	<div>HD RETRIEVABLE PACKER</div> <div>RIGHT-HAND AUTO</div> <div>4-1/2" X 2-3/8"</div>	Manual No: <b>DL-613-4500-209</b>
		Revision: <b>J</b>
		Revision Date: <b>02/06/2020</b>
Authored by: B.Mathis		Approved by: B.Oligschlaeger

## A) DESCRIPTION

The HD Retrievable Packer is a heavy duty service packer ideally suited for all types of squeeze cementing, formation fracturing, high pressure acidizing, etc. It is a large opening compression set packer with hydraulic button-type hold down. This packer withstands high pressure from above or below and uses a 3-element packing system, J-slot, and a drag block mechanism for easy setting. This packer has a built-in unloader which circulates across the hold down buttons to improve retrievability and run in performance.

## B) SPECIFICATION GUIDE

CASING			TOOL		THREAD CONNECTIONS 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	1.88	2-3/8 EUE	61345RS 61345RSH <sup>1</sup> 61345RSV <sup>2</sup>
	11.6 – 15.1	3.826 – 4.000	3.656	1.75	2-3/8 EUE	61346RS 61346RSH <sup>1</sup> 61346RSV <sup>2</sup>

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

**NOTE<sub>1</sub>:** Tools listed are right-hand set/ straight pick-up release. Additional configurations are available. Contact D&L Sales for more information.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	HANGING WEIGHT (MAX)	TORQUE (MAX)
10,000 PSI	58,000 LBS	58,000 LBS*	2,000 FT-LBS

\*Casing must be cemented for this load rating.

**CAUTION<sub>1</sub>:** Before running the tool, check the pressure affected areas chart, and consider other effects to be certain that the unloader will remain closed during operation.

**CAUTION<sub>2</sub>:** If the HD Packer is run with a retrievable bridge plug, make sure the bridge plug J-slot is compatible with the J-slot on the packer. Whichever direction you set the plug, the packer should set in the opposite direction.

## C) PRE-INSTALLATION INSPECTION PROCEDURES

**CAUTION<sub>3</sub>:** D&L ships tool connections made-up hand-tight—labeled with hand-tight tape on the tool—unless stated otherwise. Properly tighten connections before operating tool (Fig. 1).

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](http://www.dloiltools.com)



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## 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 (Fig. 1).

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

**CAUTION4:** Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

Run to setting depth. The unloader remains open while running in. Pick up the work string and rotate right-hand 1/4 turn at the packer. Slack off weight and set down on the packer to set the slips, close the unloader and compress the packing elements. A minimum weight of 10,000 lbs. at the packer is required to pack off the elements.

**CAUTION5:** Run the tool slowly, as with any hold down type packer, to help prevent dulling of the hydraulic buttons.

## E) RELEASING PROCEDURES

Pick up on the tubing to open the unloader, allowing time for the tubing and casing pressure to equalize. Continued upward movement of the work string unsets the slips, relaxes the packing elements and re-jays the packer. The tool may now be moved and reset, or pulled from the well.

## 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. Elastomers should be in a relaxed state—free from tension, compression or other 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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## G) PRESSURE AFFECTED AREA GUIDE

When set downhole, the packer mandrel is subjected to a force created by differential pressure above or below the packer that acts on the pressure affected area (i.e., the piston effect). Depending on the tubing size and weight and the seal area of the packer the force created by differential pressure acts upwards or downwards on the packer mandrel. An upward force, designated as a negative (-) value, acts to push the packer mandrel up hole and must be accounted for to ensure that the packer remains set. A downward force, designated as a positive value, acts to push the packer mandrel down hole and must be accounted for when releasing the packer. Other factors (e.g., tubing movement due to temperature change) must be considered separately to determine all the forces acting on the packer.

