September 15

SCANWILL FLUID POWER – UNIQUE HYDRAULIC PRESSURE INTENSIFIER SOLUTIONS

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Scanwill Fluid Power ApS

SCANWILL FLUID POWER APS – FACTS & FIGURES

- Founded and localized in Denmark in 2001 by Jesper Will Iversen
- Launched the range of hydraulic pressure intensifiers in 2002
- A privately-owned company by MD Jesper Will Iversen
- Today five employees in Scanwill Fluid Power ApS
- Manufacturing of all parts is outsourced by sub suppliers
- Production and office facilities located in Albertslund – Copenhagen
- Quality management: ISO 9001 certificated

ISO 9001 Management System Certification
BUREAU VERITAS Certification Denmark A/S

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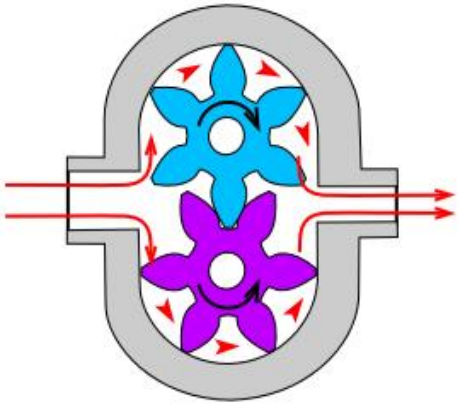
Do you know what a Scanwill intensifier does?



15 - 200 bar +

=> **22.5 – 4,000 bar**

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

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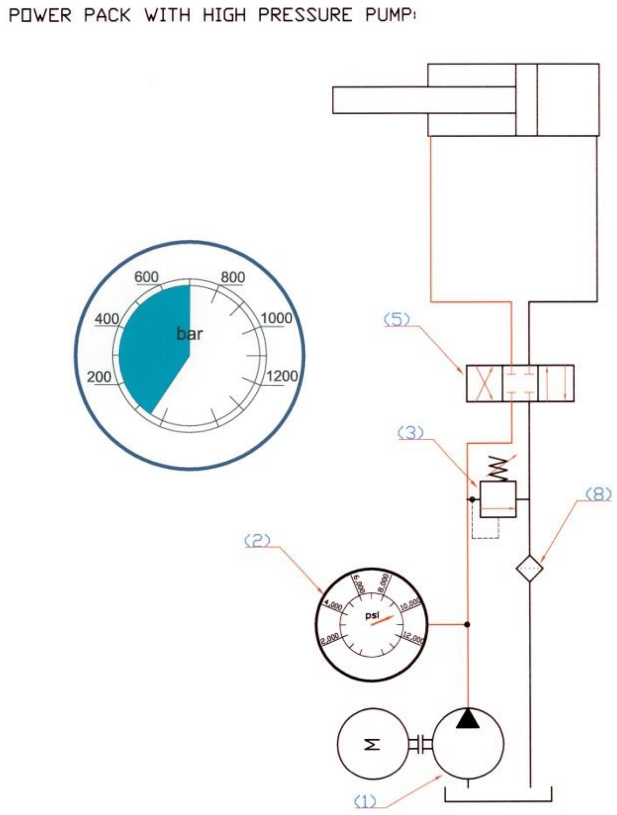
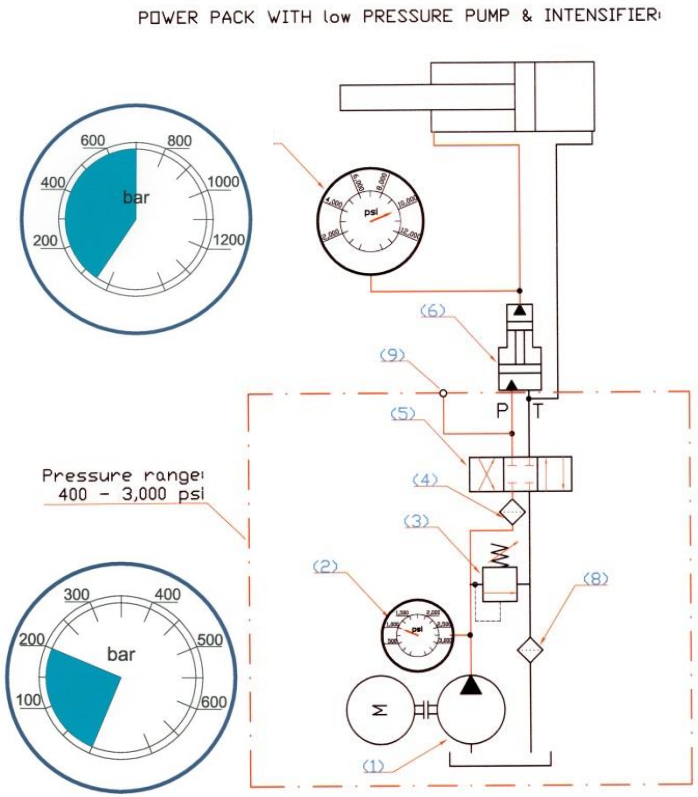
How can we achieve a high pressure?

