



# Parker Downforce Solutions

Hydraulic Force Control for the Agriculture Market



ENGINEERING YOUR SUCCESS.

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## Hydraulic Force Control for the Agriculture Market

As farmers demand uniform seed depth at faster planting speeds and a higher level of precision from their equipment, it is increasingly necessary to apply force efficiently and precisely to ground engaging implements. Parker's Negative downforce concept can provide a simple easy to control system to meet the end customer's needs.

### BENEFITS OF THE PARKER SYSTEM APPROACH:

- Single solenoid control for up and downforce
- Two hose solution for fluid conveyance
- Low electrical power requirements
- Fail to downforce in case of power loss
- Single source global supplier

Parker provides maximum flexibility in assisting our customers to develop their specific downforce solution using components proven in the application. Our team is able to

provide full system development from development, testing and implementation, to single component support. Our systems engineering team and row unit test stands are located in Elk Grove Village IL, USA and Boras, Sweden for support in the development of these systems.

### WHAT IS NEGATIVE DOWNFORCE SYSTEM?

Hydraulic downforce provides either active or passive force to maintain the ground contact a ground engaging implement in order to maintain a seed specific depth.

An individual system is mounted on each row or section.

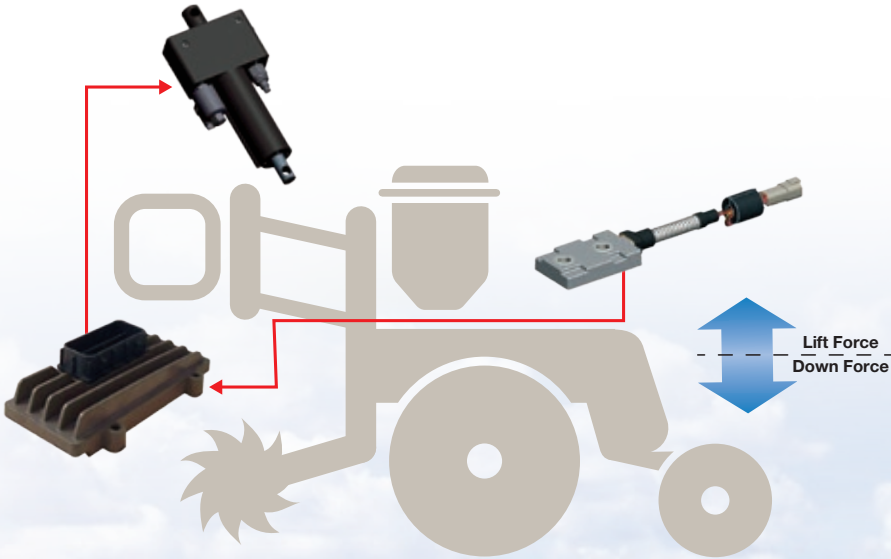
### EXAMPLES OF WHERE APPLIED

- Planters
- Seeders
- Tillage equipment

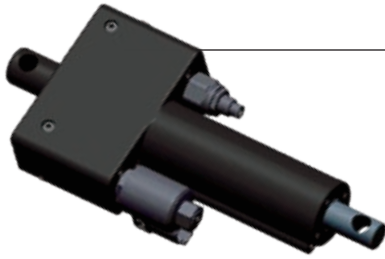
Fixed pressure provides the maximum required downforce and the proportional valve control's upward force to reduce from maximum required downforce.

The control source is a force sensor for force feedback and custom built depending on row unit design.

Pressure source is the tractor valve direct, vacuum fan and cylinder sized on max available pressure.



\*Patent Pending



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### **Valve and Actuator – Parker Negative Downforce Actuator**

- Compact Design
- Single solenoid Control for up and downforce
- Patent pending concept
- Auxiliary ports for multi-cylinder control



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### **Force Sensor – Parker LMI Sensor (in development)**

- 0-5V output
- Shock load resistant
- Custom force resolution
- IP67 rating



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### **Controller – MC42**

- Small pin population for Modular Design
- J1939 CAN Communication
- Configurable I/O for Downforce valve, CAN motor control



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### **Fluid Conveyance – Parflex Formed Hoses**

- Formed to fit uniquely into place
- Flexible to allow for linkage movement
- Reduces installation complexity



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### **WPF Series Pressure Filter – WPF Filter**

- Integrated bypass
- Low delta P reverse flow valve



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