American Leak Detection Lining Systems

Installation & Maintenance Guide

Always Do Work Safely and Ensure That All Safety Equipment is Utilized Throughout Project to Include All Required Protective Protection Equipment: Steel Toe Shoes, Leather Gloves, Safety Glasses, Hardhats and Safety Vests

The ALD Ditch Lining System is a lightweight, man-portable system that is easy to install with simple tools. The system comes with an Assembly Kit for each section connection. The lining system can be installed in new ditches/channels or can slip lined or installed in existing ditches/channels that need repairs/maintenance.

We recommend that the following industry standard be utilized as a resource when planning and executing work:

- Natural Resources Conservation Service Standard 428-c, IRRIGATION DITCH LINING, SEMI-RIGID FORMED PLASTIC
- Safety and Health Regulations for Construction (OSHA) 29 CFR 1926 Subpart C & Subpart P.
- Local Codes and Standards
- Professional Engineered Stamped Drawings with Profile Survey

Shipping and Receiving

- The buyer/purchaser is responsible for inspecting all components at the time of delivery to ensure an accurate count of liners and assembly kits.
- Inspect liners and packaging for any damage that may have occurred during shipping. Contact ALD Lining Systems if parts are damaged. See Warranty Information for contact information.

Excavation:

Survey

- Ensure that the grade line is established from point of diversion to point of discharge. It is highly recommended that a professional survey be completed to ensure that the final installation of liner systems can be placed on a uniform slope from start to finish with no low spots that could lead to potential overflowing. Backfill may be required to be compacted to

Excavate new or existing ditches to meet the following dimensions.

- Bottom width of ditch/channel = 24” maximum
- Top width of ditch/channel = 82” maximum
- Side Slope 1:1 Ratio
- Apron: ensure a minimum of 2’ each side of top width is flat, smooth, and free of debris for anchoring.
- Depth: Top of ditch bank to bottom of ditch excavation not to exceed 30” in depth.

Pour a Concrete Apron:

Pour a 12” thick, 24” wide concrete apron with 1:1 side slope at the start and end of the ditch canal and concrete headwall crossings. Ensure concrete has cured and has reached its ultimate strength prior to attaching liner with concrete pins to prevent cracking and spalling.

Installation Tools:

Required Tools:

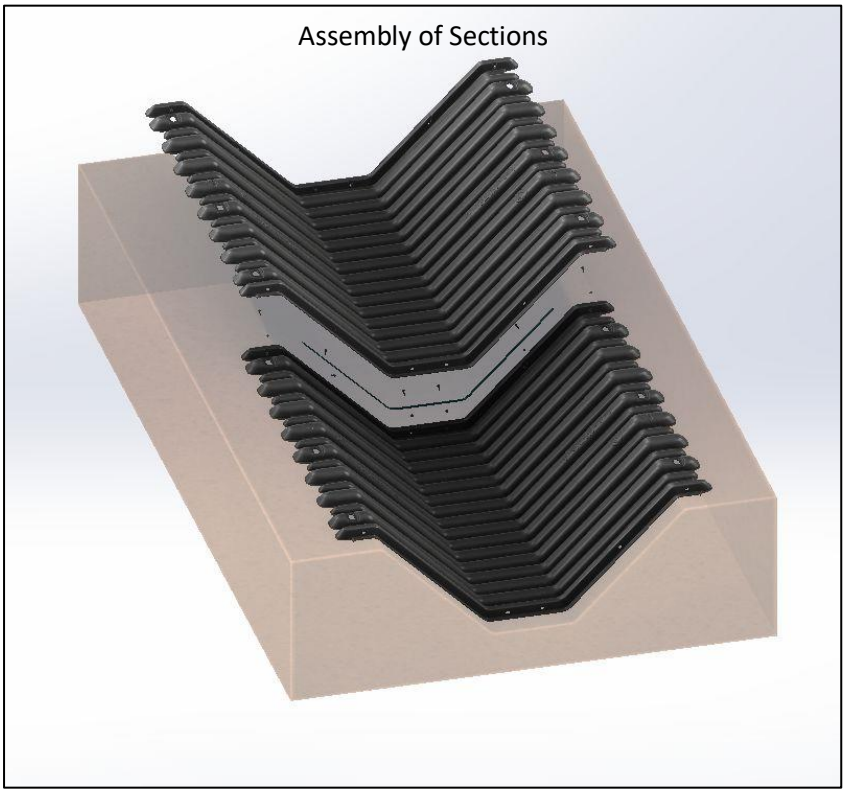
- Ramset MasterShot 0.22 Caliber Powder Actuated Tool
- Ramset 1 in. Drive Pins with Washers
- The Dewalt Hammer Drill will work along with two (2) SDS ¾” Max Ground Rod Driver Bar
- Hand Drill(s)
- Wire Cutters (Provided with Platypus Anchors)
- Rubber Mallet (Secure ALD Cap to Anchor Plate)
- OSI Max Sealant
- Anti Seize Lubricant
- Drive Rods for Anchors (Provided with Platypus Anchor System)

