



JETTSET PACKER

4-1/2" X 2-3/8"

Manual No:
DL-120-4500-495

Revision: **B**

Revision Date:
04/30/2021

Authored by: *B.Mathis*

Approved by: *D.Hushbeck*

A) DESCRIPTION

The Jettset Packer is a versatile mechanically set retrievable packer and may be used in any production application. This packer is suited for treating, testing, or injection applications, in pumping or flowing wells, either deep or shallow. This packer can be left in tension or compression, depending on well conditions and the required application. An internal by-pass reduces swabbing when running and retrieving. The by-pass closes when the packer is set and opens prior to releasing the upper slips when retrieving to allow pressure equalization. The J-Slot design allows easy setting and releasing; 1/4 turn right-hand set, 1/4 turn right-hand release.

B) SPECIFICATION GUIDE

CASING			TOOL		THREAD CONNECTION BOX UP / [PIN] [BOX] DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)	GAGE OD (INCHES)	ID (INCHES)		
4-1/2	9.5 – 13.5	3.920 – 4.090	3.750	1.94	2-3/8 EUE	12045 12045H ¹ 12045V ²

Elastomer Trim Options: ¹HSN, ²Viton

NOTE₁: Tool listed is right-hand set / right-hand release.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
7,000 PSI	35,000 LBS

C) 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.

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.

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

D-1) COMPRESSION SET

Run the packer to setting depth. Pick up the tubing to allow for setting stroke (12-13") plus desired tubing load. Rotate the tubing 1/4 right-hand turn at the packer, and then lower the tubing while releasing torque. Slack off on the tubing sufficient weight to set the packer (10,000 lbs). Pull tension to assure that the upper slips are set. The tubing can then be left in tension, compression or neutral. If insufficient weight is available to set the packer with compression, tension can be applied after slack-off to pack off the elements.

D-2) TENSION SET

Run to setting depth, pick up on the tubing and rotate 1/4 turn to the right at the packer then lower the tubing slacking off available weight to set the packer lower slips. Pull tension to set upper slips and pack off elements (10,000 lbs). After setting the packer, the tubing can be left in compression, tension or neutral.

E) RELEASING PROCEDURES

The releasing procedures are the same whether the packer has been tension or compression set. Set down weight on the packer and rotate the tubing 1/4 turn to the right at the packer and pick up while holding right-hand torque. The internal by-pass will open, allowing pressure to equalize. After pressure is equalized, continue to pick up to release the upper slips, relax the elements and release the lower slips thus allowing the packer to be re-set or removed from the well.

CAUTION: High differential pressure below the Jettset Packer may cause the upper slips to wedge in tighter, requiring an extra amount of tension to release the upper slips.

F) PRESSURE AFFECTED AREA GUIDE

PACKER SIZE (INCHES)	TUBING SIZE (INCHES)	PRESSURE AFFECTED AREA (IN ²)	
		ABOVE	BELOW
4-1/2	1.900	1.48 (DOWN)	-2.28 (UP)
	2.063	0.97 (DOWN)	-1.91 (UP)
	2.375	-0.11 (UP)	-1.19 (UP)

Example: Consider a 4-1/2" packer set on 2.063 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 the pressure affected area for the tubing size. 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 0.97 in². Multiplying the differential pressure (3,000 psi) by the pressure affected area (0.97 in²) results in a force of 270 lbs. The piston effect on the packer mandrel is a downward force of 270 lbs.



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G) 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 (F°)
NITRILE	40° - 250°F
HSN (HNBR)	70° - 300°F
VITON	100° - 350°F

H) RECOMMENDED TOOLS

H-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
- STRAP WRENCH
- 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

H-2) OPTIONAL SPECIAL TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAG BLOCK ASSEMBLY TOOL	AT045110

I) DISASSEMBLY

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

I-1.1) Unscrew and remove J-pins (17) from control body (29).

I-1.2) Unscrew and remove set screws (22) from control body (29).

I-1.3) Compress drag blocks (30) using drag block body assembly tool (T1).

I-1.4) Unscrew control body (29) from lower slip body (14). (**NOTE**₂: Left-hand threads). Move control body assembly upwards.