PACKER SIZE (IN)	TUBING TO PACKER			PRESSURE AFFECTED AREA (IN <sup>2</sup> )	
	SIZE (IN)	WEIGHT (LB/FT)	ID (IN)	ABOVE	BELOW
4-1/2"	1.900	2.40	1.650	1.373 (DOWN)	0.286 (DOWN)
		2.90	1.610	1.373 (DOWN)	0.184 (DOWN)
	2.375	4.00	2.041	-0.222 (UP)	1.420 (DOWN)
		4.70	1.995	-0.222 (UP)	1.274 (DOWN)
		5.95	1.867	-0.222 (UP)	0.886 (DOWN)
	2.875	6.50	2.441	-2.284 (UP)	2.828 (DOWN)
		7.90	2.323	-2.284 (UP)	2.386 (DOWN)
		8.70	2.259	-2.284 (UP)	2.156 (DOWN)

**Example:** Consider a 4-1/2" X 2-3/8" HD Packer set on 2.375", 4.70 lbs/ft tubing with a differential pressure of 3,000 PSI in the annulus around the tubing above the packer. What is the force acting on the seal area of the mandrel?

To calculate the force (lbs) acting on the seal area of the mandrel, refer to the Pressure Affected Area Guide for a 4-1/2" X 2-3/8" HD Packer run on 2.375", 4.70 lbs/ft tubing. In this example, the differential pressure from above the packer acts on the seal area of the packer mandrel across a pressure affected area of -0.222 in<sup>2</sup>. Multiplying the differential pressure (3,000 PSI) by the pressure affected area (-0.222 in<sup>2</sup>) results in a force of -666 lbs. The piston effect on the packer mandrel is an upward force of 666 lbs.

## H) ELASTOMER TRIM TEMPERATURE GUIDE

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



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## I) RECOMMENDED TOOLS

### I-1) 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-2) SPECIAL TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAG BLOCK ASSEMBLY TOOL	AT045110
T2	1	BUTTON REMOVAL TOOL	AT-BRT000
T3	1 GAL	KOPR-KOTE® ANTI-SEIZE LUBRICANT	DL-KOPR-KOTE-1G

## J) DISASSEMBLY

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

J-1.1) Compress drag blocks (22) with drag block assembly tool (T1).

J-1.2) Unscrew and remove set screws (26) from J-body (20).

J-1.3) Unscrew drag block body (18) from J-body (20) (**NOTE<sub>2</sub>**: Left-hand threads). Slide drag block body assembly upwards on rubber mandrel (11) temporarily.

**NOTE<sub>3</sub>**: Drag block body assembly must be free to rotate.

J-1.4) Unscrew and remove set screws (27) from bottom sub (28). Move J-body (20) as needed to access set screws (27).

J-1.5) Unscrew and remove J-pin bottom sub (28) from inner mandrel (2).

J-1.5.1) Remove o-ring (34) from J-pin bottom sub (28).

J-1.5.2) Remove J-body (20) from J-pin bottom sub (28).

J-1.6) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

J-1.7) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11).

J-1.8) Wedge slips outwards (if needed). Remove drag block body assembly from rubber mandrel (11) and disassemble:

J-1.8.1) Remove wedges (if needed). Remove lower slips (17) and lower slip springs (25) from drag block body (18).

J-1.9) Unscrew and remove lower cone (16) from rubber retainer (15).

**NOTE<sub>4</sub>**: For added leverage, insert a rod through rubber retainer (15) and rubber mandrel (11) as needed.

J-1.10) Unscrew rubber mandrel (11) from valve body (32).

J-1.11) Remove rubber mandrel assembly from inner mandrel (2) and disassemble:

J-1.11.1) Remove elements (13, 14), rubber spacers (12) and rubber retainer (15) from rubber mandrel (11).

J-1.12) Unscrew and remove valve body (32) from central body (10)

J-1.12.1) Remove o-ring (36) from valve body (32).



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## J) DISASSEMBLY (cont'd)

