HD ABANDONMENT PACKER
LEFT-HAND AUTO
6-5/8" X 3-1/2" IF TOOL JOINT

Manual No: DL-615-6625-526
Revision: **E**
Revision Date: **05/08/2017**

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A) DESCRIPTION

The HD Abandonment Packer is a heavy duty service packer ideally suited for all types of squeeze cementing, formation fracturing, high pressure acidizing, etc. This packer 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)		
6-5/8	24.0 – 32.0	5.675 – 5.921	5.500	2.50	3-1/2 IF TOOL JOINT	61565LS-XBEC 61565LSH-XBEC[1] 61565LSV-XBEC[2]

Elastomer Trim Options: [1]HSN, [2]Viton

NOTE$_1$: Can also be used for casing 7" (38.0 - 44.0#).

NOTE$_2$: Tools listed are left-hand set / straight pick-up.

DIFFERENTIAL PRESSURE (MAX)	HANGING WEIGHT ON SET PACKER (MAX)	TENSILE LOAD THRU UNSET PACKER (MAX)	TORQUE THRU TOOL (MAX)
10,000 PSI	150,000 LBS*	150,000 LBS	2,000 FT-LBS

*Casing must be cemented for this load rating.

CAUTION$_1$: 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$_2$: If the HD Abandonment Packer is run with a Retrievable Bridge Plug, make sure the Retrievable Bridge Plug J-slot is compatible with the J-slot on the HD Abandonment Packer. Whichever direction you set the plug, the packer should set in the opposite direction.

C) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION$_3$: 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"	
1,000 – 1,500 FT-LBS	600 – 800 FT-LBS	800 – 1,200 FT-LBS	Consult thread manufacturer's recommendations.

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

CAUTION$_4$: 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 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 14,000 lbs at the packer is required to pack off the elements.

CAUTION$_5$: 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 work string to open the unloader, allowing time for the tubing and casing pressure to equalize. Continued upward movement of the tubing 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. 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.

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 drill pipe 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)	DRILL PIPE TO PACKER			PRESSURE AFFECTED AREA (IN^2)			
	SIZE (IN)	WEIGHT (LB/FT)	ID (IN)	ABOVE		BELOW	
6-5/8	ABANDONED	N/A	PLUGGED	7.194	(DOWN)	-0.793	(UP)
	2.375	4.85	1.995	2.764	(DOWN)	2.333	(DOWN)
		6.65	1.815	2.764	(DOWN)	1.794	(DOWN)
	2.875	6.85	2.441	0.702	(DOWN)	3.887	(DOWN)
		10.40	2.151	0.702	(DOWN)	2.841	(DOWN)
	3.500	8.50	3.063	-2.427	(UP)	6.575	(DOWN)
		13.30	2.764	-2.427	(UP)	5.207	(DOWN)
		15.50	2.602	-2.427	(UP)	4.524	(DOWN)

Example: Consider a 6-5/8" X 3-1/2" HD Abandonment Packer set on 3.500" (13.30 lbs/ft) drill pipe with a differential pressure of 3,000 PSI in the annulus around the drill pipe 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 6-5/8" X 3-1/2" HD Abandonment Packer run on 3.500" (13.30 lbs/ft) drill pipe. 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 -2.427 in^2. Multiplying the differential pressure (3,000 PSI) by the pressure affected area (-2.427 in^2) results in a force of -7,281 lbs. The piston effect on the packer mandrel is an upward force of 7,281 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

I) RECOMMENDED TOOLS

I-1) 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	AT070110
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) Unscrew and remove set screws (29) from bottom sub (28).

J-1.2) Unscrew and remove bottom sub (28) from J-pin bottom sub (23).

J-1.2.1) Remove o-ring (42) from bottom sub (28).

J-1.3) Unscrew and remove set screws (36) from J-pin bottom sub (23). Move J-body (20) as needed to access screws.

J-1.4) Unscrew and remove J-pin bottom sub (23) from inner mandrel (2).

NOTE$_3$: Drag block body assembly must be free to rotate.

