



HYDROSET IV PACKER

5" X 2-3/8"

Manual No:
DL-654-5000-1633

Revision: **A**

Revision Date:
12/22/2022

Authored by: J.Anderson

Approved by: D.McKeon

A) DESCRIPTION

The Hydroset IV Packer 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. Its design allows for multiple zone completions. It can be run with other hydraulic packers or mechanical set packers.

This packer is ideal to run as a tandem packer with double grip packers that will lock the tubing in place. This packer is released with a straight pull to shear releasing screws.

This packer features a three element packing arrangement, a lock ring mechanism to lock in setting force, and field adjustable shear screws to allow adjustment of setting initiation and releasing force required to release the packer.

B) SPECIFICATION GUIDE

CASING			TOOL		THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)	GAGE OD (INCHES)	NOMINAL ID (INCHES)		
5	18.0 – 20.8	4.156 - 4.276	4.000	2.00	2-3/8 EUE	65452 65452H ¹ 65452V ²

Elastomer Trim Options: ¹HSN, ²Viton

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
7,000 PSI	50,000 LBS

C) 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.



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.

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.

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.

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



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D) SETTING PROCEDURES

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

NOTE₆: Tool is shipped with two (2 qty) socket cap screws to prevent damage to brass setting shear screws during shipment. Before first use, replace cap screws with provided shear screws.

D-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.

D-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.

NOTE₁: 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.

E) RELEASING PROCEDURES

To release, pull 30,000 lbs at the packer to shear the shear screws (3,000 lbs/screw). Allow the elements to relax before retrieving tool.

F) SETTING AREA GUIDE

PACKER SIZE (INCHES)	SETTING AREA (SQ INCHES)	SHEAR VALUE (PSI/SCREW)	SETTING INITIATION (PSI)	RECOMMENDED SETTING (PSI)
5	3.865	310	2,480	3,234

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) ELASTOMER TRIM TEMPERATURE GUIDE

NITRILE (STD)			
TEMPERATURE RANGE (F°)	DUROMETER		
	END	MIDDLE	END
40° - 125°	80	70	80
125° - 250°	90	70	90
150° - 250°	90	80	90
250° +	Contact D&L Sales		

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

I) 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

J) DISASSEMBLY

NOTE₁: Tool is shipped with two (2 qty) socket cap screws to prevent damage to brass setting shear screws during shipment. Before first use, replace cap screws with provided shear screws.

J-1) Clamp upper end of mandrel (1) in vise.

J-1.1) Unscrew and remove shear screws (6) from lock ring housing (8).

J-1.2) Unscrew and remove lock ring housing (8) from lock ring (9) (**NOTE₂:** Left-hand threads).

J-1.3) Unscrew and remove bottom sub (11) from mandrel (1).

J-1.3.1) Remove o-ring (12) from bottom sub (11).

J-1.4) Unscrew and remove lock ring (9) from setting piston (7).

NOTE₃: Using snap ring spreader pliers, lock ring (9) may be spread slightly to be removed from setting piston (7).

J-1.5) Unscrew and remove shear screws (10) from setting piston (7).

J-1.6) Remove setting piston (7) from mandrel (1).

J-1.6.1) Remove o-rings (13, 14) from setting piston seal (10).

J-1.7) Remove elements (3, 5) and rubber spacers (4) from mandrel (1).

J-1.8) Unscrew and remove gage ring (2) from mandrel (1).

J-2) Unclamp and remove mandrel (1) from vise.



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K) ASSEMBLY

NOTE₄: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

K-1) Clamp mandrel (1) in vise.

K-1.1) Screw gage ring (2) onto mandrel (1).

K-1.2) Install elements (3, 5) and rubber spacers (4) onto mandrel (1).

K-1.3) Install o-rings (13, 14) in o-ring grooves in setting piston (7).

K-1.4) Install setting piston (7) onto rubber retainer (6). Align threaded holes in setting piston (7) with grooves in mandrel (1).

CAUTION₃: Do not rip or tear o-rings during installation.

K-1.5) Screw shear screws (10) into setting piston (7). Tighten until shear screws (10) contact mandrel (1). Back shear screws (10) out 1/4 turn.

K-1.6) Screw and/or slide lock ring (9) onto the setting piston (7).

NOTE₅: Threads on lock ring (9) are directional—it **MUST** be installed in correct direction for tool to work properly.

K-1.7) Install o-ring (12) in o-ring groove in bottom sub (11).

K-1.8) Screw bottom sub (11) onto mandrel (1).

K-1.9) Screw lock ring housing (8) onto lock ring (9) (**NOTE₂:** Left-hand threads). Align threaded holes in lock ring housing (8) with groove in bottom sub (11).

CAUTION₃: Do not rip or tear o-rings during installation.

K-1.10) Screw shear screws (6) into lock ring housing (8). Tighten until shear screws (6) contact bottom sub (11). Back shear screws (6) out 1/4 turn.

K-2) Unclamp mandrel (1) and remove tool assembly from vise.

