

4.750"

Revision: C

Revision Date:

Authored by: J.Anderson

10/02/2020 Approved by: B.Oligschlaeger

A) DESCRIPTION

The D&L 4.750" Seal Bore Accessories are designed to work with D&L Permapak Packers with 4.750" seal bores.

NOTE1: Other seal bore accessories are available. Contact D&L Sales for more information.

B) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION₁: 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

HAND TIGHT	GENERAL THREAD CONNECTION TORQUE RECOMMENDATIONS				
	STUB ACME /	INTERNAL TAPI	ERED TUBING THREADS	PREMIUM THREADS	
	ACME 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.

C) 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.

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.

D) ELASTOMER TRIM TEMPERATURE GUIDE

RUBBER TYPE	TEMPERATURE RANGE	
NITRILE	40° - 250°F	
HSN (HNBR)	70° - 300°F	
VITON/VTR	100° - 350°F	
ATR	100° - 400°F	

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



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E) RECOMMENDED HAND TOOLS

• VISE

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- GLOVES PIP
- 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

F) LOCATOR SEAL ASSEMBLY

The Locator Seal Assembly is used in installations which require floating seals. Once landed, the seal locator prevents downward movement of the tubing while allowing the seal to move with tubing contraction.

F-1) SPECIFICATION GUIDE

PACKER BORE SIZE	ASSEMBLY OD	ASSEMBLY BORE	THREAD CONNECTION	PART
(INCHES)	(INCHES)	(INCHES)	BOX UP / PIN DOWN	NUMBER
4.750	5.75	3.50	4-1/2 EUE / 4.0940 UNS	58347 58347H ¹ 58347V ² 58347ATR ³ 58347VTR ⁴

¹HSN Option, ²Viton Option, ³AFLAS, Teflon, Ryton Seal Stack Option, ⁴Viton, Teflon, Ryton Seal Stack Option

DIFFERENTIAL PRESSURE (MAX)	
8,000 PSI	

F-2) DISASSEMBLY

F-2.1) Clamp locator sub (1) in vise.

F-2.1.1) Remove bonded seals (2) and seal spacer (3) from locator sub (1).

F-2.1.1.1) Remove o-rings (4) from bonded seals (2).

F-2.2) Unclamp and remove locator sub (1) from vise.

F-3) ASSEMBLY

NOTE₂: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation.

F-3.1) Clamp locator sub (1) in vise.

F-3.1.1) Install o-rings (4) in o-ring grooves in bonded seals (2).

F-3.1.2) Install bonded seals (2) and seal spacer (3) onto locator sub (1).

CAUTION1: Do not rip or tear o-rings during installation

F-3.2) Unclamp locator sub (1) from vise and remove assembled tool.



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F) LOCATOR SEAL ASSEMBLY (cont'd)

F-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58347	
1	1	LOCATOR SUB	L-80	58347610	
2	2	BONDED SEAL	90 DURO NITRILE	58047520*	
3	1	SEAL SPACER	1026	58047550*	
4	2	156 O-RING	90 DURO NITRILE	90156*	
*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (K.4).					

ASSEMBLED WEIGHT 45 LBS

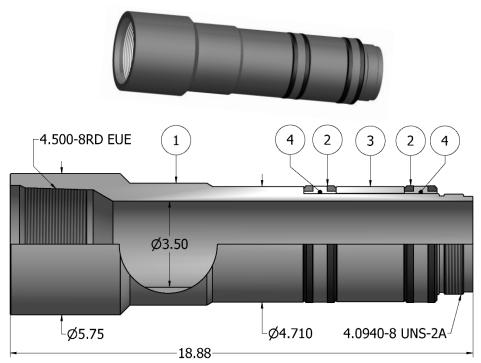
F-5) ELASTOMER TRIM OPTIONS

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

F-5.1)	HSN	
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ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58347H			
2	2	BONDED SEAL	90 DURO HSN	58047520H			
4	2	156 O-RING	90 DURO HSN	90156H			
F-5.2) VIT	F-5.2) VITON						
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58347V			
2	2	BONDED SEAL	90 DURO VITON	58047520V			
4	2	156 O-RING	90 DURO VITON	90156V			

F-6) TECHNICAL ILLUSTRATION



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G) ANCHOR LATCH ASSEMBLY

The D&L Anchor Latch is used to hold tubing in tension, or compression. The D&L Anchor Latch will automatically latch into the packer upon set down. To release the Anchor Latch from the packer put 1 to 2 points tension (1,000-2,000 lbs) on the tubing and rotate 8-10 turns to right at packer. The D&L Anchor Latch works with standard packer latch thread.

