



# DLH ANTI-ROTATION PACKER

## 7" X 2-7/8"

Manual No:  
**DL-935-7000-612**

Revision: **C**

Revision Date:  
**12/21/2020**

Authored by: *J.Anderson*

Approved by: *B.Oligschlaeger*

### A) DESCRIPTION

The DLH Packer is a hydraulic set single-string retrievable packer and may be used in virtually any production application. Tubing pump pressure is used to set the packer and the setting force is locked into the packer by a body lock ring. A large internal by-pass reduces swabbing when running and retrieving. The by-pass closes when the packer is set, and opens during the releasing process to allow pressure equalization. Shear screws are used to control the packer release. The standard DLH Packer is designed for differential pressures up to 7,500 PSI.

### B) RELATED TOOLS (sold separately)

B-1) 2-7/8" Pump-Out Plug (P/N varies) — refer to technical manual *DL-597-0000-431*.

### C) 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)		
7	17.0 – 26.0	6.276 - 6.538	6.000	2.50	2-7/8 EUE	93572AR 93572ARH <sup>1</sup> 93572ARV <sup>2</sup>

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

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	TORQUE THRU TOOL (MAX)
7,500 PSI	105,600 LBS	12,000 FT-LBS

### D) 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.

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

**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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### D) PRE-INSTALLATION INSPECTION PROCEDURES (cont'd)

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.

### E) 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.

#### E-1) RUNNING SEQUENCE

Running speed is critical, especially in heavy or viscous fluid where excess speed can result in swabbing off the packing element or in creating pressure waves which could lead to creating a preset condition. As a guide it is recommended that running speed should not be more than 30 seconds per joint (range II or 30 feet). **Do not exceed this speed**, particularly when running the packer in the heaviest weight casing for the range for which the packer is dressed.

A run in the well with a junk basket and suitable sized gauge ring or a bit and scraper is strongly recommended prior to running. The location of any tight spots should be noted and the running speed for the packer through these spots should be reduced.

Being a hydraulically set packer, it can be subject to preset conditions by pressure waves through the fluid. A slow steady running speed should be used and sudden stops and starts, such as when setting or pulling slips, should be avoided. Make up the packer to the tubing string in the desired position and to the required torque-transmission of make-up torque through the packer should be avoided.

Run the packer to the desired setting depth at the recommended speed and taking precautions listed above. While running in the hole, the packer body is rigidly connected to the packer mandrel and external forces caused by debris or tight spots are transmitted directly to the tubing. These forces load the mandrel through the chamber and body locks. Unless the string sequence is initiated by tubing pressure, the packer will not set.

Typically the tubing will be landed prior to setting. Establish a plug in the tubing below the packer using a drop ball, wireline plug, or other device. Apply pressure to the tubing to the recommended pressure for the given size of packer and hold for 5 minutes. If the well completion allows, apply annulus pressure to test the packer.

**CAUTION<sub>3</sub>:** If the packer is used in a multi-zone completion above a permanent packer and locator type seal, care should be taken to ensure that no set down weight can be exerted on the locator as this will act on the shear system and try to unset the packer.



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### E-2) SETTING SEQUENCE

Internal tubing pressure enters the setting chamber through the setting port and acts upward on the setting sleeve and downwards on the setting chamber/lower cone. When the applied load acting on these pistons exceeds the value of the setting initiation shear screws, they will shear and allow the setting process to proceed.

The setting sleeve pushes up through the setting shear screws between the rubber mandrel and setting sleeve closing the valve and setting the upper slips. The setting chamber/lower cone pushes down setting the lower slips.

Further pressuring shears the setting shear screws and packs off the packer elements. All this setting force is mechanically locked in place by the packer lock ring as it slides over the threads on the setting sleeve.

**NOTE<sub>1</sub>:** No mandrel movement occurs during the setting sequence. However, some residual tension will remain in the tubing due to the tubing elongation caused by piston effects. This should be taken into consideration when deciding on field shear-out adjustments.

