



# CLUTCHED EXPANSION JOINT

## 4-1/2", 10 FT

Manual No:  
**DL-539-4500-1729**

Revision: **A**

Revision Date:  
**12/11/2023**

Authored by: *J.Anderson*

Approved by: *K.Plunkett*

### A) DESCRIPTION

The Expansion Joint is used to allow expansion and contraction during injection or production operations. They are also used between packers to allow stroke for setting and releasing packers and provides for rotation through the tool. Available with optional seals for low to high temperatures and in lengths up to 20 feet.

The Clutched Expansion Joint allows torque to be transmitted through the joint when the expansion joint is fully collapsed or extended.

### B) SPECIFICATION GUIDE

TUBING SIZE (INCHES)	TOOL		TOOL LENGTH (INCHES)		THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
	GAGE OD (INCHES)	NOMINAL ID (INCHES)	COLLAPSED	EXPANDED		
4-1/2	5.88	3.94	143.57	263.57	4-1/2 EUE	53945-120 53945H-120 <sup>1</sup> 53945V-120 <sup>2</sup>

Elastomer Trim Options: <sup>1</sup>HSN, <sup>2</sup>Viton

**NOTE<sub>1</sub>**: Other tool lengths available up to 20 feet. Contact D&L sales for more information.

SAFE WORKING PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	ROTATIONAL TORQUE LIMIT (MAX)
8,000 PSI	200,000 LBS	1,500 FT-LBS

### C) PRE-INSTALLATION INSPECTION PROCEDURES

**CAUTION<sub>1</sub>**: 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.

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)

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

### D) OPERATING PROCEDURES

Make up the expansion joint on the work string and run downhole. Fully collapse or extend the joint to engage the clutch. With clutch engaged, torque through the joint as needed.

### E) ELASTOMER TRIM TEMPERATURE GUIDE

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

### 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. 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) 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
- STRAP WRENCH
- 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

### H) DISASSEMBLY

**NOTE<sub>2</sub>:** Support tool during disassembly and assembly with jack stands as necessary.

H-1) Clamp cylinder (2) in vise.

H-1.1) Unscrew and remove set screws (7) from cylinder (2).

H-1.2) Unscrew clutch sub (4) from cylinder (2).

H-1.3) Remove stroke mandrel assembly from cylinder (2) and disassemble:

H-1.3.1) Unscrew and remove seal sub (5) from mandrel (3).

H-1.3.1.1) Remove o-rings (8) from seal sub (5).

H-1.3.2) Remove clutch sub (4) from mandrel (3).

H-1.4) Unscrew and remove set screws (6) from cylinder (2).



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### H) DISASSEMBLY (cont'd)

H-1.5) Unscrew and remove top sub (1) from cylinder (2).

H-1.5.1) Remove o-ring (8) from top sub (1).

H-2) Unclamp and remove cylinder (2) from vise.

### I) 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.

**CAUTION<sub>2</sub>:** To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 2).

**NOTE<sub>2</sub>:** Support tool during disassembly and assembly with jack stands as necessary.

I-1) Clamp cylinder (2) in vise.

I-1.1) Install o-ring (8) in o-ring groove in top sub (1).

I-1.2) Screw top sub (1) into cylinder (2).

**CAUTION<sub>3</sub>:** Do not rip or tear o-ring(s) during installation.

I-1.3) Screw set screws (6) into cylinder (2).

I-1.4) Assemble stroke mandrel assembly and install:

I-1.4.1) Install clutch sub (4) onto mandrel (2).

I-1.4.2) Install o-rings (8) in o-ring grooves seal sub (5).

I-1.4.3) Screw seal sub (5) onto mandrel (2).

I-1.4.4) Install stroke mandrel assembly into cylinder (2). Engage fingers of seal sub (5) with top sub (1)

**CAUTION<sub>3</sub>:** Do not rip or tear o-ring(s) during installation.

I-1.5) Screw clutch sub (4) into cylinder (2).

I-1.6) Screw set screws (7) into cylinder (2).

I-2) Unclamp cylinder (2) from vise and remove assembled tool.

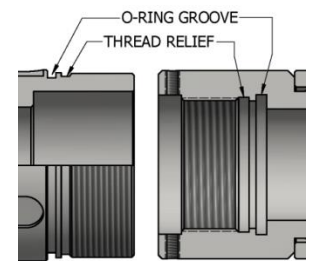


Fig. 2



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### J) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 53945-120
1	1	TOP SUB	DLMS110	53945101
2	1	CYLINDER	DLMS80	53945104-120
3	1	MANDREL	DLMS80	53945210-120
4	1	CLUTCH SUB	DLMS110	53945102
5	1	SEAL SUB	DLMS110	53945106
6	4	5/16-18 UNC X 3/8 SOCKET SET SCREW	STEEL	SSS031C037
7	4	1/4-20 UNC X 3/8 SOCKET SET SCREW	STEEL	SSS025C037
8	3	350 O-RING	90 DURO NITRILE	90350

REDRESS KIT (RDK)		53945050
ASSEMBLED WEIGHT		452 LBS

#### J-1) ELASTOMER TRIM OPTIONS

**NOTE4:** For temperature range, refer to Elastomer Trim Temperature Guide.

##### J-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 53945H-120
8	3	350 O-RING	90 DURO HSN	90350H

REDRESS KIT (RDK)		53945050H
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##### J-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 53945V-120
8	3	350 O-RING	90 DURO VITON	90350V

REDRESS KIT (RDK)		53945050V
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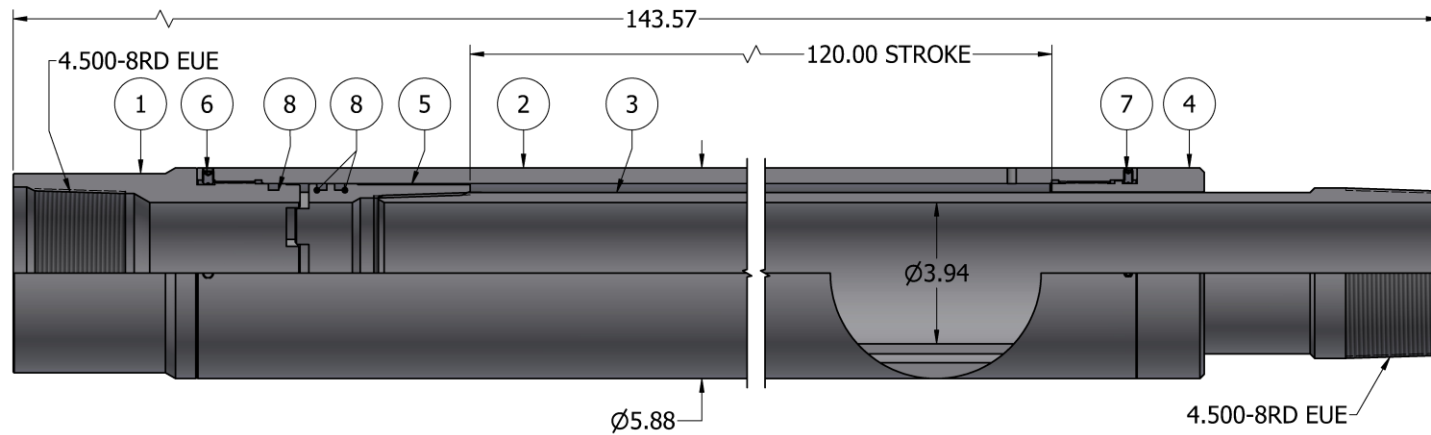
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### K) TECHNICAL ILLUSTRATION



### L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
12/11/2023	A	Created new manual	-	-