

APPLICATOR

OPERATING INSTRUCTIONS



Hooking Up and Initial Setup

1. Hook applicator up to your tractor
 - a. Ensure that your tractor hitch and the applicator hitch are compatible.
 - i. For 3-point applicators, ensure that pins are in the correct position, and of the correct size to securely attach to your tractor.
 - ii. For pull-type applicators, ensure that drawbar pin and applicator hitch are compatible.
 - b. Carefully back under your apparatus to align pins with quick hitch or 3-point arms. The top link of your 3-point may need extended or retracted to properly hook up to the applicator.
 - c. Insert 3-point pins into arms, or raise quick hitch to hook up to the bar. Ensure that all locking mechanisms, clips, or pins are in place and properly set prior to moving the tractor.
2. Ensure that all tractor hydraulics are in the neutral position, and not activated. Route hydraulic hoses to desired ports on your tractor, and hook up ensuring they are properly seated.
3. Puck swing pipes require a case drain line to be hooked up to the tractor. Consult your tractor's Operator's Manual to locate the case drain port. If the case drain port does not have a hookup compatible with your Puck swing pipe, consult your tractor dealer to obtain the proper fitting. Failure to properly plumb the case drain line will result in swing pipe failure.
4. Test hydraulic system
 - a. Ensure that all objects and persons are completely clear of the area of the applicator, as well as the complete range of swing of the swing arm
 - b. Remove any locking mechanisms (if equipped)
 - c. Test each hydraulic function individually. Note that equipment new from the factory may have air trapped in hydraulic system, and may move erratically. Cycle hydraulics until movement is controlled.
 - d. Some Puck swing pipes are configured with separate hydraulics for your pig shooter gate, and others combine the main gate and the pig shooter gate on the same hydraulic loop. If you have separate hydraulic hoses and a stainless-steel pig shooter gate, they are separate. If there is only one set of gate hoses and a brass pig shooter gate, they are plumbed together.
 - e. If your pig shooter gate is plumbed with your main gate, the following settings are possible
 - i. Powering the valve controlling the gates open will cause both gates to open.
 - ii. Powering the valve controlling the gates to close will close the main gate, but will not cause the pig shooter gate to move.
 - iii. Floating the valve controlling the gates will cause the pig shooter gate to close, and the main gate to remain in its current position.
 - f. Brass gates are opened with a hydraulic cylinder, and close with a spring. They will open when given a command to open, and close automatically when there is a lack of hydraulic pressure to keep them open. Stainless steel gates must be powered in both directions.

****Steps 5 and 6 are only necessary when using a Tractor Mounted Swing Pipe that is independent of the applicator.****

5. Set the upper limit on your 3-point to prevent the swing pipe from colliding with your applicator in the up position.
 - a. Retract the hydraulic cylinder on your swing pipe to orient the swing pipe directly behind the tractor.
 - b. Raise the 3-point of your tractor until the upper most point of the applicator (likely the distributor motor) is 8" to 12" below the swing pipe.
 - c. Follow the Operator's Manual for your tractor to set the high limit to this location.
 - d. Raise and lower your 3-point a couple times to ensure the setting is as desired.

6. Hook up hose from the swing pipe to the applicator. (If your applicator is not equipped with a Puck Z-Pipe, please arrange your own method for transporting liquid from the swing pipe to the applicator).
 - a. Locate an 8" coupler set, a short piece of 8" lay flat hose, associated clamps, and a tape measure.
 - b. Install coupler ends, one on the applicator Z-Pipe inlet, and the other on the swing pipe outlet.
 - c. Raise the applicator to the fully up position (with the 3-point limit set).
 - d. With the Z-pipe on the storage stand, rotate the inlet joint so that the inlet is pointing directly at the outlet of the swing pipe.
 - e. Using tape measure, measure how long your hose will need to be, from the far side of your coupler collar on the Z-pipe side to the far side of the coupler collar on the swing pipe side.
 - f. Add 4 inches, and cut your short hose at this length.
 - g. Remove coupler ends from the swing pipe and Z-pipe and install on the hose.
 - h. Install your new hose between the Z-pipe and swing pipe
 - i. Raise and lower your applicator to test. If properly sized, your Z-pipe should lower close to, or slightly touch the storage stand with the applicator fully up, and should not come close to over-centering with applicator fully down. If too long, the hose will be prone to kinking off flow when you raise up on the end rows. If too short, the Z-pipe will be in danger of over centering into your tractor when the applicator is lowered in the field.
 - j. If necessary, re-cut your hose and test again until proper fit is found.
7. Set the draft angle of the applicator as you pull it through the field
 - a. Find a location where you can run your applicator in the field prior to hooking a hose up to set your draft angle.
 - b. On level ground, lower your applicator into the soil and pull until it is at desired tillage depth.
 - c. While at depth, check the angle of your applicator. The top frame of the applicator should be approximately level to the ground when at desired operating depth.
 - d. Adjust your draft angle as necessary.
 - i. Return applicator to solid ground, and follow your tractor's Operator's Manual to adjust to top link of the 3-point as necessary.
 - ii. Return to step a. above, and repeat until you have reached desired draft angle.

