



HYDRAULIC OPEN HOLE PACKER

8-1/2" X 5-1/2"

Manual No:
DL-335-8500-556

Revision: **C**

Revision Date:
05/04/2022

Authored by: J.Anderson

Approved by: K.Riggs

A) DESCRIPTION

The Hydraulic Open Hole Packer is a hydraulic set, single string packer suitable for use in open hole applications. Tubing pressure is used to set the packer and the setting force is locked into the packer by a body lock ring. This packer features a double backup element system that is capable of holding high pressures in open hole or large ID cased holes. A large ID is maintained through the packer for increased flow potential. It is ideal for use as a tandem isolation packer between ports in a multi-stage hydraulic fracturing completion.

NOTE: The Hydraulic Open Hole Packer is not designed to be released.

B) SPECIFICATION GUIDE

OPEN HOLE SIZE (INCHES)	RECOMMENDED HOLE SIZE (INCHES)	TOOL OD (INCHES)	TOOL ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
8-1/2	8.000 – 8.500	7.780	4.75	5-1/2 BUTTRESS	33580-1
	8.500 – 8.750	8.000	4.75	5-1/2 BUTTRESS	33581-1

DIFFERENTIAL PRESSURE (MAX)	TEMPERATURE RATING (MAX)
10,000 PSI	250°F

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.

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.

D & L OIL TOOLS
P.O. BOX 52220 TULSA, OK 74152
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D) RUNNING SEQUENCE

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

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. 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 pre-set conditions by pressure waves through the fluid. A slow steady running speed should be used. Sudden stops and starts should be avoided.

Make up the packer to the tubing string in the desired position and to the required torque.

Run the packer to the desired setting depth at the recommended speed and taking precautions listed above.

- Typically the tubing/casing will be landed prior to setting.
- Establish a plug in the tubing below the packer using a drop ball, wireline plug or other device.
- Apply pressure to the tubing/casing to the recommended pressure for the given size of packer hold for 20 minutes.

E) 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.

F) SETTING AREA GUIDE

PACKER SIZE (INCHES)	SETTING AREA (SQ INCHES)	SETTING INITIATION (PSI)
8-1/2 X 5-1/2	6.994	2,900

G) 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



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H) DISASSEMBLY

H-1) Clamp lock ring housing (5) in vise.

H-1.1) Unscrew and remove coupling (2) from mandrel (1).

H-1.2) Unscrew and remove shear screws (12) from shear cap (3).

H-1.3) Remove shear cap (3) from setting piston (4).

H-1.3.1) Remove o-ring (14) from shear cap (3).

H-1.4) Unscrew and remove setting piston (4) from lock ring housing (5).

H-1.4.1) Remove o-rings (14, 15) from setting piston (4).

H-2) Unclamp and remove lock ring housing (5) from vise. Clamp upper end of mandrel (1) in vise.

CAUTION₃: Do NOT mar or damage seal surface.

H-2.1) From lower end of tool, unscrew and remove bottom sub (10) from mandrel (1).

H-2.2) Remove element backups (7) and elements (8, 9) from mandrel (1)

H-2.3) Unscrew and remove upper gage ring (6) from lock ring housing (5).

H-2.4) Unscrew and remove and remove set screws (13) from lock ring housing (5).

H-2.5) Unscrew and remove lock ring housing (5) from lock ring (11).

H-3) Unclamp and remove mandrel (1) from vise

H-3.1) Unscrew and remove lock ring (11) from upper end of mandrel (1) (**NOTE₂**: Inner threads are left-hand threads).

NOTE₃: Using snap ring spreader pliers, lock ring (11) may be spread slightly to be removed.

I) 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.

I-1) Install lock ring (11) onto upper end of mandrel (1) (**NOTE₂**: Inner threads are left-hand threads). Do not engage threads on mandrel (1).

NOTE₃: Using snap ring spreader pliers, the lock nut (1) may be spread slightly to be removed.

NOTE₅: Lock ring (11) MUST be installed in proper direction (Fig. 1).

I-2) Clamp upper end of mandrel (1) in vise.

CAUTION₃: Do NOT mar or damage seal surface.

I-2.1) Screw lock ring housing (5) onto lock ring (11) pulling it into the lock ring housing (5).

I-2.2) Align gap in lock ring (11) with threaded holes in lock ring housing (5). Screw set screws (13) into lock ring housing (5) (Fig. 1).

NOTE₆: Do NOT tighten set screws (13) down onto threads on mandrel (1).

I-2.3) Screw upper gage ring (6) onto lock ring housing (5).

I-2.4) Install element backups (7) and elements (8, 9) onto mandrel (1)

I-2.5) Screw bottom sub (10) onto mandrel (1).

I-3) Remove mandrel (1) from vise. Clamp lock ring housing (5) in vise.

I-3.1) Install o-rings (14, 15) in o-ring grooves in setting piston (4).

I-3.2) Screw setting piston (4) into lock ring housing (5).

CAUTION₄: Do not rip or tear o-rings during installation

I-3.3) Install o-ring (14) in o-ring groove in shear cap (3).

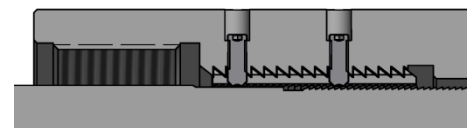


Fig. 1



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I) ASSEMBLY (cont'd)

I-3.4) Install shear cap (3) onto setting piston (4).

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

I-3.5) Screw shear screws (12) into shear cap (3). Tighten until shear screws (12) make contact with setting piston (4). Back shear screws (12) out 1/4 turn.

