



DUAL BORE RETRIEVABLE SEAL BORE PACKER 5" X 3.000" X 2.688"

Manual No:
DL-268-5000-497

Revision: **C**

Revision Date:
11/15/2019

Authored by: *B.Mathis*

Approved by: *D.Hushbeck*

A) DESCRIPTION

The Retrievable Seal Bore (RSB) Dual Bore Packer delivers high performance with simplicity of design and desirable economics. This packer allows for a larger ID through the packer by sealing in an upper sealbore. This packer is rated for 7,000 psi and can be equipped to withstand severe corrosion and high temperatures.

NOTE1: Setting and retrieving tools sold separately.

NOTE2: This packer requires at least a 30 second burn on the wireline setting tool to ensure a proper set. A burn time less than 30 seconds may shear the setting tool from the packer before fully setting the packer.

B) RELATED TOOLS (sold separately)

B-1) WLAK for 5" X 3.000" X 2.688" (P/N 26950)—refer to technical manual *DL-269-5000-1294*.

B-2) Retrieving Tool for 5" X 3.000" X 2.688" (P/N 26950RT)—refer to technical manual *DL-269-5000-1271*.

B-3) 3.000" Seal bore accessories—refer to technical manual *DL-581-2688-780*.

B-4) 2.688" Seal bore accessories—refer to technical manual *DL-581-3000-661*.

C) SPECIFICATION GUIDE

CASING			TOOL OD (INCHES)	SEAL BORE (INCHES)	MIN ID THRU SEALS (INCHES)	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)				
5	15.0 – 18.0	4.276 – 4.408	4.000	3.000 / 2.688	2.38 / 1.94	26850 26850H ¹ 26850V ²

Elastomer Trim Options: ¹HSN, ²Viton

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
7,000 PSI	55,000 LBS

D) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION1: 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



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D) 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.

E) SETTING PROCEDURES

CAUTION2: Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

Run the RSB Packer in on a hydraulic pressure setting assembly with the RSB Setting Adapter Kit. To set the packer, follow the setting procedures provided in the technical manual for the hydraulic pressure setting assembly.

F) RELEASING PROCEDURES

Run the RSB Retrieving Tool into the well until the tool is sitting on the packer. Set down weight to shear the screws retaining the latch mandrel of the retrieving tool and to engage the threaded latch of the retrieving tool with the top sub of the packer (Refer to the retrieving tool technical manual for retrieving tool operating procedures). Continue setting down to engage releasing collet of the retrieving tool with the support ring of the packer. Once the retrieving tool is fully engaged with the packer, straight pick up a minimum of 9,600 lbs to shear the screws retaining the packer support ring. Continue picking up to release the slips and relax the packing element. The packer may now be removed from the well.

F-1) EMERGENCY RELEASE

If the packer fails to release, the retrieving tool can be released with straight pick up to shear the retrieving tool shear ring. Apply right-hand rotation to disconnect the retrieving tool from the packer (refer to the retrieving tool technical manual for retrieving tool operating procedures).

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.



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H) ELASTOMER TRIM TEMPERATURE GUIDE

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

I) 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

J) DISASSEMBLY

J-1) Clamp lock ring housing (3) in vise.

J-1.1) Unscrew and remove set screws (24) from lower end of connector sleeve (14).

J-1.2) Unscrew and remove bottom sub (17) from connector sleeve (14).

J-1.2.1) Remove o-ring (30) from bottom sub (17).

J-1.3) Unscrew and remove set screws (19) from upper end of connector sleeve (14).

J-1.4) Unscrew and remove socket cap screws (23 – also referred to as torque screws) from collet (15).

J-1.5) Unscrew and remove connector sleeve (14) from collet (15) and lower cone (13).

J-1.6) Unscrew and remove collet (15) from inner mandrel (9).

J-1.6.1) Unscrew and remove shear screws (22) from collet (15).

J-1.6.2) Separate collet (15) from support ring (16)

J-1.6.3) Remove o-rings (27, 29) from collet (15).

J-1.7) Unscrew upper cone from rubber retainer (8). Remove slip body assembly and disassemble:

J-1.7.1) Unscrew and remove shear screws (22) from slip body (11).

