

# SALFORD



## Fertilizer Application

# 4R Nutrient Management - Right Source, Right Rate, Right Place, Right Time

## **The Right Source**

Selecting the right source of fertilizer for your crops is the first step in maximizing soil productivity and developing the greatest yield potential.

Salford fertilizer application technology offers a variety of pre-plant application technology. Premium quality commodity carts are available for dry product handling and metering, and the Independent Series tools offer application attachments for dry fertilizer, liquid fertilizer and anhydrous ammonia.

## **The Right Place**

Placing your fertilizer accurately maximizes its effectiveness, prevents nutrient loss through erosion and leaching, and prevents damage to your crop from placing fertilizer too close to your seed.

Salford commodity carts offer optional double shoot kits to have multiple air streams on one cart allowing you to deliver two products to two places in one pass. Salford Independent Series application attachments are designed for broadcast with incorporation, shallow banding and deep placement of fertilizer. With Independent Series application equipment you can use one attachment at a time or combine all three to do more in one pass. In addition, with each pass you benefit from the superior vertical tillage and residue management of Salford "I-Series" tools.

## **The Right Rate**

Choosing the correct rate of fertilizer to apply is one of the most critical steps in any fertilizer application program. Balancing the soil's nutrient supply with the crops demand helps establish the most cost effective and environmentally sustainable rates.

Salford commodity carts are designed to accurately meter dry fertilizer at high speeds. Durable Independent Series application equipment is designed to work at high speed to keep up with Salford commodity carts and the fastest anhydrous ammonia metering equipment available today.

## **The Right Time**

Applying fertilizer at the right time ensures the least amount of nutrient loss and the maximum fertility is available for the crop.

Salford equipment gets into the field when you need to. Independent Series applicators excel in the widest range of operating conditions, with unmatched clearance for wet soil and high volume residue. Heavier models with greater down pressure are available for tough, dry conditions. Industry leading obstacle protection for stoney soils and extremely durable designs allow "I-Series" tools to go to the field with virtually anyone who can drive a tractor. Whether you are applying anhydrous ammonia through a thin layer of snow or applying a liquid starter ahead of the planter while you prepare seedbeds Salford application technology helps get fertilizer in the field when you need it.

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## SALFORD AC 1000, 2000 and 3000 Commodity Carts

SALFORD Air Carts are available with one, two or three commodity tanks, and the additional PLUS tank for micro-nutrients and granular herbicide is available on the AC2000 and AC3000 models. Tow Between or Tow Behind designs are available in most sizes.

- 1 SALFORD commodity tanks are available with 160 cu ft, 210 cu ft and 260 cu ft capacity\*. The poly tanks are designed to hold fertilizer or seed without risk of corroding. The soft corners and plastic material are ideal for rapid, easy clean out.
- 2 75 cu ft\* PLUS tanks are ideal for lower rate products such as granular herbicide and micro-nutrients like zinc, magnesium and sulphur. PLUS tanks can also be used for additional capacity to extend the range of the cart.
- 3 A wide ladder and sturdy platform allow for safe and simple access to each tank.
- 4 The operator convenience center helps organize your machinery and put equipment features within easy reach making SALFORD Commodity Carts a pleasure to operate.
- 5 13" Crary fans, or 17" REM fans (shown) are always mounted to blow in the direction of commodity travel to maximize their efficiency. Single, or double fans are available to match the various cart sizes, number of runs and application rates.



\*Tank Capacity based on fertilizer at 64 lbs/ cu ft. 160 cu ft = 5.1 ton, 210 cu ft = 6.7 ton, 260 cu ft = 8.3 ton, 75 cu ft = 2.4 ton



■ AC1000 Rear 3pt Hitch model

- 6 SALFORD Air Carts use stainless steel meters to prevent corrosion. The high rate meter roll is capable of sustaining up to 800lbs/acre\*. The individual metering compartments and pressurized system increase the carts accuracy at high speeds. \*Using two or more tanks/meters with double shoot switch and two fans.
- 7 SALFORD Air Carts come standard with Zero Max™ mechanically adjustable ground driven metering. Variable rate metering is optional using a hydraulic drive. Monitoring systems are required for variable rate application.
- 8 SALFORD Air Carts feature high flotation tires to match the capacity of the cart to minimize compaction and carry loads safely through the field.
- 9 Rear 3pt hitch is standard equipment with AC1000 commodity carts. The 3pt mount allows for direct connection of various fertilizer application attachments. Rear 3pt hitch is also available on select AC2000 models.
- 10 AC2000: 8" x 20' Steel loading / unloading auger (not pictured)  
AC3000: 10" x 22' Steel loading / unloading auger (not pictured)

## Commodity Cart Specifications



### AC 1000 Single Tank Cart

- Plastic bin available in 125\*, 160, 210 and 260 cu ft capacity
- 13" Crary fan with single 6 outlet manifold
- Stainless steel inner tank components, air lines and metering system
- Available as Tow Between only
- 3 Point Hitch is standard equipment
- 125 cu ft tanks are subject to limited availability
- \*\* Cart shown with aftermarket liquid fertilizer tank

