



SEAL BORE ACCESSORIES

5.000”

Manual No:
DL-581-5000-804

Revision: **C**

Revision Date:
10/02/2020

Authored by: J.Anderson

Approved by: K.Riggs

A) DESCRIPTION

The 5.000” Seal Bore Accessories are designed to work with D&L Permapak and RSB Packers with 5.000” 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.

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.

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



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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) 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.

F-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
5.00	5.810	4.00	185,000 LBS	4-1/2 LTC / 4.6250 STUB ACME	58250 58250H ¹ 58250V ² 58250ATR ³ 58250VTR ⁴

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

F-2) DISASSEMBLY

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

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

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

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

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

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

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

F-3) ASSEMBLY

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

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

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

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

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

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

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

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

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

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



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F) ANCHOR LATCH ASSEMBLY (cont'd)

F-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58250
1	1	TOP SUB	DLMS110	58250610
2	1	SEAL MANDREL	DLMS110	58250210
3	1	COLLET	DLMS110	58250003
4	2	BONDED SEAL	90 DURO NITRILE	58250003*
5	1	SEAL SPACER	DLMS60	58050550-3000*
6	2	158 O-RING	90 DURO NITRILE	90158*
7	1	348 O-RING	90 DURO NITRILE	90348

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

ASSEMBLED WEIGHT	56 LBS
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F-4.1) ELASTOMER TRIM OPTIONS

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

F-4.1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58250H
4	2	BONDED SEAL	90 DURO HSN	58250003H
6	2	158 O-RING	90 DURO HSN	90158H
7	1	348 O-RING	90 DURO HSN	90348H

F-4.1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58250V
4	2	BONDED SEAL	90 DURO VITON	58250003V
6	2	158 O-RING	90 DURO VITON	90158V
7	1	348 O-RING	90 DURO VITON	90348V



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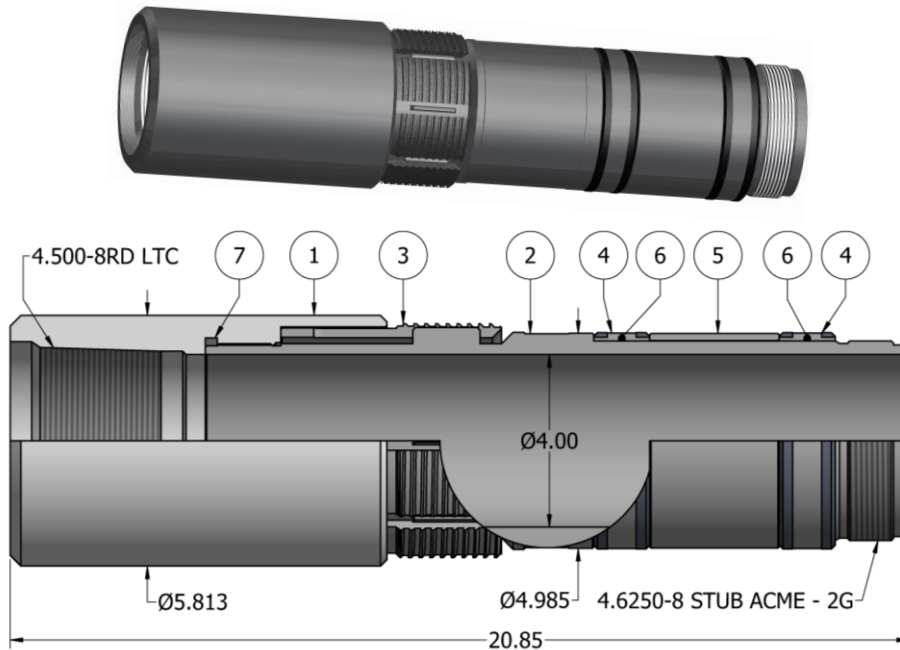
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Approved by: *K.Riggs*

F) ANCHOR LATCH ASSEMBLY (cont'd)

F-5) TECHNICAL ILLUSTRATION



G) 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 10,000 to 12,000 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.

G-1) SPECIFICATION GUIDE

PACKER BORE SIZE (INCHES)	ASSEMBLY OD (INCHES)	ASSEMBLY BORE (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
5.000	5.875	4.00	4-1/2” LTC / 4.6250 STUB ACME	57850 57850H ¹ 57850V ² 57850ATR ³ 57850VTR ⁴

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

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 (7) from bonded seals (2).

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

G-2.1.3) Unscrew and remove set screws (6) from top sub (1).

