HydraForce

POWER FORWARD

Dynamic Load-Sense Boosts Solutions

www.hydraforce.com

THE DYNAMIC LOAD SENSE BOOST VALVE DYNAMICALLY BOOSTS THE LOAD SENSE SIGNAL TO ENSURE THE REQUIRED POWER IS AVAILABLE TO EFFECTIVELY AND EFFICIENTLY CONTROL AGRICULTURE EQUIPMENT.

BOOSTING MADE EASIER

The LSB08-30 valve is installed at the inlet of the implement circuit on the LS line going to the power beyond LS coupler with a check valve in parallel. The LSB is set at the minimum desired ΔP level needed on the implement sub-circuit to ensure that all the valves will give the desired flow and movements reach their maximum speed. The setting is not linked to the tractor pressure drops but only to the implement circuit design.

When flow demand is low, the ΔP at the implement will be above the LSB setting, and no boosting occurs. The LS signal coming from the implement cross the check valve without any amplification. The system works like if no boost valve was installed. When flow demand increases, the ΔP at the inlet of the implement decreases due to the line and coupler pressure drops. As the ΔP drops to the set threshold, the LSB08-30 begins boosting the LS pressure dynamically. If more flow is demanded, the boost value increases by the same to compensate the increase of pressure losses in the line between pump and implement. The boost value is not constant but is dynamically and automatically adjusted by the valve to maintain the ΔP available above the level set on the valve.

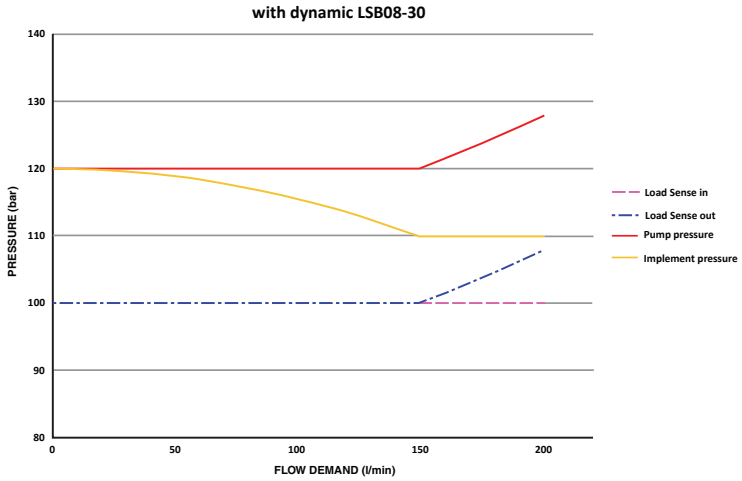
Hydraforce LSB valve is adjusted based on the implement ΔP need. If the implement is connected to a different tractor, the setting will remain the same, the LSB will adapt the amount of boost depending on tractor performances.

PERFORMANCE OF THE NEW LSB08-30 VALVE:

Below: An example of a Typical pressure curve measured on tractor and implement, equipped with the dynamic LSB08-30 versus flow demand.

For low and medium flow demand, there is no boost: the LS pressure signal [pink] from the implement, and the LS signal [blue] going to the pump are equal. As soon the ΔP at the implement reaches the LSB setting, the valve starts to provide a boost. The amount of boost increases with the flow demand, in order to maintain the ΔP constant at the desired level.

On most of the implements, the LSB will be set below the margin pressure of the pump. It is also possible to set the LSB above the pump setting. In this case, the valve will boost permanently but the amount of boost will vary with the flow demand.



***Advantage**: a unique setting based on the implement sub-circuit will work with all tractors. The circuit is not boosted for low & medium flow rate, saving fuel.*

LSB08-30 Advantages:

- Results in fuel & energy savings (as valve only boosts when required)
  - Increased performance from towed implements
- Reduce maintenance and operating costs
  - Suitable for all types of tractor connections

The new patent-pending, dynamic load-sense boost valve.

IMPROVE IMPLEMENT EFFICIENCY WITH ON-DEMAND BOOST VALVE

As agricultural implements grow larger and more complex, they require greater hydraulic flow from the tractor to till, seed, bale, or spray the field. Because of this increase in flow capacity, many hydraulic systems may starve for flow and provide poor performance and efficiency due to low ΔP at the implement.

A way to solve the problem is to use a load-sense boost valve.

