K-Line™ Max70 Effluent

For efficient effluent dispersal

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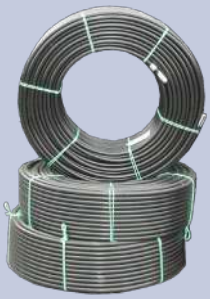
K-Line™ Max Effluent

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 the 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 traveling 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

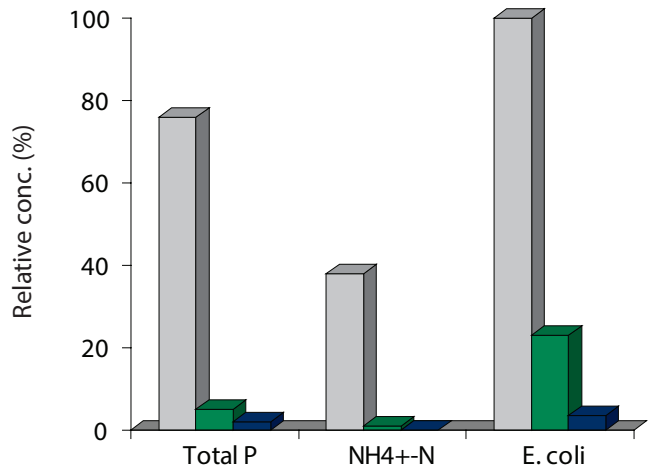


Figure 1.

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

Why use K-Line™ Max^{70} Effluent?

- Low rate of application
- No leaching or run-off
- No ponding
- Cost effective
- 3 pods to replace a traveling irrigator
- Large nozzle to eliminate blockages
- Easily separated by cam locks and shifted individually
- Low maintenance

Senninger 7025 S Sprinkler

- The 70 series full-circle sprinklers distribute effluent over a large diameter, for higher volume systems
- Senninger 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
- Built-in hex wrench for easy in-the-field maintenance
- Standard lower bearing pipe thread: 1" male thread
- 25° angle for maximum distance of throw
- Single nozzle design minimizes clogging

Sprinkler Operation

- Special Senninger 7025 sprinklers have a range of nozzles down to 7/32" in size. The selection of the 7/32" is only required when a very low application rate is required
- The figure to the right shows the flow rate and diameter of throw of the recommended K-Line™ Max^{70} sprinkler nozzles
- Complete flow rates: 8.1 - 31.6 GPM