Most Commonly Used Solution:
Standard High Pressure Pump



The Future <u>Energy Saving</u> Solution:
Scanwill Pressure Intensifier



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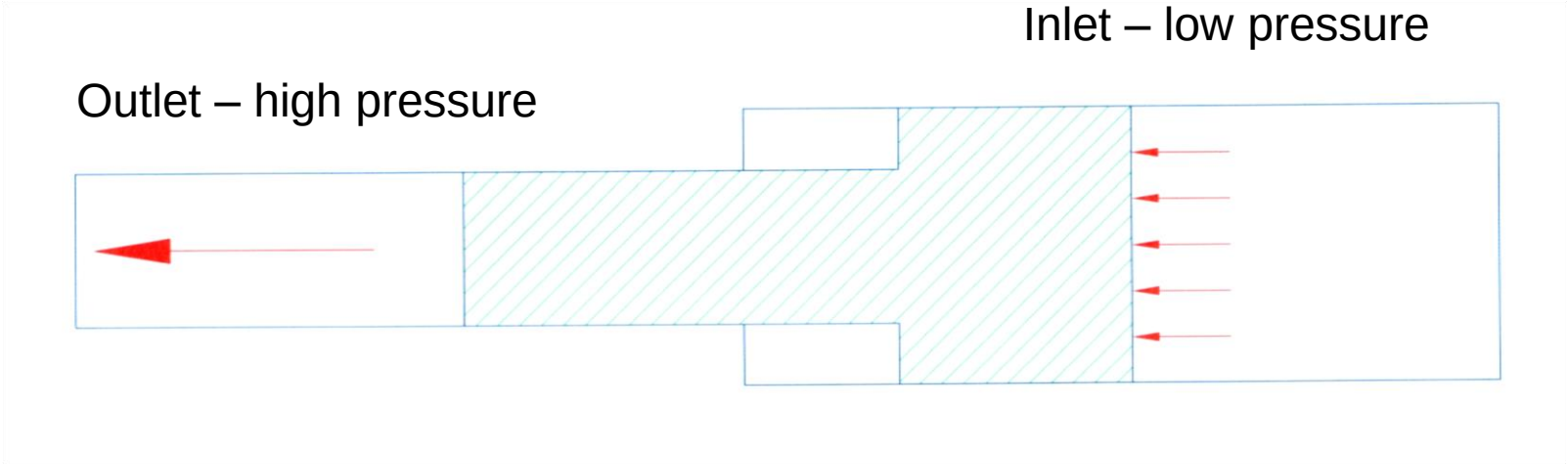
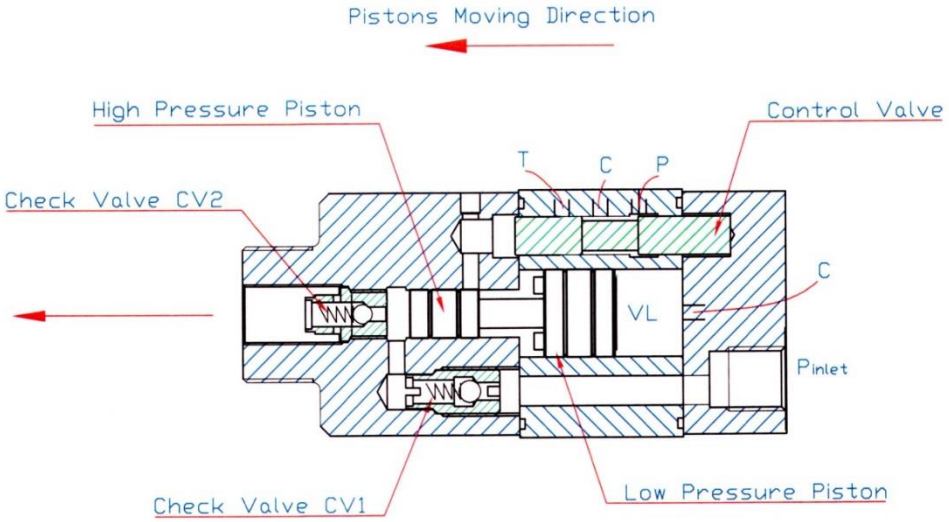
The basic principle of a Scanwill intensifier

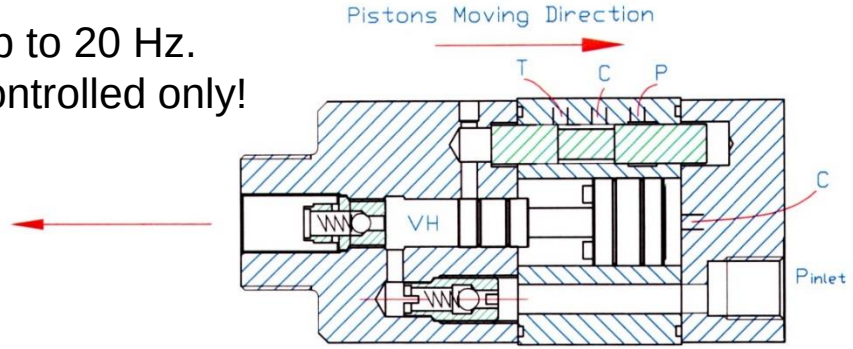


The intensifier function as a small “piston pump” in the system and will constantly deliver flow until the output pressure has been reached.

SCANWILL ADDED VALVES AND MADE A COMPACT DESIGN



Piston speed up to 20 Hz.
Hydraulically controlled only!