I-1.5) Release and remove drag blocks (30) and drag block springs (27) from control body (29).

I-1.6) Remove control body (29) from J-slot mandrel (3).

I-1.7) Rotate lower cone (13) and lower rubber mandrel (18) as needed to align slots. Unscrew and remove set screws (19) from J-slot mandrel (3).

I-1.8) Unscrew and remove J-slot mandrel (3) from inner mandrel (2).

I-1.8.1) Remove o-ring (24) from J-slot mandrel (3).

I-1.9) Unscrew lower rubber mandrel (18) from upper rubber mandrel (16).

I-1.10) Remove lower rubber mandrel assembly and disassemble:

I-1.10.1) Unscrew and remove socket cap screws (21) from lower rubber mandrel (18).

I-1.10.2) Remove lower rubber mandrel (18) from lower slip body (14). Wedge lower slips (15) outwards (if needed).



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I) DISASSEMBLY (cont'd)

- I-1.10.3 Remove lower slips (15) and lower slip springs (31) from lower slip body (14).
- I-1.11 Unscrew and remove lower cone (13) from rubber retainer ring (12).
- I-1.12 Unscrew upper rubber mandrel (16) from center coupling (9).
- I-1.13 Remove upper rubber mandrel assembly and disassemble:
 - I-1.13.1 Remove elements (10), rubber spacer (11), and rubber retainer (12) from upper rubber mandrel (16).
- I-1.14 Unscrew and remove center coupling (9) from upper cone (8).
 - I-1.14.1 Remove seal (23) and o-ring (25) from center coupling (9).
- I-1.15 Remove upper cone (8) from inner mandrel (2).
- I-2) Remove top sub (1) from vise. Clamp inner mandrel (2) in vise.

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

 - I-2.1 Unscrew spring cage cap (4) from spring cage (5).

CAUTION₂: Compression spring (28) will be compressed with spring tension against spring cage assembly.
 - I-2.2 Unscrew and remove set screws (20) from top sub (1).
 - I-2.3 Unscrew and remove top sub (1) from inner mandrel (2).
 - I-2.3.1 Remove o-ring (26) from top sub (1).
 - I-2.4 Remove compression spring (28) from inner mandrel (2).
 - I-2.5 Wedge releasing slip (6) and upper slips (7) outwards (if needed). Remove spring cage assembly from inner mandrel (2) and disassemble:
 - I-2.5.1 Remove upper slips (7), releasing slip (6), and upper slip springs (32) from spring cage (5).
- I-3) Remove inner mandrel (2) from vise.

J) ASSEMBLY

- NOTE₄:** Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order & orientation.
- J-1) Clamp inner mandrel (2) in vise.

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

 - J-1.1) Assemble spring cage assembly and install:
 - J-1.1.1) Install upper slips (7), releasing slip (6) and upper slip springs (32) into spring cage (5).
 - H-1.1.1) Wedge releasing slip (6) and upper slips (7) outwards. Install spring cage assembly onto inner mandrel (2).
 - H-1.2) Install compression spring (28) onto inner mandrel (2) and into spring cage assembly.
 - H-1.3) Install o-ring (26) in groove in top sub (1).
 - H-1.4) Screw top sub (1) onto inner mandrel (2).

CAUTION₃: Do not rip or tear o-ring during installation.
 - H-1.5) Screw set screws (20) into top sub (1).
 - H-1.6) Screw spring cage cap (4) onto spring cage (5).

CAUTION₂: Compression spring (28) will be compressed with spring tension against spring cage assembly.
 - J-2) Remove inner mandrel (2) and assembly from vise.
 - J-3) Install o-ring (25) in groove in center coupling (9).
 - J-4) Install seal (23) into center coupling (9).



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J) ASSEMBLY (cont'd)

J-5) Clamp center coupling (9) in vise. Assemble rubber mandrel assembly:

H-1.7) Screw upper cone (8) onto center coupling (9).

H-1.8) Assemble rubber mandrel assembly and install:

J-5.1.1) Install rubber retainer ring (12), elements (10), and rubber spacer (11) onto upper rubber mandrel (16).

