



PERMAPAK SEAL BORE PACKER

7" X 2.688" (23.0 – 32.0#)

Manual No:
DL-670-7000-1214

Revision: **B**

Revision Date:
02/28/2024

Authored by: J.Anderson

Approved by: N.Banker

A) DESCRIPTION

The Permapak Packer is a highly versatile tool which may be set on wireline or hydraulically. The Permapak Packer is frequently used on stimulation jobs where excessively high pressures and/or temperatures are encountered. By installing a Knock-out Plug, Pump-out Plug or Screw-out Plug, the Permapak may be used as a temporary bridge plug to isolate a lower zone. The zone may later be produced by removing the plug with the production string and landing the seals.

Optional bottoms are available for the Permapak for accepting Seal Bore Extensions, Non-sealing Extensions, Knock-out Plugs, Screw-out Plugs, Pump-out Plugs and Flapper Valves.

NOTE1: Permapak setting equipment, bottoms, and accessories are sold separately.

NOTE2: This packer requires at least a 30 second burn on the wireline setting tool to ensure a proper set. A burn time less than 30 seconds may shear the setting tool off of the packer before fully setting the packer.

B) RELATED TOOLS (sold separately)

B-1) 7" Wireline Adapter Kit (WLAK) (PN 97070)—refer to technical manual *DL-970-7000-626*.

B-2) Model "H" #20 Hydraulic Setting Tool (PN 39120-3)—refer to technical manual *DL-391-20-377*.

B-3) LC #20 Hydraulic Setting Tool (PN 97465-20)—contact D&L sales.

B-4) LC Setting Kit (PN varies)—refer to technical manual *DL-394-20-229*.

B-5) 2.688" Seal bore accessories— refer to technical manual *DL-581-2688-780*.

C) SPECIFICATION GUIDE

CASING			TOOL OD (INCHES)	THROUGH SEALS (INCHES)	SEAL BORE (INCHES)	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)				
7	23.0 – 32.0	6.094 – 6.366	5.813	1.94	2.688	67071-1 67071H-1 ¹ 67071V-1 ² 67071C-1 ³ 67071HC-1 ⁴ 67071VC-1 ⁵

Tool Options: ¹HSN, ²Viton, ³Nitrile, Carbide, ⁴HSN, Carbide, ⁵Viton, Carbide

DIFFERENTIAL PRESSURE (MAX)
10,000 PSI

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

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

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.

E) OPERATION PROCEDURES

CAUTION₂: Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

E-1) ON A WIRELINE

In setting the Permapak, the setting forces are transferred from the gun to the packer through the setting adapter kit. The lock ring housing is backed up while the top connection (and thus the inner mandrel) is pulled up. This movement causes the shear pins in the lock ring housing and the cones to shear and the slips to separate and set. Further stroke expands the back-up rings against the casing, packs off the element, and shears the adapter kit free of the packer.

The rubber pack-off is maintained by the slips and the inner mandrel movement is checked by the lock ring. When the packer is milled, there are two rotational locks; the lock ring and the key in the lower cone.

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.



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G) ELASTOMER TRIM TEMPERATURE GUIDE

RUBBER TYPE	TEMPERATURE RANGE
NITRILE	40° - 250°F
HSN (HNBR)	70° - 300°F
VITON	100° - 350°F

H) RECOMMENDED 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) DISASSEMBLY

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

I-1.1) Remove slip ring (5) from inner mandrel (2).

I-1.2) Unscrew and remove shear screws (14) from lower cone (11).

I-1.3) Remove lower cone (11) from inner mandrel (2).

I-1.4) Remove keys (15) from inner mandrel (2).

I-1.5) Remove male and female expansion rings (7, 8), rubber retainers (9), and element (10) from inner mandrel (2).

I-1.6) Unscrew and remove shear screws (14) from upper cone (6).

I-1.7) Remove upper cone (6) from inner mandrel (2).

I-1.8) Remove slip ring (5) from inner mandrel (2).

