	DL SHEAR TENSION PACKER 4-1/2” X 2-3/8”	Manual No: **DL-412-4500-087** Revision: **G** Revision Date: **11/01/2022**
Authored by: B.Mathis		*Approved by: B.Oligschlaeger*

A) DESCRIPTION

The DL Shear Tension Packer is an economical, compact tool for injection, pumping, medium range treating and production applications. This packer is set by 1/4 right-hand rotation of the tubing and then pulling tension. To release the packer, slack off the tubing and the packer will automatically re-jay into the release position. This packer has a right-hand rotation release allowing retrieval of the work string.

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		THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	**WEIGHT** (LBS/FT)	**RECOMMENDED HOLE SIZE** (INCHES)	**GAGE OD** (INCHES)	**NOMINAL ID** (INCHES)		
4-1/2	9.5 – 13.5	3.920 – 4.090	3.750	1.94	2-3/8 EUE	41245 41245H[1] 41245V[2] 41245C[3] 41245HC[4] 41245VC[5]
	15.1	3.826	3.656	1.94	2-3/8 EUE	41243 41243H[1] 41243V[2] 41243C[3] 41243HC[4] 41243VC[5]

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

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
5,000 PSI	45,000 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.

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)

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 10,000 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) ELASTOMER TRIM TEMPERATURE GUIDE

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

G) 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.

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 coupling (1) in vise.

I-1.1) Unscrew bottom sub (4) from mandrel (2). Remove bottom sub assembly and disassemble:

I-1.1.1) Remove shear pins/screws:

I-1.1.1.1) For P/N 41245 only, unscrew and remove pipe plug (13) from shear sleeve (8).

I-1.1.1.1.1) Remove shear pins (5) from bottom sub (4) and shear sleeve (8). Rotate shear sleeve (8) to access shear pins (5).

I-1.1.1.2) For P/N 41243 only, unscrew and remove shear screws (5) from shear sleeve (8).

I-1.1.2) Separate bottom sub (4) and shear sleeve (8).

I-1.1.3) Remove o-ring (17) from bottom sub (4).

I-1.2) Remove element (3) and cone (6) from mandrel (2).

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

I-1.4) Remove drag springs (10) from J-body (7).

I-1.5) Unscrew and remove button head cap screws (16) from cage ring (9).

I-1.6) Wedge slips (12) outward (if needed). Remove J-body assembly from mandrel (2) 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 (2) from top coupling (1) (**NOTE3**: Left-hand threads).

CAUTION3: Do NOT wrench or clamp on seal surface.

I-1.7.1) Remove cage ring (9) from mandrel (2).

I-2) Unclamp and remove top coupling (1) 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).

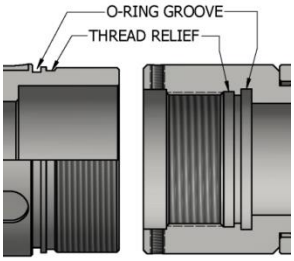


Fig. 2

J-1) Clamp top coupling (1) in vise.

J-1.1) Install cage ring (9) onto upper end of mandrel (2).

J-1.2) Screw mandrel (2) into top coupling (1) (**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 one (1ea) spring per slip (Fig. 3).

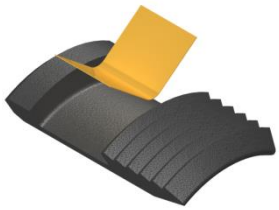


Fig 3

J-1.3.2) Install J-body assembly onto lower end of mandrel (2). 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) into J-body (7) and bottom head cap screws (15) into cage ring (9).

J-1.7) Install cone (6) and element (3) onto mandrel (2)

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) Install shear pins/screws:

J-1.8.2.1) For P/N 41245 only, one at a time, align recessed hole in bottom sub (4) with plug hole in shear sleeve (8). Insert shear pin (5).

J-1.8.2.1.1) Once desired quantity of shear pins (5) are installed, screw pipe plug (13) into shear sleeve (8).

J-1.8.2.2) For P/N 41243 only, align threaded holes in shear sleeve (8) with groove in bottom sub (4). Screw shear screws (5) into shear sleeve (5). Tighten until shear screws (5) make contact with bottom sub (4). Back shear screws (5) out 1/4 turn.

J-1.8.3) Screw bottom sub (4) onto mandrel (2).

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

J-2) Unclamp top coupling (1) from vise and remove assembled tool.

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41245	P/N 41243
1	1	TOP COUPLING	DLMS60	CP2375NLH2375E	CP2375NLH2375E
2	1	MANDREL	DLMS60	41245210	41243210
3	1	ELEMENT	80 DURO NITRILE	40545512	40543512
4	1	BOTTOM SUB	DLMS60	41045615	41043615
5	10	SHEAR PIN/SCREW	DLM360BRS	41000990 (4000#)	BSSSLT043C043 (4100#)
6	1	CONE	DLMS60	40045410	40043410
7	1	J-BODY	DLMS60	41045310	41043310
8	1	SHEAR SLEEVE	DLMS60	41045850	41043851
9	1	CAGE RING	DLMS60	41045320	
10	4	DRAG SPRING	DLMSSP301	40045920	
11	4	SLIP SPRING	ELGILOY	7145900	
12	4	SLIP	DLMS35	71045110	
13	1	1/4 PIPE PLUG	4140	SPP025	-
14	4	BUTTON HEAD CAP SCREW 5/16-18 UNC	STEEL	BHSC031C025 (1/4” LONG)	BHSC031C031 (5/16” LONG)
15	4	BUTTON HEAD CAP SCREW 5/16-18 UNC	STEEL	BHSC031C043 (7/16” LONG)	BHSC031C050 (1/2” LONG)
16	6	BUTTON HEAD CAP SCREW 5/16-18 UNC X 3/8	STEEL	BHSC031C037	
17	1	228 O-RING	90 DURO NITRILE	90228	

REDRESS KIT (RDK)		41245050	41243050
ASSEMBLED WEIGHT		35 LBS	36 LBS

K) PARTS LIST (cont’d)

K-1) ELASTOMER TRIM OPTIONS

NOTE6: For temperature range, refer to Elastomer Trim Temperature Guide.

