



HD RETRIEVABLE PACKER

RIGHT-HAND AUTO

18" X 6-5/8" API FULL HOLE TOOL JOINT

Manual No:
DL-613-18000-399

Revision: **G**

Revision Date:
07/23/2021

Authored by: *B.Mathis*

Approved by: *J.McArthur*

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 hydraulic hold down buttons to improve retrievability and run in performance.

B) SPECIFICATION GUIDE

CASING			TOOL		THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)	GAGE OD (INCHES)	ID (INCHES)		
18	78.0 – 96.5	16.989 – 17.194	16.750	5.00	6-5/8 FULL HOLE TOOL JOINT	61318RSX

NOTE₁: Tools listed are right-hand auto set / straight pick-up.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU UNSET TOOL (MAX)	HANGING WEIGHT ON SET TOOL (MAX)*	TORQUE THRU TOOL (MAX)
3,000 PSI	575,000 LBS	470,000 LBS*	2,000 FT-LBS

*Casing must be cemented for this load rating.

CAUTION₁: 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.

CAUTION₂: 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

CAUTION₃: 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.

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

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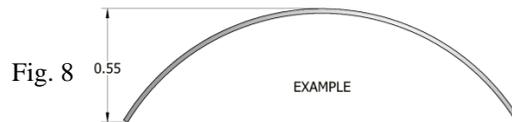
C) PRE-INSTALLATION INSPECTION PROCEDURES (cont'd)

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.

DRAG BLOCK SPRING (MIN HEIGHT)	HOLD DOWN BUTTON SPRING (MIN HEIGHT)
0.55 INCHES	0.55 INCHES



NOTE₁₃: Before assembly, measure height of drag block springs and hold down button springs. Refer to spring height table – if height of an individual spring is less than the minimum height, replace spring(s).

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 tubing 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 40,000 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. Refer to Pressure Affected Area Guide to determine weight in addition to pipe weight required to pick up on packer. 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. Elastomers 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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G) PRESSURE AFFECTED AREAS 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)	DRILL PIPE TO PACKER			PRESSURE AFFECTED AREA (IN ²)	
	SIZE (IN)	WEIGHT (LBS/FT)	ID (IN)	ABOVE	BELOW
18	ABANDONED	N/A	PLUGGED	35.520 (DOWN)	-5.479 (UP)
	2.375	4.85	1.995	31.090 (DOWN)	-2.353 (UP)
		6.65	1.815	31.090 (DOWN)	-2.891 (UP)
	2.875	6.85	2.441	29.028 (DOWN)	-0.799 (UP)
		10.40	2.151	29.028 (DOWN)	-1.845 (UP)
	3.500	8.50	3.063	25.899 (DOWN)	1.890 (DOWN)
		13.30	2.764	25.899 (DOWN)	0.522 (DOWN)
		15.50	2.602	25.899 (DOWN)	-0.161 (UP)
	4.000	11.85	3.476	22.954 (DOWN)	4.011 (DOWN)
		14.00	3.340	22.954 (DOWN)	3.283 (DOWN)
		15.70	3.240	22.954 (DOWN)	2.766 (DOWN)
	4.500	13.75	3.958	19.616 (DOWN)	6.825 (DOWN)
		16.60	3.826	19.616 (DOWN)	6.018 (DOWN)
		20.00	3.640	19.616 (DOWN)	4.928 (DOWN)
		22.82	3.500	19.616 (DOWN)	4.142 (DOWN)
	5.000	16.25	4.408	15.885 (DOWN)	9.782 (DOWN)
		19.50	4.276	15.885 (DOWN)	8.882 (DOWN)
		25.60	4.000	15.885 (DOWN)	7.088 (DOWN)
	5.500	19.20	4.892	11.762 (DOWN)	13.317 (DOWN)
		21.90	4.778	11.762 (DOWN)	12.451 (DOWN)
		24.70	4.670	11.762 (DOWN)	11.650 (DOWN)
	5.875	23.40	5.153	8.412 (DOWN)	15.376 (DOWN)
		24.17	5.045	8.412 (DOWN)	14.511 (DOWN)
	6.625	25.20	5.965	1.049 (DOWN)	22.467 (DOWN)
		27.70	5.901	1.049 (DOWN)	21.870 (DOWN)

Example: Consider a 18" X 6-5/8" HD Packer set on 4.500" (20.00 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 16" X 6-5/8" HD Packer run on 4.500" (20.00 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 19.616 in². Multiplying the differential pressure (3,000 PSI) by the pressure affected area (19.616 in²) results in a force of 58,848 lbs. The piston effect on the packer mandrel is a downward force of 58,848 lbs.