Operating in the field

1. Hook up the drag hose to the end of the swing pipe using a clamp designed and intended for this purpose
2. Prior to accepting flow to the tractor, understand the operation of your swing pipe. There are 4 potential settings for the valve in your tractor that controls the main cylinder on your swing pipe. Consult your tractor Operator's Manual to understand how to activate these settings.
3. Always be sure that the complete swing radius of the swing pipe is clear of objects and people prior to activating hydraulics.
 - a. Cylinder Neutral
 - i. Your valve in the neutral position will cause the main cylinder to remain in whatever position it was most recently commanded to.
 - b. Cylinder Float
 - i. Floating your cylinder is a critical part of correctly operating your swing pipe.
 - ii. As you pull hose through the field, you want your swing pipe to be able to trail behind you as it needs to. Activating float on the valve controlling your main cylinder will allow the swing pipe to trail properly.
 - iii. You will have this valve in float for a majority of the time when operating your swing pipe.

- iv. Puck swing pipes have a hydraulic relief in place so that if you forget to place your cylinder in float, it will protect itself. However, this is not for operation, it is a safeguard. Relying on this relief will lead to damage to either the hose or the swing pipe itself.
- c. Cylinder Retract
 - i. Retracting your main cylinder will attempt to move the swing pipe directly behind your tractor
 - ii. Retracting your cylinder may be used in the following situations
 - 1. During road travel, retracting your cylinder causes it to trail behind you.
 - 2. After a turn around, once you are back in line for your pull you may want to briefly retract your cylinder to line your hose back up behind you so it does not 'cuff' over as you begin your pull.
- d. Cylinder Extend
 - i. Extending your main cylinder will cause the swing pipe to swing to the side, in whichever direction it can do so most freely.
- 4. As flow is approaching the tractor, ensure that your swing pipe is in float.
- 5. It may be necessary to open the pig shooter gate when receiving the initial burst of flow, so that the very heavy initial plug coming through the system does not enter your distribution system
- 6. Once consistent flow has arrived, close your pig shooter gate and move through the field on your first pass, matching your ground speed to what is necessary for the flow rate you are receiving.
- 7. When making turn arounds, raise your applicator out of the ground.
- 8. Ensure that you never use the bumpers on your swing pipe to pull hose during a turnaround, as this will cause swing pipe failure. Back up if necessary, to prevent pulling hose in this manner.

Shooting the Pig

1. When shooting the pig, it is important to receive the pig with a minimum of 100 yards (approximately a half piece) of straight hose behind your tractor, and your swing pipe directly behind you. Failure to do so can cause a very dangerous situation for the equipment, as well as the operator of the tractor, as approaching air will cause erratic movement of the hose.
2. As the pig approaches, the flow rate measured in your tractor cab will increase quickly. When this happens, open your pig shooter gate and prepare to receive the pig.
3. Once the pig has arrived, close the pig shooter gate on the swingarm to trap the air in the hose.
4. With the air trapped in the hose, straighten out the hose as much as possible to allow it to be more easily picked up by the person rolling hose.
5. If the air compressor has not already been shut down, ensure that is done now.
6. Once you are in the location where the hose will be unhooked, re-open the pig shooter gate to exhaust all the air from the system. Do not exit the cab of the tractor until all air has exhausted and the hose lays flat in the field.
7. Prior to unhooking the hose, ensure that your swing pipe is no longer in float so that unhooking the coupler doesn't cause the swing pipe to swing freely.
8. Exit the tractor and unhook the hose from the swing pipe.
9. Upon getting back in the tractor, open all gates on the applicator and swing pipe to ensure that fluid is drained from the system.

Revision History

Revision Number	Date	Equipment Line	Comments
1	5/10/2019	Applicator	Initial