J-5.1.2) Screw upper rubber mandrel (16) and assembly into center coupling (9).

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

H-1.9) Screw lower cone (13) into rubber retainer ring (12).

J-6) Assemble lower rubber mandrel assembly and install:

J-6.1) Install lower slips (15) and lower slip springs (31) into lower slip body (14).

J-6.2) Install lower slip body assembly onto lower rubber mandrel (18). Wedge lower slips (15) outwards.

J-6.3) Align slotted holes in lower slip body (14) with threaded holes in lower rubber mandrel (18). Screw socket cap screws (21) into lower rubber mandrel (18).

J-6.4) Screw lower rubber mandrel (18) into upper rubber mandrel (16).

J-7) Remove rubber mandrel assembly from vise. Clamp inner mandrel and assembly in vise – clamp on top sub (1).

J-7.1) Install o-ring (24) in groove in J-slot mandrel (3).

J-7.2) Screw J-slot mandrel (3) onto inner mandrel (2).

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

J-7.3) Rotate lower cone (13) and lower rubber mandrel (18) as needed to align slots with threaded holes in J-slot mandrel (3). Screw set screws (19) into J-slot mandrel (3).

J-7.4) Assemble control body assembly and install:

J-7.4.1) Install drag blocks (30) and drag block springs (27) into control body (29).

J-7.4.2) Compress drag blocks (30) using drag block body assembly tool (T1).

J-7.4.3) Screw control body (29) into lower slip body (14) (**NOTE:** Left-hand threads).

J-7.4.4) Release drag blocks.

J-7.4.5) Screw set screws (22) into lower slip body (14).

J-7.5) Align threaded holes with J-slots in J-slot mandrel (3). Screw J-pins (17) into control body (29)

J-8) Unclamp top sub (1) from vise and remove assembled tool.



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K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 12045
1	1	TOP SUB	DLMS80	12045610
2	1	INNER MANDREL	DLMS80	12045210
3	1	J-SLOT MANDREL	DLMS110	12045230
4	1	SPRING CAGE CAP	DLMS60	12045810
5	1	SPRING CAGE	DLMS80	12045325
6	1	RELEASING SLIP	DLMS110	12045125
7	2	UPPER SLIP	DLMS35	12045115
8	1	UPPER CONE	DLMS80	12045410
9	1	CENTER COUPLING	DLMS80	12045620
10	2	ELEMENT	80 DURO NITRILE	60245512
11	1	RUBBER SPACER	DLMS60	60245840
12	1	RUBBER RETAINER RING	DLMS60	12045850
13	1	LOWER CONE	DLMS80	12045420
14	1	LOWER SLIP BODY	DLMS80	12045336
15	3	LOWER SLIP	DLMS60	60045135
16	1	UPPER RUBBER MANDREL	DLMS80	12045220
17	2	J-PIN	DLMS80	12045870
18	1	LOWER RUBBER MANDREL	DLMS80	12045221
19	4	1/4-20 UNC X 3/16 SOCKET SET SCREW	STEEL	SSS025C018
20	1	1/4-20 UNC X 1/4 SOCKET SET SCREW	STEEL	SSS025C025
21	3	1/4-20 UNC X 1/4 SOCKET CAP SCREW	STEEL	SCS025C025
22	3	5/16-18 UNC X 5/16 SOCKET SET SCREW	STEEL	SSS031C031
23	1	SEAL	90 DURO NITRILE	12045520
24	1	138-90 O-RING	90 DURO NITRILE	90138
25	1	231-90 O-RING	90 DURO NITRILE	90231
26	1	229-90 O-RING	90 DURO NITRILE	90229
27	12	DRAG BLOCK SPRINGS	-	9100900
28	1	COMPRESSION SPRING	DLMCRSP	12045920
29	1	CONTROL BODY	DLMS80	12045335
30	4	DRAG BLOCK	DLMSDB8	9045900
31	3	LOWER SLIP SPRINGS	-	7145901
32	3	UPPER SLIP SPRINGS	-	7145902

REDRESS KIT (RDK)	12045050
ASSEMBLED WEIGHT	69 LBS



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K) PARTS LIST (cont'd)

K-1) ELASTOMER TRIM OPTIONS

NOTE₂: For temperature range, refer to Elastomer Trim Temperature Guide.

