



AS-II PACKER, RH AUTO

5-1/2" X 2-7/8"

Manual No:
DL-611-5500-657

Revision: **C**

Revision Date:
08/24/2022

Authored by: J.Anderson

Approved by: D.Hushbeck

A) DESCRIPTION

The AS-II Packer is a large-opening, compression-set packer with mechanical slip hold-downs. This packer withstands high pressure from above or below by using a 3-element packing system, and upper and lower mechanical slips. A J-slot and a drag block mechanism are incorporated for easy setting. This packer has a built-in unloader which circulates across the mechanical hold-down slips to improve retrievability. The unloader has a pressure compensating piston to keep it closed when pressure is greater below the set packer.

The AS-II Packer is available in the standard J-slot arrangement - right-hand auto set with straight pick-up release. Other J-slot arrangements are available: right-hand manual set, left-hand auto set, and left-hand manual set. All J-slot arrangements are straight pick-up release.

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)	ID (INCHES)		
5-1/2	14.0 – 20.0	4.778 – 5.012	4.625	2.38	2-7/8 EUE	61156RS 61156RSH ¹ 61156RSV ² 61156RSC ³ 61156RSHC ⁴ 61156RSVC ⁵

Tool Options: ¹HSN, ²Viton, ³Nitrile, Carbide, ⁴HSN, Carbide, ⁵Viton, Carbide

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
7,000 PSI	62,000 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.



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

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



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C) PRE-INSTALLATION INSPECTION PROCEDURES (cont'd)

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) 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.

Run to setting depth. The unloader remains open while running in. Pick up the work string and rotate 1/4 right-hand 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 of 11,000 lbs at the packer is required to pack off the elements.

E) RELEASING PROCEDURES

Pick up on the work string to open the unloader. Allow time for the tubing and casing pressure to equalize. Continue to pick up on the work string to unset the top slips, relax the elements, and re-jays the packer. The tool may now be moved and reset, or pulled from the well.

F) 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.

G) 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



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H) RECOMMENDED TOOLS

H-1) 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
- STRAP WRENCH
- 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

H-2) OPTIONAL SPECIAL TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAG BLOCK ASSEMBLY TOOL	AT070110

I) DISASSEMBLY

NOTE₁: For added leverage, insert a rod through central body (10) or rubber retainer (15) as needed.

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

I-1.1) Unscrew and remove J-pin bottom sub (23) from inner mandrel (2).

NOTE₂: Drag block body (18) must be free to rotate.

I-1.2) Compress drag blocks (22) using drag block body assembly tool (T1).

I-1.3) Unscrew and remove set screws (24) from J-body (20).

I-1.4) Unscrew and remove J-body (20) from drag block body (18) (**NOTE₃:** Left-hand threads).

I-1.5) Remove drag block retainer (21) from drag block body (18).

I-1.6) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

I-1.7) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11).

I-1.8) Wedge lower slips (17) outwards (if needed). Remove drag block body assembly and disassemble:

I-1.8.1) Remove wedges (if needed). Remove lower slips (17) and lower slip springs (25) from drag block body (18).

I-1.9) Unscrew and remove lower cone (16) from rubber retainer (15).

I-1.10) Unscrew rubber mandrel (11) from valve body (31).

I-1.11) Remove rubber mandrel assembly and disassemble:

I-1.11.1) Remove elements (13, 14), rubber spacers (12), and rubber retainer (15) from rubber mandrel (11).

I-1.12) Unscrew and remove valve body (31) from central body (10).

I-1.12.1) Remove o-ring (32) from valve body (31).

I-1.13) Unscrew and remove central body (10) from upper cone (9).

I-1.14) Unscrew and remove seal assembly (6) from valve piston (29).

I-1.14.1) Remove o-ring (34) from seal assembly (6).

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

NOTE₄: Do NOT wrench or clamp on seal surface.

I-2.1) Unscrew and remove spring cage cap (27) from spring cage (5).

CAUTION₃: Compression spring (4) is compressed with spring tension on spring cage (5).

I-2.2) Unscrew and remove top sub (1) from inner mandrel (2).



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I) DISASSEMBLY (cont'd)

- I-2.3) Remove compression spring (4) from inner mandrel (2).
- I-2.4) Wedge slips outward (if needed). Remove spring cage assembly and disassemble:
 - I-2.4.1) Remove wedges (if needed). Remove releasing slip (7), upper slips (8), and upper slip springs (26) from spring cage (5).
- I-2.5) Remove upper cone (9) from inner mandrel (2).
 - I-2.5.1) Remove o-ring (33) from upper cone (9).
- I-2.6) Remove compensating piston (28) from inner mandrel (2).
 - I-2.6.1) Remove o-rings (32, 34) from compensating piston (28).
- I-2.7) Unscrew and remove valve piston cap (30) from valve piston (29).
- I-3) Unclamp and remove inner mandrel (2) from vise.
- I-4) Remove valve piston (29) from inner mandrel (2).

