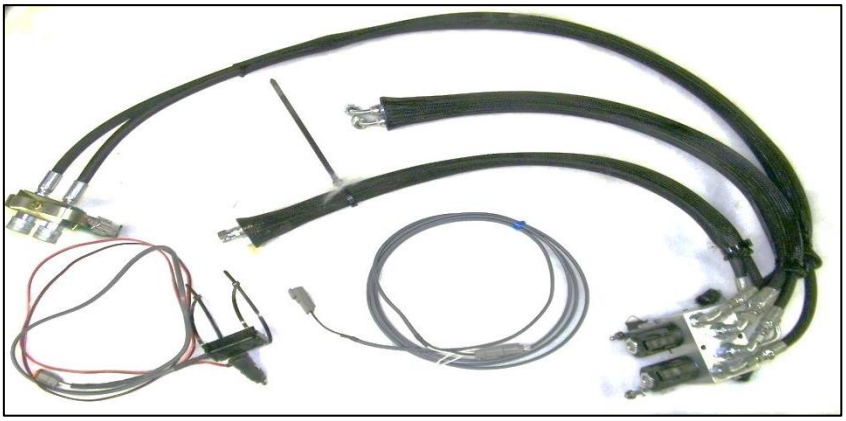
INSTALLATION & OWNER'S MANUAL

HYDRAULIC DIVERTER KIT

P/N: HDK-LA340–PTL & APP

(fits Kubota LA340 loaders)



An electrically operated hydraulic valve system to divert hydraulic fluid from the loader dump/curl circuit to a forward auxiliary connection for loader attachments, requiring momentary hydraulic power, such as the Artillian Grapple, Hydraulic Plow, etc.

Approximate Installation Time
Experienced Dealer Technician – 2 Hours
Average Dealer Technician – 4 Hours
Do-It-Yourself – 6 Hours

Approximate Product Specifications
Weight: 12.0 lbs.
Max. Pressure: 3,000 PSI

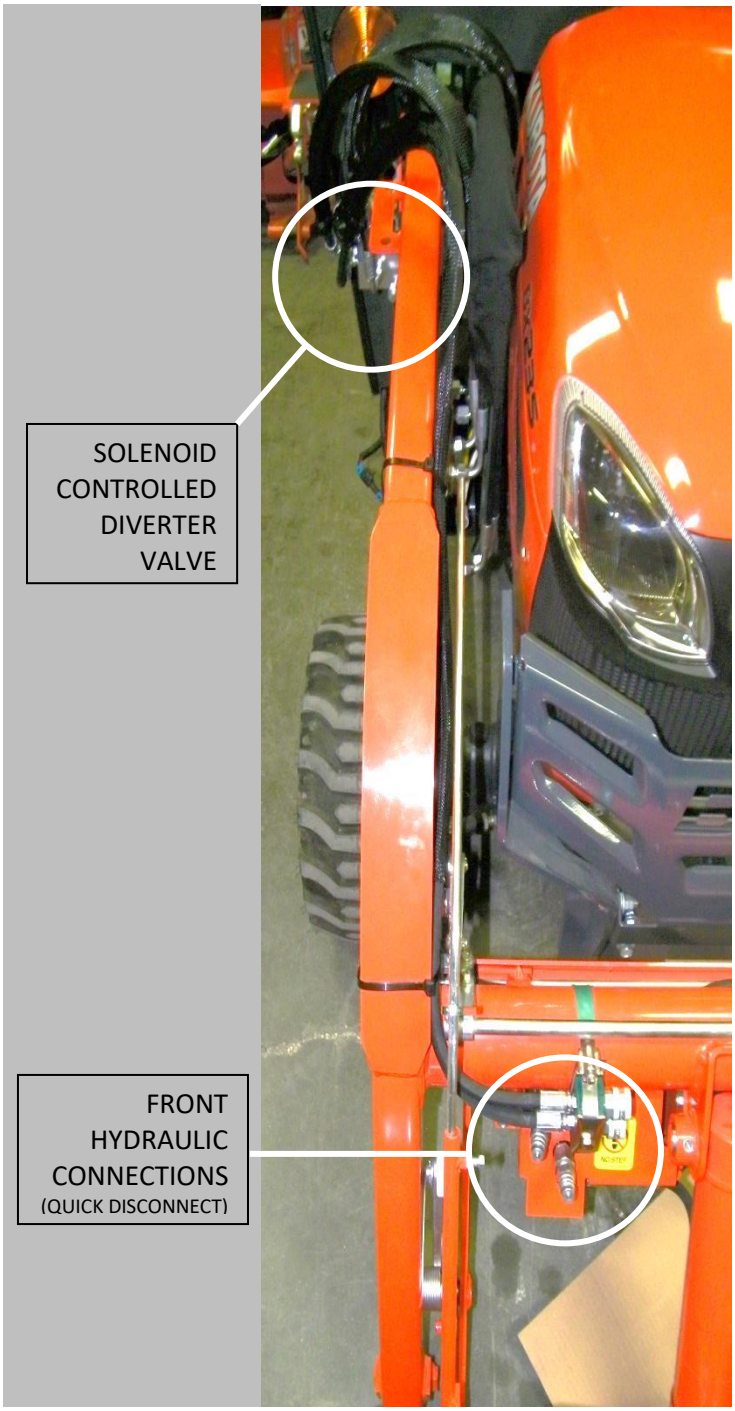
Register your new product quickly online at **Artillian.com/product-registration/**

