



ABANDONMENT VALVE

3-5/8", 2-7/8" EUE

Manual No:
DL-617-3625-1723

Revision: **A**

Revision Date:
11/27/2023

Authored by: *J.Anderson*

Approved by: *E.Visaez*

A) DESCRIPTION

The Abandonment Valve provides a means for temporarily abandoning a well without tripping out a work string. This valve is run in conjunction with a heavy duty service packer. The Abandonment Valve and packer are designed to allow heavy loads to hang through them and thus allowing a work string to hang below during abandonment. The most common use of the Abandonment Valve and packer combination is offshore for storm abandonment, but can also be used for working on BOP's during drilling without tripping the drill string out.

This valve uses a colleted sliding valve (lower collet) that is opened and closed by the disconnect and reconnect operations. The valve is designed so that the flow slots in the valve line up with the flow slots in the valve case to allow for higher rates of circulation without damaging the valve.

This valve uses a colleted latch that has a left-hand buttress thread allowing easy insertion of the latch while providing a strong connection. The colleted latch is supported during loading to ensure the latch threads stay completely engaged. All external threads are locked with set screws to ensure against backing off during packer setting.

B) SPECIFICATION GUIDE

TOOL OD (INCHES)	TOOL ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
3.69	1.00	2-7/8" EUE	61736-XBAC 61736H-XBAC ¹ 61736V-XBAC ²

Elastomer Trim Options: ¹HSN, ²Viton

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	TORQUE THRU TOOL (MAX)
10,000 PSI	175,000 LBS	2,000 FT-LBS

C) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION: 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

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

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D) PRE-INSTALLATION INSPECTION PROCEDURES (cont'd)

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.

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, o-rings, shear screws, etc. Contact D&L sales for redress kit and/or other replacement part information.

D) OPERATION

CAUTION3: Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

The Abandonment Valve is designed to operate with a heavy duty service packer (**NOTE1:** The packer must be compatible with the valve operation). The valve disconnects with right-hand rotation, but a right-hand set packer can be run due to the fact that the work string weight hanging through the packer and valve will keep the latch thread loaded. Keep in mind that the right-hand torque will need to be released as the packer sets or the latch could begin to disconnect. The latch thread should not be over-torqued. Recommended torque for the latch thread is 400-600 ft-lbs.

D-1) RUNNING

D-1.1) Make up the Abandonment Valve to the packer.

NOTE2: If running the Abandonment Valve with a D&L Abandonment Packer, the valve and packer can be threaded directly together by removing the top sub of the packer and the bottom of the valve and threading them together with the stub acme thread.

D-1.2) Trip out the work string to allow the Abandonment Valve and Packer to be set a safe distance below the surface equipment.

D-1.3) Make up the top connection of the valve on pipe and pick up the valve and packer assembly. Torque this connection across the tool joint thread.

NOTE3: Do not torque pipe threads through the valve body.

D-1.4) Make up the bottom sub of the packer into the work string. Torque this connection across the tool joint thread.

NOTE4: Do not torque pipe threads through the packer mandrel.

D-1.5) Trip in to 2-5 feet below setting depth. Note the string weight for future reference. Pick up to setting depth and set the packer. Set all the weight on the packer to check the set. Pressure test the annulus to check the packer set.

D-1.6) Pick up 1,000-2,000 lbs above neutral and rotate 12 turns to the right, taking care to continue to pick up while rotating. If you don't continue to pick up, the latch can stroke down and reconnect.

NOTE5: If the drilling vessel is subject to heave, a bumper sub can be run immediately above the valve to compensate for the heave and allow for a smooth disconnect.

D-1.7) Trip out with the upper valve assembly. Close the rams and pressure test the set packer and closed valve taking care not to exceed the operating pressure of the pump-out plug.



