



SEAL BORE ACCESSORIES

2.500”

Manual No:
DL-581-2500-950

Revision: **B**

Revision Date:
10/02/2020

Authored by: J.Anderson

Approved by: K.Riggs

A) DESCRIPTION

The D&L 2.500” Seal Bore Accessories are designed to work with D&L Permapak Packers with 2.500” 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

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.

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



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E) 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

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 (INCHES)	ASSEMBLY OD (INCHES)	ASSEMBLY BORE (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
2.500	3.06	1.91	2-3/8 EUE / 2.1875 STUB ACME	58325 58325H ¹ 58325V ² 58325ATR ³ 58325VTR ⁴

Elastomer Trim Options: ¹HSN, ²Viton, ³AFLAS, Teflon, Ryton Seal Stack, ⁴Viton, Teflon, Ryton Seal Stack

F-2) DISASSEMBLY

- F-2.1) Clamp locator sub (1) in vise.
 - F-2.1.1) Remove bonded seals (2) from locator sub (1).
 - F-2.1.1.1) Remove o-rings (3) 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 (3) in o-ring grooves in bonded seals (2).
 - F-3.1.2) Install bonded seals (2) 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 58325
1	1	LOCATOR SUB	DLMS110	58325610
2	2	BONDED SEAL	90 DURO NITRILE	58025520*
3	2	139 O-RING	90 DURO NITRILE	90139*

*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (I.4).

ASSEMBLED WEIGHT	10 LBS
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F-4.1) ELASTOMER TRIM OPTIONS

F-4.1.1) HSN

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58325H
2	2	BONDED SEAL	90 DURO HSN	58025520H
3	2	139 O-RING	90 DURO HSN	90139H

F-4.1.2) VITON

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58325V
2	2	BONDED SEAL	90 DURO VITON	58025520V
3	2	139 O-RING	90 DURO VITON	90139V



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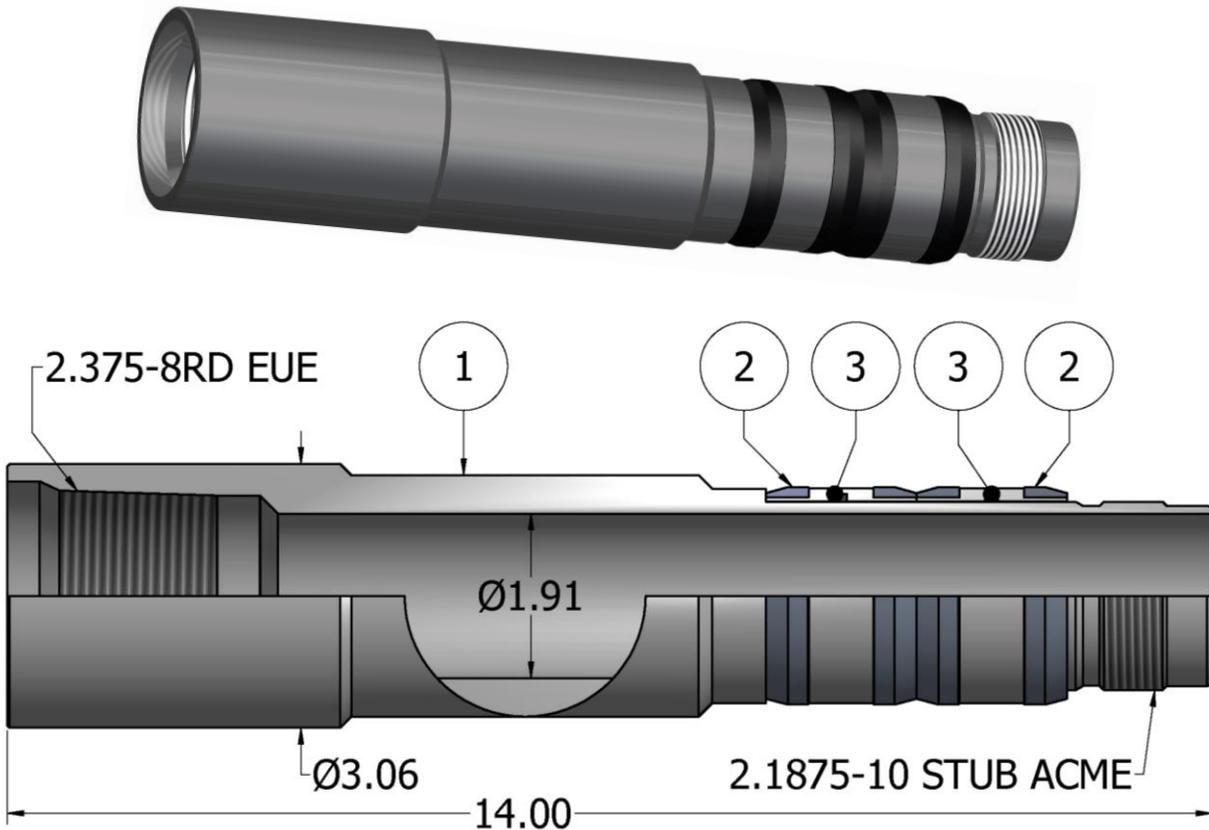
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F) LOCATOR SEAL ASSEMBLY (cont'd)

