



IE THERMAL PACKER

9-5/8" X 3-1/2"

w/15 FT EXPANSION JOINT

Manual No:
DL-741-9625-392

Revision: **B**

Revision Date:
01/09/2012

Authored by: *B.Mathis*

Approved by: *B.Oligschlaeger*

A) DESCRIPTION

The D&L IE Thermal Packer is D&L's DLT Thermal Packer with an Internal Expansion (IE) Joint. The DLT Thermal Packer is a double-grip retrievable packer designed for steam injection/production. The packer design is based on our highly successful ASI-X Packer. The DLT Thermal Packer features a double-grip hold down system capable of holding pressure from above and below. This feature allows the packer to maintain pack-off and prevent movement of the packing element without having the packer in tension or compression. The double-grip feature allows the packer to be ideally suited for huff and puff operations as well as continuous steam injection.

B) SPECIFICATION GUIDE

CASING		RECOMMENDED HOLE SIZE (INCHES)	TOOL OD (INCHES)	TOOL ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)					
9-5/8	32.3 – 43.5#	8.755 – 9.110	8.500	4.00	3-1/2 EUE	74196-XBAE

C) RATINGS

TEMPERATURE	PRESSURE
625° F	5,000 PSI

D) SETTING PROCEDURES

Run the packer to setting depth, raise the tubing approximately (1 Ft) one foot, and rotate 1/4 turn to the right at the packer. Lower the tubing while releasing torque until it takes weight. Set 20,000 to 30,000 lbs on the packer. Pull 20,000 to 30,000 lbs tension and hold for ten (10) minutes to set the packer.

Since the thermal packing elements are more resistant to flowing than our standard elastomeric elements, it is recommended to apply tension and slack off weight two (2) or three (3) cycles to insure the elements are fully packed off. Set down, turn to the left and hold left hand torque while picking up to release the expansion joint. Stroke the expansion joint to the desired position.

E) RELEASING PROCEDURES

Lower the tubing until it takes weight. Hold right hand torque and raise the tubing. This action will bring the J-pins of the packer into the releasing slots. Additional tension will release the upper slips, relax the packing element, release the lower slips and automatically re-jay the tool in the running position. The packer may now be removed from the well. Should the packer not release, there is a safety shear release built into the packer. Straight pull of 66,000 lbs over tubing weight will shear the screws in the J-pin ring, allowing the packer to release.

D & L OIL TOOLS
P.O. BOX 52220 TULSA, OK 74152
PHONE: (800) 441-3504 www.dlmfg.com



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F) DISASSEMBLY

F-1) Clamp upper J-body (32) in vise.

F-1.1) Unscrew and remove set screws (36) from wireline guide bottom (28).

F-1.2) Unscrew and remove wireline guide bottom (28) from expansion joint mandrel (31) (**NOTE₁**: Left-hand threads).

F-1.3) Slide lower J-body (20) as needed to unscrew and remove set screws (35) from J-pin sub (23).

NOTE₂: Drag block body assembly must be free to rotate.

F-1.4) Wrench on lower J-body (20), rotating to the right, to unscrew and remove J-pin sub assembly from inner mandrel (2) (**NOTE₁**: Left-hand threads).

F-1.4.1) Unscrew and remove shear screws (33) from J-pin ring (12).

F-1.4.2) Remove J-pin ring (12) from J-pin sub (23).

F-1.5) Compress drag blocks (22) using drag block body assembly tool (T1, T2). Rotate drag block retainer (21) as need to unscrew and remove set screws (34) from drag block body (18).

F-1.6) Unscrew and remove lower J-body (20) from drag block body (18) (**NOTE₁**: Left-hand threads).

F-1.7) Remove drag block retainer (21) from drag block body (18).

F-1.8) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

F-1.9) Unscrew and remove rubber mandrel cap (19) from inner mandrel (2).

F-1.10) Wedge lower slips (17) outwards (if needed). Remove drag block body assembly and disassemble:

F-1.10.1) Remove lower slips (17) and lower slip springs (25) from drag block body (18).

F-1.11) Unscrew and remove lower cone (16) from rubber retainer (15).

