



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

A) DESCRIPTION

The VSI-X HT Single String Double Grip Production Packer is one of the most versatile packers on the market. This packer is a modification of the ASI-X HT Packer with the advantage of being able to set on electric line or hydraulically.

An On-Off Tool Stinger with a Wireline Plug installed can be attached to the top of this packer. This packer can then be lubricated in the hole and set under pressure. Once set, casing pressure can be bled off, and the tubing with an On-Off Tool Overshot can be run and latched onto the packer. The Wireline Plug can then be removed.

This packer easily converts to a mechanically set ASI-X HT Packer – just remove the shear screws and install drag blocks and drag block springs. The ASI-X HT Packer sets with 1/4 right-hand rotation and releases with 1/4 right-hand rotation. The ASI-X Packer can be left in tension, compression or neutral.

NOTE₁: Stinger and setting equipment sold separately.

NOTE₂: This packer requires at least a 30 second burn on the wireline setting tool to ensure a proper set. A burn time less than 30 seconds may shear the setting tool off of the packer before fully setting the packer.

B) RELATED TOOLS (sold separately)

B-1) 9-5/8" X 2-7/8" Wireline Adapter Kit (WLAK) (PN 97196-BAC)—refer to technical manual *DL-971-9625-979*.

B-2) 9-5/8" X 2-7/8" DT-2 On/Off Tool (PN 51295)—refer to technical manual *DL-512-2875-146*.

B-3) 2-7/8" Stinger—actual P/N varies depending on customer requirements.

C) 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)		
9-5/8	32.3 – 43.5	8.755 – 9.001	8.500	2.50	2-7/8 EUE	60196HTC-XBAC 60196HTHC-XBAC ¹ 60196HTVC-XBAC ²
	43.5 – 53.5	8.535 – 8.755	8.250	2.50	2-7/8 EUE	60195HTC-XBAC 60195HTHC-XBAC ¹ 60195HTVC-XBAC ²

Elastomer Trim Options: ¹HSN, ²Viton

NOTE₃: Tools listed are right-hand set / right-hand release.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
8,000 PSI	154,000 LBS

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



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

D) 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 tools 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.

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 part information.

E) RELEASING PROCEDURES

Set down weight on the packer and rotate the work string 1/4 turn to the right at the packer and pick up while holding right-hand torque. The internal by-pass will open, allowing pressure to equalize. After pressure is equalized, continue to pick up to release the upper slips, relax the elements and release the lower slips.

CAUTION₂: High differential pressure below the VSI-X may cause the upper slips to wedge in tighter, requiring an extra amount of tension to release the upper slips.

F) 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. 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) PRESSURE AFFECTED AREA GUIDE

When set downhole, the packer mandrel is subjected to a force created by differential pressure above or below the packer that acts on the pressure affected area (i.e., the piston effect). Depending on the tubing size and weight and the seal area of the packer the force created by differential pressure acts upwards or downwards on the packer mandrel. An upward force, designated as a negative (-) value, acts to push the packer mandrel up hole and must be accounted for to ensure that the packer remains set. A downward force, designated as a positive value, acts to push the packer mandrel down hole and must be accounted for when releasing the packer. Other factors (e.g., tubing movement due to temperature change) must be considered separately to determine all the forces acting on the packer.



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

G) PRESSURE AFFECTED AREA GUIDE (cont'd)

PACKER SIZE (INCHES)	TUBING SIZE (INCHES)	PRESSURE (SQ. INCHES)	
		ABOVE	BELOW
9-5/8" X 2-7/8"	2.875	11.11 (DOWN)	-12.92 (UP)
	3.500	7.98 (DOWN)	-10.56 (UP)
	4.500	1.70 (DOWN)	-5.30 (UP)

Example: Consider a 9-5/8" X 2-7/8" ASI-X Packer set on 2.875" tubing with a differential pressure of 3,000 psi in the annulus around the tubing above the packer. What is the force acting on the seal area of the mandrel?

To calculate the force (lbs) acting on the seal area of the mandrel, refer to the Pressure Affected Area Guide for a 9-5/8" X 2-7/8" ASI-X Packer run on 2.875" tubing. In this example, the differential pressure from above the packer acts on the seal area of the packer mandrel across a pressure affected area of 11.11 in². Multiplying the differential pressure (3,000 psi) by the pressure affected area (11.11 in²) results in a force of 33,330 lbs. The piston effect on the packer mandrel is a downward force of 33,330 lbs.

