Improving your System Design with Pressure Intensifier

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Bahri Company

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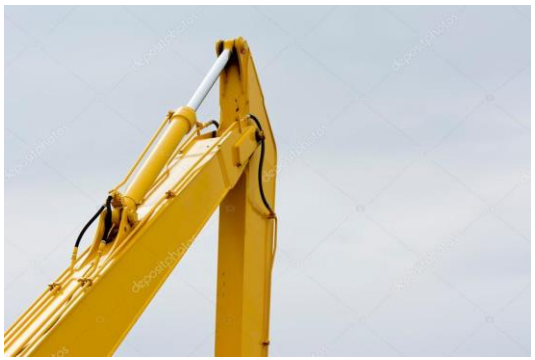
Water Solutions

Industrial Automation

Mobile Technology



Timeline

2016

- Company Foundation;
- 1st Mobile Project.

2017

- **Argo-Hytos** Partnership;
- **CSL** Partnership;
- **Moog** Partnership;

2018

- Belém Porto-Futuro Park;
- 1st IoT Project;

Ministério da Integração Nacional

BELÉM Porto Futuro

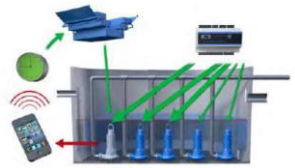


Figura 1 – Instalação de monitoramento on-line em estação de bombeamento.

2019

Argo-Hytos Award: Best Filter Sales Brazil

Timeline

2020

- 1st Electric Servo Actuator Project: Offshore application

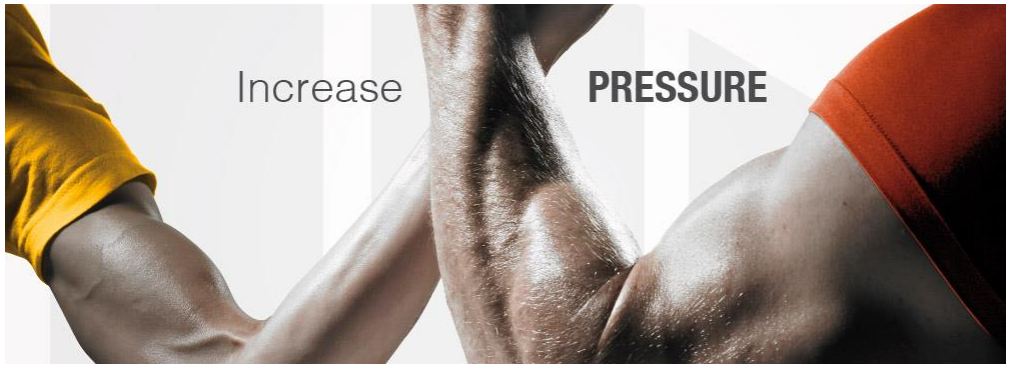
2021

- **Moog Award**: National Sales Distributor of the Year.

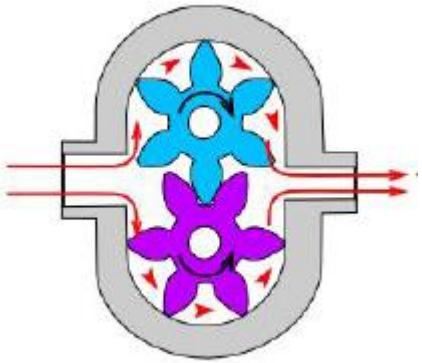
2022

- **ScanWill** Partnership:

ScanWill Fluid Power ApS



Pressure Intensifier – How it Works

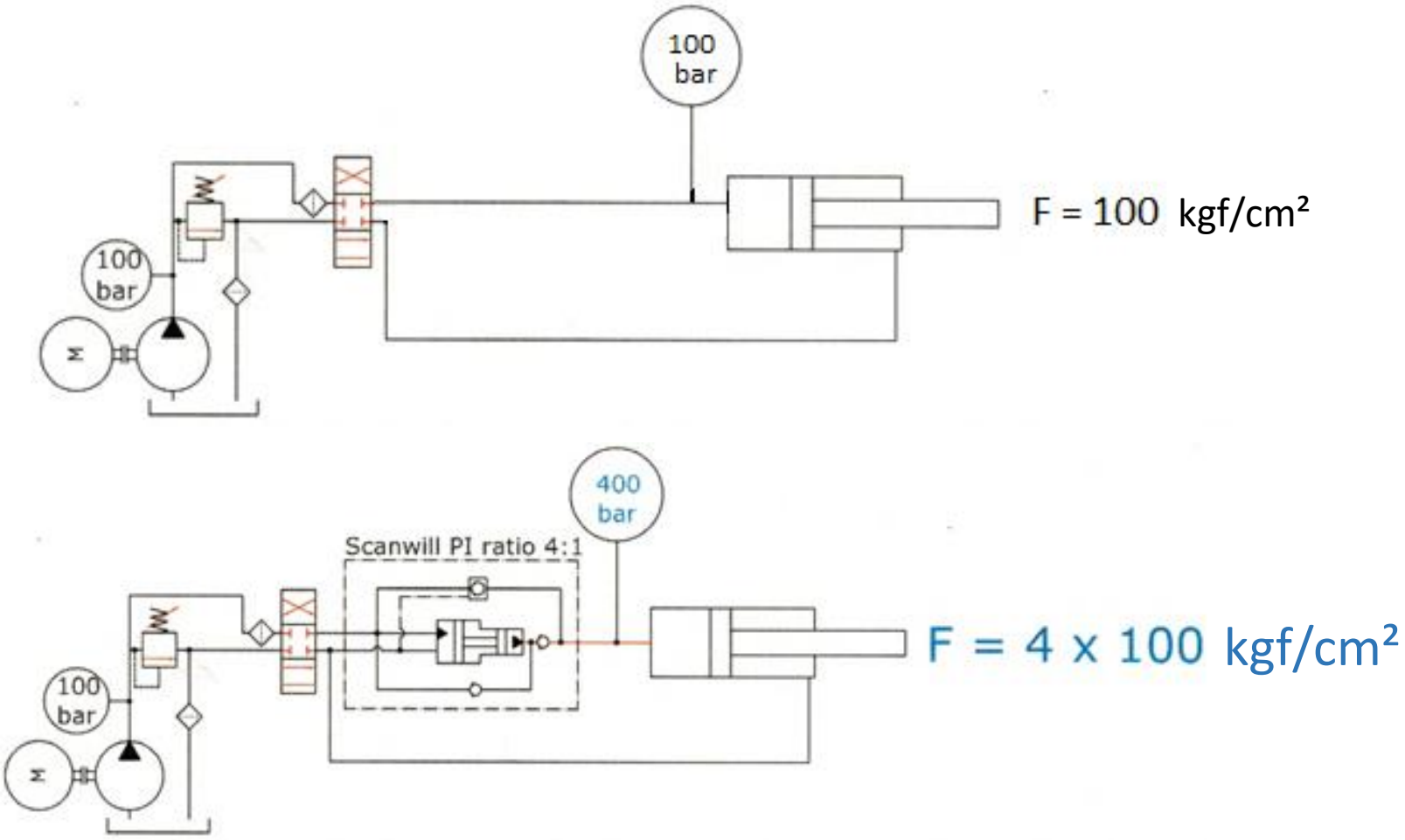


15 to 200 bar +