G-2.1.4) Unscrew and remove snap latch collet (3) from top sub (1).

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

G-2.3) Remove o-ring (8) from top sub (1).



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G) SNAP LATCH ASSEMBLY (cont'd)

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 (8) in o-ring groove in top sub (1).

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

G-3.2.1) Screw snap latch collet (3) into top sub (1).

G-3.2.2) Screw set screws (6) into top sub (1).

G-3.2.3) Screw seal mandrel (2) into top sub (1).

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

G-3.2.4) Install o-rings (7) in o-ring grooves in bonded seals (4).

G-3.2.5) 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.

G-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57850
1	1	TOP SUB	DLMS110	57850610
2	1	SEAL MANDREL	DLMS110	57850210
3	1	SNAP LATCH COLLET	DLMS110	57850003
4	2	BONDED SEAL	90 DURO NITRILE	58050520*
5	1	SEAL SPACER	1026	58050550-3000*
6	3	SET SCREW 3/8-16 UNC X 3/8	STEEL	SSS037C037
7	2	158 O-RING	90 DURO NITRILE	90158*
8	1	348 O-RING	90 DURO NITRILE	90348

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

ASSEMBLED WEIGHT	58 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 57850H
4	2	BONDED SEAL	90 DURO HSN	58050520H
7	2	158 O-RING	90 DURO HSN	90158H
8	1	348 O-RING	90 DURO HSN	90348H

G-4.1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 57850V
4	2	BONDED SEAL	90 DURO VITON	58050520V
7	2	158 O-RING	90 DURO VITON	90158V
8	1	348 O-RING	90 DURO VITON	90348V



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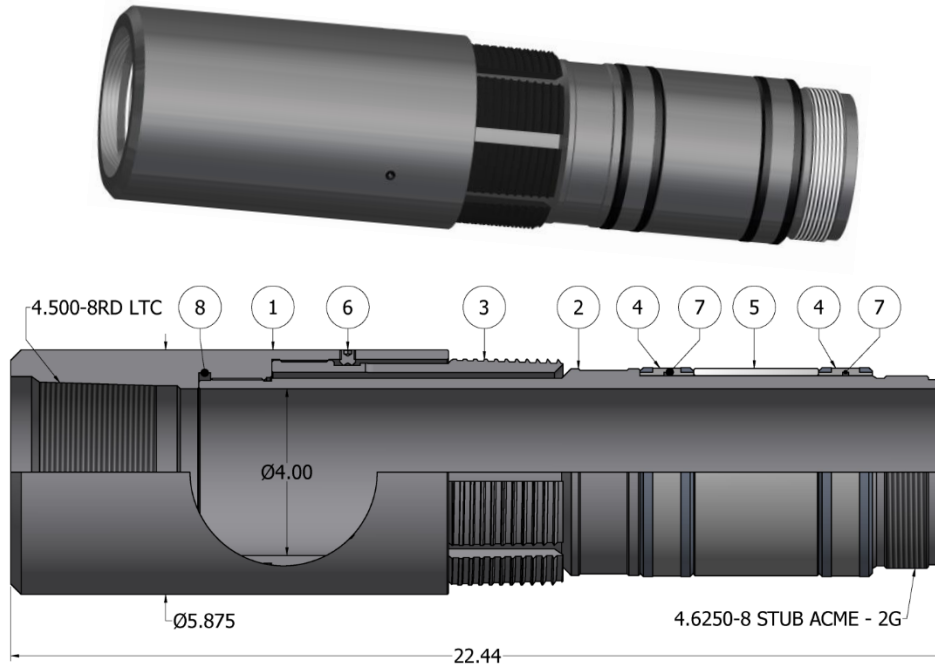
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G) SNAP LATCH ASSEMBLY (cont'd)

G-5) TECHNICAL ILLUSTRATION



H) 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.

H-1) SPECIFICATION GUIDE

PACKER BORE SIZE (INCHES)	ASSEMBLY OD (INCHES)	ASSEMBLY BORE (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
5.000	4.985	4.00	4.6250-8 STUB ACME	58150 58150H ¹ 58150V ² 58150ATR ³ 58150VTR ⁴

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

H-2) DISASSEMBLY

H-2.1) Clamp seal mandrel (1) in vise.

H-2.1.1) Remove bonded seals (2) and seal spacer (3) from seal mandrel (1).

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

H-2.2) Unclamp and remove seal mandrel (1) from vise.

