



HYDROSET IV PACKER WITH J-RELEASE 5-1/2" X 2-3/8

Manual No:
DL-653-5500-052

Revision: **F**

Revision Date:
03/23/2021

Written by: *B.Mathis*

Approved by: *B.Oligschlaeger*

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)		
5-1/2	14.0 – 20.0	4.778 – 5.012	4.625	2.00	2-3/8 EUE	65355 65355H ¹ 65355V ²

Elastomer Trim Options: ¹HSN, ²Viton

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
7,000 PSI	71,900 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.



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.

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

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

NOTE: Tool is shipped with two (2 qty) socket cap screws (16) 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.

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.

E) RELEASING PROCEDURES

To release, set down 4,000 – 5,000 lbs on the packer. Torque the tubing to shear 112# per screw and turn 1/4 turn right at the tool. Pick up to come out of the hole.

F) SETTING AREA GUIDE

PACKER SIZE (INCHES)	SETTING AREA (SQ INCHES)	SHEAR VALUE (PSI/SCREW)	SETTING INITIATION (PSI)	RECOMMENDED SETTING (PSI)
5-1/2	5.925	200	3,240	2,500



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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.

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 (16) to prevent damage to brass setting shear screws during shipment. Before first use, replace cap screws with provided shear screws.

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

J-1.1) Unscrew and remove stop ring (8) from bottom sub (15).

J-1.2) Unscrew and remove lock ring housing (6) from lock ring (7) (**NOTE₂:** Left-hand threads).

J-1.3) Unscrew and remove set screws (19) from bottom sub (8).

J-1.4) Unscrew and remove bottom sub (8) from inner mandrel (2).

J-1.4.1) Remove o-ring (24) from bottom sub (8).

J-1.5) Unscrew and remove setting sleeve seal (9) from setting piston (5).

J-1.5.1) Remove o-rings (25, 27) from setting sleeve seal (9).

J-1.6) Unscrew and/or slide lock ring (7) to remove from setting piston (5).

NOTE₃: Using snap ring spreader pliers, lock ring (4) may be spread slightly to be removed from inner mandrel (2).

J-1.7) Unscrew and remove shear screws (22) from setting piston (5).



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J) DISASSEMBLY (cont'd)

- J-1.8) Remove setting piston (5) from inner mandrel (2).
- J-1.9) Remove elements (13, 14) and rubber spacers (12) from inner mandrel (2).
- J-1.10) Unscrew and remove set screws (20) from J-pin sleeve (3).
- J-1.11) Remove gage ring (4) from J-pin sleeve (3).
 - J-1.11.1) Remove split ring (10) from gage ring (4).
- J-1.12) Unscrew and remove shear screws (21) and J-pins (11) from J-pin sleeve (3).
- J-1.13) Remove inner mandrel assembly from J-pin sleeve (3) and disassemble:
 - J-1.13.1) Unscrew and remove set screws (17) from J-body (16).
 - J-1.13.2) Unscrew and remove inner mandrel (2) from J-body (16).
 - J-1.13.3) Remove o-rings (23, 26) from J-body (16).
- J-1.14) Unscrew and remove set screws (18) from J-pin sleeve (3).
- J-1.15) Unscrew and remove J-pin sleeve (3) from top sub (1).
- J-2) Unclamp and remove top sub (1) from vise.
 - J-2.1) Remove o-ring (26) from top sub (1).

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.

CAUTION3: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs unless stated otherwise (Fig. 2).

K-1) Install o-ring (26) in groove in top sub (1).

K-2) Clamp top sub (1) in vise.

K-2.1) Screw J-pin sleeve (3) onto top sub (1).

CAUTION4: Do not rip or tear o-ring during installation.

K-2.2) Screw set screws (18) into J-pin sleeve (3).

K-2.3) Assemble inner mandrel assembly and install:

K-2.3.1) Install o-rings (23, 26) in grooves in J-body (16).

K-2.3.2) Screw inner mandrel (2) into J-body (16).