J-1.4.1) Remove o-ring (38) from J-pin bottom sub (23).

J-1.5) Compress drag blocks (22) with drag block assembly tool (T1).

J-1.6) Unscrew and remove set screws (34) from drag block body (18).

J-1.7) Unscrew and remove J-body (20) from drag block body (18) (**NOTE$_4$**: Left-hand threads).

J-1.7.1) Remove retaining ring (31) from J-body (20).

J-1.8) Remove drag block retainer (21) from drag block body (18).

J-1.9) Release drag blocks. Remove drag blocks (22) and drag block springs (3).

J-1.10) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11).

NOTE$_5$: For added leverage, insert a rod through holes in rubber retainer (15) and rubber mandrel (11).

J-1.11) Wedge lower slips (17) outward (if needed). Remove drag block body assembly and disassemble:

J-1.11.1) Remove wedges. Remove lower slips (17) and lower slip springs (25) from drag block body (18).

J-1.12) Unscrew and remove lower cone (16) from rubber retainer (15).

J-1.13) Unscrew rubber mandrel (11) from valve body (32).

J-1.14) Remove rubber mandrel assembly and disassemble:

J-1.14.1) Remove rubber retainer (15), elements (13, 14), and rubber spacers (12) from rubber mandrel (11).

J) DISASSEMBLY (cont'd)

J-1.15) Unscrew and remove valve body (32) from central body (10).

J-1.15.1) Remove o-ring (40) from valve body (32).

J-1.16) Unscrew and remove central body (10) from hold down body (6).

J-2) Unclamp and remove top sub (1) from vise. Clamp lower end of inner mandrel (2) in vise.

CAUTION$_6$: Do NOT wrench or clamp on seal surface.

J-2.1) Unscrew and remove set screws (35) from top sub (1).

J-2.2) Unscrew and remove top sub (1) from inner mandrel (2).

J-2.2.1) Remove o-ring (39) from top sub (1).

J-2.3) Unscrew and remove hold down extension (4) from hold down body (6).

J-2.3.1) Remove o-rings (42) from hold down extension (4).

J-2.4) Unscrew and remove flat head cap screws (7) from hold down body (6).

J-2.5) Remove hold down straps (33) from hold down body (6).

J-2.6) Remove hold down button springs (26) from hold down buttons (30).

J-2.7) Remove hold down buttons (30) from hold down body (6) with button removal tool (T2).

J-2.7.1) Remove o-rings (37) from hold down buttons (30).

J-2.8) Remove hold down body (6) from inner mandrel (2).

J-2.8.1) Remove o-rings (40, 44) from hold down body (6).

J-2.9) Unscrew and remove compensating mandrel (8) from seal receptacle (5).

J-2.9.1) Remove compensating piston (9) from compensating mandrel (8).

J-2.9.1.1) Remove o-rings (43, 44) from compensating piston (9).

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

J-3.1) Remove seal receptacle assembly and disassemble:

J-3.1.1) Unscrew and remove seal retainer (27) from seal receptacle (5).

J-3.1.1.1) Remove o-rings (40, 41) from seal receptacle (5).

J-3.1.1.2) Remove quad seal (24) from seal retainer (27).

K) ASSEMBLY

NOTE$_6$: 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$_7$: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 2).

NOTE$_7$: Apply anti-seize lubricant (T3) on STUB ACME and drill pipe connections when making up connections.

K-1) Assemble seal receptacle assembly and install:

K-1.1) Install o-rings (40, 41) in o-ring grooves in seal receptacle (5).

K-1.2) Install quad seal (24) in groove in seal receptacle (5).

K-1.3) Screw seal retainer (27) onto seal receptacle (5).

CAUTION$_8$: Do not rip or tear o-ring or seal during installation.

K-1.4) Install seal receptacle assembly onto inner mandrel (2).

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

CAUTION$_6$: Do NOT wrench or clamp on seal surface.

K-2.1) Screw compensating mandrel (8) into seal receptacle (5).

CAUTION$_8$: Do not rip or tear o-ring during installation.

