



**Case Study:**  
GoldAcres

**Industry:**  
Agriculture

**Problem:**  
Cylinder extension due to imperfections in road surface when travelling between fields

**Outcome:**  
A four-part seal that controls leakage, provides stability, reduces friction and tolerates vibration.

## About GoldAcres

GoldAcres is an industry-leading manufacturer and supplier of world-class agricultural chemical spray equipment for farmers.

Driven by a philosophy to provide farmers with equipment and technology that delivers. GoldAcres consistently strives for innovation, quality and adaptability through a courageous approach to the research and development of its versatile range of sprayers.



Photo courtesy of GoldAcres

From cultivators to cutters, sprayers to seeders, Hydraulic Seals Australia's range of seals are designed to meet the technical needs of the agricultural industry. Our seals have been designed to withstand the demands of our harsh environment and typical contaminants such as dust and moisture.





## SECTOR CREDENTIALS

A vast range of agricultural equipment provides many challenges for hydraulic equipment. From a simple lifting mechanism to a broad acre plow, operating night and day all parts of the system need to be reliable, including the hydraulic seals to prevent fluid leakage.

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With an extensive range of high quality seals and years of experience, HSA provides exceptional performance to minimise downtime and keep agricultural equipment running.

## Problem

GoldAcres fitted 'standard' hydraulic cylinders to the spraying machines they manufacture. These machines have 'wings' that sit parallel to the machine when it's travelling on the road or through the farm gate. Once in the field, the hydraulic cylinders open the wings at 90 degrees to the machine. The wings carry the spray heads that apply fertiliser and water etc to the ground and crop.

As the machines were travelling along the roads from field to field, and even on some public roads, the wings were extending. This was very unsafe and posed a danger for any other traffic using the road.

Due to the vibration caused by corrugations and other imperfections on the road surface, the double-acting piston seal was moving back and forth, axially in its housing, sometimes at quite high frequency. The movement caused a displacement of hydraulic oil from the annulus to the full bore side of the piston, resulting in cylinder extension.

## Strategy

We needed to design and manufacture a double-acting piston seal that would fit into the same housing yet be limited in its axial movement to avoid the 'pumping' issue.

The original cylinders were fitted with five-part piston seals. The rubber element has a significant amount of radial preload, therefore the axial length compensates for that. The new seal needs to be wider and as leak-free as possible in order to eliminate the fluid being pumped from the high pressure side to the low pressure side.

## Results

We developed a four part seal comprising of:

- A dynamic sealing face with two sharp lips to control the leakage, provide stability, reduce friction and tolerate vibration.
- A rubber energiser to provide stability and excellent sealing retention force.
- Two POM guide rings, integrated with the face and energiser to eliminate the possibility of seal extrusion.

