

MY12 **STACKER** DISTRIBUTION SYSTEM

PRODUCT INFORMATION

THE LIQUID SYSTEMS APPROACH

Liquid Systems (SA) is a family owned business in South Australia that has over 45 years of direct involvement in research, design and manufacture of agricultural machinery. Liquid Systems (SA) strongly believes in building reliable, accurate, durable products that provide the best end-user experience delivering the best results and peace of mind for the customer.

We specialise in the design, manufacture and distribution of unique and specialised systems and components to furrow inject liquid fertiliser, trace elements, inoculants, fungicides, soil wetters and other fluid products at seeding time.

We know that when planting a crop, our customer's time is too important to be spent dealing with the pitfalls of second rate equipment. That's why we build quality products that help farmers maximise their productivity by seeding and injecting multiple liquids simultaneously with systems that they can trust.

Our R&D testing facility has enabled us to undertake the prototyping and testing necessary to develop components and systems with the right characteristics for precision injection of liquids.

The Liquid Systems (SA) Quality Management System ensures that all our products are fit for purpose. They are of the highest quality and are supported by a comprehensive customer service facility. By purchasing Liquid Systems (SA) products farmers can count on faultless streaming of liquid at the openers, actually know what rates they are applying and integrate with mapping systems. Really, the only limiting factor in the diversity of our systems is your imagination.

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Liquid Systems (sil)

STACKER OVERVIEW

Liquid Systems (SA) STACKER is the most thoroughly researched and carefully designed liquid distribution system on the market today. Liquid Systems (SA) has been improving the design of its distribution system for over 11 years and with the latest STACKER Distribution system we believe we have all the answers for distributing liquids precisely and evenly to each row.

STACKER meets all the essential requirements:

- even distribution of liquid to each outlet across a wide range of application rates
- · flexibility to easily configure the number of outlets
- precise delivery of unbroken streams of liquid
- · durability to withstand corrosive liquids and harsh operating conditions
- reliability for extended periods of trouble free operation

PRECISION LIQUID CONTROL

ADVANTAGES OVER GRAVITY and FLOW DIVIDER SYSTEMS

STACKER has the edge over both these systems because it provides:

- Even distribution over a broader range of application rates and operating parameters
- Precision stream control with minimal lag time for start-up and shut-off
- Steady unbroken stream of liquid ensuring every seed gets its fair share



ROW-TO-ROW ACCURACY

Liquid delivered accurately on a second by second, outlet by outlet basis is the key to liquid soil injection regimes. "There is simply no point in applying liquids unless you do it accurately! Under apply product and you're ineffective, over apply product and you're wasting money, fracture you streams and you can forget about applying fungicides and inoculants via injection" says Peter Burgess, CEO and founder of Liquid Systems (SA).

The chart shown (below) compares the Coefficient of Variation (COV) of the Liquid Systems (SA) STACKER Distribution system against a commonly used variable flow system. COV is a measure of how evenly liquid is applied across the bar. The lower the COV the more even the distribution.

This has enabled us to provide systems to the industry that have a verified average COV of 4.1% over an operating pressure range of 0.3bar – 7.0bar (4.5psi – 100psi).

The results demonstrate an extreme contrast in accuracy between the two, especially at lower rates. The STACKER Distribution provides far superior performance. This test was independently controlled and conducted by a US customer.

% COV*by Rate: Variable System vs STACKER-12''spacings



FEATURES

EVEN DISTRIBUTION

Our tuned pressurized approach to liquid metering provides even distribution to all rows. Key to this even distribution are our own line meters which restrict the flow with a precise orifice size.

Large bore interconnected manifolds ensure even pressure to all lines resulting in even flows to each outlet.

PRECISE INJECTION

Precision delivery (stream control) can only be achieved by controlling the peripheries or terminals of a distribution system.

Our terminal assemblies are designed to enable precise delivery of liquid to where it's required in the furrow.

Our custom 2psi check valves ensure that lines remain charged with liquid during short breaks in seeding.

APPLICATION FLEXIBILITY

Thanks to our precision line meters, supplied in a range of orifice sizes, the Liquid Systems (SA) STACKER Distribution System will work across a huge range of application rates and operating speeds to suit fertilizer programs for a variety of crops.