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D) OPERATION (cont'd)

D-2) RETRIEVING

- D-2.1) Pick up upper valve assembly and trip in to 5-10 feet above the lower valve assembly and set packer.
- D-2.2) Rig up for circulation and circulate while slowly lowering into the lower valve assembly. Circulate at 5-10 bbls/min and slow to 2-3 bbls/min as you enter the lower valve assembly. Back pressure should begin to build as the stinger enters the valve fingers (lower collet). As back pressure begins to build stop circulation and lower the upper valve assembly fully into the lower valve assembly. Set all the pipe weight available on the valve to fully insert the latch into the valve. It should take 800-1,000 lbs to fully insert the latch.
NOTE: If sufficient weight is not available, left-hand rotation can be cautiously applied to make up the latch.
- D-2.3) Pick up 1/2 the original string weight to check that the latch is fully attached.
- D-2.4) Pick up the full string weight and circulate around the unset packer to remove any solids that could have settled on the packer.
- D-2.5) Trip out and remove the valve and packer from the work string. Trip back in with the work string and resume operations.

E) PUMP-OUT PLUG

The Abandonment Valve comes with a pump-out plug that allows for through-tubing operations to be performed through the valve. Pressure above the pump-out plug shears a preset number of pins and releases the plug to fall to the bottom of the work string. The shear valve is calculated as follows:

Shear screw value = 566 psi/screw

Pressure to shear = Qty of screws X 566 psi/screw

Example: 6 shear screws X 566 psi/screw = 3,396 psi to shear

E-1) PROCEDURE

- E-2) Remove the stinger from the upper valve assembly by first removing the stinger collar. Replace the stinger collar and run the upper valve assembly to 5-10 feet above the lower valve assembly and set packer.
- E-3) Rig up for circulation and circulate while slowly lowering into the lower valve assembly. Circulate at 5-10 bbls/min and slow to 2-3 bbls/min as you enter the lower valve assembly. Back pressure should begin to build as the upper valve assembly enters the lower valve assembly. As back pressure begins to build, stop circulation and lower the upper valve assembly fully into the lower valve assembly. Set all the pipe weight available on the valve to fully insert the latch into the valve. It should take 800-1,000 lbs to fully insert the latch.
NOTE: If sufficient weight is not available, left hand rotation can be cautiously applied to make up the latch.
- E-4) Pick up 1/2 the original string weight to check that the latch is fully attached. Pick up the full string weight to release the packer.
- E-5) Pressure work string up to calculated shear pressure for the pump-out plug. When the plug shears, circulation can be established down the work string.



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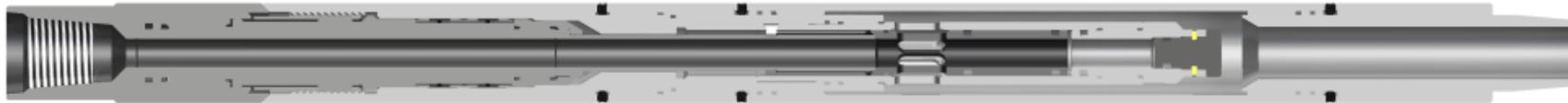
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3-5/8" Abandonment Valve



Prior to releasing Upper Valve



Begin Release Movement – Stinger Assy & Valve Moves Upward. Lower Collet Fingers Expand Into Connector.



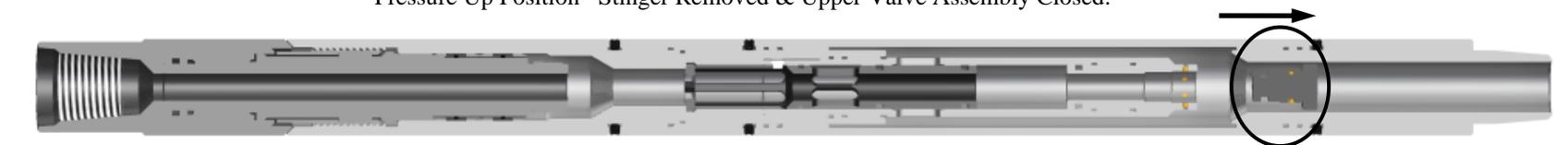
Released Position – Stinger Pulled Out & Upper Valve Assembly Closed.