Note: OSI Max Sealant, Anti Seize Lubricant, Ramset Tool, and Concrete Pins are **NOT INCLUDED** in assembly kits and are to be purchased by contractor or owner.

- Set the parts alongside or inside ditch/channel.
- From survey stationing provided in survey if available, start installation of sections at the end or downstream of the ditch/channel.
- Place the first section with the female end of section terminating on the concrete apron. Flow arrow will be pointed downstream.
- Secure liner to concrete apron with ram set tool and pins.
- Place a thick OSI max sealant bead on edge of liner and concrete to prevent water from flowing under the liner section.

Step 1: Installation of Liners

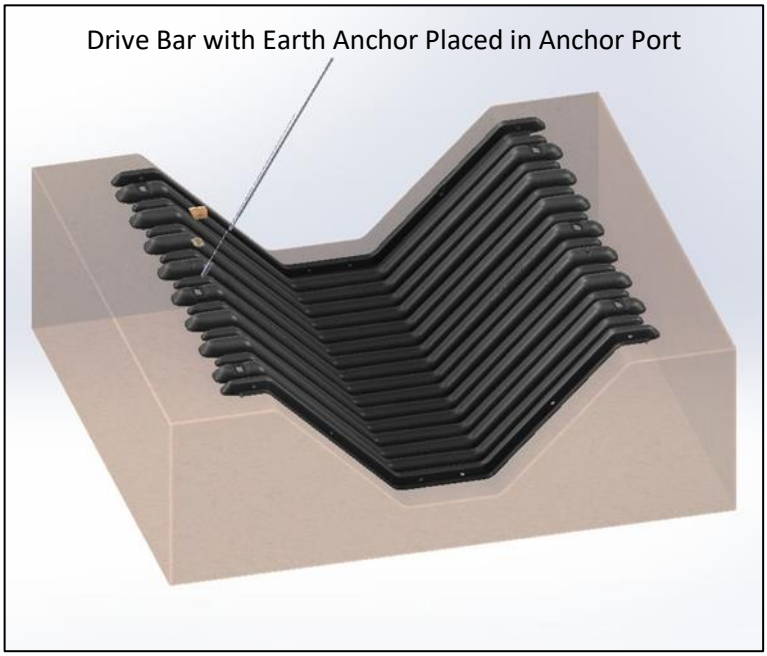
- Once end piece is secure continue to install liners (straight or outlet) sections by placing the hydrophilic gasket on the formed groove of the female end corrugation of each section that is facing upstream thereafter. Secure gasket to formed grove with 3M adhesive. Ensure formed groove is free of dirt and debris to ensure gasket does not slip or move and is secured in place.
- Place the next section with the male end downstream on top of the female connection having the hydrophilic gasket, Place a bead of OSI Max in the twelve (12) Rivnut ports around the inside perimeter and secure mechanical connection with the (12) twelve 5/16" x 1-1/2" bolts and 5/16" washers with 3" x 2" x1/4" HDPE Port Caps at all the mechanical connection ports on both side of corrugation. Ensure that each riv-nut is coated with Anti-seize lubricant before insertion of 5/16" x 1-1/2" bolts with 5/16" washers and HDPE Caps. Hand tighten bolts then torque with hand drill. Do not over tighten.
- Once all liners have been installed secure the last section to the upstream concrete apron and ramset in place. Place thick a OSI Max bead on the edge of liner and concrete to prevent water from flowing under the liner section.