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H) ELASTOMER TRIM TEMPERATURE GUIDE

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

G-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
- JACK STANDS

G-2) SPECIAL TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAG BLOCK ASSEMBLY TOOL	AT018110
T2	1	BUTTON REMOVAL TOOL	AT-BRT000
T3	1 GAL	KOPR-KOTE® ANTI-SEIZE LUBRICANT	DL-KOPR-KOTE-1G

J) DISASSEMBLY

NOTE₂: Ensure vise is capable of handling weight of tool.

NOTE₃: Support tool during disassembly and assembly with jack stands as necessary.

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

J-1.1) Unscrew and remove set screws (43) from J-pin sub (23).

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

J-1.3) Unscrew and remove set screws (41) from J-pin sub (23). Move J-body (20) as needed to access set screws (43).

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

NOTE₄: Drag block body assembly must be free to rotate.

J-1.4.1) Remove o-rings (49) from J-pin sub (23).

J-1.5) Unscrew and remove set screws (41) from drag block body support (27).

J-1.6) Unscrew and remove J-body (20) from drag block body support (27) (**NOTE_s:** Left-hand threads).

J-1.7) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11). Move drag block body assembly as needed to access rubber mandrel cap (19).



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J) DISASSEMBLY (cont'd)

J-1.8) Remove drag block body assembly and disassemble:

J-1.8.1) Compress drag blocks (22) using drag block body assembly tool (T1).

J-1.8.2) Unscrew and remove drag block retainer (21) from drag block body (18).

J-1.8.3) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

J-1.8.4) Unscrew and remove set screws (41) from drag block body (18). Rotate drag block retainer (21) as needed to access set screws (41).

J-1.8.5) Unscrew and remove drag block body support (27) from drag block body (18) (**NOTE:** Left-hand threads).

J-1.8.6) Unscrew and remove socket cap screws (42) from drag block body (18).

J-1.8.7) Wedge lower slips (17) outward (if needed). Remove lower slip support sleeve (37) from drag block body (18).

J-1.8.8) 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 support (35) from lower cone (16).

J-1.10) Unscrew and remove lower cone (16) from rubber retainer (15).

NOTE: For added leverage, insert a rod through central body (10) as needed.

J-1.11) Unscrew rubber mandrel (11) from valve body (30).

J-1.12) Remove rubber mandrel assembly and disassemble:

J-1.12.1) Remove elements (13, 14), rubber spacers (12) and rubber retainer (15) from rubber mandrel sleeve (37).

J-1.12.2) Remove rubber mandrel sleeve (37) from rubber mandrel (11).

J-1.12.2.1) Remove o-ring (47) from rubber mandrel (11).

J-1.13) Unscrew and remove gage ring (29) from valve body (30).

J-1.14) Unscrew and remove valve body (30) from central body (10).

NOTE: For added leverage, insert a rod through central body (10) as needed.

J-1.14.1) Remove bonded seal (24) from valve body (30).

J-1.14.2) Remove o-rings (45) from valve body (30).

J-1.15) Unscrew and remove central body (10) from hold down body adapter (31).

J-2) Remove top sub (1) from vise and clamp lower end of inner mandrel (2) in vise.

CAUTION: Do NOT wrench or clamp on seal surface.

J-2.1) Unscrew and remove set screws (41) from top sub (1).

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

J-2.2.1) Remove o-ring (49) from top sub (1).

J-2.3) Unscrew and remove upper hold down retaining ring (7) from hold down body cap (4).

J-2.4) Unscrew and remove lower hold down retaining ring (7) from hold down body base (6). Slide lower hold down retaining ring (7) out-of-the-way temporarily.

J-2.5) Unscrew and remove hold down body cap (4) from hold down body extension (32).

J-2.6) Remove hold down rings assembly from hold down body sleeve (33) and disassemble:

J-2.6.1) Separate hold down rings (34). Remove hold down button retaining ring (44) and locator pins (40) from hold down ring(s) (34).

