



# SEAL BORE ACCESSORIES

## 6.000”

Manual No:  
**DL-581-6000-821**

Revision: **F**

Revision Date:  
**10/02/2020**

Authored by: J.Anderson

Approved by: K.Plunkett

### A) DESCRIPTION

The 6.000” Seal Bore Accessories are designed to work with D&L Permapak Packers with 6.000” seal bores.

**NOTE<sub>1</sub>:** Other seal bore accessories are available. Contact D&L Sales for more information.

### B) PRE-INSTALLATION INSPECTION PROCEDURES

**CAUTION<sub>1</sub>:** 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

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



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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
6.000	7.50	4.75	5-1/2 LTC / 5.4590-8 STUB ACME	58360 58360H <sup>1</sup> 58360V <sup>2</sup> 58360ATR <sup>3</sup> 58360VTR <sup>4</sup>

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

<b>DIFFERENTIAL PRESSURE (MAX)</b>
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

**NOTE<sub>2</sub>:** 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).

**CAUTION<sub>1</sub>:** 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 58360
1	1	SEAL LOCATOR	DLMS80	58360610
2	2	BONDED SEAL	DLMS60 / 90 DURO NITRILE	58060520*
3	1	SEAL SPACER	DLMS60	58060550*
4	2	161 O-RING	90 DURO NITRILE	90161*

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

ASSEMBLED WEIGHT	95 LBS
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#### F-5) ELASTOMER TRIM OPTIONS

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

##### F-5.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58360H
2	2	BONDED SEAL	DLMS60 / 90 DURO HSN	58060520H
4	2	161 O-RING	90 DURO HSN	90161H

##### F-5.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58360V
2	2	BONDED SEAL	DLMS60 / 90 DURO VITON	58060520V
4	2	161 O-RING	90 DURO VITON	90161V



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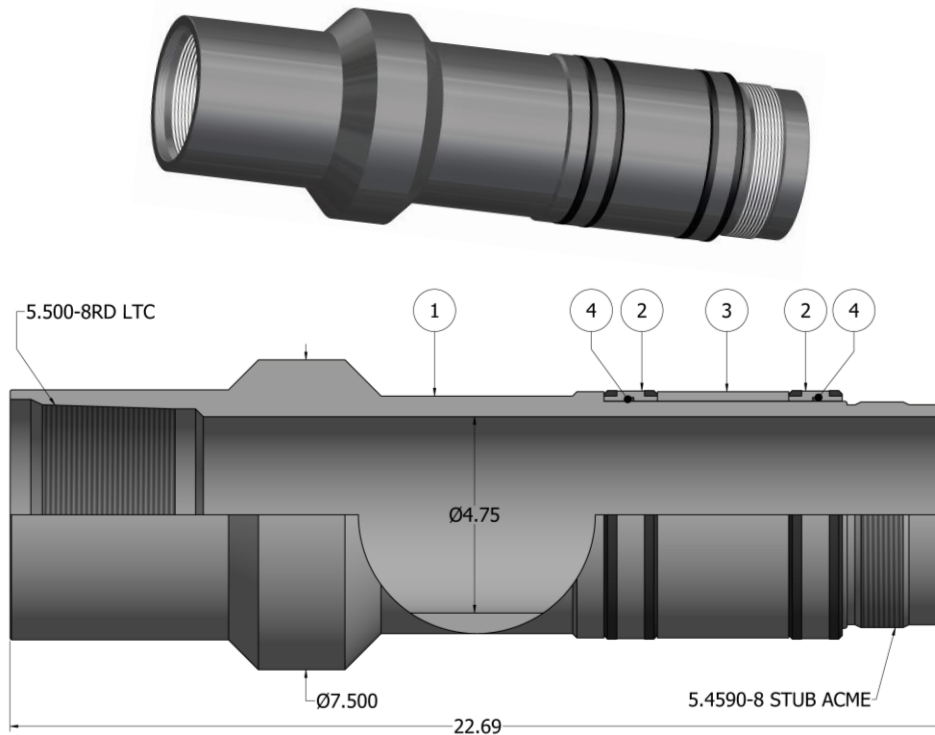
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## F) LOCATOR SEAL ASSEMBLY (cont'd)

### F-6) 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)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
6.00	7.500	4.75	5-1/2” LTC / 5.4590 STUB ACME	58260 58260H <sup>1</sup> 58260V <sup>2</sup> 58260ATR <sup>3</sup> 58260VTR <sup>4</sup>

<sup>1</sup>HSN Option, <sup>2</sup>Viton Option, <sup>3</sup>AFLAS, Teflon, Ryton Seal Stack Option, <sup>4</sup>Viton, Teflon, Ryton Seal Stack Option

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
8,000 PSI	290,000



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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) 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-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).