### AC 2000 Dual Tank Cart

- Plastic bins available in 160, 210 and 260 cu ft capacity
- Optional Plus tank, additional 75 cu ft
- 17" REM™ fan with single 10 outlet manifold
- Stainless steel inner tank components, air lines and metering system
- 8" x 20' Steel loading / unloading auger
- Capped steel flighting with plastic hopper
- Available in Tow Between or Tow Behind configurations
- 3 point hitch available on TBT models less than 400 cu ft

### AC 3000 Triple Tank Cart

- Plastic bins available in 160, 210 and 260 cu ft capacity
- Optional Plus tank, additional 75 cu ft
- 17" REM™ fan with single 10 outlet manifold
- Stainless steel inner tank components, air lines and metering system
- 10" x 22' Steel loading / unloading auger
- Capped steel flighting with plastic hopper
- Available in Tow Between or Tow Behind configurations

# Poly Commodity Tanks: Multiple Individually Mounted Tanks, Maximum Flexibility

## Up to Four Tanks: Capacity and Commodity Flexibility

Up to four tanks with a max capacity up to 855 cu ft (27.3 tons) of product. Tanks are separately mounted and metered for accurately weighing the product in each bin and to blend fertilizer in field, minimizing separation due to product settling in transport. The air tight tanks are pressurized in order to equalize the pressure inside the tank and in the metering air stream so that product is delivered consistently and evenly.

\*Tank Capacity based on fertilizer at 64 lbs/ cu ft.

160 cu ft = 5.1 ton, 210 cu ft = 6.7 ton,

260 cu ft = 8.3 ton, 75 cu ft = 2.4 ton



## Plastic Translucent Tanks

The plastic tanks do not corrode with fertilizer. The round molded corners help product flow and are easy to clean. Translucent plastic allows you to see the remaining product.

## Individually Mounted Scale Ready Tanks

Tanks are mounted separately on the cart frame allowing optional scales to be applied to each bin for maximum accuracy when filling the cart and blending in the field.

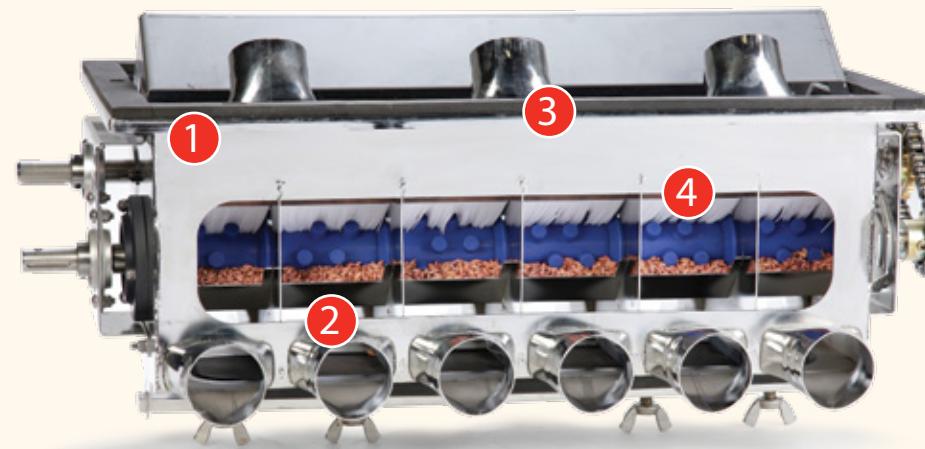
## Plus Tank

The optional 75 cu ft Plus tank is available to increase overall capacity or for the delivery of lower rate products such as herbicides and micro-nutrients.

## Commodity Metering

The Salford metering system is accurate, versatile and simple. The pressurized system is designed for high volume, high speed application. Whether it is set up with ZeroMax™ infinitely adjustable ground drive, or hydraulic variable rate drive, the meter rolls are designed to turn smoothly and accurately deliver even amounts of product to each run. Carts with two or more tanks and double shoot systems can achieve up to two times the application rates using the multiple air streams of the double shoot system.

- 1 The stainless steel meter housing handles fertilizer and seed treatments without corroding.
- 2 Meters are available with 6 or 10 outlets, and run block kits are available. Individual metering compartments ensure that equal amounts of product are delivered to each run.
- 3 The pressurized tank and metering system ensure that each run is unrestricted by the air pressure in the lines for increased metering accuracy.



4

■ High volume stainless steel metering roller for 40-400 lbs/acre rate

■ High volume plastic metering roller for 10-360 lbs/acre rate

■ Standard plastic metering roller for 3-250 lbs/acre rate.