### F) RELEASING PROCEDURES

The packer is released by tension on the work string which triggers the following sequence of events:

- The upper and lower shear screws shear as the tension exceeds the shear value. The mandrel begins to move up relative to the packer body. The by-pass valve opens and movement upward raises the upper slip support thereby releasing the upper slips. Continued upward movement lifts the packer body, relaxing the packer elements and pulling the bottom cone upwards releasing the lower slips.
- The final stage of un-setting occurs when the lower section (lower slip body and lower slips) reach the bottom sub. They are then latched down by a split ring snapping into a groove in the inner mandrel, thus allowing the tool to move freely up or down.
- After unsetting, wait 10 minutes to allow the rubber to relax and then pull out of the hole. The valve will be open allowing fluid to by-pass the rubber through the passage under the rubber mandrel.
- The shear release value is adjustable by adding or removing shear screws from the shear housing, or by using steel screws. The upper brass shear screws (P/N 32045910) are rated to 5,000 lbs/screw, the lower brass shear screws (P/N DL60442) are rated to 6,000 lbs/screw.

**NOTE<sub>2</sub>:** An alternate lower shear screw made of steel is available and is rated at 10,000 lbs/screw.

- Two (2) upper shear screws should always be used in the upper slip support.
- The recommended shear screw arrangement:
  - o Total shear value = 46,000 lbs
    - Upper shear screws = Two (2ea) for 10,000 lbs shear
    - Lower shear screws = Six (6ea) for 36,000 lbs shear

### G) SETTING AREA GUIDE

VALVE ID (INCHES)	BALANCE AREA UNPLUGGED		SHEAR VALUE (PSI/SCREW)	SETTING AREA (SQ INCHES)	SETTING INITIATION (PSI)	RECOMMENDED SETTING (PSI)
	ABOVE (SQ INCHES)	BELOW (SQ INCHES)				
3.630	3.015	7.466	248	9.584	1,000	2,500



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### H) ELASTOMER TRIM TEMPERATURE

NITRILE (STD)			
TEMPERATURE RANGE (F°)	DUROMETER		
	END	MIDDLE	END
40° - 125°	80	70	80
125° - 250°	90	70	90
150° - 250°	90	80	90
250° +	Contact D&L Sales		

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

### I) 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.

### J) 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

### K) DISASSEMBLY

K-1) Clamp top sub (1) in vise.

K-1.1) Unscrew and remove bottom sub (28) from inner mandrel (2).

**NOTE:** Back-up on inner mandrel (2) with wrench while wrenching on bottom sub (28).

K-1.2) Unscrew and remove shear screws (34) from lower slip body (18).

K-1.3) Wedge lower slips (17) outward. Remove lower slip body assembly and disassemble:

K-1.3.1) Remove wedges. Remove lower slips (17) and lower slip springs (25) from lower slip body (18).

K-1.3.2) Remove internal rings (31, 37) from lower slip body (18).

K-1.4) Remove keys (23) from inner mandrel (2).

K-1.5) Unscrew setting chamber (30) from lower cone (16). Move setting chamber (30) assembly up and out of way temporarily.

K-1.6) Unscrew and remove shear screws (19) from setting sleeve (21).



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### K) DISASSEMBLY (cont'd)

