

Three-leg centre structure

Our three leg centre structure is the strongest on the market. It is available both fixed and towable (three-wheel) versions. It is used on very long machines or where the terrain is extreme. It uses the industry standard Pierce seal.



Sloping-pipe centre structure

AGRICO launched the sloping-pipe (SP) centre in 1989. It brought a new concept to centre pivot irrigation: it was the first centre which could be hooked up to the 3-point linkage of a tractor for easy and quick towing.



Although its main advantage was originally seen as easy towing, it has become immensely popular as a fixed centre (shown above). Some of the reasons why it sells so well are:

- Dual polyurethane u-seals eliminate leaks;
- Its bearing is metal-on-polyamide, a great improvement on the crude metal-on-metal bearing conventionally used;
- The anchor point is built to conveniently T or L into the main line, eliminating all the expensive plumbing usually necessary at the centre point;
- The anchor point is delivered with permanent shuttering for the pouring of concrete;
- It requires only 1.75 m³ of concrete, compared to the 3 to 6 m³ that conventional multiple-leg centres need.

Linear irrigators

The use of a linear machine is justified in cases where high-value rectangular and racecourse shaped fields need to be irrigated, or where special crop layouts are required (for example at experimental farms). AGRICO has considerable know-how in laterals. With our ditch-fed lateral you can irrigate 1 000 metre runs with our high-voltage automatic cable reeling system.

In hose-fed laterals we have pioneered the catenary-style hose anchor. This system lifts a considerable portion of the hose being pulled into the air (see picture below), reducing the hose draught force and wear, while providing traction needed to pull the hose by placing the weight of the suspended hose onto the wheels of the pull-tower.



Autoflush

Another innovation by AGRICO is the new Autoflush valve. In the last few pipe lengths of a centre pivot, the flowrate is very low, and as a result dirt tends to accumulate at the end of the overhang, frequently clogging the last few nozzles.



The Autoflush valve pictured above flushes for approximately 25 seconds each time the pump is started, purging the dirt from the overhang, and eliminating the problem of clogged nozzles.

Your partner in irrigation

At AGRICO you deal directly with the manufacturer of your irrigation equipment – there is no middleman. AGRICO is a stable company that takes great pride in its products, service and support. We continue to supply parts for all systems that we have ever sold. This lets you focus on the business of farming, and keeps the resale value of your centre pivot high, increasing the value of the property it is irrigating.

AGRICO Centre Pivot 2011-01.29999950.docx

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*Meer as 100 jaar van diens!
More than 100 years' service!*



CENTRE PIVOT IRRIGATION

- Coverage from 2 to 200 ha
- Fixed and towable machines
- Hose-drag linear irrigators
- Ditch-fed linear irrigators
- Water driven pivots
- Standard, high and low clearance
- High stability towers with a longer wheelbase for windy areas
- 100 Micron zinc layer on all piping
- Duplex Pivot® for aggressive water
- Rust-free stainless steel main panel enclosure
- Rust-free, UV-stabilised, fibre-reinforced polyester tower boxes with solid stainless steel control rods
- Control voltage of 230 V, not 110 V
- High-quality, branded electrical switchgear
- Cablesaver and Wheelsaver for areas where theft is a problem
- Our inline galvanising plant enables us to deliver your pivot fresh from the zinc-bath
- World class drive train
- Autoflush valve eliminates the problem of clogged nozzles on the overhang
- Country-wide service network consisting of 27 branches

ADVANTAGES OF CENTRE PIVOTS

There are many reasons why centre pivots have become so popular as a means of irrigation:

- Low initial cost;
- Low labour requirement;
- Low inlet pressure (low pumping cost);
- Easy to manage;
- Modern sprinkler packages give low evaporation and excellent uniformity of water application;
- Low maintenance;
- Long lifetime;
- Good resale value.

AGRICO has been active in the South African Market for over 100 years. We entered the South African centre pivot market in 1978, when we imported our first machine. Since then we have become the leading manufacturer of centre pivots in South Africa, under the AGRICO brand name, with a 5 000 m² factory, which includes an inline galvanising bath.