Artillian encourages all customers to register their Artillian products. However, failure to do so will not diminish right to warranty. Curtis Industries does not sell or share your information with anyone else.

Download a digital copy of your installation instructions online at **Artillian.com/literature/**

Artillian strives to continuously improve our products, technical documentation, etc. Therefore, the installation manual for this product may have been updated after your product was packaged. The latest revision of the installation manual can always be found at the website above.

The contents of this envelope are the property of the owner. Leave with the owner when installation is complete.



Installation Overview

- Remove factory dump/curl hoses from loader
- Install the diverter valve on the loader
- Install new hydraulic hoses on loader
- Install the joystick switch & wiring harnesses
- Connect to a 12V power source

Tools Required

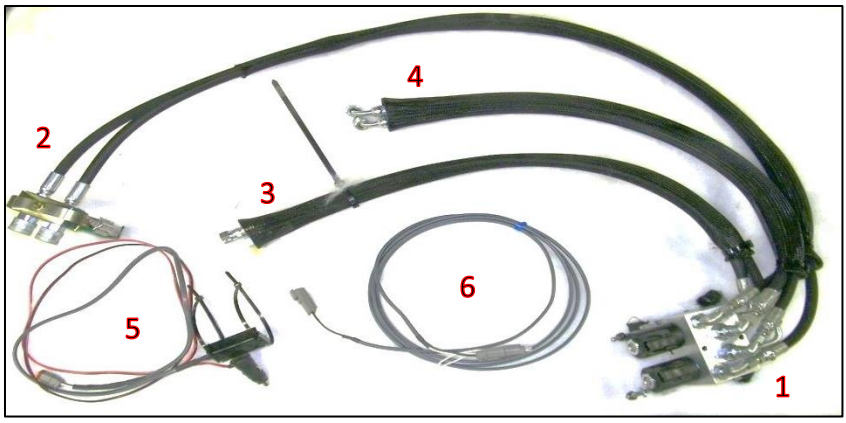
Open end wrench assortment, 7/16” thru 7/8”
Adjustable wrenches (optional)
SAE socket set (optional)
Flat screwdriver
Pliers
Cut off pliers
Absorbent rags and/or drain pan
Electrical wiring tools (for pigtail kits)
Electrical Tape (not provided)

Valve Specifications

Maximum Valve Flow: 10 GPM
Maximum Pressure: 3000 PSI
Solenoid Voltage: 12 VDC
System Current Draw: 4 Amps Max

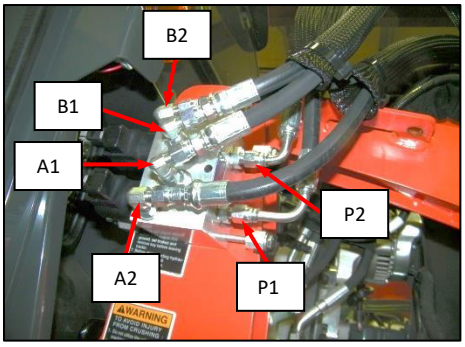
Contents

1- Hydraulic Diverter Valve with Edge Clamp Mounting System
2- Gang of 2 Hoses with Front Manifold
3- Gang of 2 Hoses with Solenoid Wire Harness
4- Gang of 2 Hoses to Loader Arm
5- Actuator Switch Harness & Power Cable, with pigtail leads or aux power plug (depending on kit)
6- Intermediate Wire Harness
7- 24” (or longer) cable tie, 6 (not shown)
8- 11” cable ties, 4 (not shown)
9- 8” cable ties, 18 (not shown)
10- 4” cable ties, 11 (not shown)
11- QD dust plug, yellow (not shown)
12- QD dust plug, black (not shown)