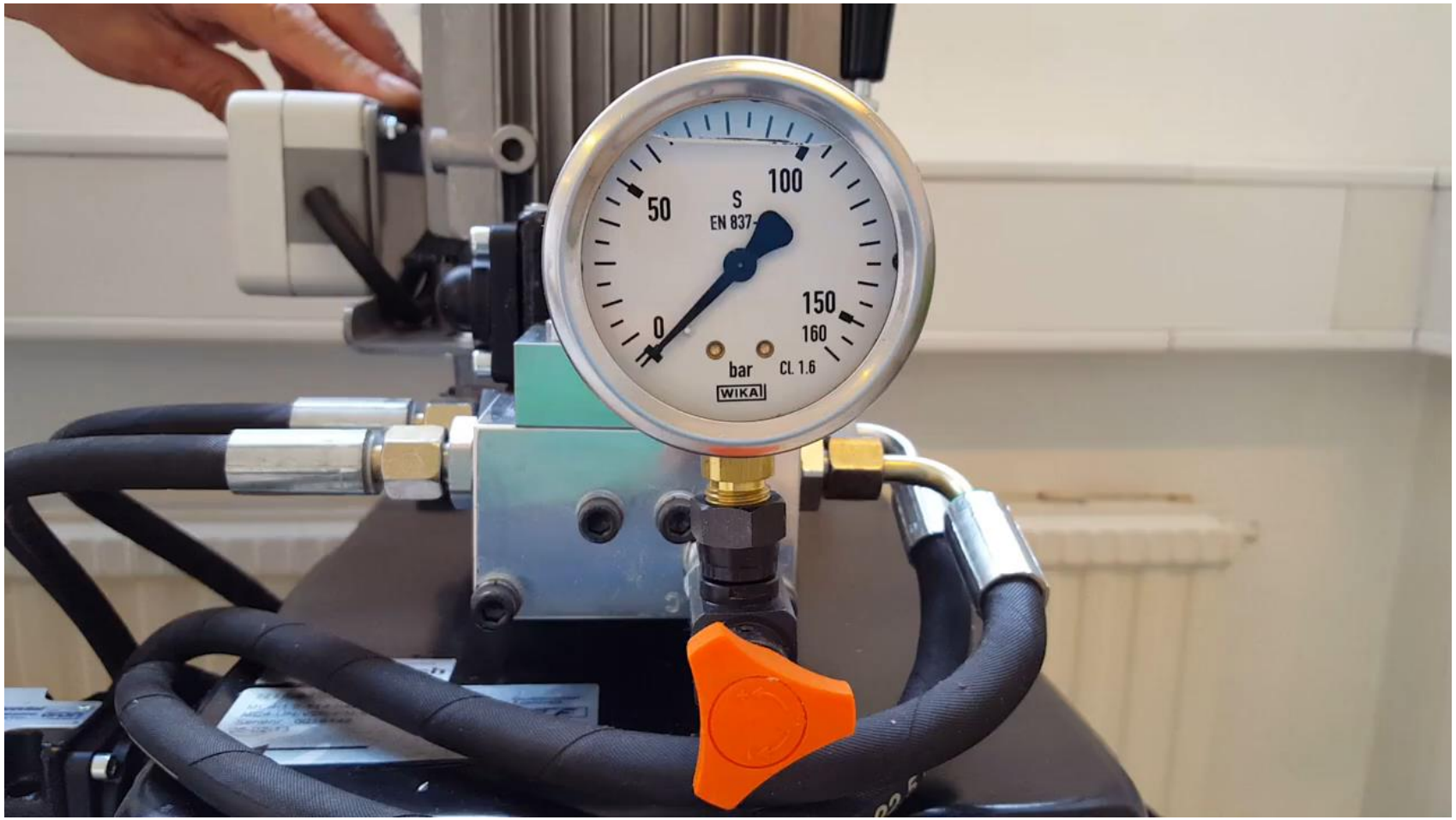
=> 22.5 to 4,000 bar

The Scanwill intensifier increases a supplied pressure to a higher output pressure!