L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65452
1	1	MANDREL	DLMS80	65445210
2	1	GAGE RING	DLMS60	65452830
3	2	ELEMENT	90 DURO NITRILE	60252513
4	2	RUBBER SPACER	DLMS60	60252840
5	1	ELEMENT	70 DURO NITRILE	60252511
6	10	3/8-16 UNC X 3/8 SLOTTED SHEAR SCREW (3000#)	DLM360BRS	BSSSLT037C037
7	1	SETTING PISTON	DLMS80	65452750
8	1	LOCK RING HOUSING	DLMS80	65445725
9	1	LOCK RING	DLMS41X80	65445720
10	8	1/4-20 UNC X 3/8 SLOTTED SHEAR SCREW (1200#)	DLM360BRS	BSSSLT025C037
11	1	BOTTOM SUB	DLMS80	65445630



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L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65452
12	1	234 O-RING	90 DURO NITRILE	90234
13	1	336 O-RING	90 DURO NITRILE	90336
14	1	332 O-RING	90 DURO NITRILE	90332
15	2	1/4-20 UNC X 1" SOCKET CAP SCREW	STEEL	SCS025C100

REDRESS KIT (RDK)		65452050
ASSEMBLED WEIGHT		35 LBS

L-1) ELASTOMER TRIM OPTIONS

NOTE₇: For temperature range, refer to Elastomer Trim Temperature Guide.

L-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65452H
3	2	ELEMENT	90 DURO HSN	60252513H
5	1	ELEMENT	70 DURO HSN	60252511H
12	1	234 O-RING	90 DURO HSN	90234H
13	1	336 O-RING	90 DURO HSN	90336H
14	1	332 O-RING	90 DURO HSN	90332H

REDRESS KIT (RDK)		65452050H
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L-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65452V
3	2	ELEMENT	90 DURO VITON	60252513V
5	1	ELEMENT	70 DURO VITON	60252511V
12	1	234 O-RING	90 DURO VITON	90234V
13	1	336 O-RING	90 DURO VITON	90336V
14	1	332 O-RING	90 DURO VITON	90332V

REDRESS KIT (RDK)		65452050V
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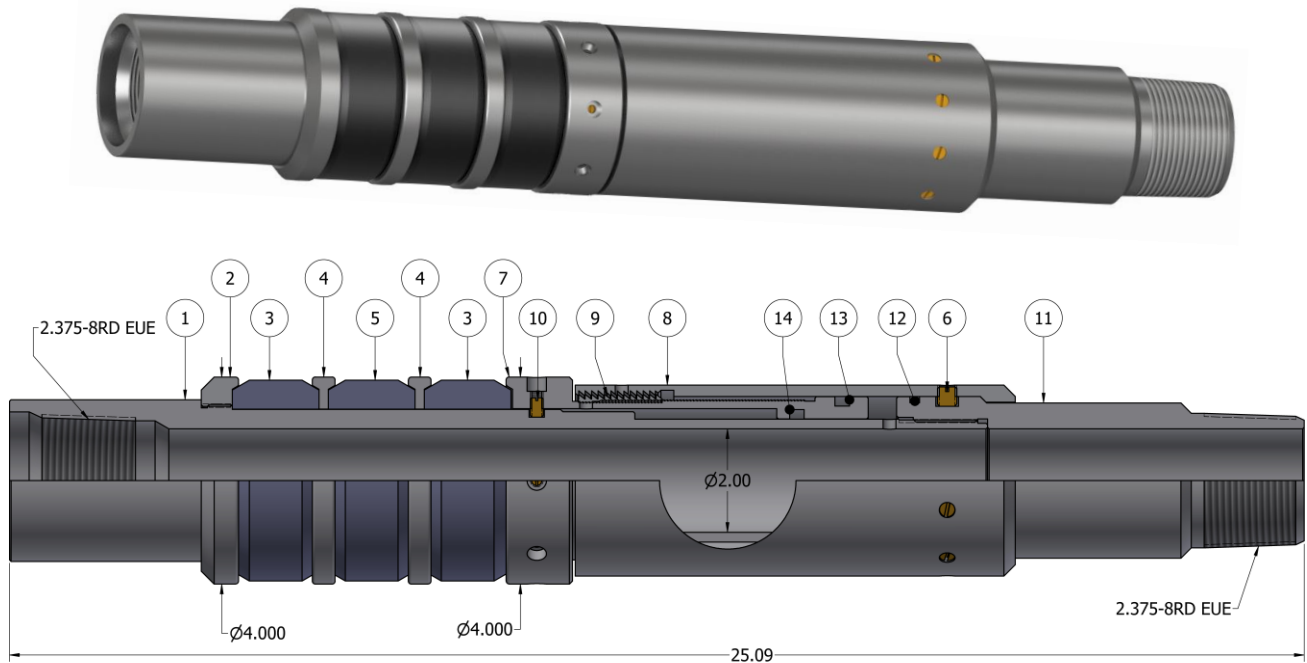
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M) TECHNICAL ILLUSTRATION



N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
12/22/2022	A	Created manual	-	-