Narrow or wide spacing versus low to high application rates and a wide range of operating speeds.

DURABILITY AND RELIABILITY

Liquid injection involves a diverse range of corrosive and reactive liquids. All components of the distribution system are made from chemical resistant materials to prevent system deterioration and failure.

Substantial filtration of liquid coming from the rate control system protects the system from blockages that would cause liquid application failure and downtime.

EASE OF USE

Incorporating a number of features unique to Liquid Systems (SA), STACKER Distribution Systems are easy to assemble and maintain.

STACKER manifolds, line meters and check valves all join to distribution lines via push-in connectors. These quick-fit and quick-release connectors make assembly and checking of lines a breeze.

Our precision line meters supersede orifice plates as a much easier to handle component that can be checked and cleared in seconds.

QUICKER, MORE EVEN EMERGENCE. GREATER EFFICIENCY IN APPLICATION AND USE OF LIQUID FERTILIZERS, TRACE ELEMENTS AND FUNGICIDES. REDUCED INPUT COSTS. EASY HANDLING. UNPRECEDENTED FLEXIBILITY. FAULTLESS STREAMING OF LIQUID AT THE OPENERS.







STACKER COMPONENTS

INDUCTION FILTER

Adequate filtration is of primary importance in maintaining open lines to all openers. STACKER's 80 mesh 2" line filter ensures any loose particles in the fertilizer solution are captured to prevent blockage or impairment of flow in the delivery lines. MY12 induction filters now feature a stainless steel, universal mounting bracket to make fitting to air tools and planters a very simple task.

STACKER MANIFOLD

At the core of the STACKER Distribution System is the Liquid Systems (SA) STACKER Manifold. MY12 manifolds are injection moulded in Polyester and feature 8.0mm push-in dual 'O' ring cartridge inserts for ease of assembly and maintenance. They are manufactured using our own automotive standard tooling.

They have been designed to give the installer total flexibility for system installation on tillage bars and planters. These large bore interconnected manifolds ensure even pressure is maintained to all outlets. Common galleries allow the manifolds to be stacked or nested as required. Push-in plugs are included to cater for different plumbing configurations. STACKER manifolds come complete with new stainless steel universal mounting brackets and stainless steel covers.

PRESSURE GAUGE

Each standard STACKER system comes with a Liquid Systems (SA) custom made 316 stainless steel 8 bar (116 psi) pressure gauge and stainless steel mounting bracket to monitor system pressure at the manifolds.

STACKER SUPPORT KIT

It includes tools that will help in the installation process and a generous supply of spare parts.



TERMINAL ASSEMBLY

With the enormous variety of tillage and seed tube configurations on the market today, STACKER Distribution provides a flexible set of components that will work with all of them to deliver liquid precisely where it's needed.

The Liquid Systems (SA) precision Line Meter is a key component to delivering liquid accurately to each row. They supersede orifice plates by providing far more flexibility in terms of location and ease of handling while still providing a precise bore size.

For 2012, we have expanded and updated our range of custom components to increase the versatility, robustness and quality of our systems. This has allowed us to release a range of terminal assembly configurations that suit a variety of planter and air tool setups and cropping regimes.

LINE METERS

For 2012 we have remodelled and added 4 new line meters to our range to cater for the US planter market and high rate requirements for air tools in Canada. Liquid Systems (SA) designed Line Meters have high precision bore sizes to ensure even delivery to every outlet. Their internal geometry promotes easy flow of liquid and eliminates potential 'dead zones'. Designed to work with push-in connectors; assembly, changing or checking and clearing of line meters takes literally seconds.

Modifications include:

- increased length for easier extraction from 8mm double o-ring fittings
- "track and trace" batch date stamp
- material code for plastic recycling
- orifice size marked by colour and in text
- "bull-nosed" ends for easier and more reliable fitting

V4 CHECK VALVE

The in-line check valves ensure that when liquid delivery is temporarily switched off the lines remain charged with liquid, thus providing an almost instant start-up upon resumption of operation. Good balance of component sizes ensures that the check valves do not adversely affect system performance.

PUSH-IN CONNECTORS

Make assembly and line checking simple.