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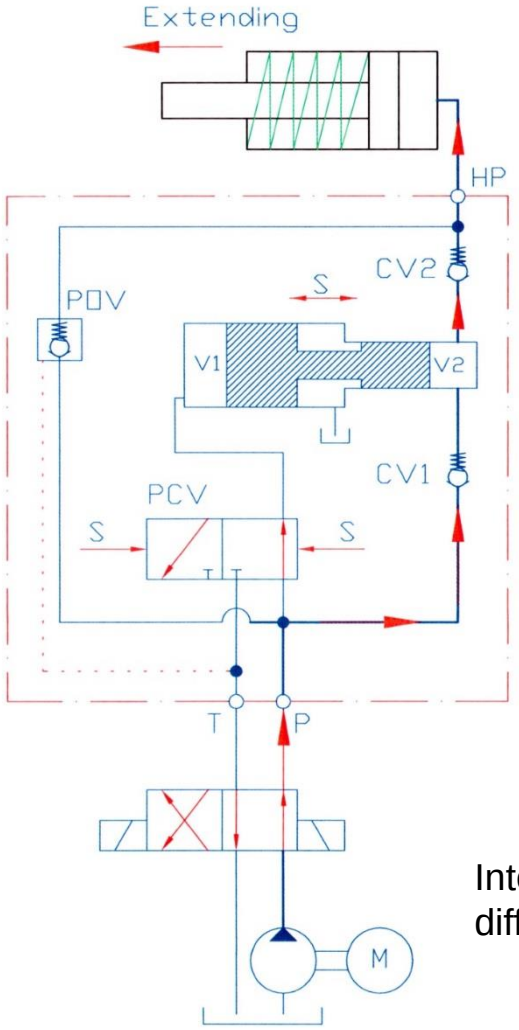
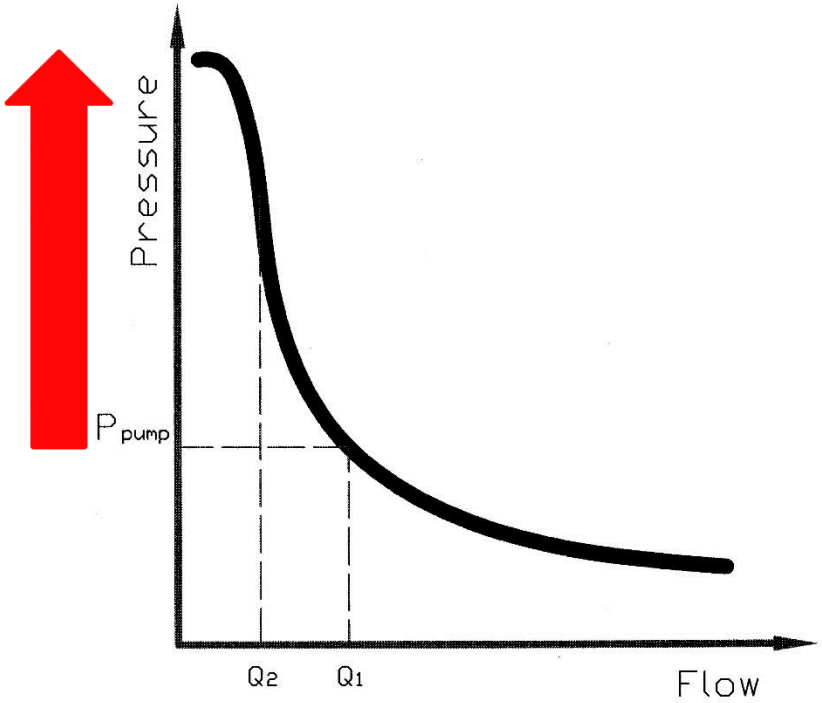
THE BASIC PRINCIPLE & THE GENERAL FLOW-PRESSURE CURVE

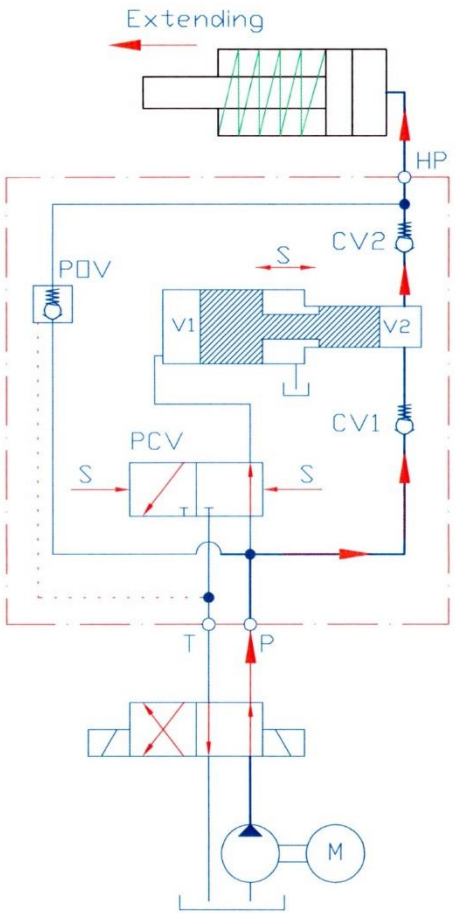


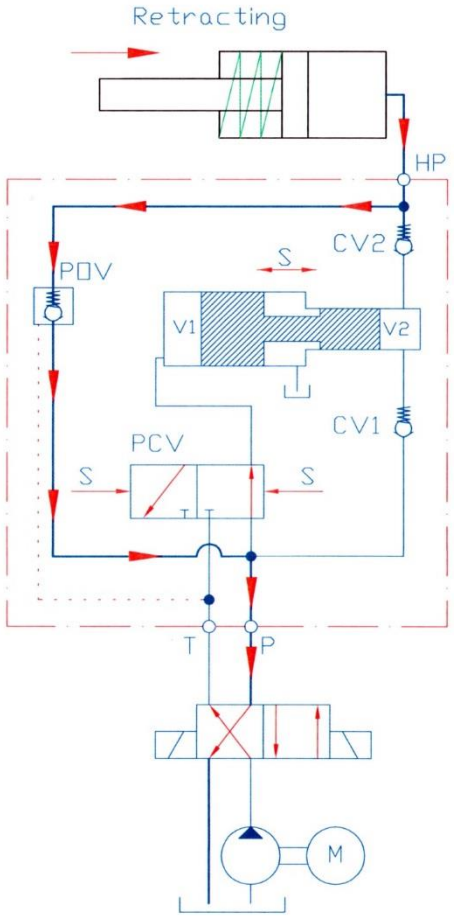
Add-on feature
from intensifier!



Intensifier output pressure equals ratio multiplied by the differential pressure between P & T (P minus T)!

