K-LINE IRRIGATION
NORTH AMERICA

Installation & Operation Manual

for K-Line Pod Lines and Feed Lines

For additional resources, or to access this manual digigally, visit www.K-LineNA.com/installation

Installation & Operation Manual

for K-Line Feed Lines and Pod Lines

Prior to following these instructions, the underground portion of your K-Line system should be complete; including water source, pump, risers (hydrants) and power supply.

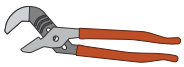
Instructions for the installation of the above ground portion of the K-Line Irrigation system:

STEP 1: View the K-Line Installation Video

Please review the K-Line Installation video on our website to become familiar with the K-Line system. It is found on the *Installation* page of our website at www.K-LineNA.com

STEP 2: Tools Required for Installation


Adjustable pipe wrench


Large channel lock pliers


Rubber mallet

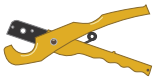

Ratchet wrench

#13 metric deep socket


Socket extension(s)


Teflon tape


Cordless drill


1½" to 2" poly pipe cutters (or hacksaw)


Water

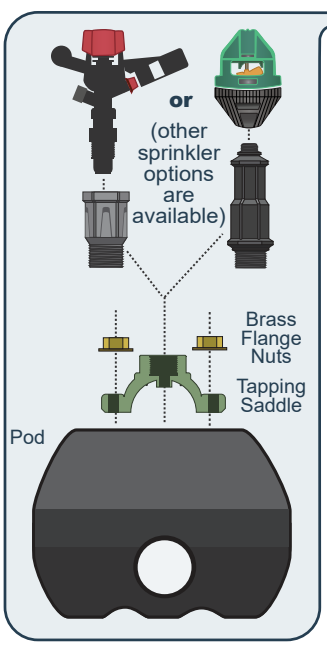

Measuring wheel or 100 ft. tape(s)


9/16" Spade bit w/limiter

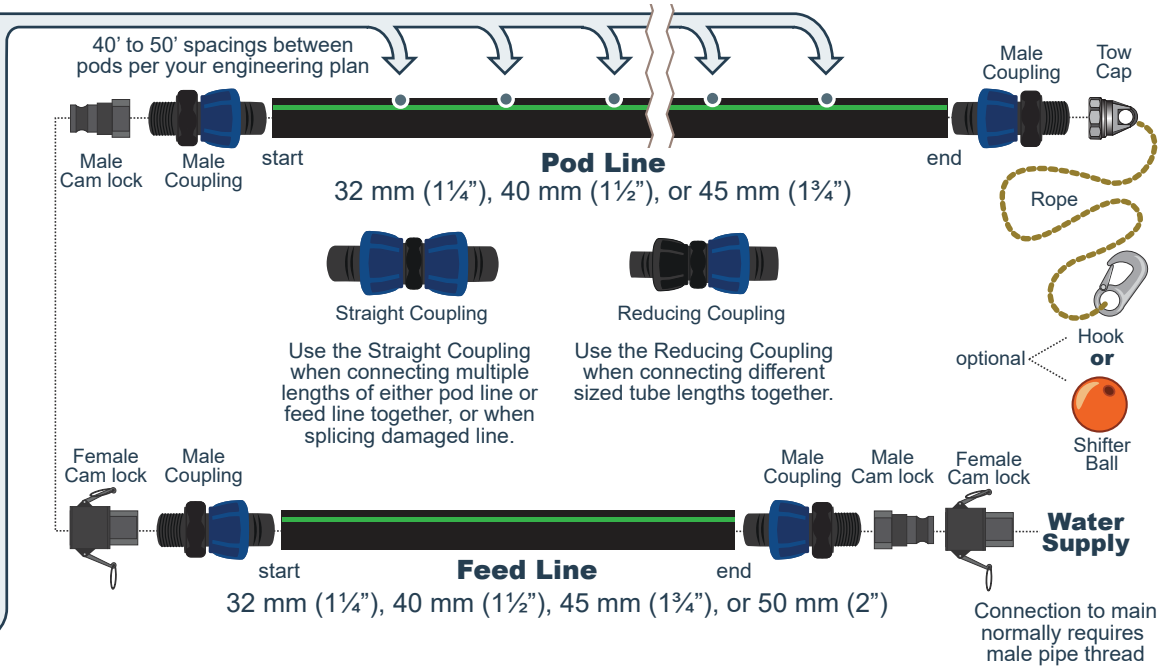

Marker flags **(optional)**


1 1/16" & 1 1/8 wrenches **(optional)**

STEP 3: K-Line System Overview



Pod Set Up



STEP 4: Review Your Engineering Plan

The Engineering Plan will often be an aerial/satellite photograph or government drawing. Become familiar with the Plan and identify variations from one part of the system to another. Take note of:

- **the number of K-Lines and Feed Lines used**
- **the size(s) of the tubing on each K-Line**
- **the number of pods on each K-Line**
- **the types of sprinklers and nozzle sizes used**
- **the size of the tapping saddles**
- **the spaces between sprinklers/pods**
- **the length of K-Lines and Feed Lines**
- **the location of each K-Line**

STEP 5: Identify System Components

Identify and become familiar with the K-Line Irrigation components – a list of options and K-Line components with pictures can be found in the catalog located in the *Product Resources* section of our website. Consider the location(s) where you will be constructing the K-Lines. It saves time to collect and group together materials for specific areas of the installation prior to layout and construction of the K-Lines.

Hint: K-Line Male Couplings and quick-connect cam fittings can be pre-assembled in a work shop more easily and efficiently than in the field. If Tow Caps and Male Couplings are pre-assembled, they should be **hand tight** only, because the Tow Cap will be removed later to flush the system.

STEP 6: Lay Out Marker flags

Location, Location, Location - Building each K-Line in the area that it will irrigate is often inefficient (much more time is spent moving materials, tools, and personnel with this method). It is much more efficient to build several K-Lines in one (or a couple of) layout area(s) with easy access to several areas that the K-Lines will irrigate. The layout area should be long enough for the longest K-Line to be constructed in that part of the system, has easy access, in mowed or short pasture, and is free of obstructions and livestock interference.

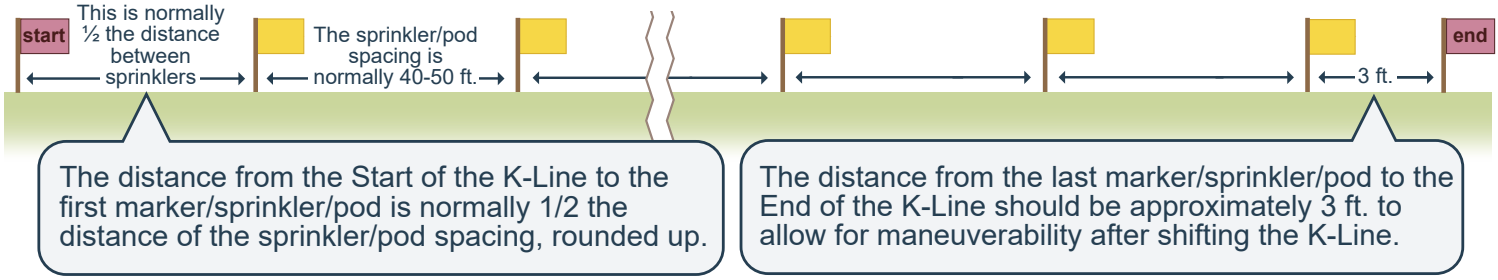
In installations where there are multiple fences, waterways or other obstacles, it is important to plan ahead on how you will get the Pod Lines and Feed Lines from the layout area(s) to their initial placements. In many situations it is best to have multiple layout locations.