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

G-3.1.3) Install o-rings (6) in o-ring grooves in bonded seals (4).

G-3.1.4) Install bonded seals (4) and seal spacer (5) onto seal mandrel (2).

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

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

#### G-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58260
1	1	TOP SUB	L-80	58260610
2	1	SEAL MANDREL	L-80	58260210
3	1	COLLET	P-110	58260003
4	2	BONDED SEAL	90 DURO NITRILE	58060520*
5	1	SEAL SPACER	DLMS60	58060550*
6	2	161 O-RING	90 DURO NITRILE	90161*

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

ASSEMBLED WEIGHT	116 LBS
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#### G-4.1) ELASTOMER TRIM OPTIONS

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

G-4.1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58260H
4	2	BONDED SEAL	90 DURO HSN	58060520H
6	2	161 O-RING	90 DURO HSN	90161H



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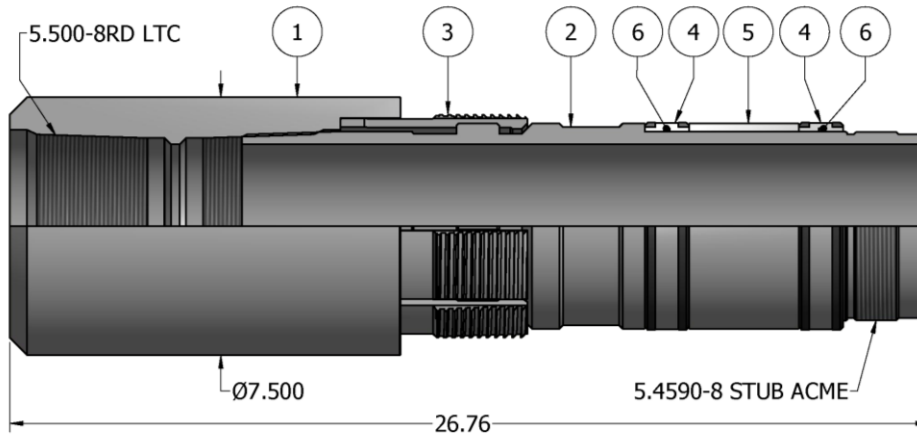
Approved by: K.Plunkett

### G) ANCHOR LATCH ASSEMBLY (cont'd)

#### G-4.1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58260V
4	2	BONDED SEAL	90 DURO VITON	58060520V
6	2	161 O-RING	90 DURO VITON	90161V

### G-5) TECHNICAL ILLUSTRATION





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### 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
6.000	7.500	4.750	5-1/2” LTC / 5.4590 STUB ACME	57860 57860H <sup>1</sup> 57860V <sup>2</sup> 57860ATR <sup>3</sup> 57860VTR <sup>4</sup>

<sup>1</sup>HSN Option, <sup>2</sup>Viton Option, <sup>3</sup>AFLAS, Teflon, Ryton Seal Stack Option, <sup>4</sup>Viton, Teflon, Ryton Seal Stack Option

<b>DIFFERENTIAL PRESSURE (MAX)</b>
8,000 PSI

#### 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 (7) from bonded seals (4).

H-2.1.2) Unscrew and remove upper set screws (6) from top sub (1).

H-2.1.3) Unscrew and remove seal mandrel (2) from top sub (1).

H-2.1.3.1) Remove o-ring (8) from seal mandrel (2).

H-2.1.4) Unscrew and remove remaining set screws (6) from top sub (1).

H-2.1.5) Unscrew and remove snap latch collet (3) from top sub (1).

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

#### H-3) ASSEMBLY

**NOTE<sub>2</sub>:** 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) into top sub (1).

H-3.1.2) Screw lower set screws (6) into top sub (1).