THE EXTENDING & RETRACTING CYCLE OF SCANWILL INTENSIFIERS



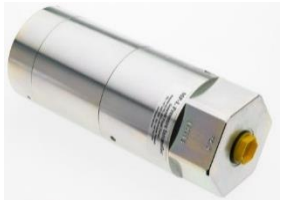


SCANWILL INTENSIFIER PRODUCT RANGE

MP-S: In-Line mounting
P_{out} max.: 800 bar
Q_{in} max.: 8 LPM

MP-T: In-Line mounting
P_{out} max.: 800 bar
Q_{in} max.: 15 LPM

MP-M: In-Line mounting
P_{out} max.: 800 bar
Q_{in} max.: 35 LPM



MP-L: In-Line mounting
P_{out} max.: 800 bar
Q_{in} max.: 80 LPM

MP-F: Flange-On mounting
P_{out} max.: 700 bar
Q_{in} max.: 15 LPM

MP-C: CETOP/NG6 mounting
P_{out} max.: 500 bar
Q_{in} max.: 15 LPM

SPECIAL DESIGNS:

MP-2000: In-Line mounting
P_{out} max.: 3,000 bar
Q_{in} max.: 13 LPM

MPL-4000: In-Line mounting
P_{out} max.: 4,000 bar
Q_{in} max.: 30 LPM

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SCANWILL INTENSIFIERS ACCESSORIES

Mounting and connection kits:

Mounting brackets for base plate

Nut M28 x 1.5 for fixation

Connection kit for hydraulic block mounting

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SCANWILL INTENSIFIERS SELECTING CHART

1) Requested output pressure bar
2) Inlet flow lpm
3) Inlet pressure bar – to select intensifier ratio

	Pressure Intensifier Series MP - Max. Inlet Flow (lpm/gpm):									
Output Pressure (bar/psi):	MP-S	MP-T	MP-M	MP-L	MP-2000	MPL-1400	MPL-2000	MPL-4000	MP-C (Cetop)	MP-F (Flange-on)
Up to 210 bar / 3,000 psi	8.0 lpm/2.11 gpm	15.0 lpm/3.96 gpm	35.0 lpm/9.25 gpm	80.0 lpm/21.13 gpm					15.0 lpm/3.96 gpm	15.0 lpm/3.96 gpm
Up to 360 bar / 5,220 psi	8.0 lpm/2.11 gpm	15.0 lpm/3.96 gpm	35.0 lpm/9.25 gpm	80.0 lpm/21.13 gpm					15.0 lpm/3.96 gpm	15.0 lpm/3.96 gpm
Up to 500 bar / 7,250 psi	8.0 lpm/2.11 gpm	15.0 lpm/3.96 gpm	35.0 lpm/9.25 gpm	80.0 lpm/21.13 gpm					15.0 lpm/3.96 gpm	15.0 lpm/3.96 gpm
Up to 700 bar / 10,150 psi	8.0 lpm/2.11 gpm	15.0 lpm/3.96 gpm	35.0 lpm/9.25 gpm	80.0 lpm/21.13 gpm						14.0 lpm/3.70 gpm
Up to 800 bar / 11,600 psi	8.0 lpm/2.11 gpm	14.0 lpm/3.70 gpm	35.0 lpm/9.25 gpm	80.0 lpm/21.13 gpm						
Up to 1,400 bar / 20,300 psi					13.0 lpm/3.43 gpm	50.0 lpm/13.21 gpm				
Up to 2,000 bar / 29,000 psi					12.0 lpm/3.17 gpm		30.0 lpm/7.93 gpm			
Up to 2,800 bar / 40,600 psi					10.0 lpm/2.64 gpm		30.0 lpm/7.93 gpm			
Up to 3,000 bar / 43,500 psi					10.0 lpm/2.64 gpm			30.0 lpm/7.93 gpm		
Up to 4,000 bar / 60,000 psi								30.0 lpm/7.93 gpm		

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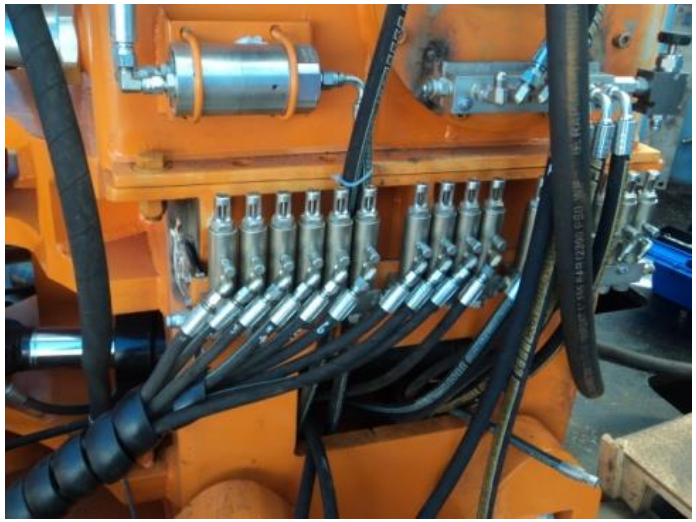
SCANWILL INTENSIFIERS TECHNICAL DATA

Material:	Cast Iron & Steel (Option: Stainless Steel)
Surface Coating:	Chromite Blue Finish
Minimum inlet flow:	
MP-T, MP-C, MP-F & MP-2000:	2 LPM
MP-M:	7 LPM
MP-L:	15 LPM
Minimum inlet pressure:	15 bar
Temperature Range:	-10 °C to 100 °C
Filtration requirement:	Minimum 10 micron nominal
Fluids:	Standard hydraulic oils Water glycol (min. 5% glycol) Water (stainless steel units only)
Functionality test:	Factory tests – before surface coating/after surface coating



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F.A.Q. ABOUT SCANWILL INTENSIFIERS

Is the intensifier a pump?

No!

Does the T-port need to be connected?

Yes, or it will not oscillate.

Can intensifiers operate on fluid ”X”?

If standard hydraulic components are used - then yes! However always ask if special sealing material is required (EPDM, Viton etc.). If it is aggressive fluids check with Scanwill.

Can intensifiers be used for reducing the pressure and/or flow?

No!

Will the intensifiers operate on gas?

No!

