Acrison®

Model 515
Polyelectrolyte Preparation Module

For Dry and Liquid Polymers

Industrial and municipal chemical feed equipment.

Acrison®
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Model 515
Packaged Polyelectrolyte Preparation Module

Cuts water and wastewater treatment cost by accurate feeding, positive dispersion, and complete wetting of dry and liquid polyelectrolytes.

The Model 515 Polyelectrolyte Preparation Module automatically prepares a homogeneous and precise solution from dry or liquid polyelectrolytes.

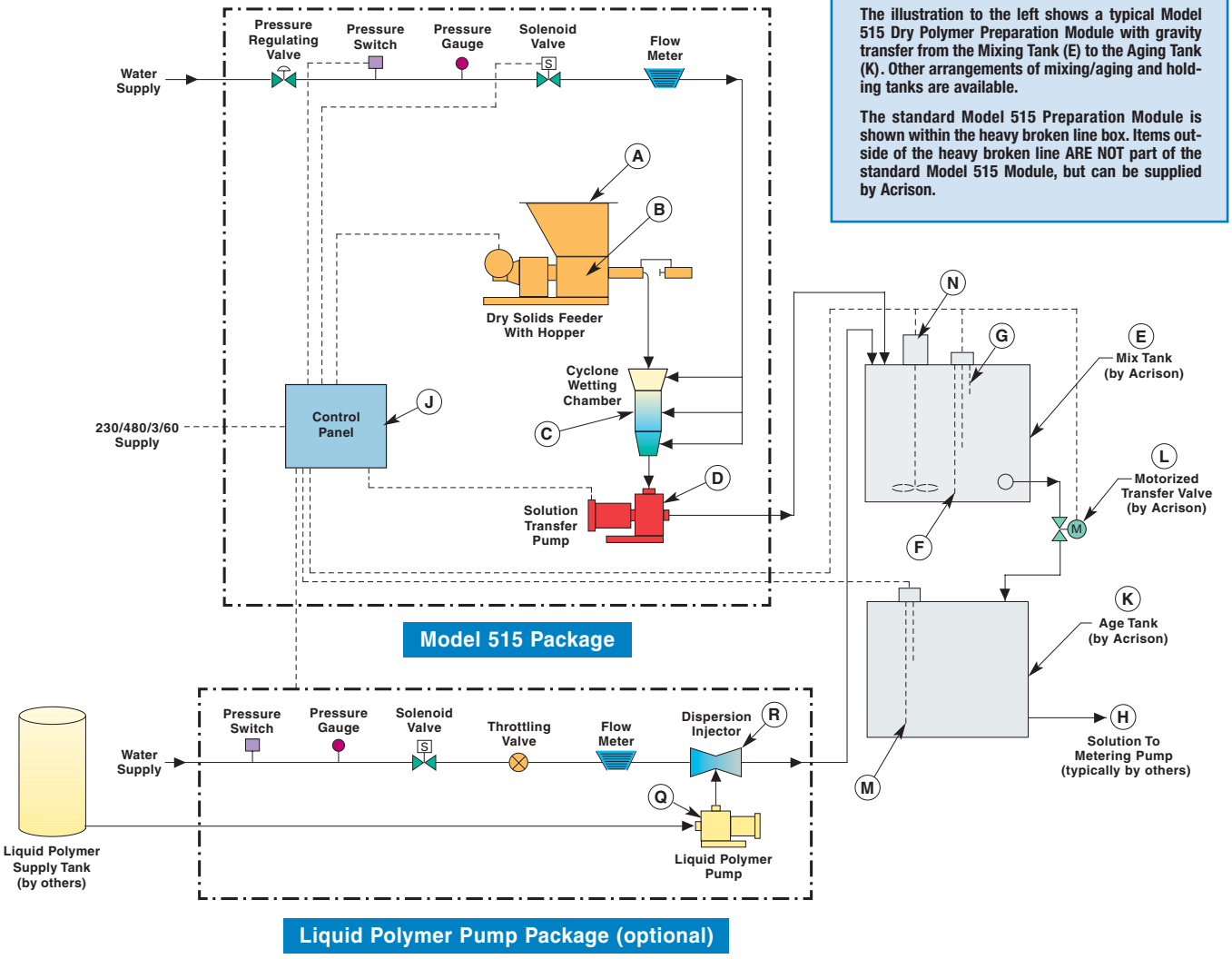
To accomplish this, a dry solids volumetric feeder meters polymer into a unique Wetting Chamber where the polymer combines with high energy, swirling water to form a thoroughly wetted solution, accomplished without eductors or other static restrictive orifices. When processing liquid polymer, a metering pump is used in conjunction with Acrison's novel *"Dispersion-Injector"* to blend the polymer and water. The prepared solution is transferred to the required arrangement of Mixing/Aging Tanks immediately upon wetting. The Model 515 Preparation Module is a complete packaged assembly mounted onto a "skid" type base, and includes control logic for most Tank Systems.