J-1.7.2) Unscrew and remove low head socket cap screws (21) from lower cone (13).

J-1.7.3) Remove lower cone (13) from slip body (11).

J-1.7.4) Remove slips (12) and slip springs (27) from slip body (11).

J-1.7.5) Unscrew and remove low head socket cap screws (21) from upper cone (10).

J-1.7.6) Remove upper cone (10) from slip body (11).

J-1.8) Moving to upper end of tool, unscrew and remove setting sleeve (1) from lock ring housing (3).

J-1.9) Unscrew and remove shear screws (18) from lock ring housing (3).

J-2) Unclamp lock ring housing (3) from vise. Clamp lower end of inner mandrel (9) in vise.

J-2.1) Align holes in lock ring housing (3) as needed to unscrew and remove set screws (19) from adapter sub (4).



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J) DISASSEMBLY (cont'd)

J-2.2) Unscrew and remove upper seal bore (2):

J-2.2.1) If upper seal bore (2) unscrews with adapter sub (4) attached:

J-2.2.1.1) Unscrew and remove upper seal bore (2) from adapter sub (4).

J-2.2.1.1.1) Remove o-rings (28) from upper seal bore (2).

J-2.2.1.1.2) Remove o-ring (26) from adapter sub (4).

J-2.2.2) If upper seal bore (2) DOES NOT unscrew with adapter sub (4) attached:

J-2.2.2.1) Remove o-rings (28) from upper seal bore (2).

J-2.2.2.2) Thread lock ring housing (3) downwards on inner mandrel (9) to move outer components downwards (**NOTE₃**: Left-hand threads).

J-2.2.2.3) Using a strap wrench (or other wrench with soft jaws), carefully unscrew and remove adapter sub (4) from inner mandrel (9).

NOTE₄: Do NOT mar or damage seal surface or threads.

J-2.2.2.4) Remove o-ring (26) from adapter sub (4).

J-2.3) Unscrew and remove shear screw (20) from lock ring housing (3).

J-2.4) Thread lock ring housing (3) upwards on inner mandrel (9) about 1-1/2" to move outer components upwards (**NOTE₃**: Left-hand threads).

J-2.5) Unscrew upper rubber retainer (6) from lock ring housing (3).

J-2.6) Unscrew and remove lock ring housing (3) from lock ring (5).

J-2.7) Unscrew and remove lock ring (5) from inner mandrel (9) (**NOTE₃**: Left-hand threads).

J-2.8) Remove upper rubber retainer (6), element (7), and rubber retainer (8) from inner mandrel (9).

J-3) Unclamp and remove inner mandrel (9) from vise.

K) ASSEMBLY

NOTE₅: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order & orientation.

K-1) Clamp lower end of inner mandrel (9) in vise.

K-1.1) Install rubber retainer (8), element (7), and upper rubber retainer (6) onto inner mandrel (9).

K-1.2) Install lock ring (5) onto inner mandrel (9) (**NOTE₆**: Inner threads on lock ring MUST NOT ENGAGE with threads on inner mandrel).

K-1.3) Screw lock ring housing (3) onto lock ring (5).

K-1.4) Screw upper rubber retainer (6) onto lock ring housing (3).

K-1.5) Align threaded hole in upper rubber retainer (6) with gap in lock ring (5). Screw shear screw (20) into lock ring housing (3). Tighten until shear screw (20) contacts inner mandrel (9). Back shear screw (20) out 1/4 turn.

K-1.6) Make up upper seal bore (2) to adapter sub (4) and install:

K-1.6.1) Install o-ring (26) in o-ring groove in adapter sub (4).

K-1.6.2) Install o-rings (28) in o-ring grooves in upper seal bore (2).

K-1.6.3) Screw upper seal bore (2) onto adapter sub (4).

CAUTION₁: Do not rip or tear o-rings during installation.

K-1.6.4) Install assembly - screw adapter sub (4) onto inner mandrel (9).

NOTE₇: During make up, look thru holes in adapter sub (4) to make sure threaded holes in adapter sub (4) are aligned with groove in inner mandrel (9).

CAUTION₁: Do not rip or tear o-ring during installation.



