



QUARTER TURN ROD TUBING ANCHOR, CARBIDE, 40K 7" X 2-7/8"

Manual No:
DL-315-7000-1185

Revision: **B**

Revision Date:
04/02/2020

Authored by: J.Anderson

Approved by: K.Plunkett

A) DESCRIPTION

The Quarter Turn Reduced OD Tubing Anchor is a mechanically set, retrievable, tubing anchor designed to allow increased fluid bypass in the annulus. The anchor is suited for treating, testing, injecting, pumping wells, and flowing wells, deep or shallow. The 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 with 1/4 turn right-hand set, right-hand release.

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)		
7	23.0 – 35.0	6.004 – 6.366	5.75	2.44	2-7/8 EUE	31570C-40

NOTE₁: Tools listed are right-hand set / right-hand release.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	TORQUE THRU TOOL (MAX)
10,000 PSI	100,000 LBS	2,000 FT-LBS

C) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION₁: 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.

GENERAL SCREW TORQUE RECOMMENDATIONS									
SCREW SIZE (INCHES)	#6	#8	#10	1/4	5/16	3/8	7/16	1/2	5/8 and larger
TORQUE RANGE (INCH-POUNDS)	5 – 8	10 – 15	18 – 25	25 – 40	50 – 80	90 – 135	160 – 210	250 – 330	450 - 650

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
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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. Contact D&L sales for replacement part information.

D) SETTING PROCEDURES

CAUTION: 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 with enough weight to set the anchor (14,000 lbs). Pull tension (14,000 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 slips. Pull tension to set upper slips (14,000 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.

E-1) EMERGENCY RELEASE

In the event the anchor will not release in the normal manner, the anchor is equipped with an emergency shear release. The shear pins can be sheared with straight pickup above tubing weight. The shear release value is 40,000 lbs (20,000 lbs/pin). When released in this manner, the anchor will reset automatically when moved down the hole.

F) STORAGE RECOMMENDATIONS

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) RECOMMENDED 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



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H) DISASSEMBLY

H-1) Clamp bottom sub (11) vise.

H-1.1) Carefully unscrew top sub (1) from inner mandrel (2).

CAUTION: Compression spring (4) will be compressed with spring tension against top sub (1).

H-1.2) Remove compression spring (4) from inner mandrel (2).

H-1.3) Unscrew and remove pins (12) from main body (6).

H-1.4) Remove upper cone (9) from inner mandrel (2).

H-1.5) Unscrew and remove button head cap screws (14) from lower cone (7) and remove drag springs (10) from main body (6).

H-1.6) Wedge slips (3) outward (if needed). Remove main body assembly from inner mandrel (2) and disassemble:

H-1.6.1) Remove wedges (if needed). Remove slip assemblies from main body (6) and disassemble:

H-1.6.1.1) Unscrew and remove button head cap screws (13) from slips (3) and remove slip springs (5).

H-1.7) Unscrew and remove shear pins (8) from lower cone (7).

H-1.8) Unscrew and remove inner mandrel (2) from bottom sub (11).

H-1.8.1) Remove lower cone (7) from inner mandrel (2).

H-2) Unclamp and remove bottom sub (11) from vise.

I) ASSEMBLY

NOTE₂: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

I-1) Clamp bottom sub (11) in vise.

I-1.1) Assemble mandrel assembly and install:

I-1.1.1) Install lower cone (7) onto lower end of inner mandrel (2).

I-1.1.2) Screw inner mandrel (2) into bottom sub (11).

I-1.2) Assemble main body assembly and install:

I-1.2.1) Assemble slip assemblies and install:

I-1.2.1.1) Place slip springs (5) into slips (3). Screw button head cap screws (13) into slips (3) to secure slip springs (5).

NOTE₃: Install two (2 ea) springs per slip (Fig. 3).

I-1.2.1.2) Install slip assemblies into main body (6). Wedge slips outwards.

I-1.2.2) Install main body (6) onto inner mandrel (2). Remove wedges.

I-1.3) Adjust lower cone (7) and main body (6) to align slots of main body (6) with threaded holes for shear pins (8) in lower cone (7). Align threaded holes for shear pins (8) in lower cone (7) with lower landing in slot in inner mandrel (2).