Placing pod and tubing Markers

After consulting the Engineering Plan:

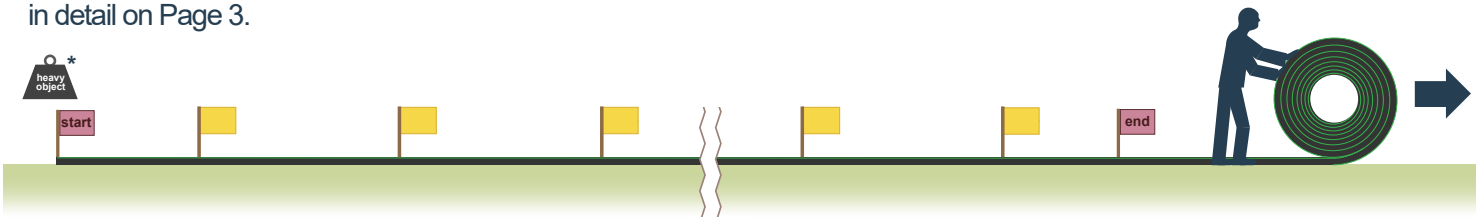
- Use a measuring wheel or measuring tapes to place markers according to sprinkler/pod spacing for the K-Line(s) to be constructed; and
- Use different markers to mark the “start,” and “end” of the K-Line.

NOTE: When K-Lines have the same length and sprinkler/pod spacing, multiple K-Lines can be assembled side by side to save time. Completed K-Lines can then be moved to their areas of service.



STEP 7: Tubing and Pod Placement

A **Single tube Installations:** Some K-Lines may require only one, or a portion of one roll of tubing. See the illustration below. Sliding on pods, connecting two lengths of tubing together, and attaching fittings at the start and end of the K-Line are covered in detail on Page 3.



DO NOT ALLOW IT TO TWIST!
Caution, when rolling out the line by hand, be sure to use the process indicated in the picture. This will eliminate line twist. The green line(s) on the tubing should be in the up position the entire length of the line.

***Hint:** It helps to place a heavy object on the ends of the K.PIPE® when rolling it out to keep the tubing in place and prevent it from rolling up behind you. The tubing will relax once rolled out and allowed to sit in the sun.

B **Multiple tube installations:** An Engineering Plan will often call for the use of more than one size of tubing (i.e. 40 mm and 32 mm, or 45 mm and 40 mm) in one K-Line, or for multiple coils of the same size in one K-Line.

For example: an Engineering Plan may call for a 480' K-Line that is 10 pods in length with a 50' spacing between pods, 25' of tubing before the 1st pod, and 3' of tubing after the last pod - for a total tubing length of 478'. This K-Line may be a combination of 45 mm and 40 mm, all 40 mm, or a combination of 40 mm and 32 mm depending on sprinkler output.

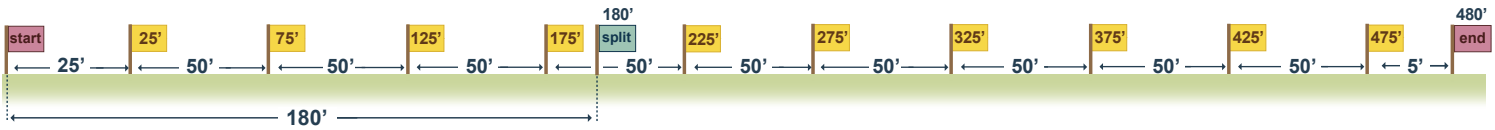
The following procedure should be used when any two lengths of tubing (same, or different sizes) need to be connected together with a Straight or Reducing Coupling. A tow vehicle and Spool-out Reel are invaluable time savers in a K-Line installation involving multiple K-Lines of more than 5 or 6 pods (but are not absolutely required). The steps below use language for connecting two different sizes of K-Line tubing but are applicable to connections using both Straight and Reducing Couplings.

C Consult your Engineering Plan for the K-Line length and the number of pods / tapping saddle sizes on each length of tubing (if applicable).

Double check that the number of pods matches the number of markers that you placed in **STEP 6**.

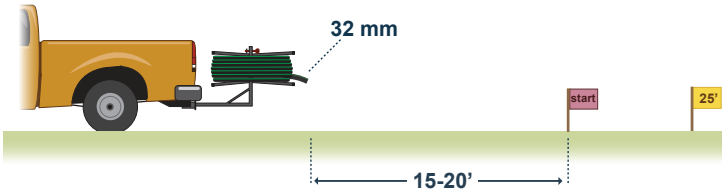
D **Mark the transition point:** Use a flag to mark the point where the two tubes will be joined together. An Engineering Plan will generally specify how many pods on what sized tubing, and how long each length of tubing will be. The marker's distance from the starting point should be equal to the length of the second section of tubing (often the smaller section, both in length and diameter).

For example: If the plan above calls for 6 pods on 300 ft. of 40 mm tubing followed by 4 pods on 180 ft. of 32 mm tubing, the marker should be 180' from the Start of the K-Line; as illustrated bellow.

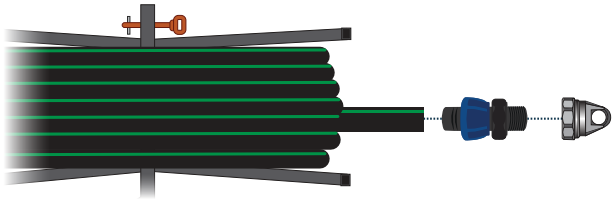


NOTE: When connecting two lengths of tubing, be sure that the connection will not fall within 3' of a pod.

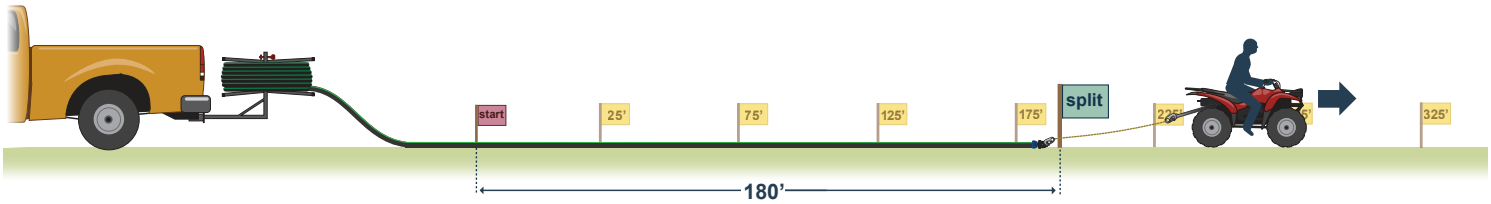
E A tubing jenny, or similar device, should be placed 15 - 20' in front of the Start of the K-Line. This should be loaded with the 2nd section's tubing (32 mm in this example).



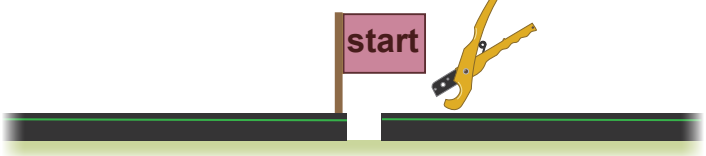
F Attach a Male Coupling to the tube and hand tighten a Tow Cap to it. See page 6, **STEP 10A** for coupling installation instructions.



G Using a rope attached to a hook, connect the rope to the tow vehicle and the hook to the Tow Cap. Begin pulling out the smaller tubing until the Tow Cap at the end of the smaller tubing reaches the flag at the transition marker (180' in this example).

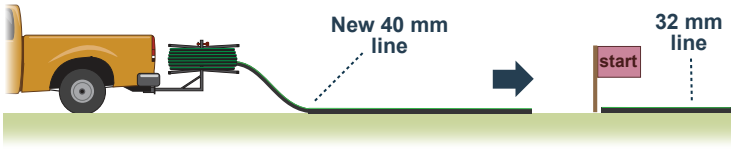


H Cut the tubing at the Start flag using 1½"-2" poly pipe cutters.

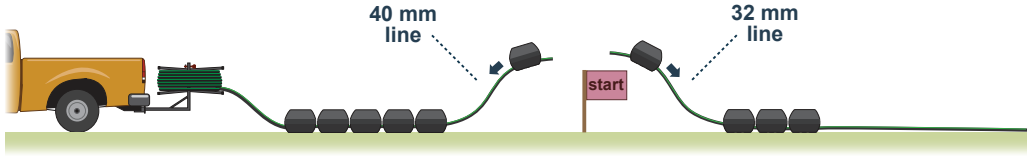


NOTE: Take care when cutting the tubing because the tubing will want to roll back on itself.