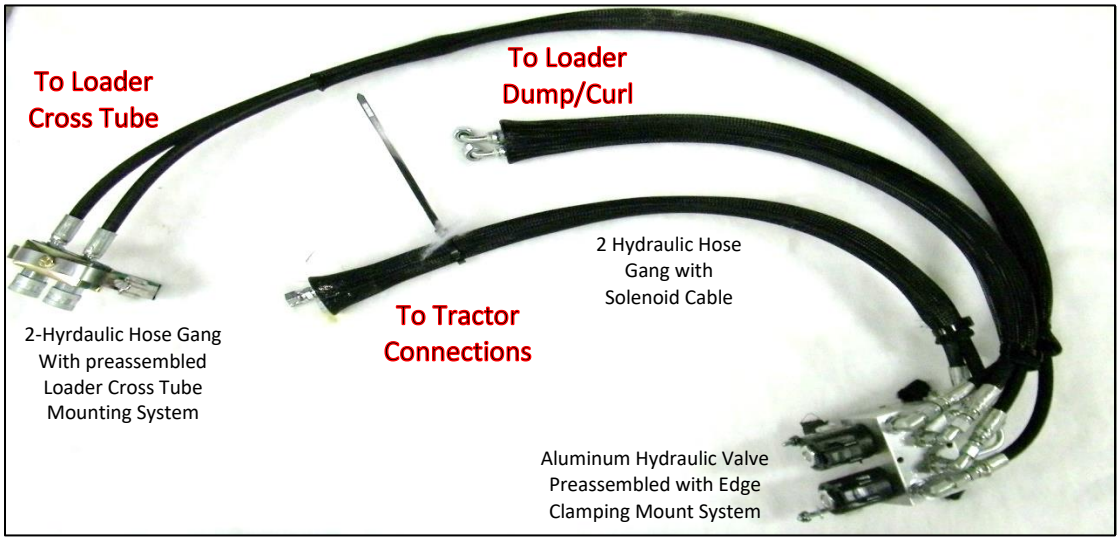


Hydraulic Connections

Valve Port P1- Tractor
Valve Port P2- Tractor
Valve Port A1- Loader “curl” hard line
Valve Port B1- Loader “dump” hard line
Valve Port A2- Loader front QD manifold (Black plug)
Valve Port B2- Loader front QD manifold (Yellow plug)

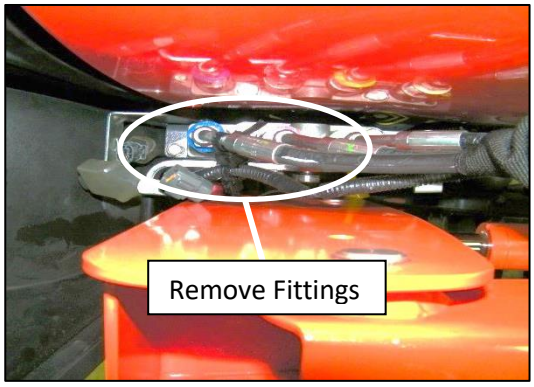


Hydraulic Connection Overview



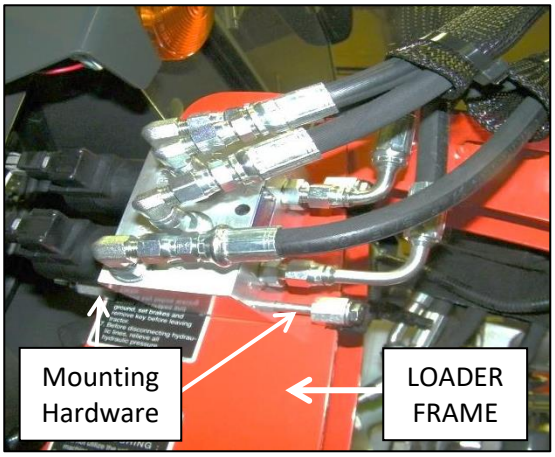
Installation

- **Remove the factory dump/curl hoses (the existing loader hoses fitted with red or blue indicators.)**



1. Turn off tractor. Settle loader to the ground. Actuate all hydraulic controls to relieve hydraulic pressure throughout the system.
2. Locate the 4 hydraulic quick disconnect housing on right side of the tractor and follow hoses to connections on loader arm.
3. Place an absorbent rag and/or basin beneath the hose connections to catch hydraulic fluid. Some will escape!
4. Using wrenches, carefully and slowly separate Blue and Red hose connections on the loader arm. **DO NOT TO BEND, TWIST, OR OTHERWISE DEFORM THE ALUMINUM HARD LINES.**
5. Using wrenches separate the Blue and Red hose connections from the quick disconnect housing on the tractor.
6. Adjust disconnected lines to drain as much fluid out of them as possible, fittings can be covered with bags to collect any remaining fluid and protect debris from getting into fittings.
7. Use zip-ties to secure removed fittings, be sure to keep them away from any moving parts, and not to bend, twist, or deform any aluminum hard lines.