CAUTION4: Do not rip or tear o-ring during installation.

K-2.3.3) Screw set screws (17) into J-body (16).

K-2.3.4) Install inner mandrel assembly into J-pin sleeve (3).

CAUTION4: Do not rip or tear o-ring during installation.

K-2.4) Position running position (lower end) of J-slot in J-body (16) to align with threaded J-pin holes in J-pin sleeve (3) (Fig. 3). Screw J-pins (11) into J-pin sleeve (3).

K-2.5) Ensure threaded shear screw holes in J-pin sleeve (3) are aligned with slots in J-body (16). Screw shear screws (21) into J-pin sleeve (3). Tighten until shear screws (21) contact inner mandrel (2). Back shear screws (21) out 1/4 turn.

K-2.6) Install split ring (10) onto gage ring (4).

NOTE6: Grease will help hold split ring (10) in place.

K-2.7) Install gage ring (4) into J-pin sleeve (3). Align holes in split ring (10) and gage ring (4) with threaded holes in J-pin sleeve (3).

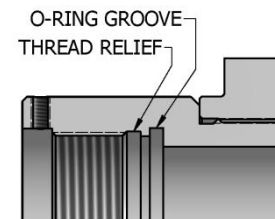


Fig. 2



Fig. 3 Running Position



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K) ASSEMBLY (cont'd)

K-2.8) Screw set screws (20) into J-pin sleeve (3).

K-2.9) Install elements (13, 14) and rubber spacers (12) onto inner mandrel (2).

K-2.10) Install setting piston (5) onto inner mandrel (2). Align threaded holes in setting piston (5) with grooves in inner mandrel (2).

K-2.11) Screw shear screws (22) into setting piston (5). Tighten until shear screws (22) contact inner mandrel (2). Back shear screws (22) out 1/4 turn.

K-2.12) Screw and/or slide lock ring (7) onto the upper end of OD threads on setting piston (5).

NOTE: Threads on lock ring (7) are directional—it **MUST** be installed in correct direction for tool to work properly.

K-2.13) Install o-rings (25, 27) in grooves in setting sleeve seal (9).

K-2.14) Install setting sleeve seal (9) onto inner mandrel (2) and screw into setting piston (5).

CAUTION: Do not rip or tear o-ring during installation.

K-2.15) Install o-ring (24) in groove in bottom sub (15).

K-2.16) Screw bottom sub (15) onto inner mandrel (2).

CAUTION: Do not rip or tear o-ring during installation.

K-2.17) Screw set screws (19) into bottom sub (15).

K-2.18) Install lock ring housing (6) onto bottom sub (15) and setting sleeve seal (9) and screw onto lock ring (7) (**NOTE:** Left-hand threads).

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

K-2.19) Screw stop ring (8) onto bottom sub (15).

K-3) Unclamp top sub (1) from vise and remove assembled tool.



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L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65355
1	1	TOP SUB	DLMS80	65355610
2	1	INNER MANDREL	DLMS80	65355210
3	1	J-PIN SLEEVE	DLMS80	65355875
4	1	GAGE RING	1026	65355830
5	1	SETTING PISTON	DLMS80	65456750
6	1	LOCK RING HOUSING	DLMS80	65456725
7	1	LOCK RING	DLMS80	65456720
8	1	STOP RING	1026	65355930
9	1	SETTING SLEEVE SEAL	DLMS80	65456751
10	2	SPLIT RING	DLMS60	65355102
11	3	J-PIN	DLMS110	65373870
12	2	RUBBER SPACER	DLMS60	60255840
13	1	ELEMENT	70 DURO NITRILE	60255511
14	2	ELEMENT	90 DURO NITRILE	60255513
15	1	BOTTOM SUB	DLMS80	65355630
16	1	J-BODY	DLMS80	65355230
17	4	SET SCREW 1/4-20 UNC X 1/4	STEEL	SSS025C025
18	4	SET SCREW 1/4-20 UNC X 1/2	STEEL	SSS025C050
19	4	SET SCREW 1/4-20 UNC X 5/8	STEEL	SSS025C062
20	4	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037
21	3	SHEAR SCREW (750#) #10-32 UNF X 3/4	DLM360BRS	BSSSLT1032F075
22	16	SHEAR SCREW (1200#) 1/4-20 UNC X 1/2	DLM360BRS	BSSSLT025C050
23	1	232 O-RING	90 DURO NITRILE	90232
24	1	240 O-RING	90 DURO NITRILE	90240
25	1	336 O-RING	90 DURO NITRILE	90336
26	2	337 O-RING	90 DURO NITRILE	90337
27	1	342 O-RING	90 DURO NITRILE	90342
28	2	SOCKET CAP SCREW 1/4-20 UNC X 1"	STEEL	SCS025C100