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 12045H
10	2	ELEMENT	80 DURO HSN	60245512H
23	1	SEAL	90 DURO HSN	12045520H
24	1	138-90 O-RING	90 DURO HSN	90138H
25	1	231-90 O-RING	90 DURO HSN	90231H
26	1	229-90 O-RING	90 DURO HSN	90229H

REDRESS KIT (RDK)		12045050H
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K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 12045V
10	2	ELEMENT	80 DURO VITON	60245512V
23	1	SEAL	90 DURO VITON	12045520V
24	1	138-90 O-RING	90 DURO VITON	90138V
25	1	231-90 O-RING	90 DURO VITON	90231V
26	1	229-90 O-RING	90 DURO VITON	90229V

REDRESS KIT (RDK)		12045050V
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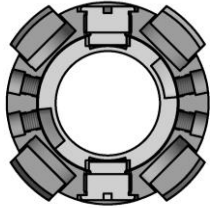
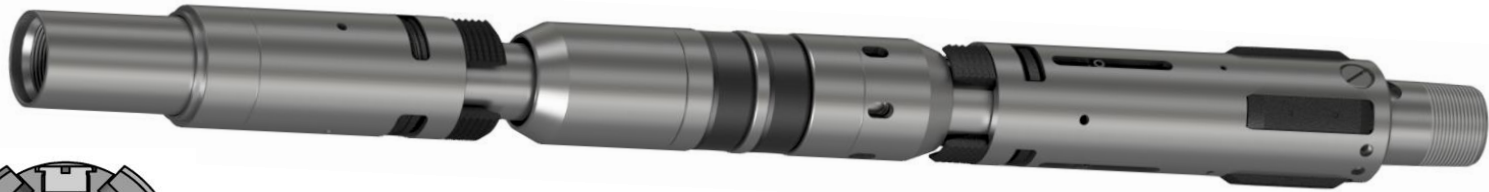
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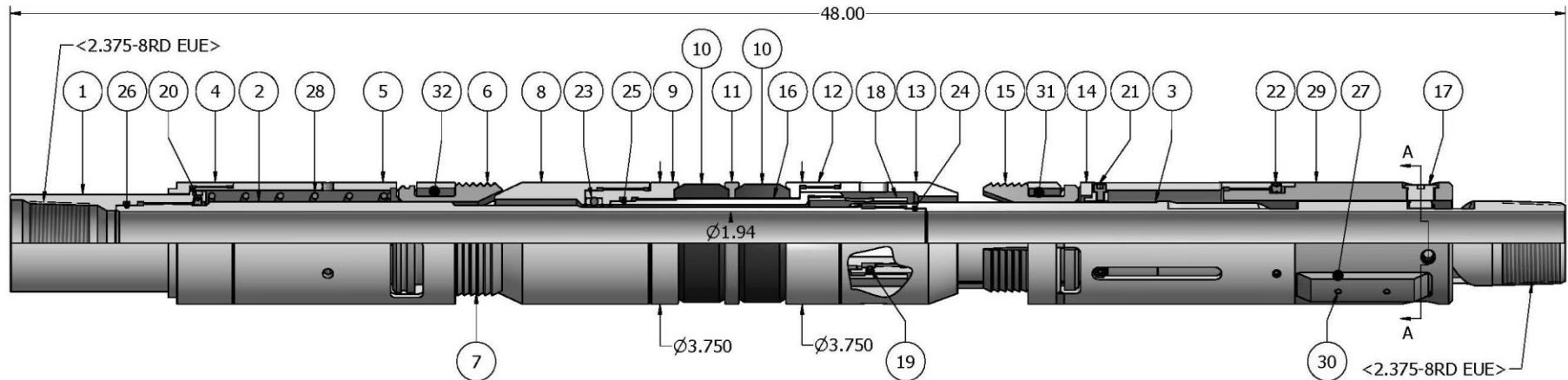
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I) TECHNICAL ILLUSTRATION



SECTION A





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J) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
04/30/2021	B	Revised entire manual	J.Anderson	E.Visaez