H-2.3) Remove o-ring (5) from seal mandrel (1).



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H) SEAL UNIT 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) Install o-ring (5) in o-ring groove in seal mandrel (1).

H-3.2) Clamp seal mandrel (1) in vise.

H-3.2.1) Install o-rings (4) in o-ring grooves in bonded seals (2).

H-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

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

H-4) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58150
1	1	SEAL MANDREL	DLMS80	58150012
2	2	BONDED SEAL	90 DURO NITRILE	58050520*
3	1	SEAL SPACER	DLMS60	58050550-3000*
4	2	158 O-RING	90 DURO NITRILE	90158*
5	2	246 O-RING	90 DURO NITRILE	90246

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

ASSEMBLED WEIGHT	22 LBS
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H-4.1) ELASTOMER TRIM OPTIONS

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

H-4.1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58150H
2	2	BONDED SEAL	90 DURO HSN	58050520H
4	2	158 O-RING	90 DURO HSN	90158H
5	2	246 O-RING	90 DURO HSN	90246H

H-4.1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 58150V
2	2	BONDED SEAL	90 DURO VITON	58050520V
4	2	158 O-RING	90 DURO VITON	90158V
5	2	246 O-RING	90 DURO VITON	90246V



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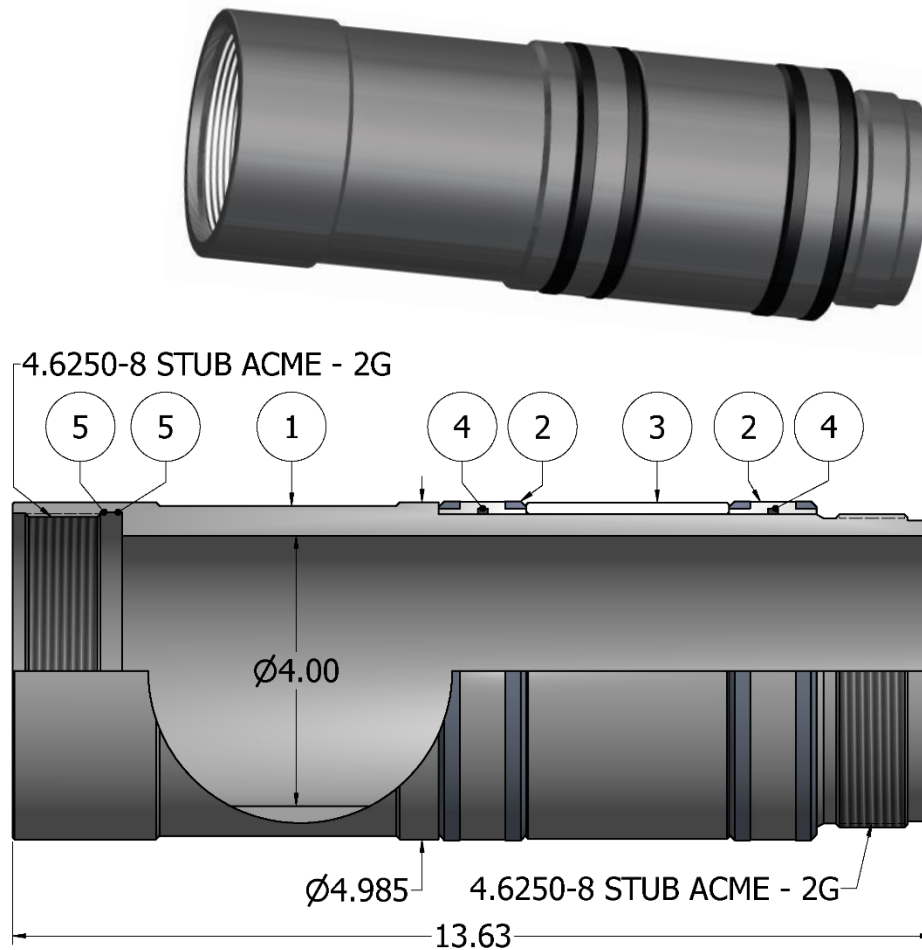
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H) SEAL UNIT ASSEMBLY (cont'd)

H-5) TECHNICAL ILLUSTRATION



I) 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.