- J-1.13) Unscrew and remove central body (10) from hold down body (6).
- J-2) Unclamp and remove top sub (1) from vise and clamp inner mandrel (2) in vise.
  - NOTE5:** Do NOT wrench or clamp on seal surface.
  - J-2.1) Unscrew and remove set screws (27) from top sub (1).
  - J-2.2) Unscrew and remove top sub (1) from inner mandrel (2).
    - J-2.2.1) Remove o-ring (35) from top sub (1).
  - J-2.3) Unscrew and remove hold down cap (9) from hold down body (6).
    - J-2.3.1) Remove o-ring (41) from hold down cap (9).
  - J-2.4) Slide strap retainer (23) temporarily down and out-of-the-way on hold down body (6).
  - J-2.5) Unscrew and remove flat head cap screws (29). Remove hold down straps (31) from hold down body (6).
  - J-2.6) Remove hold down button springs (8) from hold down buttons (7).
  - J-2.7) Remove hold down buttons (7) from hold down body (6) with button removal tool (T2).
    - J-2.7.1) Remove o-rings (33) from hold down buttons (7).
  - J-2.8) Remove hold down body (6) from inner mandrel (2).
    - J-2.8.1) Remove o-rings (39, 40) from hold down body (6).
    - J-2.8.2) Remove strap retainer (23) from hold down body (6).
  - J-2.9) Remove compensating piston (5) from compensating mandrel (4).
    - J-2.9.1) Remove o-rings (37, 38) from compensating piston (5).
  - J-2.10) Unscrew and remove compensating mandrel (4) from seal receptacle (30).
- J-3) Unclamp inner mandrel (2) and remove from vise.
  - J-3.1) Remove seal receptacle (30) from inner mandrel (2).
    - J-3.1.1) Remove o-ring (37) from seal receptacle (30).
    - J-3.1.2) Unscrew and remove seal retainer (21) from seal receptacle (30).
      - J-3.1.2.1) Remove o-ring (36) and quad seal (24) from seal retainer (21).

## K) ASSEMBLY

**NOTE6:** Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

**NOTE7:** Apply KOPR-KOTE anti-seize lubricant (T1) on STUB ACME and drill pipe connections when making up connections.

**CAUTION6:** To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs unless stated otherwise (Fig. 2).

K-1) Assemble seal receptacle assembly and install:

- K-1.1) Install o-ring (36) in o-ring groove in seal retainer (21).
- K-1.2) Install quad seal (24) in groove in seal retainer (21).
- K-1.3) Screw seal retainer (21) onto seal receptacle (30).

**CAUTION7:** Do not rip or tear o-ring or seal during installation.

- K-1.4) Install o-ring (37) in o-ring groove in seal receptacle (30).
- K-1.5) Install seal receptacle assembly onto inner mandrel (2).

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

**NOTE8:** Do NOT wrench or clamp on seal surface.

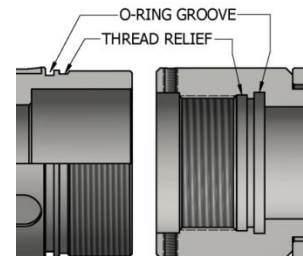


Fig. 2



# HD RETRIEVABLE PACKER RIGHT-HAND AUTO 4-1/2" X 2-3/8"

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## K) ASSEMBLY (cont'd)

K-2.1) Install compensating mandrel (4) onto upper end of inner mandrel (2) and screw into seal receptacle (30).

K-2.2) Install o-rings (37, 38) in o-ring grooves in compensating piston (5).

K-2.3) Install compensating piston (5) onto compensating mandrel (4).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-2.4) Install strap retainer (23) onto inner mandrel (2).

K-2.5) Install o-rings (39, 40) in o-ring grooves in hold down body (6).

K-2.6) Install hold down body (6) onto inner mandrel (2).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-2.7) Install o-rings (33) in o-ring grooves in hold down buttons (7).

K-2.8) Install hold down buttons (7) and hold down button springs (8) into hold down body (6) (Fig. 3 and 4).

**CAUTION7:** Do not rip or tear o-rings during installation.

**NOTE8:** Install two (2ea) springs per hold down button (Fig. 4).

K-2.9) Set hold down straps (31) in slots in hold down buttons (7) and hold down body (6) (Fig. 4).

K-2.10) Screw flat head cap screws (29) into hold down body (6) (Fig. 4).

K-2.11) Install strap retainer (23) onto hold down body (6) to capture ends of hold down straps (31).

K-2.12) Install o-ring (41) in o-ring groove in hold down cap (9).

K-2.13) Screw hold down cap (9) onto hold down body (6) to capture ends of hold down straps (31).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-2.14) Install o-ring (35) in o-ring groove in top sub (1).

K-2.15) Screw top sub (1) onto inner mandrel (2).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-2.16) Screw set screws (27) into top sub (1).

K-3) Unclamp and remove inner mandrel (2) from vise and clamp top sub (1) in vise.

K-3.1) Screw central body (10) onto hold down body (6).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-3.2) Install o-ring (36) in o-ring groove in valve body (32).

