

K-Line™ Std Effluent

For efficient effluent dispersal



K-Line Irrigation NA
St. Joseph, MI 49085
866-665-5463
info@k-linena.com
www.k-linena.com

K-Line™ Std Effluent



Whether you are watering cattle, irrigating, or distributing wastewater, K-Line Irrigation has the solution for you. K-Line also has a wide selection of strong supporting sprinkler brands to custom design an irrigation system specifically to meet your needs.

We've got what you need

K-Line Irrigation has a wide range of products to support your water and wastewater distribution needs.



Stock Tanks
K-line Irrigations new portable stock tank has a 25 gallon capacity and supports up to 150 cow calf pairs. The tank is perfect for rotational grazers.

Kwik-Shifter
K-Line Irrigations Kwik-Shifter allows quick movement of your pod lines without dismounting your tow vehicle.



Polyethylene Pipe (Polypipe)
K-Line Irrigation has a range from 32mm (1 1/4") to 50mm (2") to suit many uses. K-Line Pipe is rated from 75 psi to 110 psi

What is K-Line™?

- K-Line™ is a flexible hose line sprinkler system originally designed for irrigation. However, the low application rate makes the K-Line™ system well suited to effluent distribution. At the heart of the system is a series of tough plastic pods protecting a sprinkler, firmly attached to special K-Line™ low density polyethylene pipe
- K-Line™ provides an excellent method of liquid dispersal options from the many and varied sources
- K-Line™ systems are all designed to operate at low pressure
- K-Line™ provides a number of product choices which gives you maximum flexibility in a customized effluent dispersal system for your farm or feedlot
- K-Line™ will suit any paddock shape, size or terrain
- K-Line™ is easily moved by an ATV or small tow vehicle
- K-Line™ is a low application rate system

Farmer Benefits

- Low capital cost
- Ease of installation use and shifting
- Tailor application to staff availability
- Low application rate to remove the risk of ponding and run-off, allowing better filtering by the soil
- Better retention of nutrients lowers fertilizer requirements
- Control of application with automated timers
- During busy times (e.g. calving) effluent irrigation can be avoided
- Best possible use of the nutrients in effluent

Production benefits

- Farmers say that K-Line™ provides them with greater pasture growth rates
- K-Line™ provides a more uniform application compared to travelling irrigators
- More palatable pasture compared with effluent applied by a travelling irrigator
- Trials show the losses of phosphorus and bacteria to drainage water are only 5-7% of the losses of a travelling irrigator when soil is near field capacity
- It also shows nitrogen levels in the drainage are minimized to almost zero (figure 1)

Drainage from a 'Mole and Tile' drained paddock after effluent application

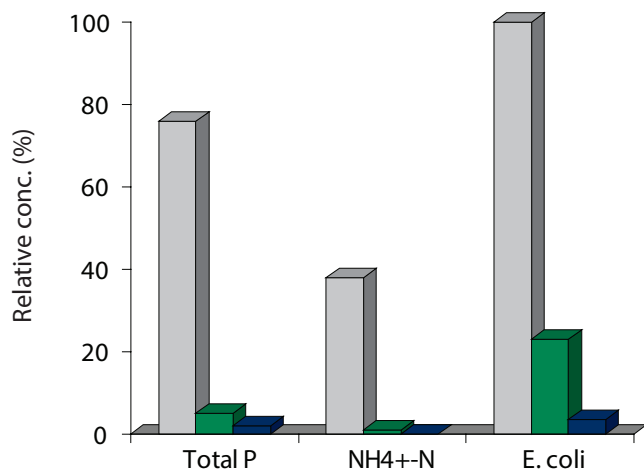


Figure 1.

- Rotating twin gun
- K-Line™
- K-Line™, intermittent pumping



Why use K-Line™ Std Effluent?

- Low rate of application
- No leaching or run-off
- No ponding
- Cost effective
- Easily shifted
- Low maintenance
- Virtually no contamination of pasture