J-2.6.2) Unscrew and remove flat head cap screws (39) from hold down rings (34).



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J) DISASSEMBLY (cont'd)

- J-2.6.3) Remove hold down straps (26) from hold down rings (34).
- J-2.6.4) Remove hold down button springs (56) from hold down rings (34).
- J-2.6.5) Remove hold down buttons (26) from hold down rings (34) using button removal tool (T2).
 - J-2.6.5.1) Remove o-rings (48) from hold down buttons (26).
- J-2.6.6) Remove o-rings (54) from hold down rings (34).
- J-2.7) Unscrew and remove hold down body base (6) from hold down body adapter (31).
- J-2.8) Remove hold down body assembly and disassemble:
 - J-2.8.1) Unscrew and remove hold down body extension (32) from hold down body sleeve (33).
 - J-2.8.1.1) Remove o-rings (50, 55) from hold down body extension (32).
 - J-2.8.2) Unscrew and separate hold down body sleeve (33) from hold down body adapter (31).
 - J-2.8.2.1) Remove o-rings (52) from hold down body sleeve (33).
 - J-2.8.2.2) Remove o-ring (53) from hold down body adapter (31).
- J-2.9) Remove lower hold down retaining ring (7) from inner mandrel (2).
- J-2.10) Remove compensating piston (9) from compensating mandrel (8).
 - J-2.10.1) Remove o-rings (51, 53) from compensating piston (9).
- J-2.11) Unscrew and remove compensating mandrel (8) from seal receptacle (5).
- J-3) Unclamp and remove inner mandrel (2) from vise.
- J-4) Remove seal receptacle (5) from inner mandrel (2).
 - J-4.1) Remove o-ring (46) from seal receptacle (5).

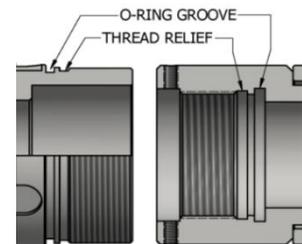


Fig. 2

K) ASSEMBLY

NOTE₇: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION₇: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 2).

NOTE₈: Apply KOPR-KOTE[®] anti-seize lubricant (T3) on STUB ACME and drill pipe connections when making up connections.

NOTE₂: Ensure vise is capable of handling weight of tool.

NOTE₃: Support tool during disassembly and assembly with jack stands as necessary.

K-1) Install o-ring (46) in o-ring groove in seal receptacle (5).

K-2) Install seal receptacle (5) onto lower end of inner mandrel (2). Slide seal receptacle (5) upwards into place.

K-3) Clamp lower part of inner mandrel (2) in vise.

CAUTION₆: Do **NOT** wrench or clamp on seal surface.

K-3.1) Screw compensating mandrel (8) into seal receptacle (5).

CAUTION₈: Do not rip or tear o-ring during installation.

K-3.2) Install o-rings (51, 53) in o-ring grooves in compensating piston (9).

K-3.3) Install compensating piston (9) onto compensating mandrel (8).

NOTE₉: Ensure compensating piston (9) is installed in correct direction (Fig. 3).

CAUTION₈: Do not rip or tear o-ring during installation.

K-3.4) Place lower hold down retaining ring (7) on inner mandrel (2) - to be installed on hold down body base (6) later.

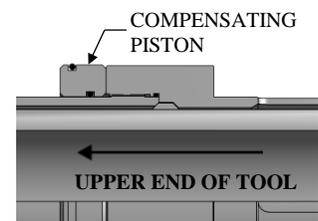


Fig. 3



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K) ASSEMBLY (cont'd)

K-3.5) Assemble hold down body assembly and install:

K-3.5.1) Install o-ring (53) in o-ring groove in hold down body adapter (31).

K-3.5.2) Install o-rings (52) in o-ring grooves in hold down body sleeve (33).

K-3.5.3) Screw hold down body sleeve (33) onto hold down body adapter (31).

CAUTION₈: Do not rip or tear o-ring during installation.

K-3.5.4) Install o-rings (50, 55) in o-ring grooves in hold down body extension (32).

K-3.5.5) Screw hold down body extension (32) into hold down body sleeve (33).

CAUTION₈: Do not rip or tear o-ring during installation.