Step 2: Anchor Liner to the ground

Place and earth anchor on each end and both sides of the liner. Insert driving rod into earth anchor. Then place anchor and rod into the liner anchor port hole.

- Drive earth anchor with demolition hammer drill while holding the 3/32” stainless steel cable against driving rod. (Driving Rodes supplied in installation kits)
- Drive earth anchor a minimum of 24” into the ground. Pull up 3/32” stainless steel cable to set earth anchor until tight and anchor is secure and not pulling up through the earth.
- Pull cable up to set earth anchor and insert 3/32” wire through middle hole in the anchor plate.
- Push anchor plate to secure to the liner section anchor port.
- Slide wire keeper until it is pushed firmly against the top of the anchor port plate simultaneously pushing the top of liner apron down to minimize gap from bottom of liner apron to final grade of the top of ditch bank.
- Cut excess above wire keeper.
- Place cap over anchor plate and snap into place using rubber mallet.
- Repeat for each liner thereafter.



Installation Kit per Liner Section

Bill of Material Corrugated Large Trapezoidal Straight Section		
Name	Dimensions	Quantity per Assembly Kit
Anchor Drive Rods	NA	2
Anchor Cap	NA	6
Anchor Plate	NA	6
Mechanical Connection Port Cap	3"x 2"x 1/4"	12
Hydrophillic Gasket	.787" x .19" x 64"	1
Connection Bolts	92240A587 5/16" X 1-1/2" - 18 THD LG Hex Head McMaster Carr	12
Washer	91090A111 5/16" Dia. McMaster Carr	12
Earth Anchor	Platipus Anchor Assembly – S2 ARGS 1M, (550 Lbs. Ultimate Holding Capacity) A Platipus S2 aluminum anchor with 3' (~1 meter) of 3mm stainless steel tendon, 3mm self-setting wedge grip.	6

Maintenance Guide

Annual Maintenance Plan for American Leak Detection (ALD) Open Channel Flow Lining System:

1. Visual Inspection:

- Perform a comprehensive visual inspection of the HDPE lining system, including the channel walls, joints, and any associated structures.

- Look for signs of damage, such as cracks, abrasions, or bulges, and note their locations for further evaluation.

2. Cleaning:

- Clear any debris, sediment, or vegetation that may have accumulated on the HDPE lining system or within the channel.

- Use appropriate equipment, such as pressure washers or hand tools, to ensure thorough cleaning without causing damage to the lining.

3. Leak Checking at Mechanical Joints:

- Conduct annual leak verification to identify any potential leaks due to lose bolts and HDPE washers in the HDPE lining system mechanical connection and tighten if loose.

4. Structural Integrity Assessment:

- Evaluate the structural integrity of the HDPE lining system to ensure it can withstand the hydraulic and environmental loads and ensure erosion control mats are intact and no undermining of the installed lining system from stormwater runoff.

5. Repair and Maintenance:

- Promptly address any identified damage, leaks, or structural issues.

- Repair minor damage using approved repair materials and techniques as recommended by the ALD.

- For major repairs or extensive damage, consult with ALD for guidance and assistance.

6. Vegetation Control:

- Implement measures to control vegetation growth within the channel and surrounding areas. Do not implement burning as a method of weed control.

- Regularly remove any vegetation that could potentially damage the HDPE lining system or impede flow capacity.

7. Monitoring and Documentation:

- Maintain comprehensive records of maintenance activities, including inspections, repairs, and testing results.

- Regularly monitor the performance of the HDPE lining system and compare it against design criteria or performance indicators.

8. Training and Awareness:

- Provide appropriate training to personnel involved in the maintenance of the HDPE lining system, ensuring they are knowledgeable about its specific requirements.

- Raise awareness among staff regarding the importance of proper maintenance practices and the early identification of issues.