



PERMAPAK SEAL BORE PACKER

7" X 4.000"

Manual No:
DL-672-7000-300

Revision: **F**

Revision Date:
07/11/2023

Authored by: B.Mathis

Approved by: D.Hushbeck

A) DESCRIPTION

The Permapak Seal Bore Packer can be used for single or multiple zone completions. It is designed for wells where high pressure/temperatures and corrosive fluids are present and it is available in a variety of elastomers and seal bore materials to meet a wide range of hostile downhole environments. This packer is recommended for injection stimulation and testing or can become a temporary bridge plug when used with our knock-out or pump-out bottom assembly (refer to Permapak Packer Tubing and Accessories product sheet). The Permapak Seal Bore Packer comes with a complete line of tubing seal accessories and elastomers.

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 from the packer before fully setting the packer.

B) RELATED TOOLS

B-1) 7" Wireline Adapter Kit (WLAK) (PN 97270)—refer to technical manual *DL-972-7000-625*.

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 97470-20)—refer to technical manual *DL-394-20-229*.

B-4) LC Setting Kit (PN 39420-CBEE)—refer to technical manual *DL-974-7000-665*.


B-5) 4" Seal bore accessories—refer to technical manual *DL-581-4000-440*.

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	17.0 – 23.0	6.366 – 6.538	6.000	3.000	4.000	67270 67270H ¹ 67270V ² 67270C ³ 67270HC ⁴ 67270VC ⁵
	23.0 – 32.0	6.094 – 6.366	5.813	3.000	4.000	67271 67271H ¹ 67271V ² 67271C ³ 67271HC ⁴ 67271VC ⁵
	32.0 – 38.0	5.920 – 6.094	5.625	3.000	4.000	67272 67272H ¹ 67272V ² 67272C ³ 67272HC ⁴ 67272VC ⁵

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

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

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C) SPECIFICATION GUIDE (cont'd)

DIFFERENTIAL PRESSURE (MAX)
10,000 PSI

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.

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.

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.



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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 or other 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.

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

I-1.6) Unscrew and remove shear screws (13) 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 (14) 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).

CAUTION₃: Do NOT wrench or clamp on seal surface.

I-1.11.1) Unscrew lock ring housing (3) from lock ring (4) and remove from inner mandrel (2).

I-1.11.2) Unscrew and/or slide lock ring (4) and remove from inner mandrel (2) (**NOTE₃:** Left-hand threads).

NOTE₄: Using snap ring spreader pliers, lock ring may be spread slightly to be removed from mandrel.



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I) DISASSEMBLY(cont'd)

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

J) ASSEMBLY

NOTE₅: 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) Screw and/or slide lock ring (4) onto the upper end of OD threads on inner mandrel (2) (**NOTE₃:** Left-hand threads).

NOTE₆: Threads on lock ring (4) are directional – it **MUST** be installed in correct direction for tool to work properly (Fig. 2).

J-1.2) Screw lock ring housing (3) onto lock ring (4). Align gap in lock ring (4) with threaded hole in lock ring housing (3).

J-1.3) Screw shear screw (14) into lock ring housing (3). Tighten until shear screw makes contact with inner mandrel (2). Back shear screw out 1/4 turn.

J-1.4) Screw inner mandrel (2) into top sub (1).

CAUTION₃: Do NOT wrench or clamp on seal surface.

J-1.5) Screw set screws (12) into top sub (1).

J-1.6) Screw shear screws (14) into lock ring housing (3). Tighten until shear screws make contact with top sub (1). Back shear screws out 1/4 turn.

J-1.7) Install slip ring (5) onto inner mandrel (2).

J-1.8) Install upper cone (6) onto inner mandrel (2).

J-1.9) Align threaded holes in upper cone (6) with pocket holes in inner mandrel (2). Screw shear screws (13) into upper cone (6). Tighten until shear screws make contact with inner mandrel (2). Back shear screws out 1/4 turn.

J-1.10) Install female expansion rings (7), male expansion rings (8), rubber retainers (9), and element (10) onto inner mandrel (2).

J-1.11) Set keys (15) in place on flats on inner mandrel (2).

J-1.12) Align slot in ID of lower cone (11) with keys (15). Install lower cone (11) onto inner mandrel (2) and keys (15). Align threaded holes in lower cone (11) with pocket holes in inner mandrel (2).

J-1.13) Screw shear screws (13) into upper cone (6). Tighten until shear screws make contact with inner mandrel (2). Back shear screws out 1/4 turn.

