



# DL SHEAR TENSION PACKER, NON- WELDED, RIGHT-HAND MANUAL

## 16" X 4-1/2" W/ 3-1/2" EUE

Manual No:  
**DL-412-16000-1286**

Revision: **C**

Revision Date:  
**10/30/2023**

Authored by: *J.Anderson*

Approved by: *K.Plunkett*

### A) DESCRIPTION

The DL Tension Packer is an economical, compact tool for injection, pumping, medium range treating and production applications. The packer is set by 1/4 right-hand rotation of the tubing and then pull tension. To release, slack off the tubing and rotate 1/4 turn to the left into the release position.

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

**NOTE:** If a higher shear release is needed, the brass shear pins can be replaced with optional mild steel shear pins that shear at 6,000 lbs per pin. Contact D&L Oil Tools for recommendation on maximum shear value allowed for tool.

### B) SPECIFICATION GUIDE

CASING			TOOL OD (INCHES)	TOOL ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)				
16	65.0 – 109.0	14.688 – 15.250	14.438	3.00	3-1/2 EUE	41216RM-3-XBAE 41216RMH-3-XBAE <sup>1</sup> 41216RMV-3-XBAE <sup>2</sup> 41216RMC-3-XBAE <sup>3</sup> 41216RMHC3-XBAE <sup>4</sup> 41216RMVC3-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)
3,000 PSI	198,500 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 all seals, elements, o-rings, shear screws, etc. Contact D&L sales for redress kit and/or other replacement part information.

**D) SETTING PROCEDURES**

Before running the packer, check the safety shear release to see that the proper quantities of shear pins are installed. Each pin shears at 4,000 lbs.

**NOTE<sub>1</sub>:** If a higher shear release is needed, the brass shear pins can be replaced with optional mild steel shear pins that shear at 6,000 lbs per pin. Contact D&L Oil Tools for recommendation on maximum shear value allowed for tool.

Run to setting depth. Set down the tubing and rotate one-quarter (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 32,000 lbs at the packer is required to pack off the elements.

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

**E) RELEASING PROCEDURES**

Set down the tubing to unset the slips, relax the packing elements. Rotate the packer a 1/4 turn to the left to re-jay the packer. The tool may now be moved and reset, or pulled from the well.

If this does not un-set the packer, pull to shear the safety shear release. Once it shears, the tool must be tripped out. If the safety shear release will not shear, torque the tubing to the right until the secondary release threads break loose. Rotate twelve to fifteen (12 - 15) additional turns to the right at the tool to release the tubing from the packer.

**F) ELASTOMER TRIM TEMPERATURE GUIDE**

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



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### G) 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
- BOLTS, 1/4-20 X 1-1/4" LONG (4EA)
- SCREWDRIVER SET, FLAT-TIPPED
- SOCKET SETS
  - 3/8-INCH DRIVE
  - 1/2-INCH DRIVE
- HAMMERS
  - SLEDGE
  - BALL PEEN
  - DEAD BLOW

### H) DISASSEMBLY

**NOTE<sub>3</sub>**: Ensure vise is capable of handling weight of tool.

**NOTE<sub>4</sub>**: Support tool during disassembly and assembly with jack stands as necessary.

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

H-1.1) Unscrew and remove pipe plug (16) from shear sleeve (8).

H-1.2) Remove shear pins (5) from hole in shear sleeve (8). Rotate shear sleeve (8) as needed.

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

H-1.3.1) Remove o-ring (19) from bottom sub (4).

H-1.4) Unscrew shear sleeve (8) from rubber mandrel (14) and remove from mandrel (1).

H-1.5) Remove flange (21) from shear sleeve (8).

H-1.6) Remove rubber mandrel assembly from mandrel (1) and disassemble:

H-1.6.1) Remove element (3) and cone (2) from rubber mandrel (14).

H-1.6.2) Remove o-ring (20) from rubber mandrel (14).

H-1.7) Unscrew and remove button head cap screws (17) from J-body (7) and spring ring (13); remove drag springs (10).

H-1.8) Unscrew and remove button head cap screws (18) from cage ring (9).

H-1.9) Unscrew and remove cap screw (22) from J-pin ring (24).

H-1.10) Remove J-body assembly from mandrel (1) and disassemble:

H-1.10.1) Wedge slips (12) outward (if needed). Unscrew and remove J-body (7) from slip body (15).

H-1.10.2) Remove wedges (if needed). Remove slips (12) and slip springs (11) from slip body (15).

H-1.10.3) Remove spring ring (13) from J-body (7).

H-1.11) Unscrew and remove mandrel (1) from top sub (6) (**NOTE<sub>6</sub>**: Left-hand threads).

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

H-1.12) Remove cage ring (9) from mandrel (1).

