

oventrop

Innovation + Quality



- Founded in 1851
- Still family owned
- Turnover 220 Million EUR
- Over 900 employees in Germany
- 10% apprentices
- Play important economic role in the region
- Job security and protection of the environment are given top priority



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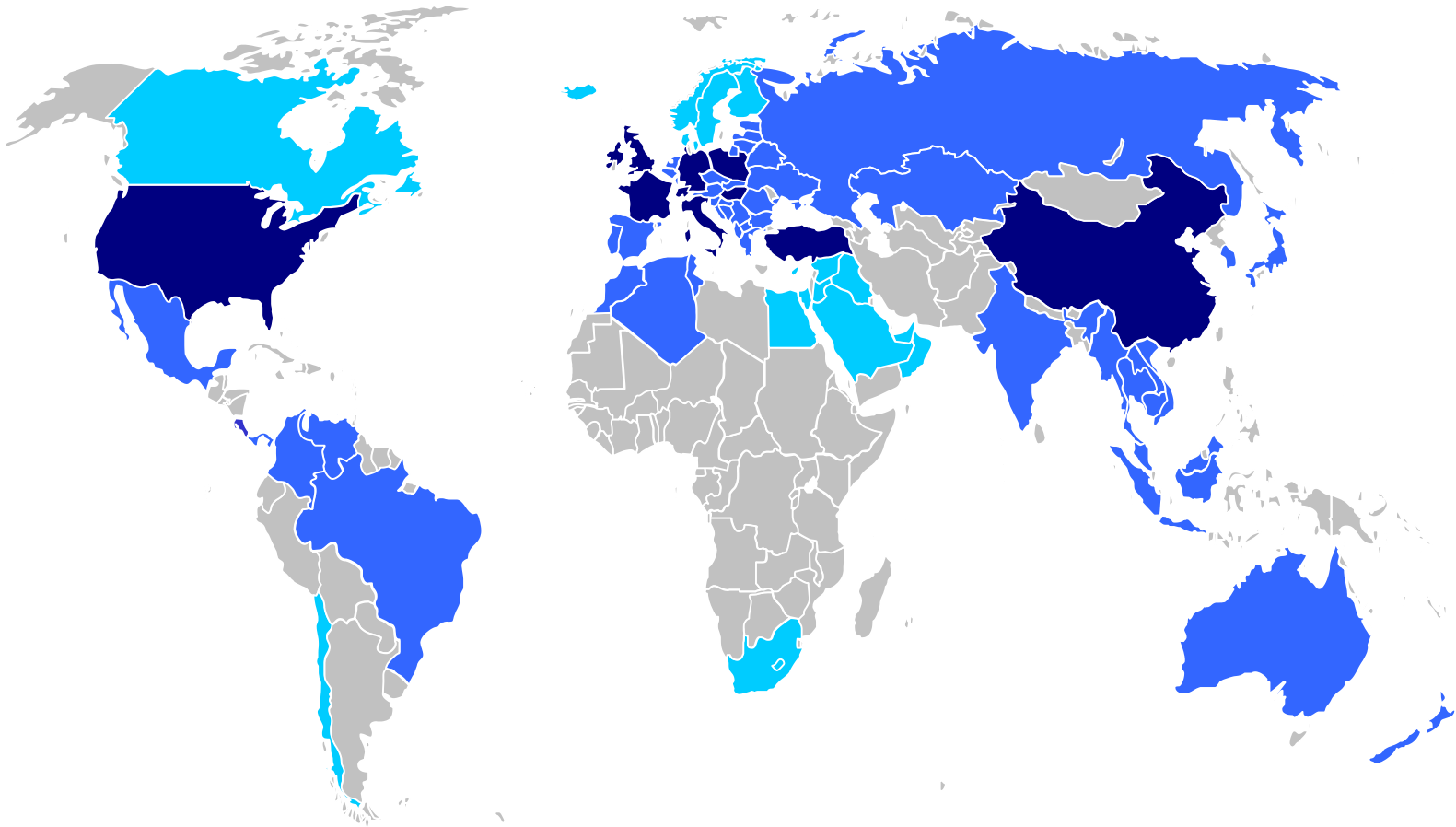
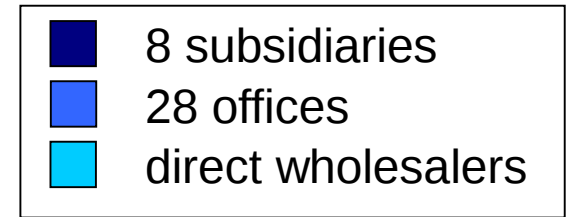
works



- Main factory in Olsberg



- Production facility in Brilon



OV



Foundry

Design team
meeting



Core
production

Automatic
assembly



Press



automatic machine



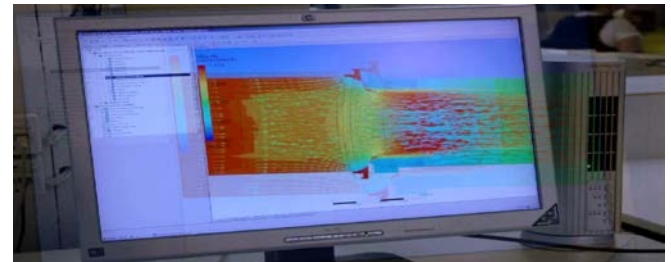
Centrelathe



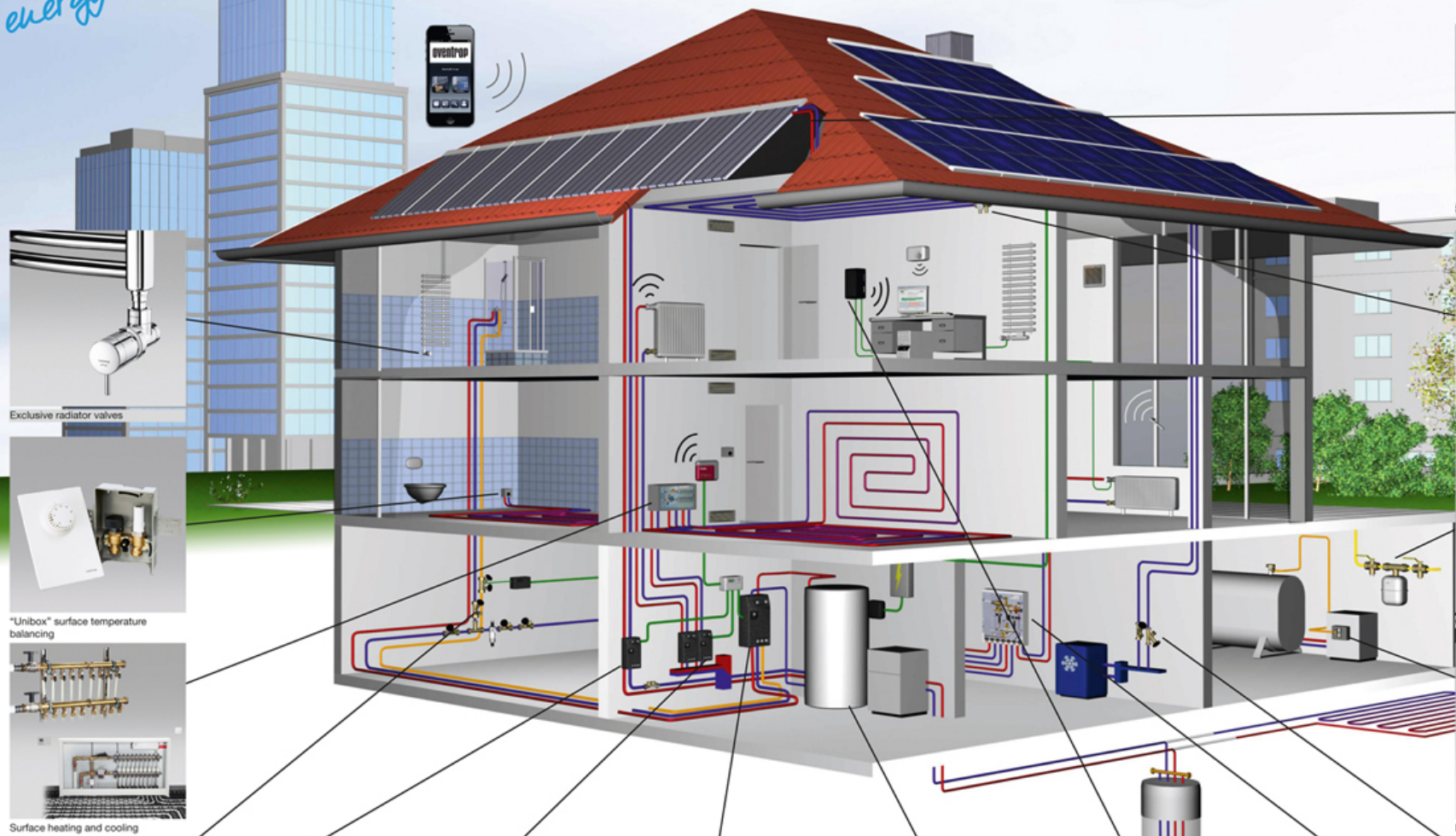
plastic extruders



Innovation + Quality



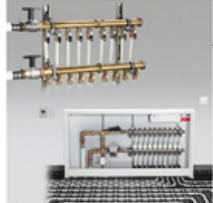
for better
energy efficiency...