- K-1.7) Remove lower cone (16) from inner mandrel (2).
  - K-1.7.1) Remove o-rings (42, 44) from lower cone (16).
- K-1.8) Remove snap ring (27) from inner mandrel (2).
- K-1.9) Unscrew setting chamber cap (22) from setting chamber (30).
- K-1.10) Unscrew and remove shear screw (47) from setting chamber (30).
- K-1.11) Unscrew and remove setting chamber (30) from lock ring (3).
- K-1.12) Unscrew and remove shear screws (19) from upper end of setting sleeve (21).
- K-1.13) Unscrew and remove setting sleeve (21) from rubber retainer (15).
- K-1.14) Remove setting sleeve assembly and disassemble.
  - K-1.14.1) Remove setting chamber cap (22) from setting sleeve (21).
  - K-1.14.2) Unscrew and/or slide lock ring (3) from setting sleeve (21) (**NOTE4:** Left-hand threads).
    - NOTES:** Using snap ring spreader pliers, the lock ring (3) may be spread slightly to be removed from setting sleeve (21).
  - K-1.14.3) Remove o-rings (44, 46) from setting sleeve (21).
- K-1.15) Unscrew rubber mandrel (11) from center coupling (10).
- K-1.16) Remove rubber mandrel assembly and disassemble:
  - K-1.16.1) Remove elements (13, 14), rubber spacers (12), and rubber retainer (15) from rubber mandrel (11).
- K-1.17) Unscrew and remove gage ring (29) from center coupling (10).
- K-1.18) Unscrew and remove center coupling (10) from by-pass housing (20).
  - K-1.18.1) Remove o-rings (40, 41) from center coupling (10).
- K-1.19) Unscrew and remove by-pass housing (20) from upper cone (9).
  - K-1.19.1) Remove bonded seal (24) and o-ring (45) from by-pass housing (20).
    - K-1.19.1.1) Remove o-ring (38) from bonded seal (24).
- K-1.20) Unscrew and remove set screws (35) from valve piston (5).
- K-1.21) Unscrew and remove valve piston (5) from inner mandrel (2).
  - K-1.21.1) Remove o-ring (46) from valve piston (5).
- K-2) Remove top sub (1) from vise and clamp inner mandrel (2) in vise.
  - NOTE6:** Do **NOT** wrench or clamp on seal surface.
  - K-2.1) Unscrew and remove shear screws (32) from upper slip support (33).
  - K-2.2) Unscrew and remove set screws (36) from top sub (1). Move upper slip body assembly as necessary to access set screws (36).
  - K-2.3) Unscrew and remove top sub (1) from inner mandrel (2).
    - K-2.3.1) Remove o-ring (39) from top sub (1).
  - K-2.4) Unscrew upper slip body (6) from upper slip support (33).
  - K-2.5) Remove keys (23) from upper slip support (33).
  - K-2.6) Remove upper slip support (33) from inner mandrel (2).
  - K-2.7) Wedge releasing slip (7) and upper slips (8) outward (if needed). Remove upper slip body assembly and disassemble:
    - K-2.7.1) Remove wedges (if needed). Remove releasing slip (7), upper slips (8), and upper slip springs (26) from upper slip body (6).
  - K-2.8) Remove upper cone (9) from inner mandrel (2).



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### K) DISASSEMBLY (cont'd)

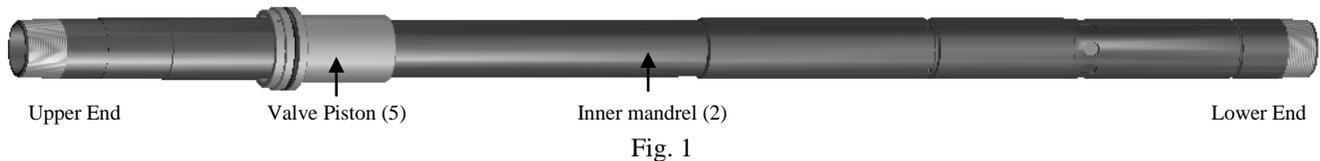
K-2.9) Remove balance piston (4) from inner mandrel (2).

K-2.9.1) Remove o-rings (43, 46) from balance piston (4).

K-3) Unclamp inner mandrel (2) and remove from vise.

### L) ASSEMBLY

**NOTE7:** Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order and orientation.



L-1) Install o-ring (46) in groove in valve piston (5).