Can the intensifiers be traced?

Yes, they are all stamped with a unique serial number.

Troubleshooting of Scanwill intensifiers

Contamination in the fluid: Check valves will not close & bores will be destroyed

Too high inlet pressure: The two screws holding the body parts together will stretch and the O-rings will come out at the side. Also the BSP connections on the high pressure side must not receive more than 800 bar.

Too high inlet flow: The unit will over speed and cavitations may occur. Also the check valves will be destroyed

Too high return flow: If a relatively large volume is pressurized, and the internal POV is activated, there can for a fraction of time be a very high flow passing back through the intensifier. This may destroy the internal check valves. (Max return flow = max inlet flow!)

Air in the oil: All kinds of damages can then happen ex. the valves will be destroyed.

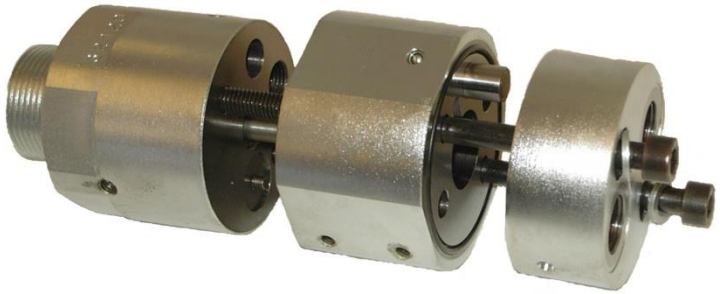
The service concept for Scanwill intensifiers

<u>If a Scanwill intensifier needs service – what are your options:</u>

Always contact Scanwill Fluid Power for advice and spare parts…

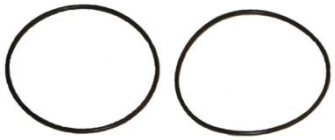
1. Separate the intensifier and clean it thoroughly. Then replace the internal check valves and o-rings
2. or return the intensifier to Scanwill Fluid Power for prompt service

<u>Spare parts:</u>



Valve CV1 & POV:

Valve CV2:



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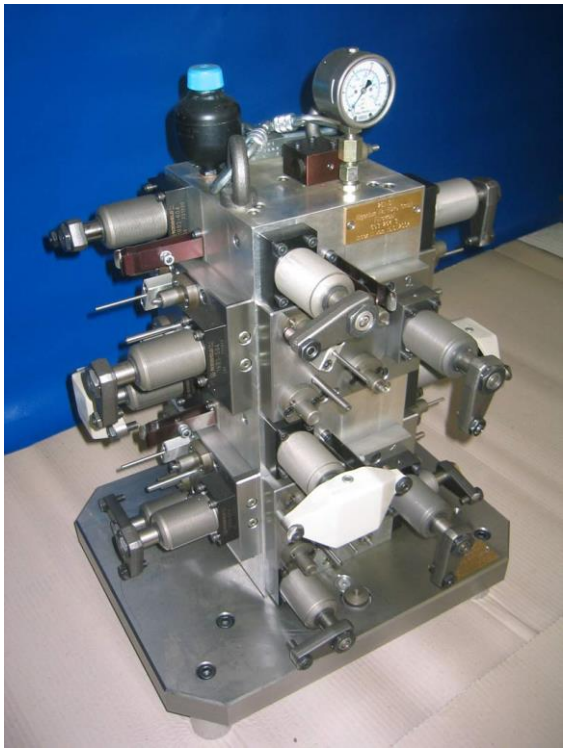
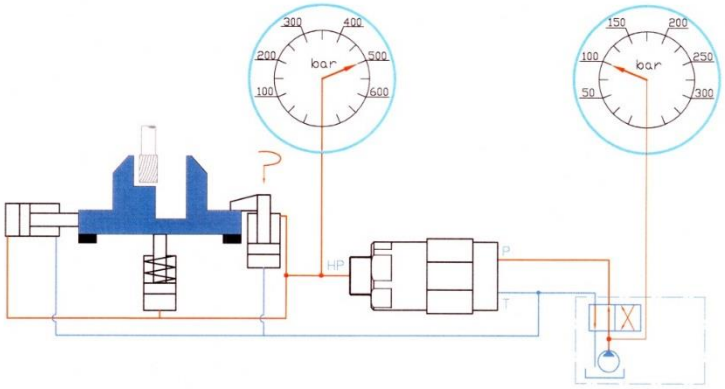
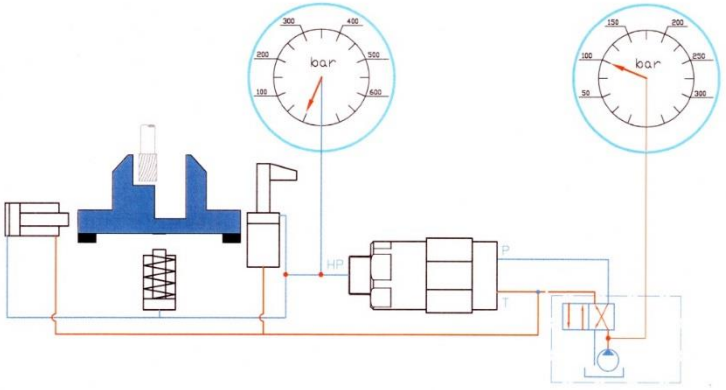
First-fit application: Work holding. Output pressure: 120 – 500 bar







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First-fit application: Hydraulic Mining Equipment. Output pressure: 360 – 800 bar