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41245H	P/N 41243H
3	1	ELEMENT	80 DURO HSN	40545512H	40543512H
17	1	228 O-RING	90 DURO HSN	90228H	

		REDRESS KIT (RDK)		41245050H	41243050H

K-1.2) VITON

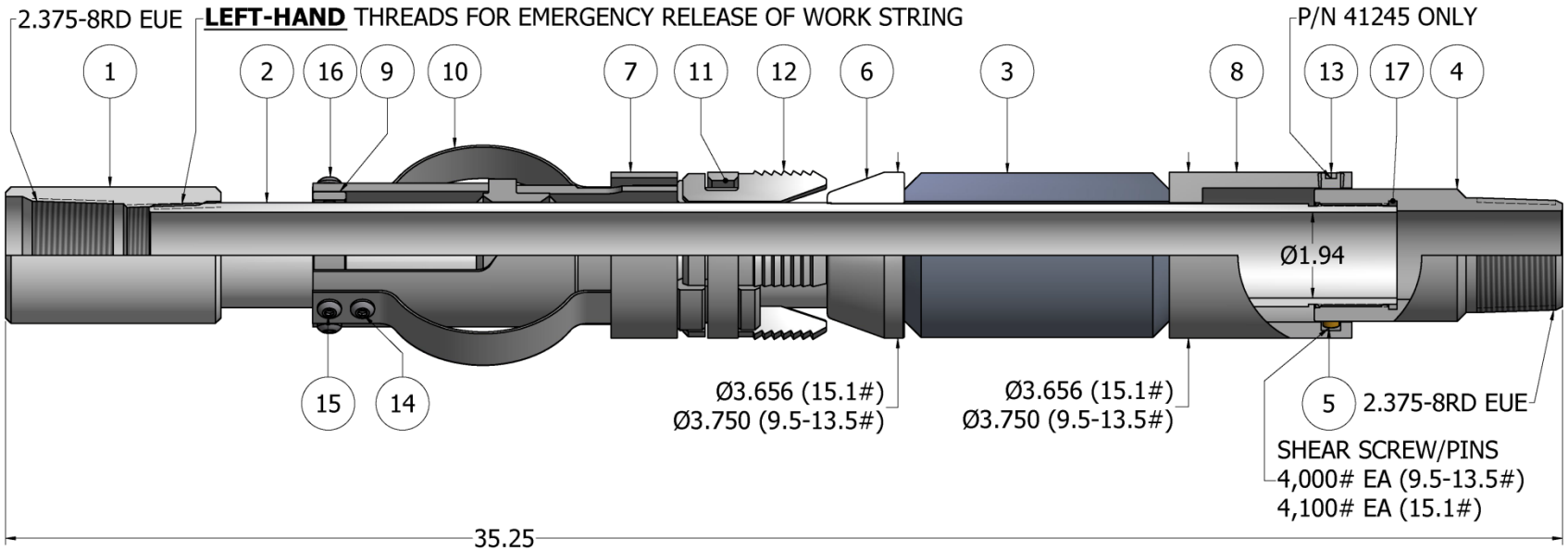
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41245V	P/N 41243V
3	1	ELEMENT	80 DURO VITON	40545512V	40543512V
17	1	228 O-RING	90 DURO VITON	90228V	

		REDRESS KIT (RDK)		41245050V	41243050V

K-2) CARBIDE OPTION

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 41245C	P/N 41243C
12	4	CARBIDE SLIP	DLMS110	71045110C	

L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
11/01/2022	G	Revised tensile load rating; Removed note for optional shear screws; Added carbide options	J.Anderson	D.McKeon
07/11/2017	F	Revised Elastomer Trim Temperature Guide Nitrile temp. rating, BHSC031C025 was BHSC031C031 BHSC031C043 was BHSC031C050	J.Anderson	K.Riggs
07/13/2016	E	Removed tool drift ID; Added General Screw Torque Recommendations; Revised Elastomer Trim Temperature Guide nitrile was 70° - 300°F, HSN was 70° - 325°F, P/N SPP025 was SPP025_OLD	J.Anderson	C.Colvin
03/11/15	D	Revised Elastomer Trim Temperature Guide was Element Selection Guide, Parts List; Added P/N 41243, Tool Drift ID	J.Anderson	K.Riggs
09/19/13	C	Revised P/N 40545512 was 40545513, P/N CP2375NLH2375E was 40045620, P/N SPP025_OLD was SPP025, P/N BHSC031C050 quantity was 8 and P/N BHSC031C031 was 6; Added max. torque, max. differential, max. tensile load, P/N BHSC031C037, HSN and Viton options, element selection guide, recommended hand tools and revision history	J.Anderson	K.Plunkett