	ASI-X ANCHOR 3-1/2” X 1.900”	Manual No: **DL-323-3500-849** Revision: **A** Revision Date: **04/28/2015**
Authored by: J.Anderson		*Approved by: K.Riggs*

A) DESCRIPTION

The ASI-X Anchor is a mechanically-set double-grip tubing anchor designed to be exceptionally durable and debris tolerant. This anchor is based on the proven ASI-X Packer design, but has been shortened, simplified and does not have a sealing element. This anchor is suited for treating, testing, injecting, pumping wells, and flowing wells, deep or shallow. This anchor is built using durable ASI-X Packer parts making redress both quick and economical.

The double-slip design allows the anchor to be left in tension or compression, depending on well conditions and the required application. The J-slot design allows easy setting and releasing; 1/4 turn right-hand set, right-hand release. With the variety of J-body configurations available, this anchor can also be set with other packers in tandem.

B) SPECIFICATION GUIDE

CASING			TOOL		THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	**WEIGHT** (LBS/FT)	**RECOMMENDED HOLE SIZE** (INCHES)	**GAGE OD** (INCHES)	**NOMINAL ID** (INCHES)		
3-1/2	7.7 – 10.2	2.922 – 3.068	2.781	1.25	1.900 NUE	32335 32335H[1] 32335V[2]

[1]HSN Option [2]Viton Option

NOTE$_1$: Tools listed are right-hand set / right-hand release.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	TORQUE THRU TOOL (MAX)
10,000 PSI	37,000 LBS	800 FT-LBS

C) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION$_1$: D&L ships tool connections made-up **HAND TIGHT**—labeled with hand-tight tape on the tool (Fig. 1)—unless stated otherwise. Tighten/torque all connections properly before operating tool.

Fig. 1

GENERAL THREAD CONNECTION TORQUE RECOMMENDATIONS			
STUB ACME / ACME THREADS	**INTERNAL TAPERED TUBING THREADS**		**PREMIUM THREADS**
	UP TO 2-3/8”	**GREATER THAN 2-3/8”**	
600 – 800 FT-LBS	600 – 800 FT-LBS	800 – 1,200 FT-LBS	Consult thread manufacturer’s recommendations.

Before first use, D&L recommends disassembly and inspection of the tool unless stated otherwise. Ensure parts have not been damaged during shipping. Replace damaged parts with D&L replacement parts. Contact D&L sales for replacement part information.

Re-assemble the tool after inspection. Install parts in the correct order and orientation. Properly tighten connections.

D & L OIL TOOLS
P.O. BOX 52220 TULSA, OK 74152
PHONE: (800) 441-3504 www.dloiltools.com

C) PRE-INSTALLATION INSPECTION PROCEDURES (cont'd)

Before re-using the tool, D&L recommends disassembly and inspection of the tool. Clean parts and ensure parts are in good working condition. Replace worn or damaged parts with D&L replacement parts.

When redressing the tool, D&L recommends replacement of all o-rings, etc. Contact D&L sales for redress kit and/or other replacement part information.

D) SETTING PROCEDURES

CAUTION$_2$: Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

D-1) COMPRESSION SET

Run the anchor to setting depth. Pick up the work string to allow for setting stroke (12-13") plus desired work string load. Rotate the work string 1/4 right-hand turn at the anchor, and then lower the work string while releasing torque. Slack off on the work string sufficient weight to set the anchor (7,000 lbs). Pull tension (7,000 lbs) to assure that the upper slips are set. The work string can then be left in tension or compression.

D-2) TENSION SET

Run to setting depth, pick up on the work string and rotate 1/4 turn to the right at the anchor then lower the work string slacking off available weight to set the anchor lower slips. Pull tension to set upper slips (7,000 lbs). After setting the anchor, the work string can be left in compression or tension.