- **Install the "Hydraulic Valve with preassembled Edge Clamp Mounting System"**



1. Loosely install the Diverter Valve on to the right side of the loader frame using the Edge Clamp Mounting System. The valve should be mounted on the **OUTSIDE** of the loader frame, in location noted to the left. The two black solenoids should face the **REAR** of the tractor. Slide the valve body toward the **FRONT** of the tractor on the shafts. You only need to get the valve to hold onto the loader frame arbitrarily for now, it will likely have to move up or down during installation.

- **Install the "Gang of 2 Hoses with Solenoid Wire Harness"**

1. Attach the 2 hoses to the diverter valve, matching the numbered tags. Tighten the connections being sure to orient the elbows so that the hoses will clear the bracket on the loader arm when routed over the arm and connected. **DO NOT OVERTIGHTEN.**

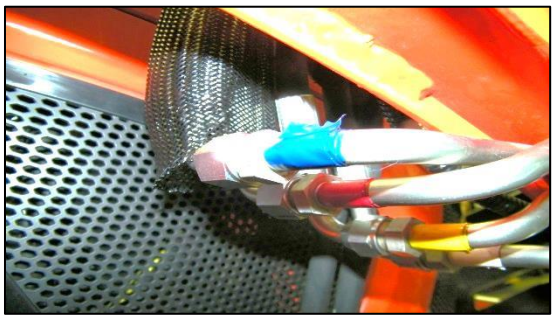
2. Route the Solenoid Wire Harness plugs across the valve and insert the two electrical connectors into the two solenoids on the diverter valve until the locking tabs engage. Be sure that wire harness is clear of all moving parts to keep from being damaged.
3. Route hoses over the loader arm and towards the quick disconnect housing, and connect to the open hydraulic ports matching the tags, tighten with open wrenches. **DO NOT OVERTIGHTEN.**
4. The electrical connector should be positioned for convenient access. This is the system disconnect when detaching the loader. Adjust position as needed.
5. Slide the diverter valve up or down on the loader mast until the hoses are given the most clearance over the loader arm for when it is lifted fully. **SLIDE THE VALVE BODY TO THE FRONT OF THE TRACTOR ALONG THE MOUNTING SHAFTS.**
6. Tighten the valve body Edge Clamp Mounting System. **TIGHTEN ONLY UNTIL IT HOLDS THE VALVE BODY FIRMLY IN PLACE. OVERTIGHTENING WILL CAUSE BENDING AND MAY DAMAGE THE SOLENOIDS.**

- **Install the "Gang of 2 Hoses with Front Manifold"**

1. Locate the "Gang of 2 Hoses with Front Manifold". Open the band clamp of the front manifold enough to pass it around the loader front cross tube with the two hoses directed toward the side of the loader with the diverter valve. Set the manifold on top of the protective cover of the loader cross tube similar to how it is shown in the photo.
2. Insert the tail of the mounting clamp into the screw housing. Take up excess length, but leave it very loose.
3. Route the hoses up the loader arm, avoiding any pinch points and any moving parts that may damage them.
4. Using a few 24" cable ties, secure the hydraulic hoses to the loader arm in multiple places to keep the hoses in the desired path. **LEAVE THEM LOOSE SO THE HOSES ARE FREE TO SLIDE UP OR DOWN. ROUTE THE HOSES SO THAT THEY WILL NOT GET BOUND OR PINCHED BY ANY OF THE MOVING PARTS ON THE LOADER ARM.**
5. Route the hoses over the top of the loader arm and connect the 2 hose fittings to the diverter valve fittings by matching the labels. Tighten each fitting fully as you go. **DO NOT OVERTIGHTEN.**

6. Making your way back down the loader arm, straighten and align the two hoses leading to the front, tightening the cable ties and clipping off the excess as you go. Perform this all the way down to the Front QD Manifold.
7. Install 24" cable ties on the loader cross tube as needed to secure the hoses to the cross tube.
8. Tighten the Front QD Manifold clamp until the Manifold is firmly secured on the loader cross tube. **DO NOT OVERTIGHTEN.**