Features	Benefits
Model 105 Series Feeder	Double Concentric Auger, Dissimilar Speed Metering Mechanism ensures positive, accurate and reliable feed of dry polymer to the wetting chamber.
Wetting Chamber - Swirling Water Vortex	Ensures complete and thorough wetting without any agglomeration or "fisheyes"
Wetting Chamber - No Moving Parts	Maintenance-free operation
Wetting Chamber Containment Box	Includes level probe to prevent overflow conditions
Hydraulically Operated Slam Gate	Seals off the feeder discharge cylinder during periods of unuse to prevent the hygroscopic polymer form absorbing moisture
Transfer Pump	Conveys wetted polymer to mix tank without damaging the fragile polymer chains
Water Pressure Switch	Prevents the system from operating should the water pressure drop
Flow Meter	Provides visual indication of water volume flowing through the Model 515 module
Hopper Low Level Probe	Warns the operator when polymer supply is low
Mix and Age Tanks Sized Based on Application	Customized systems allow for greater flexibility, especially in rooms with height or footprint limitations
Rugged Tank Construction	11 gauge stainless steel tanks ensure extended life and durability
Completely Enclosed Tanks	Prevents items and debris from falling in, and prevents solution from splashing out
Slow Speed Mixer	Gently mixes polymer solution without damaging the fragile polymer chains
Liquid Polymer Pump Assembly	Optional for the accurate metering and blending of neat liquid polymer
Advanced Control System	Allen-Bradley PLC, Ethernet capability, and 8" color touchscreen operator interface provide complete automatic control of the system with the latest technology
Model 515 Module - Compact Design	Minimizes floor space and headroom requirements
Open-Frame Design	Provides easy access to all system components
Convenient Polymer Filling Height	Facilitates operator loading of hopper
Various Hopper Sizes and Hopper Loading Devices Available	Bulk bag (super-sac) unloaders, extra-large hoppers, dust collectors with bag dump stations, and more…
Ultrasonic Level Transmitters	Optional for system control and continuous level display

Provides Value to System Functionality/Operation Facilitates Maintenance/Increases Safety Provides System/Application Flexibility

A compact, economical and advanced Polyelectrolyte Preparation Module for the highly efficient preparation of both dry and liquid polymers.

Model 515 System Operation



The illustration to the left shows a typical Model 515 Dry Polymer Preparation Module with gravity transfer from the Mixing Tank (E) to the Aging Tank (K). Other arrangements of mixing/aging and holding tanks are available.

The standard Model 515 Preparation Module is shown within the heavy broken line box. Items outside of the heavy broken line ARE NOT part of the standard Model 515 Module, but can be supplied by Acrison.

Principle of Operation

Standard Dry Mode

The Model 515 System operation can be easily understood by following the Flow Diagram above. Dry polymer is loaded into the Feeder Hopper **(A)** and then accurately metered at a preset rate by Feeder **(B)** into Wetting Chamber **(C)** where it mixes with water.