F-1.12) Unscrew and remove lower rubber mandrel (14) from rubber mandrel (11).

F-1.13) Remove rubber retainer (15) and element (13) from rubber mandrel (11).

F-1.14) Unscrew and remove gage ring (29) from rubber mandrel (11).

F-1.15) Unscrew and remove rubber mandrel (11) from upper cone (9).

NOTE₃: Do **NOT** wrench or clamp on seal surface.

F-1.15.1) Remove seal (30) from rubber mandrel (11).

F-1.16) Remove upper cone (9) from inner mandrel (2).

F-2) Remove upper J-body (32) from vise. Clamp inner mandrel (2) in vise.

NOTE₃: Do **NOT** wrench or clamp on seal surface.

F-2.1) Unscrew and remove top sub (1) from expansion joint mandrel (31).

NOTE₄: Upper slip body assembly must be free to rotate.

F-2.2) Unscrew and remove upper J-body (32) from spring cage keeper (10).

F-2.3) Remove expansion joint mandrel (31) from upper end of assembly.

F-2.4) Wedge releasing slip (7) and upper slips (8) outwards (if needed). Unscrew and separate upper slip body assembly from spring cage (5).

CAUTION₁: Compression spring (4) may have spring tension against upper slip body assembly.

F-2.5) Remove spring cage (5) from spring cage keeper (10).

F-2.6) Unscrew and remove spring cage keeper (10) from inner mandrel (2).

F-2.6.1) Remove seal (24) from spring cage keeper (10).

F-2.7) Remove compression spring (4) from inner mandrel (2).



OIL TOOLS

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F) DISASSEMBLY (cont'd)

F-2.8) Remove upper slip body assembly and disassemble:

F-2.8.1) Unscrew and remove spring retainer (27) from upper slip body (6).

F-2.8.2) Remove wedges. Remove upper slips (8), releasing slip (7) and upper slip springs (26) from upper slip body (6).

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

G) ASSEMBLY

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

G-1) Clamp inner mandrel (2) in vise.

NOTE₃: Do NOT wrench or clamp on seal surface.

G-1.1) Assemble upper slip body assembly and install:

G-1.1.1) Install upper slips (8), releasing slip (7) and upper slip springs (26) into upper slip body (6). Wedge releasing slip (7) and upper slips (8) outwards (if needed).

G-1.1.2) Screw spring retainer (27) into upper slip body (6).

G-1.1.3) Install upper slip body assembly onto inner mandrel (2).

G-1.2) Install compression spring (4) onto mandrel (2).

G-1.3) Install seal (24) into spring cage keeper (10).

G-1.4) Screw spring cage keeper (10) onto inner mandrel (2).

G-1.5) Screw spring cage (5) onto spring cage keeper (10).

CAUTION₁: Compression spring (4) may have spring tension against upper slip body assembly.

G-1.6) Screw upper J-body (32) into spring cage keeper (10)

G-1.7) Install expansion joint mandrel (31) into upper end top of assembly.

CAUTION₂: Do not rip or tear seal during installation

G-1.8) Screw top sub (1) onto expansion joint mandrel (31).

G-1.9) Remove wedges.

G-2) Remove inner mandrel (2) from vise. Clamp upper J-body (32) in vise.

G-2.1) Install upper cone (9) onto inner mandrel (2).

G-2.2) Install seal (30) into rubber mandrel (11).

G-2.3) Screw rubber mandrel (11) into upper cone (9).

CAUTION₂: Do not rip or tear seal during installation

G-2.4) Screw gage ring (29) onto rubber mandrel (11).

G-2.5) Install element (13) and rubber retainer (15) onto rubber mandrel (11).

G-2.6) Screw lower rubber mandrel (14) onto rubber mandrel (11).

G-2.7) Screw lower cone (16) into rubber retainer (15).

G-2.8) Assemble drag block body assembly and install:

G-2.8.1) Install lower slips (17) and lower slip springs (25) into drag block body (18).

G-2.8.2) Wedge lower slips (17) outwards (if needed). Install drag block body assembly onto inner mandrel (2).

G-2.9) Screw rubber mandrel cap (19) onto lower rubber mandrel (14).