L-2) From lower end of inner mandrel (2), install valve piston (5) onto inner mandrel (2). Screw valve piston (5) onto inner mandrel (2) (Fig. 1).

L-3) Screw set screws (35) into valve piston (5).

L-4) Clamp lower end of inner mandrel (2) in vise.

**NOTE6:** Do NOT wrench or clamp on seal surface.

L-4.1) Install o-rings (43, 46) into grooves in balance piston (4) (Fig. 1).

L-4.2) From upper end of inner mandrel (2), slide balance piston (4) onto inner mandrel (2) until it contacts/stops at the first shoulder.

**NOTE8:** Stand inner mandrel (2) on end if needed.

L-4.3) Install upper cone (9) onto inner mandrel (2). Use upper cone (9) to tap balance piston (4) down into position against valve piston (5) (Fig. 2).

**CAUTION4:** Do not rip or tear o-ring during installation.

L-4.4) Assemble upper slip body assembly and install (Fig. 3):

L-4.4.1) Install upper slip springs (26), releasing slip (7), and upper slips (8) into upper slip body (6). Wedge releasing slip (7) and upper slips (8) outwards (Fig. 3).

**NOTE9:** Install two (2ea) springs per slip.

L-4.4.2) Install upper slip body assembly onto inner mandrel (2). Remove wedges.

L-4.5) Install upper slip body support (33) onto inner mandrel (2). Align slotted holes in upper slip body support (33) with slots in inner mandrel (2).

L-4.6) Install keys (23) into slotted holes in upper slip body support (33).

L-4.7) Screw upper slip body (6) onto upper slip body support (33).

L-4.8) Install o-ring (39) into groove in top sub (1).

L-4.9) Screw top sub (1) onto inner mandrel (2).



Fig. 2



Fig. 3



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### L) ASSEMBLY (cont'd)

L-4.10) Screw set screws (36) into top sub (1). Move upper slip body assembly as necessary to access threaded holes in top sub (1).

L-4.11) Move upper slip body assembly onto top sub (1). Align threaded holes in upper slip body support (33) with groove in top sub (1). Screw shear screws (32) into upper slip body support (33). Tighten until shear screws (36) make contact with top sub (1). Back shear screws (36) out 1/4 turn.

L-5) Unclamp and remove inner mandrel (2) from vise. Clamp top sub (1) in vise.

L-5.1) Assemble by-pass housing assembly and install:

L-5.1.1) Install o-ring (45) in groove in by-pass housing (20).

L-5.1.2) Install o-ring (38) in groove in bonded seal (24).

L-5.1.3) Install bonded seal (24) in by-pass housing (20).

**CAUTION4:** Do not rip or tear o-ring during installation.

L-5.1.4) Install o-rings (40, 41) in grooves in center coupling (10).

L-5.1.5) Screw center coupling (10) into by-pass housing (20) (Fig. 4).

**CAUTION4:** Do not rip or tear o-ring during installation.

L-5.1.6) Screw gage ring (29) onto center coupling (10).

L-5.1.7) Screw by-pass housing (20) of by-pass housing assembly onto upper cone (9).



Fig. 4

L-5.2) Assemble rubber mandrel assembly and install:

L-5.2.1) Stand rubber mandrel (11) on end with threads facing upwards. Install rubber retainer (15), elements (13, 14) and rubber spacers (12) onto rubber mandrel (11) (Fig. 5).

**NOTE10:** Do not damage threads - use plastic or rubber hammer as needed.

L-5.2.2) Screw rubber mandrel (11) of rubber mandrel assembly into center coupling (10) (of by-pass housing assembly) (Fig. 5).

**CAUTION4:** Do not rip or tear o-ring during installation.

L-5.2.3) Tighten rubber mandrel (11) (of rubber mandrel assembly) by wrenching on rubber mandrel (11) to tighten connections in sub-assembly.

L-5.3) Assemble setting chamber assembly:

L-5.3.1) Install o-rings (44, 46) in grooves in setting sleeve (21).

