



HD RETRIEVABLE PACKER

6" X 2-3/8"

Manual No: DL-613-6000-365
Revision: C
Revision Date: 05/22/2012

Written by: B.Mathis

Approved by: D.Hushbeck

A) DESCRIPTION

The HD Retrievable Packer is a heavy duty service packer ideally suited for all types of squeeze cementing, formation fracturing, high pressure acidizing, etc. It is a large opening compression set packer with hydraulic button-type hold down. It withstands high pressure from above or below and uses a three-element packing system, J-slot, and a drag block mechanism for easy setting. The packer has a built-in unloader which circulates across the hold down buttons to improve retrievability and run in performance.

NOTE₁: This packer is rated for differential pressure up to 10,000 PSI.

B) SPECIFICATION GUIDE

CASING		RECOMMENDED HOLE SIZE	TOOL OD (INCHES)	TOOL ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)					
6	17 – 20#	5.352 – 5.450	5.188	2.00	2-3/8 EUE	61356RS

NOTE₂: Tool listed can also be set in 6-5/8" (36.7 - 40.2#) casing.

NOTE₃: Tools listed are right-hand set / straight pick-up.

CAUTION₁: Before running the tool, check the pressure affected areas chart, and consider other effects to be certain that the unloader will remain closed during operation.

CAUTION₂: If the HD Packer is run with a retrievable bridge plug, make sure the bridge plug J-slot is compatible with the J-slot on the packer. Whichever direction you set the plug, the packer should set in the opposite direction.

C) SETTING PROCEDURES

Run to setting depth. The unloader remains open while running in. Pick up the tubing and rotate 1/4 turn at the packer. Slack off weight and set down on the packer to set the slips, close the unloader and compress the packing elements. A minimum weight of 12,000 lbs at the packer is required to pack off the elements.

CAUTION₃: Run the tool slowly, as with any hold down type packer, to help prevent dulling of the hydraulic buttons.

D) RELEASING PROCEDURES

Pick up on the tubing to open the unloader, allowing time for the tubing and casing pressure to equalize. Continued upward movement of the tubing unsets the slips, relaxes the packing elements and re-jays the packer. The tool may now be moved and reset, or pulled from the well.

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



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E) PRESSURE AFFECTED AREAS GUIDE

SIZE (INCHES)	TUBING (INCHES)	ABOVE	BELOW
6" X 2-3/8"	2.375	0.92 DOWN	2.22 UP
	2.875	1.15 UP	0.67 UP

EXAMPLE: A 6" X 2-3/8" HD Retrievable Packer run on 2-3/8" tubing with a differential hydrostatic pressure above the tool in the annulus equal to 3,000 PSI. How much must be pulled to open the unloader?

Use 0.92 down (from the chart) as the factor for this packer with differential mentioned above. This value multiplied by the pressure differential (3,000 PSI) gives the force (in lbs) acting on the mandrel (0.92 X 3,000 = 2760 lbs). This is the pulling force needed to open the unloader.

F) ELEMENT SELECTION GUIDE

TEMPERATURE RANGE (F°)	DUROMETER		
	END	MIDDLE	END
70° - 125°	80	70	80
125° - 250°	90	70	90
250° - 300°	90	80	90
300° +	Contact D&L Sales		

RUBBER TYPE	TEMPERATURE RANGE
NITRILE	70° - 300°F
HSN (HNBR)	70° - 325°F
VITON	100° - 350°F

G) DISASSEMBLY

NOTE₄: For added leverage, insert a rod thru rubber retainer (15) and rubber mandrel (11) as needed.

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

NOTE₅: The drag block body assembly must be free to rotate.

G-1.1) Slide drag block body and J-body assembly up to access set screws (37). Unscrew and remove set screws (37) from J-pin bottom sub (23).

G-1.2) Unscrew and remove J-pin bottom sub (23) from inner mandrel (2).

G-1.2.1) Remove o-ring (39) from J-pin bottom sub (23).

G-1.3) Unscrew and remove set screws (35) from J-body (20).

G-1.4) Unscrew and remove J-body (20) from drag block body (18) (**NOTE₆:** Left-hand threads).

G-1.5) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11).