HydraForce engineers developed a new, patent-pending, Dynamic Load Sense Boost Valve. The LSB08-30 is a three-ported dynamic LS pressure boosting valve with an adjustable threshold. It has the unique ability to dynamically boost the load-sensing signal according to the desired ΔP at the implement, and the flow demand from the system. This is a completely mechanical solution that requires no sensors, electronic controls, programming or infield setup. When boosted, the pump provides more flow to the auxiliary hydraulics in times of high demand, but when demand is low, it saves energy by dynamically reducing the boost value to zero. This means fuel savings at the tractor and increased performance from towed implements.

LOAD-SENSE BOOST BENEFITS

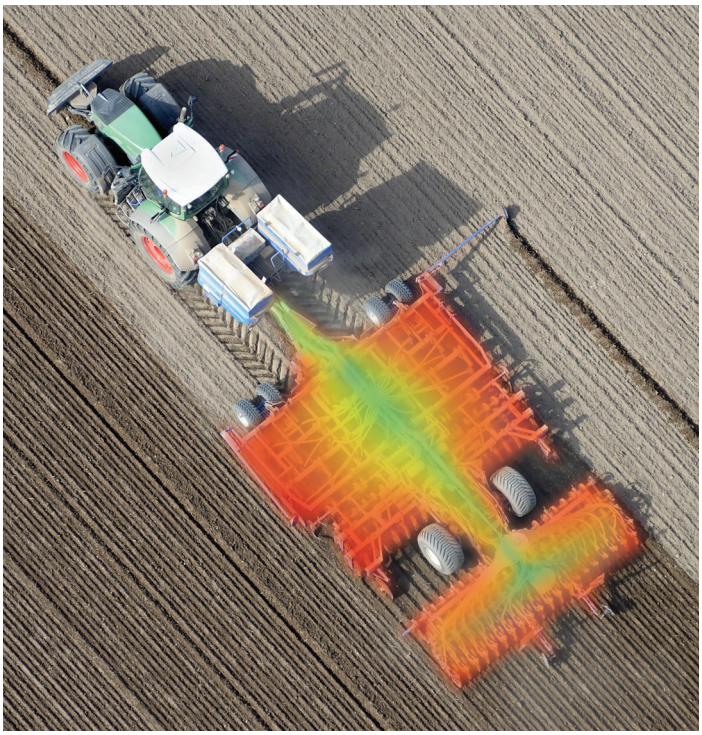
Most implements need a medium flow rate to operate, but, during short periods of time, a higher flow for a specific operation: wrapping the bale, filling a slurry tank, lifting the frame before turning at the end of the row, etc.

Traditional load sense boosters aren't operating dynamically, they boost the LS signal permanently and by a constant value. During times of low flow demand, the additional boost wastes fuel and causes the pump to work harder than needed. Dynamic boosting saves fuel, reduces operating cost and maintenance because it operates only when a boost is needed.

These benefits combined make the dynamic load-sense boost valve the efficient choice for today's implements.

On Demand Power

for your implements and attachments



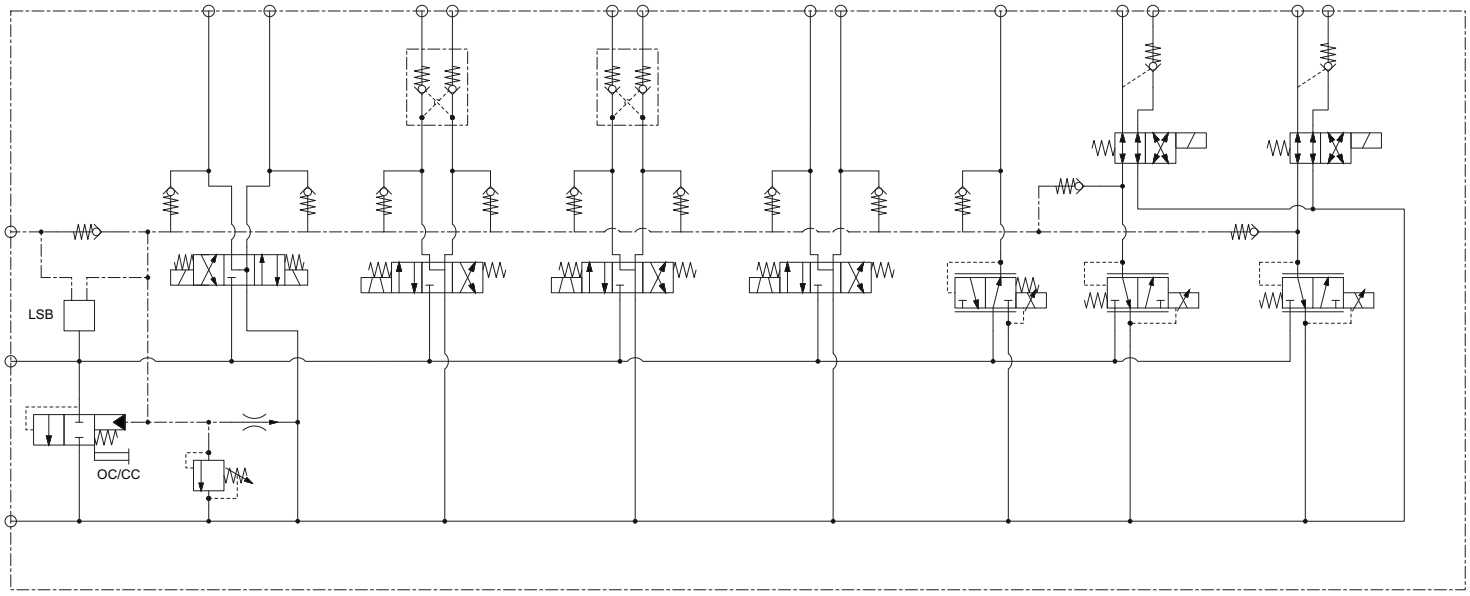
Conceptual illustration: High pressure drop caused by long plumbing runs and other factors prevents the power beyond hydraulic system from delivering at full capacity.