H) ELASTOMER TRIM TEMPERATURE GUIDE

NITRILE (STD)			
TEMPERATURE RANGE (F°)	DUROMETER		
	END	MIDDLE	END
70° - 125°	80	70	80
125° - 250°	90	70	90
150° - 250°	90	80	90
250° +	Contact D&L Sales		

RUBBER TYPE	TEMPERATURE RANGE
NITRILE	70° - 250°F
HSN (HNBR)	70° - 300°F
VITON	100° - 350°F

I) 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

J) DISASSEMBLY

J-1) Clamp spring cage (5) in vise.

J-1.1) From lower end of tool, unscrew and remove crossover (42) from bottom nipple (28).

J-1.2) Unscrew and remove shear screws (3) from J-body (20).

J-1.3) Unscrew and remove bottom nipple (28) from J-pin sub (23).

J-1.4) Unscrew and remove J-pin sub (23) from inner mandrel (2).

NOTE: Drag block body assembly must be free to rotate.

J-1.4.1) Remove o-ring (45) from J-pin sub (23).



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

J) DISASSEMBLY (cont'd)

- J-1.5) Unscrew and remove set screws (40) from drag block body (18).
 - J-1.6) Unscrew and remove J-body (20) from drag block body (18) (**NOTE₆**: Left-hand threads).
 - J-1.6.1) Remove retaining ring (30) from J-body (20).
 - J-1.7) Remove drag block retainer (21) from drag block body (18).
 - J-1.8) Unscrew and remove rubber mandrel cap (19) from rubber mandrel (11).

NOTE₇: For added leverage, insert a rod through lower cone (16) and rubber mandrel (11) as needed.
 - J-1.9) Remove drag block body assembly and disassemble:
 - J-1.9.1) Wedge lower slips (17) outwards (if needed). Unscrew and remove cap screw (41) from drag block body (18).
 - J-1.9.2) Remove lower slip support (32) from drag block body (18).
 - J-1.9.3) Remove wedges (if needed). Remove lower slips (17) and lower slip springs (25) from drag block body (18).
 - J-1.10) Unscrew and remove lower cone (16) from rubber retainer (15).
 - J-1.11) Unscrew rubber mandrel (11) from center coupling (10).
 - J-1.12) Remove rubber mandrel assembly and disassemble:
 - J-1.12.1) Remove elements (13, 14), rubber spacers (12) and rubber retainer (15) from secondary rubber mandrel (31).
 - J-1.12.2) Remove secondary rubber mandrel (31) from rubber mandrel (11).
 - J-1.12.3) Remove o-ring (44) from rubber mandrel (11).
 - J-1.13) Unscrew and remove gage ring (29) from center coupling (10).
 - J-1.14) Unscrew and remove center coupling (10) from upper collet cone (9).
 - J-1.14.1) Remove bonded seal (24) and o-rings (43) from center coupling (10).
 - J-1.15) Remove bearing bushing (38) from inner mandrel (2).
 - J-1.16) Remove upper collet cone (9) from inner mandrel (2).
 - J-1.17) Wedge slips (7 and 8) outwards (if needed). Unscrew inner mandrel (2) from top sub (1).
 - J-1.18) Remove inner mandrel assembly and disassemble:
 - J-1.18.1) Unscrew swivel sleeve cap (35) from swivel sleeve (36) and remove from inner mandrel (2).
 - J-1.18.2) Remove snap ring (34) from inner mandrel (2).
 - J-1.18.3) Remove swivel sleeve (36) from inner mandrel (2).
 - J-1.18.4) Remove thrust ring (37) from inner mandrel (2).
 - J-1.19) Remove wedges (if needed). Remove releasing slip (7), upper slips (8) and upper slip springs (26) from upper slip body (6).
 - J-1.20) Unscrew and remove upper slip body (6) from upper slip support (33).
 - J-1.21) Unscrew and remove upper slip support (33) from spring cage (5).
 - J-1.22) Unscrew and remove shear screws (3) from spring cage (5).

CAUTION₃: Compression spring (4) is compressed with tension against spring cage assembly.
 - J-1.23) Unscrew and remove spring cage cap (27) from spring cage (5).
 - J-1.24) Remove top sub (1) and compression spring (4) from spring cage (5).
 - J-1.25) Unscrew and remove cap screws (39) from spring retaining ring (8).
 - J-1.26) Remove spring retainer ring (22) from spring cage (5).
- J-2) Unclamp and remove spring cage (5) from vise.



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

K) ASSEMBLY

NOTE₄: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION₄: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig 2).

K-1) Clamp spring cage (5) in vise.

K-1.1) Install spring retainer ring (22) into spring cage (5). Align threaded holes in spring retainer ring with holes in spring cage (5).

K-1.2) Screw cap screws (39) into spring retainer ring (22).