H-1.13) Unscrew and remove cap screws (23) from J-pin ring (24).

H-1.14) Unscrew and remove J-pin ring (24) from mandrel (1).

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

### I) ASSEMBLY

**NOTE<sub>5</sub>**: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order and orientation.

**NOTE<sub>3</sub>**: Ensure vise is capable of handling weight of tool.

**NOTE<sub>4</sub>**: Support tool during disassembly and assembly with jack stands as necessary.

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



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## I) ASSEMBLY (cont'd)

- I-1.1) From upper end of mandrel (1), screw J-pin ring (24) onto mandrel (1).
  - I-1.2) Screw set screws (23) into J-pin ring (24).
  - I-1.3) Install cage ring (9) onto mandrel (1).
  - I-1.4) Screw mandrel (1) into top sub (6) (**NOTE6:** Left-hand threads).  
**CAUTION3:** Do NOT wrench or clamp on seal surfaces.
  - I-1.5) Assemble J-body assembly and install:
    - I-1.5.1) Install slips (12) and slip springs (11) into slip body (15). Wedge slips outward.  
**NOTE7:** Uses one (1 ea) slip spring (11) per slip (12).
    - I-1.5.2) Screw slip body (15) onto J-body (7). Remove wedges.
    - I-1.5.3) Install spring ring (13) onto J-body (7).
    - I-1.5.4) Install J-body assembly onto mandrel (1). Rotate J-body assembly to access threaded hole for cap screw in mandrel (1). Screw cap screw (22) into mandrel (1).
    - I-1.5.5) Move cap screw (22) into lower landing of J-slot.
  - I-1.6) Align holes in J-body (7) with threaded holes in cage ring (9). Screw button head cap screws (18) into cage ring (9).
  - I-1.7) Set drag springs (10) in place on J-body (7). Align holes in drag springs with threaded holes in J-body (7) and spring ring (13). Screw button head cap screws (17) into J-body (7) and spring ring (13).  
**NOTE8:** Install drag springs (10) in sets of three (3ea).
  - I-1.8) Assemble rubber mandrel assembly and install:
    - I-1.8.1) Install o-ring (20) in o-ring groove in rubber mandrel (14).
    - I-1.8.2) Install cone (2) and element (3) onto rubber mandrel (19).
    - I-1.8.3) Install rubber mandrel assembly onto mandrel (1).  
**CAUTION2:** Do NOT rip or tear o-ring while installing.
  - I-1.9) Install flange (21) onto shear sleeve (8).
  - I-1.10) Install shear sleeve (8) onto mandrel (1) and screw into rubber mandrel (14).
  - I-1.11) Install o-ring (19) in o-ring groove in bottom sub (4).
  - I-1.12) Screw bottom sub (4) onto mandrel (1).
  - I-1.13) Install shear pins (5) into shear sleeve (8) and bottom sub (4). Align plug hole in shear sleeve (8) with recessed hole in bottom sub (4) and install one shear pin (5) at a time.
  - I-1.14) Once desired quantity of shear pins (5) are in installed, screw pipe plug (16) into shear sleeve (8).
- I-2) Unclamp top sub (6) from vise and remove assembled tool.



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**J) PARTS LIST**

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41216RM-3-XBAE
1	1	MANDREL	DLMS60	41213210A-3
2	1	CONE	DLMS80	41216410
3	1	ELEMENT	80 DURO NITRILE	41216512
4	1	BOTTOM SUB	DLMS80	41213615-BBAE
5	18	SHEAR PIN (4000#)	DLM360BRS	41000990
6	1	TOP SUB	DLMS80	41213620-BBAE
7	1	J-BODY	DLMS35	41216310-3
8	1	SHEAR SLEEVE	DLMS80	41216850
9	1	CAGE RING	DLMS35	41216325
10	30	DRAG SPRING	DLMS35	41216325
11	6	SLIP SPRING	-	7116901
12	6	SLIP	DLMS35	41216110
13	1	SPRING RING	DLMS35	41216820
14	1	RUBBER MANDREL	DLMS35	41216220
15	1	SLIP BODY	DLMS80	41216320
16	1	SOCKET PRESSURE PLUG 1/4 NPT	4140	SPP025
17	30	BUTTON HEAD SOCKET CAP SCREW 5/16-18 UNC X 5/8	STEEL	BHSC031C062
18	16	BUTTON HEAD SOCKET CAP SCREW 5/16-18 UNC X 1"	STEEL	BHSC031C100
19	1	247 O-RNG	90 DURO NITRILE	90247
20	1	351 O-RING	90 DURO NITRILE	90351
21	1	FLANGE	DLMS80	41216860
22	1	SOCKET CAP SCREW 5/8-11 UNC X 5/8	STEEL	SCS062C062
23	4	SOCKET SET SCREW 3/8-16 UNC X 5/8	STEEL	SSS037C062
24	1	J-PIN RING	DLMS35	41216210B-3