Dynamically boosting the load sense signal allows the system to deliver full flow as needed to all parts of the implement regardless of the distance from the coupling.

APPLICATIONS

TRAILED SEEDER

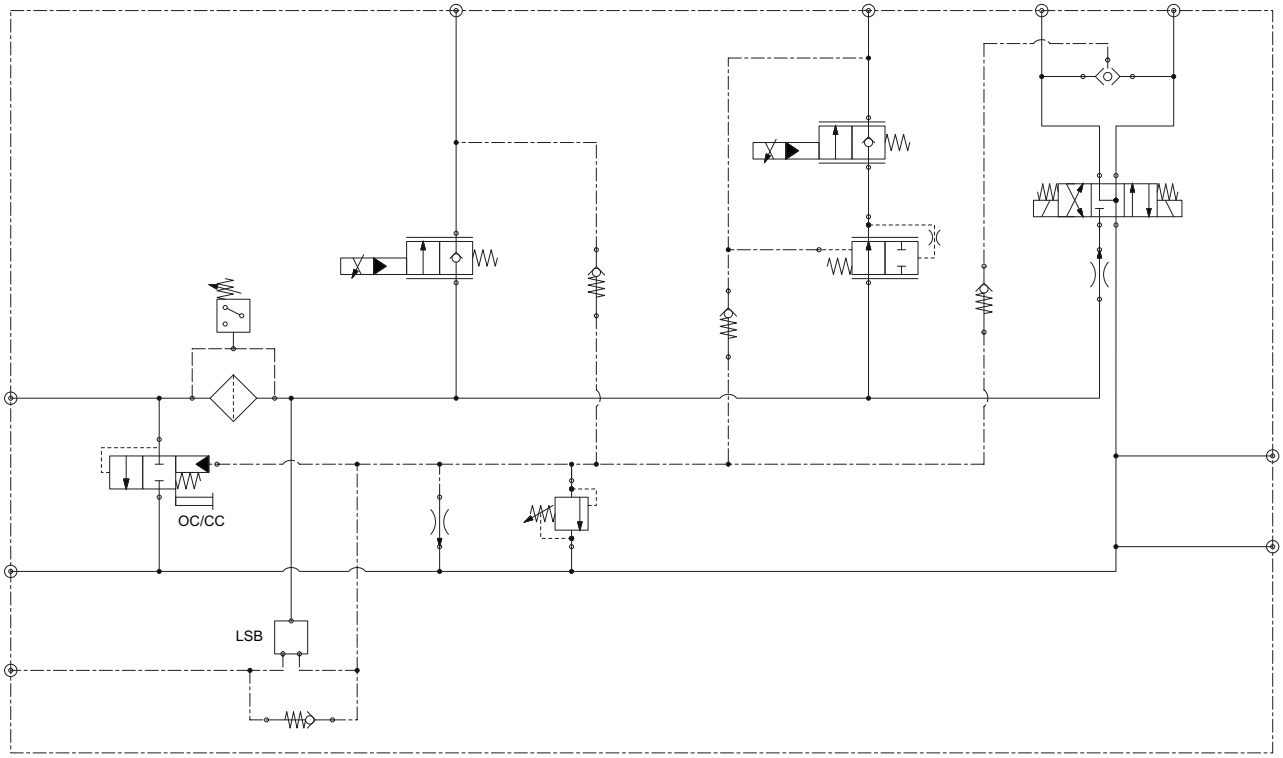
Seeders are becoming much larger than previous models and have additional functions such as down-force control. This LSB valve allows the seeder to increase power, by using the available pressure in the hydraulic motor, which drives the turbine without affecting other functions.



