A) DESCRIPTION

The Snapset II Packer is a compression set tool requiring only straight set down weight to pack-off. This packer is run above another compression set packer (such as the AS-III Packer) to selectively treat, produce or inject in multiple zone completions. This packer is also used to isolate casing hole perforations.

This packer features a large by-pass area to prevent swabbing when running and retrieving. Once the packer is set, pressure from above or below acts down on the valve to maintain the seal and prevent upward movement of the tubing. When releasing, the valve allows debris to be washed from the upper slips. This packer is equipped with an internal latch to prevent setting prematurely when running in the hole. When releasing, the latch re-engages to allow movement downhole.

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	11.5 – 15.0	4.408 – 4.560	4.125	1.94	2-3/8 EUE	63650 63650H[1] 63650V[2] 63650C[3] 63650HC[4] 63650VC[5]
	18.0 – 21.0	4.154 – 4.276	4.000	1.94	2-3/8 EUE	63652 63652H[1] 63652V[2] 63652C[3] 63652HC[4] 63652VC[5]

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

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
5,000 PSI	63,000 LBS

C) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION$_1$: 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.

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

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

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.

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

Run the packer to setting depth with an ASI-X Packer or other comparable packer below the Snapset II Packer. Set the lower tool to provide resistance to set the Snapset II Packer. Apply sufficient set down weight to release the internal latch (5,000-10,000 lbs). Then apply a minimum weight of 10,000 lbs at the packer to pack off the elements and set the slips.

E) RELEASING PROCEDURES

Pick up on the work string, pulling with enough tension to relax the elements, release the slips and re-set the internal latch. The packer can now be retrieved or reset.

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** (F°)
NITRILE	40° - 250°F
HSN (HNBR)	70° - 300°F
VITON	100° - 350°F

H) 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

I) DISASSEMBLY

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

I-1.1) Unscrew and remove set screws (6) from torque sleeve (20).

I-1.2) Unscrew and remove bottom sub (28) from torque sleeve (20).

I-1.2.1) Remove o-ring (29) from bottom sub (28).

I-1.3) Unscrew and remove torque pins (22) from torque ring (21).

I-1.4) Unscrew and remove torque sleeve (20) from rubber retainer (15).

I-1.5) Remove torque ring (21) from lower mandrel (19).

I-1.6) Remove collet (16) from lower mandrel (19).

I-1.7) Unscrew and remove lower mandrel (19) from inner mandrel (2).

I-1.8) Unscrew rubber mandrel (11) from valve body (18). Remove rubber mandrel assembly and disassemble:

I-1.8.1) Remove elements (13, 14), rubber spacers (12), and rubber retainer (15) from rubber mandrel (11).

I-1.9) Unscrew and remove valve body (18) from central body (10).

I-1.9.1) Remove o-ring (30) from valve body (18).

I-1.10) Unscrew and remove central body (10) from upper cone (9).

I-1.11) Unscrew and remove seal (24) from valve piston (23).

I-1.12) Unscrew and remove valve piston (23) from valve piston cap (17).

I-1.12.1) Remove o-ring (32) from valve piston (23).

I-2) Unclamp and remove top sub (1) from vise and clamp lower end of inner mandrel (2) in vise.

CAUTION$_3$: Do NOT wrench or clamp on seal surface.

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

CAUTION$_4$: Compression spring (4) will be compressed with spring tension against spring cage assembly.

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

I-2.3) Remove compression spring (4) from spring cage (5).

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 slip springs (25) from spring cage (5).

I-2.4.2) Remove spring retaining ring (26) from spring cage (5).

I-2.5) Remove upper cone (9) from inner mandrel (2).

I-2.5.1) Remove o-ring (31) from upper cone (9).

I-2.6) Remove compensating piston (3) from inner mandrel (2).

I-2.6.1) Remove o-rings (32, 31) from compensating piston (3).

I-2.7) Remove valve piston cap (17) from inner mandrel (2).

I-3) Unclamp inner mandrel (2) and remove from vise.

J) ASSEMBLY

NOTE1: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

J-1) Clamp lower end of inner mandrel (2) in vise.

CAUTION3: Do NOT wrench or clamp on seal surface.

J-1.1) Install valve piston cap (17) onto inner mandrel (2).

J-1.2) Install o-rings (32, 31) in o-ring grooves in compensating piston (3).

J-1.3) Install compensating piston (3) onto inner mandrel (2).

CAUTION5: Do NOT rip or tear o-rings while installing.

J-1.4) Install o-ring (31) in o-ring groove in upper cone (9).

J-1.5) Install upper cone (9) onto inner mandrel (2).