Pressure Intensifier – How it Works

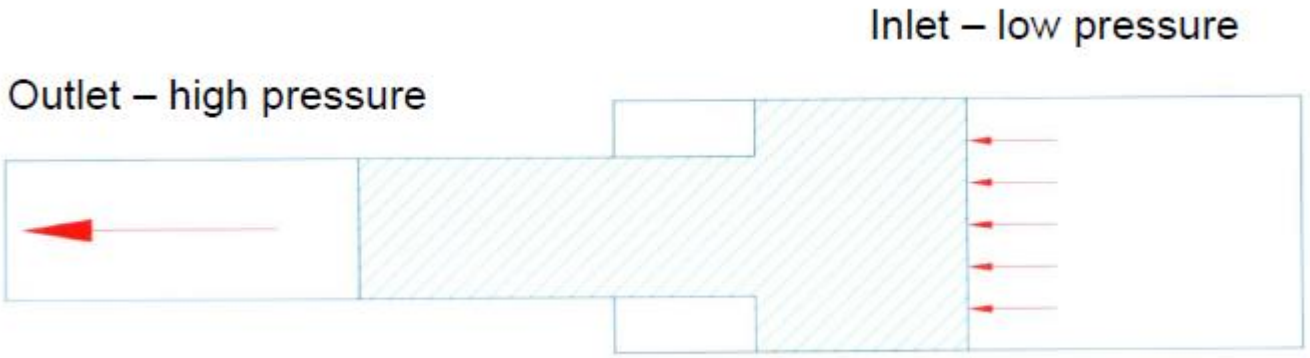


Pressure Intensifier – How it Works



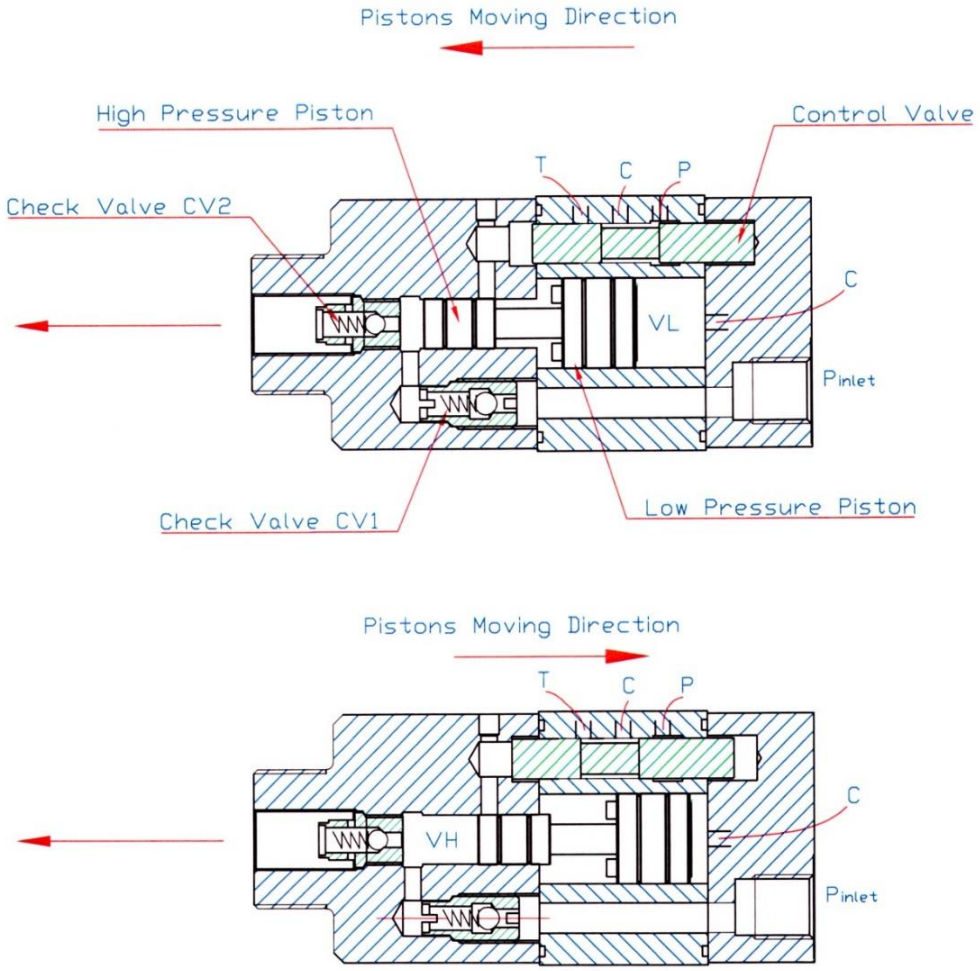
Source: IC-Fluid Power, Inc.