SLURRY TANK

The LSB08-30 allows for increased flow rate and power on the hydraulic motor which drives the turbine. This results in reductions in the fill-in time and leads to increased productivity.

The fill-in phase takes several minutes each rotation. With HydraForce's dynamic LSB08-30, boost will only occur during this phase, in comparison to the traditional LS Booster which would boost continuously, leading to a degradation in the efficiency of the equipment.

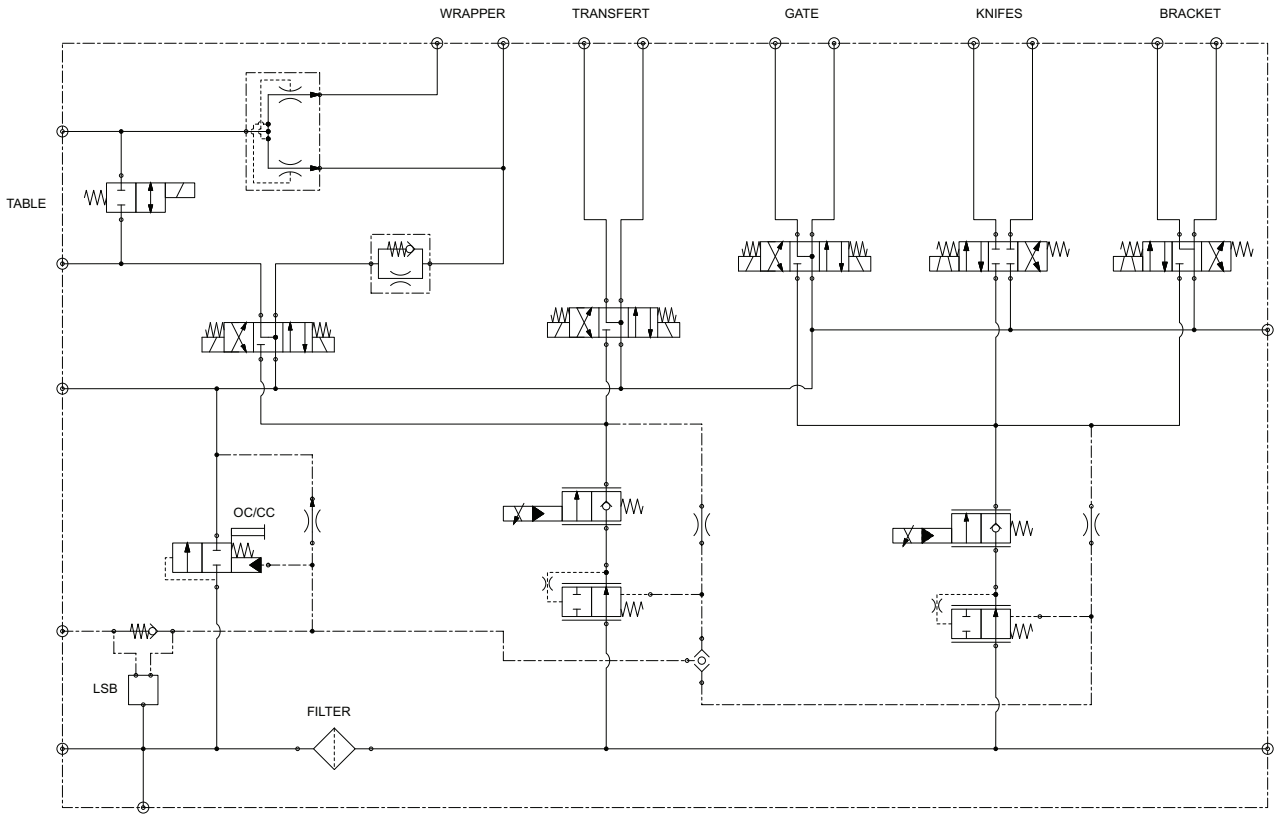


save fuel,
reduce operating cost
and maintenance

BALER-WRAPPER

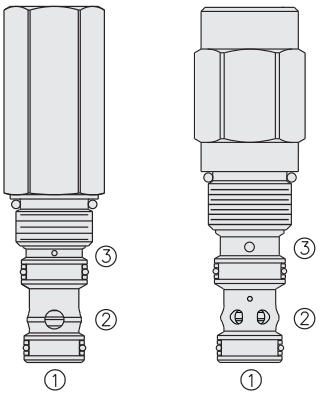
HydraForce's Load Sense Boost valve allows for increased flow rate on all the functions when actioned simultaneously, which reduces the cycle time and increases productivity.

