



# DL SHEAR TENSION PACKER, NON-WELDED

## 10-3/4" X 4-1/2", 3-1/2" EUE

Manual No:  
**DL-412-10750-1586**

Revision: **A**

Revision Date:  
**08/01/2022**

Authored by: J.Anderson

Approved by: J.Johnson

### A) DESCRIPTION

The DL Tension Packer and DL Shear Tension Packer are economical, compact tools for injection, pumping, medium range treating and production applications. These packers are set by 1/4 right-hand rotation of the tubing and then pull tension. To release these packers, slack off the tubing and the packer will automatically re-jay into the release position. These packers have a right-hand rotation release allowing retrieval of the tubing string.

The DL Tension Packer can be run in tension or compression. When the DL Tension Packer is run in compression, the right-hand release option cannot be utilized.

The DL Shear Tension Packer features an adjustable straight pull safety shear release. This packer is not designed to be run in compression.

### B) SPECIFICATION GUIDE

CASING		RECOMMENDED HOLE SIZE	TOOL OD (INCHES)	TOOL ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)					
10-3/4	32.7 – 55.0	9.670 – 10.192	9.500	3.00	3-1/2 EUE	41210-3-XBAE 41210H-3-XBAE <sup>1</sup> 41210V-3-XBAE <sup>2</sup> 41210C-3-XBAE <sup>3</sup> 41210HC-3-XBAE <sup>4</sup> 41210VC-3-XBAE <sup>5</sup>

Tool Options: <sup>1</sup>HSN, <sup>2</sup>Viton, <sup>3</sup>Nitrile, Carbide, <sup>4</sup>HSN, Carbide, <sup>5</sup>Viton, Carbide

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
4,000 PSI	170,000 LBS

### C) PRE-INSTALLATION INSPECTION PROCEDURES

**CAUTION:** 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.

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



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

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.

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 element, o-rings, shear screws, etc. Contact D&L sales for redress kit and/or other replacement part information.

### D) SETTING PROCEDURES

**CAUTION<sub>2</sub>:** Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

Before running the packer, check the safety shear release to see that the proper quantities of shear pins are installed.

Run to setting depth. Set down the work string and rotate 1/4 turn to the right at the packer. Pull tension on the packer to set the slips and compress the packing elements. A minimum pull of 25,000 lbs. at the packer is required to pack off the elements.

**NOTE<sub>1</sub>:** Take care not to pull more than two-thirds (2/3) of the safety shear setting.

### E) RELEASING PROCEDURES

Set down the work string to unset the slips, relax the element and re-jay the packer. The packer may now be moved and reset, or pulled from the well.

#### E-1) EMERGENCY RELEASE

In the event the packer will not release in the normal manner, pull to shear the safety shear release. Once it shears, set down one to two feet (1'-2') and pick up to ensure the packer is released. Trip out with the packer. If the safety shear release will not shear, torque the work string to the right until the secondary release threads break loose. Rotate 12-15 additional turns to the right at the tool and trip out.

### 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. Elements should be in a relaxed state—free from tension, compression, and other stresses that could cause deformation.

Store the tool, if possible, in an enclosed, temperature and humidity controlled environment. Avoid excessively high temperatures over long periods of time. Shield elastomeric parts from ultraviolet light sources. 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.



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### G) ELASTOMER TRIM TEMPERATURE GUIDE

RUBBER TYPE	TEMPERATURE RANGE
NITRILE	40° - 250°F
HSN (HNBR)	70° - 300°F
VITON	100° - 350°F

### H) RECOMMENDED 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

### I) DISASSEMBLY

I-1) Clamp top sub (6) in vise.

I-1.1) Unscrew and remove pressure plug (13) from shear sleeve (8).

I-1.2) Remove shear pins (5) from shear sleeve (8). Rotate shear sleeve (8) as needed to access shear pins (5).

I-1.3) Unscrew and remove bottom sub (4) from mandrel (1).

I-1.3.1) Remove o-ring (16) from bottom sub (4).

I-1.4) Unscrew and remove shear sleeve (8) from flange (19).

I-1.5) Remove flange (19) from mandrel (1).

I-1.6) Remove element (3) and cone (2) from rubber mandrel (24).

I-1.7) Remove rubber mandrel (24) from mandrel (1).

I-1.7.1) Remove o-ring (17) from rubber mandrel (24).

I-1.8) Unscrew and remove button head screws (14) from cage ring (9).

I-1.9) Unscrew and remove button head screws (15) from slip body (20).

I-1.10) Unscrew and remove button head screws (14) from spring ring (23).

I-1.11) Remove drag springs (10) from spring ring (23) and body (20).

I-1.12) Remove spring ring (23) from J-body (7).