K-2.2) Install o-rings (43, 44) in o-ring grooves in compensating piston (9).

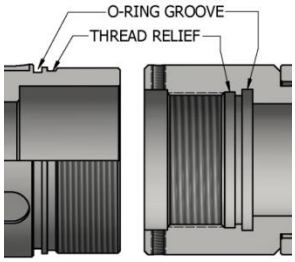


Fig. 2

K) ASSEMBLY (cont'd)

K-2.3) Install compensating piston (9) onto compensating mandrel (8).

NOTE$_8$: Compensating piston must be installed in correct direction (refer to Technical Illustration Det. A)

K-2.4) Install o-rings (40, 44) in o-rings groove in hold down body (6).

K-2.5) Install hold down body (6) onto inner mandrel (2).

K-2.6) Assemble hold down buttons (30) and install:

K-2.6.1) Install o-rings (37) in o-ring grooves in hold down buttons (30).

K-2.6.2) Install hold down buttons (30) into hold down body (6) (Fig. 3).

CAUTION$_8$: Do not rip or tear o-rings during installation.

Fig. 3

K-2.6.3) Align slot in hold down buttons (30) with slot in hold down body (6). Install hold down button springs (26) into hold down buttons (30).

NOTE$_9$: Install two (2ea) hold down button springs per hold down button (Fig. 4).

K-2.6.4) Set hold down straps (33) in slots in hold down buttons (30) and hold down body (6) (Fig. 4).

K-2.6.5) Screw flat head cap screws (7) into hold down body (6) to secure hold down straps (33) (Fig. 4).

K-2.7) Install o-rings (42) in o-ring grooves in hold down extension (4).

K-2.8) Screw hold down extension (4) into hold down body (6).

CAUTION$_8$: Do not rip or tear o-rings during installation.

K-2.9) Install o-ring (39) in o-ring groove in top sub (1).

K-2.10) Screw top sub (1) onto inner mandrel (2).

CAUTION$_8$: Do not rip or tear o-ring during installation.

K-2.11) Screw set screws (35) into top sub (1).

Fig. 4

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

K-3.1) Install central body (10) onto inner mandrel (2) and screw into hold down body (6).

CAUTION$_8$: Do not rip or tear o-rings during installation.

K-3.2) Install o-ring (40) in o-ring groove in valve body (32).

K-3.3) Install valve body (32) onto inner mandrel (2) and screw into central body (10).

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) Install rubber mandrel assembly onto inner mandrel (2) and screw rubber mandrel (11) into valve body (32).

CAUTION$_8$: 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.

NOTE$_{10}$: Install two (2ea) springs per slip (Fig. 5).

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

Fig. 5

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

NOTE$_5$: For added leverage, insert a rod through holes in rubber retainer (15) and rubber mandrel (11).

K) ASSEMBLY (cont'd)

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

NOTE$_{11}$: Install six (6ea) drag block springs per drag block (Fig. 6).

Fig. 6

K-3.9) Install drag block retainer (21) onto drag block body (18) capturing ends of drag blocks (22).

K-3.10) Install retaining ring (31) onto J-body (20).

K-3.11) Screw J-body (20) into drag block body (18) (22) (**NOTE$_4$**: Left-hand threads).

K-3.12) Screw set screws (34) into J-body (20). Align holes in drag block retainer (21) with threaded holes in drag block body (18).

K-3.13) Release drag blocks (22) and remove drag block assembly tool (T1).

K-3.14) Install o-ring (38) in o-ring groove in J-pin bottom sub (23).

K-3.15) Screw J-pin bottom sub (23) onto inner mandrel (2).

NOTE$_3$: Drag block body assembly must be free to rotate.

CAUTION$_8$: Do not rip or tear o-ring during installation.

K-3.16) Screw set screws (36) into J-pin bottom sub (23). Move J-body (20) as needed to access threaded holes in J-pin bottom sub (23).

K-3.17) Install o-ring (42) in o-ring groove in bottom sub (28).

K-3.18) Screw bottom sub (28) onto J-pin bottom sub (23).