K-3.3) Screw valve body (32) into central body (10).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-3.4) Assemble rubber mandrel assembly and install:

K-3.4.1) Install rubber retainer (15), rubber spacers (12), and elements (13, 14), onto rubber mandrel (11).

K-3.4.2) Screw rubber mandrel (11) of rubber mandrel assembly into valve body (32).

**CAUTION7:** Do not rip or tear o-ring during installation.

K-3.5) Screw lower cone (16) into rubber retainer (11).

K-3.6) Assemble drag block body assembly and install:

K-3.6.1) Install lower slips (17) and lower slip springs (25) into drag block body (18). Wedge slips outward.

**NOTE9:** Install one (1ea) spring per slip.

K-3.6.2) Install drag block body assembly onto rubber mandrel (11).



Fig. 3

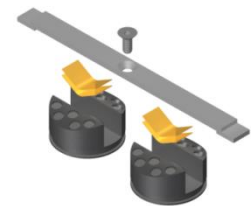


Fig. 4



# HD RETRIEVABLE PACKER RIGHT-HAND AUTO 4-1/2" X 2-3/8"

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## K) ASSEMBLY (cont'd)

K-3.7) Screw rubber mandrel cap (19) onto rubber mandrel (11).

**NOTE<sub>4</sub>:** For added leverage, insert a rod through rubber retainer (15) and rubber mandrel (11) as needed.

K-3.8) Install drag block springs (3) and drag blocks (22) in drag block body (18). (Fig. 5) Compress drag blocks (22) with drag block assembly tool (T1).

**NOTE<sub>10</sub>:** Install four (4ea) springs per drag block (Fig. 5).

K-3.9) Screw J-body (20) onto drag block body (18) capturing ends of drag blocks (22) (**NOTE<sub>2</sub>:** Left-hand threads).

K-3.10) Screw set screws (26) into J-body (20). Remove drag block assembly tool (T1). Remove wedges.

K-3.11) Install o-ring (34) in o-ring groove in J-pin bottom sub (28).

K-3.12) Screw J-pin bottom sub (28) onto inner mandrel (2).

**CAUTION<sub>7</sub>:** Do not rip or tear o-ring during installation.

**NOTE<sub>3</sub>:** Drag block body assembly must be free to rotate.

K-3.13) Screw set screws (27) into bottom sub (28). Move J-body (20) as needed to access threaded holes.

K-4) Remove top sub (1) from vise and remove assembled tool.



Fig. 5

## L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	9.5 – 13.5# P/N 61345RS	11.6 – 15.1# P/N 61346RS
1	1	TOP SUB	DLMS110	61345615	61346615
2	1	INNER MANDREL	DLMS110	61345215	61346215
3	20	DRAG BLOCK SPRING	-	9100900	
4	1	COMPENSATING MANDREL	DLMS110	61345240	61346240
5	1	COMPENSATING PISTON	DLMS110	61345710	61346710
6	1	HOLD DOWN BODY	DLMS110	61345321	61346321
7	8	HOLD DOWN BUTTON	DLMSSP	61345140C	
8	16	HOLD DOWN BUTTON SPRING	-	61345975	
9	1	HOLD DOWN CAP	DLMS110	61345370	61346370
10	1	CENTRAL BODY	DLMS110	61345381	61346381
11	1	RUBBER MANDREL	DLMS110	61345220	61346220
12	2	RUBBER SPACER	DLMS60	60245840	60246840
13	1	ELEMENT	80 DURO NITRILE	60245512	60246512
14	2	ELEMENT	90 DURO NITRILE	60245513	60246513
15	1	RUBBER RETAINER	DLMS60	60245850	60246850
16	1	LOWER CONE	DLMS110	60045420HT	60046420HT