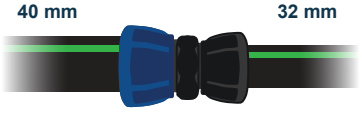
I Remove the rest of the 32 mm tubing from the Spool-out Reel. Place the new 40 mm tubing on the Spool-out Reel and pull out a length to the Start flag.



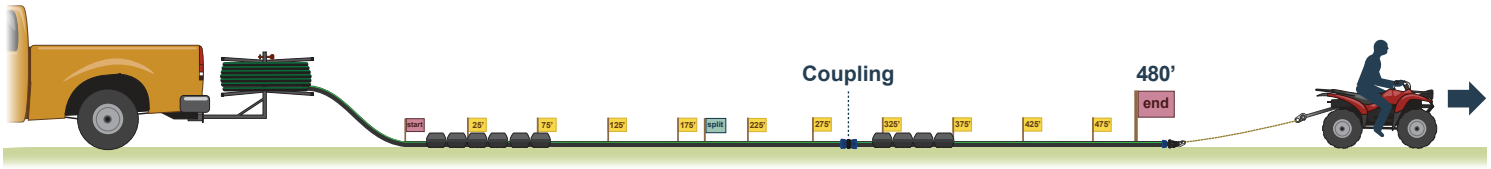
J Slide the correct number of pods onto each of the smaller AND larger size tubing. In our example, slide 4 pods onto the 32 mm AND 6 pods onto the 40 mm tubing.



K Join the two lines by installing the Reducing Coupling as depicted on page 6 **STEP 11C**.

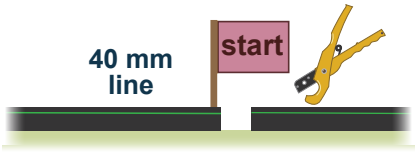


L Continue pulling the entire length of tubing with the tow vehicle until the Tow Cap reaches just past the End marker.



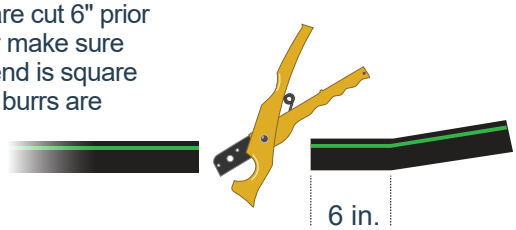
NOTE: Pulling K.PIPE® during installation may cause the tubing to stretch slightly on a hot day. The tubing will then relax and the Tow Cap end will contract back a foot or so.
If the option is available, it is always advisable to connect two lengths of tubing closer to the beginning of the line rather than near the end. While a properly secured connection is as strong, or stronger, than the tubing itself, it is better to error on the side of caution.

M Cut the tubing at the Start flag using 1½"-2" poly pipe cutters or saw. This will be the beginning of the K-Line and will require the connection of a Male Coupling and Male cam lock.
See page 6, **STEP 10A.**

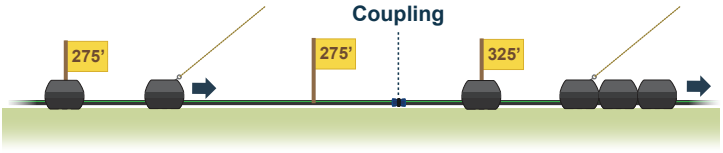


NOTE: Take care when cutting the tubing because the tubing will want to roll back on itself.

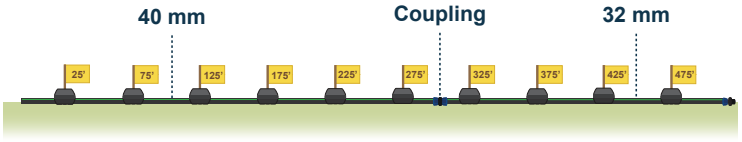
N When you finish unrolling a roll of tubing, there may be a kink in the tubing from when it was wound for shipping. Make a square cut 6" prior to the kink or make sure that the cut end is square and that any burrs are removed.



O Use the Tow Rope and Hook to pull all pods to the markers along both sections of the line. Unhook a pod at each marker.



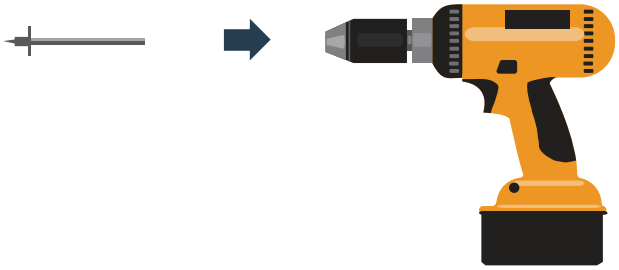
P All markers should now have a pod beside them.



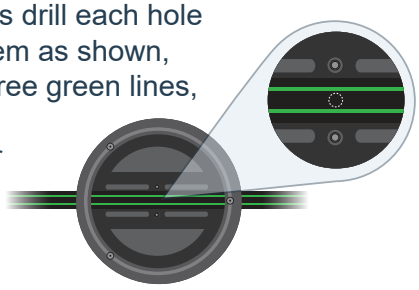
Repeat this process for all K-Lines in your system.

STEP 8: Tapping Saddle Installation

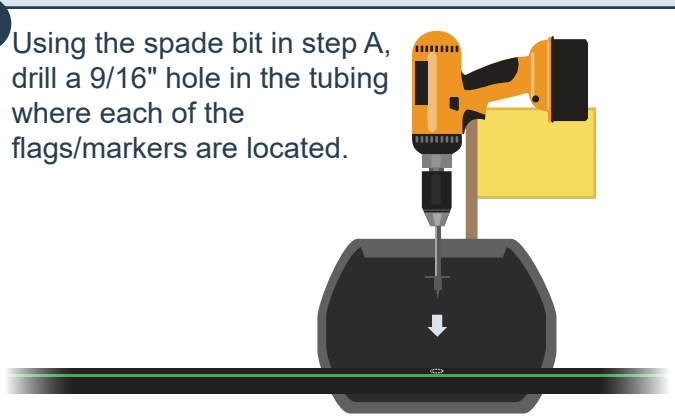
A Install the K-Line 9/16" spade drill bit with limiter into a cordless drill.



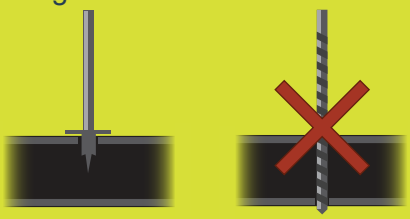
B There may be between 1 and 3 green lines on your tubing. If you have a single green line, drill tapping saddle holes right in the middle of the line. If you have two green lines drill each hole directly between them as shown, here. If you have three green lines, drill holes in the middle of the center line.



C Using the spade bit in step A, drill a 9/16" hole in the tubing where each of the flags/markers are located.

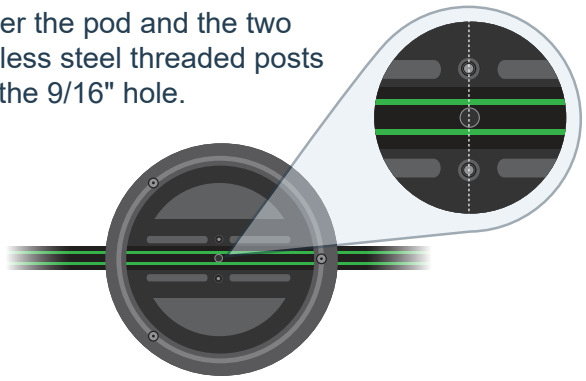


D **Caution: Do not use a 3rd party drill bit.**
The K-Line Bit includes a depth limiter to prevent the bit from being inserted too deeply and puncturing the opposite tubing wall.

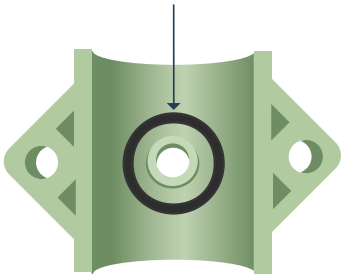


After drilling, remove the tubing chaff from each hole.

