



WIRELINE SET BRIDGE PLUG

3-1/2"

Manual No:
DL-730-3500-230

Revision: **C**

Revision Date:
07/27/2016

Authored by: *B.Mathis*

Approved by: *D.Hushbeck*

A) DESCRIPTION

The Wireline Set Bridge Plug (WBP) is wireline set, packer-type retrievable bridge plug capable of holding differential pressure from above or below. The WBP is used for a temporary bridge plug for acidizing, fracturing, cementing, casing pressure tests, well head replacement, and zone isolation. The WBP utilizes standard wireline or hydraulic setting tools.

B) RELATED TOOLS (sold separately)

B-1) 3-1/2" and 4" Wireline Adapter Kit (WLAK) (PN 73035-05)—refer to technical manual *DL-730-3500-726*.

B-2) 3-1/2" Retrieving Tool (PN 73035800)—refer to technical manual *DL-730-3500-728*.

C) SPECIFICATION GUIDE

CASING			TOOL	THREAD CONNECTION PIN UP	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)	GAGE OD (INCHES)		
3-1/2	7.7 – 10.2	2.922 – 3.068	2.700	5/8 UNF	73035

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	TEMPERATURE RATING (MAX)
10,000 PSI	14,000 LBS	300°F

D) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION: 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

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.

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

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

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.

E) SETTING PROCEDURES

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

The WBP is set on a wireline pressure setting assembly and wireline adapter kit. It is retrieved using the WBP retrieving tool.

F) RELEASING PROCEDURES

F-1.1) TUBING RETRIEVAL

Make up the retrieving tool on the work string and run it to the setting depth. In the event sand or other debris is present on top of the plug, standard washing may be continued after the head is latched onto the plug. To equalize any differential pressure across the plug, set down approximately 1,340 lbs. This shifts the equalizing sleeve downward and opens the equalizing ports. After the differential is equalized, the tool is released by the application of 4,000-5,000 lbs tension. Move the tool up the hole a maximum of six feet to completely stretch out the slip system before moving back down the hole.

During retrieval, a calculated force of 14,000 lbs may be pulled on the 3-1/2" Wireline Set Bridge Plug.

F-1.2) SANDLINE RETRIEVAL

Make up the retrieving tool with the stem and the jars. Position the jars immediately above the retrieving tool. Flag the line and run the tools to setting depth. Jar down to open the equalizing sleeve. Allow sufficient time for any pressure differential to equalize before releasing the plug. Pull 4,000-5,000 lbs or jar upward to release the plug. Slowly retrieve the plug for 100 ft to allow the packing element system to relax and pass through the casing without hanging up.

G) 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.



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H) RECOMMENDED 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) DISASSEMBLY

- I-1) Clamp lower cone (11) in vise.
- I-1.1) Unscrew and remove shear stud (18) from shear coupling (17).
 - I-1.2) Unscrew and remove shear coupling (17) from inner mandrel (1).
 - I-1.3) Unscrew and remove shear screws (19) from latch (5).
 - I-1.4) Remove latch (5) from inner mandrel (1).
 - I-1.5) Unscrew and remove shear screw (19) from outer sleeve (22).
 - I-1.6) Remove outer sleeve (22) from main mandrel top (4) and inner mandrel (1).
 - I-1.6.1) Remove o-rings (25) from outer sleeve (22).
 - I-1.7) Moving to lower end of tool, unscrew and remove inner mandrel cap (13) from inner mandrel (1).
 - I-1.8) Moving to upper end of tool, remove inner mandrel (1) from main mandrel (2).
 - I-1.8.1) Remove o-ring (24) from inner mandrel (1).
 - I-1.9) Unscrew and remove main mandrel cap (4) from main mandrel (2).
 - I-1.10) Unscrew and remove shear screws (20) from upper gage ring (6).
 - I-1.11) Unscrew upper cone (10) from lower gage ring (8).
 - I-1.12) Unscrew rubber mandrel (3) from lock ring (15).
 - I-1.13) Remove rubber mandrel assembly from main mandrel (2) and disassemble:
 - I-1.13.1) Unscrew and remove upper gage ring (6) from rubber mandrel (3).
 - I-1.13.1.1) Remove o-ring (25) from upper gage ring (6).
 - I-1.13.2) Remove elements (9) and rubber spacer (7) from rubber mandrel (3).
 - I-1.13.3) Unscrew and remove shear screws (20) from lower gage ring (8).
 - I-1.13.4) Remove lower gage ring (8) from rubber mandrel (3).
 - I-1.14) Unscrew and/or slide lock ring (15) from main mandrel (2).

