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Approved Chemigation Equipment for Outdoor Agricultural Production

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The Idaho State Department of Agriculture (ISDA) maintains this guide to address the licensing and backflow prevention equipment requirements to chemigate fertilizers and pesticides using a ground or surface water source that is not a municipal water source. Additional information related to Idaho's chemigation program and requirements can be found on the ISDA website at www.agri.idaho.gov.

Chemigation is the injection of chemicals (fertilizers or pesticides) into an irrigation system. Idaho's chemigation program is designed to license, educate, and regulate the injection of chemicals into agricultural, domestic, or municipal irrigation systems.

Chemigator Licensing: Any person that injects chemicals into irrigation water is required to obtain the chemigation (CH) license category on a private or professional pesticide applicator license by passing the chemigation licensing exam. The Idaho Chemigation Study Manual is available for purchase through the ISDA pesticide applicator licensing office in Boise or for viewing or download at no charge on the ISDA website.

Chemigation Equipment: Irrigation systems used in outdoor agricultural production to apply chemicals to land or crops must be equipped with approved backflow prevention equipment to prevent the backflow of treated water back to the water source. Approved backflow prevention devices for outdoor agricultural production include a chemigation valve, a wafer check valve and spool, or a gooseneck configuration. Systems that use chemigation valves or wafer check valves/spools must also include an inspection port, a vacuum relief valve, and a low-pressure drain.
Other methods of backflow prevention such as pumping downhill, pumping over a hill, or injecting fertilizer in an open ditch below a break in the water, *may be approved in certain situations.*

Chemigation Valve

Wafer Check Valve and Spool

Gooseneck Configuration

Approved Irrigation Line Check Valves (Chemigation Valves)

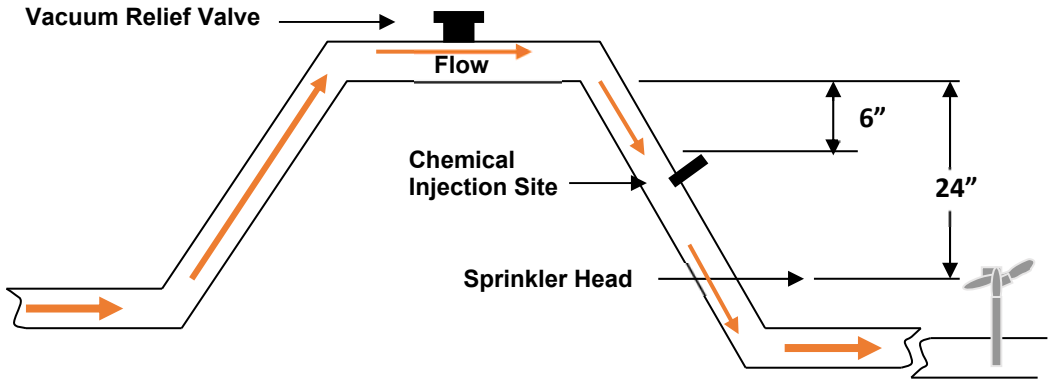
Manufacturer	Model (Nominal size in inches)
Clemons Sales Corp.	CCV (4, 6, 8, 10, 12)
Pierce Corporation	1775-60 (3), 1775-61 (4), 1778-61 (6), 1778-62 (8), 1778-63 (10), 1778-64 (12)
Lake Company	(4, 6, 8, 10)
Gheen Irrigation Works	CMV-FL (3, 4, 6, 8, 10, 12)
Midwest Irrigation Co.	CVP (6, 8, 10, 12)
Morrill Industries	1533 (4, 6, 8, 10, 12, 14, 16)
Reinke Manufacturing Co. Inc.	CV8-RL (Blu Rivr)
T-L Irrigation Co.	IV6109 (6), IV110 (8), IV6111 (10)
Water Specialties Corporation	ML-CV-S (6, 8, 10, 12)
Waterman Industries Inc.	CPC-30B (4, 6, 8, 10, 12)
API International / Enbee	CMV-FL (4, 6, 8, 10, 12)
Kroy-Midwest	CVMW (6, 8, 10)

Approved Irrigation Line Check Valves (Wafer Check Valves)

Manufacturer	Model (Nominal size in inches)
Fresno Valves & Casting Inc.	CVW 150 (4 – 12)
Netafim USA	65ARIN4, 65ARIN6 (4, 6)
Matco-Norca	CVC (4 – 8)
Universal Irrigation Sales Co.	CV (4 – 12)
Champion Valves Inc.	CVR12 (2 - 48)

