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.

NOTE$_1$: If running the packer with high pressure from below, risk of unsetting the packer exists. Contact D&L sales for recommendations.

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)				
7	17.0 – 29.0	6.184 – 6.538	6.000	3.00	3-1/2 EUE	41273 41273H[1] 41273V[2] 41273C[3] 41273HC[4] 41273VC[5]

Tool Options: [1]HSN, [2]Viton, [3]Nitrile, Carbide, [4]HSN, Carbide, [5]Viton, Carbide

DIFFERENTIAL PRESSURE (MAX)	**TENSILE LOAD THRU TOOL** (MAX)
7,000 PSI	69,000 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.

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

CAUTION$_2$: 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 desired quantities of shear pins are installed. Use of all shear pins is recommended.

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 14,000 lbs at the packer is required to pack off the elements.

NOTE$_2$**:** 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 packing elements and 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 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.

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 bottom sub (4) from mandrel (1). Remove bottom sub assembly and disassemble:

I-1.1.1) Unscrew and remove pipe plug (13) from shear sleeve (8).

I-1.1.2) Remove shear pins (5) from bottom sub (4) and shear sleeve (8). Rotate shear sleeve (8) to access shear pins (5).

I-1.1.3) Remove bottom sub (4) and shear sleeve (8).

I-1.1.4) Remove o-ring (17) from bottom sub (4).

I-1.2) Remove element (3) and cone (2) from mandrel (1).

I-1.3) Unscrew and remove button head cap screws (14, 15) from J-body (7)

I-1.4) Unscrew and remove button head cap screws (16) from cage ring (9).

I-1.5) Remove drag springs (10) from J-body (7).

I-1.6) Wedge slips (12) outward (if needed). Remove J-body assembly from mandrel (1) and disassemble:

I-1.6.1) Remove wedges (if needed.). Remove slips (12) and slip springs (11) from J-body (7).

I-1.7) Unscrew and remove mandrel (1) from top sub (6) (**NOTE3**: Left-hand threads).

CAUTION3: Do NOT wrench or clamp on seal surface.

I-1.7.1) Remove cage ring (9) from mandrel (1).

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

J) ASSEMBLY

NOTE4: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION4: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs unless stated otherwise (Fig. 2).

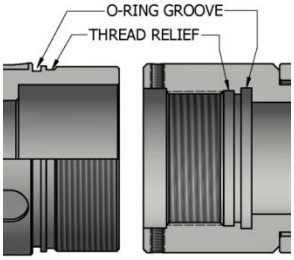


Fig. 2

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

J-1.1) Install cage ring (9) onto upper end of mandrel (1).

J-1.2) Screw mandrel (1) into top sub (6) (**NOTE3**: Left-hand threads).

CAUTION3: Do NOT wrench or clamp on seal surfaces.

J-1.3) Assemble J-body assembly and install:

J-1.3.1) Install slips (12) and slip springs (11) into J-body (7). Wedge slips outward.

NOTE5: Install six (6 ea) springs per slip (Fig. 3).

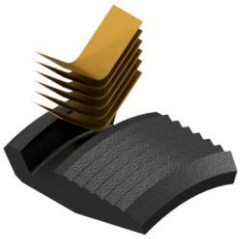


Fig 3

J-1.3.2) Install J-body assembly onto lower end of mandrel (1). Remove wedges.

J-1.4) Align holes in J-body (7) with threaded holes in cage ring (9). Screw button head cap screws (16) into cage ring (9).

J-1.5) Set drag springs (10) in place on J-body (7) being sure to capture lower end of springs under lip of ring on J-body (7).

J-1.6) Align holes in drag springs with threaded holes in J-body (7) and cage ring (9). Screw button head cap screws (14, 15) into J-body (7).

J-1.7) Install cone (2) and element (3) onto mandrel (1)

J-1.8) Assemble bottom sub assembly and install:

J-1.8.1) Install o-ring (17) into o-ring groove in bottom sub (4).

J-1.8.2) One at a time, align counterbore in bottom sub (4) with plug hole in shear sleeve (8). Insert shear pin (5).

J-1.8.3) Once desired quantity of shear pins (5) is installed, screw pipe plug (13) into shear sleeve (8).

J-1.8.4) Screw bottom sub (4) onto mandrel (1).

CAUTION5: Do not rip or tear o-ring during installation.