Within Wetting Chamber **(C),** turbulently flowing water effectively and efficiently wets the polymer without clumping, agglomeration or "fisheyes." The completely wetted polymer then drops directly into Solution Transfer Pump **(D)** and is immediately and continuously transferred into a Mixing Tank **(E)** without in any way damaging the polymer chains. A slow speed Mixer **(N)** is included in this tank.

Low Level Probe **(F),** located in the Mixing Tank **(E),** initiates start-up of the system; its High Level Probe **(G)** shuts-off the Processing Module. Logic for the automatic transfer of solution to the Aging Tank **(K),** through Transfer Valve **(L)** , is provided upon command from Level Probe **(M).** The entire Model 515 System operation is performed from a Control Panel **(J).** Prepared polymer solution is then fed into the process at the desired rate by a Metering Pump **(H).**

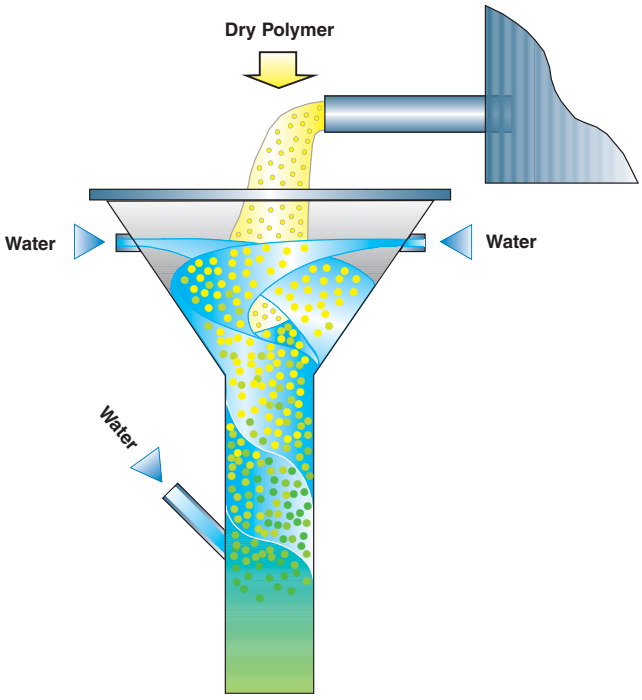
Principle of Operation

Optional Liquid Mode

As indicated in the above Flow Diagram for liquid polymer addition, Pump **(Q)** accurately meters liquid polymer directly into Acrison's unique *Dispersion-Injector* **(R)** where the polymer is simultaneously dispersed and mixed with vigorously flowing water to produce a superior, high quality solution. The solution is then immediately transferred into the Mix Tank **(E)**, typically provided with an Acrison Model 515 Polyelectrolyte Preparation System.

Constructed of clear Acrylic so that its internal area is entirely visible, the Dispersion-Injector **(R)** also contains and completely isolates the liquid polymer whenever the Metering Pump **(Q)** is not operating, or when the Liquid Polymer Preparation System is not in use. Very notably, Acrison's *Dispersion-Injector* is also non-clogging, self-cleaning, corrosion-proof and maintenance-free.

Cyclone Wetting Chamber



Cyclone Wetting Chamber

Acrison's Polymer Cyclone Wetting Chamber

Referring to the illustration, swirling water is combined with polymer for complete and thorough wetting.

- Based on original wetting device designed by Acrison in 1974.
- Swirling water vortex ensures sufficient surface area for proper wetting of the polymer particles.
- Suction of pump mounted below the wetting chamber creates a downdraft which atomizes the polymer, eliminates splashing, and ensures dust control.
- Eliminates agglomerate formation.
- No restrictive orifices ensures non-clogging operation of wetting chamber.
- Constructed of 316 stainless steel.
- No moving parts - Maintenance Free.