Exclusive radiator valves



"Unibox" surface temperature balancing



Surface heating and cooling



Thermal regulating valve



Control unit for solar thermal energy



Control unit for boiler connection



Station for heating of potable water



Energy storage centre



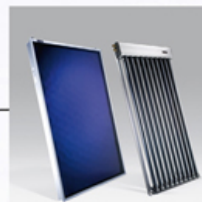
Control system "DynaTemp"



Dwelling station



Regulating valves for hydronic balancing



Solar collector



Flow controller



Gas cocks



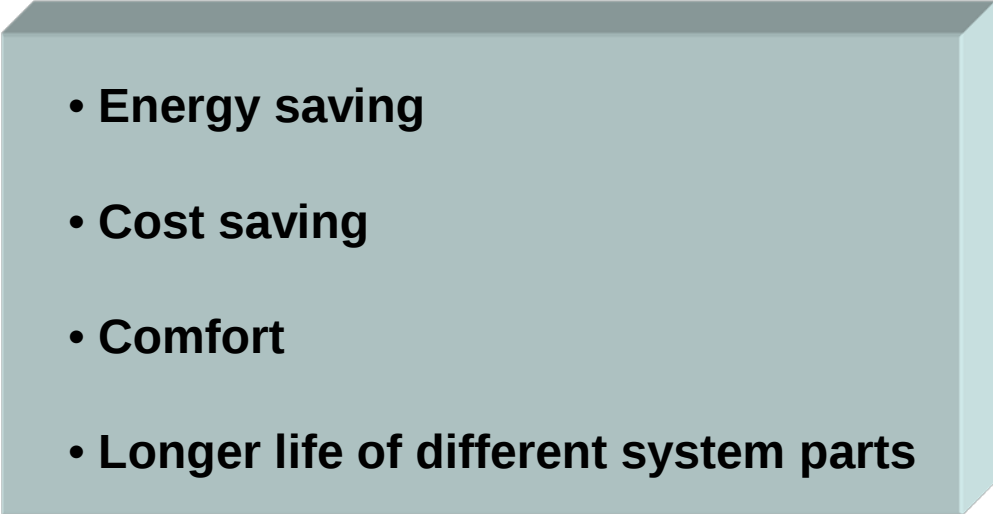
Heating oil filter/deaerator

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for better energy efficiency...

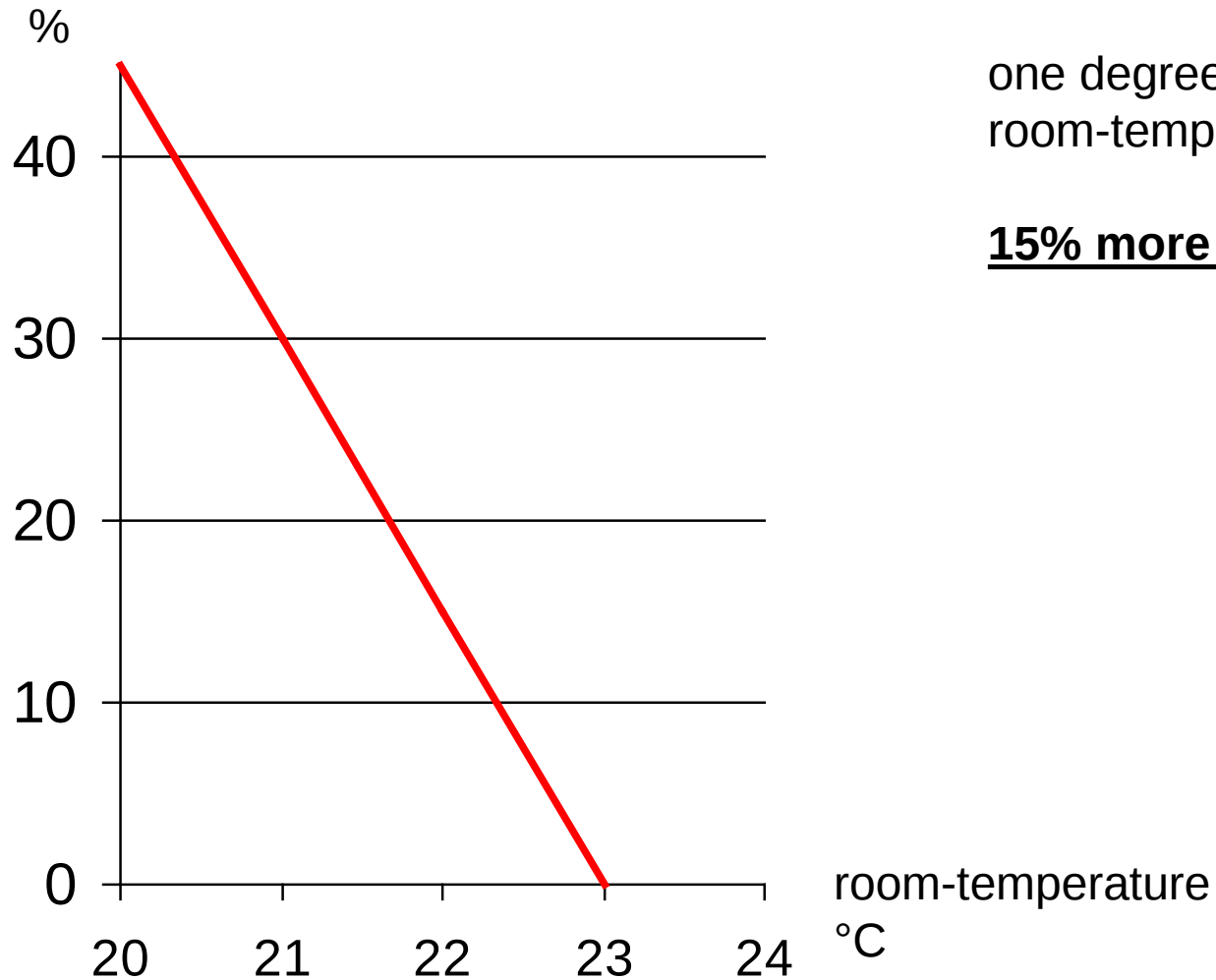
Why Hydronic Balancing?

Reasons:

- 
- Energy saving
 - Cost saving
 - Comfort
 - Longer life of different system parts