L-5.3.2) Stand setting sleeve (21) on end with upper end facing upwards.

L-5.3.3) Install setting chamber (30) over setting sleeve (21).

L-5.3.4) Install lock ring (3) onto setting sleeve (21) until outer threads contact threads in setting chamber (30). Rotate setting chamber (30) to thread lock ring (3) into setting chamber (30) leaving enough room for setting chamber cap (22) to be installed. Align gap in lock ring (3) with threaded hole in setting chamber (30).

**NOTE11:** ID threads MUST NOT engage with threads on setting sleeve (21).

**NOTE12:** Threads on lock ring (3) are directional - it MUST be installed in correct direction for tool to work properly.

L-5.3.5) Screw shear screw (47) into setting chamber (30). Tighten until screw (47) contacts setting sleeve (21). Back off 1/4 turn.

L-5.3.6) Screw setting chamber cap (22) into setting chamber (30).



Fig. 5



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### L) ASSEMBLY (cont'd)

L-5.4) Assemble setting chamber assembly onto rubber mandrel assembly:

L-5.4.1) During the sub-assembly process, the rubber retainer (15) and elements (13, 14) get in a slight bind. Using a plastic or rubber hammer, tap upwards on rubber retainer (15) to unbind them enough to thread onto setting chamber assembly.

**NOTE<sub>10</sub>**: Do not damage threads - use plastic or rubber hammer as needed.

Fig. 6



L-5.4.2) Install setting chamber assembly onto rubber mandrel (11). Screw rubber retainer (15) onto setting sleeve (21) (Fig. 6).

**NOTE<sub>13</sub>**: DO NOT grip on the setting chamber assembly as this may cause the lock ring to prematurely lock in place.

L-5.4.3) Tap setting chamber assembly upwards to rubber retainer (15).

**NOTE<sub>10</sub>**: Do not damage threads - use plastic or rubber hammer as needed.

L-5.5) Install snap ring (27) in groove in inner mandrel (2).

L-5.6) Install o-rings (42, 44) in grooves in lower cone (16).

Fig. 7



L-5.7) Install lower cone (16) onto inner mandrel (2). Tap lower cone (16) into place. Align threaded holes in lower cone (16) with holes in setting sleeve (21) (Fig. 7).

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

L-5.8) Screw shear screws (19) into lower end of setting sleeve (21). Ensure shear screws (19) are flush with OD of setting sleeve (21) (Fig. 7).

L-5.9) Slide setting chamber assembly down. Tap setting chamber assembly downwards onto lower cone (16) over o-rings (42, 46). Screw setting chamber (30) onto lower cone (16) (Fig. 8).

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



Fig. 8

L-5.10) Wrench on setting chamber (30) to tighten. Downward pressure may be required to get threads started. Back up on lower cone (16) with wrench as needed.

L-5.11) Align threaded holes in setting sleeve (21) with holes in rubber mandrel (11). May have to tap setting chamber assembly downwards using hammer and brass block to align holes.

**NOTE<sub>15</sub>**: Align large holes in setting sleeve (21) with large holes in rubber mandrel (11).

L-5.12) Screw shear screws (19) into upper end of setting sleeve (21). Tighten until shear screws (19) contact rubber mandrel (11). Back shear screws (19) out 1/4 turn (Fig. 8).

**NOTE<sub>16</sub>**: Shear screws (19) MUST be below the OD surface of the setting sleeve (21). Adjust shear screws (19) as required.

L-5.13) Install keys (23) into upper end of slots in inner mandrel (2).



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### L) ASSEMBLY (cont'd)

Fig. 9



L-5.14) Assemble lower slip body assembly and install (Fig. 9):

L-5.14.1) Install lower slip springs (25) and lower slips (17) into lower slip body (18).