K-3.5.6) Install hold down body assembly onto inner mandrel (2).

CAUTION₈: Do not rip or tear o-rings during installation.

K-3.6) Screw hold down body base (6) onto hold down body adapter (31).

K-3.7) Assemble hold down rings assembly and install:

K-3.7.1) Install o-rings (54) in o-ring grooves in hold down rings (34).

K-3.7.2) Install o-rings (48) in o-ring grooves in hold down buttons (26).

K-3.7.3) Install hold down buttons (26) into hold down rings (34) (Fig. 4).

CAUTION₈: Do not rip or tear o-rings during installation.

K-3.7.4) Align slot in hold down buttons (26) with slot in hold down rings (34). Install hold down button springs (56) in place on hold down buttons (26).

NOTE₁₀: Uses two (2ea) button springs per hold down button (Fig. 5).

K-3.7.5) Set hold down straps (26) in place on hold down buttons (26) (Fig. 5).

K-3.7.6) Screw flat head cap screws (39) into hold down rings (34).

K-3.7.7) Insert locator pins (40) into holes in one of the hold down rings (34). Hold down rings (34) are unidirectional.

K-3.7.8) Install hold down button retaining ring (44) on a hold down ring (34).

K-3.7.9) Align locator pins (40) with holes and push hold down rings (34) together.

K-3.7.10) Install hold down rings assembly onto hold down body sleeve (33).

K-3.7.11) Screw hold down body cap (4) onto hold down body extension (32).

K-3.7.12) Screw lower hold down retaining ring (7) onto hold down body base (6).

K-3.7.13) Screw upper hold down retaining ring (7) onto hold down body cap (4).

K-3.7.14) If pressure testing of the hold down body assembly is desired, install pressure test equipment and test hold down body assembly at this time (refer to technical manual *DL-PTF-1800-1164*).

NOTE₁₄: Pressure testing of the hold down body assembly is not mandatory.

K-3.8) Install o-ring (49) in o-ring groove in top sub (1).

K-3.9) Screw top sub (1) onto inner mandrel (2).

CAUTION₈: Do not rip or tear o-rings during installation.

K-3.10) Screw set screws (41) into top sub (1).

K-4) Remove inner mandrel (2) from vise. Clamp top sub (1) in vise.

K-4.1) Screw central body (10) onto hold down body adapter (31).

CAUTION₈: Do not rip or tear o-ring during installation.

K-4.2) Install o-rings (45) in o-ring grooves in valve body (30).

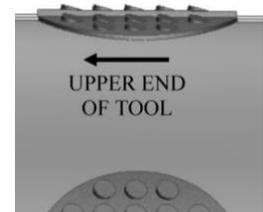


Fig. 4



Fig. 5



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K) ASSEMBLY (cont'd)

K-4.3) Install bonded seal (24) in valve body (30).

CAUTION₈: Do not rip or tear o-rings during installation.

K-4.4) Screw valve body (30) into central body (10).

NOTE₆: For added leverage, insert a rod through central body (10) as needed.

K-4.5) Screw gage ring (29) onto valve body (30).

K-4.6) Assemble rubber mandrel assembly and install:

K-4.6.1) Install o-ring (47) in o-ring groove in rubber mandrel (11).

K-4.6.2) Install rubber mandrel sleeve (37) onto rubber mandrel (11).

CAUTION₈: Do not rip or tear o-ring during installation.

K-4.6.3) Install rubber retainer (15), elements (13, 14), and rubber spacers (12) onto rubber mandrel sleeve (37).

K-4.7) Screw rubber mandrel (11) into valve body (30).

CAUTION₈: Do not rip or tear o-rings during installation

K-4.8) Screw lower cone (16) into rubber retainer (15).

NOTE₆: For added leverage, insert a rod through central body (10) as needed.

K-4.9) Screw lower cone support (35) into lower cone (16).

K-4.10) Assemble drag block body assembly and install:

K-4.10.1) Install lower slips (17) and lower slip springs (25) into drag block body (18). Wedge lower slips (17) outward.

NOTE₁₁: Uses two (2ea) slip springs per slip (Fig. 6).

K-4.10.2) Install lower slip support sleeve (38) into drag block body (18).