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cost saving

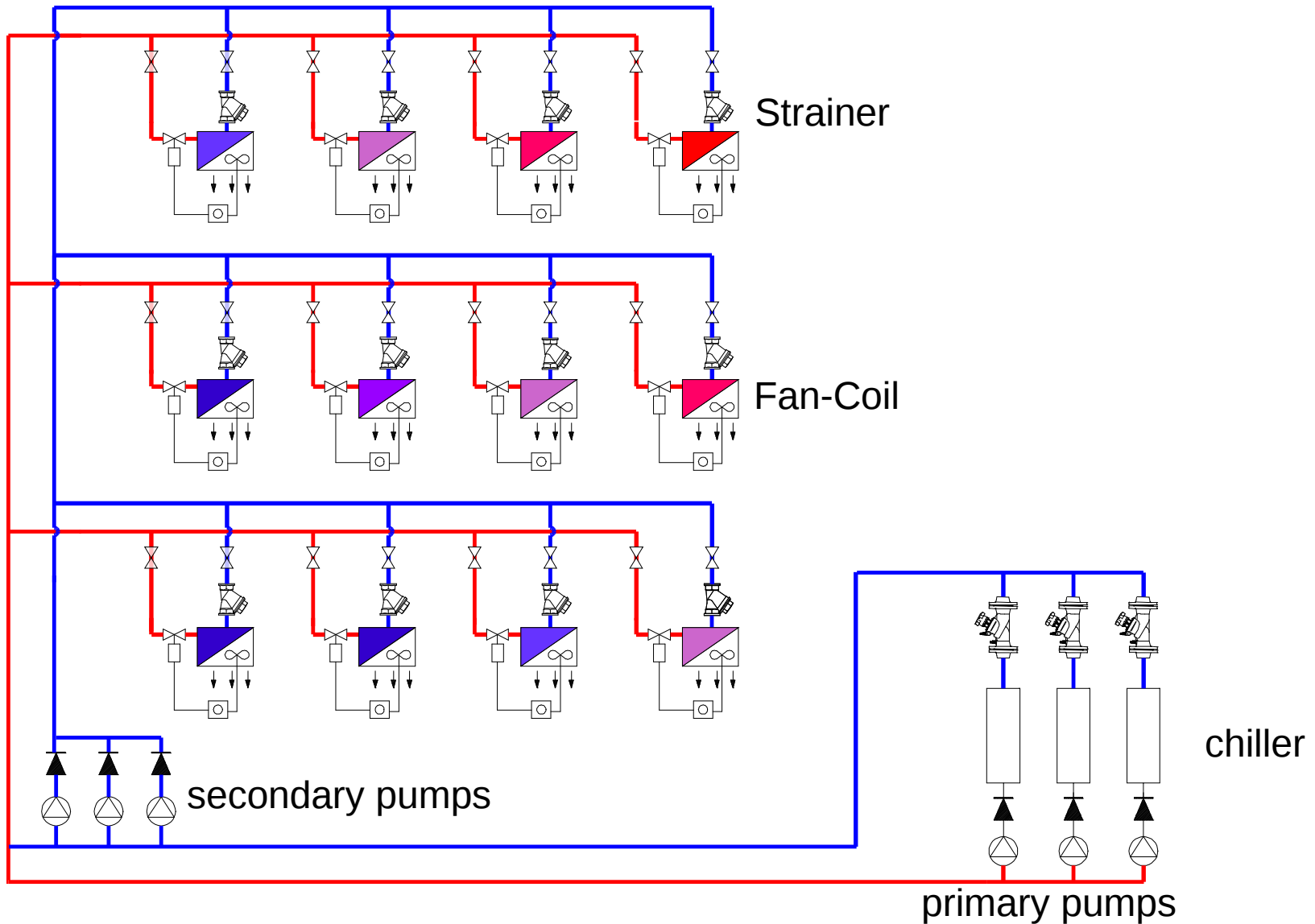


one degree lower
room-temperature

15% more costs !!

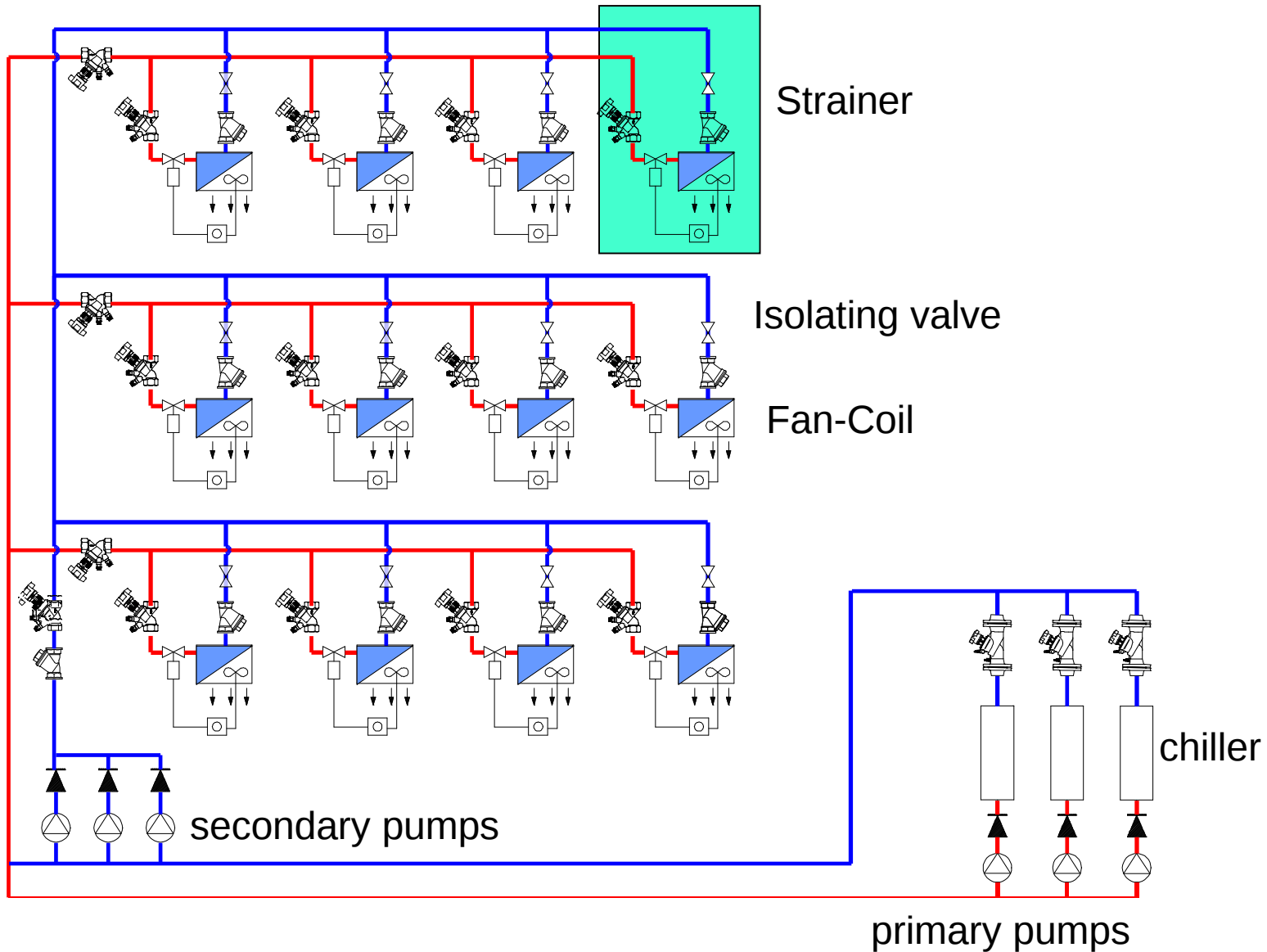
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chilled water system without balancing