F-5) TECHNICAL ILLUSTRATION



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 (INCHES)	ASSEMBLY OD (INCHES)	ASSEMBLY BORE (INCHES)	TENSILE LOAD THRU TOOL (MAX)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
2.500	3.47	1.91	72,000 LBS	2-3/8 EUE / 2.1875 STUB ACME	58225 58225H ¹ 58225V ² 58225ATR ³ 58225VTR ⁴

Elastomer Trim Options: ¹HSN, ²Viton, ³AFLAS, Teflon, Ryton Seal Stack, ⁴Viton, Teflon, Ryton Seal Stack



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G) ANCHOR LATCH ASSEMBLY (cont'd)

G-2) DISASSEMBLY

- G-2.1) Clamp top sub (1) in vise.
 - G-2.1.1) Remove bonded seals (4) from seal mandrel (2).
 - G-2.1.1.1) Remove o-rings (5) 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-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) Clamp top sub (1) in vise.
 - G-3.1.1) Install collet (3) onto seal mandrel (2).
 - G-3.1.2) Screw seal mandrel (2) into top sub (1).
 - G-3.1.3) Install o-rings (5) in o-ring grooves in bonded seals (4).
 - G-3.1.4) Install bonded seals (4) onto seal mandrel (2).
- CAUTION₁:** Do not rip or tear o-rings during installation

- G-3.2) Unclamp top sub (1) and remove assembled tool from vise.

G-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58225
1	1	TOP SUB	DLMS60	58226610
2	1	SEAL MANDREL	DLMS110	58225210
3	1	COLLET	DLMS110	58225003
4	2	BONDED SEAL	90 DURO NITRILE	58025520*
5	2	139 O-RING	90 DURO NITRILE	90139*

*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (I.4).

ASSEMBLED WEIGHT	17 LBS
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G-4.1) ELASTOMER TRIM OPTIONS

G-4.1.1) HSN

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58225H
4	2	BONDED SEAL	90 DURO HSN	58025520H
5	2	139 O-RING	90 DURO HSN	90139H

G-4.1.2) VITON

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58225V
4	2	BONDED SEAL	90 DURO VITON	58025520V
5	2	139 O-RING	90 DURO VITON	90139V