J-1.6) Assemble spring cage assembly and install:

J-1.6.1) Install spring retaining ring (26) into spring cage (5).

J-1.6.2) Install releasing slip (7), upper slips (8), and slip springs (25) into spring cage (5). Wedge slips outward.

NOTE2: Install one (1ea) spring per slip (Fig. 2).

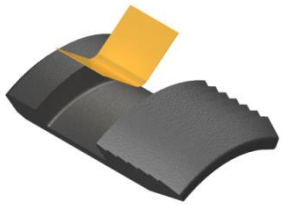


Fig. 2

J-1.6.3) Install spring cage assembly onto inner mandrel (2). Remove wedges.

J-1.7) Install compression spring (4) into spring cage (5).

J-1.8) Screw top sub (1) onto inner mandrel (2).

J-1.9) Screw spring cage cap (27) onto spring cage (5).

CAUTION4: Compression spring (4) will be compressed with spring tension against upper slip body assembly.

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

J-2.1) Install o-ring (32) in o-ring groove in valve piston (23).

J-2.2) Screw valve piston (23) onto valve piston cap (17).

J-2.3) Screw seal (24) onto valve piston (23).

J-2.4) Screw central body (10) onto upper cone (9).

CAUTION5: Do NOT rip or tear o-rings while installing.

J-2.5) Install o-ring (30) in o-ring groove in valve body (18).

J-2.6) Screw valve body (18) into central body (10).

J-2.7) Assemble rubber mandrel assembly and install:

J-2.7.1) Install rubber retainer (15), elements (13, 14), and rubber spacers (12) onto rubber mandrel (11).

J-2.7.2) Install rubber mandrel assembly onto inner mandrel (2). Screw rubber mandrel (11) into valve body (18).

CAUTION5: Do NOT rip or tear o-ring while installing.

J-2.8) Screw lower mandrel (19) onto inner mandrel (2).

J-2.9) Install collet (16) and torque ring (21) onto lower mandrel (19).

J-2.10) Screw torque sleeve (20) onto rubber retainer (15).

J-2.11) Align slots in torque sleeve (20) with threaded holes in torque ring (21) and pocket holes in lower mandrel (19). Screw torque pins (22) into torque ring (21).

J-2.12) Install o-ring (29) in o-ring groove in bottom sub (28).

J) ASSEMBLY (cont’d)

J-2.13) Screw bottom sub (28) into torque sleeve (20).

CAUTION5: Do NOT rip or tear o-ring while installing.

J-2.14) Screw set screws (6) into torque sleeve (20).

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

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63650	P/N 63652
1	1	TOP SUB	DLMS80	60145610	
2	1	INNER MANDREL	DLMS80	63645210	
3	1	COMPENSATING PISTON	DLMS60	61045710	
4	1	COMPRESSION SPRING	DLMCRSP	61045920	
5	1	SPRING CAGE	DLMS80	61050325	
6	3	SET SCREW 1/4-20 UNC X 1/4	STEEL	SSS025C025	
7	1	RELEASING SLIP	DLMS110	60050125	
8	2	UPPER SLIP	DLMS35	60050115	
9	1	UPPER CONE	DLMS110	61045411	
10	1	CENTRAL BODY	DLMS80	63645381	
11	1	RUBBER MANDREL	DLMS60	63545220	
12	2	RUBBER SPACER	DLMS35	60250840	60252840
13	1	ELEMENT	70 DURO NITRILE	60250511	60252511
14	2	ELEMENT	90 DURO NITRILE	60250513	60252513
15	1	RUBBER RETAINER	DLMS80	63550851	63552850
16	1	COLLET	DLMS110	63545660	
17	1	VALVE PISTON CAP	DLMS60	61145720	
18	1	VALVE BODY	DLMS80	61150350	61152350
19	1	LOWER MANDREL	DLMS80	63545230	
20	1	TORQUE SLEEVE	DLMS60	63545370	
21	1	TORQUE RING	DLMS60	63545725	
22	3	TORQUE PIN	STEEL	63545377	
23	1	VALVE PISTON	DLMS110	61145730	
24	1	SEAL	90 DURO NITRILE	61145520	
25	3	SLIP SPRING	-	7145902	
26	1	SPRING RETAINING RING	DLMS60	60045820	
27	1	SPRING CAGE CAP	DLMS60	60145810	
28	1	BOTTOM SUB	DLMS80	63545630	
29	1	229 O-RING	90 DURO NITRILE	90229	

K) PARTS LIST (cont’d)

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63650	P/N 63652
30	1	231 O-RING	90 DURO NITRILE	90231	
31	2	332 O-RING	90 DURO NITRILE	90332	
32	2	336 O-RING	90 DURO NITRILE	90336	
		REDRESS KIT (RDK)		63650050	63652050
		ASSEMBLED WEIGHT		79 LBS	79 LBS

K-1) ELASTOMER TRIM OPTIONS

NOTE3: For temperature range, refer to Elastomer Trim Temperature Guide.