G-1) SPECIFICATION GUIDE

PACKER BORE SIZE	ASSEMBLY OD	ASSEMBLY BORE	THREAD CONNECTION	PART
(INCHES)	(INCHES)	(INCHES)	BOX UP / PIN DOWN	NUMBER
4.750	5.810	3.50	4" EUE / 4.0940 UNS	

¹HSN Option, ²Viton Option, ³AFLAS, Teflon, Ryton Seal Stack Option, ⁴Viton, Teflon, Ryton Seal Stack Option

DIFFERENTIAL	TENSILE LOAD	
PRESSURE	THRU TOOL	
(MAX)	(MAX)	
8,000 PSI	162,000 LBS	

G-2) DISASSEMBLY

G-2.1)Clamp top sub (1) in vise.

G-2.1.1) Remove bonded seals (4) and seal spacer (5) from seal mandrel (2).

G-2.1.1.1) Remove o-rings (6) from bonded seals (2).

G-2.1.2) Unscrew and remove seal mandrel (2) from top sub (1).

G-2.1.3) Remove collet (3) from seal mandrel (2).

G-2.2)Unclamp and remove top sub (1) from vise.

G-2.3)Remove o-ring (7) from top sub (1).

G-3) ASSEMBLY

NOTE₂: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

G-3.1)Install o-ring (7) in o-ring groove in top sub (1).

G-3.2)Clamp top sub (1) in vise.

G-3.2.1) Install collet (3) onto seal mandrel (2).

G-3.2.2) Screw seal mandrel (2) into top sub (1).

CAUTION1: Do not rip or tear o-rings during installation

G-3.2.3) Install o-rings (6) in o-ring grooves in bonded seals (4).

G-3.2.4) Install bonded seals (4) and seal spacer (5) onto seal mandrel (2).

CAUTION₁: Do not rip or tear o-rings during installation

G-3.3)Unclamp top sub (1) from vise and remove assembled tool.



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G) ANCHOR LATCH ASSEMBLY (cont'd)

G-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58247
1	1	TOP SUB	L-80	58247610
2	1	SEAL MANDREL	P-110	58247210
3	1	COLLET	P-110	58247003
4	2	BONDED SEAL	90 DURO NITRILE	58047520*
5	1	SEAL SPACER	1026	58047550*
6	2	156 O-RING	90 DURO NITRILE	90156*
7	1	346 O-RING	90 DURO NITRILE	90346
	-	*Not part of ATR and VTR	assemblies. Refer to ATR and V	TR Seal Stack Assembly (K.4).
		ASSEMBLED WEIGHT		53 LBS

G-5) ELASTOMER TRIM OPTIONS

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

G-5.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58247H
4	2	BONDED SEAL	90 DURO HSN	58047520H
6	2	156 O-RING	90 DURO HSN	90156H
7	1	346 O-RING	90 DURO HSN	90346H

G-5.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58247V		
4	2	BONDED SEAL	90 DURO VITON	58047520V		
6	2	156 O-RING	90 DURO VITON	90156V		
7	1	346 O-RING	90 DURO VITON	90346V		



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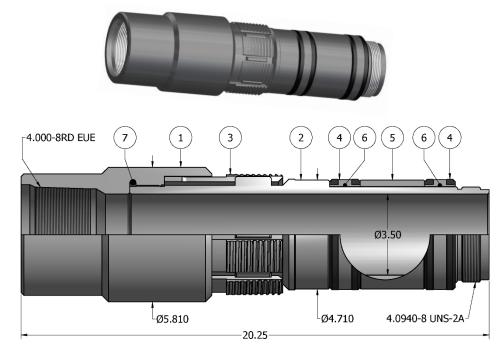
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G) ANCHOR LATCH ASSEMBLY (cont'd)

