

Cartridge Amplifier CA300

Product Features

- Integrated inside the piston rod of a cylinder
- Amplified pressure up to 700 bar
- By-pass flow up to 300 l/min
- Automatic activation with adjustable sequence valve
- Integrated load holding pilot operated check valve
- Durable, compact and robust design

Function

PistonPower cartridge pressure amplifier is a hydraulic pressure amplifier integrated into the hydraulic cylinder.

The hydraulic pressure amplifier is a device that converts the kinematic energy of oil (flow) into the static energy of oil (pressure) so that the amplified pressure is higher than the input pressure at the expense of output amplified flow being lower than input flow. The ratio between amplified output pressure and input pressure is the amplification ratio.

PistonPower cartridge pressure amplifier is rated for max. amplified output pressure of 700 bar and is available with different amplification ratios to allow applications with various system pressure reach their full potential.

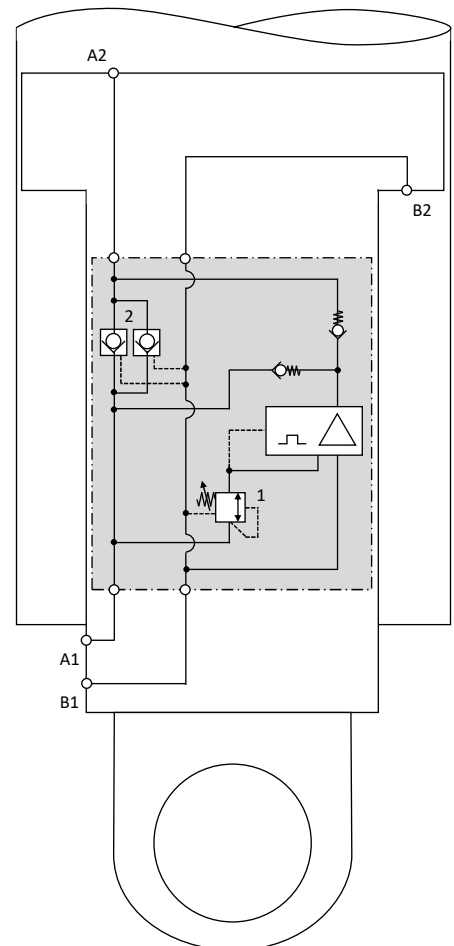
The benefit of pressure amplification is higher power density allowing either higher force with same cylinder size, same force with smaller cylinder size or downscaling of the hydraulic system and pressure source.

The benefit of integrating the hydraulic pressure inside the hydraulic cylinder is the compact package and increased safety thanks to the reduction of all external high-pressure hydraulic components (e.g. pipes, hoses, fittings).

The actuation of pressure amplification is automatic based on the actual load.

If the system pump pressure is sufficient to overcome load the amplification is not activated the oil flows freely, restricted only by the pressure drop of the channels and pilot operated check valve (pos.2), from A1 directly to A2 and the cylinder works as usual. This is called **bypass mode**.

Once the system pump pressure is not sufficient to overcome the load, the sequence valve (pos.1) opens and routes the flow to the amplification part of the CA. The amplification process starts and increases the pressure inside the cylinder. This is called **amplification mode**.



Specifications of CA300

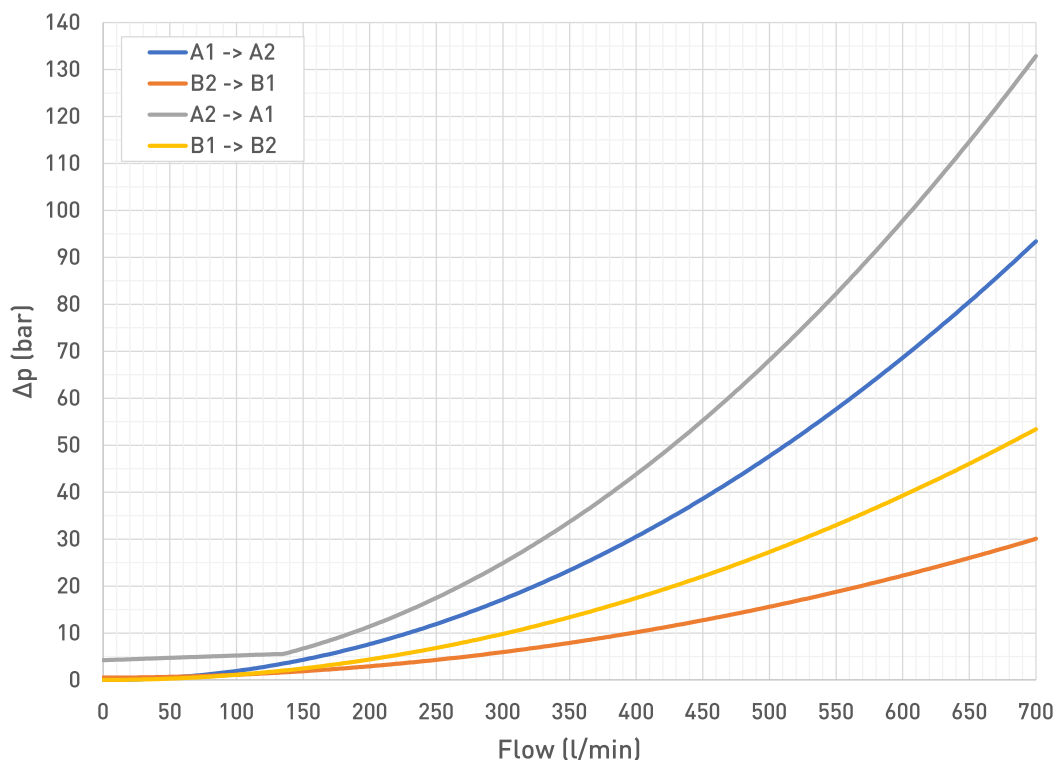
Product Specifications

- Double stage pilot operated load holding check valve
- Adjustable direct acting sequence valve
- All integrated valves and components are designed for high pressure
- Lifetime tested for up to 10^7 amplification cycles
- High strength steel housing, pistons and parts

Fluid requirements

- Hydraulic fluids as defined by art 2 and part 3 of DIN51524, compatible with Viton seals
- Fluid temperature range $-20\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$) to $80\text{ }^{\circ}\text{C}$ ($194\text{ }^{\circ}\text{F}$)
- Fluid viscosity range 10 cSt to 400cSt
- Fluid cleanliness level 21/19/16 or better according to ISO 4406

Pressure drop characteristic



| CA300 | Pressure limitations | | | Flow | Dimensions | | Weight |
|-------------------------|-----------------------|------------------------|-----------------------|-------------------------|----------------------|----------------------|-----------------------|
| | port A1 | port A2 | port B1/B2 | port A1/B1 | length | diameter | |
| Amplification ratio 2.0 | 350 bar (5076 psi) | 700 bar (10152 psi) | 350 bar (5076 psi) | 300 L/min (79.3 gpm) | 520 mm (20.47 in) | 99.6 mm (3.92 in) | 24.3 kg (53.6 lbs) |
| Amplification ratio 2.4 | 280 bar (4061 psi) | | | | | | |

Note: For applications or operating conditions not described, please contact PistonPower for further information.

The data in this datasheet is provided for the purpose of describing the product and its features only. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this data sheet.

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