I-3.6) Screw coupling (2) onto mandrel (1).

I-4) Unclamp lock ring housing (5) from vise and removed assembled tool.

J) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 33580-1	P/N 33581-1
1	1	MANDREL	DLMS110	33580211	
2	1	COUPLING	DLMS110	CP-BLC-C	
3	1	SHEAR CAP	DLMS110	33580741	
4	1	SETTING PISTON	DLMS110	33580751	
5	1	LOCK RING HOUSING	DLMS110	33585013	
6	1	UPPER GAGE RING	DLMS60	33585831	33581831
7	2	ELEMENT BACK UP	90 DURO NITRILE/MESH	33585516	33581516
8	2	ELEMENT	90 DURO NITRILE	33585515	33581515
9	1	ELEMENT	80 DURO NITRILE	33585522	33581522
10	1	BOTTOM SUB	DLMS110	33585631	33581631
11	1	LOCK RING	DLMS80	33580011	
12	10	SHEAR SCREW (2000#) 5/16-18 UNC X 3/8	DLM360BRS	BSSSLT031C037	
13	2	SET SCREW #10-32 UNF X 1/2	STEEL	SSS1032F050	
14	2	257 O-RING	90 DURO NITRILE	90257	
15	1	259 O-RING	90 DURO NITRILE	90259	

ASSEMBLED WEIGHT		272 LBS	274 LBS
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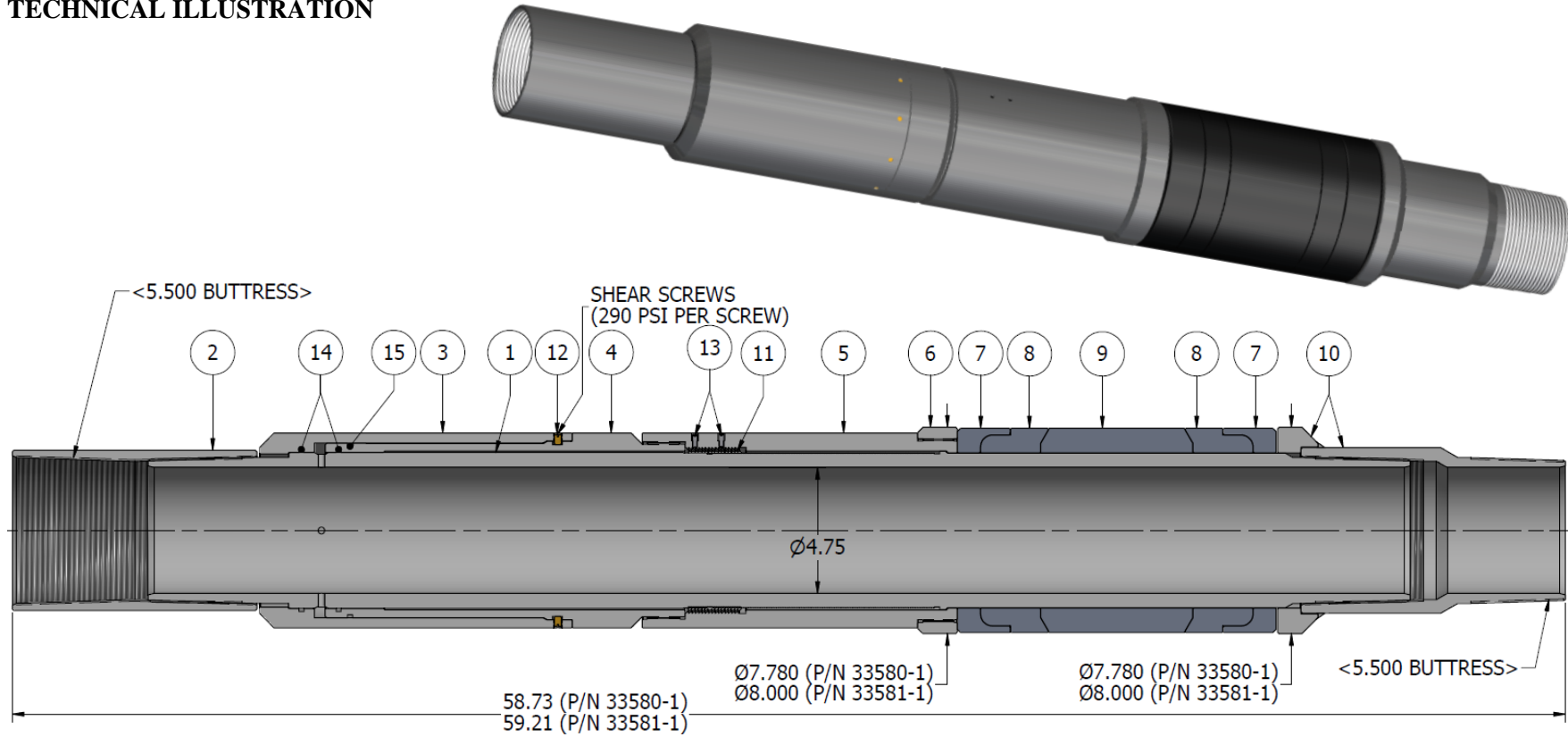
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K) TECHNICAL ILLUSTRATION





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L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
05/04/2022	C	Revised setting hold time was 5 minutes	J.Anderson	K.Plunkett
04/24/2017	B	Revised P/N 33580-1 recommended hole size was 8.000 – 9.000, differential pressure was 7,000 psi; Added General Screw Torque Recommendations	J.Anderson	K.Plunkett
01/20/2016	A	Created new tech manual	-	-