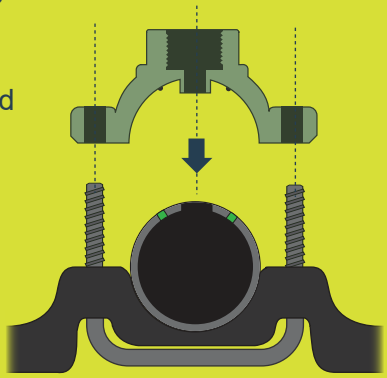
E Center the pod and the two stainless steel threaded posts with the 9/16" hole.



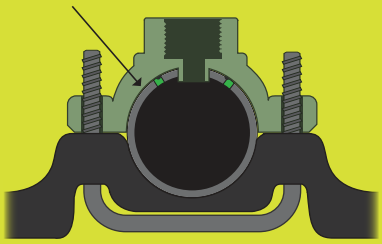
F Make sure that the rubber O-ring is in the groove on the underside of each K-Line Tapping Saddle.



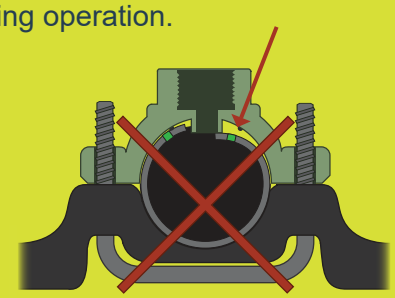
G ⚠ Push the K-Line tapping saddle down over the threaded posts and be certain that the nipple on the underside of the tapping saddle is inserted into the 9/16" hole.



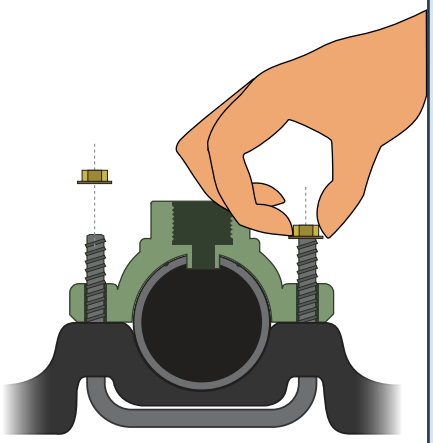
The K-Line tapping saddle should sit snugly over the tubing without a gap.



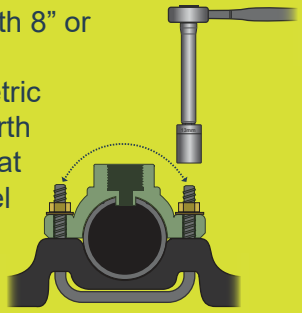
A gap might indicate that you are pinching the tubing on either side of the hole causing water to spray out into the pod during operation.



H Hand tighten an 8 mm brass flange nut on each threaded post. At this point, it is important to only hand tighten to the surface of the Tapping Saddle.



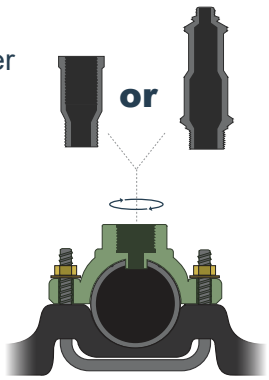
I ⚠ With a 13 mm socket (with 8” or longer extension) and ratchet; alternate tightening the #8 metric nuts by switching back and forth several times to make sure that the Tapping Saddle seats level and square over the K.PIPE®.



TIP: Both nuts should be tightened to the point that approximately 1/2” of the U-Bolt post is protruding from the top of the nut. 1/2” is equal to approximately 12 exposed threads. Overtightening may cause the tapping saddle shoulder to crack.

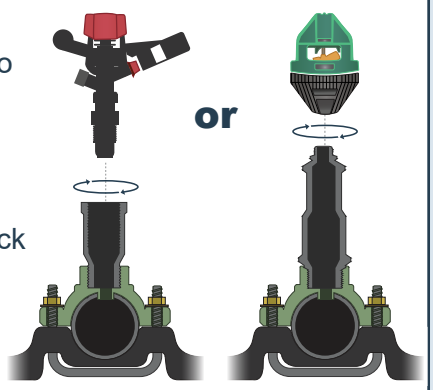
STEP 9: Sprinkler Installation

A All sprinklers require an adapter.* Hand start the adapter into the K-Line tapping saddle (careful not to cross thread). then finish tightening with an adjustable wrench or channel lock pliers.



* Your Engineering Plan may call for the adapter to be replaced with a Nelson Mini Regulator and Nelson Nipple.

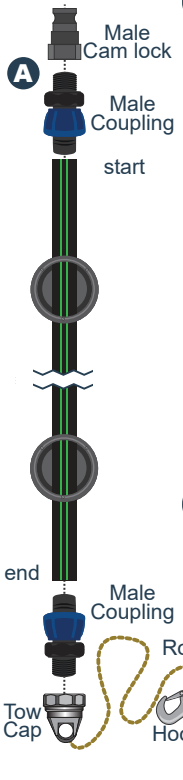
B Hand start the sprinkler into the adapter (careful not to cross thread). Finish tightening impact sprinklers with a 13/16” open ended wrench or channel lock pliers. Rotator sprinklers are firmly tightened by hand.



Repeat Steps 8 and 9 for each pod in the K-Line.

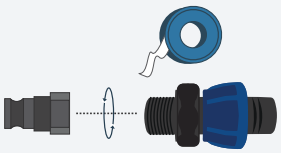
STEP 10: Adding Fittings to the Sprinkler / Pod Line

OVERVIEW



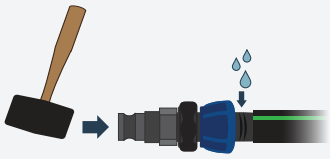
A Attach the Male Coupling and Male Cam lock to the Start of the **Pod Line**, as follows:

1. Assemble the Male Coupling and Male Cam lock together, using Teflon tape on the threads to seal the connection, and tighten with a pipe wrench and channel locks.*

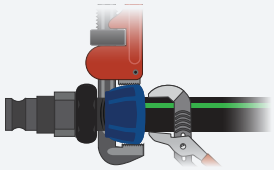


*Cam lock and Male Coupling may be pre-assembled

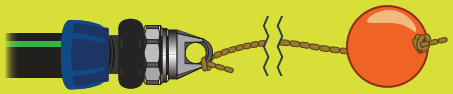
2. Moisten the barbed end of the Male Coupling with water. Ensure that the coupling's collar is screwed back against its hex-shaped neck, revealing the entire length of the barb. Drive the barb of the Male Coupling all the way into the K.PIPE® with a rubber mallet.



3. Hand tighten the collar of the Male Coupling onto the tubing, then finish by using a combination of pipe wrenches and channel locks to securely tighten the collar. This causes the barbs to bite into the interior and exterior of the K-Line tubing for a strong connection.



B Attach the rope to the Shifter Ball (or Hook) and Tow Cap. Use a sturdy knot or double knot to attach the rope to the Shifter Ball (or Hook), and then attach the rope to the Tow Cap with a sturdy knot or double knot.

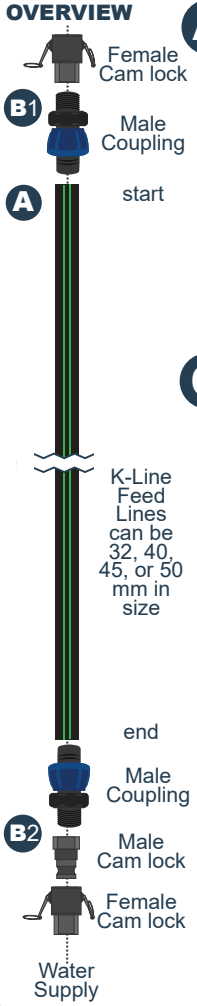


Inquire with your K-Line dealer about a Kwik Shifter dolly for fast shifting and reduced mounting and dismounting of the tow vehicle.

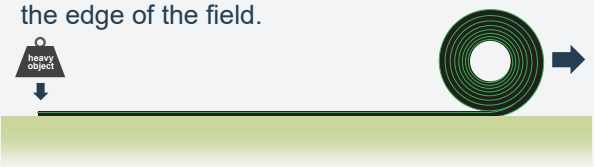
SAFETY PRECAUTION !!! When shifting K-Lines, always attach your tow rope to the drawbar of the tow vehicle. Do not attach to the storage racks or hold onto the rope.

