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)	**DRIFT ID** (INCHES)		
5-1/2	14.0 – 20.0	4.778 – 5.012	4.625	2.00	1.901	2-3/8 EUE	63655 63655H[1] 63655V[2]
	20.0 – 23.0	4.670 – 4..778	4.500	2.00	1.901	2-3/8 EUE	63657 63657H[1] 63657V[2]

[1]HSN Option [2]Viton Option

DIFFERENTIAL PRESSURE (MAX)	TEMPERATURE RATING	TENSILE LOAD (MAX)	TORQUE THRU TOOL (MAX)
5,000 PSI	300° F	70,000 LBS	1,000 FT-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.

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
PHONE: (800) 441-3504 www.dloiltools.com

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

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 tool) below the Snapset II Packer. Set the lower tool to provide resistance to set the Snapset II Packer. Apply a minimum of 12,000 lbs. set down weight to release the internal latch, pack off the elements and set the slips.

E) RELEASING PROCEDURES

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

F) STORAGE PROCEDURES

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) ELEMENT SELECTION GUIDE

NITRILE (STD)			
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

H) DISASSEMBLY

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

H-1.1) Unscrew and remove set screws (27) from torque sleeve (20).

H-1.2) Unscrew and remove bottom sub (26) from torque sleeve (20).

H-1.2.1) Remove o-ring (29) from bottom sub (26).

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

H) DISASSEMBLY (cont'd)

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

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

H-1.6) Unscrew collet (16) from rubber retainer (15) and remove from lower mandrel (19).

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

H-1.8) Unscrew rubber mandrel (11) from valve body (18).

H-1.9) Remove rubber mandrel assembly and disassemble:

H-1.9.1) Remove elements (13, 14), rubber spacers (12), and rubber retainer (15) from rubber mandrel (11).

H-1.10) Unscrew and remove valve body (18) from central body (10).

H-1.10.1) Remove o-ring (28) from valve body (18).

H-1.11) Unscrew and remove central body (10) from upper cone (9).

H-1.12) Unscrew and remove seal (24) from valve piston (23).

H-1.13) Unscrew and remove valve piston (23) from valve piston cap (17).

H-1.13.1) Remove o-ring (30) from valve piston (23).

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

NOTE$_1$: Do NOT wrench or clamp on seal surface.

H-2.1) Unscrew and remove spring cage (5) from upper slip body (6).

CAUTION$_3$: Compression spring (4) has tension against upper slip body assembly.

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

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

H-2.4) Wedge slips outward (if needed). Remove upper slip body assembly and disassemble:

H-2.4.1) Remove wedges (if needed). Remove releasing slip (7), upper slips (8), and slip springs (25) from upper slip body (6).

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

H-2.5.1) Remove o-ring (29) from upper cone (9).

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

H-2.6.1) Remove o-rings (29, 30) from compensating piston (3).

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

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

I) ASSEMBLY

NOTE$_2$: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION$_4$: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs unless stated otherwise (Fig. 2).

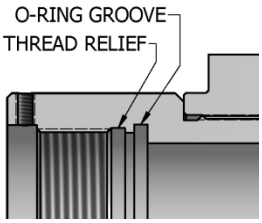


Fig. 2

I-1) Assemble valve piston assembly and install:

I-1.1) Screw seal (24) onto valve piston (23).

CAUTION$_5$: Do NOT rip or tear seal while installing.

I-1.2) Install o-ring (30) in groove in valve piston (23).

I-1.3) Install valve piston assembly onto inner mandrel (2) from lower end.

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

NOTE$_1$: Do NOT wrench or clamp on seal surface.

I) ASSEMBLY (cont’d)

I-2.1) Screw valve piston cap (17) into valve piston (23).

I-2.2) Install o-rings (29, 30) in grooves in compensating piston (3).

I-2.3) Install compensating piston (3) onto inner mandrel (2).

CAUTION$_5$: Do NOT rip or tear o-ring while installing.

I-2.4) Install o-ring (29) in groove in upper cone (9).

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

CAUTION$_5$: Do NOT rip or tear o-ring while installing.

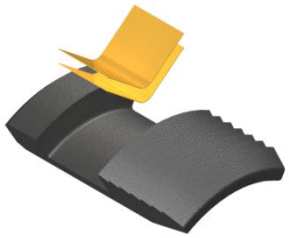


Fig. 3

I-2.6) Assemble upper slip body assembly and install:

I-2.6.1) Install releasing slip (7), upper slips (8), and slip springs (25) into upper slip body (6).

NOTE$_3$: Uses two (2ea) springs per slip (Fig. 3).

I-2.6.2) Wedge slips outward. Install upper slip body assembly onto inner mandrel (2).

I-2.7) Install compression spring (4) onto inner mandrel (2).

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

I-2.9) Install spring cage (5) onto top sub (1) and screw into upper slip body (6).

CAUTION$_6$: Compression spring (4) will be compressed with spring tension against upper slip body assembly.

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

I-3.1) Screw central body (10) onto upper cone (9).

CAUTION$_5$: Do NOT rip or tear o-rings while installing.

I-3.2) Install o-ring (28) in groove in valve body (18).

I-3.3) Screw valve body (18) into central body (10).

I-3.4) Assemble rubber mandrel assembly and install:

I-3.4.1) Install rubber retainer (15), elements (13, 14), and rubber spacers (12) onto rubber mandrel (11).

I-3.4.2) Install rubber mandrel assembly onto inner mandrel (2) and screw rubber mandrel (11) into valve body (18).

CAUTION$_5$: Do NOT rip or tear o-ring while installing.

I-3.5) Screw lower mandrel (19) onto inner mandrel (2).

I-3.6) Install collet (16) onto lower mandrel (19) and screw into rubber retainer (15).