G-2.10) Install drag blocks (22) and drag block springs (3) in drag block body (18).



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G) ASSEMBLY (cont'd)

G-2.11) Compress drag blocks (22) using drag block body assembly tool (T1, T2). Install drag block retainer (21) onto drag block body (18) capturing ends of drag blocks (22).

NOTE₆: Align holes in drag block retainer (21) to access threaded holes in drag block body (18).

G-2.12) Screw lower J-body (20) into drag block body (18) (**NOTE₁:** Left-hand threads).

G-2.13) Screw set screws (34) into lower J-body (20). Release drag blocks (22).

G-2.14) Assemble wireline guide bottom assembly and install:

G-2.14.1) Install J-pin ring (12) onto J-pin sub (23).

G-2.14.2) Align threaded holes in J-pin ring (12) with pocket holes in J-pin sub (23). Screw shear screws (33) into J-pin ring (12). Tighten and back out 1/4 turn.

G-2.15) Wrench on lower J-body (20) to screw J-pin sub (23) onto inner mandrel (2) (**NOTE₁:** Left-hand threads).

NOTE₂: Drag block body assembly must be free to rotate.

G-2.16) Slide lower J-body (20) as needed to screw set screws (35) into J-pin sub (23).

G-2.17) Screw wireline guide bottom (28) onto expansion joint mandrel (31) (**NOTE₁:** Left-hand threads).

G-2.18) Screw set screws (36) into wireline guide bottom (28).

G-2.19) Remove wedges.

G-3) Unclamp upper J-body (32) from vise and remove assembled tool

H) TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAG BLOCK ASSEMBLY TOOL	AT010110
T2	20	SQUARE HEAD SET SCREW 1/2-13 UNC X 4"	SQS050C400

I) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 74196-XBAE (32.3 – 43.5#)
1	1	TOP SUB	1026	74195610
2	1	INNER MANDREL	1026	74195210
3	36	DRAG BLOCK SPRING		9101900
4	1	COMPRESSION SPRING	CHROME VANADIUM	74195920
5	1	SPRING CAGE	1026	74195310
6	1	UPPER SLIP BODY	P-110	60395320A
7	1	RELEASING SLIP	P-110	60095125
8	2	UPPER SLIP	1026	60095115
9	1	UPPER CONE	1026	74195410
10	1	SPRING CAGE KEEPER	1026	74195811



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I) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 74196-XBAE (32.3 – 43.5#)
11	1	RUBBER MANDREL	1026	74195220
12	1	J-PIN RING	P-110	74195875
13	1	ELEMENT	90 DURO AFLAS	S7383
14	1	LOWER RUBBER MANDREL	1026	74195250
15	1	RUBBER RETAINER	1026	74196850
16	1	LOWER CONE	1026	74195420
17	4	LOWER SLIP	1026	60095135
18	1	DRAG BLOCK BODY	1026	74195335
19	1	RUBBER MANDREL CAP	1026	74195230
20	1	J-BODY - LOWER	1026	74195340A
21	1	DRAG BLOCK RETAINER	1026	74195910
22	6	DRAG BLOCK	8620	9080900
23	1	J-PIN SUB	L-80	74195640
24	1	SEAL		S7387
25	8	LOWER SLIP SPRING		7170901
26	6	UPPER SLIP SPRING		7170902
27	1	SPRING RETAINER	1026	74195820
28	1	WIRELINE GUIDE BOTTOM	P-110	74195633WL
29	1	GAGE RING	1026	74196830
30	1	SEAL		S7384
31	1	EXPANSION JOINT MANDREL	1026	74195260
32	1	J-BODY - UPPER	1026	74195345
33	12	SHEAR SCREW (5500# EA) 1/2-13 UNC X 7/16	BRASS	BSSSLT050C043
34	3	SET SCREW 1/4-20 UNC X 1/4	STEEL	SSS025C025
35	2	SET SCREW 1/4-20 UNC X 1/2	STEEL	SSS025C050
36	2	SET SCREW 5/16-18 UNC X 1/2	STEEL	SSS031C050

ASSEMBLED WEIGHT	930 LBS
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J) TECHNICAL ILLUSTRATION