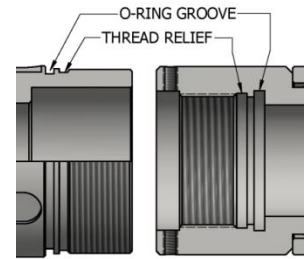


Fig. 2

J) ASSEMBLY

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

CAUTION6: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 2).

J-1) Install valve piston (29) onto inner mandrel (2).

J-2) Clamp lower part of inner mandrel (2) in vise.

NOTE4: Do NOT wrench or clamp on seal surface.

J-2.1) Screw valve piston cap (30) into valve piston (29).

J-2.2) Install o-rings (32, 34) in grooves in compensating piston (28).

J-2.3) Install compensating piston (28) onto inner mandrel (2).

CAUTION5: Do not rip or tear o-rings during installation.

J-2.4) Install o-ring (33) in groove in upper cone (9).

J-2.5) Install upper cone (9) onto inner mandrel (2).

CAUTION5: Do not rip or tear o-ring during installation.

J-2.6) Assemble spring cage assembly and install:

J-2.6.1) Install releasing slip (7), upper slips (8), and upper slip springs (26) in spring cage (5).

NOTE6: Uses two (2ea) springs per slip (Fig. 3).

J-2.6.2) Wedge releasing slip (7) and upper slips (8) outward. Install spring cage (5) onto inner mandrel (2). Remove wedges.

J-2.7) Install compression spring (4) onto inner mandrel (2) and into spring cage (5).

J-2.8) Screw top sub (1) onto inner mandrel (2).

J-2.9) Compress compression spring (4) by forcing spring cage (5) upwards. Screw spring cage cap (27) onto spring cage (5).

CAUTION3: Compression spring (4) is compressed with spring tension on spring cage (5).

J-3) Unclamp and remove inner mandrel (2) from vise. Clamp top sub (1) in vise.

J-3.1) Install o-ring (34) in groove in seal assembly (6).

J-3.2) Screw seal assembly (6) onto valve piston (29).

CAUTION4: Do not rip or tear seal during installation.

J-3.3) Screw central body (10) onto upper cone (9).

CAUTION5: Do not rip or tear o-rings during installation.

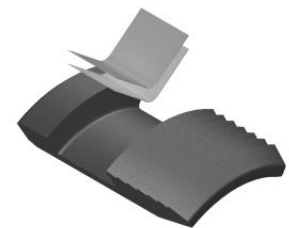


Fig. 3



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J) ASSEMBLY (cont'd)

J-3.4) Install o-ring (32) in groove in valve body (31).

J-3.5) Screw valve body (31) into central body (10).

J-3.6) Assemble rubber mandrel assembly and install:

J-3.6.1) Install rubber retainer (15), elements (13, 14), and rubber spacers (12) onto rubber mandrel (11).

J-3.6.2) Install rubber mandrel assembly onto inner mandrel (2).

J-3.6.3) Screw rubber mandrel (11) into valve body (36).

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

J-3.7) Screw lower cone (16) into rubber retainer (15).

J-3.8) Assemble drag block body assembly and install:

J-3.8.1) Install lower slips (17) and lower slip springs (25) into drag block body (18). Wedge slips outward.

NOTE7: Uses one (1ea) spring per slip (Fig. 4).

J-3.8.2) Install drag block body (18) onto rubber mandrel (11). Remove wedges.

J-3.9) Screw rubber mandrel cap (19) onto rubber mandrel (11).

J-3.10) Install drag blocks (22) and drag block springs (3) into drag block body (18). Compress drag blocks (22) using drag block body assembly tool (T1).

NOTE8: Uses five (5ea) springs per drag block (Fig. 5).

J-3.11) Install drag block retainer (21) onto drag block body (18) capturing ends of drag blocks (22).

J-3.12) Screw J-body (20) onto drag block body (18) (**NOTE3:** Left-hand threads).

J-3.13) Screw set screws (26) into J-body (20). Release drag blocks (22).

J-3.14) Screw J-pin bottom sub (23) onto inner mandrel (2). Position J-pin of bottoms sub (23) in running position on the J-slot of J-body (20).

NOTE2: Drag block body (18) must be free to rotate.

J-4) Unclamp top sub (1) from vise and remove assembled tool.

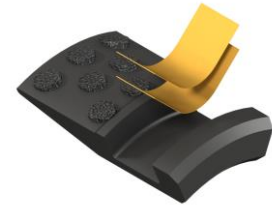


Fig. 4



Fig. 5

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61156RS
1	1	TOP SUB	DLMS80	60156610
2	1	INNER MANDREL	DLMS80	61056210
3	20	DRAG BLOCK SPRING	-	9100900
4	1	COMPRESSION SPRING	DLMCRSP	61056920
5	1	SPRING CAGE	DLMS80	61056325
6	1	SEAL ASSEMBLY	90 DURO NITRILE	61156520
7	1	RELEASING SLIP	DLMS110	60056125
8	2	UPPER SLIP	DLMS35	60056115
9	1	UPPER CONE	DLMS60	61056410
10	1	CENTRAL BODY	DLMS110	61055370
11	1	RUBBER MANDREL	DLMS60	61056220
12	2	RUBBER SPACER	DLMS60	60256840