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## L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	9.5 – 13.5# P/N 61345RS	11.6 – 15.1# P/N 61346RS
17	4	LOWER SLIP W/ CARBIDE	DLMS110	60045135C	
18	1	DRAG BLOCK BODY	DLMS110	61345335	61346335
19	1	RUBBER MANDREL CAP	DLMS110	61345230	61346230
20	1	J-BODY	DLMS110	61345340	61346340
21	1	SEAL RETAINER	DLMS110	61345530	61346530
22	5	DRAG BLOCK W/ CARBIDE	DLMSDB4	9045900C	
23	1	STRAP RETAINER	DLMS80	61345650	61346650
24	1	QUAD SEAL	90 DURO NITRILE	61345520	61346520
25	4	LOWER SLIP SPRING	ELGILOY	7145901	
26	4	SET SCREW 1/4-20 UNC X 3/8	STEEL	SSS025C037	
27	7	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037	
28	1	J-PIN BOTTOM SUB	DLMS110	61345635	61346635
29	4	FLAT HEAD CAP SCREW #10-24 UNC X 1/2	STEEL	FHSC1024C050	
30	1	SEAL RECEPTACLE	DLMS110	61345730	61346730
31	4	HOLD DOWN STRAP	DLMS110	61345360	61346360
32	1	VALVE BODY	DLMS110	61345350	61346350
33	8	125 O-RING	90 DURO NITRILE	90125	
34	1	O-RING	90 DURO NITRILE	90228	90227
35	1	O-RING	90 DURO NITRILE	90230	90229
36	2	O-RING	90 DURO NITRILE	90231	90230
37	2	O-RING	90 DURO NITRILE	90232	90231
38	1	O-RING	90 DURO NITRILE	90234	90233
39	1	O-RING	90 DURO NITRILE	90235	90234
40	1	O-RING	90 DURO NITRILE	90236	90235
41	1	O-RING	90 DURO NITRILE	90333	90332

REDRESS KIT (RDK)		61345050	61346050
ASSEMBLED WEIGHT		105 LBS	103 LBS





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## L) PARTS LIST (cont'd)

### L-1) ELASTOMER TRIM OPTIONS

**NOTE11:** For temperature range, refer to Elastomer Trim Temperature Guide.

#### L-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	9.5 – 13.5# P/N 61345RSH	11.6 – 15.1# P/N 61346RSH
13	1	ELEMENT	80 DURO HSN	60245512H	60246512H
14	2	ELEMENT	90 DURO HSN	60245513H	60246513H
24	1	QUAD SEAL	90 DURO HSN	61345520H	61346520H
33	8	125 O-RING	90 DURO HSN	90125H	
34	1	O-RING	90 DURO HSN	90228H	90227H
35	1	O-RING	90 DURO HSN	90230H	90229H
36	2	O-RING	90 DURO HSN	90231H	90230H
37	2	O-RING	90 DURO HSN	90232H	90231H
38	1	O-RING	90 DURO HSN	90234H	90233H
39	1	O-RING	90 DURO HSN	90235H	90234H
40	1	O-RING	90 DURO HSN	90236H	90235H
41	1	O-RING	90 DURO HSN	90333H	90332H

REDRESS KIT (RDK)		61345050H	61346050H
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#### L-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	9.5 – 13.5# P/N 61345RSV	11.6 – 15.1# P/N 61346RSV
13	1	ELEMENT	80 DURO VITON	60245512V	60246512V
14	2	ELEMENT	90 DURO VITON	60245513V	60246513V
24	1	QUAD SEAL	90 DURO VITON	61345520V	61346520V
33	8	125 O-RING	90 DURO VITON	90125V	
34	1	O-RING	90 DURO VITON	90228V	90227V
35	1	O-RING	90 DURO VITON	90230V	90227V
36	2	O-RING	90 DURO VITON	90231V	90230V
37	2	O-RING	90 DURO VITON	90232V	90231V
38	1	O-RING	90 DURO VITON	90234V	90233V
39	1	O-RING	90 DURO VITON	90235V	90234V
40	1	O-RING	90 DURO VITON	90236V	90235V
41	1	O-RING	90 DURO VITON	90333V	90332V

REDRESS KIT (RDK)		61345050V	61346050V
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# HD RETRIEVABLE PACKER RIGHT-HAND AUTO 4-1/2" X 2-3/8"

