

K-Line™ Mid Effluent

For efficient effluent dispersal



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K-Line™ Mid Effluent



Whether you are storing, transporting or distributing water or wastewater, K-Line has the solution for you. With a wide selection of strong supporting brands, K-Line can assist whatever your requirements.

We've got what you need

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



K-Line's portable stock tanks have the same flexibility as the irrigation system. The tanks can be easily towed from paddock to paddock



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



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 many variable sources
- K-Line™ systems are all designed to operate at low pressure
- K-Line™ provides a number of product choices which give you maximum flexibility in a customized effluent dispersal system for your farm
- K-Line™ will suit any paddock shape, size or terrain
- K-Line™ is easily moved by any ATV or farm 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 of bacteria, resulting in better compliance to requirements
- 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 farm dairy or feedlot 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 that the losses of phosphorus and bacteria to drainage water are only 5-7% of the losses compared to a travelling irrigator when soil is near field capacity
- Nitrogen levels in the drainage are minimized to almost zero (figure 1)

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

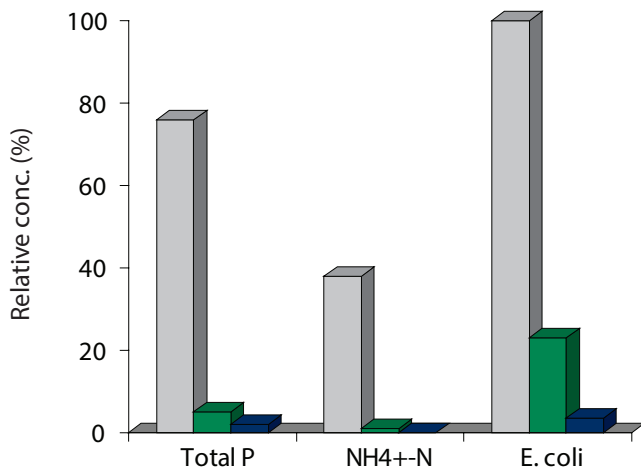


Figure 1.

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



Why use K-Line™ Mid Effluent?

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

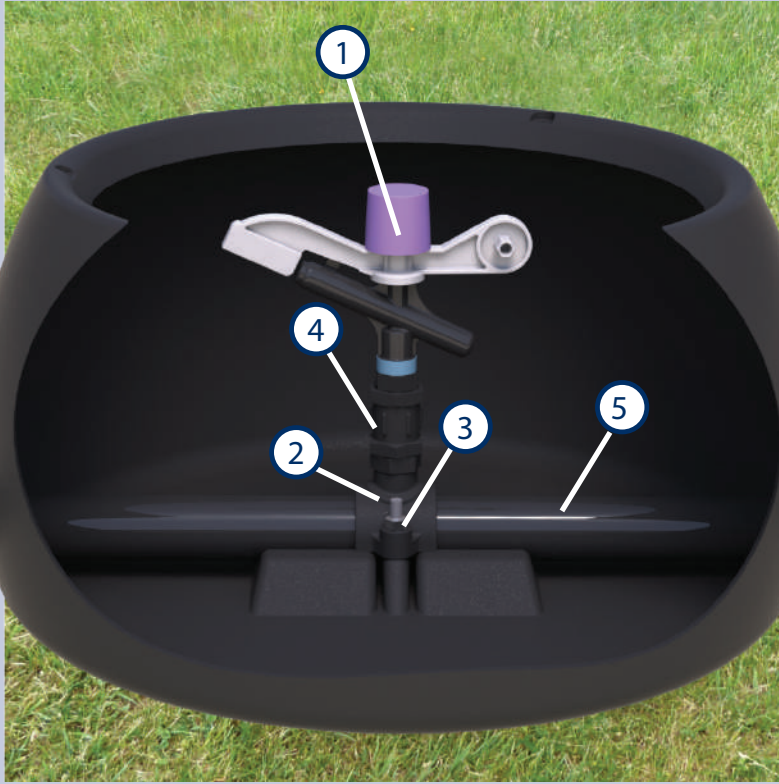
Senninger 5023 sprinkler

- The Senninger 5023 3/4" full-circle sprinklers distribute effluent over a 82' diameter
- Senninger 5023 sprinklers can achieve application rates down to as low as .08" 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
- Pressures range between 30 and 65 PSI
- Standard lower bearing pipe thread: 3/4" male thread
- 27° angle for maximum distance of throw
- Single nozzle design minimizes clogging