**NOTE<sub>17</sub>**: Uses two (2ea) springs per slip.

L-5.14.2) Wedge lower slips (17) outward. Install lower slip body assembly onto inner mandrel (2). Remove wedges. Ensure slots in lower slip body (18) are aligned with slots in inner mandrel (2) and keys (23).

L-5.14.3) Align threaded holes in lower slip body (18) with recessed holes in inner mandrel (2). Screw shear screws (34) into lower slip body (18). Tighten until shear screws (34) contact inner mandrel (2). Back shear screws (34) out 1/4 turn.

L-5.14.4) Install internal rings (31, 37) into grooves in lower slip body (18).

L-5.15) Screw bottom sub (28) onto inner mandrel (2) (Fig. 9).

L-6) Unclamp top sub (1) from vise and remove assembled tool.

**NOTE<sub>20</sub>**: If pressure testing of the packer is desired, refer to technical manual *DL-937-7000-1178*. Pressure testing of the packer is not mandatory.

### M) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 93572AR
1	1	TOP SUB	DLMS80	93573611-WBAC
2	1	INNER MANDREL	DLMS110	93570210AR
3	1	LOCK RING	DLMS80	93573011
4	1	BALANCE PISTON	DLMS80	93573918
5	1	VALVE PISTON	DLMS110	93573960
6	1	UPPER SLIP BODY	DLMS80	93572320AR
7	1	RELEASING SLIP	DLMS110	60073125
8	2	UPPER SLIP	DLMS110	60073115CAR
9	1	UPPER CONE	DLMS80	93573410
10	1	CENTER COUPLING	DLMS80	93573230
11	1	RUBBER MANDREL	DLMS80	93573220
12	2	RUBBER SPACER	DLMS35	60274840
13	1	ELEMENT	70 DURO NITRILE	60274511
14	2	ELEMENT	90 DURO NITRILE	60274513
15	1	RUBBER RETAINER	DLMS60	93574850
16	1	LOWER CONE	DLMS80	93573420



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### M) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 93572AR
17	4	LOWER SLIP	DLMS110	60073135CAR
18	1	LOWER SLIP BODY	DLMS110	93572325AR
19	12	SHEAR SCREW (248 PSI)	DLM360BRS	60100990
20	1	BY-PASS HOUSING	DLMS110	93573311
21	1	SETTING SLEEVE	DLMS80	93573751
22	1	SETTING CHAMBER CAP	DLMS60	93573315
23	4	KEY 1/2 X 1/2 X 1-1/2	DLMSKS	KS050X050X147
24	1	BONDED SEAL	90 DURO NITRILE	93573520
25	8	LOWER SLIP SPRINGS	-	7170901
26	6	UPPER SLIP SPRINGS	-	7170902
27	1	SNAP RING	DLMS110	93573980
28	1	BOTTOM SUB	DLMS80	93570630
29	1	GAGE RING	DLMS60	60274830
30	1	SETTING CHAMBER	DLMS110	93573314
31	1	SMALLEY MEDIUM HEAVY DUTY INTERNAL RING	DLMSC	WHT-412
32	2	SHEAR SCREW (5000#) .625-18 UNF X .45	DLM360BRS	32045910
33	1	UPPER SLIP SUPPORT	DLMS110	93573810AR
34	6	SHEAR SCREW (6000#)	DLM360BRS	DL60442
35	2	SET SCREW 1/4-20 UNC X 3/8	STEEL	SSS025C037
36	4	SET SCREW 3/8-16 UNC X 1/2	STEEL	SSS037C050
37	1	SMALLEY MEDIUM HEAVY DUTY INTERNAL RING	DLMSC	WHT-475
38	1	156 O-RING	90 DURO NITRILE	90156
39	1	237 O-RING	90 DURO NITRILE	90237
40	1	245 O-RING	90 DURO NITRILE	90245
41	1	248 O-RING	90 DURO NITRILE	90248
42	1	249 O-RING	90 DURO NITRILE	90249
43	1	342 O-RING	90 DURO NITRILE	90342
44	2	344 O-RING	90 DURO NITRILE	90344
45	1	346 O-RING	90 DURO NITRILE	90346
46	3	351 O-RING	90 DURO NITRILE	90351
47	1	SLOTTED SHEAR SCREW (1200#)1/4-20 UNC X 1/4	DLM360BRS	BSSSLT025C025