Pressure Intensifier – Multiplier Principle



The intensifier function as a small “piston pump” in the system and will constantly deliver flow until the output pressure has benn reached.

Pressure Intensifier – Multiplier Principle

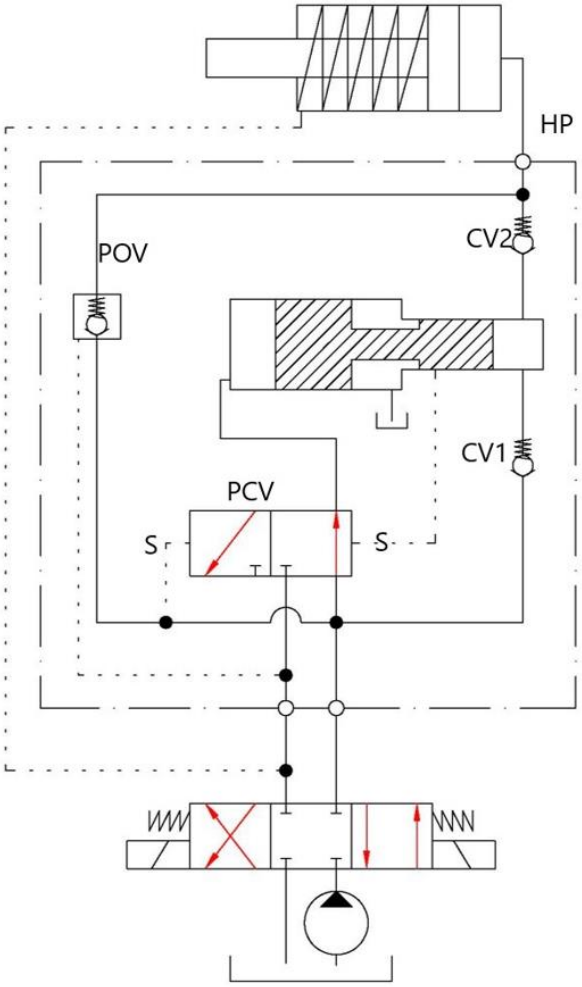


Piston speed up to 20 Hz. Hydraulically controlled only!

Pressure Intensifier – Multiplier Function

The intensifiers are reciprocating, and will automatically increase a supplied pressure to a higher end pressure.

The figure to the right shows the principle of the intensifiers, consisting of a piston arrangement and a Piston Control Valve, PCV.
The position of the pistons will at the end of every stroke prompt a signal S to the PCV, which makes this change position, ensuring the pistons are moving in the opposite direction.
This cycle will continue until the end pressure has been reached. At this point the pistons stop, and will now only move to maintain the end pressure