J-1.14) Install slip ring (5) onto inner mandrel (2).

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

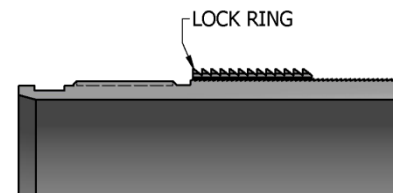



Fig. 2


	PERMAPAK SEAL BORE PACKER 7” X 4.000”	Manual No: DL-672-7000-300
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K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67270	P/N 67271	P/N 67272
1	1	TOP SUB	DLMS110	67271601		
2	1	INNER MANDREL	DLMS110	67271210		
3	1	LOCK RING HOUSING	DLSMS80	67070012-L-80	67071012-L-80	67072012-L-80
4	1	LOCK RING	DLMS80	67070011		
5	2	SLIP RING	DLMCIG2	67070111	67071111	67072111
6	1	UPPER CONE	DLMCIG2	67070014	67071014	67072014
7	2	FEMALE EXPANSION RING	DLM660BRZ	67070013	67071013	67072013
8	2	MALE EXPANSION RING	DLM660BRZ	67070020	67071020	67072020
9	2	RUBBER RETAINER	DLMCIG2	67070015	67071015	67072015
10	1	ELEMENT	80 DURO NITRILE	67070512	67071512	67072512
11	1	LOWER CONE	DLMCIG2	67070023	67071023	67072023
12	4	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037		
13	8	SHEAR SCREW (1200#) 1/4-20 UNC X 1/2	DLM360BRS	BSSSLT025C050		
14	7	SHEAR SCREW (750#) #10-32 UNF	DLM360BRS	BSSSLT1032F050 (1/2" LONG)	BSSSLT1032F037 (3/8" LONG)	
15	2	KEY 3/16 X 3/16 X 1"	DLMS110	KS018X018X100		
16	10	DRIV-LOK PIN (4800#) 5/16 X 1"	4140	DLP031100*		

*Not shown in technical illustration. Refer to WLAK tech manual for placement.

ASSEMBLED WEIGHT		78 LBS	72 LBS	66 LBS
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K) PARTS LIST (cont'd)

K-1) ELASTOMER TRIM OPTIONS

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

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67270H	P/N 67271H	P/N 67272H
10	1	ELEMENT	80 DURO HSN	67070512H	67071512H	67072512H

K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67270V	P/N 67271V	P/N 67272V
10	1	ELEMENT	80 DURO VITON	67070512V	67071512V	67072512V

K-2) CARBIDE OPTIONS

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67270C	P/N 67271C	P/N 67272C
5	2	CARBIDE SLIP RING	DLMCIG2	67070111C	67071111C	67072111C

L) ACCESSORIES - BOTTOM SUBS

NOTE₇: Standard bottom subs are listed. Other tubing sizes/configurations and threads are available. Sold separately.

NOTE₈: O-rings and set screws required for installation of bottom subs. Sold separately.

DESCRIPTION	MATERIAL	THREAD CONNECTION	17.0 – 23.0# P/N 67270	23.0 – 32.0# P/N 67271	32.0 – 38.0# P/N 67272
PLAIN BOTTOM	DLMS60	-	67270018	67271018	67272018
CONCENTRIC BOTTOM	L-80	4-1/2-8 STUB ACME	67270610	67271610	67272610
BOX TUBING BOTTOM	DLMS80	3-1/2-8 RD EUE BOX	67270620	67271620	67272620
PIN TUBING BOTTOM	L-80	3-1/2-8 RD EUE PIN	67270630-B	67271630-B	67272630-B