## Application Rates

Average Rates Single or Multiple Tanks, One Meter, One Fan				
30" Rows	Capacity	Speed	Pri. Hose	Sec. Hose
8 Rows	500 lbs/acre	6 mph	2.5"	N/A
12 Rows	500 lbs/acre	6 mph	2.5"	1.5"
16 Rows	500 lbs/acre	6 mph	2.5"	1.5"
24 Rows	400 lbs/acre	5 mph	2.5"	1.5"

High Rates Multiple Tanks, Two or more Meters with Double Shoot, Two Fans				
30" Rows	Capacity	Speed	Pri. Hose	Sec. Hose
8 Rows	800 lbs/acre	6 mph	2.5"	N/A
12 Rows	800 lbs/acre	6 mph	2.5"	N/A
16 Rows	800 lbs/acre	6 mph	2.5"	N/A
24 Rows	600 lbs/acre	5 mph	2.5"	1.5"

High Speed Multiple Tanks, Two or more Meters with Double Shoot, Two Fans				
30" Rows	Capacity	Speed	Pri. Hose	Sec. Hose
8 Rows	500 lbs/acre	9 mph	2.5"	N/A
12 Rows	500 lbs/acre	9 mph	2.5"	N/A
16 Rows	500 lbs/acre	9 mph	2.5"	N/A
24 Rows	N/A	N/A	N/A	N/A

\*Metering rates vary by product and air line sizes. Alternative rates are possible with different equipment configurations.

## Single/Double Shoot Switch Option - Multiple Product Delivery or Increased Pounds per Acre

The double shoot switch adds a second air stream and is operated open or closed. The switch allows separate products to be delivered to separate application attachments at the same time. The additional air stream increases the per acre delivery capacity of the commodity cart.

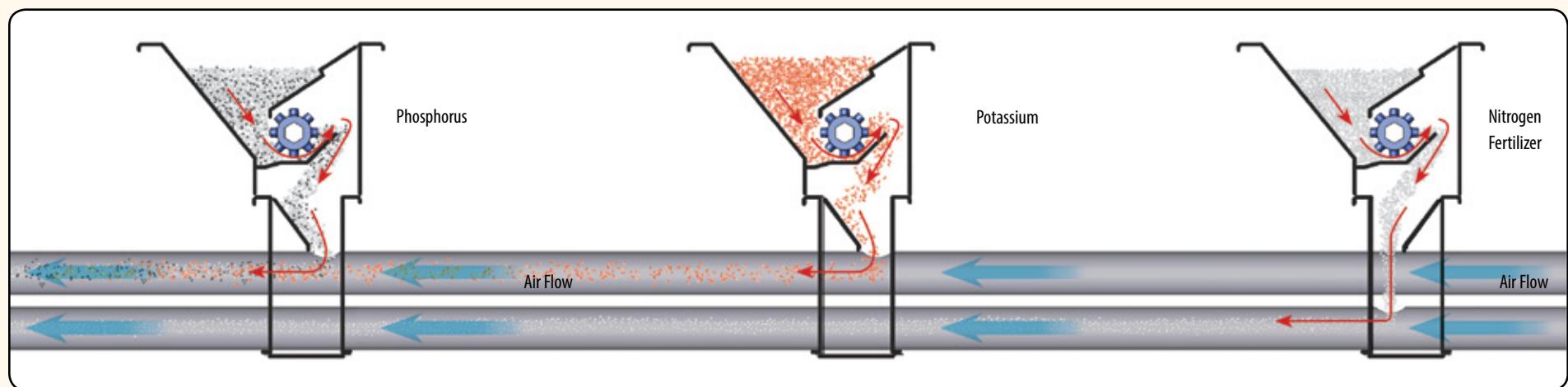
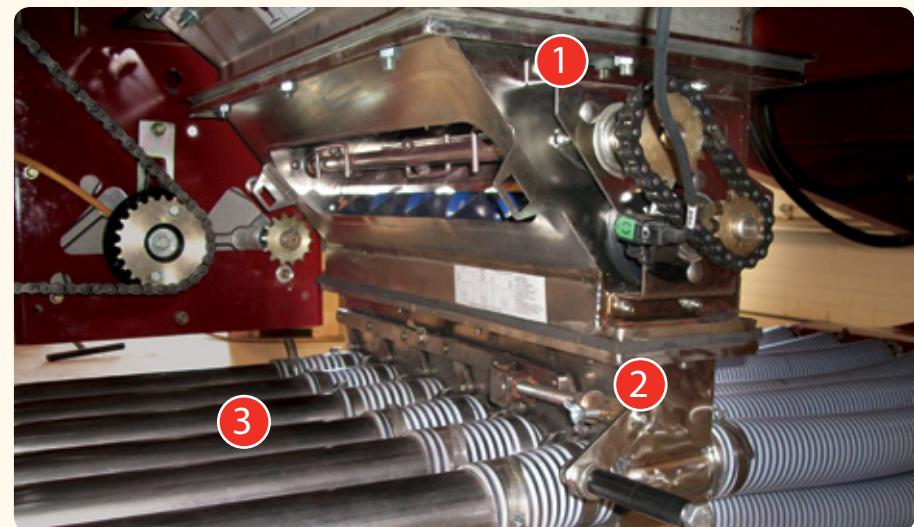
### AC2000 - 2 bin Air Cart