REDRESS KIT (RDK)		65355050
ASSEMBLED WEIGHT		140 LBS



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L) PARTS LIST (cont'd)

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 65355H
13	1	ELEMENT	70 DURO HSN	60255511H
14	2	ELEMENT	90 DURO HSN	60255513H
23	1	232 O-RING	90 DURO HSN	90232H
24	1	240 O-RING	90 DURO HSN	90240H
25	1	336 O-RING	90 DURO HSN	90336H
26	2	337 O-RING	90 DURO HSN	90337H
27	1	342 O-RING	90 DURO HSN	90342H

REDRESS KIT (RDK)		65355050H
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L-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 65355V
13	1	ELEMENT	70 DURO VITON	60255511V
14	2	ELEMENT	90 DURO VITON	60255513V
23	1	232 O-RING	90 DURO VITON	90232V
24	1	240 O-RING	90 DURO VITON	90240V
25	1	336 O-RING	90 DURO VITON	90336V
26	2	337 O-RING	90 DURO VITON	90337V
27	1	342 O-RING	90 DURO VITON	90342V

REDRESS KIT (RDK)		65355050V
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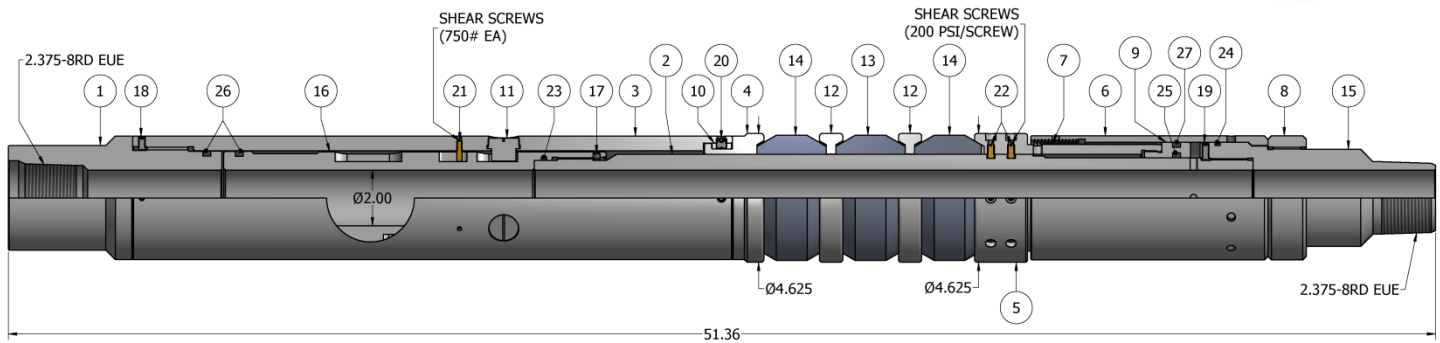
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M) TECHNICAL ILLUSTRATION



N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
03/23/2021	F	Added P/N SCS025C100, note8	J.Anderson	E.Visaez
08/22/14	E	Revised entire manual	J.Anderson	K.Riggs