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63650H	P/N 63652H
13	1	ELEMENT	70 DURO HSN	60250511H	60252511H
14	2	ELEMENT	90 DURO HSN	60250513H	60252513H
24	1	SEAL	90 DURO HSN	61145520H	
29	1	229 O-RING	90 DURO HSN	90229H	
30	1	231 O-RING	90 DURO HSN	90231H	
31	2	332 O-RING	90 DURO HSN	90332H	
32	2	336 O-RING	90 DURO HSN	90336H	
		REDRESS KIT (RDK)		63650050H	63652050H

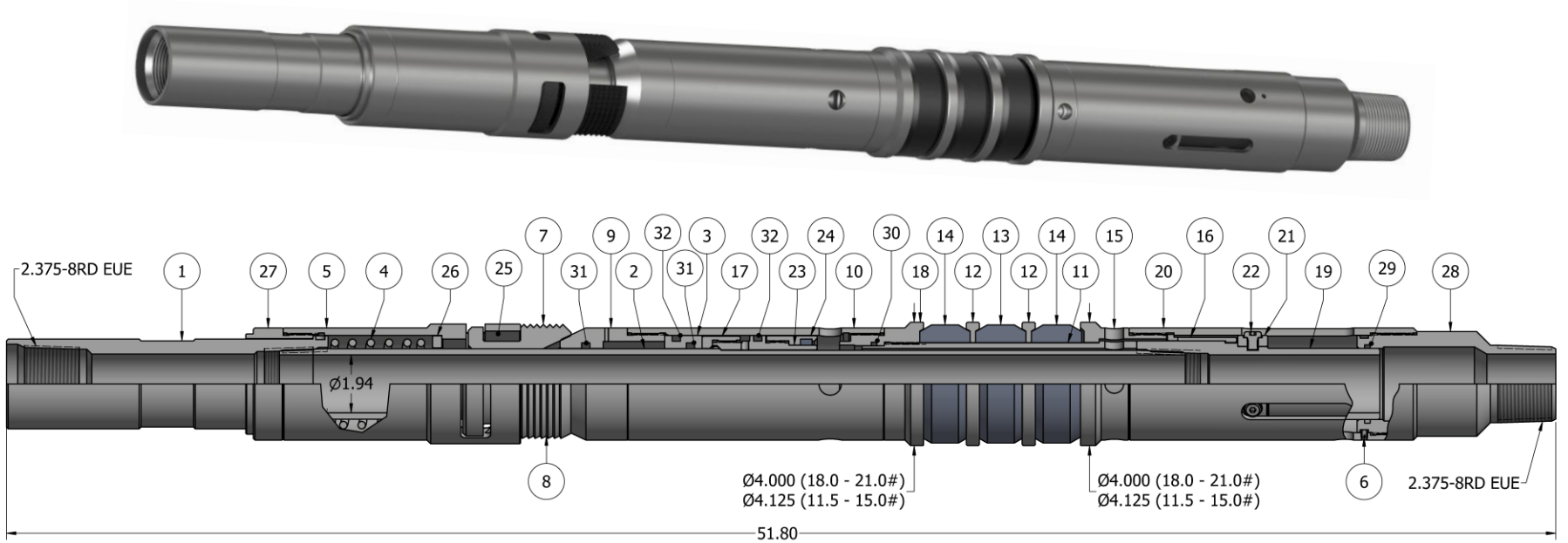
K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63650V	P/N 63652V
13	1	ELEMENT	70 DURO VITON	60250511V	60252511V
14	2	ELEMENT	90 DURO VITON	60250513V	60252513V
24	1	SEAL	90 DURO VITON	61145520V	
29	1	229 O-RING	90 DURO VITON	90229V	
30	1	231 O-RING	90 DURO VITON	90231V	
31	2	332 O-RING	90 DURO VITON	90332V	
32	2	336 O-RING	90 DURO VITON	90336V	
		REDRESS KIT (RDK)		63650050V	63652050V

K-2) CARBIDE OPTIONS

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63650C	P/N 63652C
8	2	CARBIDE UPPER SLIP	1026	60050115C	

L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
11/20/2020	B	Added carbide options, General Screw Torque Recommendations; Revised elastomer trim temp. ratings, 60145610 was 60045610, 60145810 was 60045810	J.Anderson	E.Visaez
05/08/2015	A	Created new manual	-	-