K-1.3) Install compression spring (4) and top sub (1) into spring cage (5).

CAUTION₃: Compression spring (4) is compressed with tension against spring cage assembly.

K-1.4) Screw spring cage cap (27) into spring cage (5). Align threaded holes in spring cage (5) with recessed holes in top sub (1).

NOTE₈: Press down top sub (1) to compress compression spring (4) as necessary.

K-1.5) Screw shear screws (3) into spring cage (5). Tighten until shear screws (3) make contact with top sub (1). Back shear screws (3) out 1/4 turn.

K-1.6) Screw upper slip body support (33) onto spring cage (5).

K-1.7) Screw upper slip body (6) onto upper slip body support (33).

K-1.8) Install upper slips (8), releasing slip (7) and upper slip springs (26) into upper slip body (6). Wedge slips outwards.

NOTE₉: Install two (2ea) springs per slip (Fig. 3).

K-1.9) Assemble inner mandrel assembly and install:

K-1.9.1) Install thrust ring (37) onto upper end of inner mandrel (2).

K-1.9.2) Install swivel sleeve (36) onto inner mandrel (2).

K-1.9.3) Install snap ring (34) into snap ring groove in inner mandrel (2).

K-1.9.4) Install swivel sleeve cap (35) onto inner mandrel (2) and screw onto swivel sleeve (36).

K-1.9.5) Screw inner mandrel (2) into top sub (1). Remove wedges.

K-1.10) Install bearing bushing (38) into upper collet cone (9).

K-1.11) Install upper collet cone (9) and bearing bushing (38) onto inner mandrel (2). Slide upper collet cone (9) until bearing bushing (38) comes into contact with shoulder of inner mandrel (2).

K-1.12) Install bonded seal (24) onto inner mandrel (2) against bearing bushing (38).

CAUTION₅: Do not rip or tear o-rings during installation.

K-1.13) Install o-rings (43) into o-ring grooves in center coupling (10).

K-1.14) Screw center coupling (10) onto upper collet cone (9).

CAUTION₆: Do not damage seal during installation.

K-1.15) Screw gage ring (29) onto center coupling (10).

K-1.16) Assemble rubber mandrel assembly and install:

K-1.16.1) Install o-ring (44) in o-ring groove in rubber mandrel (11).

K-1.16.2) Install secondary rubber mandrel (31) onto rubber mandrel (11).

CAUTION₅: Do not rip or tear o-rings during installation.

K-1.16.3) Install rubber retainer (15), elements (13, 14), and rubber spacers (12) onto secondary rubber mandrel (31).

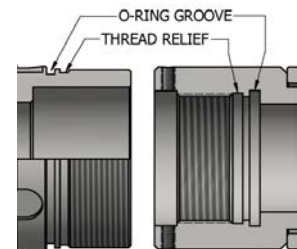


Fig. 2



Fig. 3



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

K) ASSEMBLY (cont'd)

K-1.16.4) Install rubber mandrel assembly onto inner mandrel (2). Screw rubber mandrel (11) into center coupling (10).

CAUTION₅: Do not rip or tear o-ring during installation.

K-1.17) Screw lower cone (16) into rubber retainer (15).

K-1.18) Assemble drag block body assembly and install:

K-1.18.1) Install lower slips (17) and lower slip springs (25) into drag block body (18). Wedge slips outwards.

NOTE₁₀: Install two (2ea) springs per slip (Fig. 4).

K-1.18.2) Install lower slip support (32) into drag block body (18). Align hole in lower slip support with threaded hole in drag block body (18).

K-1.18.3) Screw cap screw (41) into drag block body (18). Remove wedges.

K-1.18.4) Install drag block body assembly onto rubber mandrel (11).

K-1.19) Screw rubber mandrel cap (19) onto rubber mandrel (11).

NOTE₇: For added leverage, insert a rod through lower cone (16) and rubber mandrel (11) as needed.

K-1.20) Install drag block retainer (21) onto drag block body (18). Align holes in drag block retainer with threaded holes in drag block body.

K-1.21) Install retaining ring (30) onto upper end of J-body (20).

K-1.22) Screw J-body (20) onto drag block body (18) (**NOTE₆:** Left-hand threads).

K-1.23) Screw set screws (40) into J-body (20).

K-1.24) Install o-ring (45) into o-ring groove in J-pin sub (23).

K-1.25) Screw J-pin sub (23) onto inner mandrel (2).

CAUTION₅: Do not rip or tear o-ring during installation.

NOTE₅: Drag block body assembly must be free to rotate.

K-1.26) Position J-pin of J-pin sub (23) on tension shoulder in J-slot of J-body (20) (Fig. 5).