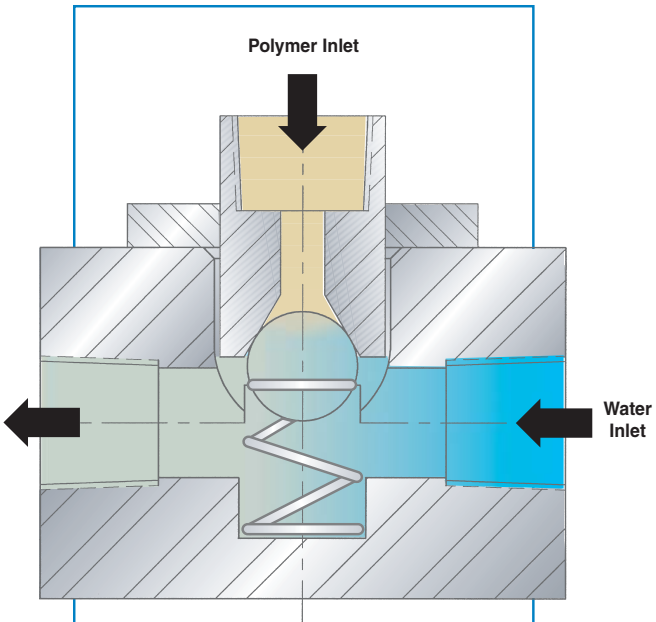
Dispersion-Injector

Acrison's Polymer* Dispersion-Injector

– Provided with the optional liquid polymer package –

Referring to the illustration, water flows into the *Dispersion-Injector* from one end. In the central section of the unit, polymer enters from around a spring-loaded ball causing the polymer to disperse into a thin, fine conical stream that instantaneously blends with the vigorously flowing water, exiting the *Dispersion-Injector* as a "pre-blended" solution at the end opposite the water inlet. In addition, the spring-loaded ball completely seals and isolates the liquid polymer from contact with water anytime the polymer pump is off or the Preparation Module shut-down.

- Efficient Solution Reduces Long-Term Polymer Use
- Full Polymer Activation
- Self-Cleaning and Non-Clogging
- Polymer isolated from water during shutdown
- Clear Synthetic Housing allows visual observation of process
- Corrosion-Proof
- Low-Maintenance
- Reliable Rugged Design