Stinger Has Been Removed, Upper Valve Assembly Closed.



Pressure Up Position – Stinger Removed & Upper Valve Assembly Closed.



Pressured Up – Upper Valve Assembly Closed, Shear Screws Sheared, & Plug Released.



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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.

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) ELASTOMER TRIM TEMPERATURE GUIDE

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

H) 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

I) DISASSEMBLY

I-1) Clamp connector (8) in a vise.

I-1.1) Wrench on top sub (1) to the right to unscrew collet (7) from latch case (6) and back out upper valve assembly from latch case (6) (**NOTE:** Left-hand threads).

NOTE: Tension may be required on upper valve assembly when wrenching on top sub (1) to prevent collet threads from jumping.

I-1.2) Remove upper valve assembly from latch case (6) and set aside.

I-1.3) Unscrew and remove set screws (14) from connector (8).

I-1.4) Unscrew and remove latch case (6) from connector (8).

I-1.4.1) Remove o-ring (21) from latch case (6).

I-1.5) Moving to lower end of tool, unscrew and remove set screws (14) from lower end of lower sleeve (9).

I-1.6) Unscrew and remove bottom sub (15) from lower sleeve (9).

I-1.7) Remove o-ring (22) from bottom sub (15).

I-1.8) Unscrew and remove remaining set screws (14) from lower sleeve (9)

I-1.9) Unscrew and remove lower sleeve (9) from connector (8).

I-1.10) Unscrew and remove shear screws (2) from plug case (12).

I-1.11) Remove plug (13) from plug case (12).

I-1.11.1) Remove o-ring (23) from plug (13).



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I) DISASSEMBLY (cont'd)

- I-1.12) Unscrew and remove plug case (12) from valve case (10).
 - I-1.12.1) Remove o-ring (24) from plug case (12).
- I-1.13) Unscrew and remove valve case (10) from connector (8).
- I-1.14) Remove alignment pin (16) from valve case (10).
- I-2) Unclamp and remove connector (8) from vise.
 - I-2.1) Remove o-rings (20, 22) from connector (8).
- I-3) Clamp valve case (10) in vise
 - I-3.1) Remove lower collet (11) from valve case (10).
 - I-3.1.1) Remove o-rings (19, 24) from lower collet (11).
- I-4) Unclamp and remove valve case (10) from vise. Clamp top sub (1) of upper valve assembly in vise.
 - I-4.1) Unscrew and remove stinger collar (5) from latch mandrel (3).
 - I-4.1.1) Remove stinger (4) from stinger collar (5).
 - I-4.2) Remove bonded seals (17) from latch mandrel (3).
 - I-4.2.1) Remove o-rings (18) from bonded seals (17).
 - I-4.3) Unscrew and remove latch mandrel (3) from top sub (1).
 - I-4.4) Remove latch (7) from latch mandrel (3).
- I-5) Unclamp and remove top sub (1) from vise.
 - I-5.1) Remove o-ring (25) from top sub (1).

J) ASSEMBLY

NOTE7: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

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

J-1) Clamp top sub (1) in vise and assemble upper valve assembly:

- J-1.1) Install o-ring (25) in o-ring groove in top sub (1).
- J-1.2) Install latch (7) onto latch mandrel (3).
- J-1.3) Screw latch mandrel (3) into top sub (1).

CAUTION2: Do not rip or tear o-ring during installation

- J-1.4) Install o-rings (18) in o-ring grooves in bonded seals (17).
- J-1.5) Install bonded seals (17) onto latch mandrel (3).

CAUTION2: Do not rip or tear o-rings during installation

- J-1.6) Install stinger (4) into stinger collar (5).
- J-1.7) Screw stinger collar (5) onto latch mandrel (3).

J-2) Unclamp and remove top sub (1) and remove upper valve assembly from vise.

J-3) Clamp valve case (10) in vise.

- J-3.1) Install o-ring s (19, 24) in o-ring grooves in lower collet (11).
- J-3.2) Drive lower collet (11) into valve case (10).