I-1) SPECIFICATION GUIDE

PACKER BORE SIZE (INCHES)	PART OD (INCHES)	PART BORE (INCHES)	THREAD CONNECTION	PART NUMBER
5.000	4.985	3.88	4.625 STUB ACME	58450615

WEIGHT		7 LBS
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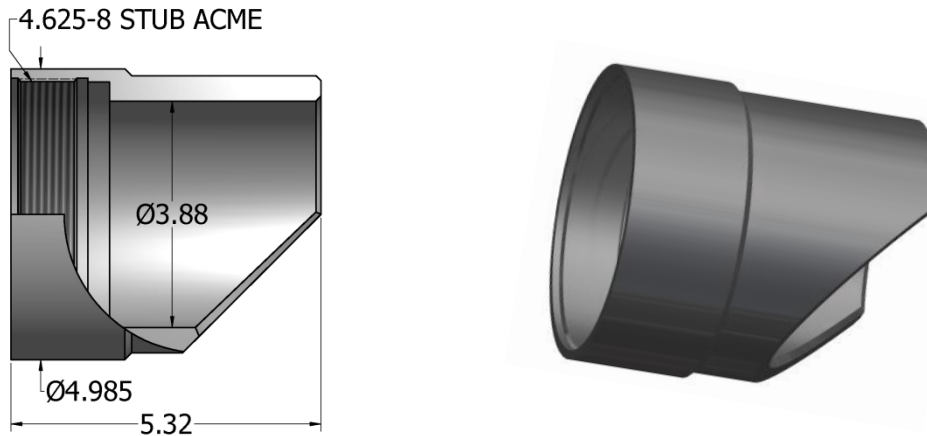
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I) MULE SHOE (cont'd)

I-2) TECHNICAL ILLUSTRATION



J) 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.

J-1) ASSEMBLY

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

J-1.1) Clamp seal bore accessory in vise. Follow assembly instructions given above for seal bore accessory for all other parts.

J-1.2) Install end spacer (S.5) onto seal bore accessory.

J-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.

J-1.4) Install center spacer (S.4) onto seal bore accessory.

J-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.

J-1.6) Install end spacer (S.5) onto seal bore accessory.

J-1.7) Unclamp seal bore accessory from vise and remove assembled tool.



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

J-2) ATR OPTION PARTS LIST

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

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	5.000" ATR SEAL STACK	-	58750ATRSS
S.1	6	AFLAS RING	AFLAS	587AF500
S.2	6	TEFLON RING	TEFLON	587TF500
S.3	6	RYTON SPACER	RYTON	587RY500
S.4	1	CENTER SPACER	DLMS60	587CS500
S.5	2	END SPACER	DLMS60	587ES500

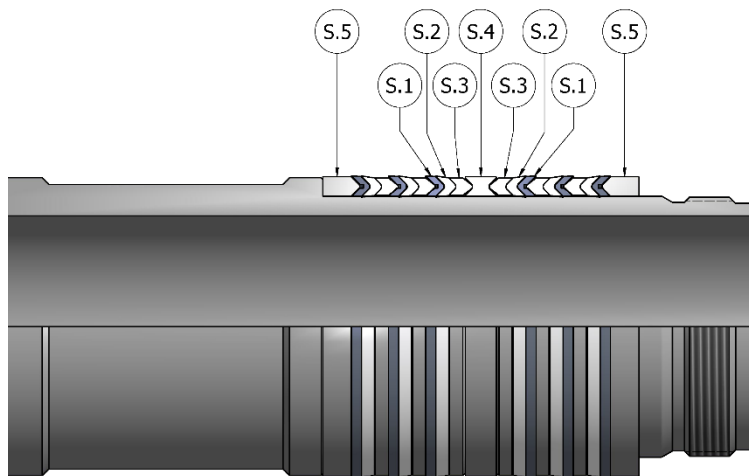
J-3) VTR OPTION SEAL STACK

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

ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER
S	1	5.000" VTR SEAL STACK	-	58750VTRSS
S.1	6	VITON RING	VITON	587VF500
S.2	6	TEFLON RING	TEFLON	587TF500
S.3	6	RYTON SPACER	RYTON	587RY500
S.4	1	CENTER SPACER	DLMS60	587CS500
S.5	2	END SPACER	DLMS60	587ES500

J-4) TECHNICAL ILLUSTRATION

NOTE₄: Seal Unit Assembly (P/N 58150ATR) shown. Order, orientation and quantity typical of all assemblies.





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K) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
10/02/2020	C	Added tensile load to anchor latch	J.Anderson	D.Hushbeck
07/10/2019	B	Revised Technical Illustration for P/N 58250 for shorten mandrel length	J.Anderson	Z.Speer
02/22/2018	A	Created new manual	-	-