Manual No:  
**DL-613-4500-209**

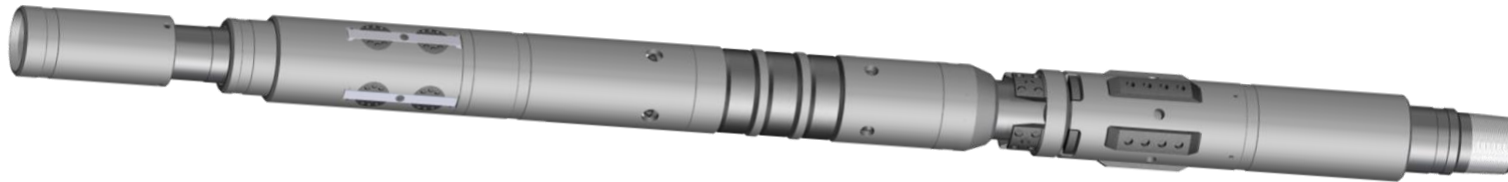
Revision: **J**

Revision Date:  
**02/06/2020**

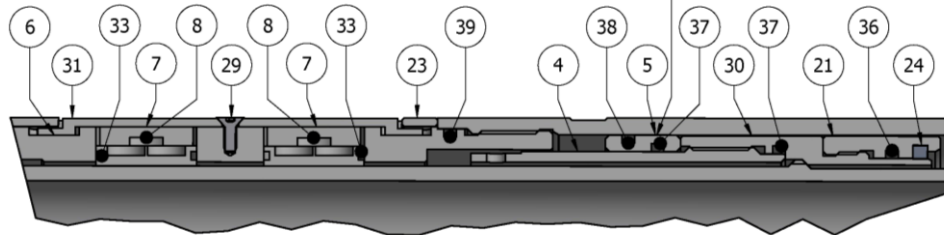
Authored by: B.Mathis

Approved by: B.Oligschlaeger

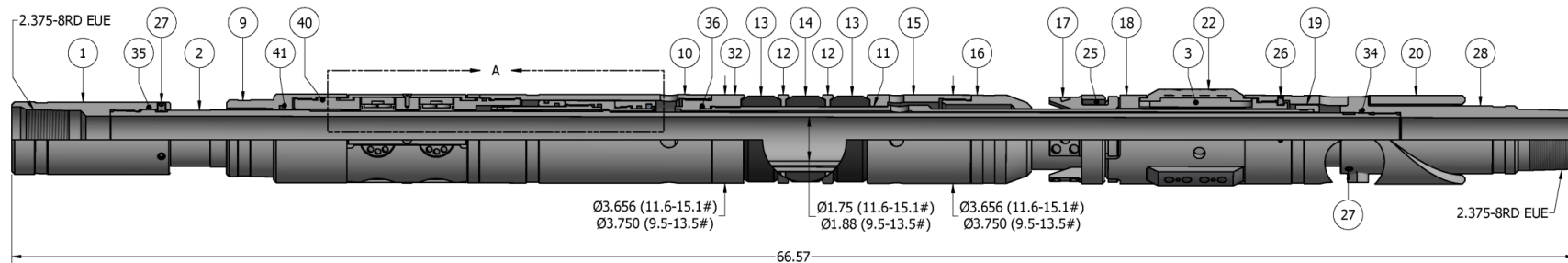
## M) TECHNICAL ILLUSTRATION



**NOTE: UNIDIRECTIONAL PART (5)  
INSERT AS SHOWN**



DETAIL A



	<b>HD RETRIEVABLE PACKER</b> <b>RIGHT-HAND AUTO</b> <b>4-1/2" X 2-3/8"</b>		Manual No: <b>DL-613-4500-209</b>
			Revision: <b>J</b>
			Revision Date: <b>02/06/2020</b>
<i>Authored by: B.Mathis</i>		<i>Approved by: B.Oligschlaeger</i>	

## N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
02/06/2020	J	Added General Screw Torque Recommendations; Revised max. tensile load thru tool and hanging weight from set packer, Elastomer Trim Temperature Guide temp. ratings	J.Anderson	D.Hushbeck
12/10/2015	H	Added: Note9; Revised: Setting minimum weight was 14,000 lbs, 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, PARTS LIST DESCRIPTION - 125 O-RING was 129 O-RING; Removed: Drift ID;	B.Mathis	B.Oligschlaeger
12/11/2014	G	Revised: P/N 61345RS was 61345, 61346RS was 61346, Pressure Affected Area Guide; Added: Pre-Installation Inspection and Storage Procedures, Special Tool item T3 and note	J.Anderson	J.McArthur
10/02/2013	F	Added: revision history, pressure affected areas, recommended tools section, HSN and Viton options (61345H, 61345V, 61346H, 61346V); Revised: P/N 61345 assembled weight 105 lbs was 107 lbs	J.Anderson	B.Oligschlaeger