G-6) TECHNICAL ILLUSTRATION



H) SNAP LATCH ASSEMBLY

The Snap Latch Seal Assembly latches into the packer upon set down (like our Anchor Latch Seal Assembly). It can be removed with straight pull of 2,000 to 4,000 lbs. above tubing weight. The Snap Latch Seal Assembly is used where a mechanical indication is required to verify the seal assembly is properly positioned in the packer bore.

H-1) SPECIFICATION GUIDE

PACKER BORE SIZE	ASSEMBLY OD	ASSEMBLY BORE	THREAD CONNECTION	PART
(INCHES)	(INCHES)	(INCHES)	BOX UP / PIN DOWN	NUMBER
4.750	6.07	3.50	4" EUE / 4.0940 UNS	57847 57847H ¹ 57847V ² 57847ATR ³ 57847VTR ⁴

¹HSN Option, ²Viton Option, ³AFLAS, Teflon, Ryton Seal Stack Option, ⁴Viton, Teflon, Ryton Seal Stack Option

DIFFERENTIAL PRESSURE (MAX)	
8,000 PSI	



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H) SNAP LATCH ASSEMBLY (cont'd)

H-2) DISASSEMBLY

H-2.1)Clamp top sub (1) in vise.

H-2.1.1) Remove bonded seals (4) and seal spacer (5) from seal mandrel (2).

H-2.1.1.1) Remove o-rings (6) from bonded seals (2).

H-2.1.2) Unscrew and remove seal mandrel (2) from top sub (1).

H-2.1.3) Remove snap latch collet (3) from seal mandrel (2).

H-2.2)Unclamp and remove top sub (1) from vise.

H-2.3)Remove o-ring (7) from top sub (1).

H-3) ASSEMBLY

NOTE₂: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

H-3.1)Install o-ring (7) in o-ring groove in top sub (1).

H-3.2)Clamp top sub (1) in vise.

H-3.2.1) Install snap latch collet (3) onto seal mandrel (2).

H-3.2.2) Screw seal mandrel (2) into top sub (1).

CAUTION₁: Do not rip or tear o-rings during installation

H-3.2.3) Install o-rings (6) in o-ring grooves in bonded seals (4).

H-3.2.4) Install bonded seals (4) and seal spacer (5) onto seal mandrel (2).

CAUTION1: Do not rip or tear o-rings during installation

H-3.3)Unclamp top sub (1) from vise and remove assembled tool.

H-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57847		
1	1	TOP SUB	L-80	57847610		
2	1	SEAL MANDREL	L-80	57847210		
3	1	SNAP LATCH COLLET	P-110	57847003		
4	2	BONDED SEAL	90 DURO NITRILE	58047520*		
5	1	SEAL SPACER	1026	58047550*		
6	2	156 O-RING	90 DURO NITRILE	90156*		
7	1	346 O-RING	90 DURO NITRILE	90346		
	*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (K.4).					
		ASSEMBLED WEIGHT		51 LBS		



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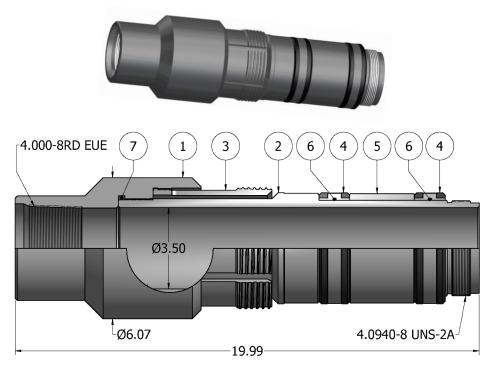
H) SNAP LATCH ASSEMBLY (cont'd)

H-5) ELASTOMER TRIM OPTIONS

NOTE3: For temperature range, refer to Elastomer Trim Temperature Guide. **H-5** 1) **HSN**