K-Line™ Max^{70} Effluent components

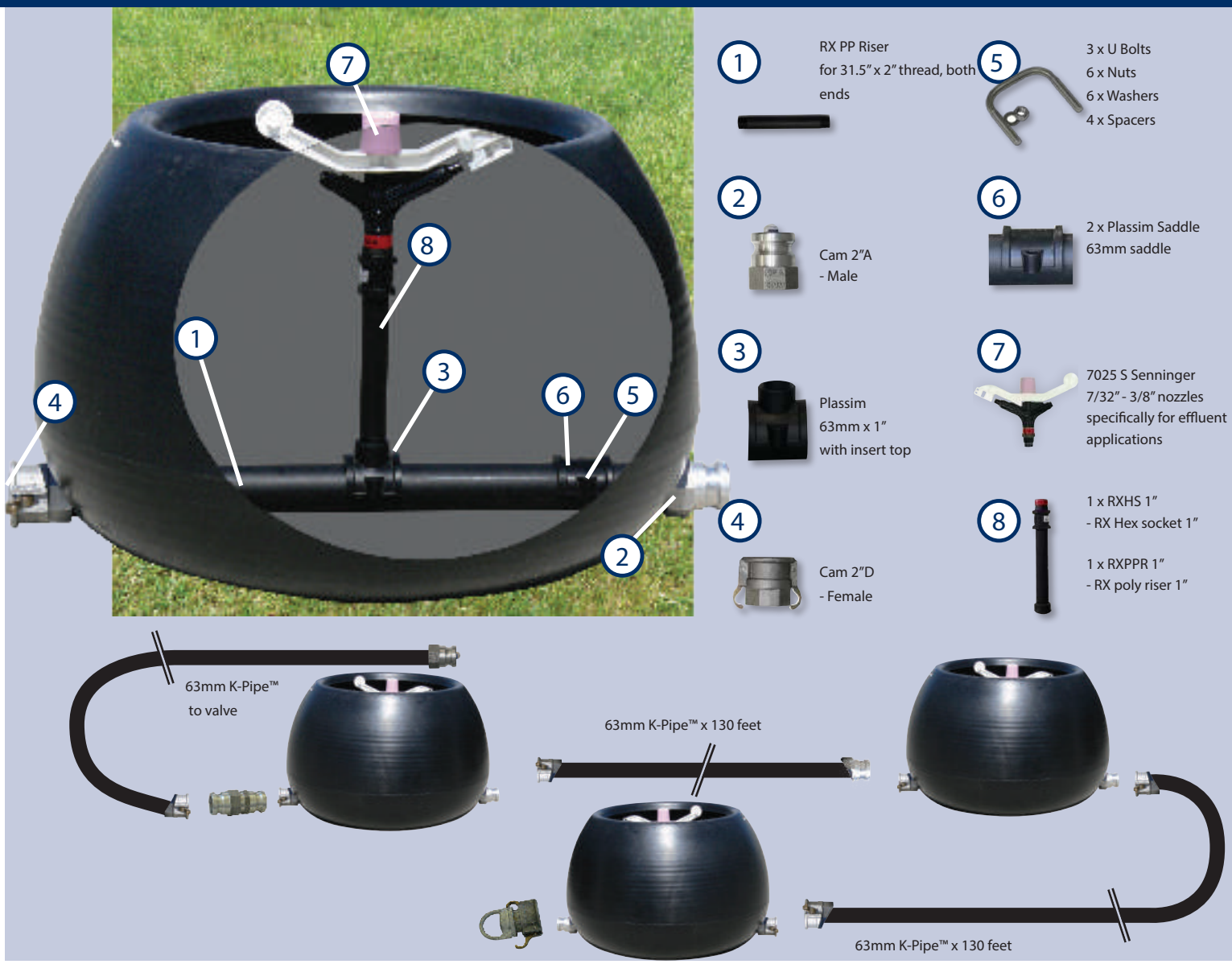


Figure 2. Pressure and flows of the Senninger 7025

Pressure (PSI)	40	45	50
#20 Nozzle (5/16")			
(gpm)	17.1	18.2	19.2
Diameter (feet)	130	134	137
#22 Nozzle (11/32")			
(gpm)	20.5	21.8	22.9
Diameter (feet)	133	141	148
#24 Nozzle (3/8")			
(gpm)	23.9	25.3	26.7
Diameter (feet)	138	145	151

System components

- The K-Line™ Max^{70} pod comes complete with 2" female and male cam locks
- K-Line™ provides a 63mm K-Pipe™ x 130 feet that is M&F (male and female) cam locked (2" connectors)
- With this combination, the lines can be connected in any order to the pods
- To ease shifting, K-Line™ provides male adaptors and end tow units, both with 2" cam locks

Spacing and Pipe System

- Special 63mm K-Pipe™ tubing, complete with M&F (male and female) cam locks, come pre-fabricated to instantly connect your new K-Line™ Max^{70} effluent pods
- The special K-Pipe™ is designed to be flexible but highly resilient to the stresses of the shifting process

K-Line™ Max^{70} Effluent

What You Need.

Happy Farmer!

Happy Cows!

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. The K-Line™ Max^{70} minimum requirements are a suitable storage pond to draw from. The system typically consists of a pump, main line, sub main and 63mm K-Pipe feeder.

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

General principles of effluent application would suggest that an application of 1/2" per shift would be a maximum, with an application area of 20 A. /100 cows considered as best management practice.

Cows Enter Shed

Dairy Shed

Stone Trap

Pump System

K-Line™ Effluent

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™ Max^{70} lines are always shifted when they are not running.