E) RELEASING PROCEDURES

The releasing procedures are the same whether the anchor has been tension or compression set. Set down weight on the anchor to unseat the J-pin from the tension shoulder of the J-slot. Rotate the work string 1/4 right-hand turn at the anchor and pick up while holding right-hand torque. Weight in addition to pipe weight may be required to pick up on anchor. Continue to pick up to release the slips thus allowing the anchor to be re-set or removed from the well.

F) STORAGE PROCEDURES

When preparing the tool for storage, follow the Pre-Installation Inspection Procedures. Re-assemble the tool with connections hand-tight only and in running position if applicable.

Store the tool, if possible, in an enclosed, temperature and humidity controlled environment. Avoid excessively high temperatures over long periods of time. Keep tool dry and protected from condensation. Do not store in contact with or near volatile or corrosive chemicals. Do not store near ozone generating equipment or operations such as welding.

G) ELASTOMER TRIM TEMPERATURE GUIDE

RUBBER TYPE	TEMPERATURE RANGE
NITRILE	70° - 300°F
HSN (HNBR)	70° - 325°F
VITON	100° - 350°F

H) RECOMMENDED TOOLS

H-1) HAND TOOLS

- VISE
- GLOVES
- ALLEN WRENCHES
- TAPE MEASURE
- O-RING PICK
- BAR
  - 1/2-INCH
  - 3/4-INCH
- PAINT BRUSH, 2-INCH
- PIPE WRENCH, 3-FT (2 EA)
- “CHEATER” PIPE, 4-FT LONG
- ADJUSTABLE WRENCH, 12-INCH
- CORDLESS DRILL, 18V
- SNAP RING SPREADER PLIERS
- ALIGNING PUNCH
- SCREWDRIVER SET, FLAT-TIPPED
- SOCKET SETS
  - 3/8-INCH DRIVE
  - 1/2-INCH DRIVE
- HAMMERS
  - SLEDGE
  - BALL PEEN
  - DEAD BLOW

H-2) SPECIAL TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAG BLOCK ASSEMBLY TOOL	AT045110

I) DISASSEMBLY

I-1) Clamp top sub (1) in vise.

I-1.1) Unscrew and remove J-pin bottom sub (21) from inner mandrel (2).

NOTE$_3$: Drag block body assembly must be free to rotate.

I-1.1.1) Remove o-ring (21) from J-pin bottom sub (21).

I-1.2) Compress drag blocks (10) with drag block assembly tool (T1).

I-1.3) Unscrew and remove set screws (15) from J-body (20).

I-1.4) Unscrew and remove J-body (20) from drag block body (18) (**NOTE$_4$**: Left-hand threads).

I-1.5) Remove drag block retainer (14) from drag block body (18).

I-1.6) Remove drag block assembly tool (T1) from drag blocks (10).

I-1.7) Remove drag blocks (10) and drag block springs (3) from drag block body (18).

I-1.8) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11).

I-1.9) Wedge lower slips (17) outward (if needed). Remove drag block body assembly and disassemble:

I-1.9.1) Remove wedges (if needed). Remove lower slips (17) and lower slip springs (12) from drag block body (18).

I-1.10) Unscrew and remove rubber mandrel (11) from upper cone (9).

I-1.11) Remove upper cone (9) from inner mandrel (2).

I-2) Unclamp and remove top sub (1) from vise. Clamp lower part of inner mandrel (2) in vise.

CAUTION$_3$: Do NOT wrench or clamp on seal surface.

I-2.1) Unscrew and remove spring cage (5) from upper slip body (6).

I-2.2) Unscrew and remove top sub (1) from inner mandrel (2).

CAUTION$_4$: Compression spring (4) is compressed with spring tension against top sub.

I-2.3) Remove compression spring (4) from inner mandrel (2).

I-2.4) Wedge releasing slip (7) and upper slips (8) outwards (if needed). Remove slip body assembly and disassemble:

I-2.4.1) Remove wedges (if needed). Remove releasing slip (7), upper slips (8) and upper slip springs (13) from upper slip body (6).