K-1.27) Align threaded holes in J-body (20) with pocket holes in rubber mandrel cap (19).

K-1.28) Screw shear screws (3) into J-body (20). Tighten until shear screws (3) make contact with rubber mandrel cap (19). Back shear screws (3) out 1/4 turn.

K-1.29) Screw bottom nipple (28) into J-pin sub (23).

K-1.30) Screw crossover (42) onto bottom nipple (28).

K-2) Unclamp spring cage (5) from vise and remove assembled tool.

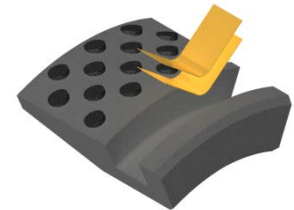


Fig. 4

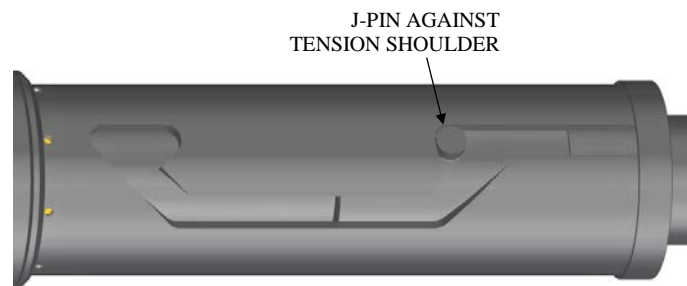


Fig. 5



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	32.3 – 43.5#	43.5 – 53.5#
				P/N 60196HTC-XBAC	P/N 60195HTC-XBAC
1	1	TOP SUB	P-110	60195611HT	
2	1	INNER MANDREL	DLMS110	60395210HT	
3	16	SHEAR SCREW (2375#)	DLM360BRS	60100990	
4	1	COMPRESSION SPRING	CHROME VANADIUM	60395920HT	
5	1	SPRING CAGE	1026	60195311	
6	1	UPPER SLIP BODY	DLMS110 / DLMS80	60395320	
7	1	RELEASING SLIP	DLMS110	60095125	
8	2	UPPER SLIP W/CARBIDE	DLMS110	60095115C	
9	1	UPPER COLLET CONE	DLMS110	60395414	
10	1	CENTER COUPLING	DLMS80	60095620HT	
11	1	RUBBER MANDREL	DLMS110	60313220HT	
12	2	RUBBER SPACER	DLMS35	60296840S	60295840S
13	1	ELEMENT	80 DURO NITRILE	60296512S	60295512S
14	2	ELEMENT	90 DURO NITRILE	60296513S	60295513S
15	1	RUBBER RETAINER	DLMS110	60296850SHT	60295850SHT
16	1	LOWER CONE	DLMS110	60395420SHT	
17	4	LOWER SLIP W/ CARBIDE	DLMS110	60095135C	
18	1	DRAG BLOCK BODY	DLMS60 / DLMS35	60395335	
19	1	RUBBER MANDREL CAP	DLMS60	60195230	
20	1	J-BODY	DLMS80 / DLMS60	60195340	
21	1	DRAG BLOCK RETAINER	DLMS60	60395910	
22	1	SPRING RETAINING RING	DLMS60	60395107	
23	1	J-PIN SUB	DLMS110	60395634HT	
24	1	BONDED SEAL	90 DURO NITRILE	60095520	
25	8	LOWER SLIP SPRING	-	7170901	
26	6	UPPER SLIP SPRING	-	7170902	
27	1	SPRING CAGE CAP	DLMS60	60095810	
28	1	BOTTOM SUB NIPPLE	DLMS110	60395636	
29	1	GAGE RING	DLMS110	60296830HT	60295830HT
30	1	RETAINING RING	DLMS35	60095911	



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

L) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	32.3 – 43.5#	43.5 – 53.5#
				P/N 60196HTC-XBAC	P/N 60195HTC-XBAC
31	1	SECONDARY RUBBER MANDREL	DLMS110	60095221HT	
32	1	LOWER SLIP SUPPORT	DLMS110	60395912HT	
33	1	UPPER SLIP SUPPORT	DLMS110	60395880HT	
34	1	SNAP RING	DLMS60	60097102	
35	1	SWIVEL SLEEVE CAP	DLMS110	60395106	
36	1	SWIVEL SLEEVE	DLMS110	60395100	
37	1	THRUST RING	DLMS110	60395103	
38	1	BEARING BUSHING	DLMS60	60097104	
39	6	CAP SCREW 3/8-16 UNC X 3/4	STEEL	SCS037C075	
40	3	SET SCREW 3/8-16 UNC X 5/8	STEEL	SSS037C062	
41	1	CAP SCREW 1/2-13 UNC X 3/4	STEEL	SCS050C075	
42	1	CROSSOVER	P-110	CH4500E2875EHT	
43	2	160 O-RING	90 DURO NITRILE	90160	
44	1	254 O-RING	90 DURO NITRILE	90254	
45	1	O-RING	90 DURO NITRILE	90349	90348
46	8	SHEAR SCREW (5500#) 1/2-13 UNC X 7/16	DLM360BRS	BSSSLT050C043*	

*Refer to WLAK technical manual for placement.