G-1.6) Slide drag block body assembly off of rubber mandrel (11) and disassemble:

G-1.6.1) Compress drag blocks (22). Remove drag block retainer (21) from drag block body (18).

G-1.6.2) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

G-1.6.3) Unscrew and remove socket cap screws (34) from lower slip support (32).

G-1.6.4) Remove lower slip support (32) from drag block body (18).

G-1.6.5) Remove wedges. Remove lower slips (17) and lower slip springs (25) from drag block body (18).

G-1.7) Unscrew and remove lower cone (16) from rubber retainer (11).

G-1.8) Unscrew rubber mandrel (11) from valve body (29).



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G) DISASSEMBLY (cont'd)

- G-1.9) Remove rubber mandrel assembly from inner mandrel (2) and disassemble:
 - G-1.9.1) Remove elements (13, 14), rubber spacers (12) and rubber retainer (15) from rubber mandrel (11).
- G-1.10) Unscrew and remove valve body (29) from central body (10).
NOTE₄: For added leverage, insert a rod thru central body (10) as needed.
 - G-1.10.1) Remove o-ring (41) from valve body (29).
- G-1.11) Unscrew and remove central body (10) from hold down body (6).
- G-1.12) Unscrew and remove seal retainer (27) from seal receptacle (28).
 - G-1.12.1) Remove quad seal (24) from seal receptacle (28).
- G-1.13) Unscrew and remove seal receptacle (28) from compensating mandrel (8).
 - G-1.13.1) Remove o-rings (41, 42) from seal receptacle (28).
- G-2) Remove top sub (1) from vise and clamp inner mandrel (2) in vise.
NOTE₇: Do **NOT** wrench or clamp on seal surface.
 - G-2.1) Unscrew and remove set screws (36) from top sub (1).
 - G-2.2) Unscrew and remove top sub (1) from inner mandrel (2).
 - G-2.2.1) Remove o-ring (40) from top sub (1).
 - G-2.3) Unscrew and remove hold down cap (5) from hold down body (6).
 - G-2.4) Unscrew and remove hold down extension (4) from hold down body (6).
 - G-2.4.1) Remove o-ring (44) from hold down extension (4).
 - G-2.5) Slide strap retainer (7) temporarily down out of way of hold down body (6).
 - G-2.6) Unscrew and remove flat head cap screws (33), then remove hold down straps (31).
 - G-2.7) Remove hold down button springs (26) and hold down buttons (30) from hold down body (6).
 - G-2.7.1) Remove o-rings (38) from hold down buttons (30).
 - G-2.8) Slide hold down body (6) off of inner mandrel (2).
 - G-2.8.1) Remove o-rings (42, 43) from hold down body (6).
 - G-2.9) Remove strap retainer (7) from inner mandrel (2).
 - G-2.10) Slide compensating piston (9) off of compensating mandrel (8).
 - G-2.10.1) Remove o-rings (45, 46) from compensating piston (9).
 - G-2.11) Slide compensating mandrel (8) off of inner mandrel (2).
- G-3) Remove inner mandrel (2) from vise.



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H) ASSEMBLY

NOTE₈: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order & orientation.

H-1) Clamp inner mandrel (2) in vise.

NOTE₇: Do NOT wrench or clamp on seal surface.

H-1.1) Slide compensating mandrel (8) onto inner mandrel (2).

H-1.2) Install o-rings (45, 46) into grooves in compensating piston (9).

H-1.3) Slide compensating piston (9) onto compensating mandrel (8).

NOTE₉: Be sure compensating piston (32) is installed in correct direction.

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

H-1.4) Slide strap retainer (7) onto inner mandrel (2) and temporarily out of the way.

H-1.5) Install o-rings (42, 43) in grooves in hold down body (6).

H-1.6) Slide hold down body (6) onto inner mandrel (2).

H-1.7) Install o-rings (38) in grooves in hold down buttons (30).

H-1.8) Install hold down button springs (26) and hold down buttons (30) into hold down body (6).

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

H-1.9) Compress hold down button springs (26). Set hold down straps (31) in place and screw flat head cap screws (33) into hold down body (6).

H-1.10) Slide strap retainer (7) into place on hydraulic hold down body (6) capturing ends of hold down straps (31).

H-1.11) Install o-ring (44) in groove in hold down extension (4).