CAUTION$_8$: Do not rip or tear o-ring during installation.

K-3.19) Screw set screws (29) into bottom sub (28).

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

L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61565LS-XBEC
1	1	TOP SUB	DLMS110	61370615-XBEC
2	1	INNER MANDREL	DLMS125	61370215-T
3	24	DRAG BLOCK SPRING	INCONEL	9101900
4	1	HOLD DOWN EXTENSION	DLMS110	61370310
5	1	SEAL RECEPTACLE	P-110	61365730
6	1	HOLD DOWN BODY	P-110	61365320
7	9	FLAT HEAD CAP SCREW 5/16-18 UNC X 1/2	STEEL	FHSC031C050
8	1	COMPENSATING MANDREL	DLMS110	61370240
9	1	COMPENSATING PISTON	P-110	61365715
10	1	CENTRAL BODY	P-110	61365385
11	1	RUBBER MANDREL	DLMS110	61370220
12	2	RUBBER SPACER	DLMS35	60265840
13	1	ELEMENT	80 DURO NITRILE	60265512
14	2	ELEMENT	90 DURO NITRILE	60265513

L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61565LS-XBEC
15	1	RUBBER RETAINER	P-110	61365850
16	1	LOWER CONE	P-110	60065420HT
17	4	LOWER SLIP W/ CARBIDE	DLMS110	60065135C
18	1	DRAG BLOCK BODY	DLMS35 / DLMS60	60065335
19	1	RUBBER MANDREL CAP	DLMS60	60070230
20	1	J-BODY	DLMS110	61370341
21	1	DRAG BLOCK RETAINER	DLMS60	60065910
22	4	DRAG BLOCK W/ CARBIDE	DLMSDB4	9060900C
23	1	J-PIN BOTTOM SUB	DLMS110	61370630-XAB
24	1	QUAD SEAL	90 DURO NITRILE	61370520
25	8	LOWER SLIP SPRING	-	7170901
26	12	HOLD DOWN BUTTON SPRING	ELGILOY	61370975
27	1	SEAL RETAINER	P-110	61365530
28	1	BOTTOM SUB	DLMS110	61370635-XBEC
29	4	SET SCREW 1/4-20 UNC X 1/2	STEEL	SSS025C050
30	6	HOLD DOWN BUTTON W/ CARBIDE	STRESSPROOF	61365140C
31	1	RETAINING RING	DLMS60	60065911
32	1	VALVE BODY	P-110	61365350
33	3	HOLD DOWN STRAP	P-110	61365360
34	3	SET SCREW 5/16-18 UNC X 3/8	STEEL	SSS031C037
35	3	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037
36	2	SET SCREW 3/8-16 UNC X 1/2	STEEL	SSS037C050
37	6	230 O-RING	90 DURO NITRILE	90230
38	1	233 O-RING	90 DURO NITRILE	90233
39	1	235 O-RING	90 DURO NITRILE	90235
40	3	241 O-RING	90 DURO NITRILE	90241
41	1	243 O-RING	90 DURO NITRILE	90243
42	3	339 O-RING	90 DURO NITRILE	90339
43	1	344 O-RING	90 DURO NITRILE	90344
44	2	348 O-RING	90 DURO NITRILE	90348

REDRESS KIT (RDK)		61565050
ASSEMBLED WEIGHT		360 LBS

L) PARTS LIST (cont'd)

L-1) ELASTOMER TRIM OPTIONS

NOTE$_{12}$: For temperature range, refer to Elastomer Trim Temperature Guide.