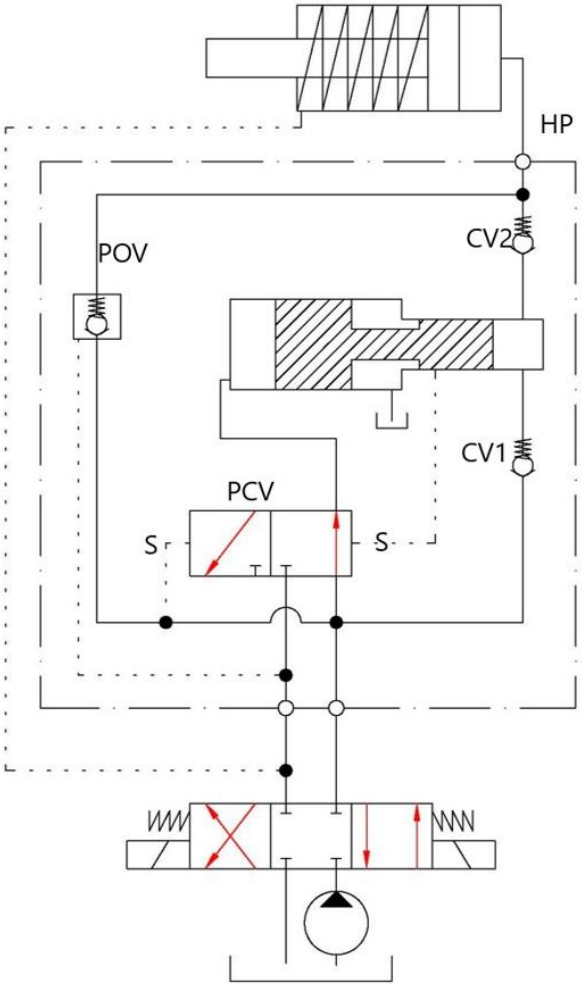


Pressure Intensifier – Multiplier Cycle

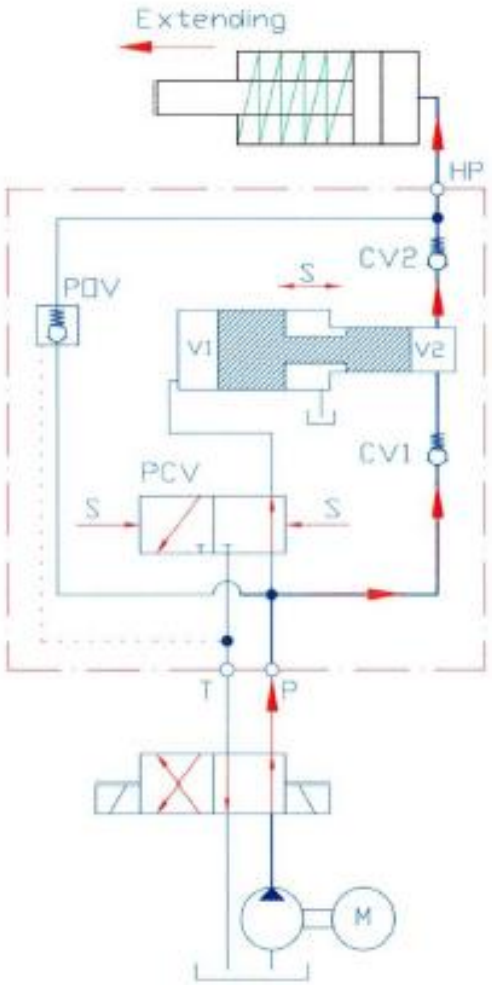
When a hydraulic fluid is supplied to the P-connection of the intensifier and the T-connection is connected to tank, the oil will be directed through the check valves CV1 and CV2 to the high pressure connection HP.
If the internal Pilot Operated check Valve POV is incorporated the oil will go straight to the HP connection. In this situation all the flow supplied goes to the high pressure side ensuring a fast filling og the system.

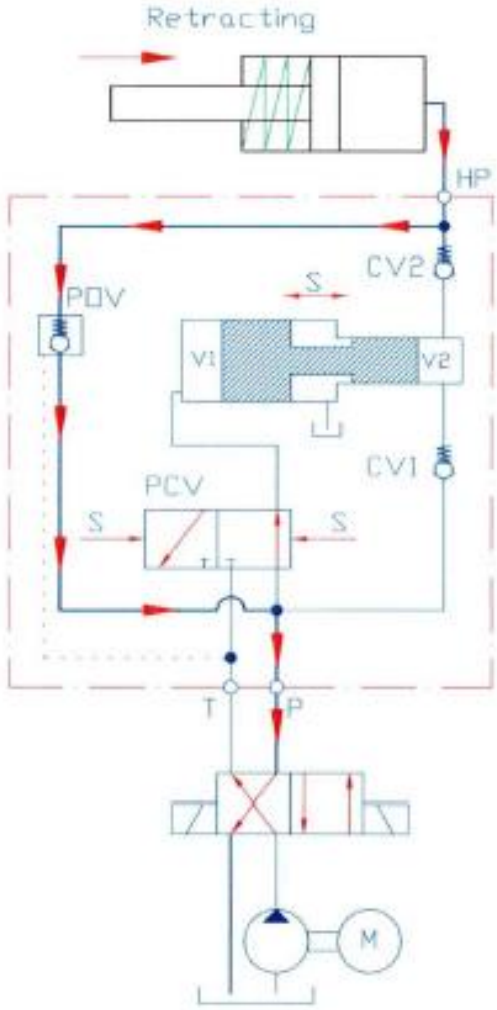
When pump pressure has been reached, the intensifier pistons will deliver the flow to the high pressure side, and continue to do so until the required end pressure has been reached. The pistons then stop, and will only move to make up for a pressure loss due to leakage or consumption.

