



PERMAPAK - DUAL BORE

4" X 2.688" X 1.750"

Manual No:
DL-673-4000-289

Revision: **A**

Revision Date:
03/22/2009

Written by: *B.Mathis*

Approved by: *H.Bringham*

A) DESCRIPTION

The D&L Permapak Production Packers are highly versatile tools which may be set on wireline or hydraulically. They are 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, Knock-out Plugs, Screw-out Plugs, Pump-out Plugs and Flapper Valves.

These Permapak Dual Bore Packers are rated at 8,000 PSI pressure differential (except noted otherwise) and 300° F (higher temperature rated packers are available upon request).

B) SPECIFICATION GUIDE

CASING		RECOMMENDED HOLE SIZE	TOOL OD (INCHES)	THROUGH SEALS (INCHES)	SEAL BORE (INCHES)	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)					
4	9.5 - 11.6#	3.428 – 3.548	3.281	1.750	2.688	67340
	11.6 - 14.8#	3.240 – 3.428	3.090	1.750	2.688	67341

NOTE: Different lengths for the upper seal bore are available.

C) OPERATION PROCEDURES

C-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 locking nut housing is backed up while the top connection (and thus the inner mandrel) is pulled up. This movement causes the shear pins in the locking nut 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 locking nut. When the packer is milled, there are two rotational locks; the locking nut and the key in the lower cone.

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



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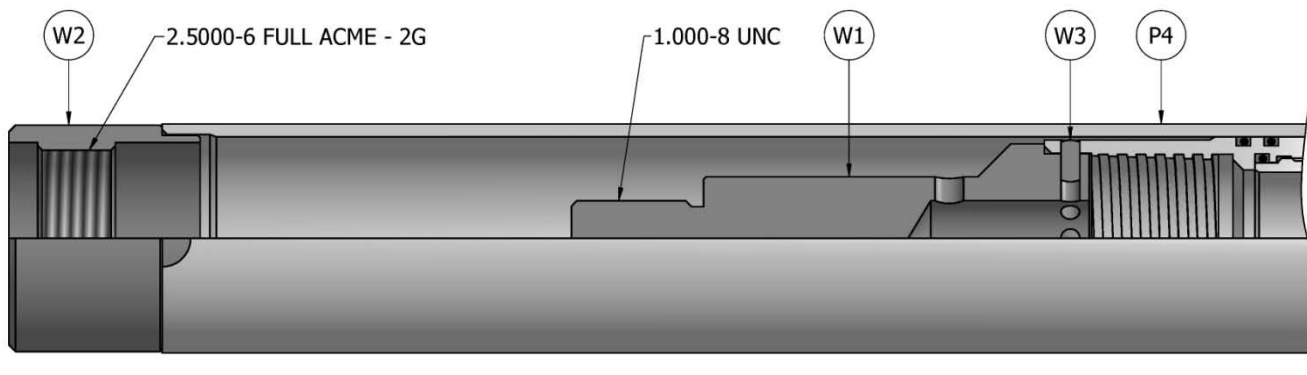
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D) WIRELINE SETTING KIT

D-1) TECHNICAL ILLUSTRATION



D-2) ASSEMBLY - SETTING EQUIPMENT TO WIRELINE ADAPTER KIT

- D-2.1 Unscrew and remove upper seal bore (13) from Permapak Dual Bore Packer (P4).
- D-2.2 Grease seal bore of Permapak Dual Bore Packer (P4).
- D-2.3 Slide inner adapter (W1) into top of Permapak Dual Bore Packer (P4).
- D-2.4 Install Driv-Lok pins (W3) through holes in top sub on Permapak Dual Bore Packer (P4) into holes in inner adapter (1).
- D-2.5 Screw upper seal bore onto top sub (1) of Permapak Dual Bore Packer (P4) while holding back-up on lock nut housing (3).
- D-2.6 Set outer adapter (W2) onto cross link sleeve of pressure setting assembly. Make up wrench tight.
- D-2.7 Attach Permapak Packer (P4) to pressure setting assembly by screwing inner adapter (W1) onto setting mandrel of pressure setting assembly until outer adapter contacts setting sleeve.

D-3) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 97341
W1	1	INNER ADAPTER	P-110	97341460
W2	1	OUTER ADAPTER	P-110	97341470
W3	8	1/4 X 1/2 DRIV-LOK PIN	STEEL	DLP025050
P4	1	4" X 2.688" X 1.750" PERMAPAK - DUAL BORE PACKER		67340 -OR- 67341

ASSEMBLED WEIGHT	5 LBS
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E) DISASSEMBLY (Permapak - Dual Bore)