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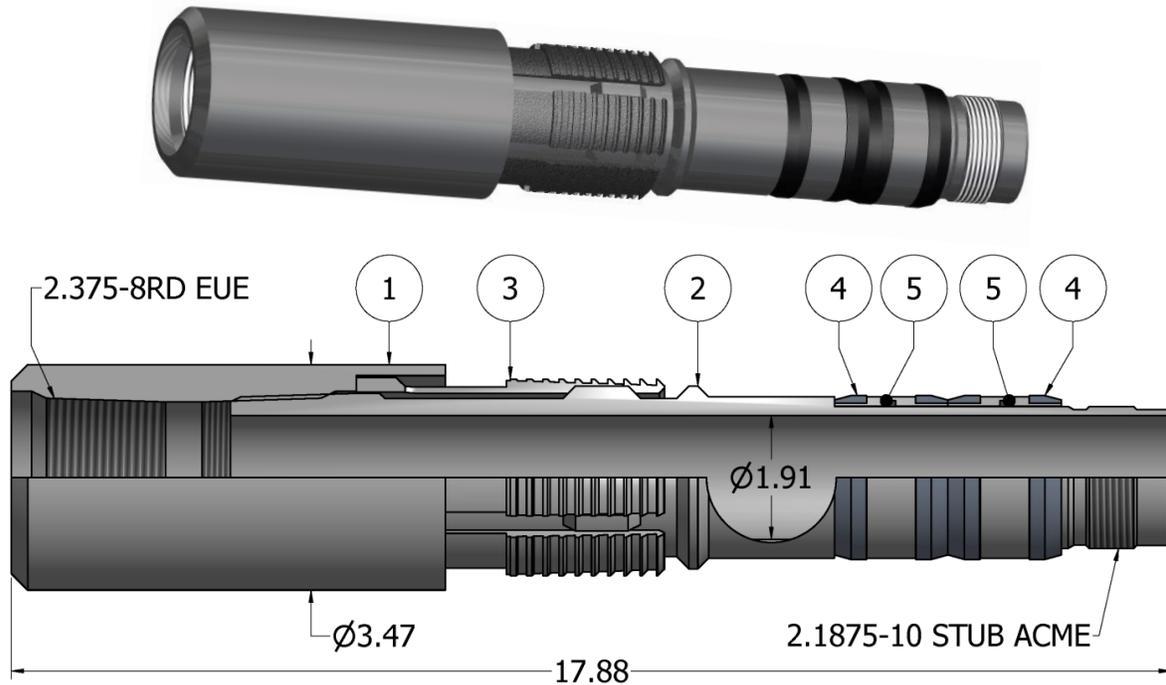
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G) ANCHOR LATCH ASSEMBLY (cont'd)

G-5) 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 (INCHES)	ASSEMBLY OD (INCHES)	ASSEMBLY BORE (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
2.500	3.47	1.91	2-3/8 EUE / 2.1875 STUB ACME	57825 57825H ¹ 57825V ² 57825ATR ³ 57825VTR ⁴

Elastomer Trim Options: ¹HSN, ²Viton, ³AFLAS, Teflon, Ryton Seal Stack, ⁴Viton, Teflon, Ryton Seal Stack

H-2) DISASSEMBLY

- H-2.1) Clamp top sub (1) in vise.
 - H-2.1.1) Remove bonded seals (4) 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) Unscrew and remove set screws (5) from top sub (1).
 - H-2.1.4) Unscrew and remove snap latch collet (3) from seal mandrel (2).
- H-2.2) Unclamp and remove top sub (1) from vise.



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H) SNAP LATCH ASSEMBLY (cont'd)

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) Clamp top sub (1) in vise.

H-3.1.1) Screw snap latch collet (3) onto seal mandrel (2).

H-3.1.2) Screw set screws (5) into top sub (1).

H-3.1.3) Screw seal mandrel (2) into top sub (1).

H-3.1.4) Install o-rings (6) in o-ring grooves in bonded seals (4).

H-3.1.5) Install bonded seals (4) onto seal mandrel (2).

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

H-3.2) Unclamp top sub (1) from vise and remove assembled tool.

H-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57825
1	1	TOP SUB	1026	57825610
3	1	SEAL MANDREL	P-110	57825003
2	1	SNAP LATCH COLLET	P-110	57825210
4	2	BONDED SEAL	90 DURO NITRILE	58025520*
5	3	SET SCREW 1/4-20 UNC X 1/4	STEEL	SSS025C025
6	2	139 O-RING	90 DURO NITRILE	90139*

*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (I.4).