For evacuating the high pressure side the internal POV is used. The valve is opened by directing the supplied pressure to the T-port and connecting the P-port to tank. This allows the oil from the high pressure side to flow directly back to tank.



Pressure Intensifier – Extending and Retracting



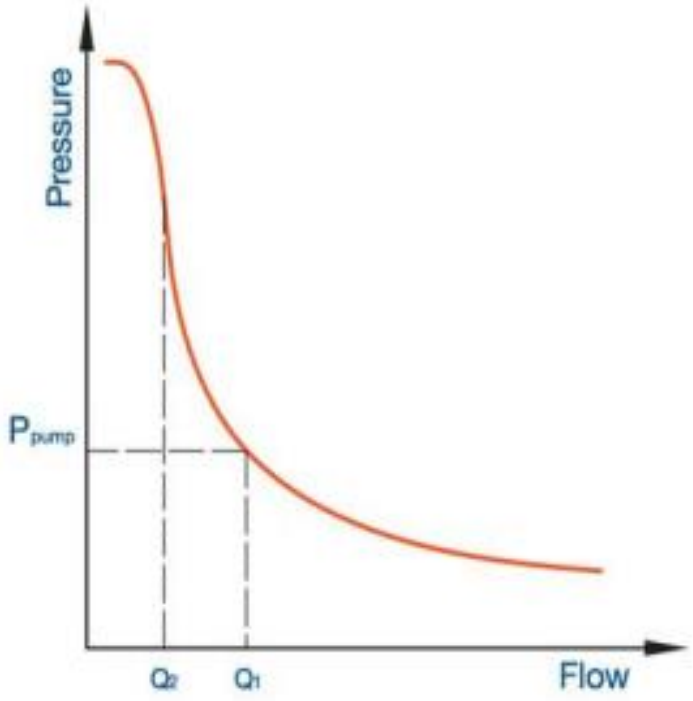


Pressure Intensifier – Extending and Retracting

Pressure Intensifier – Multiplier Cycle

The pressure build up

This curve shows the relation between pressure and flow in the process.
Q1 bieng the moment just before max pump pressure, and Q2 is when the intensifier is setting in