REDRESS KIT (RDK)		60196050HT	60195050HT
ASSEMBLED WEIGHT		589 LBS	585 LBS

L-1) ELASTOMER TRIM OPTIONS

NOTE₁₁: For temperature range, refer to Elastomer Trim Temperature Guide.

L-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	32.3 – 43.5#	43.5 – 53.5#
				P/N 60196HTHC-XBAC	P/N 60195HTHC-XBAC
13	1	ELEMENT	80 DURO HSN	60296512SH	60295512SH
14	2	ELEMENT	90 DURO HSN	60296513SH	60295513SH
24	1	BONDED SEAL	90 DURO HSN	60095520H	
43	2	160 O-RING	90 DURO HSN	90160H	
44	1	254 O-RING	90 DURO HSN	90254H	
45	1	O-RING	90 DURO HSN	90349H	90348H

REDRESS KIT (RDK)		60196050HTH	60195050HTH
-------------------	--	-------------	-------------



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

L) PARTS LIST (cont'd)

L-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	32.3 – 43.5#	43.5 – 53.5#
				P/N 60196HTVC-XBAC	P/N 60195HTVC-XBAC
13	1	ELEMENT	80 DURO VITON	60296512SV	60295512SV
14	2	ELEMENT	90 DURO VITON	60296513SV	60295513SV
24	1	BONDED SEAL	90 DURO VITON	60095520V	
43	2	160 O-RING	90 DURO VITON	90160V	
44	1	254 O-RING	90 DURO VITON	90254V	
45	1	O-RING	90 DURO VITON	90349V	90348V
REDRESS KIT (RDK)				60196050HTV	60195050HTV



VSI-X HT PACKER, CARBIDE

9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

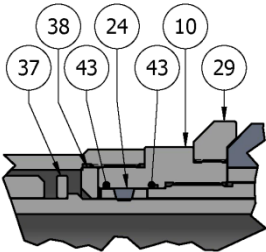
Revision: A

Revision Date:
03/01/2016

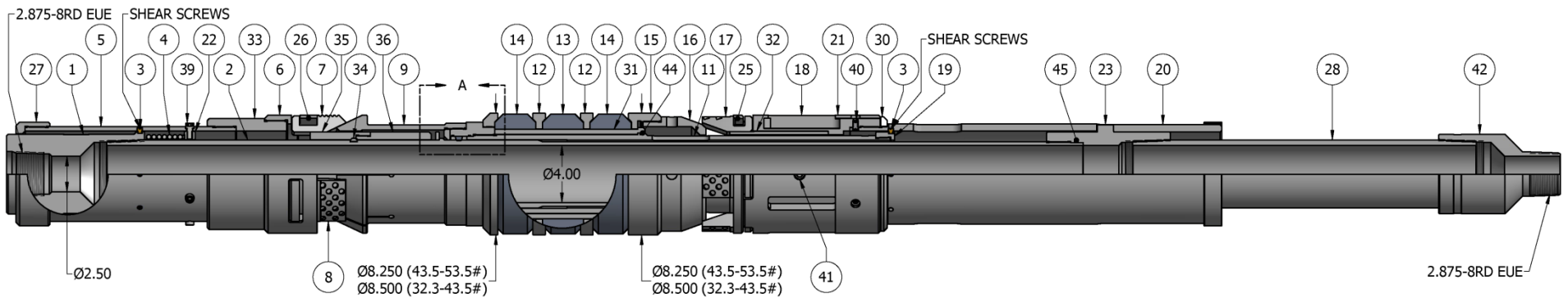
Authored by: J.Anderson

Approved by: C.Colvin

M) TECHNICAL ILLUSTRATION



DETAIL A





VSI-X HT PACKER, CARBIDE
9-5/8" X 4-1/2" with 2-7/8" EUE

Manual No:
DL-601-9625-977

Revision: **A**

Revision Date:
03/01/2016

Authored by: J.Anderson

Approved by: C.Colvin

N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
03/01/2016	A	Created new manual	-	-