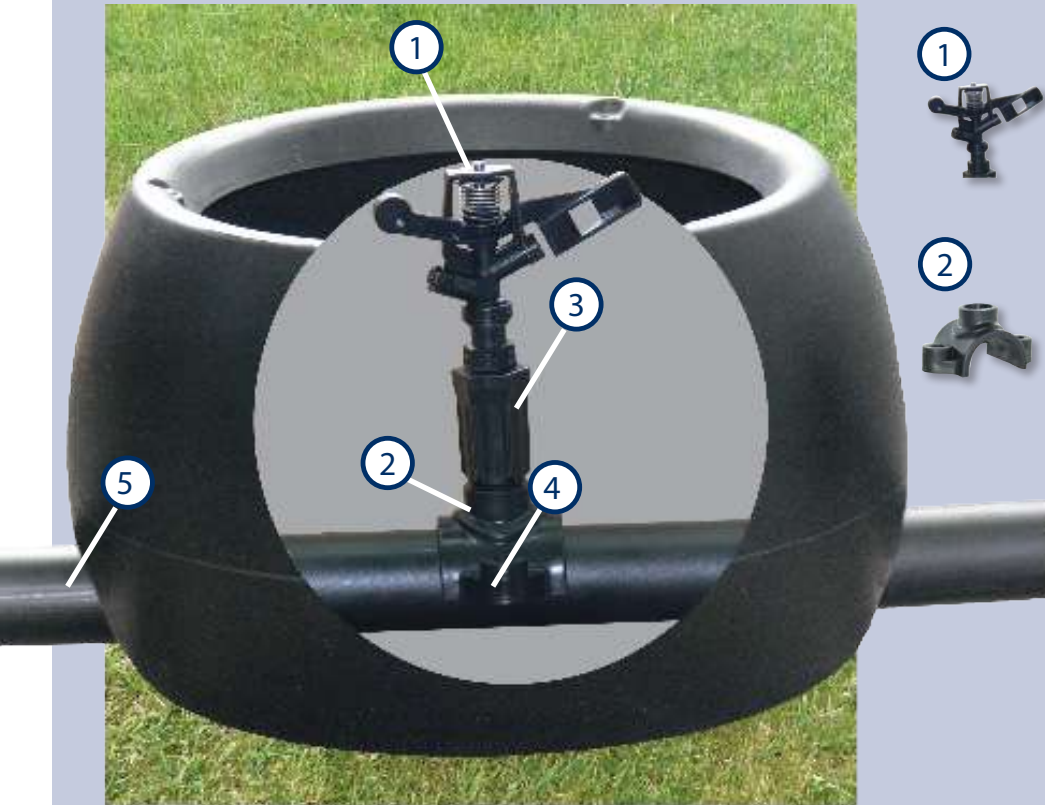
Naan 5022 sprinkler

- The Naan 5022 ½" full-circle sprinklers distribute effluent up to a 86' diameter
- Naan 5022 sprinklers can achieve application rates down to as low as .32" per hour. This reduces the risk of ponding and run-off and other forms of preferential flow. The soil has time to filter nutrients and bacteria
- Outlasts and costs less than brass or aluminium sprinklers
- Built for strength and durability using high-impact engineering-grade thermoplastics and top quality stainless steel components
- Pressure range between 40 and 60 psi.
- Standard lower bearing pipe thread: ½" male thread
- Quick release bayonet nozzles for fast interchange
- Single nozzle design minimizes clogging

Sprinkler operation

- Naan 5022 sprinklers have a range of nozzles down to 1/8" in size that are suitable for effluent. However the recommendation is to use the 5/32" black nozzle
- The figure to the right shows the flow rate and diameter of throw of the recommended black K-Line™ Std sprinkler nozzles and also the next two smaller nozzles
- Complete flow rates: 3.00 - 5.3 gallon/min

K-Line™ Std Effluent components



1 Naan 5022
1/8" - 5/32"
nozzles for effluent
applications



3 1 x Naan adaptor
1/2" male x 1/2" female
specifically for the
Naan sprinkler



2 K-Line™
Tapping saddle
drill 5/8" hole in
tubing



4 1 x U Bolts
2 x Nuts
2 x Washers



5 K-Pipe™
32mm, 40mm
and 45mm. Made
specifically for K-Line™
systems



Figure 2. Pressure and flows of the Naan 5022

Pressure (PSI)	40	50	60
Green Nozzle (1/8")			
(gallon/min)	3.00	3.3	3.6
Diameter (feet)	77	81	83
Blue Nozzle (9/64")			
(gallon/min)	3.4	3.8	4.2
Diameter (feet)	79	83	85
Black Nozzle (5/32")			
(gallon/min)	4.4	4.9	5.3
Diameter (feet)	82	84	86

System components

- The K-Line™ Std pod comes complete with the sprinkler, riser assembly and saddle to connect your K-Pipe™ to the pod
- K-Line™ provides a complete series of K-Pipe™ solutions
- To ease shifting K-Line™ also provides tow hooks

Spacing and pipe system

- Special 32, 40, 45mm K-Pipe™ is available to complete your new K-Line™ Std effluent pods. The K-Pipe™ is simply threaded through the K-Line™ pod then with a 5/8" drill bit and 13mm socket you are able to assemble your system.
- The special K-Pipe™ is designed to be flexible but highly resilient to the shifting process

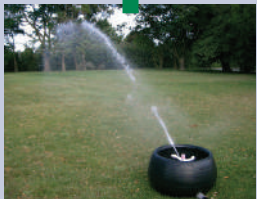
K-Line™ Std Effluent

What You Need

Happy Farmer!



Happy Cows!



K-Line™ Effluent

The process starts with a visit from your consultant to plan the K-Line™ effluent system. The consultant will examine the shape and size of your property, land dispersal area, the quality and quantity of the effluent supply, effluent rotation and the soil types involved.