CAUTION2: Do not rip or tear o-rings during installation

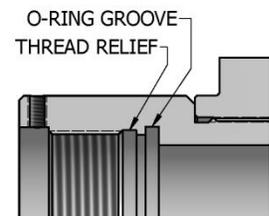


Fig. 2



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J) ASSEMBLY (cont'd)

J-4) Unclamp and remove valve case (10) from vise. Clamp connector (8) in vise.

J-4.1) Install o-rings (20, 22) in o-ring grooves in connector (8).

J-4.2) Install o-ring (21) in o-ring groove in latch case (6).

J-4.3) Screw latch case (6) into connector (8).

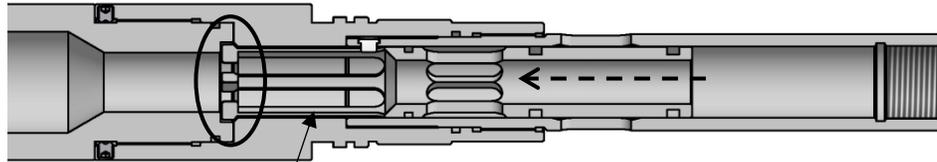
CAUTION₂: Do not rip or tear o-ring during installation

J-4.4) Screw set screws (14) into connector (8).

J-4.5) Align hole in valve case (10) with gap between fingers of lower collet (11). Install alignment pin (16) into valve case (10).

J-4.6) Screw valve case (10) into connector (8).

CAUTION₂: Do not rip or tear o-ring during installation



Collet (11) Fig. 3

J-4.7) Drive lower collet (11) into connector (8) until dogs of collet fingers engage groove in lower end of latch case (6) (Fig. 3).

J-4.8) Install o-ring (24) in o-ring groove in plug case (12).

J-4.9) Screw plug case (12) into valve case (10).

CAUTION₂: Do not rip or tear o-ring during installation

J-4.10) Install o-ring (23) in o-ring groove in plug (13).

J-4.11) Install plug (13) into plug case (12).

CAUTION₂: Do not rip or tear o-ring during installation

J-4.12) Align threaded holes in plug case (12) with groove in plug (13). Screw shear screws (2) into plug case (12). Tighten until shear screws (2) contact plug (13). Back shear screws (2) out 1/4 turn.

J-4.13) Screw lower sleeve (9) onto connector (8).

CAUTION₂: Do not rip or tear o-ring during installation

J-4.14) Screw set screws (14) into upper end of lower sleeve (9).

J-4.15) Install o-ring (22) in o-ring groove in bottom sub (15).

J-4.16) Screw bottom sub (15) into lower sleeve (9).

CAUTION₂: Do not rip or tear o-ring during installation

J-4.17) Screw set screws (14) into lower end of lower sleeve (9).

J-4.18) Install upper valve assembly into latch case (6). Drive assembly into latch case until threads of collet (7) catch threads of latch case (6).

J-4.19) Wrench on top sub (1) to the left to screw collet (7) into latch case (6) (**NOTE₈:** Left-hand threads).

CAUTION₄: To avoid damaging collet fingers during assembly, lower collet (valve) must be in full closed position (full up) before inserting upper valve assembly (Fig. 3). Inserting upper valve assembly will open valve.

J-5) Unclamp connector (8) from vise and remove assembled tool.