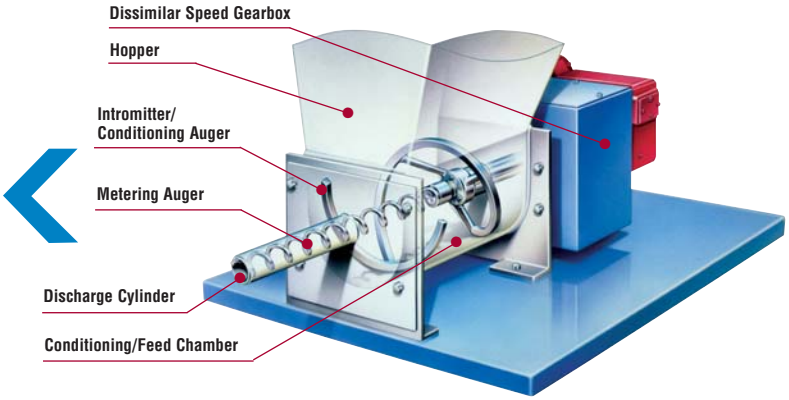
Acrison's Dispersion-Injector

***** Patents issued and pending.

Model 515 Polyelectrolyte Preparation Module

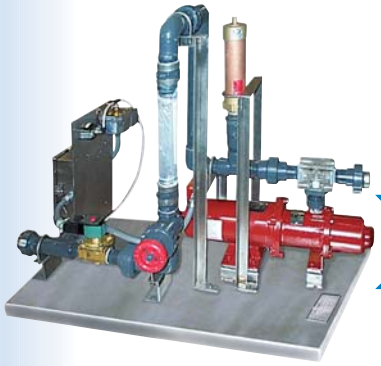
Basic Specifications

- **Construction:** As standard, product contact surfaces of the dry polymer feeder and wetting chamber are stainless steel.
- **Dry Polymer Feeder:** Dry polymer is metered by an Acrison Model 105 Series, dissimilar speed, Double Concentric Auger Volumetric Feeder. The standard feeder hopper capacity is two cubic feet, and the entire feeder is dust-tight. Metering accuracy is usually within ± 1 to 2 percent (error) or better based on a given number of consecutive one minute weighments.
- **Wetting Chamber:** Utilizes swirling turbulent water and a multitude of converging water jets to provide complete wetting of polymer.
- **Wetting rate:** Up to 4 pounds per minute (nominal) of dry polymer.
- **Transfer Pump:** Constant speed, direct coupled. The transfer pump motor is totally enclosed.
- **Control System:** Allen-Bradley Micrologix PLC with 8" color touchscreen operator interface and Ethernet capability standard. Provides complete control of system and run/alarm indication of all system components through an operator-friendly platform.
- **Control Panel Enclosure:** NEMA 4 is standard. NEMA 4X optional.



- **Power requirements:** 230/460/3/60.
- **Base dimensions:** 26 x 47 inches.
- **Filling height:** 60 inches to the top of the dry polymer supply hopper.
- **Water requirements:** 15-20 psi minimum. Standard systems require 16 gpm minimum water flow. Systems with liquid polymer option require 30 gpm minimum. Water flow requirements for larger systems with rapid-fill logic are calculated on a project-by-project basis.

Optional Equipment



- **Mixing/Aging Tanks –** when supplied by Acrison, these tanks are furnished independent of the Model 515 Processing Module. All necessary accessories, including the mixing tank mixer, level probes and transfer valve are fitted to the tank system at the factory. As standard, the Model 515 Control System includes all necessary control logic for operation with mixing/aging tanks.
- **Liquid Polymer Blending Package –** allows for the use of liquid emulsion type polymers. The package uses Acrison's unique *Dispersion-Injector* to blend liquid polymer with water prior to discharge into the mix tank.
- **Polymer Solution Metering Pump –** furnished as a separate item, the pump receives prepared solution from the aging tank. Post-dilution accessories can also be provided.
- **Ultrasonic Level Transmitters –** used in place of the standard conductance type level probes on the mix and age tanks, the ultrasonic transmitters provide non-contacting operation, changeable set-points, and continuous level measurement.
- **Original Control Package –** in lieu of the PLC and touchscreen interface, the panel can be provided with original relay control logic, and door-mounted lights and switches.

Discover the difference!

We cordially invite you to witness a test in Acrison's state-of-the-art Customer Demonstration Facilities handling your actual product(s) with the specific equipment we recommend for the application. Usually, there is no cost or obligation for this service.

Discover the difference in technology, quality and performance of Acrison equipment.

Acrison products...

- Models 101 and 130 Volumetric Feeders
- Models V101 and V130 Volumetric Feeders
- Model 1015 Volumetric Feeder Series
- Model 105 Volumetric Feeder Series
- Model W105 Volumetric Feeder Series
- Model 120 Volumetric Feeder
- Model 140 Volumetric Feeder Series
- Model 170 Volumetric Feeder Series
- Bin Discharger Feeders
- Model 200 Series of Weigh Belt Feeders
- Model 203B Series of Weigh Auger Feeders
- Model 270 Series of In-Line Weigh Feeders
- Models 402, 404, A405, 406 and 407 Series ("Weight-Loss-Differential") Weigh Feeders
- Model Series 403 ("Weight-Loss-Differential") Weigh Feeders
- Model 403B(D) Batch/Dump Weighing Systems
- Model 404BZ(BU) Bulk Bag Unloader Batch Weigher
- Models 350 and 301 Continuous Blenders and Blending Systems
- Multiple Auger Bin Dischargers and Multiple Auger Bin Discharger Hoppering Systems
- Vibratory Bin Dischargers
- Model 500 Series of Polyelectrolyte Preparation Systems
- Water and Waste Water Treatment Systems
- Volumetric and Gravimetric Feeder Controllers and Control Systems
- Accessory Equipment for Acrison Products
- Systems Engineering

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"Visibly Different... Measurably Better"

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