REDRESS KIT (RDK)		41216050
ASSEMBLED WEIGHT		777 LBS



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

**J-1) ELASTOMER TRIM OPTIONS**

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

J-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61316RMH-3-XBAE
3	1	ELEMENT	80 DURO HSN	41216512H
19	1	247 O-RING	90 DURO HSN	90247H
20	1	351 O-RING	90 DURO HSN	90351H

REDRESS KIT (RDK)		41216050H
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J-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61316RMV-3-XBAE
3	1	ELEMENT	80 DURO VITON	41216512V
19	1	247 O-RING	90 DURO VITON	90247V
20	1	351 O-RING	90 DURO VITON	90351V

REDRESS KIT (RDK)		41216050V
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**J-2) CARBIDE OPTION**

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41216RMC-3-XBAE
12	6	CARBIDE SLIP	DLMS110	41216110C



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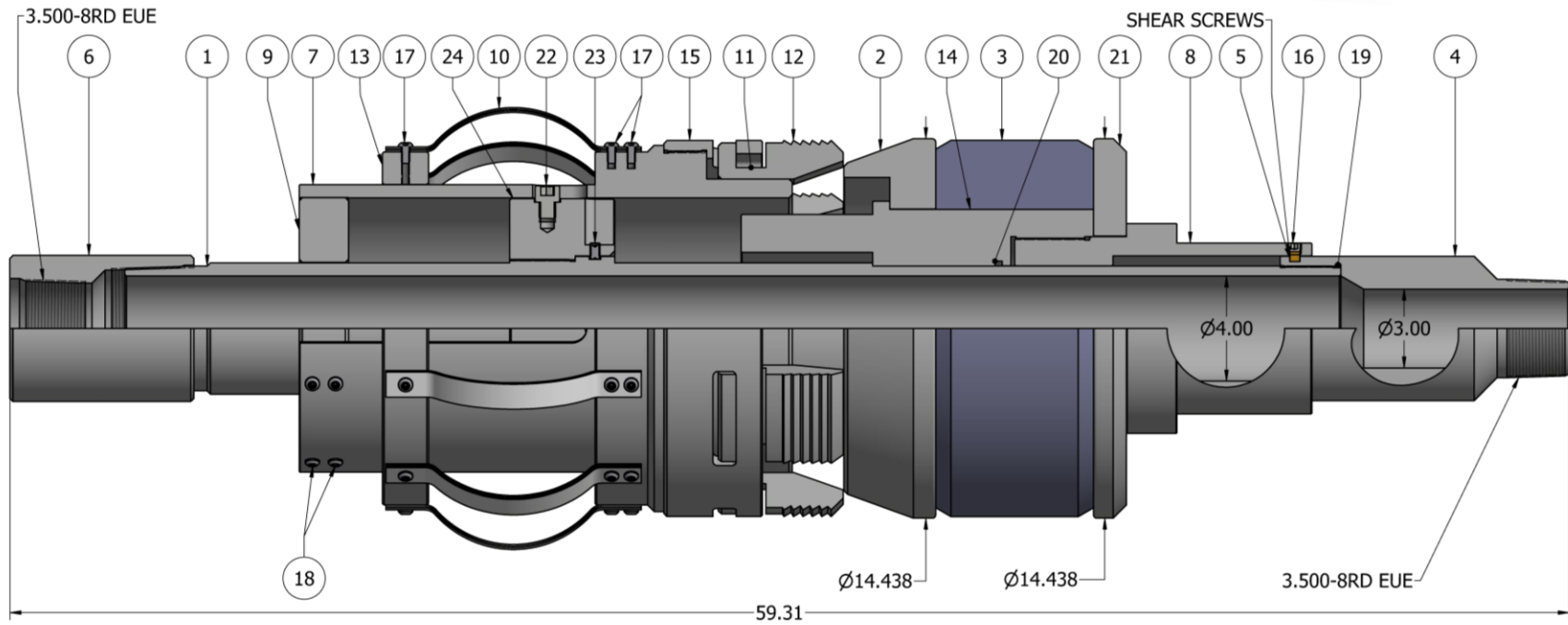
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## K) TECHNICAL ILLUSTRATION



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**L) REVISION HISTORY**

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
10/30/2023	C	Added "RM" to P/N, HSN, Viton and carbide options; removed torque thru tool	J.Anderson	E.Visaez
04/02/2020	B	Revised Item # for inner mandrel	J.Anderson	K.Plunkett
10/23/2019	A	Created new manual	-	-