1-5.1) Н5г	N			
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57847H
4	2	BONDED SEAL	90 DURO HSN	58047520H
6	2	156 O-RING	90 DURO HSN	90156H
7	1	346 O-RING	90 DURO HSN	90346H
I-5.2) VIT	ON			
ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57847V
4	2	BONDED SEAL	90 DURO VITON	58047520V
6	2	156 O-RING	90 DURO VITON	90156V
7	1	346 O-RING	90 DURO VITON	90346V

H-6) TECHNICAL ILLUSTRATION





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I) SEAL UNIT ASSEMBLY

The D&L Seal Unit Assembly is used in conjunction with the D&L Anchor Latch or Locator Assembly to increase the length of seals. The D&L Seal Unit Assembly is installed between the Anchor Latch or Locator Assembly and the Mule Shoe.

I-1) SPECIFICATION GUIDE

PACKER BORE SIZE	ASSEMBLY OD	ASSEMBLY BORE	THREAD CONNECTION	PART
(INCHES)	(INCHES)	(INCHES)	BOX UP / PIN DOWN	NUMBER
4.750	4.710	3.50	4.0940-8 UNS	58147 58147H ¹ 58147V ² 58147ATR ³ 58147VTR ⁴

¹HSN Option, ²Viton Option, ³AFLAS, Teflon, Ryton Seal Stack Option, ⁴Viton, Teflon, Ryton Seal Stack Option

DIFFERENTIAL PRESSURE (MAX)
8,000 PSI

I-2) DISASSEMBLY

- I-2.1) Clamp seal mandrel (1) in vise.
 - I-2.1.1) Remove bonded seals (2) and seal spacer (3) from seal mandrel (1).

I-2.1.1.1) Remove o-rings (4) from bonded seals (2).

- I-2.2) Unclamp and remove seal mandrel (1) from vise.
- I-2.3) Remove o-ring (5) from seal mandrel (1).

I-3) ASSEMBLY

NOTE₂: 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-3.1) Install o-ring (5) in o-ring groove in seal mandrel (1).
- I-3.2) Clamp seal mandrel (1) in vise.
 - I-3.2.1) Install o-rings (4) in o-ring grooves in bonded seals (2).
 - I-3.2.2) Install bonded seals (2) and seal spacer (3) onto seal mandrel (1).

CAUTION1: Do not rip or tear o-rings during installation

I-3.3) Unclamp seal mandrel (1) and remove assembled tool from vise.



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I) SEAL UNIT ASSEMBLY (cont'd)

I-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58147
1	1	SEAL MANDREL	L-80	58147012
2	2	BONDED SEAL	90 DURO NITRILE	58047520*
3	1	SEAL SPACER	1026	58047550*
4	2	156 O-RING	90 DURO NITRILE	90156*
5	1	241 O-RING	90 DURO NITRILE	90241
*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (K				
		ASSEMBLED WEIGHT		24 LBS

I-5) ELASTOMER TRIM OPTIONS

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

I-5.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58147H
2	2	BONDED SEAL	90 DURO HSN	58047520H
4	2	156 O-RING	90 DURO HSN	90156H
5	1	241 O-RING	90 DURO HSN	90241H

I-5.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58147V
2	2	BONDED SEAL	90 DURO VITON	58047520V
4	2	156 O-RING	90 DURO VITON	90156V
5	1	241 O-RING	90 DURO VITON	90241V



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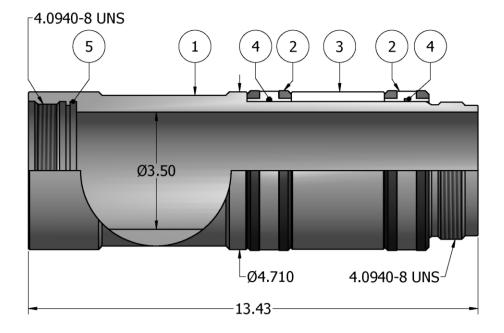
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I) SEAL UNIT ASSEMBLY (cont'd)

I-6) TECHNICAL ILLUSTRATION







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J) MULE SHOE

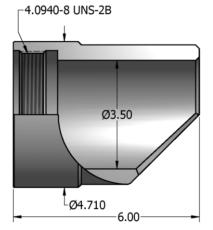
The D&L Mule Shoe is installed on the bottom of the D&L Anchor Latch, Seal Locator, or Seal Unit. The D&L Mule Shoe allows for rotation of the tubing to help guide the seals into the packer seal bore.