1. Single shoot – all products are directed into one line
2. Double shoot – products from different bins are directed into separate lines

### AC3000 - 3 bin Air Cart

1. Single shoot – all 3 products are directed into one line
2. Double shoot – 2 products from different bins are blended and directed into one line and product from the third bin is directed into separate line
3. Multi shoot – any of 3 products can be directed to any of the distribution lines

- 1 SALFORD meter box
- 2 Single/Double Shoot Switch
- 3 Stainless steel components are standard equipment



### Product Flow

Example of triple tank set-up: each hopper equipped with Double/Single Shoot Switch. Two products (Phosphorus and Potassium fertilizer) are directed to one set of tubes; a third product is directed to another set of tubes.

## Commodity Cart Features



### Load / Unload Auger

AC2000 and AC3000 Air Carts are equipped with loading and unloading augers. The AC2000 features a 8" x 20' steel auger. The higher capacity AC3000 carts have a 10" x 22' steel auger.



### Quality Components Engineered for Longevity

SALFORD Air Carts use stainless steel and plastic tank components, meters and feeder lines to stand up to any type of product for the long run.



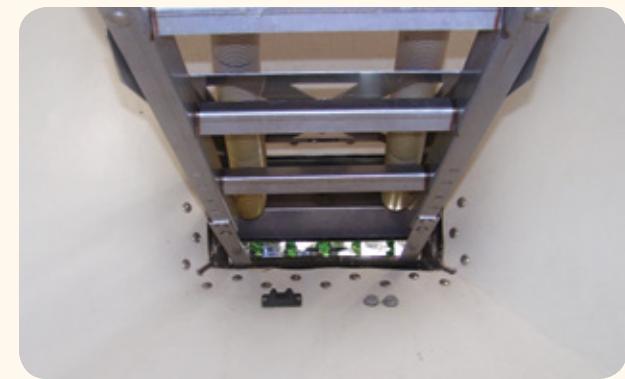
### Zero Max™ Ground driven meter

SALFORD Zero Max™ meter transmissions are mechanically adjustable for infinitely variable application rates. The rate is simply adjusted by turning the crank handle, no tools required!



### 13" Crary™ Fan

The SALFORD closed air system allows for consistent, high rate delivery of products. The 13" Crary™ fan is standard equipment on SALFORD air carts. A second Crary™ fan can be added for higher capacity or double shoot distribution systems. For larger carts, wider seeding systems and/or a high number of runs the 17" REM™ fan is available. REM™ fans can also be paired for double shoot distribution.



### Convenient Tank Space

The rounded corners of the molded plastic tanks make for easy clean out. The fill screen minimizes foreign material from entering the tank and the stainless steel ladder resists corrosion, adds stability to the plastic tank and does not hang-up product.



### 17" REM™ Fan

## Commodity Cart Options



### Hydraulic Variable Rate Drive

Variable rate application controlled through monitor systems are available using the hydraulic variable rate drive.



### Monitoring & Controls

Salford offers monitoring solutions or the commodity carts are compatible with ISO 73811 compliant monitors, which covers many industry standard controllers. Photo courtesy of DICKEY-john™



### Tow Hitch

Heavy Duty frames give Salford Commodity Carts exceptional pulling capacity. Add a rear tow hitch for trailing implements like Anhydrous tanks or high capacity liquid fertilizer carts.



### Rear 3 Point Hitch

The 3pt hitch gives ample room for working between the cart and the implement. The 3pt hitch features an auto-safety lock that traps fluid in the cylinders to prevent the hitch from lowering during road transport or if the hydraulic lines are disconnected.



### PLUS Tank for Micro-nutrients or Granular Herbicide

Add an additional 75 cu ft capacity to AC2000 and AC3000 PLUS tanks. PLUS tanks are designed to carry lower volume or lower rate products, to balance your seed and fertilizer application and minimize fill ups.

# Independent Series Application: 4R Ready and Added Value



## Multiple Application Attachments for Maximum Versatility

Salford's patented Independent Series tools are available with multiple OEM attachments for fertilizer application. Combined with the Independent Series equipment's renowned ability to operate in various soil conditions the Independent Series tools help get the right fertilizer down, at the right rate, in the right place at the right time.

## Value Added Application

Independent Series tools are well known for the quality seed beds they produce and the earlier planting dates that come with "I-Series" surface tillage. The durable machines feature industry leading obstacle protection and once set they are notoriously simple to operate and maintain, which makes them ideally suited for rental equipment and high acreage farming operations with hired operators.