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K)PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61736-XBAC
1	1	TOP SUB	DLMS110	61736610-YBAC
2	6	#10-24 UNC X 5/16 SLOTTED SHEAR SCREW (700#)	DLM360BRS	BSSSLT1024C031
3	1	LATCH MANDREL	DLMS110	61736002
4	1	STINGER	DLMS110	61736150
5	1	STINGER COLLAR	DLMS110	61736230
6	1	LATCH CASE	DLMS110	61736601
7	1	COLLET	DLMS110	61736003
8	1	CONNECTOR	DLMS110	61736621
9	1	LOWER SLEEVE	DLMS110	61736310
10	1	VALVE CASE	DLMS110	61736320
11	1	LOWER COLLET	DLMS110	61736004
12	1	PLUG CASE	DLMS110	61736721
13	1	PLUG	DLM6061T6	61736720
14	12	3/8-16 UNC X 3/8 SOCKET SET SCREW	STEEL	SSS037C037
15	1	BOTTOM SUB	DLMS110	61736620-YBAC
16	1	ALIGNMENT PIN	DLMS110	61751005
17	2	BONDED SEAL	90 DURO NITRILE	58025520
18	2	139 O-RING	90 DURO NITRILE	90139
19	1	220 O-RING	90 DURO NITRILE	90220
20	1	227 O-RING	90 DURO NITRILE	90227
21	1	230 O-RING	90 DURO NITRILE	90230
22	2	232 O-RING	90 DURO NITRILE	90232
23	1	314 O-RING	90 DURO NITRILE	90314
24	3	322 O-RING	90 DURO NITRILE	90322
25	1	327 O-RING	90 DURO NITRILE	90327

REDRESS KIT (RDK)	61376050
ASSEMBLED WEIGHT	116 LBS



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K) PARTS LIST (cont'd)

K-1) ELASTOMER TRIM OPTIONS

NOTE₁₀: For temperature range, refer to Elastomer Trim Temperature Guide.

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61736H-XBAC
17	2	BONDED SEAL	90 DURO HSN	58025520H
18	2	139 O-RING	90 DURO HSN	90139H
19	1	220 O-RING	90 DURO HSN	90220H
20	1	227 O-RING	90 DURO HSN	90227H
21	1	230 O-RING	90 DURO HSN	90230H
22	2	232 O-RING	90 DURO HSN	90232H
23	1	314 O-RING	90 DURO HSN	90314H
24	3	322 O-RING	90 DURO HSN	90322H
25	1	327 O-RING	90 DURO HSN	90327H

REDRESS KIT (RDK)	61376050H
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K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 61736V-XBAC
17	2	BONDED SEAL	90 DURO VITON	58025520V
18	2	139 O-RING	90 DURO VITON	90139V
19	1	220 O-RING	90 DURO VITON	90220V
20	1	227 O-RING	90 DURO VITON	90227V
21	1	230 O-RING	90 DURO VITON	90230V
22	2	232 O-RING	90 DURO VITON	90232V
23	1	314 O-RING	90 DURO VITON	90314V
24	3	322 O-RING	90 DURO VITON	90322V
25	1	327 O-RING	90 DURO VITON	90327V

REDRESS KIT (RDK)	61376050V
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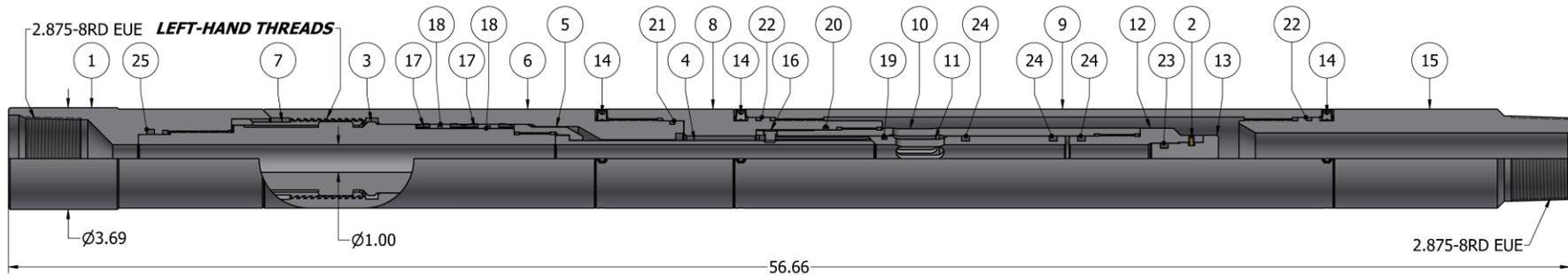
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L) TECHNICAL ILLUSTRATION



M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
11/27/2023	A	Created manual	-	-