ASSEMBLED WEIGHT	17 LBS
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H-4.1) ELASTOMER TRIM OPTIONS

H-4.1.1) HSN

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57825H
4	2	BONDED SEAL	90 DURO HSN	58025520H
6	2	139 O-RING	90 DURO HSN	90139H

H-4.1.2) VITON

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57825V
4	2	BONDED SEAL	90 DURO VITON	58025520V
6	2	139 O-RING	90 DURO VITON	90139V



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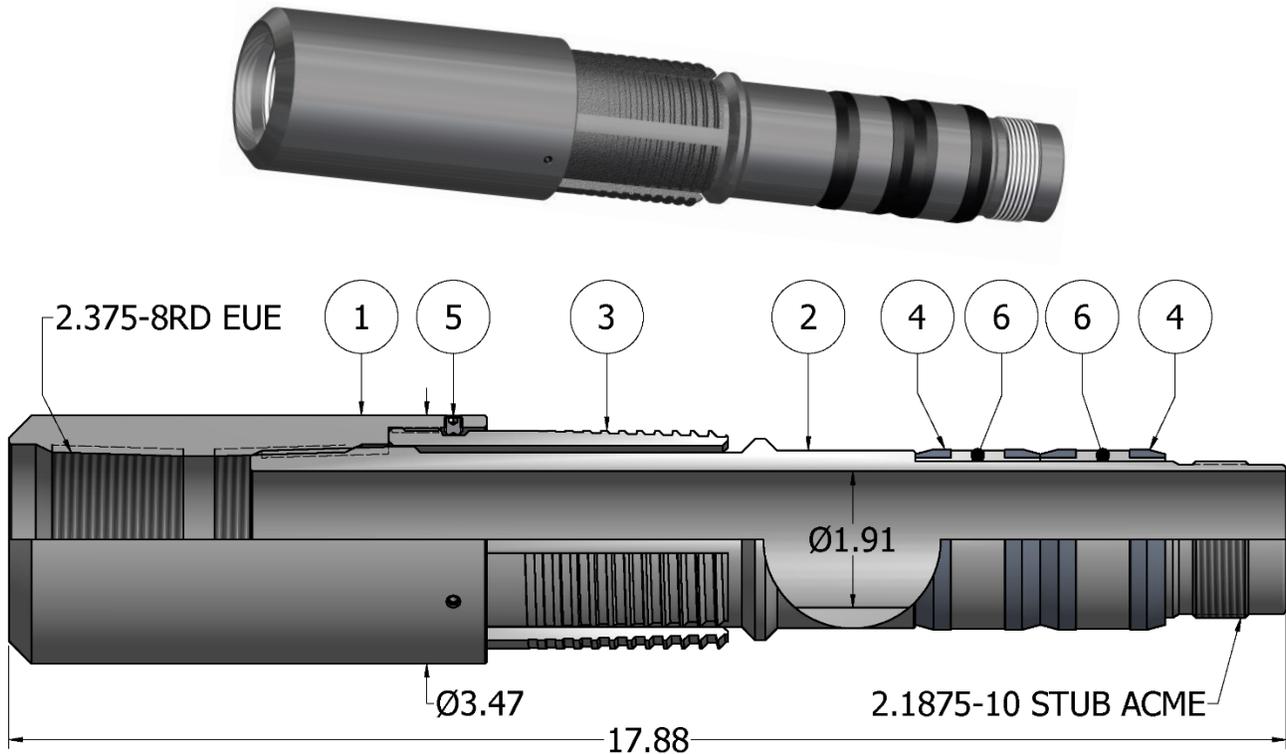
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H) SNAP LATCH ASSEMBLY (cont'd)

H-5) TECHNICAL ILLUSTRATION



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 (INCHES)	ASSEMBLY OD (INCHES)	ASSEMBLY BORE (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
2.500	2.485	1.91	2.1875 STUB ACME	58125 58125H ¹ 58125V ² 58125ATR ³ 58125VTR ⁴

Elastomer Trim Options: ¹HSN, ²Viton, ³AFLAS, Teflon, Ryton Seal Stack, ⁴Viton, Teflon, Ryton Seal Stack

I-2) DISASSEMBLY

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



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I) SEAL UNIT ASSEMBLY (cont'd)

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 (3) in thread relief 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) onto seal mandrel (1).

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

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

I-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58125
1	1	SEAL MANDREL	L-80	58125008
2	2	BONDED SEAL	1026/90 DURO NITRILE	58025520*
3	1	138 O-RING	90 DURO NITRILE	90138*
4	2	139 O-RING	90 DURO NITRILE	90139*

*Not part of ATR and VTR assemblies. Refer to ATR and VTR Seal Stack Assembly (I.4).