- **Install the "Gang of 2 Hoses to loader arm"**

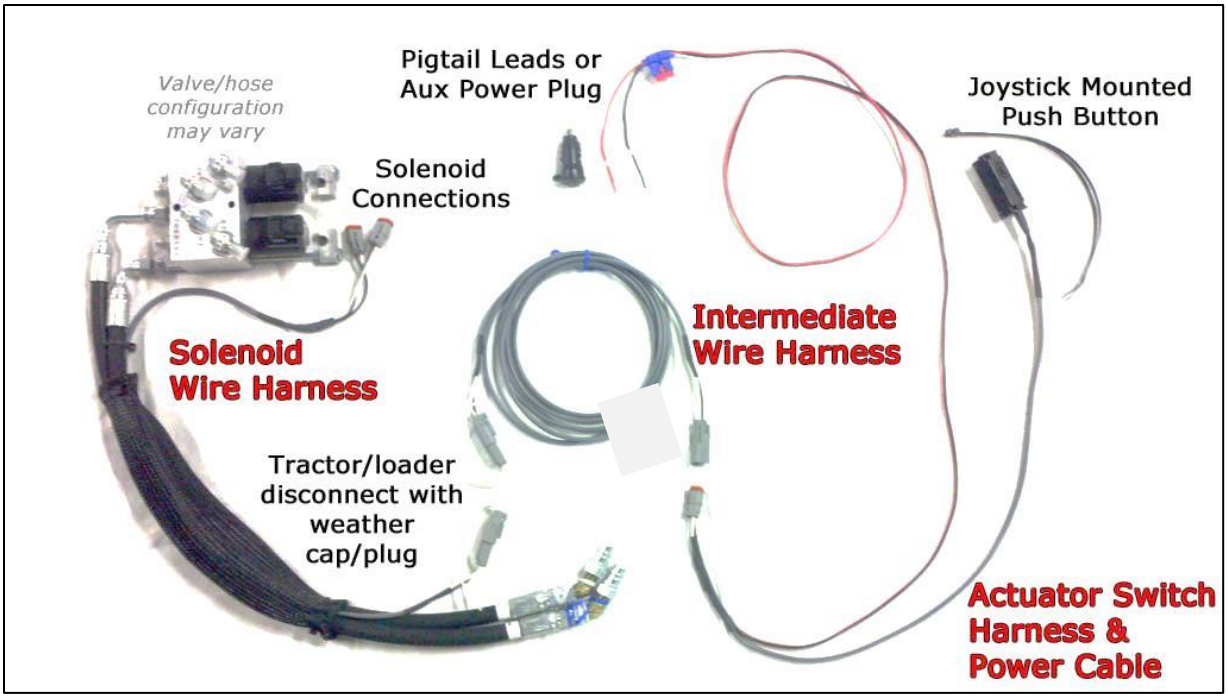


1. Connect the new dump/curl hoses to ports on the diverter valve fittings matching the labels. Observe which hard line serves the **CURL** end of the cylinders (the **LOWER** port on the cylinder) and the **DUMP** end of the cylinder (the **UPPER** port on the cylinder).
2. Route hoses over loader arm and towards hard lines, as shown in picture to the right.
3. Starting with the **RED** of the two *hard lines in the stack*, match the labels on the hoses to the appropriate hard line. Be sure to tighten these fittings securely. **DO NOT TWIST OR BEND THE LOADER HARD LINES.**
4. Smooth out all hose protectors to maximize length then secure ends with cable ties. Trim excess cable tie.

THE HYDRAULICS ARE NOW INSTALLED. YOUR INSTALLATION SHOULD LOOK SIMILAR TO BELOW

Now is a good time to clean everything, start the engine, and check your connections. Run the loader through all of its functions, raise and lower, curl and dump. Lift your loader all the way up and observe the new hoses to make sure nothing is being stretched or kinked. When dumping and curling the loader, observe the moving parts attached to the loader arms. Be sure nothing is pinching the new hoses going to the Front QD Manifold. Check your hydraulic fluid and replace as necessary.

Electrical Overview



NOTE: Your kit has one of the following 3 switch configurations. Mount your switch to your loader joystick per your discretion. Suggested guidelines are provided below.

The 3 configurations shown below from left to right are:

1) Rectangular plastic housing/switch assembly with black button.
2) Rubber switch without a plastic housing.
3) Square plastic housing with red button.

1 2 3

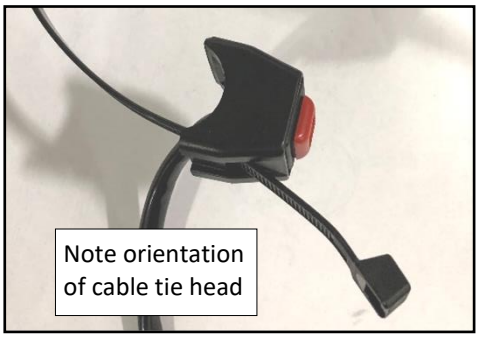
Attach configuration 1 to the joystick using two cable ties thru the provided openings near the ends of the plastic housing (see below left). If your joystick has a bend close to the knob, such that the plastic switch housing will not fit, depress the 4 tabs on the plastic housing to open it, exposing the rubber switch inside. Discard the plastic housing and mount the rubber switch (configuration 2) with two cable ties located close together as shown below and to the right.