The K-Line™ Irrigation Max^{70} lines themselves should be made with either 50mm or 63mm K-Pipe™ tubing and should match the K-Line™ Max^{70} pod. This allows the same M&F cam fittings at each end, so the lines can be connected to the submain at either end of the line with the male adapter. The K-Lines need to be pulled directly from one end to the other. Since the lines are short and have only a few pods, this process is easy. The process works for paddocks of all shapes and sizes.

The simple process is as follows:

Go to the submain valve point (1) to isolate the system. Remove the tow hook from the line end (2). Uncouple the feedline from the first K-Line™ Max^{70} pod (3), then connect the tow hook to the K-Line™ Max^{70} and then tow (dead pull) towards point (G). The K-Line™ will end up in position (B). Unhook, then recouple the K-Line™ back at the feedline. Repeat this process for the line until the field has been irrigated completely (position F). When the field has been irrigated completely, disconnect the sprinkler lines from each other and also from the feed line , then tow the sprinkler lines into a new paddock and you're ready to start the dispersal rotation again.

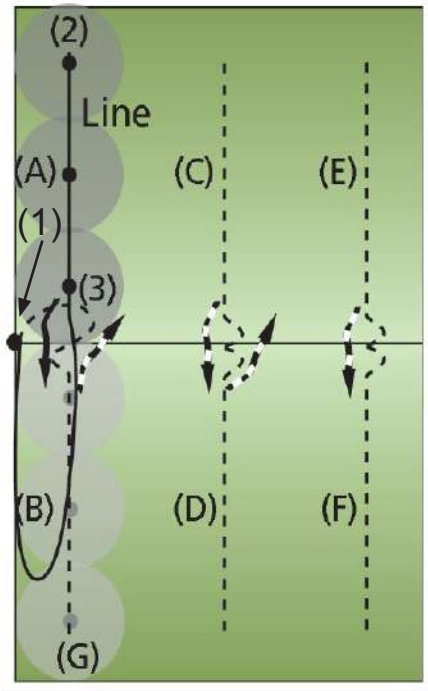


Figure 3.
Shifting rotation within a typical paddock (3 pods)
Line moves;
A to B
B to C
C to D
D to E
E to F

Best management practice

For a 1/2" application, run the system for three to four 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™ Max^{70} system

Selection of a suitable K-Line™ effluent pod and a successful installation is very much dependent on the degree of separation of the solids from the liquids.
For the K-Line™ Max^{70} Effluent pod, the nozzle selection is from 7/32" to 3/8". Successful use of the Max^{70} pod system requires only slight separation of the solids with a large single storage lagoon or better.

	Requirements		Benefits		
	Minimum Filtration	Palatability	Distribution	Application Rate	Nutrient Management
K-Line™ Std Pod Naan 5022  9" H x 15"W The K-Line™ Standard has a Naan 5022 sprinkler with a 5/32" nozzle and requires the best liquid quality.	 Weeping wall or  Solid Separator &  Storage	Optimum	Optimum	Optimum	Optimum
K-Line™ Mid Pod Senninger 5023  11" H x 22"W The K-Line™ Mid has a Senninger 5023 sprinkler with a nozzle up to 1/4". It can handle a slightly lower liquid quality.	 Two Pond Storage 	Optimum	Optimum	Optimum	Excellent
K-Line™ Max^{70} Pod Senninger 7025  18" H x 32" W The K-Line™ Max^{70} has a Senninger 7025 sprinkler with a nozzle up to 3/8". It can handle a lower liquid quality.	 Single Pond Storage	Medium	Excellent	Optimum	Good
K-Line™ Max^{80} Pod Senninger 8025  18" H x 32" W The K-Line™ Max^{80} has a Senninger 8025 sprinkler with a nozzle up to 5/8". It can handle the lowest liquid quality.	 Pumping Sump with Stone Trap	Satisfactory	Excellent	Optimum	Okay

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