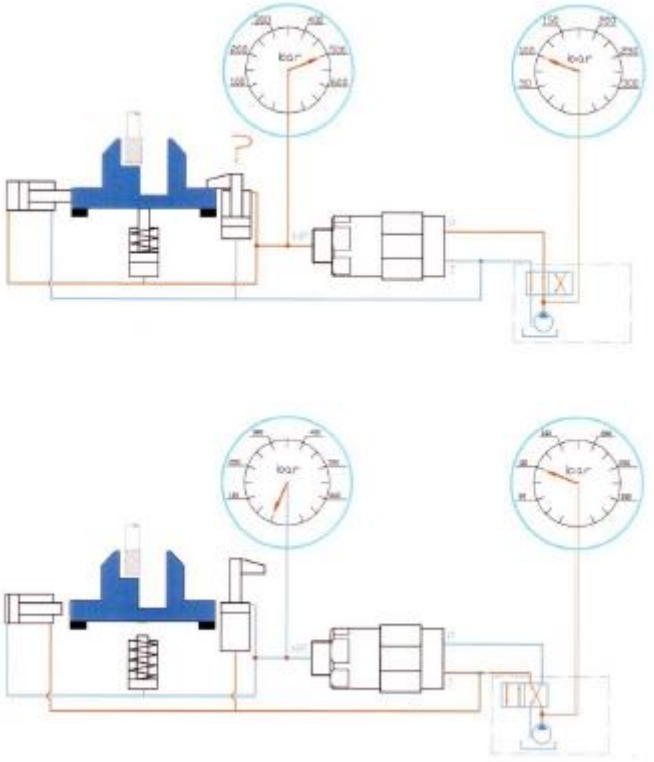


Pressure Intensifier - Advantages

- Compact
- Flange mounting
- Low flow to very high flow (with by-pass)
- Pressure from 70 bar to 400 bar
- But go up to end pressures between 1.300 and 4.000 bar

Pressure Intensifier – Standard Application

- Work holdind
- Output pressure: 120 – 500 bar



Stops at preset high pressure. No energy is used and is constantly ready to action, if additional oil should be required to maintain the preset high-pressure level.

Pressure Intensifier - Energy Efficiency

Characteristc: High Pressure precisely where needed

Advantage: Low operating pressure in the system

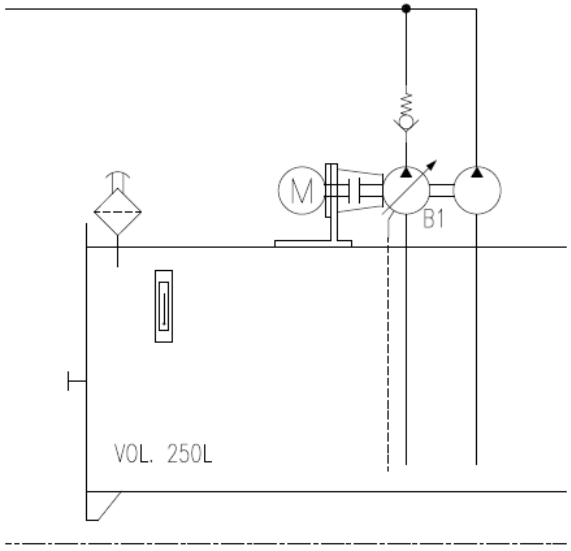
Benefit: Energy savings for the total system

Pressure Intensifier – Innovative Applitation

- In a HPU system with a High pressure pump, that gernerate pressure for all the systems, and due to that, alll the components must be designed for high pressure.
- As an alternative the intensifier is applied only in the actuator where the high pressure is required.

Pressure Intensifier - Energy Efficiency

Powered by your existing high flow, lowpressure pump it rapidly boosts low system pressure (e.g. 100 bar) up to preset value (e.g. 250 bar);
No need of double pump for high pressure.



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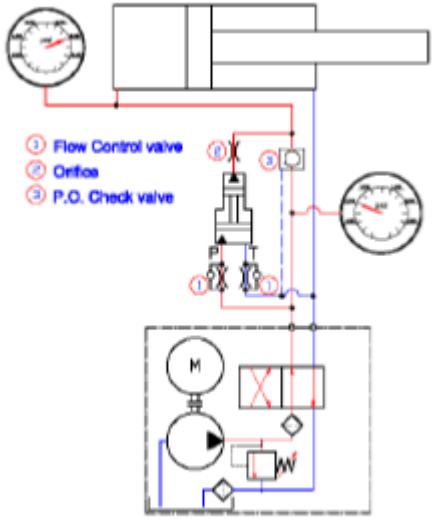

Pressure Intensifier - Energy Efficiency

In comparison with air driven high-pressure pumps, energy savings of more than 50% are achieved.

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Pressure Intensifier - Energy Recovery

Increase the energy recovery system with the combination of pressure intensifier and accumulator

Bahri will be glad to help you increase the pressure with a cost-effective and reliable solution

The only way to achieve the impossible is to believe it is possible.

Have success and ..... **Be happy!**

WIEFP 2022

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