H-3.1.3) Install o-ring (8) in o-ring groove in seal mandrel (2).

H-3.1.4) Screw seal mandrel (2) into top sub (1).

**CAUTION<sub>1</sub>:** Do not rip or tear o-rings during installation

H-3.1.5) Screw remaining set screws (6) into top sub (1).

H-3.1.6) Install o-rings (7) in o-ring grooves in bonded seals (4).

H-3.1.7) Install bonded seals (4) and seal spacer (5) onto seal mandrel (2).

**CAUTION<sub>1</sub>:** Do not rip or tear o-rings during installation

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



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### H) SNAP LATCH ASSEMBLY (cont'd)

#### H-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57860
1	1	TOP SUB	L-80	57860610
2	1	SEAL MANDREL	L-80	57860210
3	1	SNAP LATCH COLLET	L-80	57860003
4	2	BONDED SEAL	90 DURO NITRILE	58060520*
5	1	SEAL SPACER	DLMS60	58060550*
6	6	SET SCREW 5/16-18 UNC X 1/2	STEEL	SSS031C050
7	2	161 O-RING	90 DURO NITRILE	90161*
8	1	253 O-RING	90 DURO NITRILE	90253

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

ASSEMBLED WEIGHT	121 LBS
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#### H-4.1) ELASTOMER TRIM OPTIONS

**NOTE<sub>3</sub>:** For temperature range, refer to Elastomer Trim Temperature Guide.

##### H-4.1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57860H
4	2	BONDED SEAL	90 DURO HSN	58060520H
7	2	161 O-RING	90 DURO HSN	90161H
8	1	253 O-RING	90 DURO HSN	90253H

##### H-4.1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57860V
4	2	BONDED SEAL	90 DURO VITON	58060520V
7	2	161 O-RING	90 DURO VITON	90161V
8	1	253 O-RING	90 DURO VITON	90253V





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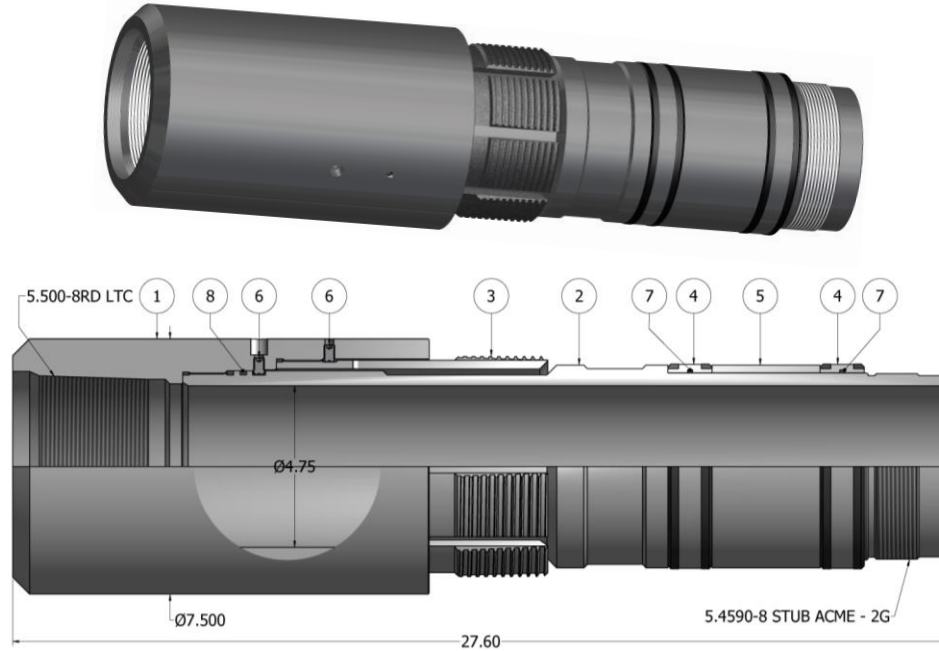
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### H) SNAP LATCH ASSEMBLY (cont'd)

#### 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
6.000	5.960	4.75	5.4590-8 STUB ACME	58160 58160H <sup>1</sup> 58160V <sup>2</sup> 58160ATR <sup>3</sup> 58160VTR <sup>4</sup>