REDRESS KIT (RDK)	93572050
ASSEMBLED WEIGHT	318 LBS



# DLH ANTI-ROTATION PACKER

## 7" X 2-7/8"

Manual No:  
**DL-935-7000-612**

Revision: **C**

Revision Date:  
**12/21/2020**

Authored by: *J.Anderson*

Approved by: *B.Oligschlaeger*

### M) PARTS LIST (cont'd)

#### M-1) ELASTOMER TRIM OPTIONS

**NOTE<sub>19</sub>**: For temperature range, refer to Elastomer Trim Temperature Guide.

##### M-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 93572ARH
13	1	ELEMENT	70 DURO HSN	60274511H
14	2	ELEMENT	90 DURO HSN	60274513H
24	1	BONDED SEAL	90 DURO HSN	93573520H
38	1	156 O-RING	90 DURO HSN	90156H
39	1	237 O-RING	90 DURO HSN	90237H
40	1	245 O-RING	90 DURO HSN	90245H
41	1	248 O-RING	90 DURO HSN	90248H
42	1	249 O-RING	90 DURO HSN	90249H
43	1	342 O-RING	90 DURO HSN	90342H
44	2	344 O-RING	90 DURO HSN	90344H
45	1	346 O-RING	90 DURO HSN	90346H
46	3	351 O-RING	90 DURO HSN	90351H

REDRESS KIT (RDK)	93572050H
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##### M-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 93572ARV
13	1	ELEMENT	70 DURO VITON	60274511V
14	2	ELEMENT	90 DURO VITON	60274513V
24	1	BONDED SEAL	90 DURO VITON	93573520V
38	1	156 O-RING	90 DURO VITON	90156V
39	1	237 O-RING	90 DURO VITON	90237V
40	1	245 O-RING	90 DURO VITON	90245V
41	1	248 O-RING	90 DURO VITON	90248V
42	1	249 O-RING	90 DURO VITON	90249V
43	1	342 O-RING	90 DURO VITON	90342V
44	2	344 O-RING	90 DURO VITON	90344V
45	1	346 O-RING	90 DURO VITON	90346V
46	3	351 O-RING	90 DURO VITON	90351V

REDRESS KIT (RDK)	93572050V
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# DLH ANTI-ROTATION PACKER

7" X 2-7/8"