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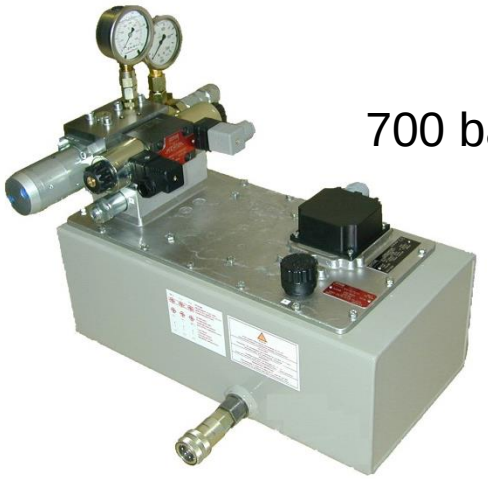
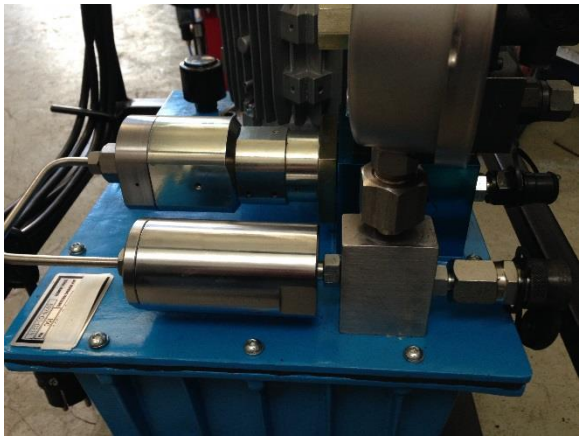
First-fit Application: Hydraulic Power Packs. Output pressure: 500 – 2,500 bar

700 bar



2,000 bar



1,600 bar

800 bar

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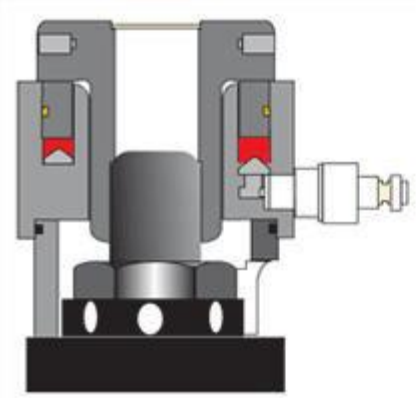
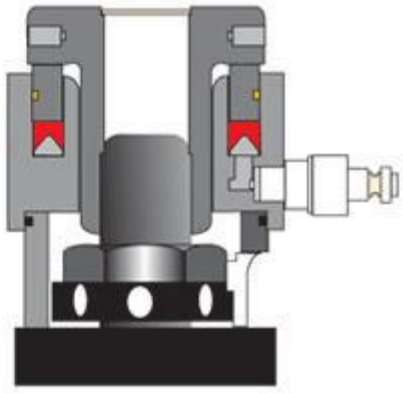
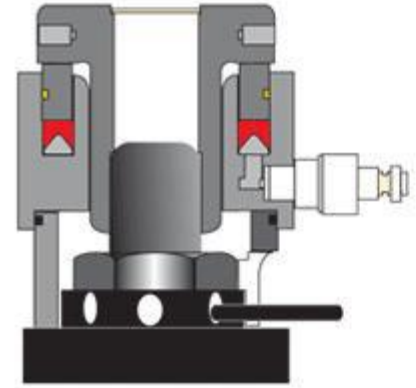
First-fit Application: Bolt Tensioning. Output pressure: 800 – 2,500 bar



Step 1



Step 2



Step 3

Step 4

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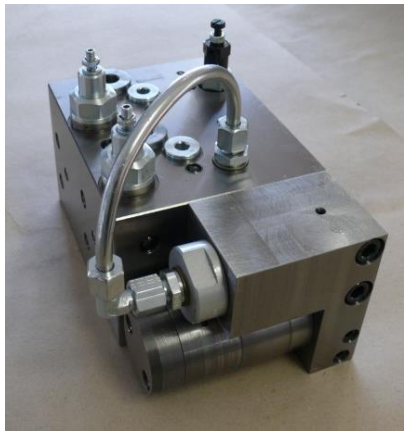
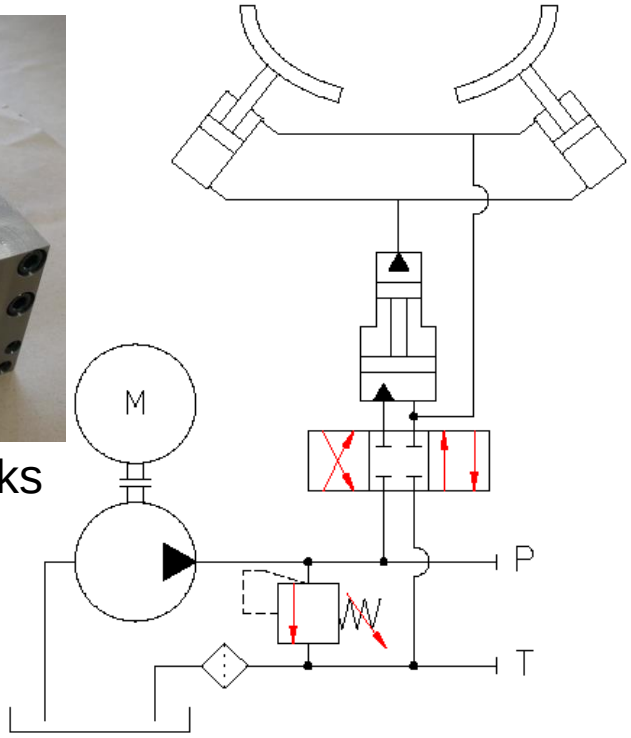
First-fit Application: Hydraulic Roughnecks. Output pressure: 500 – 700 bar