I-1.13) Wedge slips (12) outward (if needed). Unscrew and remove set screws (22) from slip body (20).

I-1.14) Unscrew slip body (20) from J-body (7). Remove slip body assembly from J-body (20) and disassemble:

I-1.14.1) Remove wedges (if needed). Remove slips (12) and slip springs (11) from slip body (20).

I-1.15) Remove J-body (7) from J-pin ring (18) and mandrel (1).

I-1.16) Unscrew and remove mandrel (1) from top sub (6) (**NOTE**<sub>2</sub>: Left-hand threads).

**CAUTION**<sub>3</sub>: Do **NOT** wrench or clamp on seal surface.

I-1.16.1) Remove cage ring (9) from mandrel (1).

I-1.16.2) Unscrew and remove set screws (21) from J-pin ring (18).

I-1.16.3) Unscrew and remove J-pin ring (18) from mandrel (1).

I-2) Unclamp and remove top sub (6) from vise.



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## J) ASSEMBLY

**NOTE<sub>3</sub>:** Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

J-1) Clamp top sub (6) in vise.

J-1.1) Screw J-pin ring (18) onto mandrel (1).

J-1.2) Screw set screws (21) into J-pin ring (18).

J-1.3) Install cage ring (9) onto mandrel (1).

J-1.4) Screw mandrel (1) into top sub (6) (**NOTE<sub>2</sub>:** Left-hand threads).

**CAUTION<sub>3</sub>:** Do NOT wrench or clamp on seal surfaces.

J-1.5) Install J-body (7) onto mandrel (1) and J-pin ring (18).

J-1.6) Assemble slip body assembly and install:

J-1.6.1) Install slips (12) and slip springs (11) into slip body (20). Wedge slips outward.

**NOTE<sub>4</sub>:** Install two (2 ea) springs per slip (Fig. 2).

J-1.6.2) Screw slip body (20) onto J-body (7). Remove wedges.

J-1.7) Screw set screws (22) into slip body (20).

J-1.8) Install spring ring (23) onto J-body (7).

J-1.9) Set drag springs (10) in place on spring ring (23) and slip body (20).

**NOTE<sub>5</sub>:** Install drag springs in sets of three (3ea).

J-1.10) Align holes in drag springs (10) with threaded holes in spring ring (23). Screw button head cap screws (14) into spring ring (23).

J-1.11) Align holes in drag springs (10) with threaded holes in slip body (20). Screw button head cap screws (15) into slip body (20).

J-1.12) Align threaded holes in cage ring (9) with holes in J-body (7). Screw button head screws (14) into cage ring (9).

J-1.13) Install o-ring (17) in groove in rubber mandrel (24).

J-1.14) Install rubber mandrel (24) onto mandrel (1).

**CAUTION<sub>4</sub>:** Do not rip or tear o-ring during installation.

J-1.15) Install cone (2), element (3) and shear sleeve flange (19) onto rubber mandrel (24).

J-1.16) Install shear sleeve (8) onto mandrel (1) and screw into flange (19).

J-1.17) Install o-ring (16) in o-ring groove in bottom sub (4).

J-1.18) Screw bottom sub (4) onto mandrel (1).

**CAUTION<sub>4</sub>:** Do not rip or tear o-ring during installation.

J-1.19) One at a time, align plug hole in shear sleeve (8) with counterbore in bottom sub (4) and insert shear pin (5).

J-1.20) After installing desired quantity of shear pins (5), screw pressure plug (13) into shear sleeve (8).

J-2) Unclamp top sub (6) from vise and remove assembled tool.

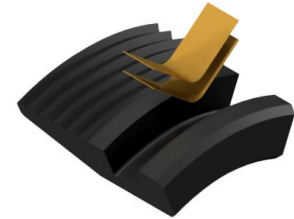


Fig. 2



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### K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41210-3-XBAE
1	1	MANDREL	DLMS80	41210210A-3
2	1	CONE	DLMS35	40510410
3	1	ELEMENT	70 DURO NITRILE	40510511
4	1	BOTTOM SUB	DLMS80	41210616-VBAE
5	15	SHEAR PIN (4000#)	DLM360BRS	41000990
6	1	TOP SUB	DLMS80	41213620-BBAE
7	1	J-BODY	DLMS60	41010310A-3
8	1	SHEAR SLEEVE	DLMS60	41099850A-3
9	1	CAGE RING	DLMS60	41210321
10	18	DRAG SPRING	DLMSSP301	40570920
11	8	SLIP SPRING	-	7170901
12	4	SLIP	DLMS35	40010110
13	1	1/4 NPT SOCKET PRESSURE PLUG	4140	SPP025
14	17	5/16-18 UNC X 5/8 BUTTON HEAD SOCKET CAP SCREW	STEEL	BHSC031C062
15	12	5/16-18 UNC X 3/8 BUTTON HEAD SOCKET CAP SCREW	STEEL	BHSC031C037
16	1	246 O-RING	90 DURO NITRILE	90246
17	1	247 O-RING	90 DURO NITRILE	90247
18	1	J-PIN RING	DLMS110	41210210B-3
19	1	FLANGE	DLMS35	41010850B-3
20	1	SLIP BODY	DLMS80	41010310B-3
21	3	1/4-20 UNC X 1/4 SOCKET SET SCREW	STEEL	SSS025C025
22	2	5/16-18 UNC X 3/8 SOCKET SET SCREW	STEEL	SSS031C037
23	1	SPRING RING	DLMS35	41010820
24	1	RUBBER MANDREL	DLMS60	41010221