STEP 11: Construct the K-Line Feed Lines

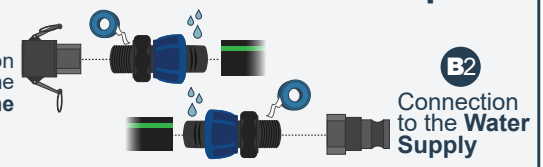
OVERVIEW



A Roll out the correct Feed Line size and length per your Engineering Plan. This is often one tubing diameter size larger than your Pod Line. The Feed Line should be at least long enough to reach from the riser in the center of the field to the edge of the field.



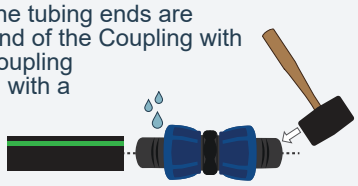
B Attach one Female Cam lock and one Male Cam lock to two Male Couplings using Teflon tape on the threads, tighten securely. Connect one set to EACH END of the **Feed Line** as depicted below following the directions described above in **Step 10A**.*



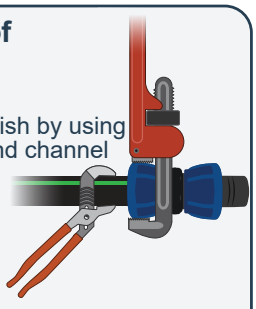
*Cam locks and Male Couplings may be pre-assembled

C In cases of damage, or when an engineering plan requires it, 2 lengths of tubing can be joined with a Straight or Reducing Coupling as follows:

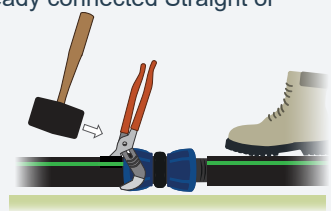
1. First, be sure that the tubing ends are square. Moisten the end of the Coupling with water and drive the Coupling into the K-Line Tubing with a rubber mallet.



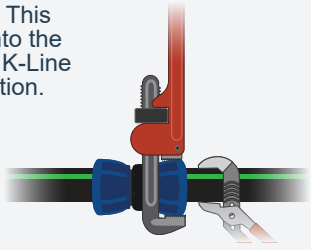
2. Hand tighten the collar of the Coupling onto the tubing, then finish by using a combination of pipe wrenches and channel locks to securely tighten the collar. This causes the barbs to bite into the interior and exterior of the K.PIPE® for a strong connection.



3. Wet and insert the unattached end of the straight or reducing coupling into the other section of tubing and place your foot (and body weight) on the tubing to hold the tubing in place. On the already connected Straight or Reducing Coupling/tubing side, place the channel locks directly behind the attached collar. Use a rubber mallet to strike the channel locks to drive the coupling securely into the unattached tubing.

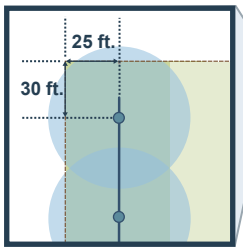


4. Hand tighten the collar of the Coupling onto the tubing, then finish by using a combination of pipe wrenches and channel locks to securely tighten the collar. This causes the barbs to bite into the interior and exterior of the K-Line tubing for a strong connection.



STEP 12: Move the K-Line Pod Lines into Position

Once the K-Lines (and Feed Lines) have been constructed, they need to be moved to the individual paddocks or areas that they are to irrigate. Use a tow rope and hook to move each K-Line and the matching Feed Line to the designated field.



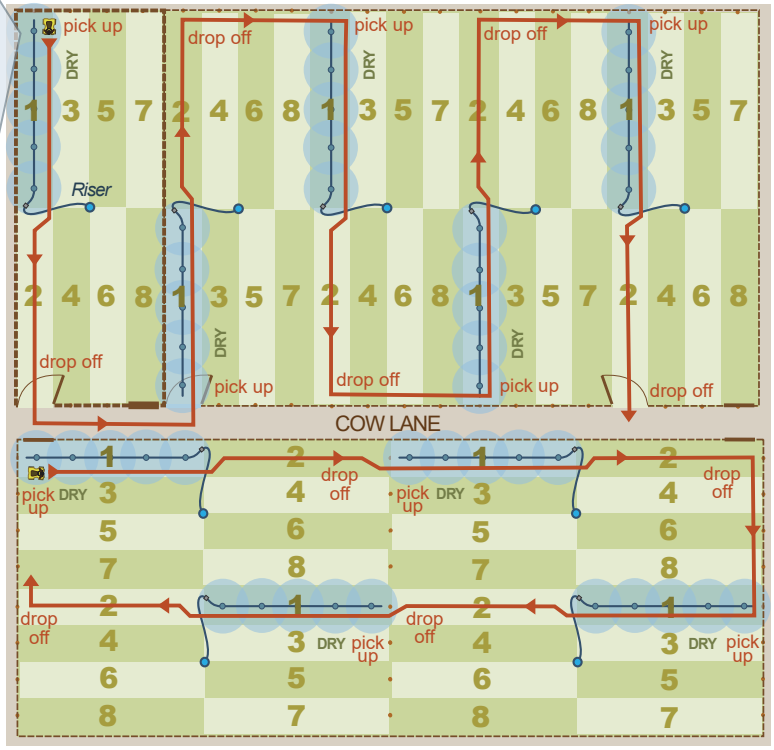
If you built each K-Line in the area that it will irrigate, see **"K-Line Shifting"** on page 8 and 9 the explanation of a **"False Cast"** on page 10 for helpful hints on how to reposition the K-Line.

If you need to move your K-Line to another field, follow these guidelines:

- Make use of lanes and fields with connecting gates.
- Plan ahead: use combinations of sharp turns while still in motion, false casts, and extremely gradual sweeping movements. The **"Resetting the System from Set 8 to Set 1," STEPS 4 – 7** on page 10, as well as **"K-Line Shifting"** on page 8, and the explanation of a **"False Cast"** on page 10 can be helpful.
- Avoid slow, medium 50 foot arc turns - it will increase the likelihood of overturning pods and twisting the tubing.
- If pods overturn, manually flip them back upright so that the green stripe(s) face up for the entire length of the K-Line.
- Sometimes it is necessary to manually straighten the line to reduce the severity of an arc.
- At fences, it is sometimes easier to unhook the K-Line, move the vehicle to the other side of the fence, then reconnect and tow the K-Line under the fence.

Place each K-Line approximately 25' (or half of the Set distance) from the fence or edge of the area to be irrigated. The end pod should be approximately 30' from the end of the area to be irrigated (as illustrated above).

Isolated Field **Open Grazing or Hay Field** *(Side by Side)*



Open Grazing or Hay Field *(End to End)*

Initial K-Line Placement and Shifting Steps

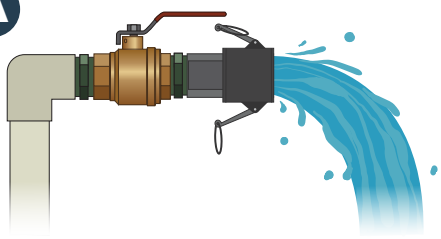
The diagram to the upper right illustrates the initial placement and the process of moving K-Lines through a normal farm operation. You now have your risers (hydrants) positioned to efficiently irrigate the field. How you initially position your K-Lines will also help you avoid excess travel back and forth across the field saving both time and money. The diagram shows the layout of three individual fields, a small "isolated" fenced in field with one line of K-Lines, an "Open Grazing or Hay Field" with 4 K-Lines above the cow lane, and another "Open Grazing or Hay Field" with four K-Lines below the cow lane.

The most efficient movement process is to position the various K-Lines in the way that allows the operator to reach the next K-Line quickly after dropping the K-Line that has just been moved. After initially placing the first K-Line in the field so that its end is up field, place the next K-Line beside it so that its end is down field as shown above the cow lane in the diagram. Continue alternating the ends of the K-Lines across the field as shown. Then when the operator moves the first K-Line to the opposite end of the field after the first watering set, it is only a short distance to the end of the second K-Line and so forth across the field. The red line on the diagram shows the path the operator would take in shifting the various sprinkler K-Lines during a normal shift process. Often, a K-Line can be moved this way in an average time of 3-5 minutes per K-Line.

