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Chemigation Approved Backflow Prevention Assemblies and Chemical Injection Systems for Domestic & Municipal Water Supplies

The Idaho State Department of Agriculture (ISDA) maintains this guide that addresses the licensing requirements and backflow prevention equipment required to chemigate fertilizers and pesticides using a domestic or 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 the recommended study material for the chemigation exam and is available for purchase through the ISDA licensing office in Boise, or for viewing or download at no charge on the ISDA website.

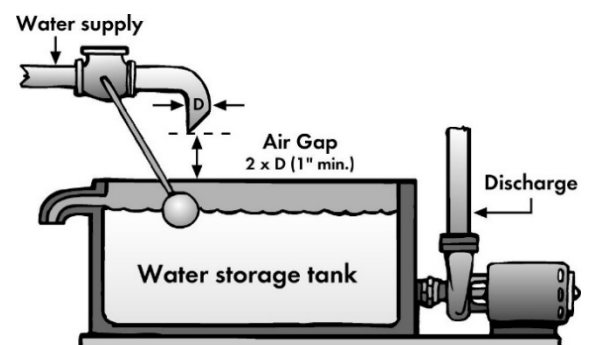
Chemigation Equipment: Irrigation systems that use a domestic or municipal water source are required to install an approved backflow prevention device to prevent the backflow of treated water back to the water source. Approved backflow prevention devices include a Reduced Backflow Prevention Assembly (RP assembly) or an Air Gap (AG) configuration. Chemigation systems must also include a functional system interlock which is designed to shut down the chemical injection system when chemical distribution is adversely affected.

Reduced Pressure Backflow Assembly (RP)



A Reduced Pressure Backflow Assembly (RP) is designed to prevent backflow. The RP assembly consists of two independent spring-loaded check valves separated by a spring-loaded differential pressure relief valve, two shutoff valves and four test cocks.

Air Gap (AG)



An approved Air Gap (AG) is a physical separation between the free-flowing discharge end of a potable water supply pipeline, and the overflow rim of a storage tank. This separation distance must be at least 2 times the discharge pipe diameter with a minimum of one (1) inch.

RP assemblies used on chemigation systems must be tested and approved for use by the University of Southern California (USC) Foundation for Cross-Connection Control and Hydraulic Research. USC maintains a list of all RP assemblies that have been tested and approved for backflow prevention. Current lists of approved RP assemblies can be found on their website at <https://fccchr.usc.edu/list.html>.

Since the RP assemblies approved and listed by USC meet the test criteria for RP assemblies in Idaho, the ISDA does not maintain a list of approved RP assemblies and allows the use of all RP assemblies on the most current USC RP assembly list.

Note: The USC list of approved valves includes a list of double-check valves that have been tested. Double-check valves are not approved for chemigation and should not be installed on chemigation systems.

RP assemblies and double-check valves installed on irrigation systems that use a municipal or domestic water supply and are not used for chemigation are regulated by the Idaho State Department of Environmental Quality (DEQ) through the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08). www.deq.idaho.gov

The Idaho Plumbing Code requires annual RP valve testing and any RP valves that do not meet the requirements must be repaired or replaced.

It is recommended that the ISDA be contacted prior to the installation and use of a chemigation system to ensure chemigation equipment and licensing requirements are met.