The LSB will boost when the gate, wrapping and table are in movement. During the chamber fill-in phase, less functions are activated and the boost will not occur; which makes the system faster and more efficient, without wasting energy.



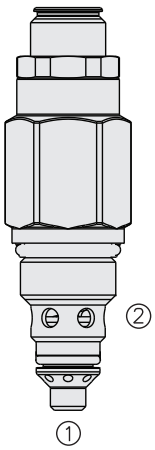
COMPLIMENTARY VALVES AND CONTROLLERS

HydraForce has developed a new portfolio of components that provide solutions for AG applications; all of which compliment the LSB08-30 valve. Our Application Engineers and Regional Sales Managers have all the relevant experience to be able to help you develop the solution you need.



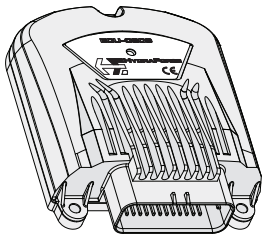
Inlet compensator EP10-S35T and EP12-S35T with manual override (MO)

- Piloted spool-type inlet bypass compensator
- Rated pressure: 345 bar (5000 psi)
- Rated flow valve size 10: 75 lpm (20 pm)
- Rated flow valve size 12: 50 lpm (40 pm)
- Manual override to select between LS pump tractor or fix flow tractor



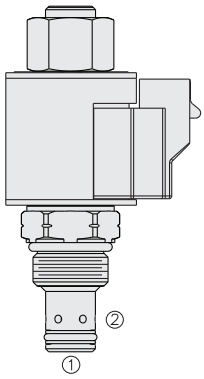
RVD58-20 Relief Valve

- Direct acting poppet type relief valve
- Dampening feature, low hysteresis and low-pressure rise
- Rated pressure: 345 bar (5000 psi)
- Rated flow: 38 lpm (10 pm)
- Max internal leakage: 5 drops at 85% of crack pressure



ISOBUS Controllers

- HydraForce provide ECUs compliant with ISOBUS communication protocol
- Programming using CoDeSys or HF-impulse graphical programming
- Flexible input and output configuration
- Withstands environmental standard of mobile Off-road electronics



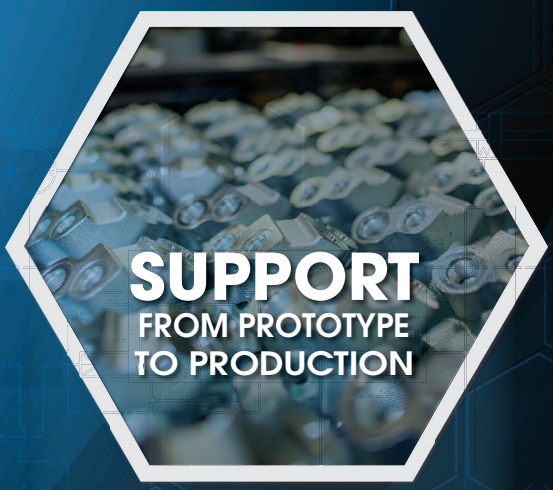
SF08-28 Solenoid Valve

- Solenoid valve, normally closed, double-blocking
- Rated flow: 11 lpm (3 gpm) at 345 bar (5000 psi) 19 lpm (5 gpm) at 275 bar (4000 psi)
- Rated pressure: 350 bar (5075 psi)
- Max internal leakage: 5 drops at 350 bar (5075 psi)

WHY CONSIDER HYDRAFORCE?

- World's largest privately owned cartridge valve manufacturer focused on EH system controls
- Broadest range of cartridge valves
- Designed EH systems for mobile equipment in every industry

- Integrate sensors, fittings, ancillary valves, and other custom components into a single manifold
- Simplified circuit design
- Consolidated or distributed hydraulic systems



- Free design support
- Simulation software
- Fast prototypes

- All manifolds are end-of-line function tested
- Use of Lean and Six Sigma practices
- Five year warranty on valves and manifolds

RoHS COMPLIANT HydraForce valve and manifold products comply with the European Council and Parliament RoHS directive 2002/95/EC limiting the use of hazardous substances. For all other products, consult factory.