I-3) Unclamp and remove inner mandrel (2) from vise.

J) ASSEMBLY

NOTE$_5$: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION$_5$: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 2).

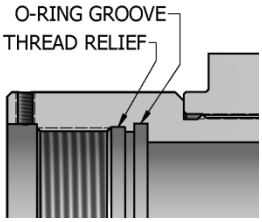


Fig. 2

J-1) Clamp inner mandrel (2) in vise.

CAUTION$_3$: Do NOT wrench or clamp on seal surface.

J-1.1) Assemble upper slip body assembly and install:

J-1.1.1) Install upper slips (8), releasing slip (7), and upper slip springs (13) into upper slip body (6).

NOTE$_6$: Install one (1ea) spring per slip (Fig. 3).

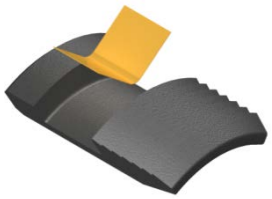


Fig. 3

J-1.1.2) Wedge releasing slip (7) and upper slips (8) outwards. Install upper slip body assembly onto inner mandrel (2). Remove wedges.

J-1.2) Install compression spring (4) onto inner mandrel (2).

J-1.3) Screw top sub (1) onto inner mandrel (2).

CAUTION$_4$: Compression spring (4) is compressed with spring tension against top sub.

J-1.4) Install spring cage (5) onto top sub (1) and screw onto upper slip body (6).

J-2) Unclamp and remove inner mandrel (2) from vise. Clamp top sub (1) in vise.

J-2.1) Install upper cone (9) onto inner mandrel (2).

J-2.2) Screw rubber mandrel (11) into cone (9).

J-2.3) Assemble drag block body assembly and install:

J-2.3.1) Install lower slips (17) and lower slip springs (12) into drag block body (18). Wedge slips outward.


Fig. 4

NOTE$_6$: Install one (1ea) spring per slip (Fig. 4).

J-2.3.2) Install drag block body assembly onto rubber mandrel (11). Remove wedges.

J-2.4) Screw rubber mandrel cap (19) onto rubber mandrel (11).

J-2.5) Install drag blocks (10) and drag block springs (3) into drag block body (18).

NOTE$_7$: Install two (2ea) springs per drag block (Fig. 5).


Fig. 5

J-2.6) Compress drag blocks (10) with drag block assembly tool (T1).

J-2.7) Install drag block retainer (14) onto drag block body (18) capturing ends of drag blocks (10).

J-2.8) Screw J-body (20) onto drag block body (18) (**NOTE$_4$**: Left-hand threads).

J-2.9) Screw set screws (15) into J-body (20).

J-2.10) Remove drag block assembly tool (T1) from drag blocks (10).

J-2.11) Install o-ring (21) in o-ring groove in J-pin bottom sub (21).

J-2.12) Screw J-pin bottom sub (21) onto inner mandrel (2).

NOTE$_3$: Drag block body assembly must be free to rotate.

CAUTION$_6$: Do not rip or tear o-ring during installation.

J-3) Unclamp top sub (1) from vise and remove assembled tool.

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 32335
1	1	TOP SUB	DLMS110	60030610-C
2	1	INNER MANDREL	DLMS110	32335210
3	8	DRAG BLOCK SPRING	INCONEL	9102900
4	1	COMPRESSION SPRING	CHROME VANADIUM	60335920
5	1	SPRING CAGE	DLMS110	60030310-C
6	1	UPPER SLIP BODY	DLMS110/1026	60030320-C
7	1	RELEASING SLIP	P-110	60030125
8	2	UPPER SLIP W/ CARBIDE	P-110	60030115C
9	1	CONE	DLMS110	32335410
10	4	DRAG BLOCK W/ CARBIDE	4140	9028900C
11	1	CONE MANDREL	DLMS80	32335220
12	4	LOWER SLIP SPRING	ELGILOY	7125900
13	3	UPPER SLIP SPRING	ELGILOY	61345975
14	1	DRAG BLOCK RETAINER	1026	60330910
15	3	SET SCREW #10-24 UNC X 3/16	STEEL	SSS1024C018
16	1	J-PIN BOTTOM SUB	DLMS110	32335630
17	4	LOWER SLIP W/ CARBIDE	P-110	60030135C
18	1	DRAG BLOCK BODY	1026	60330335
19	1	RUBBER MANDREL CAP	1026	60330230
20	1	J-BODY	DLMS110	32335345
21	1	127 O-RING	90 DURO NITRILE	90127