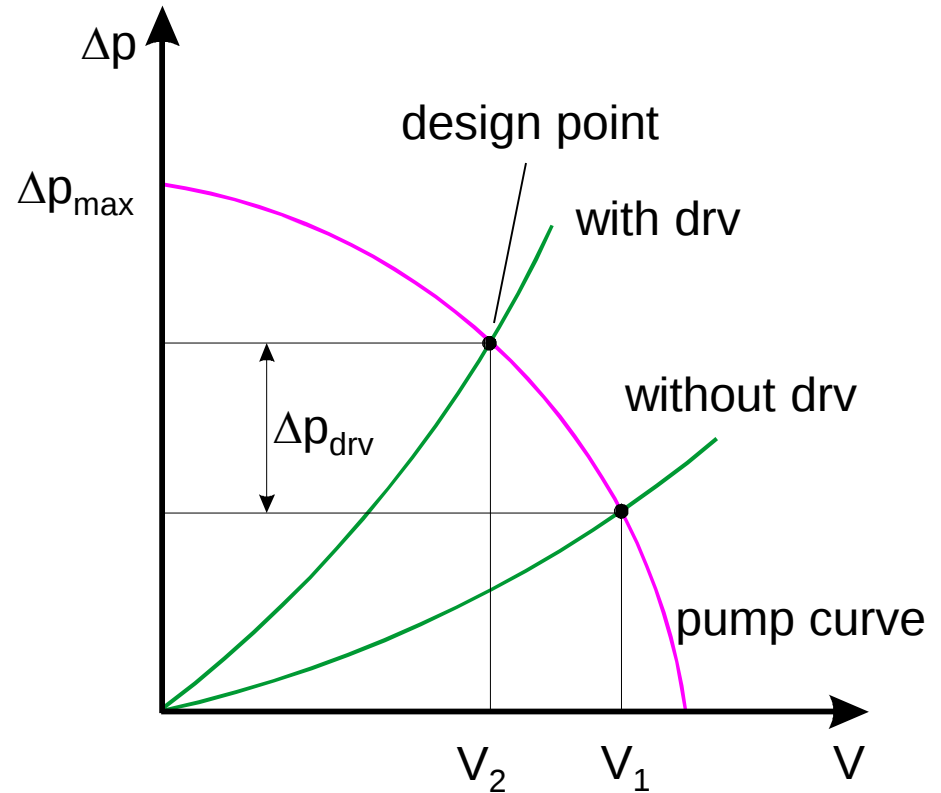
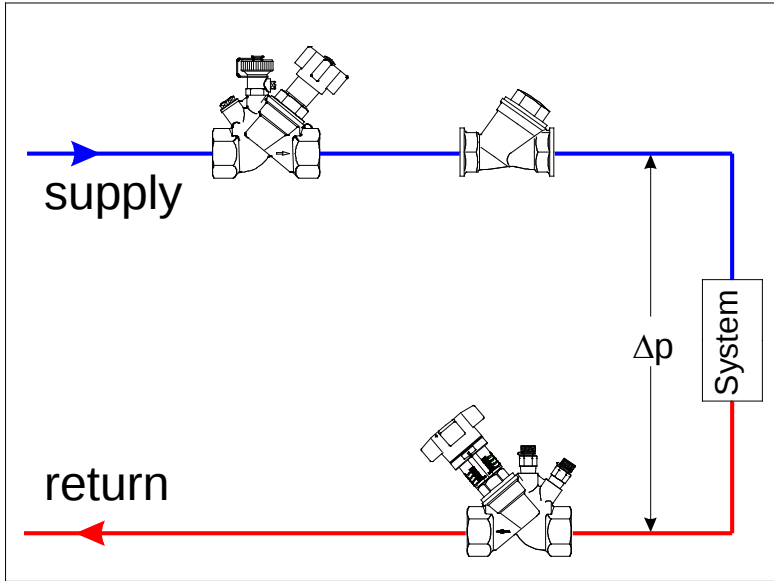
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chilled water system with balancing valves



overtrop

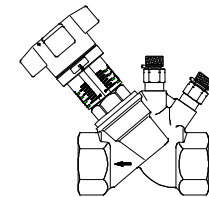
effects of using balancing valves



regulation with measured Δp



The solution: balancing valve "Hydrocontrol"
measuring computer "OV-DMC 2"

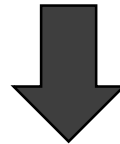
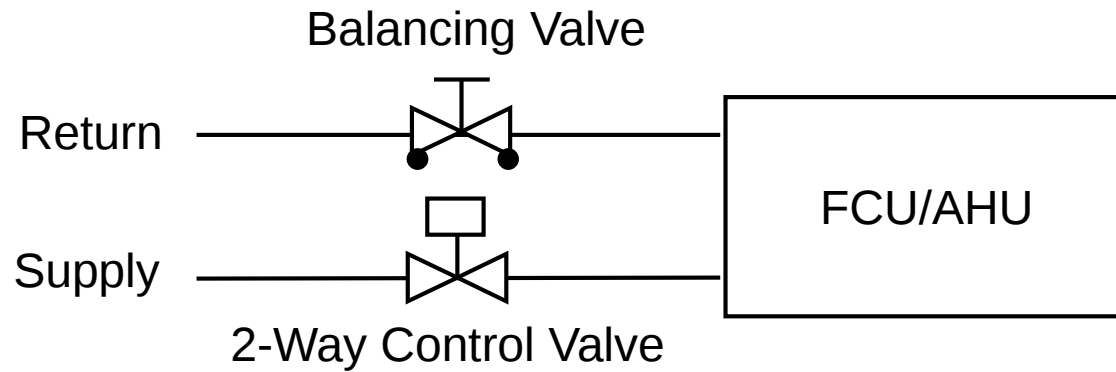


PICV (Pressure Independent Control Valve)