The diagram below the cow lane shows the advantage of placing the K-Lines in a large open field area that is aligned end to end. The end of the second K-Line is usually sitting in line with the operator as soon as the first K-Line is dropped. This shifting process is very fast and efficient.

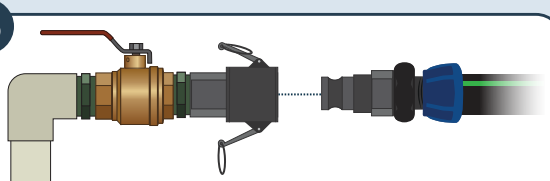
STEP 13: Flushing the Lines

A



The underground mainline and branch lines should be thoroughly flushed after installation, (but before connecting the K-Lines) to remove dirt and plastic chaff. Opening the final riser on the mainline and each of the branch lines for 10-15 minutes should be sufficient.

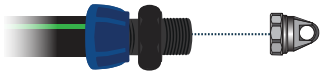
B



Connect the K-Line and Feed Line to the risers (hydrants).

C

Unscrew the hand-tightened Tow Cap from the male coupling at the end of the K-Line and put it inside the last pod to prevent misplacing it.



D

Flush each K-Line for several minutes.

E

Turn off the water and reattach the Tow Cap back into place tightly using pipe wrenches, or large pliers, and Teflon tape.

K-Line Shifting

Please also refer to our website for animations and tips that clarify how to shift the K-Line System.

Shifting from Set 1 to Set 2

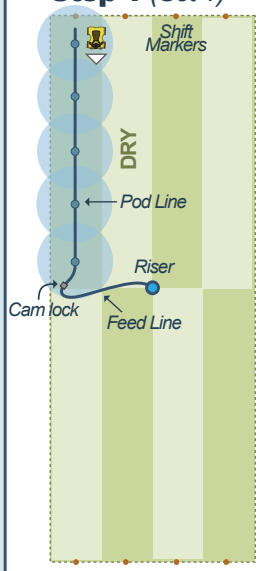
You can shift K-Line Irrigation with an ATV, heavy duty lawn tractor, golf cart, UTV, or similar tow vehicle. Shift Markers placed at the end of the fields are especially beneficial when becoming accustomed to shifting the K-Line, or in irregularly shaped fields - See the tip on page 10. The preferred method of movement is while the sprinklers are in operation. This saves shifting time and the water pressure in the K-Line tubing helps prevent kinking.

The two most important practices to follow when shifting:

1. ALWAYS Shift on the "dry" side. Always begin the shifting procedure on the dry (unirrigated) side of the K-Line. The "dry" (unirrigated) side of a K-Line is the side next to the section(s) of the field that have not been irrigated. This is opposed to the "wet" (irrigated) sections or "Sets" which have been irrigated previously. This will prevent "double loops" in the Feed Line and reduce chances that the tubing will get kinked. Please refer to the illustrations below and note that the "wet" (irrigated) and "dry" (unirrigated) Sets have been labeled.

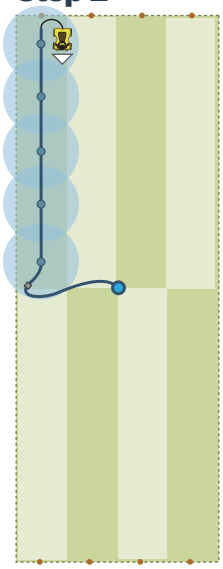
2. When connecting to the K-Line, always face towards mid-field and position the tow vehicle 6 - 8' from, and parallel to, the K-Line.

Step 1 *(Set 1)*



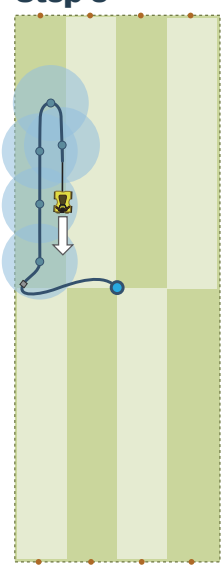
Facing the far end of the field, position your vehicle alongside and 6 - 8' away from the sprinkler/pod line.

Step 2



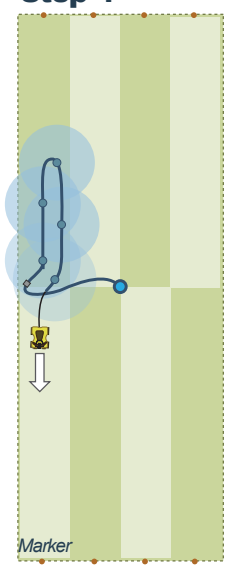
Attach the hook and rope at the end of the sprinkler/pod line to the tow vehicle.

Step 3



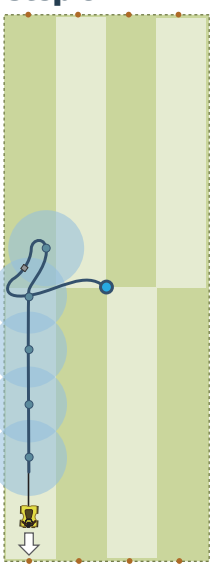
Drive along (parallel to) your sprinkler/pod line, staying within 6 - 8' of the line.

Step 4



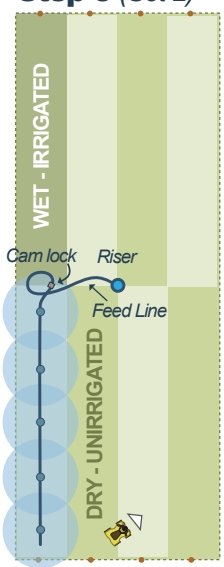
As you approach the midpoint of the zone (running over the feed line), line up with your marker at the end of the zone.

Step 5



Continue to the end of the zone and stop when the first pod is approximately 30' from the end of the zone.

Step 6 *(Set 2)*

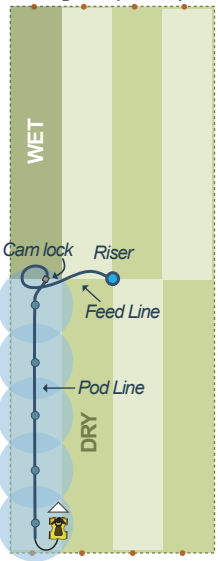


Unhook the sprinkler/pod line from your tow vehicle.

Shifting from Set 2 to Set 3

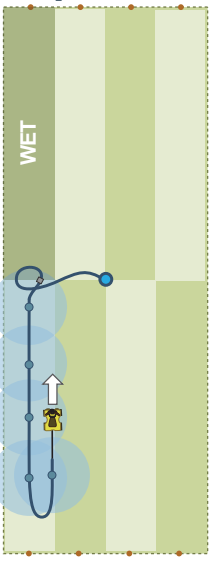
The following steps show how to move the K-Line 50' over (laterally) to the right for the next set.

Step 1 *(Set 2)*



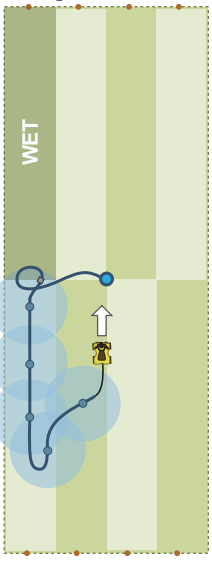
Position your vehicle as described above and hook the sprinkler/pod line to the tow vehicle.

Step 2



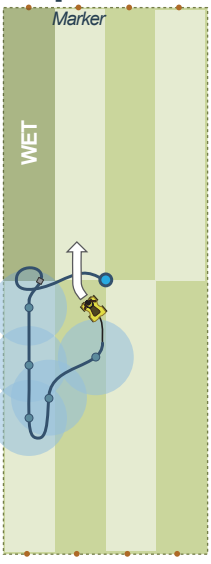
Pull straight forward until you reach the third pod.

Step 3



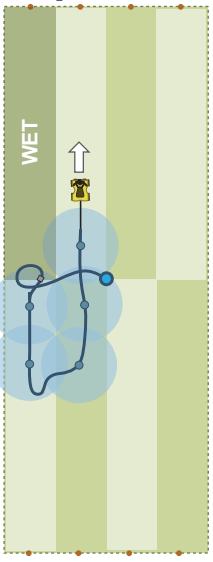
Veer right about 50' and straighten to align the vehicle with the end of the zone.