REDRESS KIT (RDK)		32335050
ASSEMBLED WEIGHT		31 LBS

K-1) ELASTOMER TRIM OPTIONS

K-1.1) HSN

NOTE$_8$: For temperature range, refer to Elastomer Trim Temperature Guide.

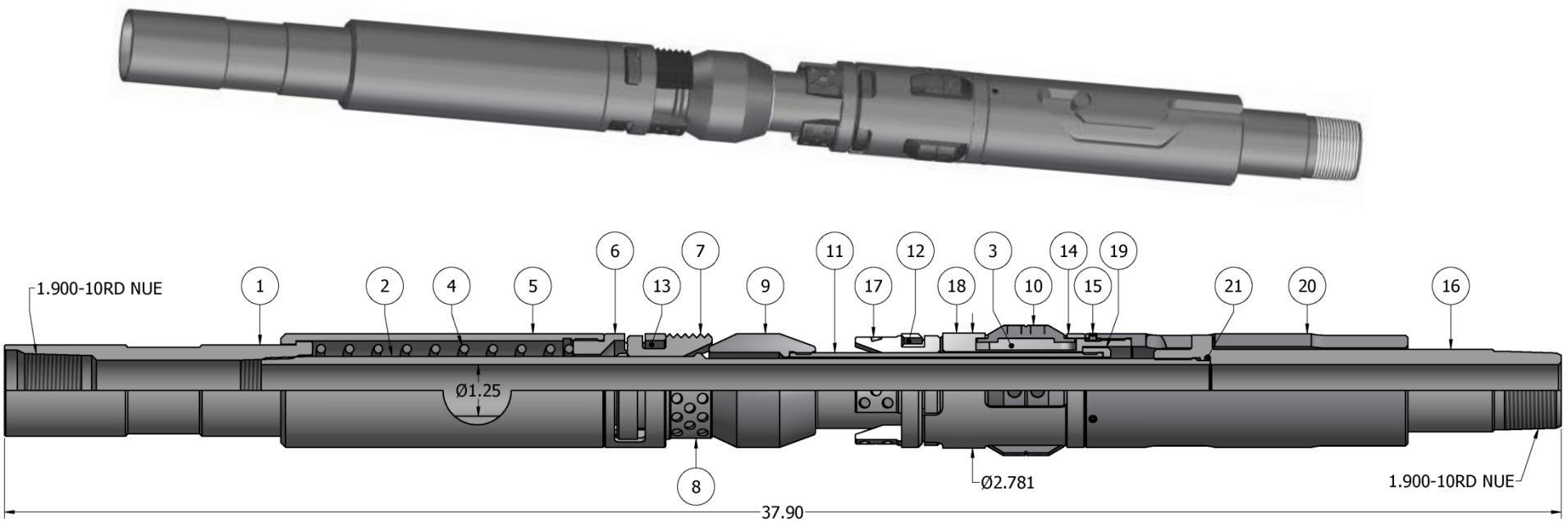
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 32335H
21	1	127 O-RING	90 DURO HSN	90127H
		REDRESS KIT (RDK)		32335050H

K-1.2) VITON

NOTE$_8$: For temperature range, refer to Elastomer Trim Temperature Guide.

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 32335V
21	1	127 O-RING	90 DURO VITON	90127V
		REDRESS KIT (RDK)		32335050V

L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
04/28/15	A	Created new manual	-	-