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

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41273
1	1	MANDREL	DLMS60	41273210
2	1	CONE	DLMS80	41273410
3	1	ELEMENT	80 DURO NITRILE	41273512
4	1	BOTTOM SUB	DLMS60	41273620
5	12	SHEAR PIN (4000#)	BRASS	41000990
6	1	TOP SUB	DLMS80	41273610
7	1	J-BODY	DLMS60 / DLMS35	41273310
8	1	SHEER SLEEVE ASSY	DLMS60 / DLMS35	41273850
9	1	CAGE RING	DLMS60	41273325
10	8	DRAG SPRING	DLMSSP301	40070920
11	24	SLIP SPRING	-	7170901
12	4	SLIP	DLMS35	60070135
13	1	1/4" PIPE PLUG	STEEL	SPP025
14	4	BUTTON HEAD SCREW 5/16-18 UNC X 3/8	STEEL	BHSC031C037
15	4	BUTTON HEAD SCREW 5/16-18 UNC X 1/2	STEEL	BHSC031C050
16	6	BUTTON HEAD SCREW 5/16-18 UNC X 7/16	STEEL	BHSC031C043
17	1	236 O-RING	90 DURO NITRILE	90236

REDRESS KIT (RDK)		41273050
ASSEMBLED WEIGHT		90 LBS

K-1) ELASTOMER TRIM OPTIONS

NOTE$_2$: For temperature range, refer to Elastomer Trim Temperature Guide.

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41273H
3	1	ELEMENT	80 DURO HSN	41273512H
17	1	236 O-RING	90 DURO HSN	90236H

REDRESS KIT (RDK)		41273050H

K-1.2) VITON

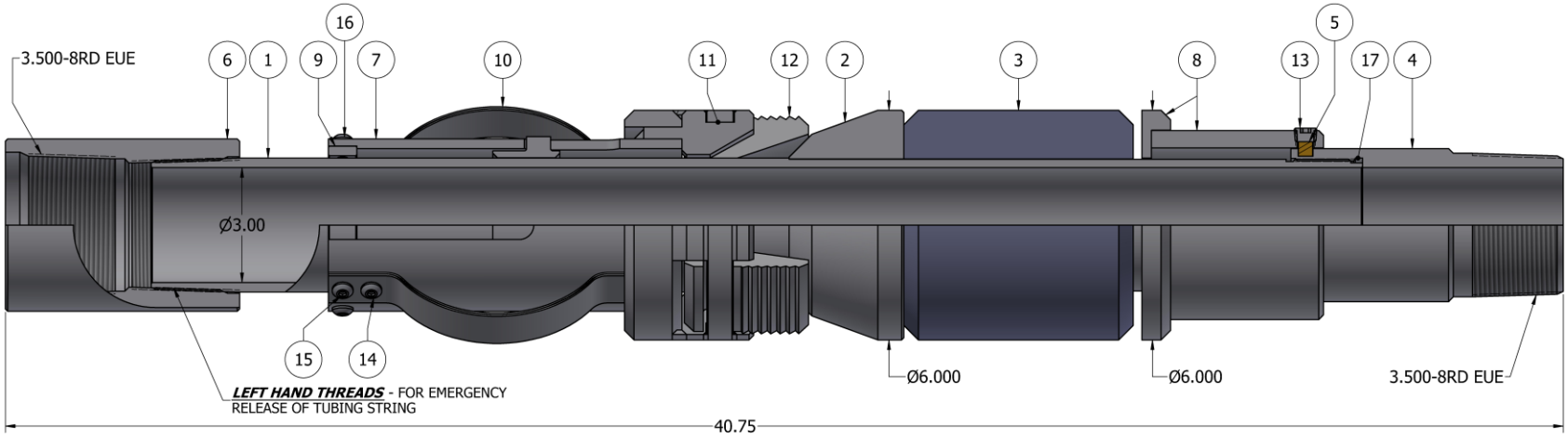
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41273V
3	1	ELEMENT	80 DURO VITON	41273512V
17	1	236 O-RING	90 DURO VITON	90236V

REDRESS KIT (RDK)		41273050V

K-2) CARBIDE OPTION

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41273C
12	4	CARBIDE SLIP	DLMS110	60070135C

L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
01/23/2023	C	Added carbide options, pre-installation procedures, storage recommendations; revised elastomer temp. ratings, 7170901 qty 24 was 8	J.Anderson	D.McKeon
12/31/13	B	Revised setting procedures minimum pull, P/N 7170901 was 7170900, P/Ns 41273410, 41273620 and 41273325 material was 1018 CD, P/N 60070135 material was 1018; Added recommended hand tools, element selection guide, HSN and Viton options, revision history;	J.Anderson	K.Plunkett