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K) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61156RS
13	1	ELEMENT	70 DURO NITRILE	60256511
14	2	ELEMENT	90 DURO NITRILE	60256513
15	1	RUBBER RETAINER	DLMS110	61056850
16	1	LOWER CONE	DLMS60	60056420
17	4	LOWER SLIP	DLMS35	60056135
18	1	DRAG BLOCK BODY	DLMS80	60056335
19	1	RUBBER MANDREL CAP	DLMS60	60156230
20	1	J-BODY	DLMS60	61056340
21	1	DRAG BLOCK RETAINER	DLMS60	60056910
22	4	550 DRAG BLOCK	DLMSDB8	9055900
23	1	BOTTOM SUB	DLMS110	61056630
24	1	5/16-18 UNC X 3/8 SOCKET SET SCREW	STEEL	SSS031C037
25	8	LOWER SLIP SPRING	-	7155901
26	6	UPPER SLIP SPRING	-	7155902
27	1	SPRING CAGE CAP	DLMS35	60156810
28	1	COMPENSATING PISTON	DLMS60	61056710
29	1	VALVE PISTON	DLMS80	61156730
30	1	VALVE PISTON CAP	DLMS60	61056720
31	1	VALVE BODY	DLMS80	61156350
32	3	235 O-RING	90 DURO NITRILE	90235
33	1	338 O-RING	90 DURO NITRILE	90338
34	3	342 O-RING	90 DURO NITRILE	90342

REDRESS KIT (RDK)	61156050
ASSEMBLED WEIGHT	165 LBS

K-1) ELASTOMER TRIM OPTIONS

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

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61156RSH
6	1	SEAL ASSEMBLY	90 DURO HSN	61156520H
13	1	ELEMENT	70 DURO HSN	60256511H
14	2	ELEMENT	90 DURO HSN	60256513H
32	3	235 O-RING	90 DURO HSN	90235H
33	1	338 O-RING	90 DURO HSN	90338H
34	3	342 O-RING	90 DURO HSN	90342H

REDRESS KIT (RDK)	61156050H
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K) PARTS LIST (cont'd)

K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61156RSV
6	1	SEAL ASSEMBLY	90 DURO VITON	61156520V
13	1	ELEMENT	70 DURO VITON	60256511V
14	2	ELEMENT	90 DURO VITON	60256513V
32	3	235 O-RING	90 DURO VITON	90235V
33	1	338 O-RING	90 DURO VITON	90338V
34	3	342 O-RING	90 DURO VITON	90342V

REDRESS KIT (RDK)	61156050V
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K-2) CARBIDE OPTION

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61156RSC
8	2	CARBIDE UPPER SLIP	DLMS110	60056115C
17	4	CARBIDE LOWER SLIP	DLMS110	60056135C
22	4	550 CARBIDE DRAG BLOCK	DLMSDB4	9055900C



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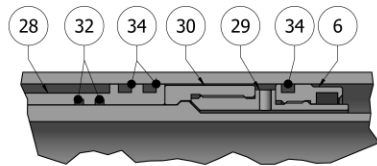
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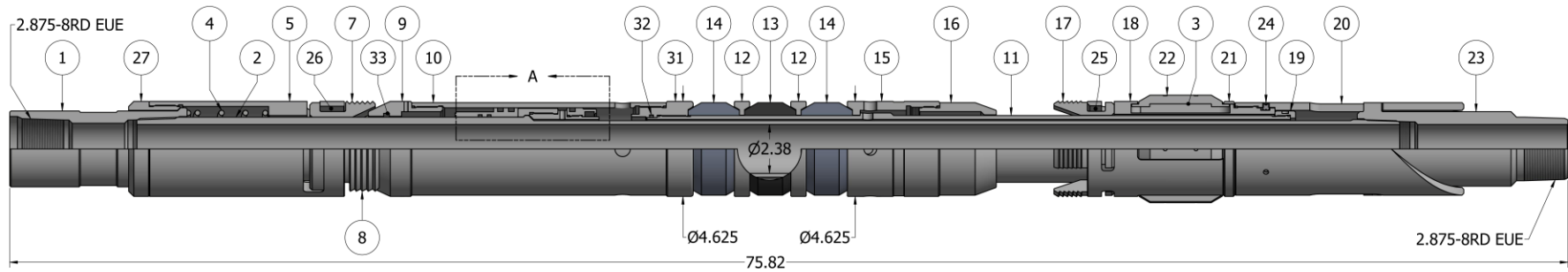
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L) TECHNICAL ILLUSTRATION



DETAIL A



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M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
08/24/2022	C	Revised 60156610 was 60070610, 60156810 was 60056810, 7155901 qty 8 was 4	J.Anderson	J.Johnson
05/19/2022	B	Revised entire manual	J.Anderson	J.Johnson
02/04/14	A	Created new manual	-	-