Trouble Shooting Guide for Reduced Pressure Backflow Assemblies

Problem	Cause	Solution
1.0 Valve spits periodically from the vent.	1.1 Fluctuating supply pressure. 1.2 Fluctuating downstream pressure.	1.1 Install a soft seated check valve immediately upstream of the device. 1.2 Install a soft seated check valve downstream of the device close as possible to the shutoff valve.
2.0 Valve drips continually from the vent.	2.1 Fouled first check. 2.2 Damaged or fouled relief valve seat. 2.3 Relief valve piston "O" ring not free to move due to pipe scale, dirt or build-up of mineral deposits. 2.4 Excessive backpressure, freezing or water hammer has distorted the second check. 2.5 Electrolysis of relief valve seat or first check seats. 2.6 Valve improperly reassembled.	2.1 Flush valve. If flushing does not resolve problem, disassemble valve and clean or replace the first check. 2.2 Clean or replace the relief valve seat. 2.3 Clean, grease or replace the piston "O" ring. 2.4 Eliminate source of excessive backpressure or water hammer in the system downstream of the device. Use a device specified by the manufacturer to dampen out backpressure and to eliminate water hammer. Replace defective second check assembly. In case of freezing; thaw, disassemble and inspect internal components. Replace as necessary. 2.5 Replace relief valve seat or inlet cover. Install dielectric unions. Electrically ground the piping system and/or electrically isolate the device with plastic pipe immediately upstream and downstream of the device. 2.6 If valve is disassembled during installation, caution must be exercised to install check springs in their proper location.
3.0 Valve exhibits high pressure drop.	3.1 Fouled strainer. 3.2 Valve too small for flows encountered.	3.1 Clean strainer element or replace. 3.2 Install proper size device based upon flow requirements.
4.0 No water flows downstream of valve.	4.1 Valve installed backwards.	4.1 Install valve in accordance with flow direction arrow.
5.0 Valve quickly and repeatedly fouls following servicing.	5.1 Debris in pipe line is too fine to be trapped by strainer.	5.1 Install finer mesh strainer element in the strainer.

Chemical Injection Devices

The chemical injection device draws chemical from the chemical tank and pumps it into the irrigation system. The components of the injection device must be resistant to the chemicals you plan to use. Consult the owner's manual or the manufacturer of the device to ensure compatibility of the device with chemicals used.

Metering pumps must be capable of being fitted with a system interlock which will shut down the pump should there be a loss of system pressure. A Venturi-type injection device must be capable of being fitted with a functional, automatic, quick closing check valve to prevent the flow of liquid back toward the chemical supply tank or a functional hydraulically operated valve which opens only when the main water line is adequately pressurized. In bypass systems (as an option to placing both valves in the line from the chemical supply tank) the check valve may be installed in the bypass, immediately upstream of the Venturi water inlet and either the normally closed solenoid or hydraulically operated valve may be installed immediately downstream of the Venturi water outlet.

Approved Chemical Injection Devices

Manufacturer	Model
Dosmatic U.S.A.	Advantage Series (A10, A12, A20, A30, A40, A80, DP30, T100), Doselec
Dosatron	D Series (All)
Smith Precision Products	R-1, R-3, R-4, R-6, R-8
H. E. Anderson Co.	Andy Series (DD100, DD200, DD400, DD1000, DD1200), Andy Jr. Series (DB100, D200, DB400, DB1000, DB1200, DB100PB, DB100P, DB1000PB, DB1000P), J Plus Series (JD31, JD32, JD52, JD104, JD104-2, JD103, JD103-3, JD164, JD164-2, JD164-4), S Series (SDN2-BA, SDN2-BAR)
Chemilizer Products, Inc.	HN55 Series, CP33 Series
Argus Control Systems Inc.	NUT-SYS/RM and NUT-AIM
Walchem	EHE Series



Lawn and Landscape Chemical Injection Devices

Chemical injectors commonly used for injection of fertilizers and pesticides onto lawns and landscapes must meet the same ISDA certification and installation requirements as other approved injectors when using domestic or municipal water as the water source. Lawn and landscape injectors typically operate on a pressure differential principle or an electrical metering pump. Pressure differential injectors work much like a Venturi system and must meet the same installation requirements as Venturi-type injectors.

Installation of an electrical metering pump requires installation of a system interlock that shuts down the metering pump when chemical distribution is adversely affected due to a drop or discontinuance of water pressure.

Please consult ISDA rules governing pesticides and chemigation use and application before installing and using chemigation systems.

Approved Lawn and Landscape Chemical Injection Devices

Manufacturer	Model
EZ-FLO	EZ001, EZ003, EZ005, EZ010, EZ020, EZ030
Yard Feeder, LLC	0602YF, 0835YF, 0805YF, 1010YF, 1215YF
Skeet-R-Gone	SRG2006

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/>