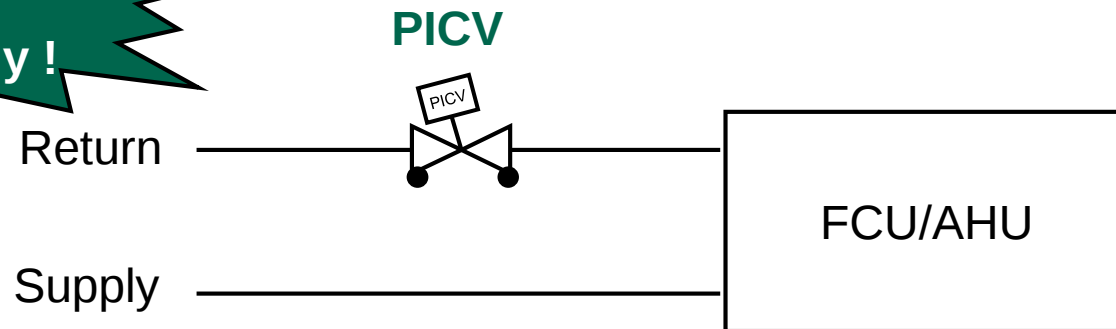


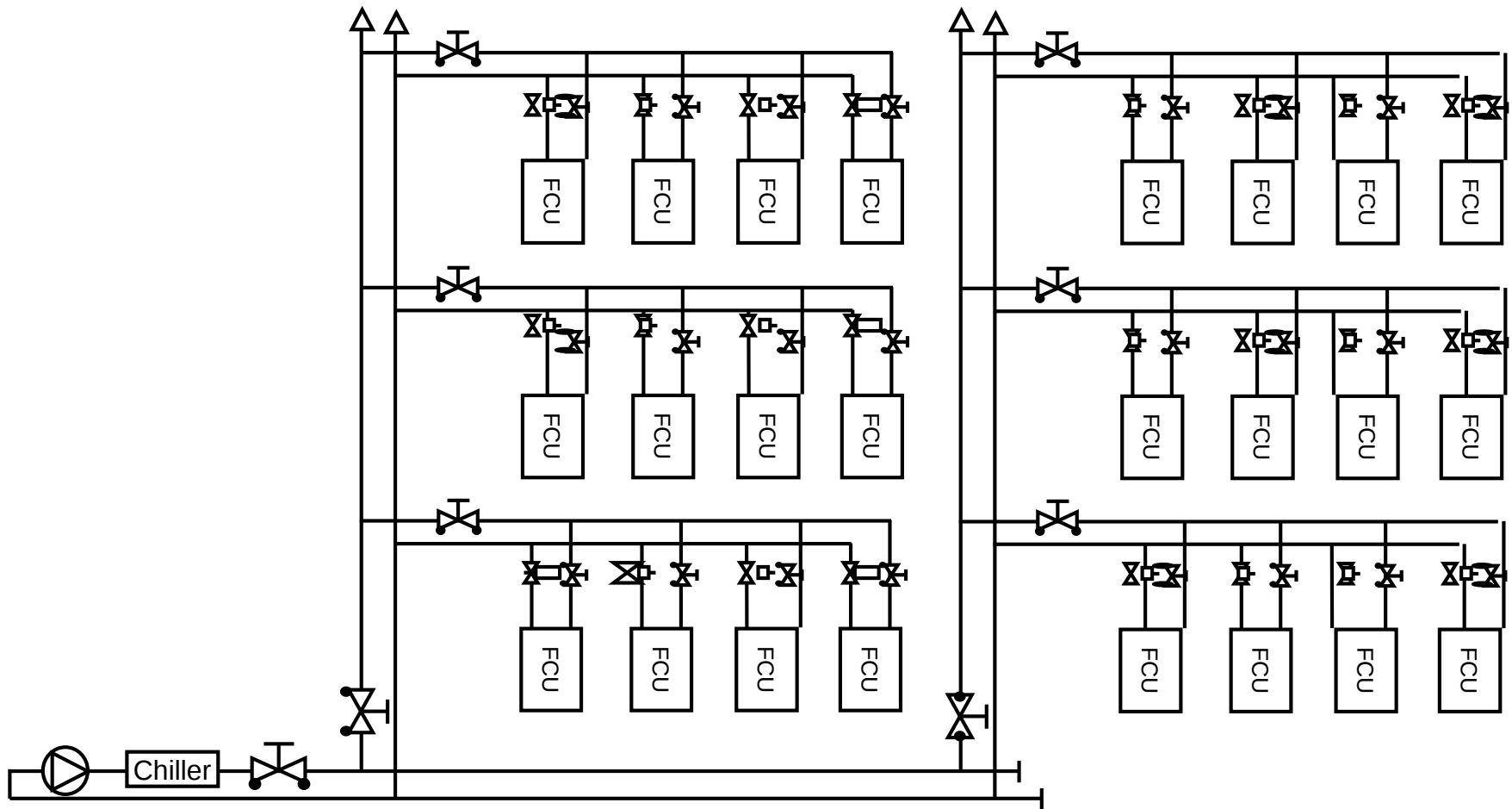
**3 in 1
valve !**

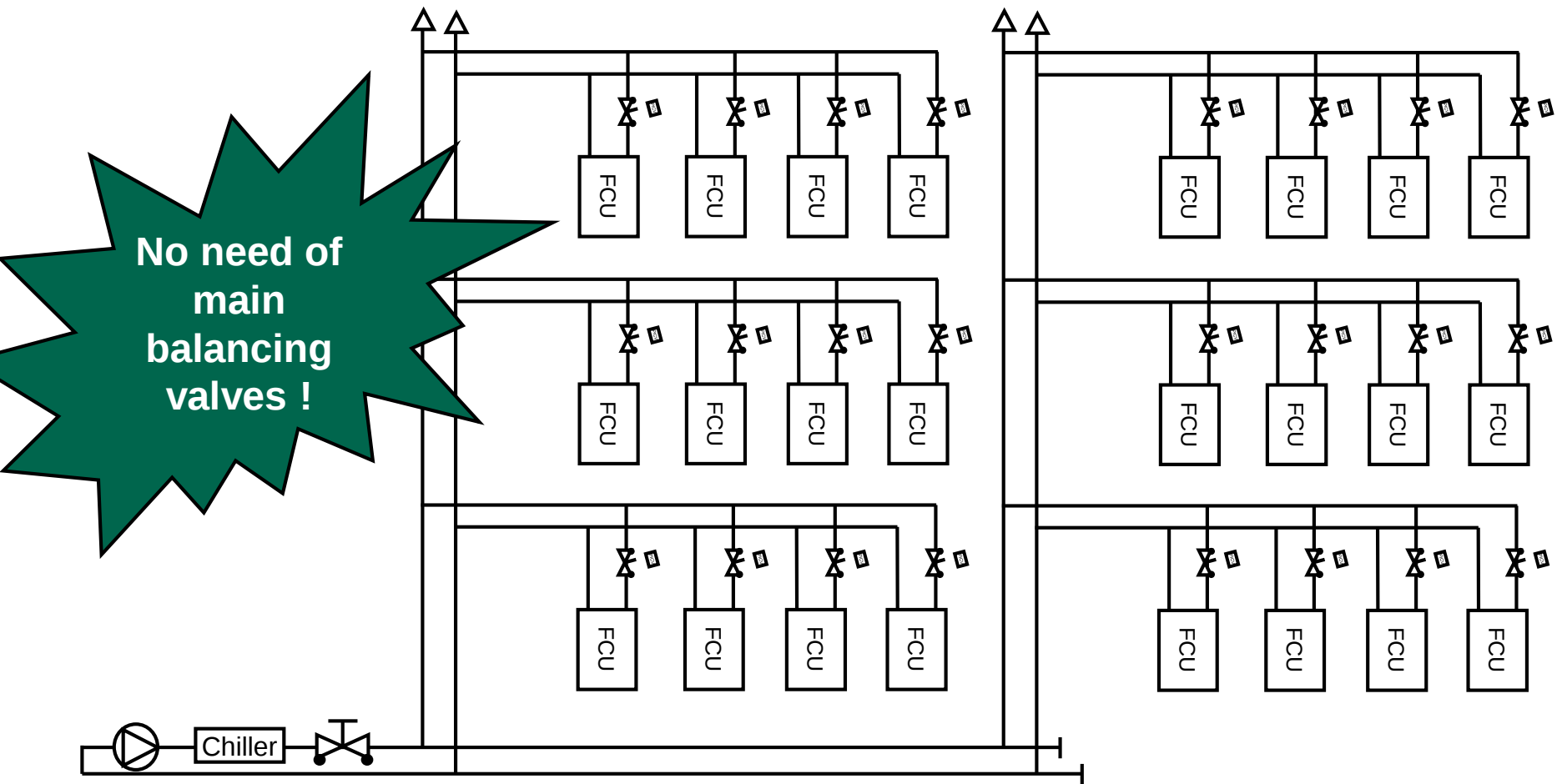
(2-way control valve + balancing valve + differential pressure regulator)



**New
Technology !**







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Easy Selection, just select by flow rate.



Q = Flow
T = Thread
Z = dezincification
resistant brass



Q = Flow
T = Thread
R = Bronze



Q = Flow
F = Flange
C = Cast iron

Name	DIM	Thread	Flow range	Flow range
Cocon QTZ	½" (DN15)	Female	150-1,050 l/h	0.7 – 4.6 GPM
	¾" (DN20)	Female	180-1,300 l/h	0.8 – 5.7 GPM
	1" (DN25)	Female	300-2,000 l/h	1.4 – 8.8 GPM
	1 ¼" (DN32)	Female	600-3,600 l/h	2.7 – 15.8 GPM
Cocon QTR	1 ½" (DN40)	Female	1.5 - 7.5 m³/h	6.7 – 33.0 GPM
	2" (DN50)	Female	2.5 - 10.0 m³/h	11.1 – 44.0 GPM
Cocon QFC	2 ½" (DN65)	Flange	5.0 – 22.0 m³/h	22.1 - 88.0 GPM
	3" (DN80)	Flange	7.5 – 30.0 m³/h	33.1 – 132.1 GPM
	4" (DN100)	Flange	12.5 – 50.0 m³/h	55.1 – 220.1 GPM
	5" (DN125)	Flange	27.0 – 108.0 m³/h	118.9 – 396.3 GPM
	6" (DN150)	Flange	36.0 – 150.0 m³/h	158.6 – 660.5 GPM
	8" (DN200)	Flange	55.0 – 190.0 m³/h	242.2 – 836.6 GPM

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Flow rate can be read on hand wheel

Size 1/2" to 1 1/4"



Size 1 1/2" to 8"



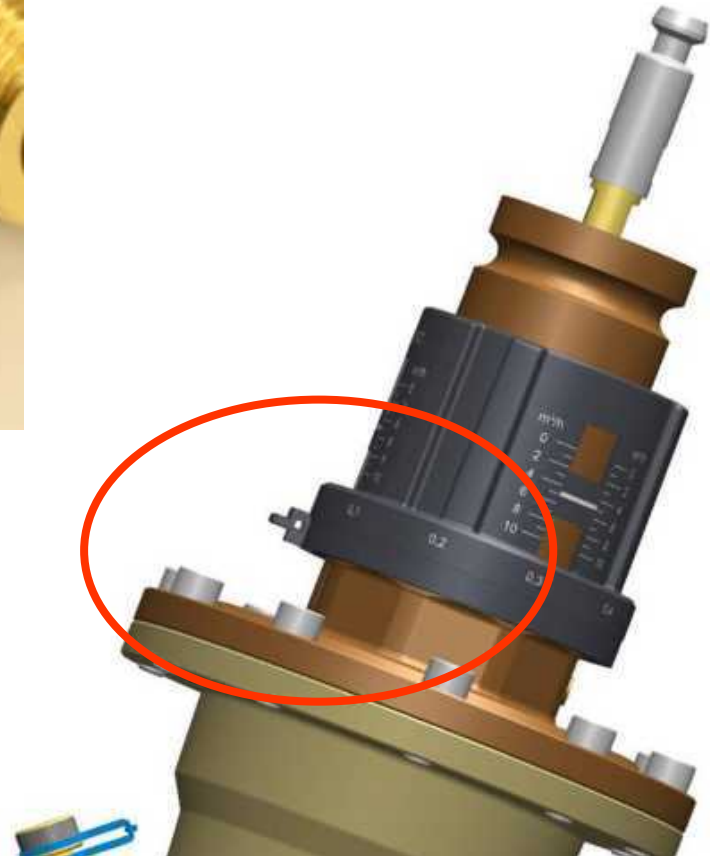
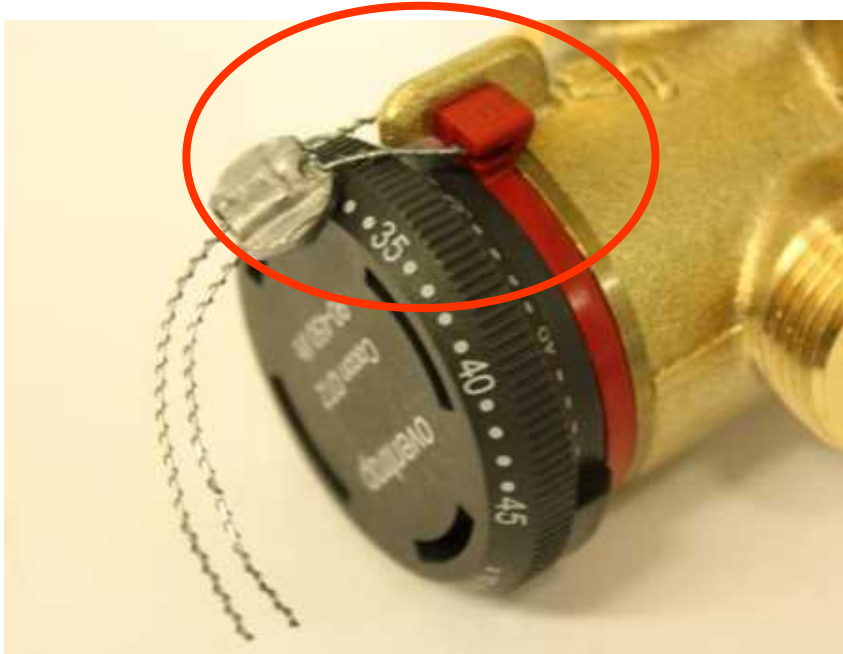
oventrop Easy setting, just rotate the hand wheel.