### Shank Kits

Shanks kits are designed for anhydrous ammonia application and the deep banding of fertilizers up to 8". Shanks are available with spring reset, or hydraulic bypass obstacle protection. I-Series tillage and the HD harrow package generate superior NH<sub>3</sub> application.

### Coulter Mounted Banding

Commodity distribution tubes mounted on the coulter arm blow fertilizer or seed in the trench cut by the coulter. I-Series tools have a variety of coulter spacing and depending on the model they can band on multiples of 5", 7" and 7.5" rows.

### Broadcast Incorporation

I-Series tools can be fitted with a broadcast air distribution across the front of the machine. Taking advantage of the I-Series tillage action the commodity is incorporated to the working depth of the machine, not left on the surface where it is susceptible to run-off or volatilization.

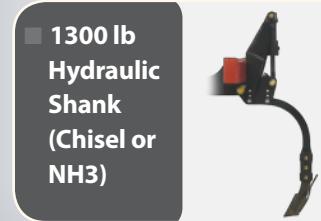
#### Integrated Fertilizer Attachment Options / Combinations



■ 500 lb  
Spring  
Shank  
(Chisel or  
NH3)



■ Coulter  
Mounted  
Banding  
Tube



■ 1300 lb  
Hydraulic  
Shank  
(Chisel or  
NH3)



■ Broadcast  
Diffuser

# Independent Series Specifications



## I-1100 Specs

Sizes	12', 16', 18', 22', 24', 27', 30', 36' 41', 50' 60'
Depth range	0" - 4"
Blade mount	1 1/4" Coil-Tech
Blade Type	20" x 4.5mm Coulter
Blade Spacing*	7"
Banding Spacing*	7", 14", 21", 28"
Shank Spacing*	14" or 28"
Shank Depth	4" - 8"

\* Spacings are approx.

## I-1500 Strip-Till Specs

Sizes	20' (8 row), 31' (12 Row), 41' (16 Row)
Depth range	0" - 4"
Blade mount	1 1/4" Coil-Tech
Blade Type	20" x 4.5mm Coulter
Blade Spacing	Strips
Banding Spacing*	Various Options
Shank Spacing*	30"
Shank Depth	4" - 8"

\* Spacings are approx.

## I-2100 Specs

Sizes	12', 18', 24', 28', 31', 36', 41', 50', 60'
Depth range	0" - 5"
Blade mount	1 5/8" Coil-Tech II
Blade Type	22" x 5mm Coulter
Blade Spacing*	7.5"
Banding Spacing*	7.5", 15", 22.5", 30"
Shank Spacing*	15" or 30"
Shank Depth	4" - 8"

\* Spacings are approx.

## I-3100 Specs

Sizes	12', 18', 24', 28', 31', 36', 41', 50', 60'
Depth range	0" - 5"
Blade mount	Rubber Suspension
Blade Type	22" x 5mm Coulter
Blade Spacing*	7.5"
Banding Spacing*	7.5", 15", 22.5", 30"
Shank Spacing*	30"
Shank Depth	4" - 8"

\* Spacings are approx.

## I-4100 Specs

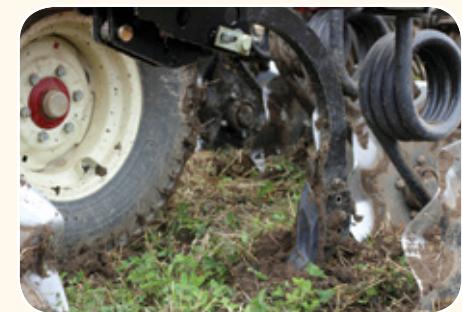
Sizes	12', 18', 24', 28', 31', 36', 41', 50', 60'
Depth range	0" - 5"
Blade mount	Rubber Suspension
Blade Type	22" x 5mm Concave & Colter
Blade Spacing*	7.5"
Banding Spacing*	7.5", 15", 22.5", 30"
Shank Spacing*	30"
Shank Depth	4" - 8"

\* Spacings are approx.

# Independent Series Attachments: Shank Kits

## Versatility

Salford Independent Series tools can be fitted with shank kits for applying fertilizer or chisel ripping. Choose between 500lb spring trip shanks, or hydraulic shanks with adjustable trip pressure up to 1,300lbs. The shanks dig in up to 8" and readily accept common fertilizer application knives to put down liquid, dry and/or NH<sub>3</sub> fertilizer. An optional heavy chisel shank allows you to convert the Independent series Fertilizer Applicator into the Independent series Coulter Chisel. Fertilizer Application and Tillage shanks quickly lock out of operating position to convert this machine to a surface tillage tool. Locking up shanks can also adjust shank spacing to match your application/tillage needs. The 500lb spring trip shanks use a single bolt lock up, hydraulic trip shanks can be raised and lowered from the tractor seat. Equip the I-1100 and I-2100 with shanks on 15" spacing for chisel operation then lift every second shank for 30" fertilizer application.