I-1.9) Unscrew and remove shear screws (13) from lock ring housing (3).

I-1.10) Unscrew and remove set screws (12) from top sub (1).

I-1.11) Unscrew and remove inner mandrel (2) from top sub (1).

I-1.12) Unscrew and remove lock ring housing (3) from lock ring (4).

I-1.13) Unscrew and/or slide lock ring (4) from inner mandrel (2) (**NOTE**₅: Left-hand threads).

NOTE₇: Using snap ring spreader pliers, the lock ring (4) may be spread slightly to be removed from inner mandrel (2).

I-2) Unclamp top sub (1) and remove from vise.



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J) ASSEMBLY

NOTE₃: 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 top sub (1) in vise.

J-1.1) Assemble inner mandrel assembly and install:

J-1.1.1) Screw and/or slide lock ring (4) onto the upper end of OD threads on inner mandrel (2) (**NOTE₅:** Left-hand threads).

NOTE₆: Threads on lock ring (4) are directional—it **MUST** be installed in correct direction for tool to work properly.

J-1.1.2) Screw lock ring housing (3) onto lock ring (4).

J-1.1.3) Screw inner mandrel (2) into top sub (1).

CAUTION₃: Do **NOT** wrench or clamp on seal surface.

J-1.2) Screw set screws (12) into top sub (1).

J-1.3) Align gap in lock ring (4) with threaded hole in lock ring housing (3). Screw one (1 qty) shear screw (13) into lock ring housing (3). Tighten until shear screw (13) contacts inner mandrel (2). Back shear screw (13) out 1/4 turn.

J-1.4) Screw remaining (6 qty) shear screws (13) into lock ring housing (3). Tighten until shear screws (13) contact top sub (1). Back shear screws (13) out 1/4 turn.

J-1.5) Install slip ring (5) onto inner mandrel (2).

J-1.6) Install upper cone (6) onto inner mandrel (2).

J-1.7) Align threaded holes in upper cone (6) with pocket holes in inner mandrel (2). Screw four (4 qty) shear screws (14) into upper cone (6). Tighten until shear screws (14) contact inner mandrel (2). Back shear screws (14) out 1/4 turn.

J-1.8) Install male and female expansion rings (7, 8), rubber retainers (9), and element (10) onto inner mandrel (2).

J-1.9) Set keys (15) in place on flat surface on lower end of inner mandrel (2).

J-1.10) Align key slots in ID of lower cone (11) with keys (9) and install lower cone (11) onto inner mandrel (2).

J-1.11) Align threaded holes in lower cone (11) with pocket holes in inner mandrel (2). Screw remaining (4 qty) shear screws (14) into upper cone (6). Tighten until shear screws (14) contact inner mandrel (2). Back shear screws (14) out 1/4 turn.

J-1.12) Install slip ring (5) onto inner mandrel (2).

J-2) Unclamp top sub (1) from vise and remove assembled tool.



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K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67071-1
1	1	TOP SUB	DLMS80	67070001-2688
2	1	INNER MANDREL	DLMS110	670C70210-2688
3	1	LOCK RING HOUSING	DLMS80	67071012-L-80
4	1	LOCK RING	DLMS80	67070011
5	2	SLIP RING	DLMCIG2	67071111
6	1	UPPER CONE	DLMCIG2	67071014
7	2	MALE EXPANSION RING	DLM660BRZ	67071020
8	2	FEMALE EXPANSION RING	DLM660BRZ	67071013
9	2	RUBBER RETAINER	DLMCIG2	67071015
10	1	ELEMENT	80 DURO NITRILE	67071512
11	1	LOWER CONE	DLMCIG2	67071023
12	3	SOCKET SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037
13	7	SLOTTED SHEAR SCREW (750#) #10-32 UNF X 3/8	DLM360BRS	BSSSLT1032F037
14	8	SLOTTED SHEAR SCREW (1200#) 1/4-20 UNC X 1/2	DLM360BRS	BSSSLT025C050
15	2	KEY	DLMSKS	KS018X018X100
16	10	DRIV-LOK PIN (4800#) 5/16 X 1"	4140	DLP031100