J-1) SPECIFICATION GUIDE

PACKER BORE SIZE (INCHES)	PART OD (INCHES)	PART BORE (INCHES)	THREAD CONNECTION	PART NUMBER
4.750	4.710	3.50	4.0940-8 UNS-2B	58447615

WEIGHT	9 LBS
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J-2) TECHNICAL ILLUSTRATION







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K) ATR AND VTR SEAL STACK OPTION ASSEMBLY

The ATR and VTR seal stack options are available for all seal bore accessories. Refer to Elastomer Trim Temperature Guide for temperature range.

K-1) ASSEMBLY

- NOTE₂: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order and orientation.
- K-1.1)Clamp seal bore accessory in vise. Follow assembly instructions given above for seal bore accessory for all other parts.
- K-1.2)Install end spacer (S.5) onto seal bore accessory.
- K-1.3)Install three (3) AFLAS/Viton rings (S.1), Teflon rings (S.2), and Ryton rings (S.3) in order onto seal bore accessory.

CAUTION₂: Rings must be installed in the proper order and orientation. Refer to Technical Illustration below.

- K-1.4)Install center spacer (S.4) onto seal bore accessory.
- K-1.5)Install three (3) Ryton rings (S.3), Teflon rings (S.2), and AFLAS/Viton rings (S.1) in order onto seal bore accessory.

CAUTION₂: Rings must be installed in the proper order and orientation. Refer to Technical Illustration below.

- K-1.6)Install end spacer (S.5) onto seal bore accessory.
- K-1.7)Unclamp seal bore accessory from vise and remove assembled tool.

K-2) ATR OPTION PARTS LIST

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

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	4.750" ATR SEAL STACK	-	58747ATRSS
S.1	6	AFLAS RING	AFLAS	587AF475
S.2	6	TEFLON RING	TEFLON	587TF475
S.3	6	RYTON SPACER	RYTON	587RY475
S.4	1	CENTER SPACER	1026	587CS475
S.5	2	END SPACER	1026	587ES475

K-3) VTR OPTION SEAL STACK

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

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER	
S	1	4.750" VTR SEAL STACK	-	58747VTRSS	
S.1	6	VITON RING	VITON	587VF475	
S.2	6	TEFLON RING	TEFLON	587TF475	
S.3	6	RYTON SPACER	RYTON	587RY475	
S.4	1	CENTER SPACER	1026	587CS475	
S.5	2	END SPACER	1026	587ES475	



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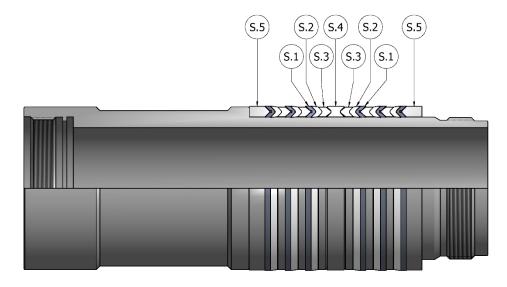
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K) ATR AND VTR SEAL STACK OPTION ASSEMBLY (cont'd)

K-4) TECHNICAL ILLUSTRATION

NOTE4: Seal Unit Assembly (P/N 58147ATR) shown. Order, orientation and quantity typical of all assemblies.



L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
10/02/2020	С	Revised snap latch straight pull release amount; Added tensile load thru anchor latch	J.Anderson	D.Hushbeck
07/31/2018	В	Revised Elastomer Trim Temperature Guide; Added max. differential pressure, Pre-Installation Inspection Procedures, Storage Recommendations	J.Anderson	D.Hushbeck
11/11/14	А	Created new manual	-	-