K-4.10.3) Align holes in lower slip support sleeve (38) with threaded holes in drag block body (18). Screw socket cap screws (42) into drag block body (18). Remove wedges.

K-4.10.4) Screw drag block body support (27) into drag block body (18) (**NOTE₅**: Left-hand threads).

K-4.10.5) Screw set screws (41) into drag block body (18).

K-4.10.6) Install drag blocks (22) and drag block springs (3) into drag block body (18). Compress drag blocks (22) using drag block body assembly tool (T1).

NOTE₁₂: Uses six (6ea) drag block springs per drag block (Fig. 7).

K-4.10.7) Screw drag block retainer (21) onto drag block body support (27) capturing ends of drag blocks (22). Release drag blocks (22).

K-4.10.8) Install drag block body assembly onto rubber mandrel (11)

K-4.11) Screw rubber mandrel cap (19) onto rubber mandrel (11).

K-4.12) Screw J-body (20) into drag block body support (27) (**NOTE₅**: Left-hand threads).

K-4.13) Screw set screws (41) into drag block body support (27).

K-4.14) Install o-rings (49) in o-ring grooves in J-pin sub (23).

K-4.15) Screw J-pin sub (23) onto inner mandrel (2).

NOTE₄: Drag block body assembly must be free to rotate.

CAUTION₈: Do not rip or tear o-ring during installation.

K-4.16) Screw set screws (41) into J-pin sub (23). Move J-body (20) as needed to access threaded holes.

K-4.17) Screw bottom sub (28) into J-pin sub (23).

CAUTION₈: Do not rip or tear o-ring during installation.

K-4.18) Screw set screws (43) into J-pin sub (23).



Fig. 6

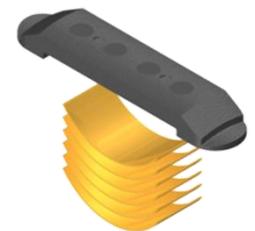


Fig. 7



HD RETRIEVABLE PACKER

RIGHT-HAND AUTO

18" X 6-5/8" API FULL HOLE TOOL JOINT

Manual No:
DL-613-18000-399

Revision: **G**

Revision Date:
07/23/2021

Authored by: *B.Mathis*

Approved by: *J.McArthur*

K) ASSEMBLY (cont'd)

K-5) Unclamp top sub (1) from vise and remove assembled tool.

L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
1	1	TOP SUB	DLMS110	61316610
2	1	INNER MANDREL	DLMS110	61316215
3	96	HOLD DOWN BUTTON / DRAG BLOCK SPRING	-	9101900
4	1	HOLD DOWN BODY CAP	DLMS110	61318370
5	1	SEAL RECEPTACLE	DLMS110	61316730
6	1	HOLD DOWN BODY BASE	DLMS110	61318320
7	2	HOLD DOWN RETAINING RING	P-110	61318X380
8	1	COMPENSATING MANDREL	DLMS110	61316240
9	1	COMPENSATING PISTON	DLMS110	61316715
10	1	CENTRAL BODY	DLMS110	61316385
11	1	RUBBER MANDREL	DLMS110	60316220
12	2	RUBBER SPACER	DLMS35	60218X840
13	1	ELEMENT	80 DURO NITRILE	60218X512
14	2	ELEMENT	90 DURO NITRILE	60218X513
15	1	RUBBER RETAINER	P-110	61318X850
16	1	LOWER CONE	P-110	61318X420
17	6	CARBIDE LOWER SLIP	P-110	60018X135C
18	1	DRAG BLOCK BODY	P-110	60318X335
19	1	RUBBER MANDREL CAP	DLMS110	60316230
20	1	J-BODY	DLMS110	61316340
21	1	DRAG BLOCK RETAINING RING	P-110	60018X910
22	16	800 CARBIDE DRAG BLOCK, TYPE 2	DLMSDB4	9080900C
23	1	J-PIN SUB	DLMS110	61316620
24	1	BONDED SEAL	DLMS60 / 90 DURO NITRILE	60016520
25	12	LOWER SLIP SPRING	-	7116901