REDRESS KIT (RDK)		41210050-3
ASSEMBLED WEIGHT		262 LBS



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**K) PARTS LIST (cont'd)**

**K-1) ELASTOMER TRIM OPTIONS**

**NOTE<sub>6</sub>:** For temperature range, refer to Elastomer Trim Temperature Guide.

**K-1.1) HSN**

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41210H-3-XBAE
3	1	ELEMENT	70 DURO HSN	40510511H
16	1	246 O-RING	90 DURO HSN	90246H
17	1	247 O-RING	90 DURO HSN	90247H

REDRESS KIT (RDK)		41210050H-3
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**K-1.2) VITON**

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41210V-3-XBAE
3	1	ELEMENT	70 DURO VITON	40510511V
16	1	246 O-RING	90 DURO VITON	90246V
17	1	247 O-RING	90 DURO VITON	90247V

REDRESS KIT (RDK)		41210050V-3
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**K-2) CARBIDE OPTION**

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41210C-3-XBAE
12	4	CARBIDE SLIP	DLMS110	40010110C



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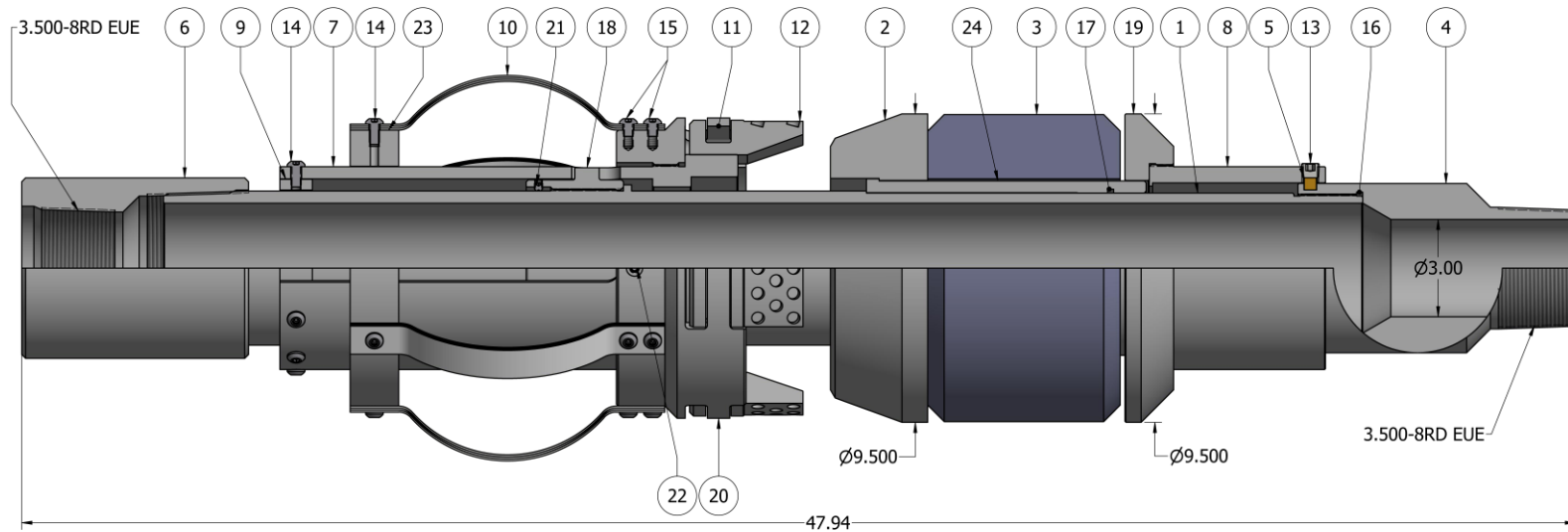
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## L) TECHNICAL ILLUSTRATION



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**M) REVISION HISTORY**

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
08/01/2022	A	Created manual	-	-