Size ½" to 1 ¼"

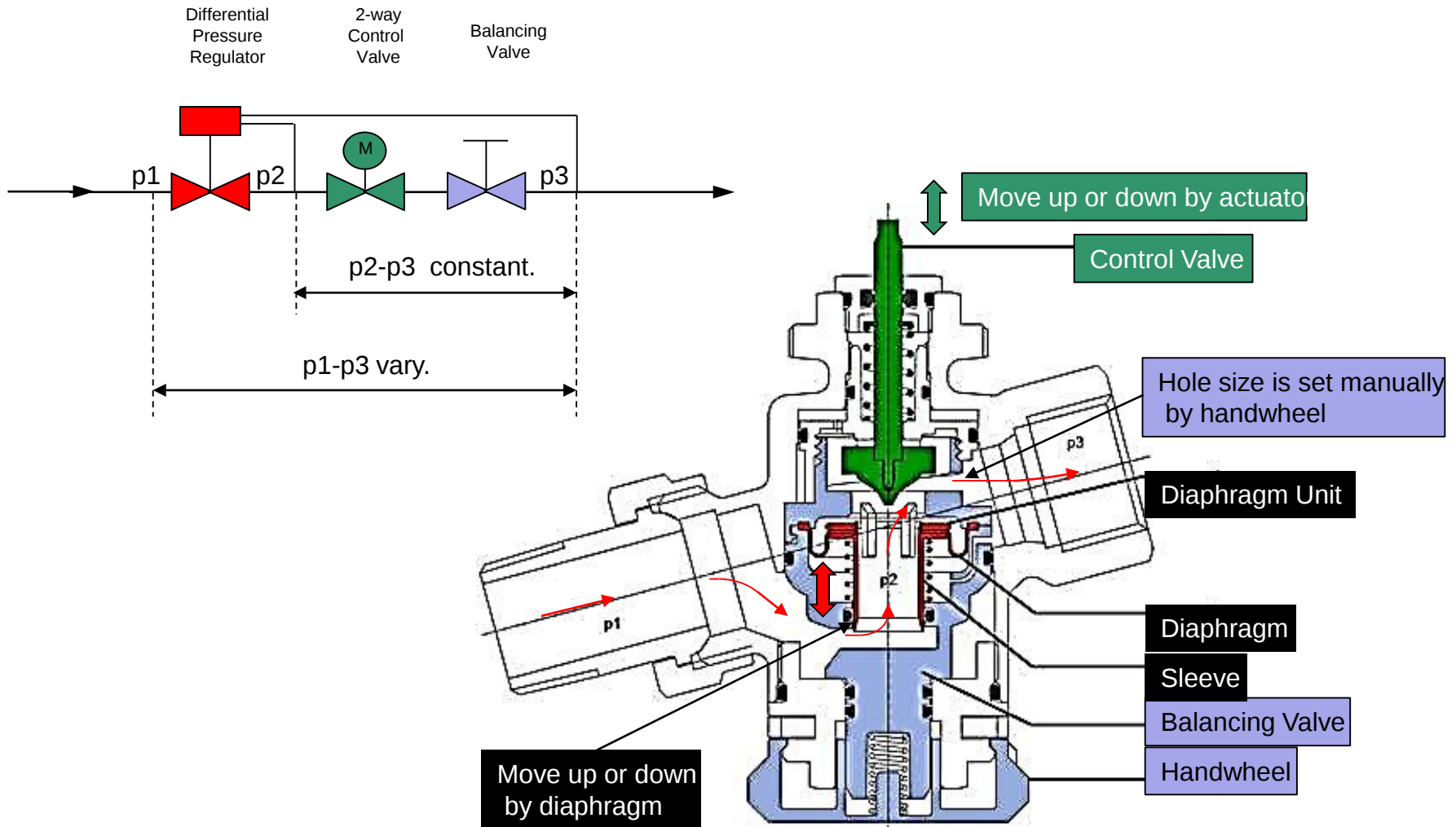
oventrop Easy setting, just rotate the hand wheel.

Setting can be locked



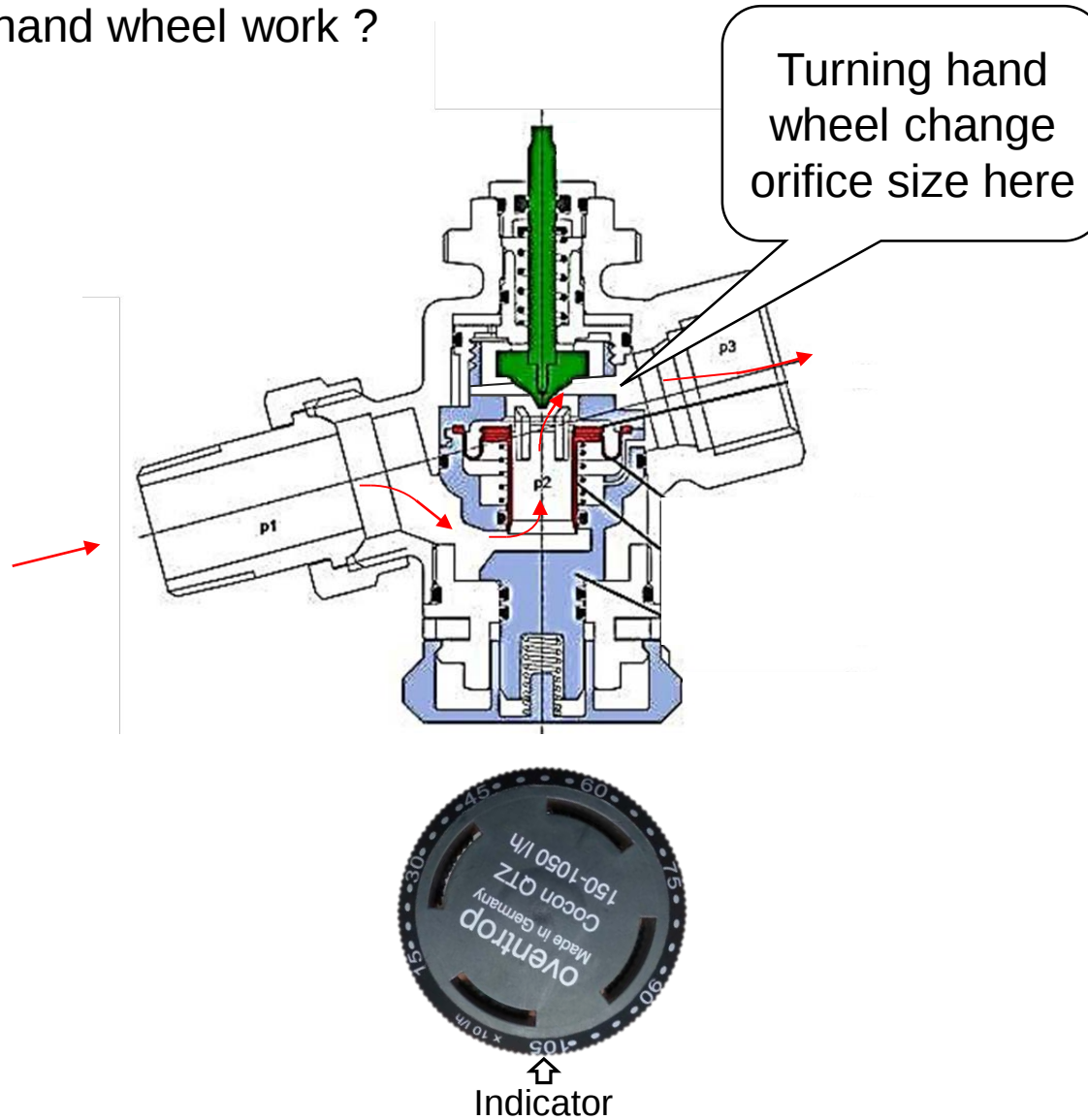
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How 3 Valves are fit in 1 Valve.