NOTE₁: Using snap ring spreader pliers, the lock ring (15) may be spread slightly to be removed from main mandrel (2).
 - I-1.15) Wedge slips outwards (if necessary). Remove slip body assembly from main mandrel (2) and disassemble:
 - I-1.15.1) Remove wedges (if necessary). Remove slip assemblies from slip body (12) and disassemble:
 - I-1.15.1.1) Unscrew and remove button head cap screws (23) from slips (14) and remove slip springs (16).
 - I-1.15.2) Remove upper cone (10) from slip body (12).
 - I-1.16) Unscrew and remove low head cap screws (21) from lower cone (11).
 - I-1.17) Remove main mandrel (2) from lower cone (11).
- I-2) Unclamp and remove lower cone (11) from vise.



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J) ASSEMBLY

NOTE₂: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

J-1) Clamp lower cone (11) in vise.

J-1.1) Install lower end of main mandrel (2) into lower cone (11). Align gaps between collet fingers of main mandrel (2) with threaded holes in lower cone (11).

J-1.2) Screw low head cap screws (21) into lower cone (11).

J-1.3) Assemble slip body assembly and install:

J-1.3.1) Install upper cone (10) into slip body (12).

J-1.3.2) Assemble slip assemblies and install:

J-1.3.2.1) Set slip springs (16) in place on slips (14) and screw button head cap screws (23) into slips (14).

NOTE₃: Install three (3ea) springs per slip (Fig. 2).

J-1.3.2.2) Install slip assemblies in slip body (12). Wedge slips (14) outwards.

J-1.3.2.3) Install slip body assembly onto main mandrel (2). Remove wedges.

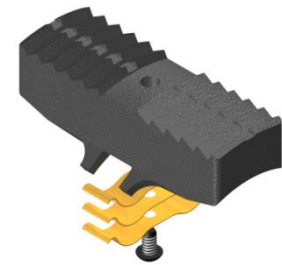


Fig. 2

J-1.4) Install lock ring (15) onto smooth surface of main mandrel (2).

CAUTION₃: Do not install lock ring (15) onto ratcheting thread on main mandrel (2)

NOTE₄: Threads on lock ring (15) are directional - it MUST be installed in correct direction for tool to work properly.

J-1.5) Assemble rubber mandrel assembly and install:

J-1.5.1) Install lower gage ring (8) onto rubber mandrel (3). Align threaded holes in lower gage ring (8) with groove in rubber mandrel (3).

J-1.5.2) Screw shear screws (20) into lower gage ring (8). Tighten until shear screws (20) make contact with rubber mandrel (3). Back shear screws (20) out 1/4 turn.

J-1.5.3) Install elements (9) and rubber spacer (7) onto rubber mandrel (3).

J-1.5.4) Install o-ring (25) in groove in upper gage ring (6).

J-1.5.5) Screw upper gage ring (6) onto rubber mandrel (3).

J-1.5.6) Install rubber mandrel assembly onto main mandrel (2) and CAREFULLY screw rubber mandrel (3) onto lock ring (15).

CAUTION₄: Do not rip or tear o-ring during installation.

J-1.6) Screw upper cone (10) into lower gage ring (8).

J-1.7) Align threaded holes in upper gage ring (6) with groove in main mandrel (2). Screw shear screws (20) into upper gage ring (6). Tighten until shear screws (20) make contact with main mandrel (2). Back shear screws (20) out 1/4 turn.

J-1.8) Screw main mandrel top (4) into main mandrel (2).

J-1.9) Install o-ring (24) in groove in inner mandrel (1).

J-1.10) Install inner mandrel (1) into main mandrel top (4) and main mandrel (2). Insert inner mandrel (1) until collet fingers of main mandrel top (4) engage collet groove in inner mandrel (1).

CAUTION₄: Do not rip or tear o-ring during installation.

J-1.11) Moving to lower end of tool, screw inner mandrel cap (13) onto inner mandrel (1).

J-1.12) Moving to upper end of tool, install o-rings (25) in grooves in outer sleeve (22).



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J) ASSEMBLY (cont'd)

J-1.13 Install outer sleeve (22) onto main mandrel top (4) and main mandrel (2). Align threaded hole in outer sleeve (22) with recessed hole in main mandrel (2).

CAUTION₄: Do not rip or tear o-rings during installation.

J-1.14 Screw shear screw (19) into outer sleeve (22). Tighten until shear screw (19) makes contact with main mandrel (2). Back shear screw (19) out 1/4 turn.

J-1.15 Install latch (5) onto inner mandrel (1). Align threaded holes in latch (5) in groove in inner mandrel (1).

J-1.16 Install shear screws (19) into latch. Tighten until shear screws (19) make contact with inner mandrel (1). Back shear screws (19) out 1/4 turn.

J-1.17 Screw shear coupling (17) onto inner mandrel (1).

J-1.18 Screw shear stud (18) into shear coupling (17).

J-2) Unclamp lower cone (11) from vise and remove assembled tool.