## Hydraulic and Spring Shanks with Lock-Up

The auto-reset shanks dig in between 4" and 8" and are adjusted through the machines operating depth, and/or by using multiple mounting positions. Hydraulic shanks are protected by a hydraulic by-pass. Each shank style also is protected with a shear bolt.

## Fertilizer Application Hardware

Equip the shanks with a variety of knives for anhydrous, liquid and dry fertilizer application, or combination knives to apply two products at once. The shanks allow for application between 4"-8". The coulters and heavy duty harrows quickly seal the trenches left by the shanks to prevent gas loss.

## Chisel Shank Kit

A 1/4" wide by 2 1/4" deep tillage shank is available for adding chisel hardware to the Independent Series. Best suited for the 1,300lb hydraulic mount the chisel shank has 50 degree mounting for various chisel attachments and quickly converts back to a surface tillage machine with the hydraulic shank control.

## Chisel Hardware

Equipped with chisel hardware, Independent series tools are capable of more aggressive soil density reduction and field leveling. The shank can work between 4" - 8" using three hardware depth settings and the single point depth control.

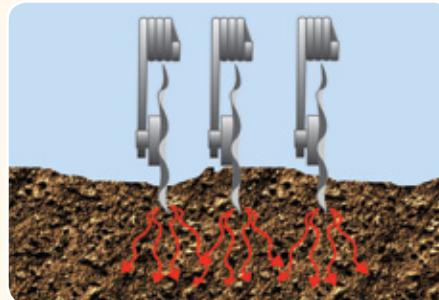
# Independent Series Attachments: Shank Kits

## Superior Anhydrous Application while Managing Residue and Preparing Seedbeds

Independent Series anhydrous application takes advantage of the unique tillage action of the spring loaded Coil-Tech Coulter. As the Coil-Tech crosses the ground it vibrates loosening the soil and creating cracks in hard ground.

When applying  $\text{NH}_3$  the gas can seep into the cracks and loosened soil creating a more even application.

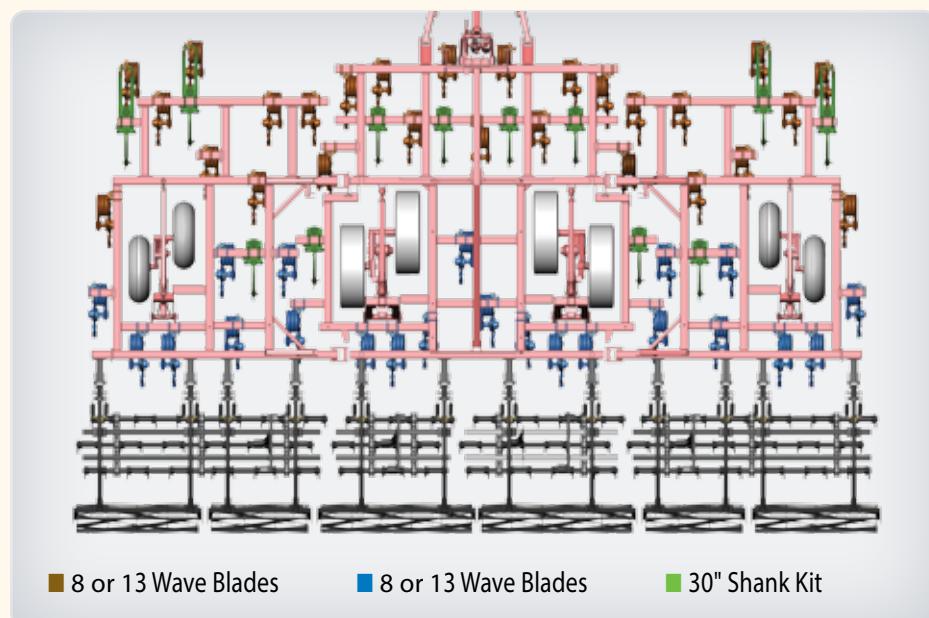
Each shank is led by a coulter to cut residue and minimize plugging. Shanks are also trailed by coulters on either side to begin closing the trench almost immediately. Within seconds the HD tine harrow crosses over the trench leveling and evenly distributing soil and residue across the machine and over the trenches. The 14" roller follows, sizing clods and gently firming the surface, completing the seal.



■ Coil-Tech Coulter Vibration



■ 1/2" 3 bar tines & 14" rolling basket



Allen Decker uses his 41' 1-1100 to prepare seed beds, manage fall residue, and apply his anhydrous. He sees less striping in the field compared to the conventional anhydrous tool bar and likes the sealing action of the HD harrow package. The I-1100 does not create secondary density layers in the soil, which Allen says gives him a yield advantage. "In certain soil types the I-1100 is all we use." The tough frame design, individually mounted blades and HD harrows, make for low operating costs and very little down time. "The I-1100 has been pretty well fool proof."