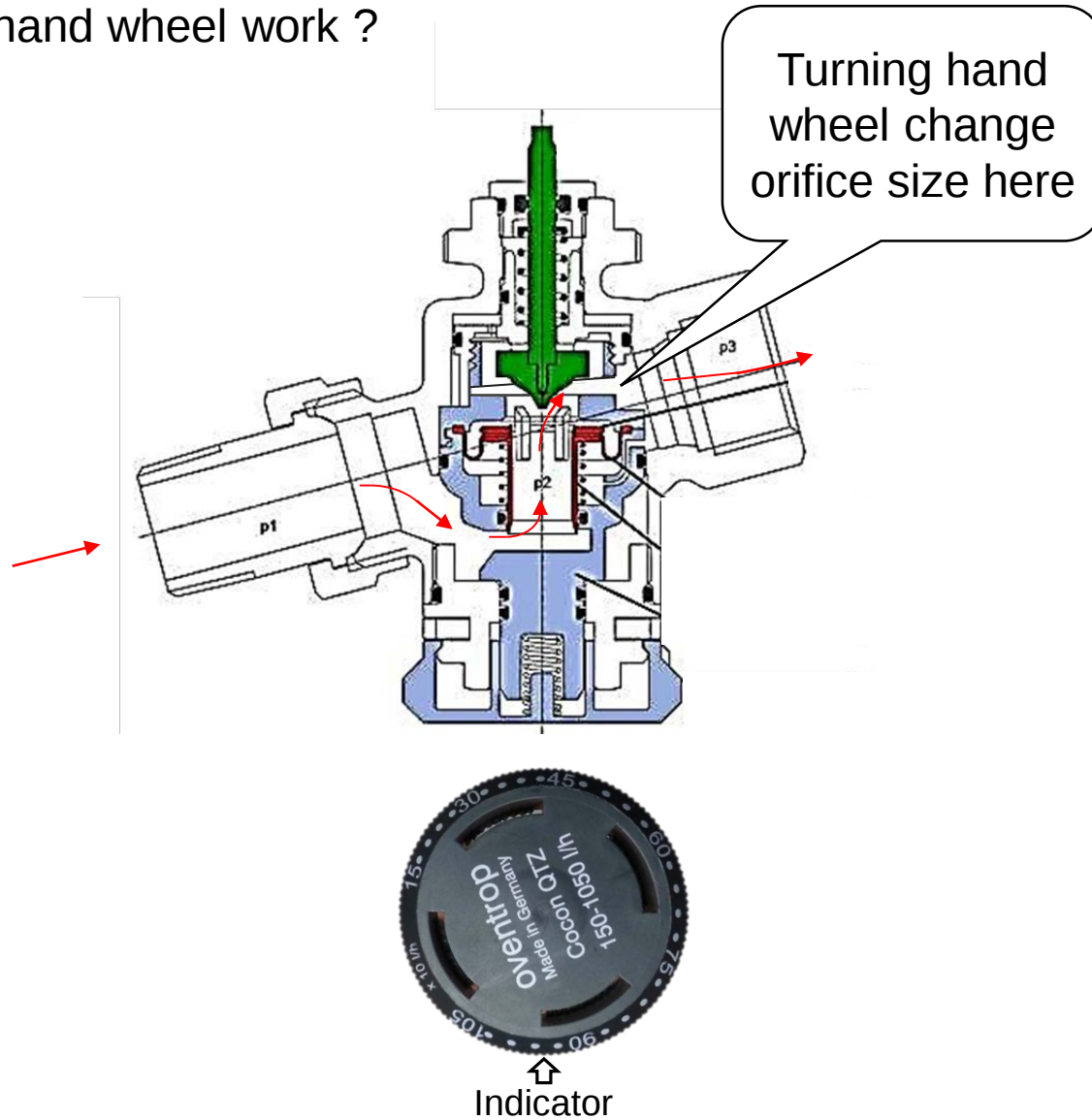
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How does the hand wheel work ?



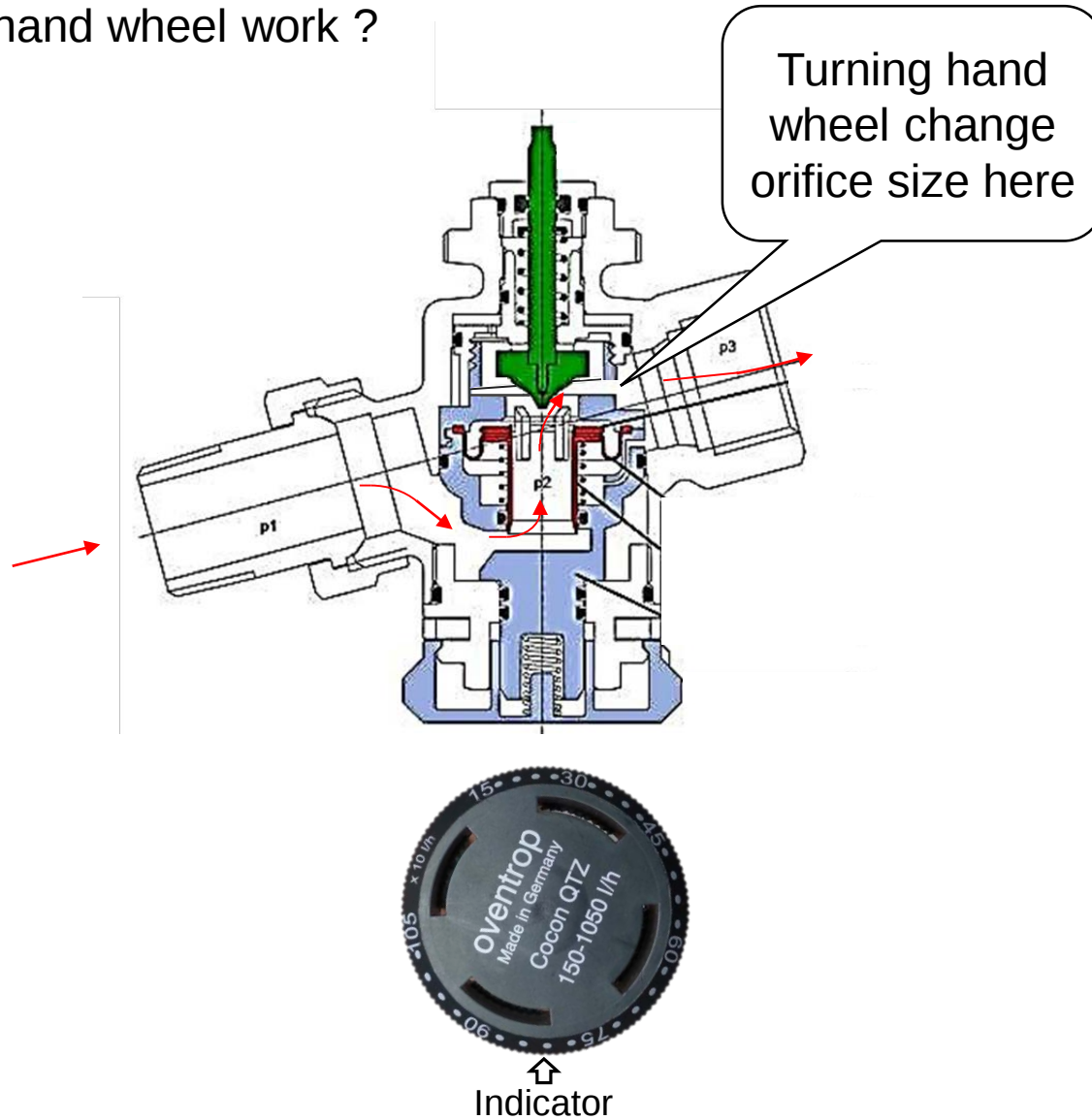
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How does the hand wheel work ?