V4 RUBBER UNION

Holds and protects providing a flexible connection between the terminal tube and stainless steel opener tube.

STAINLESS STEEL OPENER TUBE

Liquid Systems (SA) can provide stainless steel terminal tubes which can be shaped to suit any opener & seed tube configuration. **STACKER MANIFOLD**

Designed by Liquid Systems (SA).

DELIVERY TUBE

Liquid is delivered through to each outlet with our unique LLDPE 'Blend' tubing. This tubing is extruded to exacting tolerances and has been formulated to provide UV stability, a hard wearing outer surface and the ability to be manipulated into tight radius situations without crushing.

TERMINAL TUBE

Air Seeders —The 5.0mm OD X 2.5mm ID has been introduced to facilitate easier system installation and maintenance on our air seeder systems. The bore size of this tube provides good stream control and eliminates the requirement for terminal jets.

Planters —The 6.0mm OD X 4.2mm ID tube is being introduced specifically as a dealer sourced retro-fit for planters. It is a push-fit and passes through the larger 12.75mm X 10.0mm stainless steel opener tubes that are common to these units. This tube size permits rates up to 38 US GPA at 30" row spacings to be applied while still delivering good stream profiles at low application rates --- (essential if clients are contemplating applying inoculants, fungicides etc. via furrow injection)..



AIR SEEDER CONFIGURATIONS

These configurations are suited to typical tillage bar setups with narrow row spacings (up to 15") and large numbers of rows. Terminals are paired with 8mm T joiners to double the number of rows that can be fed from a single manifold. All configurations come with inline check valves and a range of line meter sizes.

STANDARD

LOW RATE

Our standard terminal configuration for MY12 systems eliminates the old terminal jet. In its place we have opted for a push-in solution (8mm x 5mm reducer) for easy assembly and maintenance. Our newly developed LLDPE 'Blend' 5.0mm X 2.5mm terminal tubing provides strong terminal streams. We recommend housing the 5.0mm LLDPE tube within 9.5mm OD x 1.63 wall (6.24mm bore) opener tubes strategically located on/to the points/disc openers assemblies.

 Connects to stainless steel opener tube.
We recommend 9.5mm OD x 1.63mm wall (³/₈" x ¹/₄").



- Fits to 1/4" stainless steel opener tubes.
- not suitable for spring tines or rocky conditions

HIGH RATE

For high rate applications, swage fit our 8mm delivery tube to connect directly to ¼" opener tubes.

Fits to ¼" stainless steel opener tubes.

PLANTER CONFIGURATIONS

These configurations are suited to typical planter setups with wide row spacings. All configurations come with inline check valves and a range of line meter sizes.

STANDARD

Our standard planter configuration uses a push-in solution (8mm x 5mm reducer) for easy assembly and maintenance. The Terminal Tubing is 5.0mm X 3.2mm which provide strong terminal streams.

 Connects to opener tube with OD of 9.5mm (³/₆").

HIGH RATE

For up to 38 GPA at 30" spacings, we have a push-in solution with an 8mm x 6mm reducer in combination with our newly developed LLDPE 'Blend' 6.0mm X 4.2mm terminal tubing.

 Connects to opener tube with inlet OD of 9.5mm (³/₈").





SECTION CONTROL

Implementing section control can deliver enormous efficiency gains in both land use and liquid product application, particularly with irregular shaped fields. Section Control is currently available in 3 to 6 sections for planters and air tools in single and dual configurations.

Interface to prescription mapping systems for the ultimate in liquid control with our optional tool mounted Section (Swath) Control Modules. Each STACKER manifold of the distribution system is fed independently via its own section control valve which is turned on and off according to field data / mapping regime requirements.



SECTION CONTROL FEATURES:

- implement up to 6 sections on planters and air seeders.
- plug and play with Topcon X20 or John Deere Greenstar™ and Swath Control Pro™.
- constant flow valve configuration provides instant section on/off and seamless rate control even at low application rates.
- even distribution of liquid to each outlet across a wide range of application rates
- universal mounting assembly for section control module allows for easy installation on any planter or tillage bar
- flexibility to easily configure the number of outlets



Liquid Systems 📾

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