Step 4



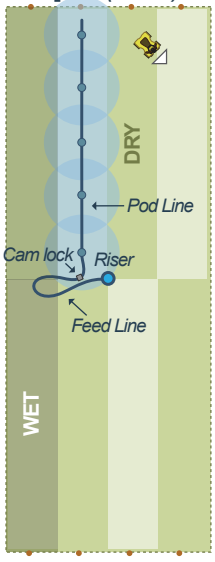
Before reaching the center line, veer back slightly to the left and line up with the marker at the end of the zone.

Step 5



Pass over the feed line and continue to the end of the zone.

Step 6 *(Set 3)*

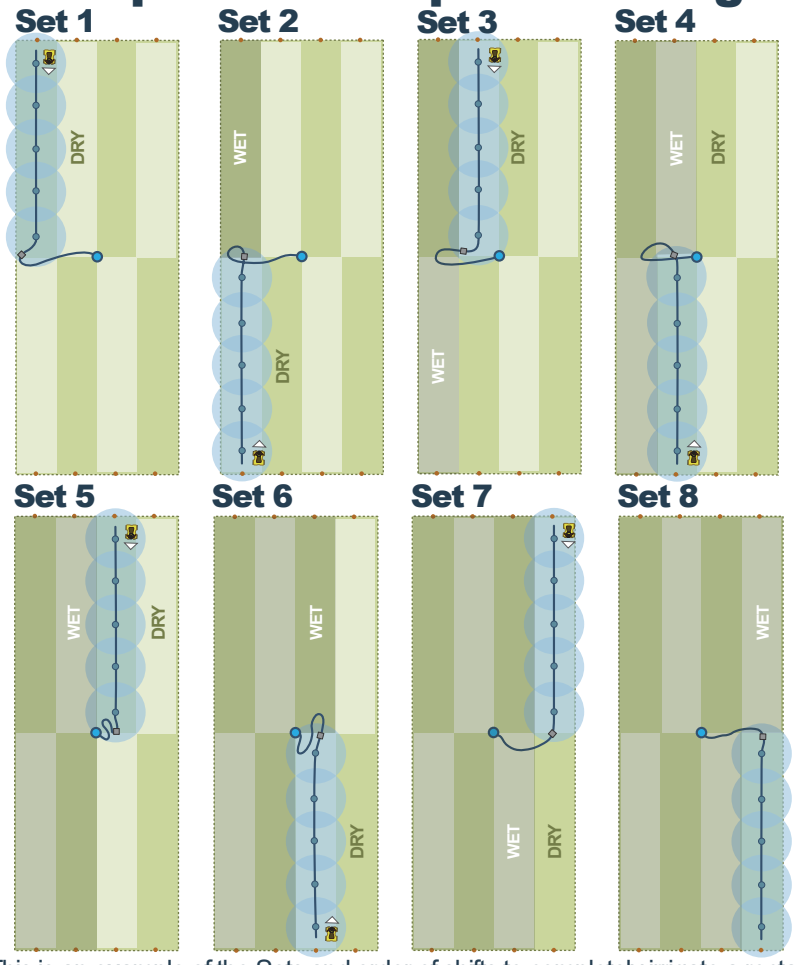


Unhook the vehicle from the sprinkler/pod line.

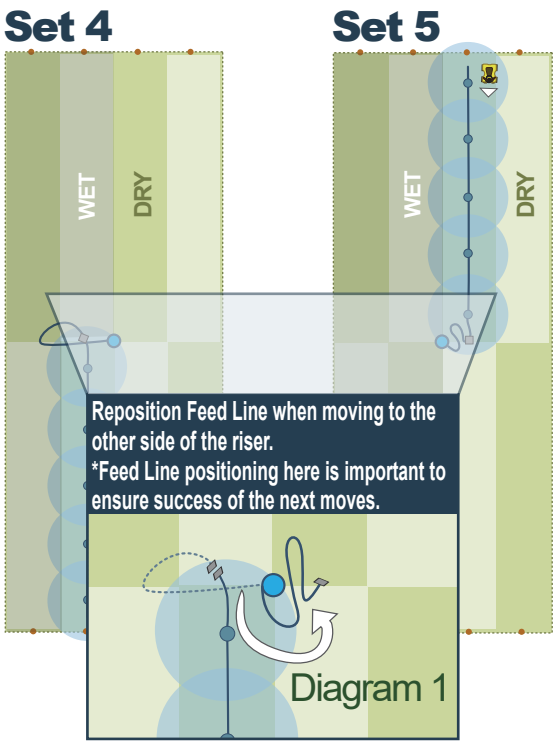
Follow the steps above to shift the line to irrigate each set within a single zone.

Example of a Complete Shifting Schedule

Give particular attention to the positioning of the Feed Line for sets 1-8. ***Feed Line positioning is critical for having a positive, minimal-effort, K-Line experience.***



Repositioning the Feed Line



This is an example of the Sets and order of shifts to completely irrigate a rectangular zone. For other zone or field shapes and sizes please consult your K-Line dealer.

Repositioning the Feed Line

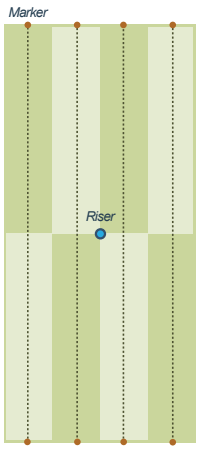
You will need to reposition the Feed Line at least once (sometimes more often) as you shift from Set to Set. In this Shifting Schedule, after the 4th shift, where the K-Line is positioned to irrigate Set 5, the operator must manually disconnect the the Feed Line (if a quick-connect connection is present) and reposition the Feed Line, to the other side of the riser, as shown in **Diagram 1**. The operator must then reconnect the Feed Line to the Pod Line once the Pod Line is in the Set 5 position.

The operator may also need to reposition the Feed Line if they see that the first sprinkler/pod (the sprinkler/pod closest to the riser or mid-zone) is out of alignment with the other pods. In this Shifting Schedule, this is most likely to occur after shifting the K-Line to the Set 7 position. In this situation, just pull the Feed Line (near the cam lock connection) to reposition the sprinkler/pod and Feed Line. Once the operator becomes familiar with the shifting procedure, the need to reposition (as in Set 7) will be less frequent.

Shift Markers

Placement of markers at the end of the zone (in the center of each Set width – see the Diagram to the right) gives the operator a target to aim for when shifting the K-Line.

Markers are often brightly colored streamers attached to a fence; or metal t-posts driven into the ground, with a 1½" by 6' PVC sleeve slid over top that offers excellent visibility in situations where a fence line is not available at the zone perimeter.



K-Line Shifting Hints

To keep the final sprinkler (pod closest to the tow vehicle during shifting) from spraying the operator during shifting, use a clothes pin to prevent sprinkler movement, or place a coffee can (or rag) over the sprinkler to stifle the spray. Remove after the K-Line has been shifted.

Always position the tow vehicle 6 - 8' from the K-Line to be shifted on the dry (unirrigated) side of the K-Line - SEE page **8-9**. This will prevent "double loops" in the Feed Line and reduce chances that the tubing will get kinked. Mark the ends of the zone with large different colored markers or flags to help position your lines properly.

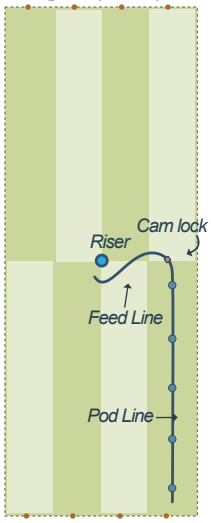
The first sprinkler/pod may be out of line with the rest of the sprinklers/pods if you have not positioned the last pod (the sprinkler/pod furthest from mid-zone) approximately 30' from the edge of the zone, OR if the Feed Line needs to be repositioned (as after moving the K-Line to the Set 3 or Set 7 positions – see above, Repositioning the Feed Line, for more details).

Shifting K-Line in hot weather without water running through the tubing increases the chance of kinking. EITHER shift the line while irrigating, OR shift (without water running) in the early morning or early evening when the tubing is cool.