I-3.7) Install torque ring (21) onto lower mandrel (19). Align threaded holes in torque ring (21) with recessed holes in lower mandrel (19).

I-3.8) Screw torque sleeve (20) onto rubber retainer (15).

I-3.9) Align slots in torque sleeve (20) with threaded holes in torque ring (21)—ensure threaded holes in torque ring (21) remain aligned with recessed holes in lower mandrel (19). Screw torque pins (22) into torque ring (21).

I-3.10) Install o-ring (29) in groove in bottom sub (26).

I-3.11) Screw bottom sub (26) into torque sleeve (20).

CAUTION$_5$: Do NOT rip or tear o-ring while installing.

I-3.12) Screw set screws (27) into torque sleeve (20).

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

J) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63655 (14.0 – 20.0#)	P/N 63657 (20.0 – 23.0#)
1	1	TOP SUB	1026	60055610	
2	1	MANDREL	L-80	63655210	63657210
3	1	COMPENSATING PISTON	1026	61055710	
4	1	COMPRESSION SPRING	CHROME VANADIUM	61055920	
5	1	SPRING CAGE	1026	61055310	61057310
6	1	UPPER SLIP BODY	1026	60055320	
7	1	RELEASING SLIP	P-110	60055125	
8	2	UPPER SLIP	1026	60055115	
9	1	UPPER CONE	1026	61055410	
10	1	CENTRAL BODY	1026	63655380	63655381
11	1	RUBBER MANDREL	1026	63555220	
12	2	RUBBER SPACER	1026	60255840	60257840
13	1	ELEMENT	70 DURO NITRILE	60255511	60257511
14	2	ELEMENT	90 DURO NITRILE	60255513	60257513
15	1	RUBBER RETAINER	1026	63555850	63557850
16	1	COLLET	P-110	63555660	
17	1	VALVE PISTON CAP	1026	61155720	
18	1	VALVE BODY	1026	61155350	61157350
19	1	LOWER MANDREL	1026	63555230	
20	1	TORQUE SLEEVE	1026	63555375	
21	1	TORQUE RING	1026	63555725	
22	3	TORQUE PIN	.375-16 X .625 LHCS	63555377	
23	1	VALVE PISTON	L-80	61155730	
24	1	SEAL	1026/90 DURO NITRILE	61155520	
25	6	SLIP SPRING	ELGILOY	7155902	
26	1	BOTTOM SUB	1026	63555630	
27	3	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037	
28	1	234 O-RING	90 DURO NITRILE	90234	
29	3	334 O-RING	90 DURO NITRILE	90334	
30	2	342 O-RING	90 DURO NITRILE	90342	

REDRESS KIT (RDK)		63655050	63657050
ASSEMBLED WEIGHT		124 LBS	123 LBS

K) OPTIONS PARTS LIST

K-1) HSN

NOTE$_4$: For temperature range, refer to Element Selection Guide.

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63655H (14.0 – 20.0#)	P/N 63657H (20.0 – 23.0#)
13	1	ELEMENT	70 DURO HSN	60255511H	60257511H
14	2	ELEMENT	90 DURO HSN	60255513H	60257513H
24	1	SEAL	1026/90 DURO HSN	61155520H	
28	1	234 O-RING	90 DURO HSN	90234H	
29	3	334 O-RING	90 DURO HSN	90334H	
30	2	342 O-RING	90 DURO HSN	90342H	

REDRESS KIT (RDK)			63655050H	63657050H

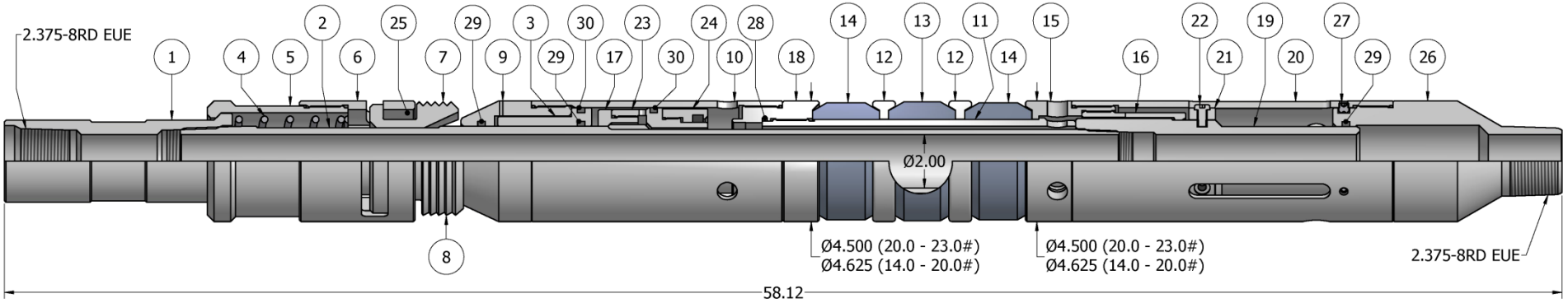
K-2) VITON

NOTE$_4$: For temperature range, refer to Element Selection Guide.

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 63655V (14.0 – 20.0#)	P/N 63657V (20.0 – 23.0#)
13	1	ELEMENT	70 DURO VITON	60255511V	60257511V
14	2	ELEMENT	90 DURO VITON	60255513V	60257513V
24	1	SEAL	1026/90 DURO VITON	61155520V	
28	1	234 O-RING	90 DURO VITON	90234V	
29	3	334 O-RING	90 DURO VITON	90334V	
30	2	342 O-RING	90 DURO VITON	90342V	

REDRESS KIT (RDK)			63655050V	63657050V

L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
08/19/14	A	Created new manual	-	-