ASSEMBLED WEIGHT	4 LBS
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I-4.1) ELASTOMER TRIM OPTIONS

I-4.1.1) HSN

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58125H
2	2	BONDED SEAL	1026/90 DURO HSN	58025520H
3	1	138 O-RING	90 DURO HSN	90138H
4	2	139 O-RING	90 DURO HSN	90139H

I-4.1.2) VITON

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

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58125V
2	2	BONDED SEAL	1026/90 DURO VITON	58025520V
3	1	138 O-RING	90 DURO VITON	90138V
4	2	139 O-RING	90 DURO VITON	90139V



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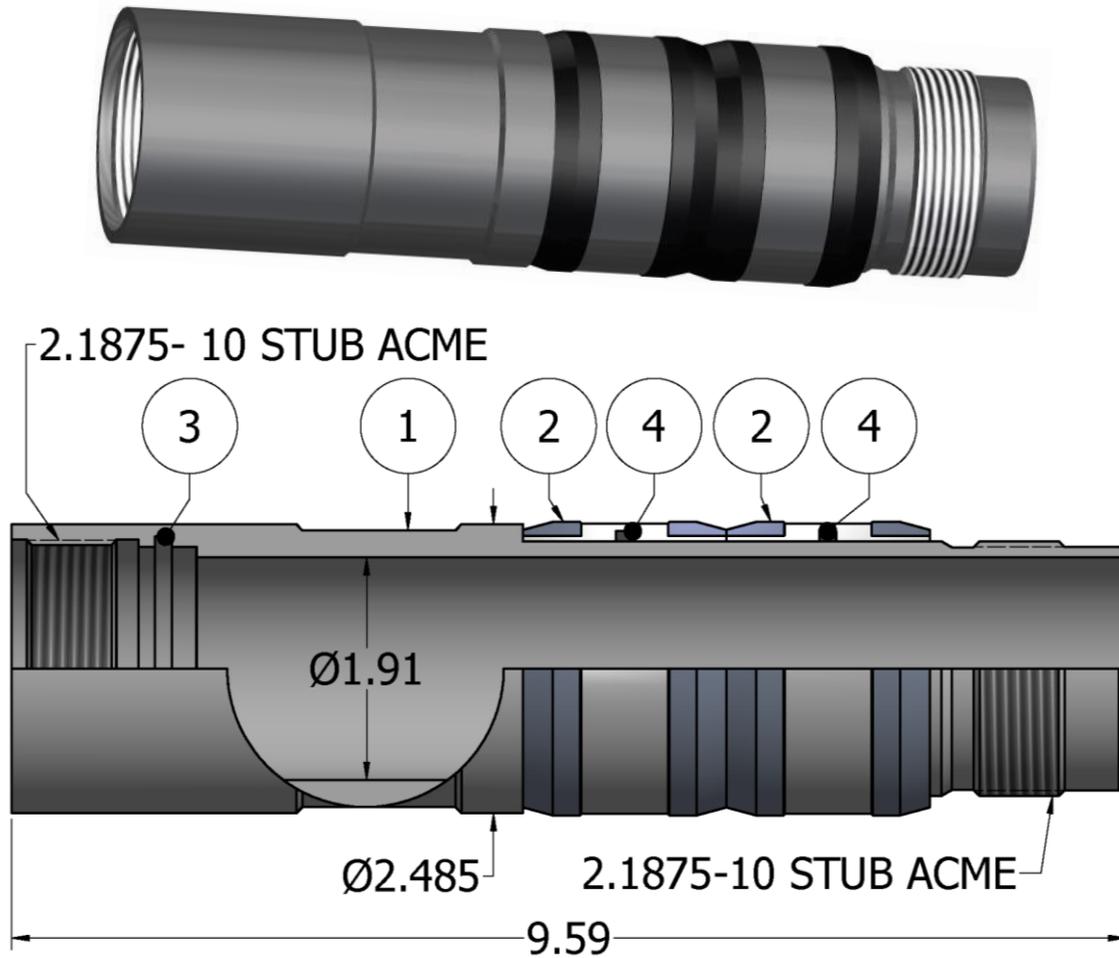
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10/02/2020

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I) SEAL UNIT ASSEMBLY (cont'd)