Gooseneck Configuration, Pumping Downhill, Pumping Over A Hill

A gooseneck, pumping downhill, or pumping over-a-hill configuration may be used in place of a check valve on systems using a surface water source. Systems using a groundwater source must use an approved check valve for backflow prevention. The bottom side of the pipe, at the loop apex or bottom side of the pump discharge, must be at least 24" above the highest sprinkler or water emitting device on the irrigation system. The point of chemical injection must be at least 6" below the bottom of the pipe at its apex, and an appropriately sized vacuum relief valve must be installed at the top of the pipe loop.



Injection Line Check Valve

The injection line check valve is designed to prevent the backflow of water from the pressurized irrigation line into the chemical supply line. Approved injection line check valves are constructed of chemical resistant material, have a cracking pressure of at least 10 psi, and must be installed between the chemical injection pump and the point of chemical injection into the irrigation line, downstream of the backflow prevention device.

Approved Injection Line Check Valves

Manufacturer	Model
Inject-O-Meter Mfg. Co. Inc.	3/4", 1/2", Max-94, 3/4" (flat on 4 sides)
Raguse & Co., Inc.	Shur-Mix II
Agri-Inject, Inc.	Mister Mist'r, Mister Mist'r Ultra, Mister Mist'r CVPC, Mini Mist'r, Mister Mist'r Stainless Steel
Jaeco Fluid Systems, Inc.	316 Stainless Ball Check 10 psi (1/4", 3/8", 1/2", 3/4", 1") 316 Stainless 10 PSI O-Ring (1/4", 3/8", 1/2" 3/4", 1")
Neptune Chemical Pump Co. Inc.	PPQ50, SSQ75, SSQ100
Ozawa R & D Inc.	PN 2349, 2351, 2352
Grundfos Pumps Corp.	1/2", 3/4" Series IV-200, IV-300
CDS-John Blue Co.	115026-HS, CV-1310

Vacuum Relief Valve

A vacuum relief valve allows air to enter the irrigation pipeline to prevent back siphonage when the irrigation system shuts down. Combination air/vacuum relief valves allow air to escape the irrigation pipeline when the system is turned on. Idaho rules require that an appropriately sized vacuum relief valve be installed between the irrigation pump and the check valve. When a gooseneck pipe loop is used, an appropriately sized vacuum relief valve is required to be installed at the apex of the gooseneck. Vacuum relief valves should be sized appropriately based on the diameter size of the irrigation pipeline.

Irrigation Pipe Diameter	Total Orifice Size (Individual or Combined)
Up to 4 inches	¾ inches
5 – 8 inches	1 inch
9 – 18 inches	2 inches
19 inches and greater	3 inches

Inspection Port

The purpose of the inspection port is to allow inspection of the check valve and the low-pressure drain. The inspection port must be must be a minimum of four (4) inches in diameter and located on the irrigation pipeline, above the low-pressure drain, close enough to the irrigation line check valve to allow for inspection.

Low-Pressure Drain and Drain Hose

The low-pressure drain is located immediately upstream of the check valve and is designed to open when the system shuts down to allow any water between the check valve and the irrigation pump to drain away from the water source. If the low-pressure drain is installed within 20' of the water source, a drain hose must be installed so that the outlet of that hose is at least 20' away from the water source. Approved low-pressure drains are chemical resistant, a minimum of ¾" in diameter, and have a closing pressure of no less than 5 psi.

Chemigation System Interlocks and Chemical Injection Devices

Each chemigation system must be equipped with an appropriate system interlock which is designed to shut down the chemical injection pump if an irrigation system failure occurs.
Chemical injection devices need to be compatible with the irrigation system and resistant to any chemical that is injected into the irrigation system.

Even though a specific model has met required specifications during initial product review, each valve must meet the specifications when inspected on site. If an individual valve does not meet the specifications when inspected, it must be repaired or replaced prior to use for chemigation.
The ISDA does not sell, install, or endorse any particular brand or manufacturer of chemigation equipment.

For rules relating to chemigation equipment requirements, please refer to **Section 961** of the Idaho Administrative Procedures Act (IDAPA) 02.03.03 – *Rules Governing Pesticide and Chemigation Use and Application* found here: https://adminrules.idaho.gov/rules/current/02/020303.pdf

For additional information, contact:

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https://agri.idaho.gov/main/chemigation/