- E-1) Clamp lock nut housing (3) in vise.
 - E-1.1) Unscrew and remove upper seal bore (13) from lock nut housing (3).
- E-2) Unclamp lock nut housing (3) from vise. Clamp top sub (1) in vise.
 - E-2.1) Unscrew and remove set screws (15) from bottom gage ring (12).
 - E-2.2) Unscrew and remove bottom gage ring (12) from inner mandrel (2).
- E-3) Unclamp top sub (1) from vise. Clamp lower end of inner mandrel (2) in vise.
 - E-3.1) Unscrew and remove set screws (15) from top sub (1).
 - E-3.2) Unscrew and remove top sub (1) from inner mandrel (2).
 - E-3.2.1) Remove o-rings (18, 19) from top sub (1).
 - E-3.3) Unscrew and remove shear screws (14) and set screws (16) from lock nut housing (3).
 - E-3.4) Unscrew and remove lock nut housing (3) from lock nut (4).
 - E-3.5) Unscrew and remove lock nut (4) from inner mandrel (2) (**NOTE:** Left-hand threads).
 - E-3.6) Remove upper slip ring (5) from inner mandrel (2).
 - E-3.7) Unscrew and remove shear screws (14) from upper cone (6).
 - E-3.8) Slide upper cone (6), female expansion rings (7), male expansion rings (8), rubber retainers (9), and element (10) off of inner mandrel (2).
 - E-3.9) Unscrew and remove set screw (17) and shear screws (14) from lower cone (11).
 - E-3.10) Slide lower cone (11) and lower slip ring (5) off of inner mandrel (2).
- E-4) Unclamp inner mandrel (2) and remove from vise.

F) ASSEMBLY (Permapak - Dual Bore)

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

- F-1) Clamp inner mandrel (2) in vise.
 - NOTE:** Clamp on lower end near threads. Do not clamp on or damage threads.
 - F-1.1) Slide lower slip ring (5) and lower cone (11) onto inner mandrel (2).
 - F-1.2) Align threaded holes in lower cone (11) with pocket holes on inner mandrel (2). Screw shear screws (14) into lower cone (11). Make contact with inner mandrel (2) and back out 1/4 turn.
 - F-1.3) Screw set screw (17) into lower cone (11). Make contact with flat on inner mandrel (2) and back out 1/4 turn.
 - F-1.4) Slide female expansion rings (7), male expansion rings (8), rubber retainers (9), element (10), and upper cone (6) onto inner mandrel (2).
 - F-1.5) Align threaded holes in upper cone (6) with pocket holes in inner mandrel (2). Screw shear screws (14) into upper cone (6). Tighten to contact and back out 1/4 turn.
 - F-1.6) Slide upper slip ring (5) onto inner mandrel (2).
 - F-1.7) Screw lock nut (4) completely onto inner mandrel (2) leaving a few mandrel threads showing above the lock nut (**NOTE:** Left-hand threads).
 - F-1.8) Screw lock nut housing (3) onto lock nut (4) until the lock nut is fully contained inside the housing and the holes are aligned with the cut in the lock nut.
 - F-1.9) Screw set screws (16) into lock nut housing (3). Now lock nut should turn with lock nut housing.
 - F-1.10) Align threaded holes in lock nut housing (3) with pocket holes in inner mandrel (2).
 - F-1.11) Screw shear screws (14) into lock nut housing (3). Tighten to contact and back out 1/4 turn.



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F) ASSEMBLY (Permapak - Dual Bore – cont'd)

- F-1.12) Install o-rings (18, 19) in grooves in top sub (1).
- F-1.13) Screw top sub (1) onto inner mandrel (2).
- F-1.14) Screw set screws (15) into top sub (1).
- F-2) Unclamp lower end of inner mandrel (2) from vise. Clamp top sub (1) into vise.
 - F-2.1) Screw bottom gage ring (12) onto inner mandrel (2).
 - F-2.2) Screw set screws (15) into bottom gage ring (12).
- F-3) Unclamp top sub (1) from vise. Clamp lock nut housing (3) into vise.
 - F-3.1) Screw upper seal bore (13) onto lock nut housing (3).
- F-4) Unclamp lock nut housing (3) from vise. Remove tool assembly.

G) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 67340 (9.5 – 11.6#)	P/N 67341 (11.6 – 14.8#)
1	1	TOP SUB	L-80	67341610	
2	1	INNER MANDREL	P-110	67340210	67335210
3	1	LOCK NUT HOUSING	L-80	67340012	67341012
4	1	LOCK NUT	L-80	67435011	
5	2	SLIP RING	CAST IRON	67440110	67241110
6	1	UPPER CONE	G-2 CAST IRON	67240014	67241014
7	2	EXPANSION RING - FEMALE	BEARING BRONZE	67240022	67241022
8	2	EXPANSION RING - MALE	BEARING BRONZE	67240021	67241021
9	2	RUBBER RETAINER	G-2 CAST IRON	67240015	67241015
10	1	ELEMENT	80 DURO NITRILE	67240512	67241512
11	1	LOWER CONE	G-2 CAST IRON	67240023	67241023
12	1	GAGE RING - BOTTOM	1026	67440018	67241018
13	1	UPPER SEAL BORE	L-80	67341211	
14	6	SHEAR SCREW (750# EA) #10-32 UNF X 5/16	BRASS	BSSSLT1032F031	
15	5	SET SCREW #10-24 UNC X 3/16	STEEL	SSS1024C018	
16	2	SET SCREW #10-32 UNF X 5/16	STEEL	SSS1032F031	
17	1	SET SCREW 1/4-20 UNC X 5/16	STEEL	SSS025C031	
18	1	226-90 O-RING		90226	
19	2	227-90 O-RING		90227	

ASSEMBLED WEIGHT		27 LBS	24 LBS
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H) TECHNICAL ILLUSTRATION – PERMAPAK - DUAL BORE