H-1.12) Screw hold down extension (4) into hold down body (6).

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

H-1.13) Screw hold down cap (5) onto hold down body (6) capturing ends of hold down straps (9).

H-1.14) Install o-ring (40) into groove in top sub (1).

H-1.15) Screw top sub (1) onto inner mandrel (2).

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

H-1.16) Screw set screws (36) into top sub (1).

H-2) Remove inner mandrel (2) from vise and clamp top sub (1) in vise.

H-2.1) Install o-rings (41, 42) into grooves in seal receptacle (28).

H-2.2) Screw seal receptacle (28) onto compensating mandrel (8).

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

H-2.3) Install quad seal (24) into seal receptacle (28).

H-2.4) Screw seal retainer (27) onto seal receptacle (28).

CAUTION₅: Do not damage quad seal (24) during installation.

H-2.5) Screw central body (10) onto hold down body (6).

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

H-2.6) Install o-ring (41) in groove in valve body (29).

H-2.7) Screw valve body (29) into central body (10).

H-2.8) Assemble rubber mandrel assembly:

H-2.8.1) Slide rubber retainer (15), rubber spacers (12), and elements (13, 14) onto rubber mandrel (11).

H-2.8.2) Slide rubber mandrel assembly onto inner mandrel (2).

H-2.9) Screw rubber mandrel (11) into valve body (29).

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



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H) ASSEMBLY (cont'd)

H-2.10) Screw lower cone (16) into rubber retainer (11).

H-2.11) Assemble drag block body assembly:

H-2.11.1) Install lower slips (17) and lower slip springs (25). Wedge slips outward.

H-2.11.2) Slide lower slip support (32) into drag block body (18).

H-2.11.3) Align holes in drag block body (18) with threaded holes in lower slip support (32). Screw socket cap screws (34) into lower slip support (32). Remove wedges from lower slips (17).

H-2.11.4) Install drag blocks (22) and drag block springs (3) into drag block body (18). Compress drag blocks (22).

H-2.11.5) Slide drag block retainer (21) onto drag block body (18) capturing ends of drag blocks (22). Release drag blocks (22).

H-2.11.6) Slide drag block body assembly onto rubber mandrel (11).

H-2.12) Screw rubber mandrel cap (19) onto rubber mandrel (11).

H-2.13) Screw J-body (20) onto drag block body (18) (**NOTE₆**: Left-hand threads).

NOTE₅: The drag block body assembly must be free to rotate.

H-2.14) Screw set screws (35) into J-body (20).

H-2.15) Install o-ring (39) into groove in J-pin bottom sub (23).

H-2.16) Screw J-pin bottom sub (23) onto inner mandrel (2).

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

H-2.17) Screw set screws (37) into J-pin bottom sub (23).

H-3) Remove top sub (1) from vise and remove assembled tool.

I) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61360RS (17 - 20#)
1	1	TOP SUB	P-110	61355615
2	1	INNER MANDREL	P-110	61355215
3	30	DRAG BLOCK SPRING		9100900
4	1	HOLD DOWN EXTENSION	P-110	61355310
5	1	HOLD DOWN CAP	P-110	61360370
6	1	HOLD DOWN BODY	P-110	61360321
7	1	STRAP RETAINER	1026	61360650
8	1	COMPENSATING MANDREL	P-110	61355240
9	1	COMPENSATING PISTON	P-110	61355710
10	1	CENTRAL BODY	P-110	61355381
11	1	RUBBER MANDREL	P-110	61355220
12	2	RUBBER SPACER	1026	61360840
13	1	ELEMENT 1	80 DURO NITRILE	61360512
14	2	ELEMENT 2	90 DURO NITRILE	61360513
15	1	RUBBER RETAINER	P-110	61360850