Allen Decker, crop farmer in Wellington, IL

# Independent Series Attachments: Banding and Broadcast

## Right Time, Right Place, Right Rate, you choose the Right source

Equipped with air distribution kits, Independent series tools are exceptional at incorporating product via coulter mounted banding tubes, broadcast diffusers, or both methods at the same time. Independent series tools work fast and open the window to a wider range of operating conditions, allowing you to apply fertilizer at the right time. Independent series tools incorporate at a uniform depth and gently firm the soil to ensure product is at the right place. Salford metering systems are very accurate and designed to handle a wide range of product with out changing meters to deliver the product you choose at the right rate.



- I-1100

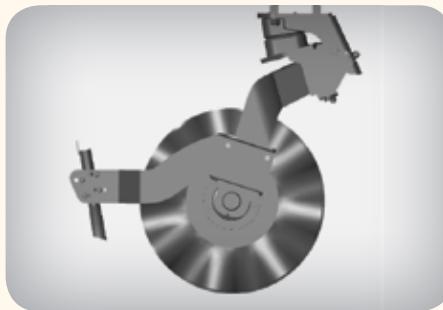
41 ft.

9 mph

**40**

acres per hour

- Residue Management or Chisel Plow
- Seedbed preparation
- Fertilizer application



### Coulter Mounted Banding

Mounted to the coulter, these commodity delivery tubes place product into the trench opened by the coulter. The banding tubes can be configured to deliver product on multiple row spacings.



### Broadcast Diffuser

The broadcast system allows for accurate incorporation and complete field coverage with fertilizer. Independent Series tools incorporate broadcasted fertilizer while they apply reducing run off and volatilization, saving a second pass across the field.



### Combine Operations

Combining attachments allows for various custom product applications. Deliver multiple commodities simultaneously while achieving the correct placement.



### Cover Crops

While you apply cover crop with the Independent Series tools take advantage of their exceptional seed bed preparation and the ability to run in damp conditions or high volume residue. If the cover crop does not winter kill, Independent Series tools can be used to work them down.

# Independent Series Attachments: Liquid Attachments



Regan Crone uses his 41' I-1100 to broadcast apply fertilizer on selected acres ahead of his seeding equipment. The I-Series equipment incorporates the fertilizer very evenly into the soil and it manages moisture and residue at the same time. "I noticed that the I-1100 left very mellow, easy to work ground, and my anhydrous applicator pulled more easily and required less horsepower after I ran the I-1100 as well".

Regan Crone, crop farmer in Spalding, SK



## After Market Liquid Application

Liquid fertilizer application can be achieved using Salford's fertilizer banding mounts to mount an aftermarket application knife, or by running a liquid fertilizer line down the Coil-Tech blade mount. Using RTK guidance, Independent Series tools can be used to apply starter fertilizer and prepare seedbeds in the same pass, taking liquid application equipment off of the planter. Shallow surface tillage with the Independent Series coulters while applying liquid fertilizer allows the nutrients to seep into the soil increasing the depth of the concentrated band of fertilizer the plant can access and reducing nutrient stratification in the soil.

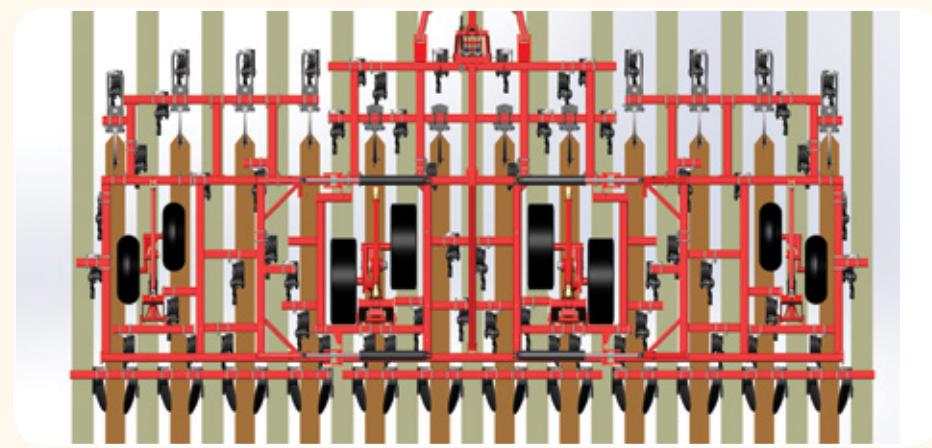
# I-1500 Strip-Till Applicator

The I-1500 Strip Till Applicator takes the best of strip till technology and spreads it out over a much deeper frame than conventional strip-till machines in order to prevent the tool from plugging with high volume residue.

