325° F
2.187 OD Model FH Poppet Valve Cement Retainer Suitable for 2-7/8 6.4 - 6.5 PPF Tubing (2.441 ID)	005-2187-504	5,000 psi	325° F
2.750 OD Model FH SVCR Suitable for 3-1/2 9.2 – 9.3 PPF Tubing (2.992 ID)	005-2750-500	5,000 psi	325° F
2.750 OD Model FH Bridge Plug Suitable for 3-1/2 9.2 – 9.3 PPF Tubing (2.992 ID)	005-2750-503	5,000 psi	325° F
2.750 OD Model FH Poppet Valve Cement Retainer Suitable for 3-1/2 9.2 – 9.3 PPF Tubing (2.992 ID)	005-2750-504	5,000 psi	325° F
3.125 OD Model FH SVCR Suitable for 4” 5.6 – 14 PPF Tubing (3.340-3.732 ID)	005-3125-500	5,000 psi	325° F
3.125 OD Model FH Bridge Plug Suitable for 4” 5.6 – 14 PPF Tubing (3.340-3.732 ID)	005-3125-503	5,000 psi	325° F
3.125 OD Model FH Poppet Valve Cement Retainer Suitable for 4” 5.6 – 14 PPF Tubing (3.340-3.732 ID)	005-3125-504	5,000 psi	325° F

5. Casing should have 100% cement bond before running cement retainer in the well.
6. Never set retainer in casing collar or where milling has occurred.
7. Always set retainer in static well conditions (no fluid or gas movement).
8. When perforating or cutting pipe, cement retainer should be protected with a minimum of ten feet of cement dumped directly on top at a distance no closer than 50 feet. Cement should be given sufficient time to harden before perforating.

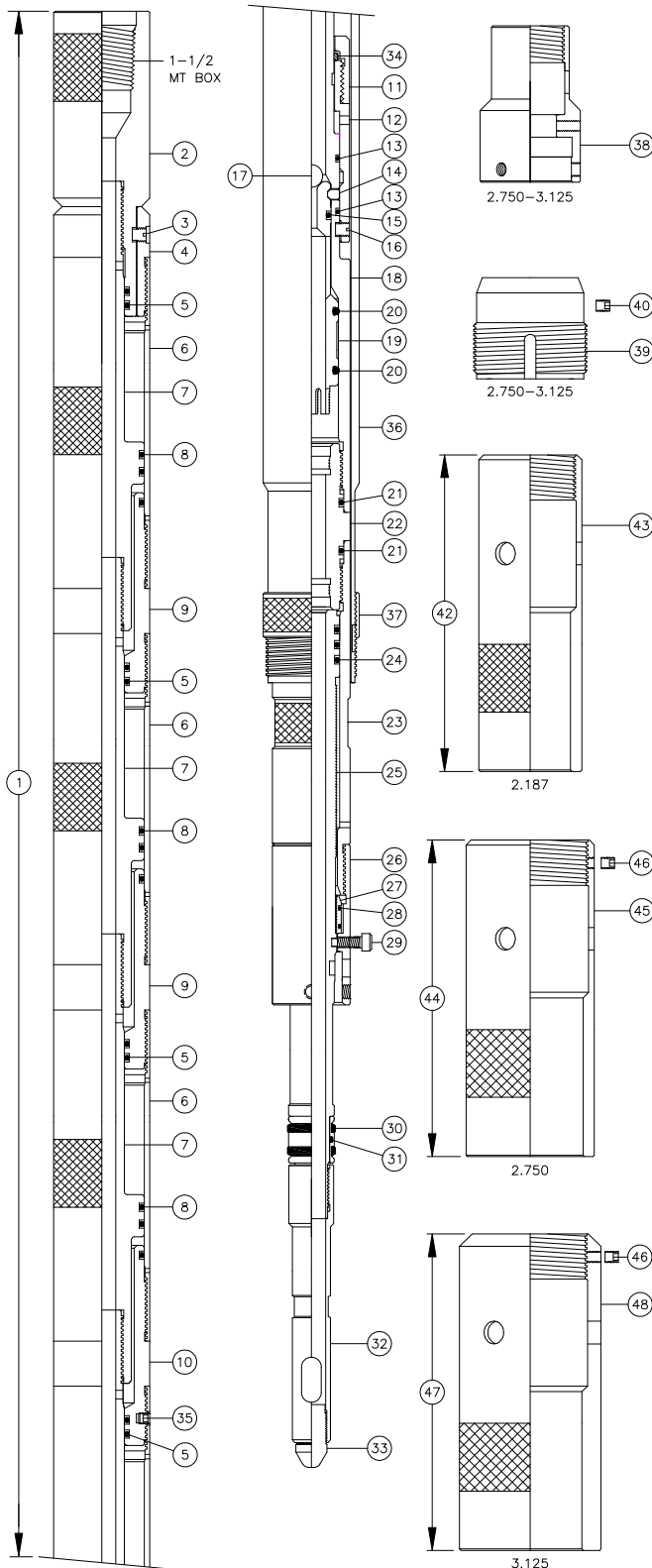
PARTS LIST:

Alpha 2.125 Model FH Hydraulic Setting Tool for 2-7/8"-4" Tubing Alpha 2.187, 2.750 & 3.125 Model FH SVCR

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ITEM	DESCRIPTION	QTY	2.125 OD
1	ALPHA 2.125 OD MODEL FH "BASIC" HYDRAULIC SETTING TOOL	1	019-2125-200
2	TOP SUB - 1-1/2 MT BOX UP	1	019-2125-220
3	BRASS SHEAR SCREW (2,000 LBS)	2	062-4500-127
4	CYLINDER CAP	1	019-2125-221
5	O-RING (70 DURO NITRILE)	8	-214
6	CYLINDER	3	019-2125-222
7	PISTON	3	019-2125-223
8	O-RING (70 DURO NITRILE)	9	-223
9	UPPER CONNECTOR	2	019-2125-224
10	LOWER CONNECTOR	1	019-2125-225
11	LOCK RETAINER NUT	1	019-2125-231
12	LOCK RETAINER	1	019-2125-230
13	O-RING (70 DURO NITRILE)	2	-121
14	BALL SEAT LOCK	2	019-2125-229
15	O-RING (90-DURO NITRILE)	1	-208
16	BRASS SHEAR SCREW (2,000 LBS)	1	062-4500-127
17	BRASS BALL (.500 DIA)	1	019-2125-236
18	BALL SEAT HOUSING (WITHOUT PORTS)	1	019-2125-227
19	BALL SEAT	1	019-2125-228
20	O-RING (70 DURO NITRILE)	2	-213
21	O-RING (90-DURO NITRILE)	2	-217
22	TANDEM SUB	1	019-2125-242
23	STROKE COMPENSATION HOUSING	1	019-2125-243
24	O-RING (70 DURO NITRILE)	3	-214
25	STINGER/STROKE COMPENSATION PISTON	1	019-2125-244
26	LATCH HOUSING (2.187)	1	019-2125-240
27	STINGER LATCH	3-PC	019-2125-241
28	O-RING (90 DURO NITRILE)	2	-025
29	SOCKET HEAD "ALIGNMENT" CAP SCREW	1	1/4-20 x 1" LG
30	MOLDED STINGER SEAL	1	019-2125-233
31	O-RING (70 DURO NITRILE)	1	-019
32	SHIFTER SUB	1	019-2125-234
33	SHIFTER SUB GUIDE	1	019-2125-235
34	SNAP RING	1	019-2125-232
35	SOCKET HEAD SET SCREW	1	1/4-20 x 1/4 LG
36	PUSH SLEEVE	1	019-2125-226
37	JAM NUT	1	019-2125-251
38	LATCH HOUSING (2.750-3.125)	1	019-2750-240
39	ADJUSTER NUT (2.750-3.125)	1	019-2750-237
40	SOCKET HEAD SET SCREW	2	1/4-20 x 1/4 LG
41	THREAD PROTECTOR (NOT SHOWN)	1	019-2125-252

ITEM	DESCRIPTION	QTY	2.187 OD
42	ALPHA 2.187 OD SETTING SLEEVE CONVERSION KIT	1	019-2187-210
43	SETTING SLEEVE	1	019-2187-247

ITEM	DESCRIPTION	QTY	2.750 OD
44	ALPHA 2.750 OD SETTING SLEEVE CONVERSION KIT	1	019-2750-210
45	SETTING SLEEVE	1	019-2750-247
46	SOCKET HEAD SET SCREW	2	1/4-20 x 1/4 LG

ITEM	DESCRIPTION	QTY	3.125 OD
47	ALPHA 3.125 OD SETTING SLEEVE CONVERSION KIT	1	019-3125-210
48	SETTING SLEEVE	1	019-3125-247
49	SOCKET HEAD SET SCREW	2	1/4-20 x 1/4 LG

ALL DIMENSIONS ARE GIVEN IN INCHES.

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Alpha 2.125 Model FH Hydraulic Setting Tool for 2-7/8"-4" Tubing
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