Our service network consists of 27 branches located throughout South Africa, all of which are built on property owned by the company. AGRICO currently employs more than 800 people in South Africa.

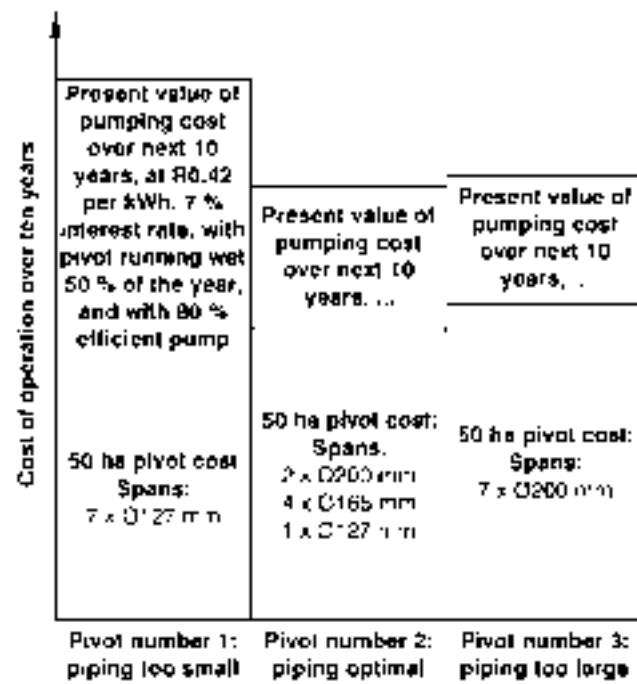
THE AGRICO CENTRE PIVOT

The AGRICO centre pivot has been continuously improved since the first machine was built in 1987. Its main features are as follows:

The optimal pipe size for your situation

The diameter of the pipe used in a centre pivot is an economic trade-off. If the piping in your pivots is too small, your pumping cost will be unnecessarily high. If the piping in your machine is too large, the initial expenditure on the machine will be unnecessarily high. Because the flow varies along the length of a centre pivot, the diameter of the pipe used should vary too. AGRICO offers four pipe sizes (Ø194, Ø165, Ø127 and Ø101 mm) and uses custom software to determine the optimal configuration for your conditions, using your pivot flow, price of electricity, interest rate and payback period.

The figure overleaf illustrates the fact that there is an optimal choice of pipe sizes for a 50 ha centre pivot designed to deliver 10 mm/day (approximately 50 l/s). It can be seen that the pumping cost decreases as the piping in the machine is made larger. Up to a point the increase in the price of the machine is more than made up for by the reduction in pumping cost in future years.



Pivot structure

The structure of a centre pivot has a large effect on its lifetime cost, since repairs to the machine after structural failures can be costly, and crop losses from lost irrigation time can be very large. The high span bow of the **AGRICO** centre pivot makes for very strong spans, and allows for spans with a length of up to 67 m to be used safely and reliably.

No commercial quality steel is used in the manufacture of **AGRICO** centre pivots. Pipes, flanges and angles are of 300WA steel with a silicon content controlled for repeatable high-quality galvanising. A 300WA steel has a yield strength of at least 300 MPa and an ultimate tensile strength of at least 450 MPa. Truss rods are manufactured using EN8 steel.

Other structural features include an ultra-strong rod-pocket, Ø16 mm flange bolts, 4 mm thick truss angles, 10 mm thick flanges and one-piece factory-welded leg assemblies, which are reinforced in high-stress areas.

The **AGRICO** pivot has dedicated tower- and pivot-end pipes at the beginning and end of each span. These pipes are reinforced where the loads from the tower legs feed into the span, eliminating the buckling often seen at these points in our competitor's spans.

Highest quality galvanising

The useful life of a centre pivot is most often determined by the corrosion life of its pipes, and thus the quality of galvanising is one of the most important factors to be considered when buying a pivot. The life of a galvanised pipe depends on a number of factors:

- The thickness of the zinc layer;

- The make-up of the zinc layer (trace amounts of metals such as aluminium are added to galvanising baths);
- The environment (aggressiveness of the water, flushing properly after giving fertiliser, effectiveness of drain valves, etc.).