Plastic housing/switch assembly

Rubber switch w/o a plastic housing

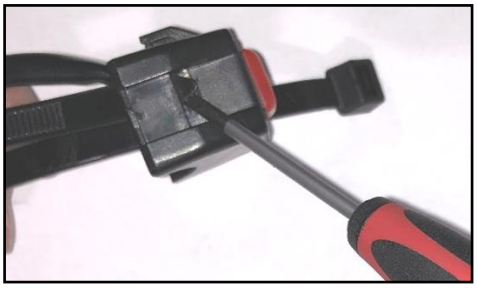
For suggestions on mounting configuration 3 (the square plastic housing with red button), see the next page.

- **Install the Joystick Switch and Switch Cable**



1. Note where build-up might be needed to support the switch housing. Using electrical tape, cut strips to length and roll it around the joystick base.
2. Insert a large cable tie through the slot on the side of the switch, from the switch side with the head facing the switch. Feed the cable tie through the slot on the other side of the switch to form a loop in the cable tie.

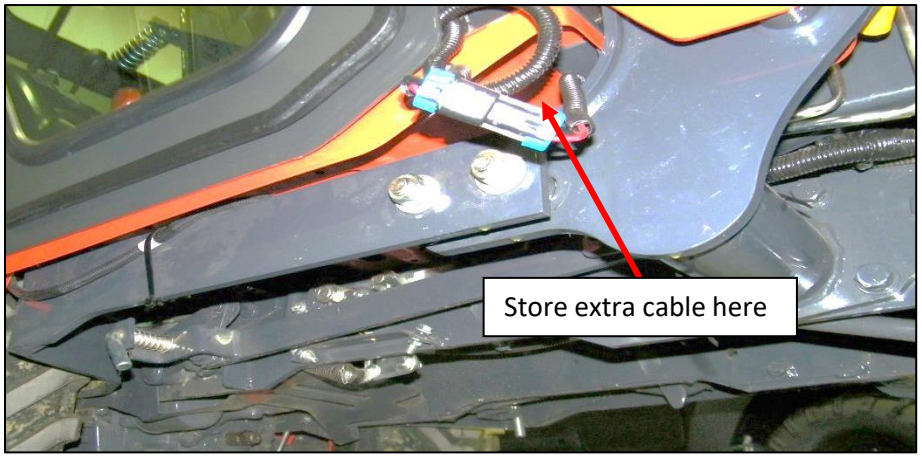
NOTE: A small screwdriver may be needed to start the tip of the cable tie through the slot.



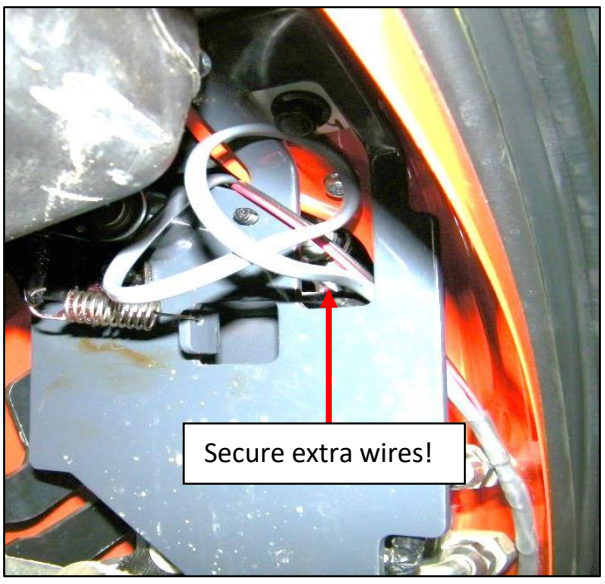
3. Place the switch over the tractor joystick, orient as desired then pull the cable tie loop tight until the switch won't fall but may still be rotated. Do not trim ties!
4. Feed wire harness through opening at the base of the joystick.
5. Sit on the tractor seat and orient the switch to the desired position for your comfort. Loop the free end of the cable tie back around the joystick shaft, opposite the switch. Feed the end through the cable tie head and pull tight. Trim the excess from the cable tie.
6. Using the 4" cable ties provided, secure the Switch Cable to the joystick shaft all the way to the bottom of the joystick shaft. Tighten and trim the cable ties once satisfied with fit.