Hydraulic Blocks



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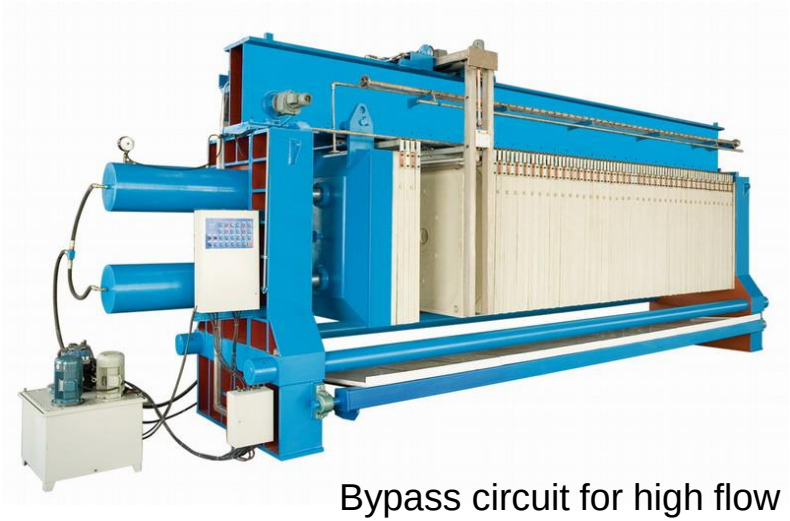
First-fit Application: Demolition Tools. Output pressure: 500 – 2,800 bar

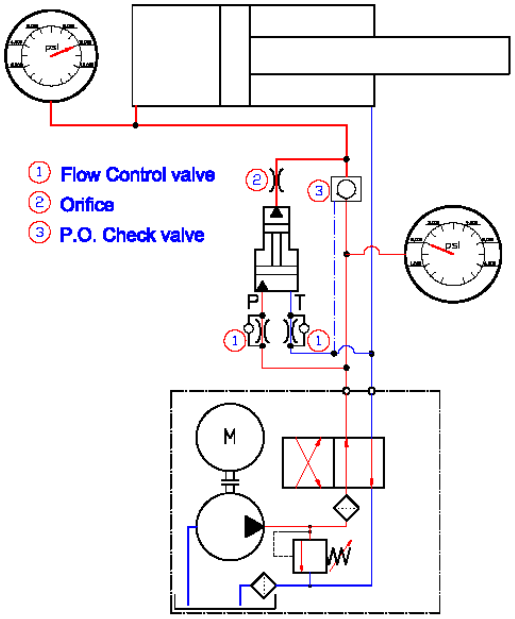
Handheld Demolition Tools 500 – 700 bar

Concrete Bursting 1,500 – 2,800 bar

Excavator Tools 700 bar

First-Fit Application: Filter Presses. Output pressure: 500 – 700 bar





Bypass circuit for high flow applications:

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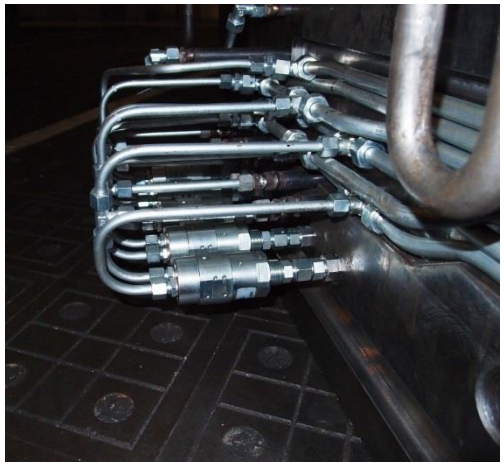
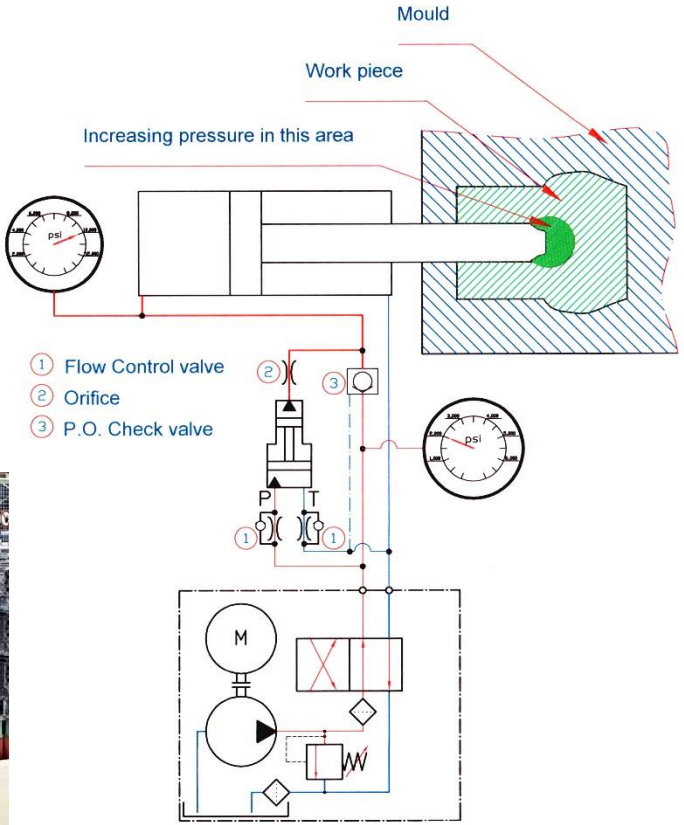
First-fit Application: Pressure Die Casting. Output pressure: 210 – 800 bar