I-5) TECHNICAL ILLUSTRATION



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
2.500	2.49	1.91	2.1875-10 STUB ACME	58425615

WEIGHT		1 LBS
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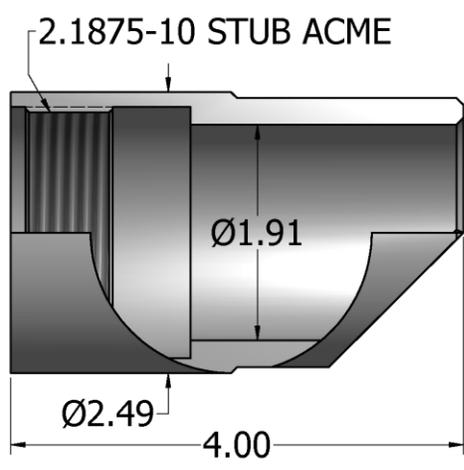
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J) MULE SHOE (cont'd)

J-2) TECHNICAL ILLUSTRATION



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.

CAUTION₄: 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.

CAUTION₄: 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) If necessary (P/N 58125), install o-ring (S.6) in o-ring groove in seal bore accessory.

K-1.8) Unclamp seal bore accessory from vise and remove assembled tool.



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

K-2) ATR OPTION PARTS LIST

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

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	2.500” ATR SEAL STACK	-	58725ATRSS
S.1	6	AFLAS SEAL RING	AFLAS	587AF250
S.2	6	TEFLON SEAL RING	TEFLON	587TF250
S.3	6	RYTON SPACER	RYTON	587RY250
S.4	1	CENTER SPACER	1026	587CS250
S.5	2	END SPACER	1026	587ES250
S.6	1	138 O-RING	AFLAS	90138A*

*P/N 58125ATR only

K-3) VTR OPTION SEAL STACK

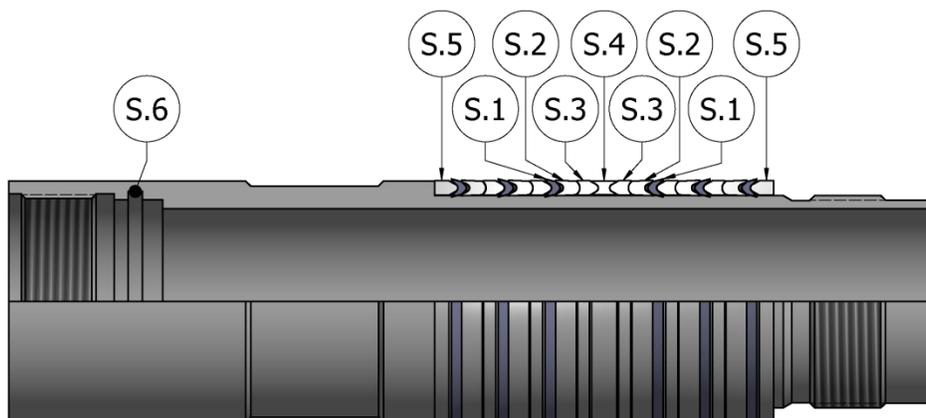
NOTE₃: For temperature range, refer to Elastomer Trim Temperature Guide.

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	2.500” VTR SEAL STACK	-	58725VTRSS
S.1	6	VITON SEAL RING	VITON	587VF250
S.2	6	TEFLON SEAL RING	TEFLON	587TF250
S.3	6	RYTON SPACER	RYTON	587RY250
S.4	1	CENTER SPACER	1026	587CS250
S.5	2	END SPACER	1026	587ES250
S.6	1	138 O-RING	VITON	90138V*

*P/N 58125VTR only

K-4) TECHNICAL ILLUSTRATION

NOTE₄: Seal Unit Assembly (P/N 58125ATR) shown. Order, orientation and quantity of seal stack components typical of all assemblies. O-ring used in Seal Unit Assembly only.





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L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
10/02/2020	B	Revised nitrile temp. rating, snap latch straight pull release amount; Added tensile load thru anchor latch, Pre-Installation Inspection Procedures, Storage Recommendations	J.Anderson	D.Hushbeck
01/20/2016	A	Created new manual	-	-