Sprinkler operation

- Senninger 5023 sprinklers have a range of nozzles down to 13/64" in sizes that are suitable for effluent. However, the recommendation is to use the 1/4" nozzle.
- Figure 2. shows the flow rate and diameter of throw of the recommended K-Line™ sprinkler nozzles
- Complete flow rates: 9.8 to 13.8 gpm.

K-Line™ Mid Effluent components



1 Senninger 5023
15/64" - 17/64"
nozzles for effluent
applications



3 1 x U-Bolt
2 x Nuts
2 x Washers



2 K-Line™
Tapping saddle
(drill 9/16" hole)



4 1 x Senninger adaptor
- 1/2 x 3/4" male and
female specifically for
the Senninger sprinkler



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



Figure 2. Pressure and flows of the Senninger 5023

Pressure (PSI)	40	45	50
#15 Nozzle (15/64")			
(gpm)	9.8	10.4	11
Diameter (ft)	96	98	100
#16 Nozzle (1/4")			
(gpm)	11.1	11.8	12.4
Diameter (ft)	97	99	101
#17 Nozzle (17/64")			
(gpm)	12.3	13.1	13.8
Diameter (ft)	98	100	102

System components

- The K-Line™ Mid 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

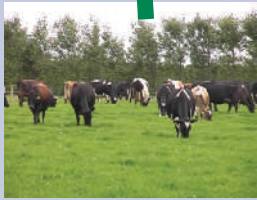
Spacing and pipe system

- Special 32, 40, and 45mm K-Pipe™ is available to complete your new K-Line™ Mid effluent pods. The K-Pipe™ is simply threaded through the K-Line™ pod, then with a 9/16" drill and 13mm socket you are able to assemble your system. The special K-Pipe™ is designed to be flexible but highly resilient to stresses of the shifting process

K-Line™ Mid 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™ Mid only distributes the liquid portion of the effluent and has 5/32" nozzles, 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 Lagoon



Storage Pond



Cows Enter Shed



Dairy Shed



Stone Trap

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 while it is running. This is not practical when the system is filled with effluent. The K-Line™ Mid lines are shifted while they are not running. The K-Line™ Mid lines themselves are generally made with 40mm or 45mm 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 with 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™ and 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 and 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)

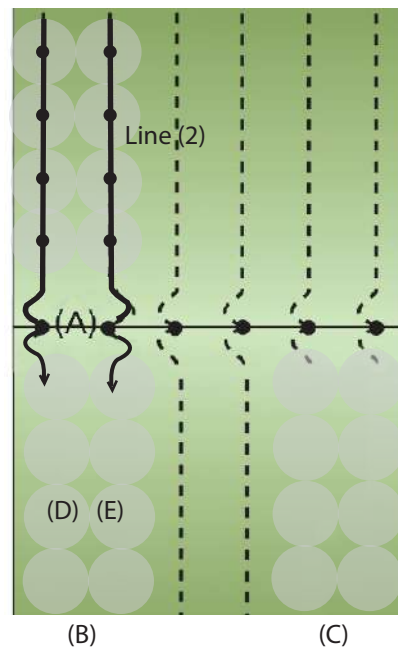


Figure 3.
Shifting rotation within a typical paddock (8 pods at 80' spacings)
Line 1 moves to D
Line 2 moves to E

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 best management practice.

Selection criteria for your K-Line™ Mid 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™ Mid Effluent pod, the nozzle selection is 1/4" and the separation of the solids would need to be better than .2".

The K-Line™ Mid requires a two pond storage system, or better separation, for successful application.



		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 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 poorer 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 poorer 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	

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