<sup>1</sup>HSN Option, <sup>2</sup>Viton Option, <sup>3</sup>AFLAS, Teflon, Ryton Seal Stack Option, <sup>4</sup>Viton, Teflon, Ryton Seal Stack Option

<b>DIFFERENTIAL PRESSURE (MAX)</b>
8,000 PSI



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### I) SEAL UNIT ASSEMBLY (cont'd)

#### 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

**NOTE<sub>2</sub>:** 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).

**CAUTION<sub>1</sub>:** 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 58160
1	1	SEAL MANDREL	L-80	58160012
2	2	BONDED SEAL	90 DURO NITRILE	58060520*
3	1	SEAL SPACER	DLMS60	58060550*
4	2	161 O-RING	90 DURO NITRILE	90161*
5	1	253 O-RING	90 DURO NITRILE	90253

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

ASSEMBLED WEIGHT	32 LBS
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#### I-4.1) ELASTOMER TRIM OPTIONS

**NOTE<sub>3</sub>:** For temperature range, refer to Elastomer Trim Temperature Guide.

##### I-4.1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58160H
2	2	BONDED SEAL	90 DURO HSN	58060520H
4	2	161 O-RING	90 DURO HSN	90161H
5	1	253 O-RING	90 DURO HSN	90253H

##### I-4.1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58160V
2	2	BONDED SEAL	90 DURO VITON	58060520V
4	2	161 O-RING	90 DURO VITON	90161V
5	1	253 O-RING	90 DURO VITON	90253V



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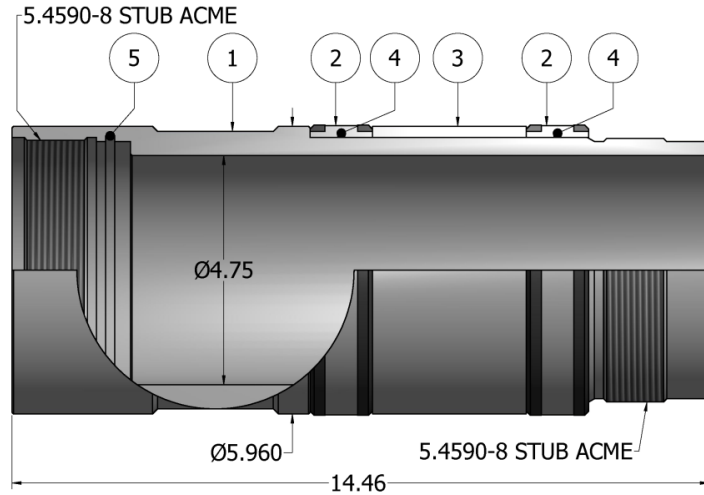
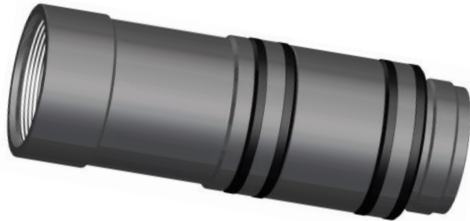
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## I) SEAL UNIT ASSEMBLY (cont'd)

### I-5) TECHNICAL ILLUSTRATION



## J) MULE SHOE

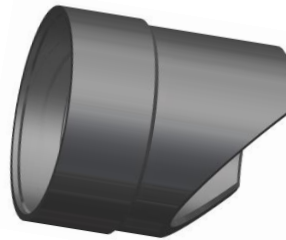
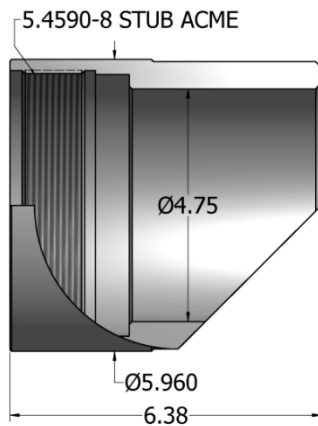
The D&L Mule Shoe is installed on the bottom of the D&L Anchor Latch, Seal Locator, or Seal Unit. The D&L Mule Shoe allows for rotation of the tubing to help guide the seals into the packer seal bore.