L-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61565LSH-XBEC
13	1	ELEMENT	80 DURO HSN	60265512H
14	2	ELEMENT	90 DURO HSN	60265513H
24	1	SEAL	90 DURO HSN	61370520H
37	6	230 O-RING	90 DURO HSN	90230H
38	1	233 O-RING	90 DURO HSN	90233H
39	1	235 O-RING	90 DURO HSN	90235H
40	3	241 O-RING	90 DURO HSN	90241H
41	1	243 O-RING	90 DURO HSN	90243H
42	3	339 O-RING	90 DURO HSN	90339H
43	1	344 O-RING	90 DURO HSN	90344H
44	2	348 O-RING	90 DURO HSN	90348H

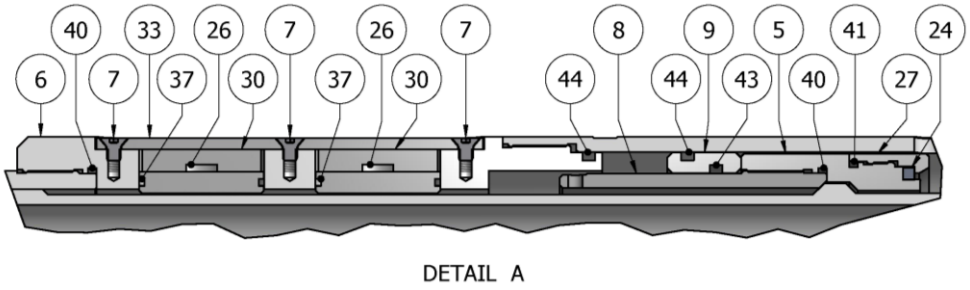
REDRESS KIT (RDK)		61565050H

L-1.2) VITON

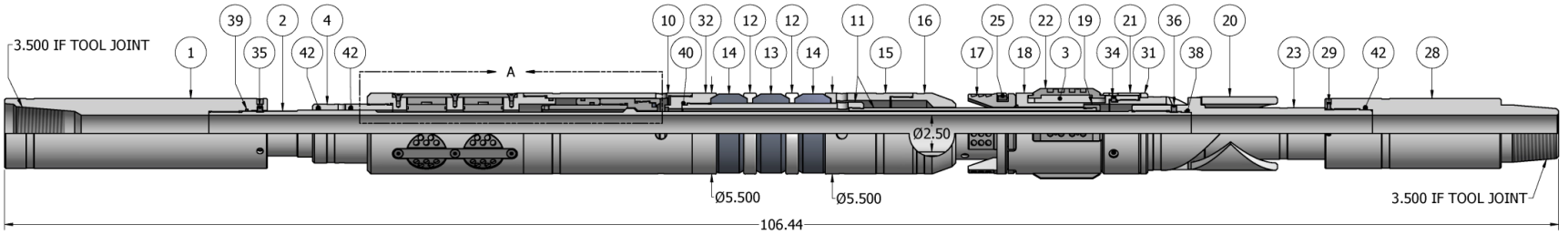
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61565LSV-XBEC
13	1	ELEMENT	80 DURO VITON	60265512V
14	2	ELEMENT	90 DURO VITON	60265513V
24	1	SEAL	90 DURO VITON	61370520V
37	6	230 O-RING	90 DURO VITON	90230V
38	1	233 O-RING	90 DURO VITON	90233V
39	1	235 O-RING	90 DURO VITON	90235V
40	3	241 O-RING	90 DURO VITON	90241V
41	1	243 O-RING	90 DURO VITON	90243V
42	3	339 O-RING	90 DURO VITON	90339V
43	1	344 O-RING	90 DURO VITON	90344V
44	2	348 O-RING	90 DURO VITON	90348V

REDRESS KIT (RDK)		61565050V

M) TECHNICAL ILLUSTRATION



DETAIL A



N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
05/08/2017	E	Added General Screw Torque Recommendations; Revised max. differential pressure 10,000 psi was 8,000 psi	J.Anderson	K.Riggs
12/14/2015	D	Revised 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;	B.Mathis	B.Oligschlaeger
11/16/2015	C	Added HSN and Viton options, max. torque thru tool; Removed: tool drift ID	J.Anderson	K.Riggs
12/12/14	B	Revised: Pressure Affected Area Guide, assembled weight was 330 lbs; Added: drift ID, Pre-Installation Inspection and Storage Procedures, special tool (T3)	J.Anderson	K.Riggs
11/15/2012	A	Created new tech manual	B.Mathis	D.Hushbeck