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
1	1	INNER MANDREL	DLMS80	73035205
2	1	MAIN MANDREL	DLMS125	73035210
3	1	RUBBER MANDREL	DLMS80	73035220
4	1	MAIN MANDREL TOP	DLMS80	73035610
5	1	LATCH	DLMS80	73035660
6	1	UPPER GAGE RING	DLMS80	73035830
7	1	RUBBER SPACER	DLMS60	73035840
8	1	LOWER GAGE RING	DLMS80	73035850
9	2	ELEMENT	80 DURO NITRILE	73035512
10	1	UPPER CONE	DLMS110	73035410
11	1	LOWER CONE	DLMS110	73035420
12	1	SLIP BODY	DLMS80	73035335
13	1	INNER MANDREL CAP	DLMS80	73035235
14	4	SLIP	DLMS60	73035135
15	1	LOCK RING	DLMS80	73035011
16	12	SLIP SPRING	DLMINC625	WP04100
17	1	SHEAR COUPLING	DLMS110	73035900
18	1	SHEAR STUD	DLMS110	73035901
19	4	SHEAR SCREW (1200#) 1/4-20 UNC X 5/16	DLM360BRS	BSSSLT025C031
20	7	SHEAR SCREW (2200#) 5/16-24 UNF X 5/16	DLM360BRS	BSSSLT031F031
21	4	LOW HEAD CAP SCREW 1/4-20 UNC X 1/4	STEEL	LHSC025C025
22	1	OUTER SLEEVE	DLMS80	73035620



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K) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
23	4	BUTTON HEAD CAP SCREW #6-32 UNC X 1/4	STEEL	BHSC632C025
24	1	207 O-RING	90 DURO NITRILE	90207
25	3	219 O-RING	90 DURO NITRILE	90219

REDRESS KIT (RDK)		73035050
ASSEMBLED WEIGHT		29 LBS



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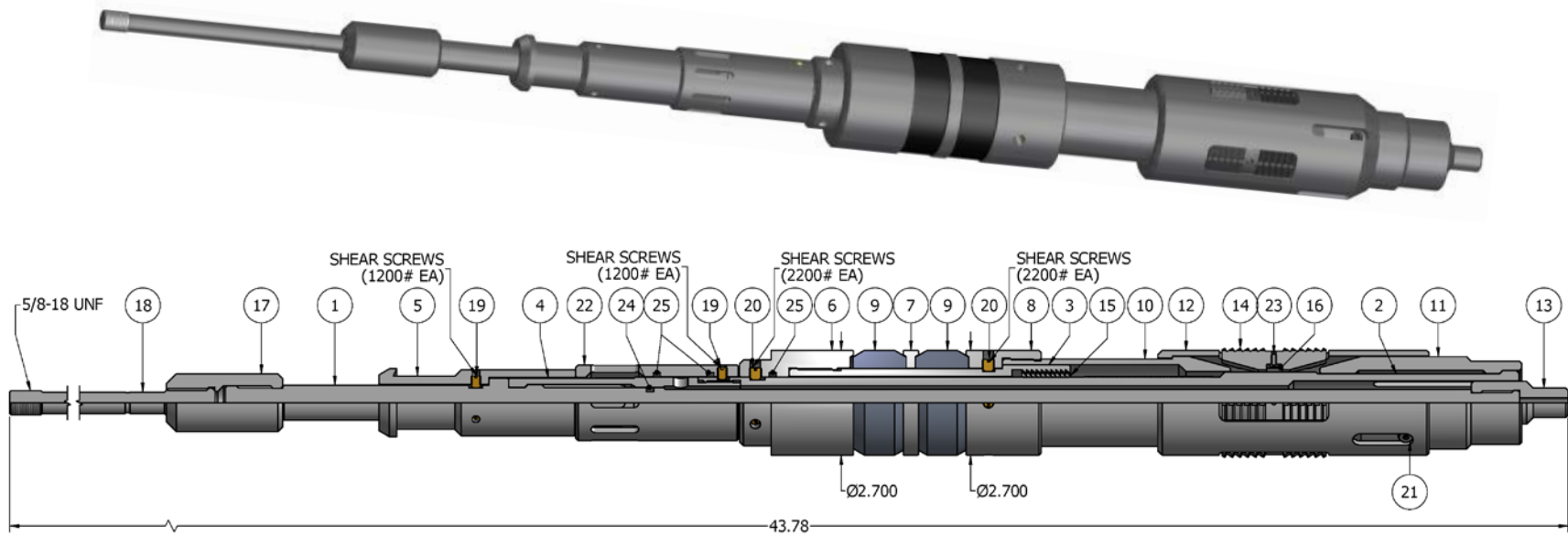
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L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
07/27/2016	C	Revised P/N for retrieving tool	J.Anderson	D.Hushbeck
08/22/14	B	Revised entire manual	J.Anderson	R.Dyer