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L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
26	12	HOLD DOWN BUTTON	DLMSSP	61316975
27	1	DRAG BLOCK BODY SUPPORT	P-110	60318X330
28	1	BOTTOM SUB	DLMS110	61316630
29	1	UPPER GAGE RING	P-110	60218X830
30	1	VALVE BODY	DLMS110	61318350
31	1	HOLD DOWN BODY ADAPTER	DLMS110	61316325
32	1	HOLD DOWN BODY EXTENSION	DLMS110	61316326
33	1	HOLD DOWN BODY SLEEVE	DLMS110	61316330
34	2	HOLD DOWN RING	P-110	61318X310
35	1	LOWER CONE SUPPORT	DLMS110	61318421
36	12	HOLD DOWN STRAP	DLMSFB4	61316360
37	1	RUBBER MANDREL SLEEVE	DLMS110	60318225
38	1	LOWER SLIP SUPPORT SLEEVE	P-110	60318X912
39	24	5/16-18 UNC X 5/8 FLAT HEAD SOCKET CAP SCREW	STEEL	FHSC031C062
40	2	LOCATOR PIN	DLMS110	500100P
41	14	3/8-16 UNC X 1/2 SOCKET SET SCREW	STEEL	SSS037C050
42	2	1/2-13 UNC X 1 SOCKET CAP SCREW	STEEL	SCS050C100
43	4	1/4-20 UNC X 1/2 SOCKET SET SCREW	STEEL	SSS025C050
44	1	HOLD DOWN BUTTON RETAINING RING	P-110	61318X910
45	2	171 O-RING	90 DURO NITRILE	90171
46	1	264 O-RING	90 DURO NITRILE	90264
47	1	267 O-RING	90 DURO NITRILE	90267
48	12	338 O-RING	90 DURO NITRILE	90338
49	3	362 O-RING	90 DURO NITRILE	90362
50	1	364 O-RING	90 DURO NITRILE	90364



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L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
51	1	367 O-RING	90 DURO NITRILE	90367
52	2	372 O-RING	90 DURO NITRILE	90372
53	2	374 O-RING	90 DURO NITRILE	90374
54	4	376 O-RING	90 DURO NITRILE	90376
55	2	440 O-RING	90 DURO NITRILE	90440
56	24	HOLD DOWN BUTTON SPRING	INCONEL	9101900