Tips & Tricks

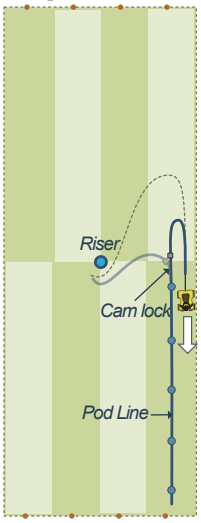
Resetting the System from Set 8 to Set 1

Step 1 *(Set 8)*



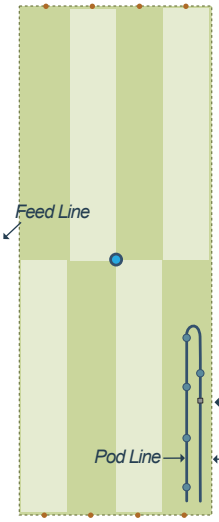
Turn off the water. Disconnect the Feed Line from the riser.

Step 2



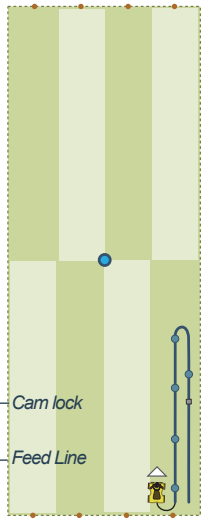
Begin to reposition the Feed Line by making a wide arc away from the sprinkler/pod line, moving to the far side and 6 - 8' from the sprinkler/pod line.

Step 3



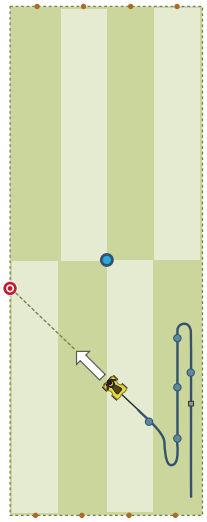
Reposition the Feed Line to run parallel to the pod line (on the far side of the zone). The cam fitting that connects to the riser should be near the end of the Pod Line.

Step 4



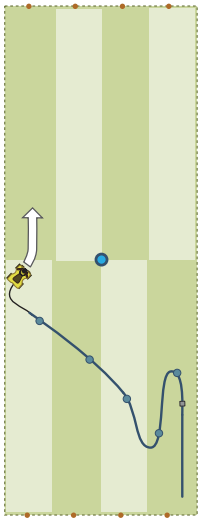
Position your vehicle alongside and 6 - 8' from the sprinkler/pod line facing the far end of the zone. Hook the sprinkler/pod line to the tow vehicle.

Step 5



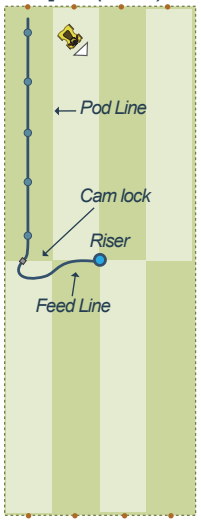
Pull forward to the second pod, then angle left aiming for a point short of the center of the far side of the zone.

Step 6



Drive to the edge of the far side of the zone. Before passing the center line, turn back and position yourself in the middle of Set 1.

Step 7 *(Set 1)*



Continue to the end of the zone. Unhook the sprinkler/pod line from the tow vehicle. Reposition the Feed Line and reconnect the Feed Line to the riser.

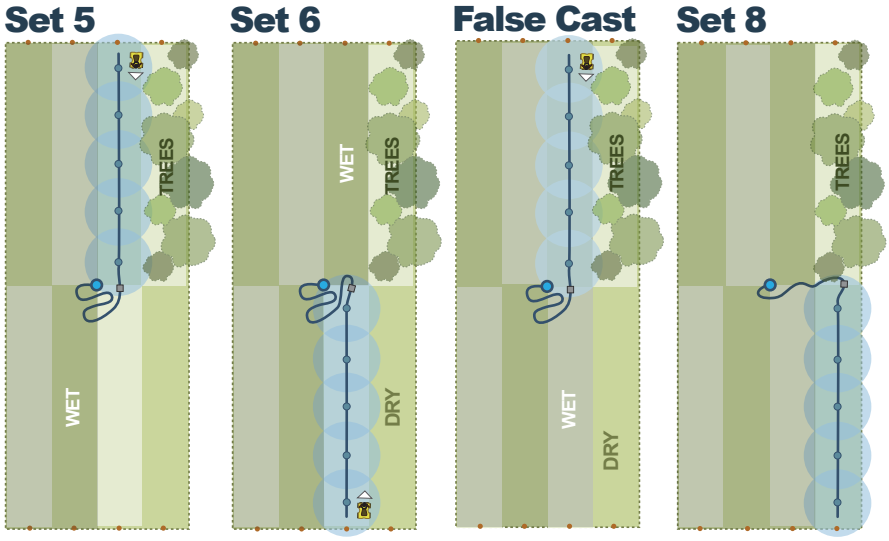
False Casting

K-Line offers versatility unparalleled by other large irrigation systems. In odd or irregularly shaped fields, in pivot corners, or fields where there is a large continuous obstruction, you may have a "Set" or "Sets" that do not receive irrigation. In these situations you perform a K-Line "False Cast."

A "False Cast" is when you move the K-Line into a Set momentarily in order to gain a better position to maneuver into another Set.

As illustrated, we have irrigated Sets 1 through Set 6, however, the area that would normally be Set 7 is almost completely obstructed by trees and will not be irrigated.

The K-Line must move upfield in order to come back into the last dry down field position approximately 50' over to the right.



In this situation, we shift the K-Line back upfield into the Set 5 area just as if we were going to irrigate it - this is our "False Cast". IMMEDIATELY reposition the tow vehicle 6 - 8' from the K-Line, facing down zone, and move into the last set.

A False Cast almost always requires that the Feed Line and start of the K-Line be repositioned (see "Repositioning the Feed Line" on page 9).

The False Cast maneuver is also useful in the process of repositioning a K-Line to another area of the field (i.e., during initial installation when moving the K-Line from the layout area to the initial irrigation position).

K-Line Troubleshooting Guide

Symptom	Possible Cause / Solution
Partial or poor distribution from sprinkler	• Plugged nozzle - remove nozzle, check for obstruction. • Obstruction in tubing - remove Tow Cap and flush line • Improper pump pressure - check pump • Damaged tubing leaking water - make square cuts to remove the damage and splice the line together by installing a Straight Coupling as described on **Page 6**, **STEP 11C** • Saddle improperly mounted on tubing - remove and mount according to **Pages 4 and 5, STEP 8**
Pods rolling over during shifting	• Towing vehicle is too far from K-Line - keep 6 - 8' from the pod line while shifting
Connectors coming loose	• Improper tightening of the K-Line connectors - cut off and discard 3" of old scarred tubing when repairing (make sure that you have a square cut), then use pipe wrenches to more firmly tighten the connectors - see **Page 6, STEP 10A.** If this fails, replace fitting with a new fitting with sharp edges.
Water Stream hits the inside of the pod	• Tapping saddle is improperly tightened down - reposition tapping saddle and tighten down evenly, see **Pages 4 and 5, STEP 8**
Feed Line loop gets too tight	• Feed Line needs to be repositioned - see **Page 9, "Repositioning the Feed Line"** • Feed Line is too short - add more tubing or narrow the width of the irrigated area
K.PIPE® tubing gets kinked	• Failure to reposition Feed Line – see **Page 9, "Repositioning the Feed Line"** • Shifting the K-Line without water running when temperatures are hot - -straighten the kinked K-Line tubing and use a rubber mallet to lightly pound the tubing back into shape

End of Season

Unhook the Feed Line and K-Line from the riser and shift it to the side of the field. Setting the K-Line on an incline, and the action of shifting the K-Line itself, will remove most of the water from the K-Line. K-Line tubing will also stretch slightly to withstand some freezing. Open all riser and drain valves to drain the system and cover any open risers or tubing ends (cam dust caps and plugs are available) to prevent small animals from nesting inside.

Upon using your K-Line system in the following season, if a significant amount of grass has grown up and entangled the K-Line, be sure to manually loosen the pods from the grip of the forage before shifting your K-Line system.