I-1.4) Screw shear pins (8) into lower cone (7).

I-1.5) Set drag springs (9) in sets of five (5 qty) in place on main body (6). Align holes in drag springs (9) with threaded holes in lower cone (7).

I-1.6) Screw button head cap screws (14) into lower cone (7) to secure drag springs (9).

I-1.7) Install upper cone (9) onto inner mandrel (2) and into main body (6). Align slots in upper cone (9) with threaded holes in main body (6).

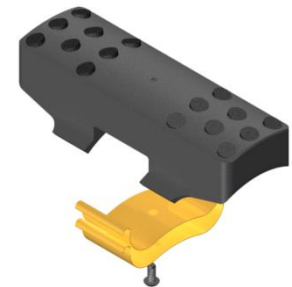


Fig. 3



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I) ASSEMBLY (cont'd)

I-1.8) Screw pins (12) into main body (6).

I-1.9) Install compression spring (4) onto inner mandrel (2).

I-1.10) Install top sub (1) onto compression spring (4). Compress compression spring (4) with top sub (1) and screw top sub (1) onto inner mandrel (2) (Fig. 4).

CAUTION: Compression spring (4) will be compressed with spring tension against top sub (1).

I-2) Unclamp bottom sub (11) from vise and remove assembled tool.

J) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
1	1	TOP SUB	DLMS80	31570610
2	1	INNER MANDREL	DLMS110	31570210
3	3	SLIP W/CARBIDE	DLMS110	31570110C
4	1	COMPRESSION SPRING	DLMCRSP	60370920
5	6	SLIP SPRING	-	32070950
6	1	MAIN BODY	DLMS80	31570310
7	1	LOWER CONE	DLMS125	31570420
8	2	SHEAR PIN (20,000#)	DLMS110	31570950-20
9	1	UPPER CONE	DLMS110	31570410
10	20	DRAG SPRING	DLMSSP301	44070910
11	1	BOTTOM SUB	DLMS80	31570630
12	3	PIN	DLMS110	31570910
13	3	BUTTON HEAD CAP SCREW #8-32 UNC X 3/8	STEEL	BHSC832C037
14	8	BUTTON HEAD CAP SCREW 5/16-18 UNC X 5/8	STEEL	BHSC031C062

ASSEMBLED WEIGHT	137 LBS
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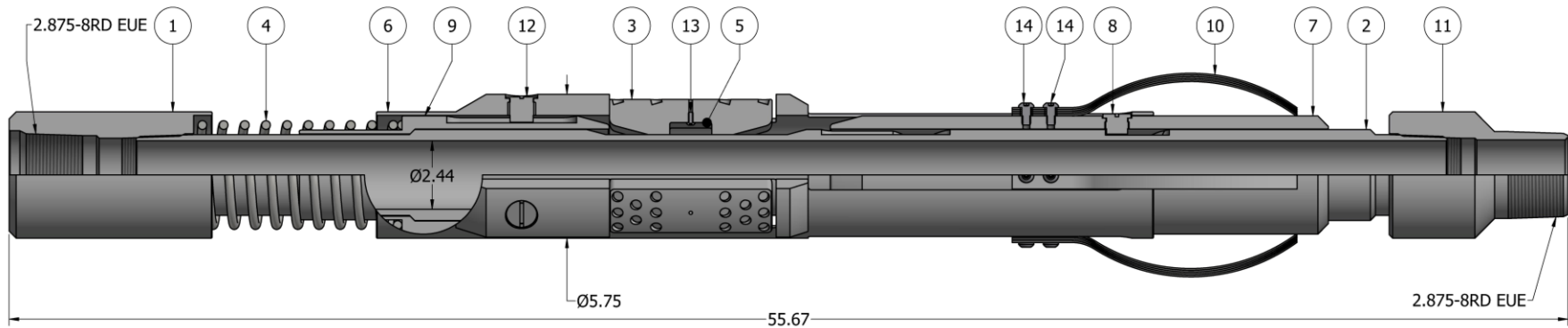
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K) TECHNICAL ILLUSTRATION



L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
04/02/2020	B	Removed requirement for thread locker on shear pins	J.Anderson	K.Plunkett
11/05/2018	A	Created new manual	-	-