### J-1) SPECIFICATION GUIDE

PACKER BORE SIZE (INCHES)	PART OD (INCHES)	PART BORE (INCHES)	THREAD CONNECTION	PART NUMBER
6.000	5.960	4.75	5.4590 STUB ACME	58460615

WEIGHT	12 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

**NOTE<sub>2</sub>:** 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.

**CAUTION<sub>4</sub>:** 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.

**CAUTION<sub>4</sub>:** 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

**NOTE<sub>3</sub>:** For temperature range, refer to Elastomer Trim Temperature Guide.

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	6.000" ATR SEAL STACK	-	58760ATRSS
S.1	6	AFLAS RING	AFLAS	587AF600
S.2	6	TEFLON RING	TEFLON	587TF600
S.3	6	RYTON SPACER	RYTON	587RY600
S.4	1	CENTER SPACER	DLMS60	587CS600
S.5	2	END SPACER	DLMS60	587ES600

#### K-3) VTR OPTION SEAL STACK

**NOTE<sub>3</sub>:** For temperature range, refer to Elastomer Trim Temperature Guide.

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	6.000" VTR SEAL STACK	-	58760VTRSS
S.1	6	VITON RING	VITON	587VF600
S.2	6	TEFLON RING	TEFLON	587TF600
S.3	6	RYTON SPACER	RYTON	587RY600
S.4	1	CENTER SPACER	DLMS60	587CS600
S.5	2	END SPACER	DLMS60	587ES600



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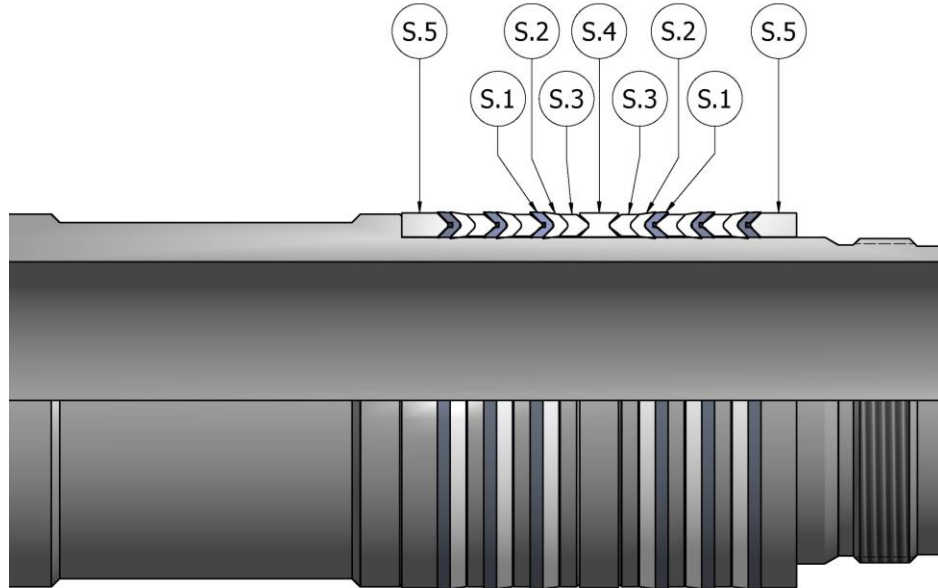
Authored by: J.Anderson

Approved by: K.Plunkett

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

#### K-4) TECHNICAL ILLUSTRATION

**NOTE4:** Seal Unit Assembly (P/N 58160ATR) shown. Order, orientation and quantity typical of all assemblies.



### L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
10/02/2020	F	Revised snap latch straight pull release amount; Added tensile load thru anchor latch	J.Anderson	D.Hushbeck
02/19/2019	E	Revised P/N 58360 tool ID, thread connection	J.Anderson	Z.Speer
10/30/2018	D	Revised description “6.000” VTR Seal Stack” was “5.000”	J.Anderson	N.Banker
07/31/2018	C	Revised Elastomer Trim Temp. Guide nitrile temp. rating was 70 – 250; Added max. differential pressure	J.Anderson	D.Hushbeck
03/25/2016	B	Revised Rubber Type Temperature Ranges – Nitrile was 70° - 300°F, HSN was 70° - 325°F; Added Pre-Installation Inspection Procedures, Storage Recommendations, P/N 58360	J.Anderson	K.Riggs
04/30/15	A	Created new manual	-	-