REDRESS KIT (RDK)		61318X050
ASSEMBLED WEIGHT		2,608 LBS



HD RETRIEVABLE PACKER RIGHT-HAND AUTO 18" X 6-5/8" API FULL HOLE TOOL JOINT

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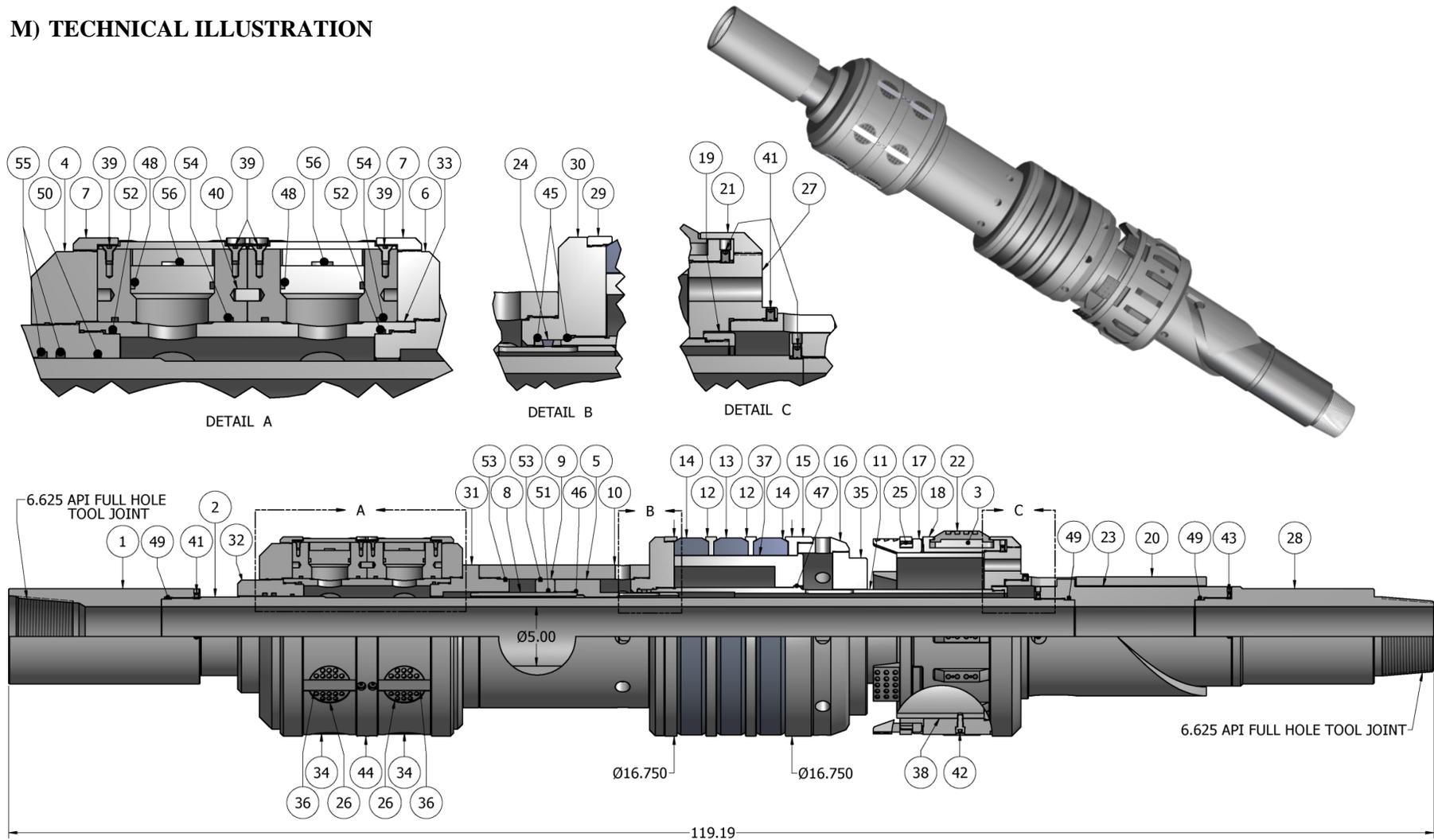
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M) TECHNICAL ILLUSTRATION



	HD RETRIEVABLE PACKER RIGHT-HAND AUTO 18” X 6-5/8” API FULL HOLE TOOL JOINT	Manual No: DL-613-18000-399
		Revision: G
		Revision Date: 07/23/2021
<i>Authored by: B.Mathis</i>		<i>Approved by: J.McArthur</i>

N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
07/23/2021	G	Revised P/N 61318RSX was 61318X, differential pressure was 5K	J.Anderson	K.Plunkett
09/27/2018	F	Added General Screw Torque Recommendations, spring inspection criteria, step K-3.7.14, note14, Revised nitrile temp. rating	J.Anderson	D.Hushbeck
12/04/2015	E	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
11/17/2015	D	Added: TORQUE THRU TOOL, HAND TOOLS – Jack Stands, Fig. 7, PRE-INSTALLATION INSPECTION PROCEDURES, Fig. 1, Caution4, STORAGE RECOMMENDATIONS, HAND TOOLS – Jack stands, SPECIAL TOOLS – T3, Note2, Note3, Caution7, Note8, Fig. 2, Fig. 3, Fig. 5, Fig. 6, Fig. 7; Revised: Title, Specification Guide - Header, Gage OD was Tool OD, Nominal ID was Tool ID, Note1, RELEASING PROCEDURES, PRESSURE AFFECTED AREA GUIDE, ELASTOMER TRIM TEMPERATURE GUIDE was ELEMENT SELECTION GUIDE, PARTS LIST – MATERIAL was P-110 (P/N's 60316220, 60316230, 61318421, 61316360, 60318225, 500100P), MATERIAL was 1026 (P/N 60218X840), MATERIAL was 90 DURO NITRILE (P/N 60016520), Hold down button spring was Item 3 (with drag block spring), Assembled weight was 2,571 lbs	B.Mathis	K.Riggs
10/02/2013	C	Revised: max. tensile load was 1,050,000 lbs, pressure affected area example calculation, assembled weight was 2,573 lbs, P/N 90362 was 90361, P/N 90364 quantity was 3, P/N 90374 quantity was 1, P/N 9101900 quantity was 72, technical illustration; Removed: P/Ns 90375, 90278, 90360, 60318226 and 61370975	J.Anderson	H.Bringham