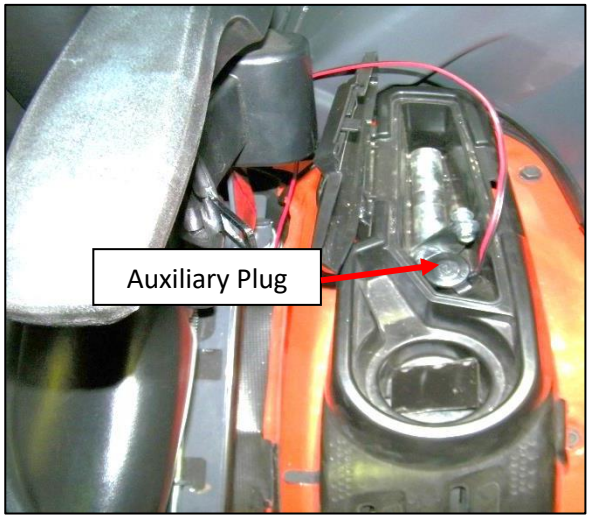
- **Install the Intermediate Cable and Connect to a 12V Power Source**

Remaining electrical routings are left up to your discretion. Here are a few points to mention:



1. The Intermediate Cable is used to connect the Switch Cable to the Solenoid Cable. It should be routed under the tractor operator station. Once the connection is made, any excess cable can be bundled up and fastened in a safe place under the floorboard using cable ties.
2. You may need to remove some of the covers from the operator station to determine the best path for the wiring.
3. It is critical to remember that wires must not encounter moving parts. While performing the installation, it may be helpful to have someone actuate pedals and levers to observe what interferences may exist.
4. Use cable ties to help keep wires away from any moving parts, such as the SCV linkage, as shown below.
5. The diverter valve solenoids require 4 amps of electrical current at 12VDC. The power wire is protected by a 10 amp fuse. If your kit has an aux power plug, an 8 amp barrel fuse is in the plug.
6. If your diverter kit has the optional auxilliary power plug, wherever the Switch Cable passes through the tractor body, the power wire should branch off and be routed externally to the auxilliary power port on your tractor.





System Operation

The loader dump/curl circuit functions normally when the joystick push button is not depressed. Dumping and curling your loader should behave exactly the same as before the diverter system was installed.

When the joystick push button is depressed, instead of fluid traveling to the loader dump/curl cylinders, the electric solenoids will redirect the fluid to the Front QD Manifold. Something needs to be attached to the Front QD Manifold for the diverter system to demonstrate functionality. Otherwise, the tractor hydraulics will simply "dead head" and open the tractor's internal pressure relief valve.

When an attachment is connected to the Front QD Manifold, whenever you **BOTH**, A) Press the joystick push button, **AND**, **B**) move the joystick to the left or right, fluid will be diverted to the Front QD Manifold and to your attachment **WHILE** you continue to press the button. If you release the joystick push button at any time, fluid flow will return to the normal dump/curl functionality.

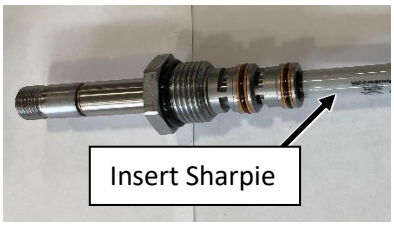
When using your tractor with the diverter valve, it is best to **NOT** engage the joystick push button **WHILE** fluid is moving through the valve. It is best to either curl/dump your loader **OR** divert to the Front QD Manifold.

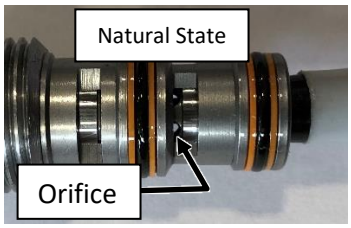
Congratulations and Thank you for choosing Artillian!

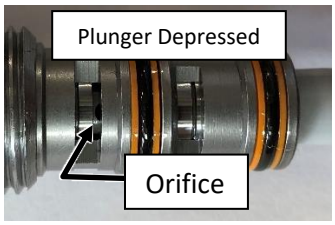
Troubleshooting

Small dirt particles and debris can cause the hydraulic valves to stick and not function properly. Below are the steps to troubleshoot this problem. The whole process should take around 10 minutes or less.

1. Disconnect the power connector from one of the valves and press the joystick button (with tractor key in “ON” position if wired to OEM fuse block). You should hear an audible click.
2. Repeat for the opposite valve. No sound could mean the valve is stuck.
3. Once the malfunctioning valve is identified, remove the valve from the valve block. 7/8” and 1” wrenches required. You may want to reinstall the solenoid onto the valve and energize while it is out of the valve block to confirm malfunction.
4. Manually depress the plunger by inserting a fine point sharpie marker (or equivalent) into the end of the valve. Observe the orifice moving from the far groove to the near groove.







