



INNERCEPT™

DIGITAL PROPORTIONAL CONTROL



HYDRAFORCE
POWER FORWARD

hydraforce.com

Introducing HydraForce's Innercept™ Digital Proportional Control

The Innercept digital proportional control with LVDT (Linear Variable Differential Transformer) is a new product designed by HydraForce, that offers plug-and-play simplicity, with servovalve accuracy.

Due to growing demand in the market for high-precision control, quick response time, and improved efficiency, Innercept provides the quickest speed to market, and flexibility for implementing high-accuracy digital proportional operation for today's mobile machinery.

Specifically created for off-highway precision applications including autonomous machines, Innercept digital proportional control achieves more stable functions with increased precision, better performance in the field, near-perfect repeatability, and enhanced accuracy. It delivers an economical solution that is easily adapted for variety of applications.

Created with your machine in mind

Innercept digital proportional control is perfect for applications where precision and response are key and it is suited for a range of machine functions.

AUTOMATIC STEERING:

Autosteering applications on agricultural tractors and earthmoving/grading equipment

AGRICULTURE:

Specialized harvesting equipment, and Variable Rate Applications including Sprayers and Spreaders where Precision application of agricultural chemicals is key.

CONSTRUCTION/ROAD BUILDING:

Precision Trenching, Paving, Motor Graders, and Road Milling machines.

INDUSTRIAL APPLICATIONS & MUNICIPAL:

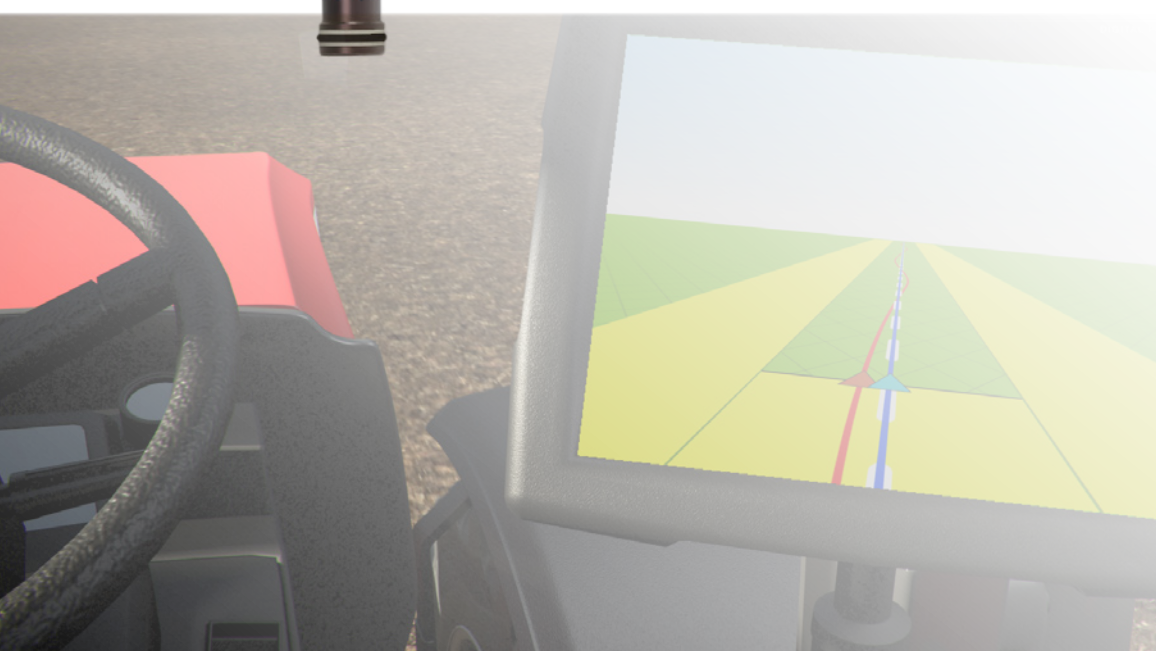
Railroad maintenance equipment. Semi and fully autonomous municipal vehicles like sweepers, salt spreaders, and refuse trucks.