Your requirements together with hydraulic analysis, pressure requirements, pump sizes, power systems and budget, will determine the options. As K-Line™ Std only distributes the liquid portion of the effluent, and has a maximum 5/32" nozzle, it is important to eliminate solids. Solids can be removed by either a weeping wall (drying bed), multiple pond systems or solid separators.

The system typically consists of a pump, main line, sub main and K-Lines™.

Assembly is so simple many people choose to install the sub main, feed and sprinkler lines themselves.



Pump System



Storage Pond



Cows Enter Shed



Dairy Shed



Stone Trap

or



Weeping Wall / Drying Bed



Solid Separators

Layout of the system

The shift pattern is quite different compared to a K-Line™ irrigation system. With an irrigation system it is important to shift the system when it is running. This is not practical when the system is filled with effluent. The K-Line™ Std lines are therefore shifted when they are not running. The K-Line™ Std lines themselves are generally made with 40mm K-Pipe™ and have the same fittings at each end, so the lines can be connected to the submain at either end of the line. The K-Lines™ need to be pulled directly from one end to the other. Because the lines are short and only a few pods this process is very easy. The process works for paddocks of all shapes and sizes.

The simple process is as follows:

Go to the submain (valve) end of the sprinkler line (1) (point (A) in Figure 3). Uncouple the line (1) from the submain, then connect the tow rope onto the K-Line™ then tow towards point (B). The K-Line™ will end up in position (D). Unhook, install a plug end then re-couple the K-Line™ back at the submain. Repeat this shifting process for line (2) uncouple at point (A) then tow the line toward point (B), Install the plug then re-couple at point (A).

When the field has been irrigated completely (point (C), disconnect the sprinkler line from the feed line, tow the sprinkler line into a new paddock and you're ready to start the dispersal rotation again.

Line (1)

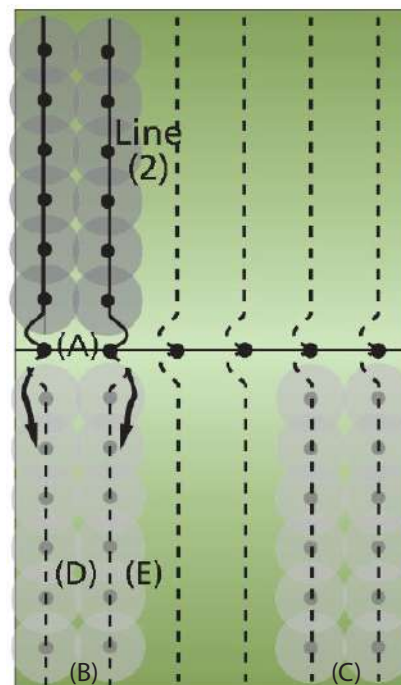


Figure 3.
Shifting rotation within a typical paddock (12 pods)
Line 1 moves to D
Line 2 moves to E

Best management practice

For a 1/2" application, run the system for 3-4 hours. It is recommended that the effluent dispersal area should be 20 A./100 cows as a best management practice.

Selection criteria for your K-Line™ Std system

Selection of a suitable K-Line™ pod and a successful installation is very much dependent on the degree of separation of the solids from the liquids. For the K-Line™ Std Effluent pod the nozzle selection is 5/32", therefore the separation of the solids would need to be better than .12".

The minimum requirement for successful use would be a weeping wall system. If your effluent system has better separation than this, then of course this product will be most suitable also.



		Requirements		Benefits		
		Minimum Filtration	Palatability	Distribution	Application Rate	Nutrient Management
<p>K-Line™ Std Naan 5022 9" x 15"</p>  <p>The K-Line™ standard has a Naan 5022 sprinkler with a 5/32" nozzle and therefore requires the best liquid quality.</p>	 Weeping wall or  Solid Separator &  Storage	Optimum	Optimum	Optimum	Optimum	
<p>K-Line™ Mid Senninger 5023 11" x 22"</p>  <p>The K-Line™ mid has a Senninger 5023 sprinkler and a nozzle up to 1/4", therefore it can handle a slightly less liquid quality.</p>	 Two Pond Storage 	Optimum	Optimum	Optimum	Excellent	
<p>K-Line™ Max⁷⁰ Senninger 7025 18" x 32"</p>  <p>The K-Line™ Max⁷⁰ has a Senninger 7025 sprinkler and a nozzle up to 3/8". It can therefore handle a lower liquid quality.</p>	 Single Pond Storage	Medium	Excellent	Optimum	Good	
<p>K-Line™ Max⁸⁰ Senninger 8025 18" x 32"</p>  <p>The K-Line™ Max⁸⁰ has a Senninger 8025 sprinkler and a nozzle up to 5/8". It can therefore handle the lowest liquid quality.</p>	 Pumping Sump with Stone Trap	Satisfactory	Excellent	Optimum	Okay	