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K) ASSEMBLY (cont'd)

- K-1.7) Align holes in lock ring housing (3) with threaded holes in adapter sub (4). Screw set screws (19) into adapter sub (4).
- K-1.8) Align threaded holes in lock ring housing (3) with pocket holes in upper seal bore (2). Screw shear screws (18) into lock ring housing (3). Tighten until shear screws (18) contact upper seal bore (2). Back shear screws (18) out 1/4 turn.
- K-1.9) Screw setting sleeve (1) onto lock ring housing (3).
- K-2) Unclamp inner mandrel (9) from vise. Clamp setting sleeve (1) in vise.
 - K-2.1) Make up slip body assembly and install:
 - K-2.1.1) Install upper cone (10) into lower end of slip body (11).
 - K-2.1.2) Align threaded holes in upper cone (10) with slots in slip body (11). Screw low head socket cap screws (21) into upper cone (10).
 - K-2.1.3) Install slip springs (27) and slips (12) into slip body (11). Wedge slips outwards.
 - K-2.1.4) Install lower cone (13) into slip body (11).
 - K-2.1.5) Align threaded holes in lower cone (13) with slots in slip body (11). Screw low head socket cap screws (21) into lower cone (13).
 - K-2.1.6) With threaded holes in slip body (11) aligned with pocket holes in upper cone (10) and lower cone (13). Screw shear screws (22) into slip body (11). Tighten until shear screws (22) contact upper cone (10) and lower cone (13). Back shear screws (22) out 1/4 turn.
 - K-2.1.7) Install slip body assembly onto inner mandrel (9).
 - K-2.1.8) Screw upper cone (10) into rubber retainer (8).
 - K-2.1.9) Remove wedges from slips (12).
 - K-2.2) Make up collet assembly and install:
 - K-2.2.1) Install support ring (16) into collet (15).
 - K-2.2.2) Align threaded holes in collet (15) with pocket holes in support ring (16). Screw shear screws (22) into collet (15). Tighten until shear screws (22) contact support ring (16). Back shear screws (22) out 1/4 turn.
 - K-2.2.3) Install o-rings (27, 29) in o-ring grooves in collet (15).
 - K-2.2.4) Screw collet (15) onto inner mandrel (9).

CAUTION: Do not rip or tear o-ring during installation.
 - K-2.3) Screw connector sleeve (14) onto collet (15).

CAUTION: Do not rip or tear o-ring during installation.
 - K-2.4) Align slot in connector sleeve (14) with threaded holes in collet (15).
 - K-2.5) Screw socket cap screws (23 – also referred to as torque screws) into collet (15).
 - K-2.6) Screw connector sleeve (14) onto lower cone (13).
 - K-2.7) Screw set screws (19) into upper end of connector sleeve (14).
 - K-2.8) Install o-ring (30) in o-ring groove in bottom sub (17).
 - K-2.9) Screw bottom sub (17) into connector sleeve (14).

CAUTION: Do not rip or tear o-rings during installation.
 - K-2.10) Screw set screws (24) into lower end of connector sleeve (14).
- K-3) Unclamp setting sleeve (1) from vise and remove assembled tool.



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L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 26850
1	1	SETTING SLEEVE	DLMS80	26850762
2	1	UPPER SEAL BORE	DLMS110	26850220
3	1	LOCK RING HOUSING	DLMS80	26850850
4	1	ADAPTER SUB	DLMS80	26850372
5	1	LOCK RING	DLMS80	67245011
6	1	UPPER RUBBER RETAINER	DLMS80	26550931
7	1	ELEMENT	80 DURO NITRILE	67250512
8	1	RUBBER RETAINER	DLMS80	26550861
9	1	INNER MANDREL	DLMS110	26550210
10	1	UPPER CONE	DLMS80	26550410
11	1	SLIP BODY	DLMS110	26550320
12	4	SLIP	DLMS60	26550110
13	1	LOWER CONE	DLMS80	26550420
14	1	CONNECTOR SLEEVE	DLMS110	26550611
15	1	COLLET	DLMS110	26550661
16	1	SUPPORT RING	DLMS80	26550530
17	1	BOTTOM SUB	DLMS80	26550621
18	8	SLOTTED SHEAR SCREW (1200#) 1/4-20 UNC X 5/16	DLM360BRS	BSSSLT025C031
19	5	SOCKET SET SCREW 1/4-20 UNC X 1/4	STEEL	SSS025C025
20	1	SLOTTED SHEAR SCREW (750#) #10-32 UNF X 3/8	DLM360BRS	BSSSLT1032F037
21	4	LOW HEAD SOCKET CAP SCREW 5/16-24 UNF X 1/4	STEEL	LHSC031F025
22	12	SLOTTED SHEAR SCREW (1200#) 1/4-20 UNC X 1/4	DLM360BRS	BSSSLT025C025
23	2	SOCKET CAP SCREW 1/4-20 UNC X 1/4	STEEL	SCS025C025
24	2	SOCKET SET SCREW 1/4-20 UNC X 5/16	STEEL	SSS025C031
25	4	TAPERED SLIP SPRING	DLMINC750	DL94829
26	1	150 O-RING	90 DURO NITRILE	90150
27	1	151 O-RING	90 DURO NITRILE	90151
28	2	152 O-RING	90 DURO NITRILE	90152