ASSEMBLED WEIGHT	130 LBS
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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 67071H-1
10	1	ELEMENT	80 DURO HSN	67071512H

K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67071V-1
10	1	ELEMENT	80 DURO VITON	67071512V

K-2) CARBIDE OPTION

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67071C-1
5	2	CARBIDE SLIP RING	DLMCIG2	67071111C



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L) ACCESSORIES - BOTTOM SUBS

NOTE: Standard bottom subs are listed. Other tubing sizes/configurations and threads are available. All sold separately.

DESCRIPTION	MATERIAL	THREAD CONNECTION	PART NUMBER
PLAIN BOTTOM	DLMS80	-	67071018-1
CONCENTRIC BOTTOM	DLMS80	3.1250-8 STUB ACME BOX	67071610
BOX TUBING BOTTOM	-	2.875-8RD EUE	67071620



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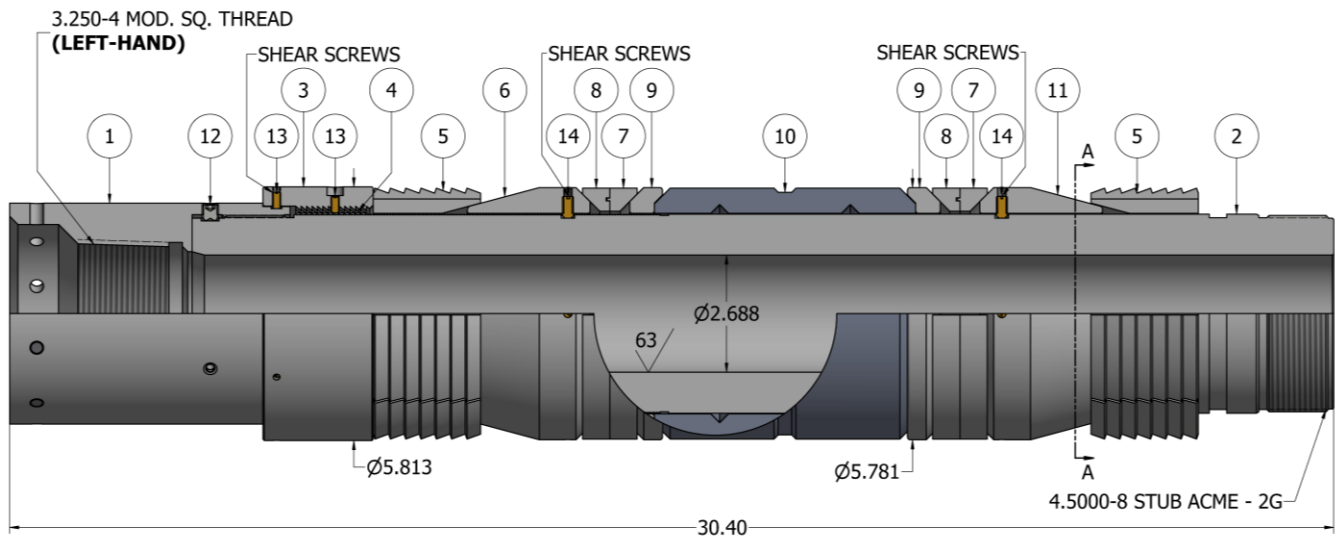
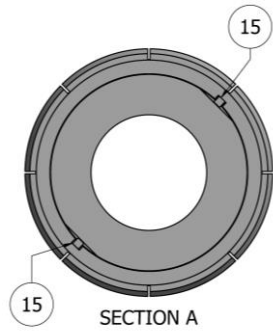
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M) TECHNICAL ILLUSTRATION



N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
02/28/2024	B	Added carbide options, Revised 67071018-1 was 67071018	J.Anderson	E.Visaez
02/21/2019	A	Created new manual	-	-