MATERIAL HANDLING:

Lift/Lower controls on vehicles.

HIGH-ACCURACY LINEAR OPERATIONS:

Machine mounted cranes; Combine Harvesters; Forestry and aerial work platform applications. In addition to Operator assistance/control-by-wire applications.

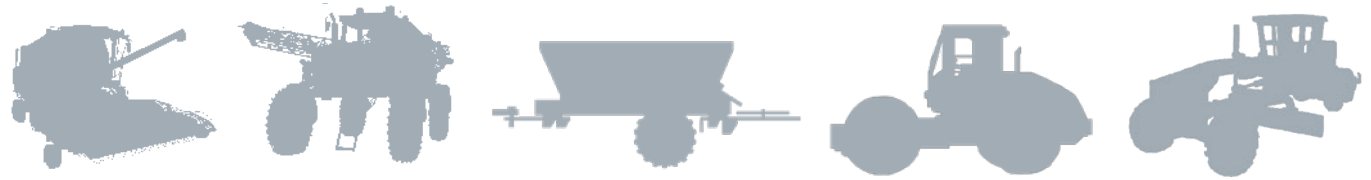




Responsive, Repeatable, Accurate: The Benefits of the Innercept™ Digital Proportional Control

HydraForce Digital Proportional Control reduces hysteresis, eliminates variation and degradation of performance, increases accuracy and productivity. Upgrade your system with the following benefits and performance improvements:

- Valve to valve repeatability
- Precisely control speed and force
- Less than 1% hysteresis
- Plug-and-Play CAN bus technology
- Superb linearity
- Overcome internal hydrodynamic forces
- Precise PID control
- Absolute accuracy
- Environmentally robust IP69K rating



SUGGESTED APPLICATIONS: COMBINE HARVESTERS, SPRAYERS, SPREADERS, PAVING, MOTOR GRADERS,



About the new Innercept™ Digital Proportional Control

HydraForce's new Digital Proportional Control (patent pending) is a highly compact, proportional control valve with integrated LVDT (linear variable differential transformer) that delivers exceptional linearity and repeatability.

This uniquely designed LVDT has been adapted for application with cartridge valve technology, and when attached to a solenoid-operated proportional valve, forms a flow control which can be combined with a wide range of additional cartridge valves to form a customized hydraulic circuit: resulting in more stable autonomous functions.

The Innercept digital proportional control is constructed using four essential components, including the proportional valve.



- **Proportional Flow Control Valve** (such as HydraForce's SP10-P57FL): provides precise directional control to a cylinder or motor, along with an isolated load-sense signal to control a pump. HydraForce will be expanding the valve offering for Innercept in the future.
- **Integrated LVDT Position Sensor:** non-contact LVDT sensor and driver circuit is rated to IP69K, and provides a 0 to 5 V signal variable to spool position that is accurate within 0.1 mm (0.004 inches). This also forms the feedback leg of the ESDR closed-loop control.
- **HydraForce's new ESDR-0201A**, a Two Output Closed-Loop PID control, to form a plug-and-play closed loop directional flow control: full-featured PID control with tuning parameters optimized out-of-the-box, or you can create custom tuning for your application. The control cycles every 5 ms to read and correct the valve's position 200 times per second. The SAE J1939 compliant ESDR receives its set-point via CAN message and has full DM1 diagnostic messaging support.
- **Electromagnetic Actuator:** two-coil proportional actuator available in 12 and 24 V variants with integrated Deutsche connectors rated to IP69K.



SWEEPERS AND OTHER OFF-HIGHWAY EQUIPMENT



Begin with the solution
at [hydrasforce.com/
Innercept](https://hydrasforce.com/Innercept)



Contact HydraForce for
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