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L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 26850
29	1	236 O-RING	90 DURO NITRILE	90236
30	1	338 O-RING	90 DURO NITRILE	90338
31	6	DRIV-LOK PIN (4800#) 5/16 X 5/8	4140	DLP031062†

†Refer to Setting Adapter Kit/WLAK technical manual for placement.

REDRESS KIT (RDK)	26850050
ASSEMBLED WEIGHT	79 LBS

L-1) ELASTOMER TRIM OPTIONS

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

L-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 26850H
7	1	ELEMENT	80 DURO HSN	67250512H
26	1	150 O-RING	90 DURO HSN	90150H
27	1	151 O-RING	90 DURO HSN	90151H
28	2	152 O-RING	90 DURO HSN	90152H
29	1	236 O-RING	90 DURO HSN	90236H
30	1	338 O-RING	90 DURO HSN	90338H

REDRESS KIT (RDK)	26850050H
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L-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 26850V
7	1	ELEMENT	80 DURO VITON	67250512V
26	1	150 O-RING	90 DURO VITON	90150V
27	1	151 O-RING	90 DURO VITON	90151V
28	2	152 O-RING	90 DURO VITON	90152V
29	1	236 O-RING	90 DURO VITON	90236V
30	1	338 O-RING	90 DURO VITON	90338V

REDRESS KIT (RDK)	26850050V
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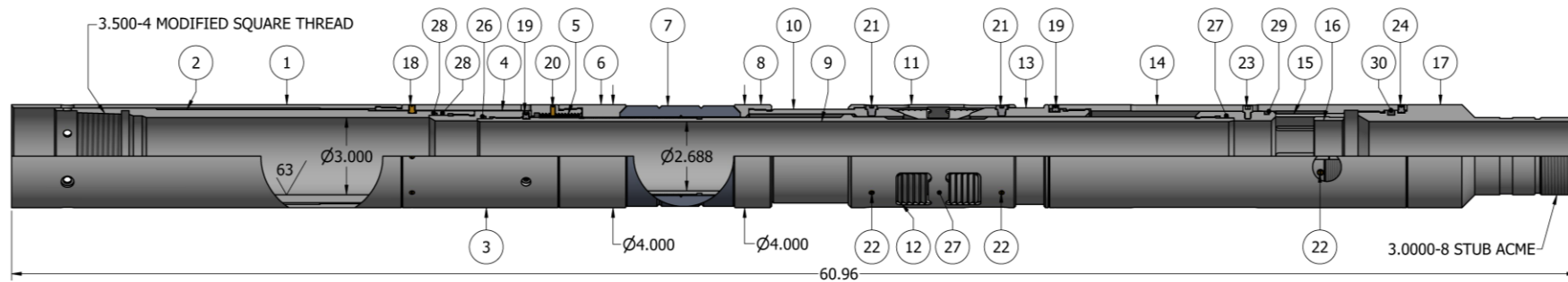
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M) TECHNICAL ILLUSTRATION



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N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
11/15/2019	C	Revised entire manual	J.Anderson	N.Banker
10/24/2012	B	Added NOTE ₂ , SETTING EQUIPMENT section, Revision History;	B.Mathis	F.Johnson