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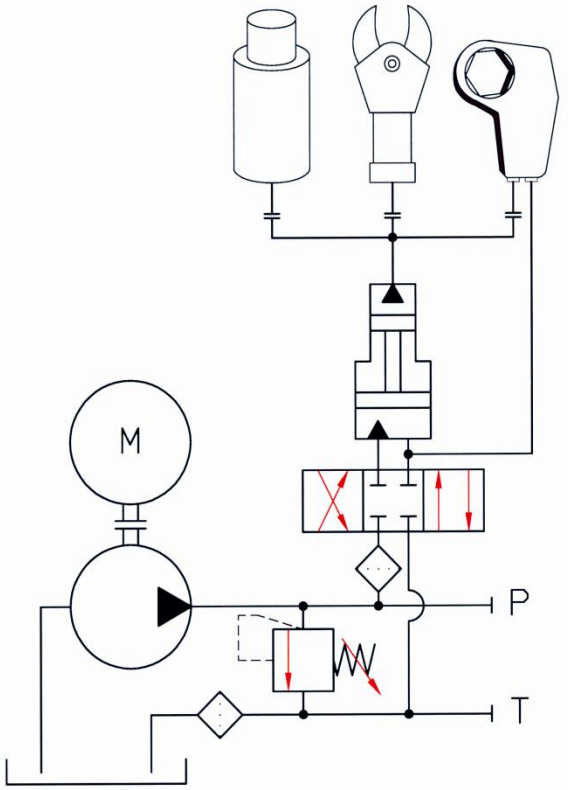
First-fit Application: Hydraulic Tools. Output pressure: 500 – 700 bar

Cable Tools

Cutting Tools



ROV Tools

Intensifier panels!

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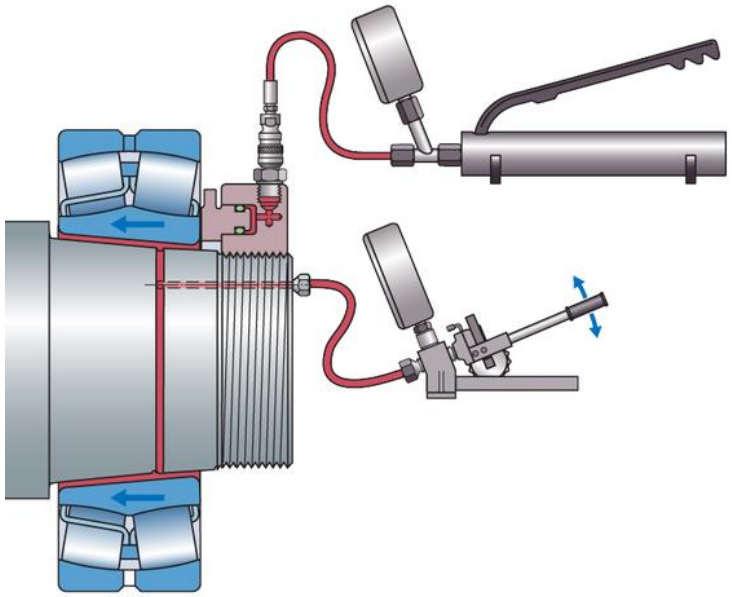
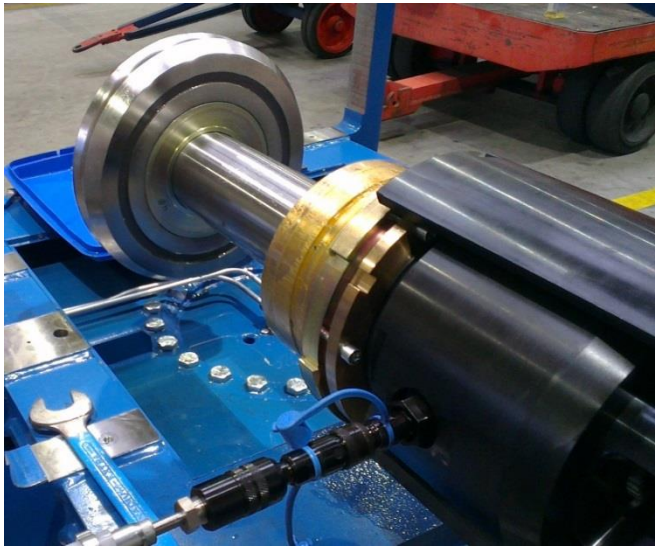
Application: bearing & wheel assembly
Output pressure: 2,500 – 4,000 bar





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First-fit Application: Hydraulic Testing. Output pressure: 300 – 4,000 bar

Landing gear testing
(A380 @12 mio. cycles)

High Pressure Testing

Cylinder testing

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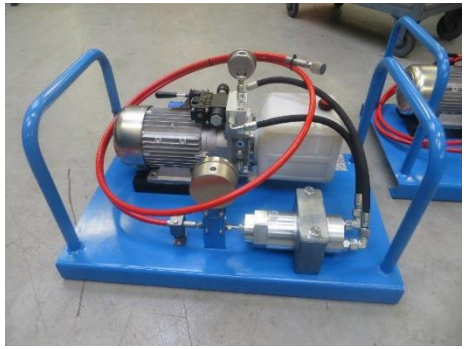
SCANWILL INTENSIFIERS IN SHORT…

Characteristics	Advantages	Benefits
• High pressure precisely where needed	• Low operating pressure in the system	• Energy savings for the total system
• High pressure by low pressure pump	• Use existing installed pump	• No need of expensive hp components
• Low pressure in most places	• Longer life of hydraulic components	• Cost savings by maintenance
• Low pressure supply to intensifier	• Use standard tubing, hoses & valves	• Less cost for the total system & higher safety
• Intensifiers are compact components	• Easy to accommodate where needed	• Cost savings by installation
• Intensifier fitted directly to cylinder	• No need for extra tubing or special parts	• Cost & space savings by installation
• Just add Scanwill intensifier	• Use existing equipment for the new task	• Cost savings by installation
• Built-in bypass valve	• Full flow available at pump pressure	• Fast operation until high pressure is reached

SCANWILL INTENSIFIER – SALES CHANNELS

- **OEM (Own Equipment Manufactures)**
  - Large OEM – series production
  - Small OEM – ad hoc projects
- **Retro-fit at current installations**
  - Direct to end-user (ex. machine works shop, foundry)
  - Through hydraulic service/engineering company
- **Aftermarket**
  - Replacement of Scanwill intensifier
  - Replacement of competitor product



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SCANWILL FLUID POWER SUPPLY CHAIN

All Scanwill intensifiers from the standard range are always in stock for day-to-day shipment!

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