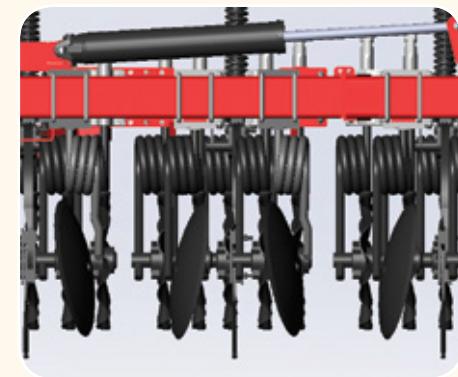
Combined with Salford Commodity Carts the I-1500 is an ideal tool for responsible nutrient management. The carts flexible metering system and multiple compartments allow you to apply the right products at the right rate. The I-1500's high clearance design allows you to get into the field in almost any conditions, allowing you to apply pre-planting fertilizers at the right time. The multiple attachments for broadcast incorporation, banding behind coulters and deep placement with the shank kit allow you to put your pre-planting fertilizer in the right place.

Salford's I-Series tools can be equipped with 500lb spring trip shanks, or 1,300lb hydraulically protected shanks that can till and apply fertilizer up to 8" deep. The I-1500 can be equipped with berthing and/or rolling baskets to create the desired finish.

The I-1500 strips are on 30" centers and the standard layout tills a 20" row with 5 coulters per row and a 10" undisturbed strip between the rows. The Coil-Tech Coulter 1 blade mounts carry a 20" wavy coulter and features industry leading clearance and durability.



Berms created by the I-1500



Rear view of the I-1500 rows

Model Size	Rows	Number of Coulters*	Transport Height	Transport Width	Approx. lbs with harrows	H.P. Required*
20'	8	38	10'1"	13'3"	13,100	200-320
31'	12	62	14'6"	15'8"	20,500	320-500
41**	16	82	13'6"	18'9"	31,400	420-600

\*\* 5 section frame

\*Horsepower requirements vary by speed and operating depth and towing other implements

# Independent Series Residue Management

## Tillage, Residue and Soil Structure

Tillage can be critical to reduce compaction and eliminating horizontal layers in the soil that can prevent root systems and water from penetrating into the sub soil. However, if care is not taken, tillage machines can cause more problems than a troublesome mat of residue.

- Tillage can be responsible for creating density layers in the soil.
- Aggressive tillage can destroy the habitat for macro and micro soil organisms causing further delays in the decomposition of residue.
- Too much residue buried in the seedbed can interfere with germination.
- Residue buried by tillage can take longer to decompose without the help of macro organisms, making nutrients unavailable for use by future crops.
- Clearing too much residue from the soil surface can increase soil erosion and cause soil moisture to evaporate too quickly.

## Working with Residue

Most of Salford's Independent series use independently mounted blades that enter straight into the ground, on 7.5" spacing. The blades slice through soil and residue as opposed to dragging and turning over the top layer of soil. After a single pass with most Independent series machines the roots that have passed between the 7.5" spacing remain loosely anchored in the soil prevent erosion. One pass with I-1100 leaves 50% or more of the soil's surface, covered in residue, preventing water erosion from rain and moisture loss due to evaporation. The re-sized residue has been cut and crimped by the coulters and mixed with soil as the fluted blades loosen the surface. The conditioned residue begins to rapidly decompose allowing micro-organisms to start mineralizing nutrients faster.

In spring seedbed preparation, the vertically mounted blades and surface tillage action resist mixing residue into the seedbed, leaving a clean environment for germination. The loosened topsoil, warmed by the slightly darker surface, allows plants to germinate faster and emerge uniformly.



**Pictured above:** Roots take from a Salford research plot administered and maintained by a 3rd party agronomist. On the left a root system growing into ground fall tilled with a Salford 9700 CTS and spring seedbed preparation with an I-1200. On the right a root system fall tilled by a chisel plow and spring seedbed preparation with a disc harrow. Avoiding vertical density layers, caused by not shattering between primary tillage shanks, or horizontal density layers created by discing or cultivating in wet or damp soil, is critical to root development and the overall yield potential of the plant.

## The Jackhammer Effect: Fracturing the Soil

The Independent Series blade mounting systems drive cracks into the ground and loosen the surrounding soil without having to overturn and disturb the soil structure. The cracks allow air and moisture to infiltrate the soil. The additional oxygen gives new energy to aerobic micro-organisms, which in turn break down residue and build organic matter. Moisture is stored deeper in the soil and can be held by the additional organic matter. The cracks caused by the Jackhammer effect also allow crop root systems to penetrate deeper into the soil, providing a healthy foundation for the plant, and allowing it to reach down to additional moisture and nutrients.

## SEEDING & FERTILIZING



520 AIR DRILLS



525 AIR DRILLS



AIR CARTS

## INDEPENDENT SERIES



I-1100



I-1200



I-2100



I-3100



I-4100



I-5100



I-Series Fertilizing



I-Series Seeding

## TILLAGE



9700 CTS



9800 DRH



9200 In-line Ripper



Disc Cultivator



Moldboard Plows



Disc Harrows



Cultivators



Universal Harrows

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