Manual No:  
DL-935-7000-612

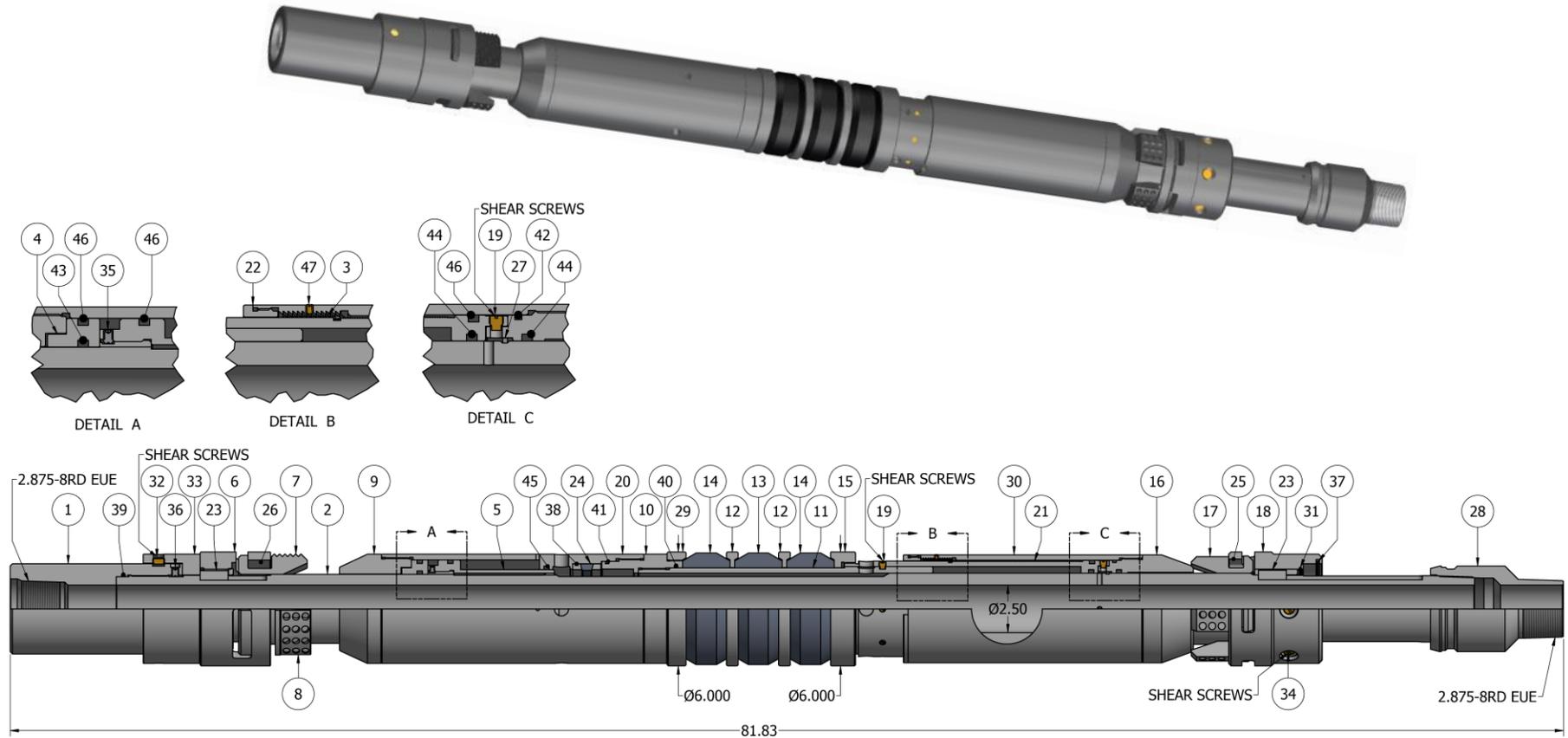
Revision: C

Revision Date:  
12/21/2020

Authored by: J.Anderson

Approved by: B.Oligschlaeger

## N) TECHNICAL ILLUSTRATION



	<b>DLH ANTI-ROTATION PACKER</b> 7" X 2-7/8"	Manual No: <b>DL-935-7000-612</b>
		Revision: <b>C</b>
		Revision Date: <b>12/21/2020</b>
<i>Authored by: J.Anderson</i>		<i>Approved by: B.Oligschlaeger</i>

## O) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
12/21/2020	C	Added General Screw Torque Recommendations, P/N BSSSLT025C025, note19; Revised 7170901 qty was 8; nitrile temp. rating	J.Anderson	E.Visaez
01/11/2016	B	Added Related Tools, Pre-Installation Inspection Procedures, Storage Recommendations, max. test pressure; Revised casing weight range 17.0-26.0# was 17.0-29.0#, Elastomer Durometer Temperatures – Nitrile (90/80/90 Duro) was 250° - 300°F, Nitrile (Contact D&L Sales) was 300°F +, Rubber Type Temperature Ranges – Nitrile was 70° - 300°F, HSN was 70° - 325°F, P/N 7170901 qty 8 was 4	J.Anderson	C.Colvin
10/08/13	A	Created new manual	-	-