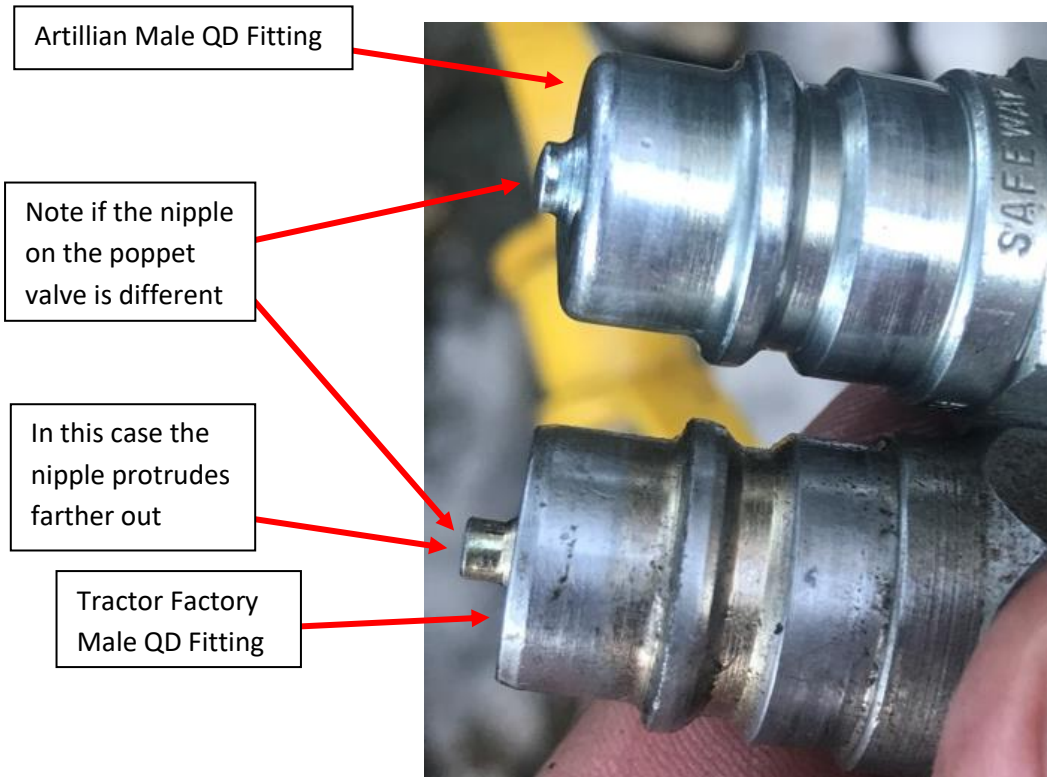
5. Depress the plunger several times. If it is sticking, gritty, or stuck, spray the internal components of the valve with WD40 and/or compressed air to dislodge the debris.
6. Clean the valve, then lubricate with fresh hydraulic oil.
7. Reinstall the solenoid onto the valve and energize to confirm functionality.
8. Reinstall into the valve block and test for functionality. Repeat on the other valve if required.

Continued on the next page.

The male quick disconnect (QD) fittings on the Artillian Hydraulic Diverter Kit P1 & P2 hoses may not engage properly with some OEM female quick disconnect fittings. This could allow fluid to flow into the hydraulic hoses, but not return to the tank on the tractor. Symptoms may include:

- Grapple (or other attachment) opening / closing for a short period of time and then "locking up"
- Grapple not functioning at all
- Tractor dump / curl operation working for a short period of time and then "locking up"
- Tractor dump / curl operation not functioning at all

1. Compare the male QD fittings from the Artillian HDK P1 & P2 hoses with the male QD fittings on the original dump / curl hoses removed from the tractor.



2. If the nipple on the tractor factory QD fitting poppet valve protrudes farther out then it does on the Artillian QD fitting, then the Artillian HDK kit may not function properly.
3. Remove the male QD fittings from the Artillian P1 & P2 hoses and from the tractor factory dump / curl hoses.
4. Replace the male QD fittings on the Artillian P1 & P2 hoses with the male QD fittings removed from the tractor factory dump / curl hoses. Reattach the P1 & P2 hoses to the appropriate female QD fittings on the tractor.
5. The grapple (or other attachment) and the tractor dump curl functions should now be working properly.

Warranty

Artillian, LLC warrants to the original purchaser that this product will be free from defects in material and workmanship for a period of **90 days** from the date possession taken by the original purchaser for use with Artillian hydraulic products and used as intended and under normal service and conditions for personal use. If not purchased for use with Artillian hydraulic products (e.g. Grapple, Plow Adapter, etc.), the warranty period is limited to **30 days**.

Finishes (coatings, labels, & decals) are not inclusive. Artillian, LLC reserves the right to inspect items claimed to be defective in material or workmanship. Artillian LLC's obligation under this warranty is limited to repair or replacement with a nearest similar part.

This Warranty will not apply to any part or product which in Artillian LLC's judgment shall have been misused or damaged by accident, abuse, misapplication, fire, negligence, or lack of normal maintenance or care, or which has been altered or repaired in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed.

Artillian, LLC's obligations under this warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, including implied warranties of merchantability and fitness for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the product warranted. In any event, liability on behalf of Artillian LLC is limited to the original purchase price.