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I) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61360RS (17 - 20#)
16	1	LOWER CONE	P-110	61360420
17	4	LOWER SLIP - CARBIDE	P-110	60055135C
18	1	DRAG BLOCK BODY		61360335
19	1	RUBBER MANDREL CAP	1026	60055230
20	1	J-BODY (RH AUTO)	L-80	61355340
21	1	DRAG BLOCK RETAINER	1026	61360910
22	6	DRAG BLOCK - CARBIDE	8620	9055900C
23	1	J-PIN BOTTOM SUB	P-110	61355635
24	1	QUAD SEAL	90 DURO NITRILE	61355520
25	8	LOWER SLIP SPRING		7155901
26	12	COIL BUTTON SPRINGS		61355975
27	1	SEAL RETAINER	L-80	61355530
28	1	SEAL RECEPTICAL	P-110	61355730
29	1	VALVE BODY	P-110	61360350
30	6	HOLD DOWN BUTTON - CARBIDE	STRESSPROOF	61357140C
31	3	HOLD DOWN STRAP	1026	61355360
32	1	LOWER SLIP SUPPORT	P-110	61360912
33	3	FLAT HEAD CAP SCREW 5/16-18 UNC X 1/2	STEEL	FHSC031C050
34	1	SOCKET CAP SCREW 5/16-18 UNC X 1/2	STEEL	SCS031C050
35	4	SET SCREW 5/16-18 UNC X 1/2	STEEL	SSS031C050
36	3	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037
37	4	SET SCREW 3/8-16 UNC X 1/2	STEEL	SSS037C050
38	6	224-90 O-RING	NITRILE	90224
39	1	229-90 O-RING	NITRILE	90229
40	1	231-90 O-RING	NITRILE	90231
41	2	235-90 O-RING	NITRILE	90235
42	2	236-90 O-RING	NITRILE	90236
43	1	241-90 O-RING	NITRILE	90241
44	1	334-90 O-RING	NITRILE	90334
45	1	339-90 O-RING	NITRILE	90339
46	1	342-90 O-RING	NITRILE	90342

REDRESS KIT	61360050
ASSEMBLED WEIGHT	192 LBS



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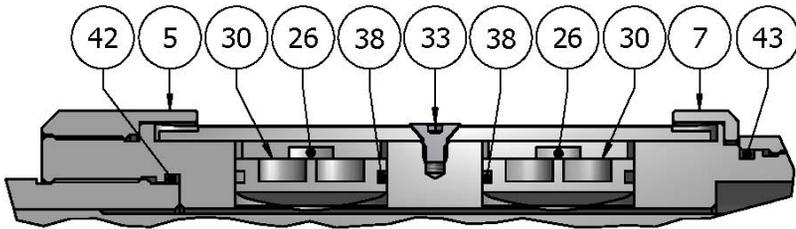
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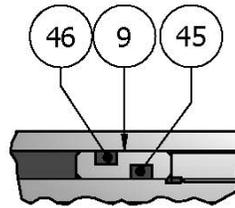
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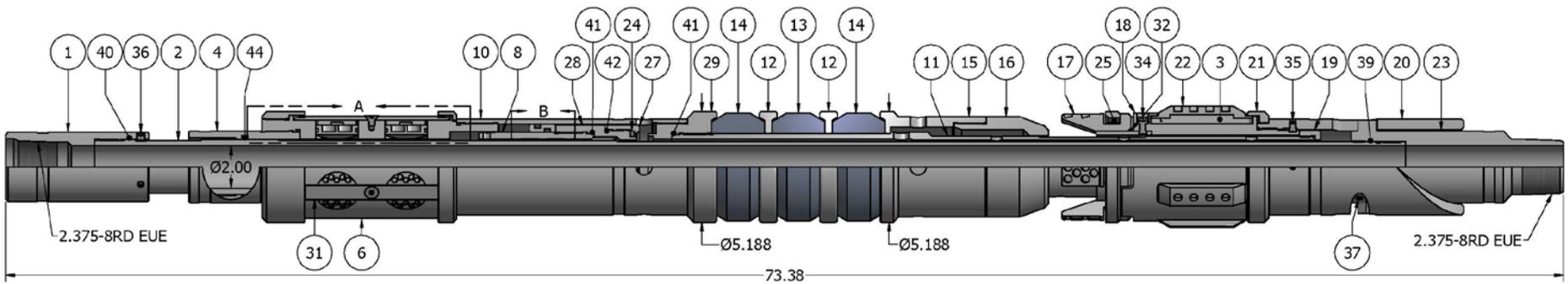
J) TECHNICAL ILLUSTRATION



DETAIL A



DETAIL B



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