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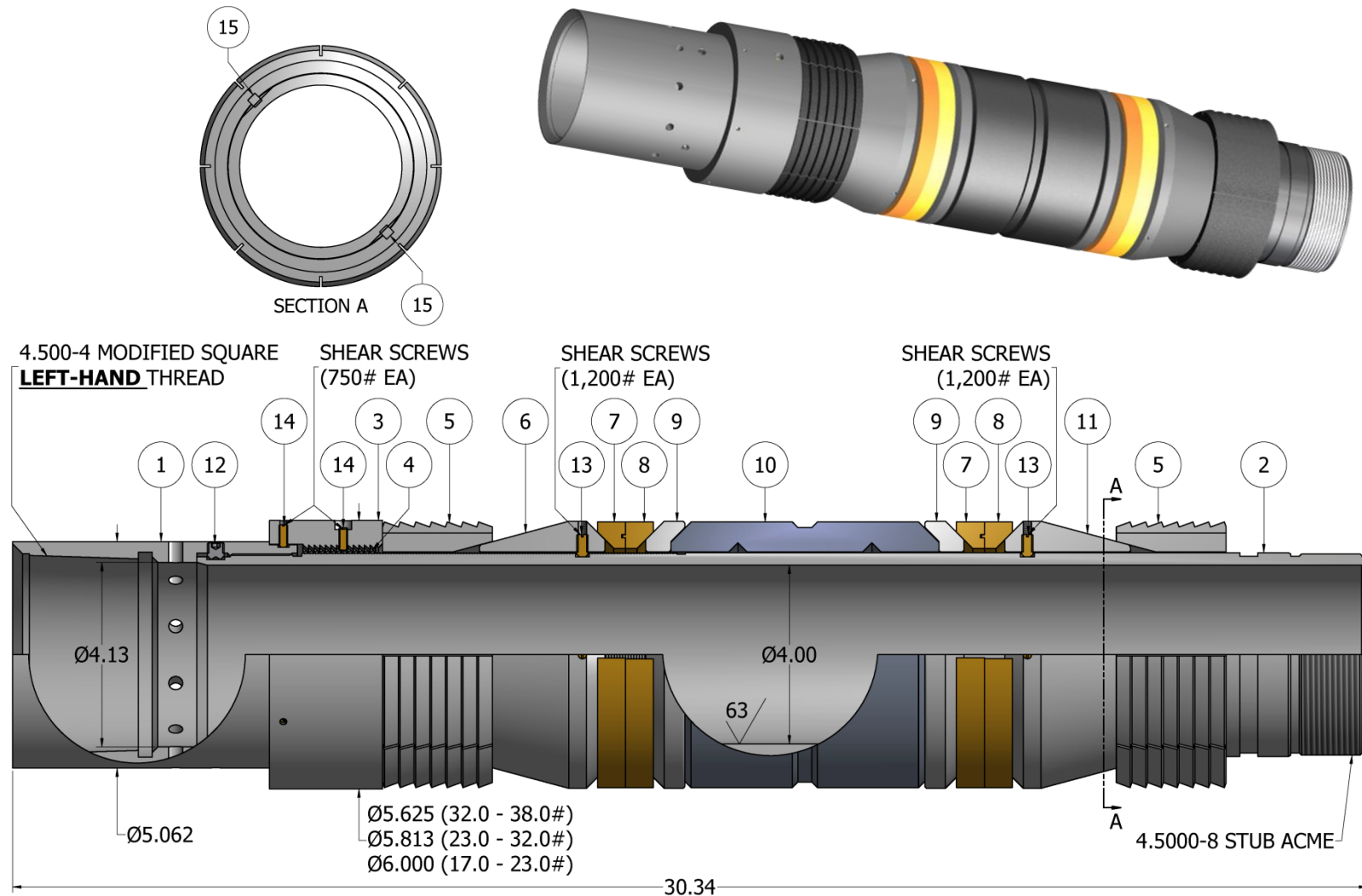
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M) TECHNICAL ILLUSTRATION



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N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
07/11/2023	F	Added carbide options, screw torque recommendations; revised nitrile temp. rating	J.Anderson	E.Visaez
01/15/2016	E	Revised max. differential pressure 10,000 psi was 8,000 psi, Rubber Type Temperature Ranges – Nitrile was 70° - 300°F, HSN was 70° - 325°F	J.Anderson	K.Riggs
06/03/2015	D	Added Related Tools, tool tolerances, Pre-Installation Inspection Procedures, Storage Recommendations, Accessories-Bottom Subs; Revised Elastomer Trim Temperature Guide, Parts List, Technical Illustration; Removed Setting Equipment	J.Anderson	K.Riggs
11/15/2012	C	Updated Disassembly instructions, Setting Equipment - Item 17 was 7 (Parts List & Technical Illustration), Item 7 was 67271013 (for P/N 67271), Item 12 was SSS037C025 (for P/N 67271), Technical Illustration; Added P/N's 67270V, 67270H, 67271V, 67271H, 67272V, 67272H (for options), Item 17, Sections for - Element Selection Guide, Recommended Hand Tools, Options Parts Lists, Accessories, Revision History;	B.Mathis	B.Oligschlaeger