Galvanising our own pivots allows us to precisely control the make-up of our zinc bath. Weekly samples are taken and analysed to ensure that trace elements are kept at their desired levels.

AGRICO pivot piping is guaranteed to have at least a 100 micron zinc layer. In the galvanising industry, the ISO 1461 standard is usually adhered to. It specifies a zinc layer of 70 microns thick. Since the coating life is directly proportional to its thickness, the piping of an **AGRICO** pivot will last at least 1.4 times as long as piping galvanised according to ISO 1461.



The picture above shows four pipes being removed from our galvanising bath. In the background cranes are being used to load parts onto the truck directly after galvanising. Because we do our own galvanising, we don't need to keep stock of the galvanised items – we simply manufacture them when we need them, avoiding the damage and weathering that inevitably go with keeping stock and handling the product multiple times by forklift. The only time the finished product is transported, is when it is taken to its final destination, only hours after galvanising.

Duplex for corrosive water

In coastal areas, or situations where very aggressive water is used (fertigation, wastewater, acidic water from coal mines), galvanising alone does not provide sufficient corrosion protection. For such instances, we offer Duplex Pivot®.

The Duplex system consists of a galvanised pipe, with an additional epoxy coating applied afterwards. The addition of an epoxy coating greatly extends the life of the pivot, since the zinc layer provides an extremely stable base for the epoxy, which in-turn protects the zinc layer.

Deliveries to some coastal areas of South Africa are already 100% Duplex.

Electrical control system

The electrical control system of a centre pivot is key to its reliability, which is why we only use high-quality branded switchgear. Hot connections are avoided by using spring-loaded connectors throughout the system.

Malfunction of the control system can cause great mechanical damage to a machine, and corrosion of the control system can be a major cause of malfunction. To this end, the **AGRICO** electrical system is 100% rust free:

- Stainless steel main panel enclosure;
- Rust-free, UV-stabilised, fibre-reinforced polyester tower boxes. Our towerboxes do not have an electroplated base plate prone to rusting through;
- Stainless steel cam arm, with a solid stainless steel control rod – **AGRICO** pivots cannot collapse as a result of rusted control rods, or broken age-embrittled plastic cam arms.

Our 230 Volt control voltage has many advantages over the 110 V used on American machines:

- Resistive losses in the cable are decreased by a factor of four;
- It is easy to obtain 230 V contactors, relays and transformers anywhere in South Africa;
- Switchgear with a 230 V control voltages is cheaper than switchgear with a 110 V control voltage.

Our power-factor corrected tower boxes reduce the current drawn by up to 50%, allowing a smaller cable to be used to supply the machine.

World class drive train



The well known and proven two stage spur gear centre drive was pioneered locally by **AGRICO**. These centre drives feature:

- Efficiency of 95%;
- External dust seals and crop guards protect oil seals;
- Thermal protection with automatic reset;
- Helical gear design, with all gears heat-treated, in ratios of 40:1 (standard), 30:1 and 20:1.

Wheel gearbox features include:

- Bellows-type full-cycle expansion chamber that prevents oil leaks as the gearbox "breathes" when its temperature changes;
- Large tapered roller bearings are used for long life;
- Input shafts are fitted with external UV-resistant dust seals;
- Crop guard seals are fitted on all shafts.

The new Tow-Nontow (TNT) gearbox pictured above allows disengagement of the output drive with the simple flip of a handle.

All gearboxes and centre drives are given serial numbers in the factory, and records are kept to aid in the investigation should theft occur at a later stage.

Wheelsaver and Cablesaver

The theft of span cable and wheels is becoming widespread in southern Africa.



Wheelsaver (pictured above) is a system of tamper-resistant nuts, which cannot be loosened using an open spanner, socket, shifting spanner or monkey wrench. A special, numbered tool is supplied to a responsible person on the farm, for use in maintenance. **AGRICO** keeps a register of all tools sold.

As a countermeasure to cable theft, you can order your pivot with Cablesaver, where the span cable is protected inside the span pipe. The cable enters and exits the pipe through glands at the tower boxes, and is safeguarded against removal even if the glands are loosened.

