



# HYDROSET IV PACKER

## 3-1/2" X 1.900"

Manual No:  
**DL-654-3500-221**

Revision: **A**

Revision Date:  
**04/01/2011**

Authored by: B.Mathis

Approved by: F.Johnson

### A) DESCRIPTION

The D&L Hydroset IV is a hydraulic set single string retrievable packer. Tubing pump pressure is used to set the packer and the setting force is locked into the packer by a body lock ring. It is ideal to run as a tandem packer with double grip packers that will lock the tubing in place. The Hydroset IV is released with a straight pull that shears pins.

Special features include: Three element packing arrangement, Locked in setting force, and Field adjustable releasing force.

### B) SPECIFICATION GUIDE

CASING		RECOMMENDED HOLE SIZE (INCHES)	MAX OD (INCHES)	MIN ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)					
3-1/2	7.7 – 10.2#	2.922 – 3.068	2.781	1.25	1.900 NUE	65435

### C) SETTING PROCEDURES

#### C-1) RUNNING SEQUENCE

Running speed is critical, especially in heavy or viscous fluid where excess speed can result in swabbing off the packing element or in creating pressure waves which could lead to creating a preset condition. As a guide it is recommended that running speed should not be more than 30 seconds per joint (range II or 30 feet). **Do not exceed this speed**, particularly when running the packer in the heaviest weight casing for the range for which the packer is dressed.

A run in the well with a junk basket and suitable sized gauge ring or a bit and scraper is strongly recommended prior to running. The location of any tight spots should be noted and the running speed for the packer through these spots should be reduced.

Being a hydraulically set packer, it can be subject to preset conditions by pressure waves through the fluid. A slow steady running speed should be used and sudden stops and starts, such as when setting or pulling slips, should be avoided.

Make up the packer to the tubing string in the desired position and to the required torque-transmission of makeup torque through the packer should be avoided. Run the packer to the desired setting depth at the recommended speed and taking precautions listed above.

Establish a plug in the tubing below the packer using a drop ball, wireline plug or other device. Apply pressure to the tubing to the recommended pressure for the given size of packer and hold for 5 minutes. If the well completion allows, apply annulus pressure to test the packer.

#### C-2) SETTING SEQUENCE

Internal tubing pressure enters the setting chamber through the setting port and acts upward on the setting sleeve. When the applied load acting on the piston exceeds the value of the setting initiation shear screws, they will shear and allow the setting process to proceed and pack off the elements. All this setting force is mechanically locked in place by the packer lock ring as it slides over the threads on the setting sleeve.

**NOTE:** No mandrel movement occurs during the setting sequence; however, some residual tension will remain in the tubing due to the tubing elongation caused by piston effects.

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



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### D) RELEASING PROCEDURES

To release, pull 19,000 lbs at the packer to shear the shear screws (2,375# per screw) to allow the elements to relax.

### E) AREA GUIDE

PACKER SIZE	SETTING AREA (SQ INCHES)	SETTING INITIATION (PSI PER SCREW)
3-1/2" X 1.900"	1.625	765

### F) DISASSEMBLY

- F-1) Clamp inner mandrel (1) in vise.
  - F-1.1) Unscrew and remove shear screws (6) from lock ring housing (8).
  - F-1.2) Unscrew and remove lock ring housing (8) from lock ring (9).  
**NOTE:** Lock ring is left-hand threads.
  - F-1.3) Unscrew and remove bottom sub (11) from inner mandrel (1).
    - F-1.3.1) Remove o-ring (14) from bottom sub (11).
  - F-1.4) Unscrew and remove setting piston seal (10) from setting piston (7).
    - F-1.4.1) Remove o-rings (13, 14) from setting piston seal (10).
  - F-1.5) Unscrew and remove lock ring (9) from setting piston (7).
  - F-1.6) Unscrew and remove shear screws (12) from setting piston (7).
  - F-1.7) Remove setting piston (7) from inner mandrel (1).
  - F-1.8) Remove elements (3, 5) and rubber spacers (4) from inner mandrel (1).
  - F-1.9) Unscrew and remove gage ring (2) from inner mandrel (1).
- F-2) Remove inner mandrel (1) from vise.

### G) ASSEMBLY

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

- G-1) Clamp inner mandrel (1) in vise.
  - G-1.1) Screw gage ring (2) onto inner mandrel (1).
  - G-1.2) Slide elements (3, 5) and rubber spacers (4) onto inner mandrel (1).
  - G-1.3) Slide setting piston (7) onto inner mandrel (1).
  - G-1.4) Screw shear screws (12) into setting piston (7). Tighten and back out 1/4 turn.
  - G-1.5) Screw lock ring (9) onto setting piston (7).
  - G-1.6) Install o-rings (13, 14) into grooves on setting piston seal (10).
  - G-1.7) Slide setting piston seal (10) onto setting piston (7).  
**CAUTION:** Do not rip or tear o-rings during installation.
  - G-1.8) Install o-ring (14) into groove in bottom sub (11).
  - G-1.9) Screw bottom sub (11) onto inner mandrel (1).
  - G-1.10) Screw lock ring housing (8) onto lock ring (9) (**NOTE:** Lock ring is left-hand threads).  
**CAUTION:** Do not rip or tear o-rings during installation.



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### G) ASSEMBLY (cont'd)

- G-1.11) Align threaded holes in lock ring housing (8) with groove in bottom sub (11). Screw shear screws (6) into lock ring housing (8). Tighten and back out 1/4 turn.
- G-2) Unclamp inner mandrel (1) and remove assembly from vise.

### H) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65435 (7.7 – 10.2#)
1	1	MANDREL	L-80	65435210
2	1	GAGE RING	1026	65435830
3	2	ELEMENT	90 DURO NITRILE	72035513
4	2	RUBBER SPACER	1026	72535840
5	1	ELEMENT	70 DURO NITRILE	72035511
6	8	SHEAR SCREW (2375#)	BRASS	60100990
7	1	SETTING PISTON	L-80	65435750
8	1	LOCK RING HOUSING	L-80	65435725
9	1	LOCK RING	L-80	65435720
10	1	SETTING PISTON SEAL	L-80	65435751
11	1	BOTTOM SUB	L-80	65435630
12	4	SHEAR SCREW (1200# EA) 1/4-20 UNC X 1/2	BRASS	BSSSLT025C050
13	1	224-90 O-RING		90224
14	2	225-90 O-RING		90225

REDRESS KIT		65435050
ASSEMBLED WEIGHT		18 LBS



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## I) TECHNICAL ILLUSTRATION