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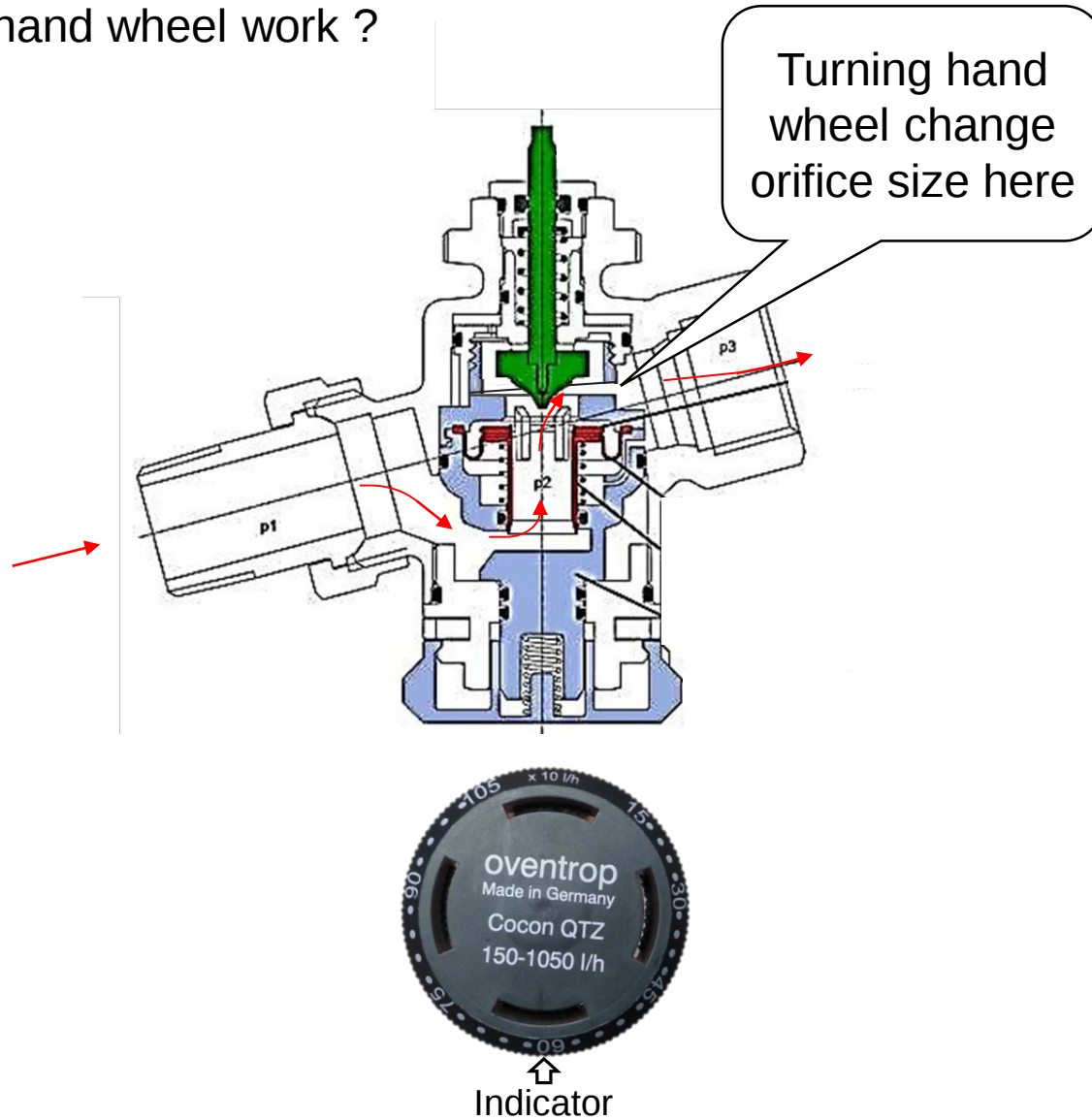
How does the hand wheel work ?



How does the hand wheel work ?

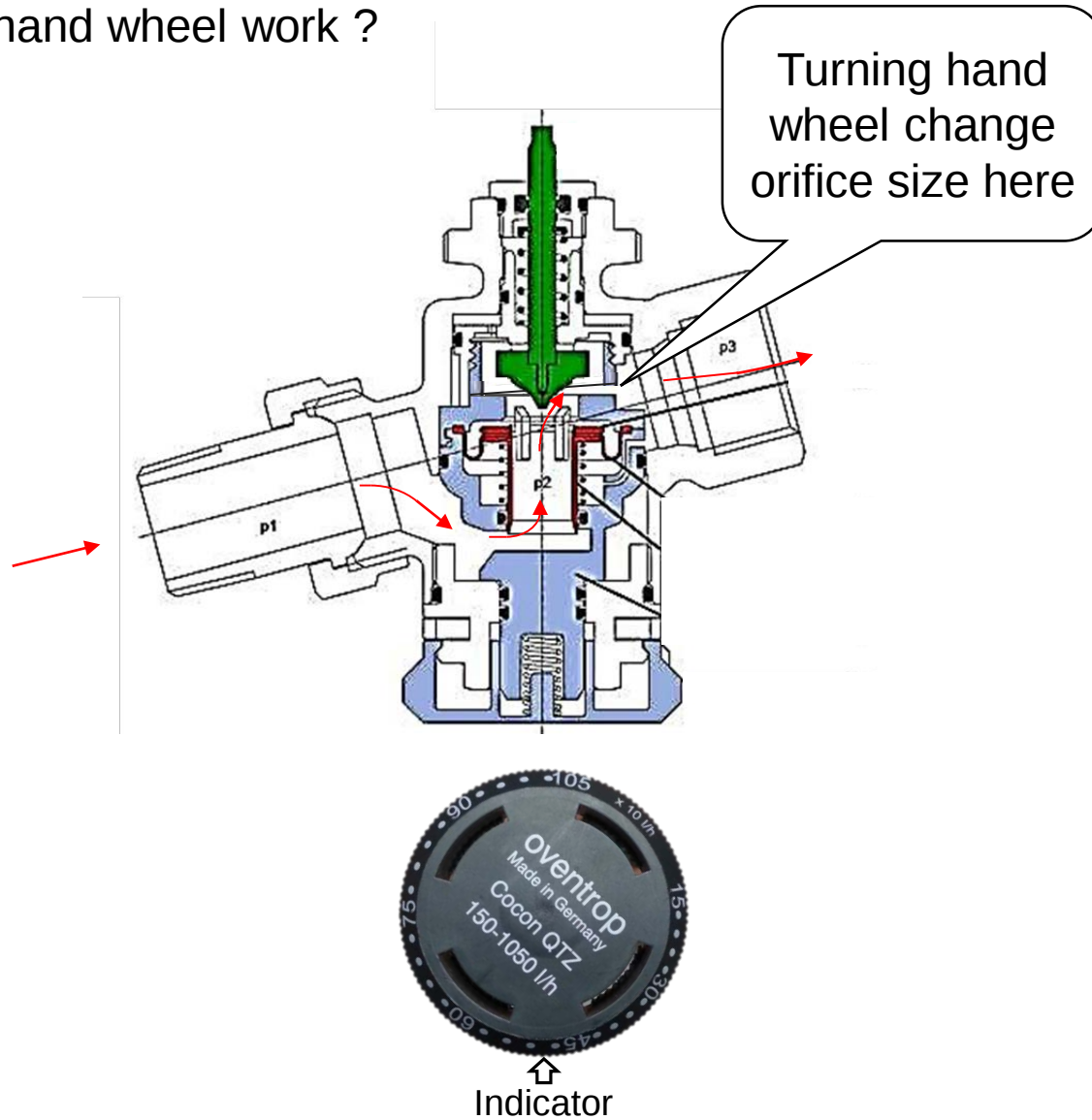
oventrop

How does the hand wheel work ?



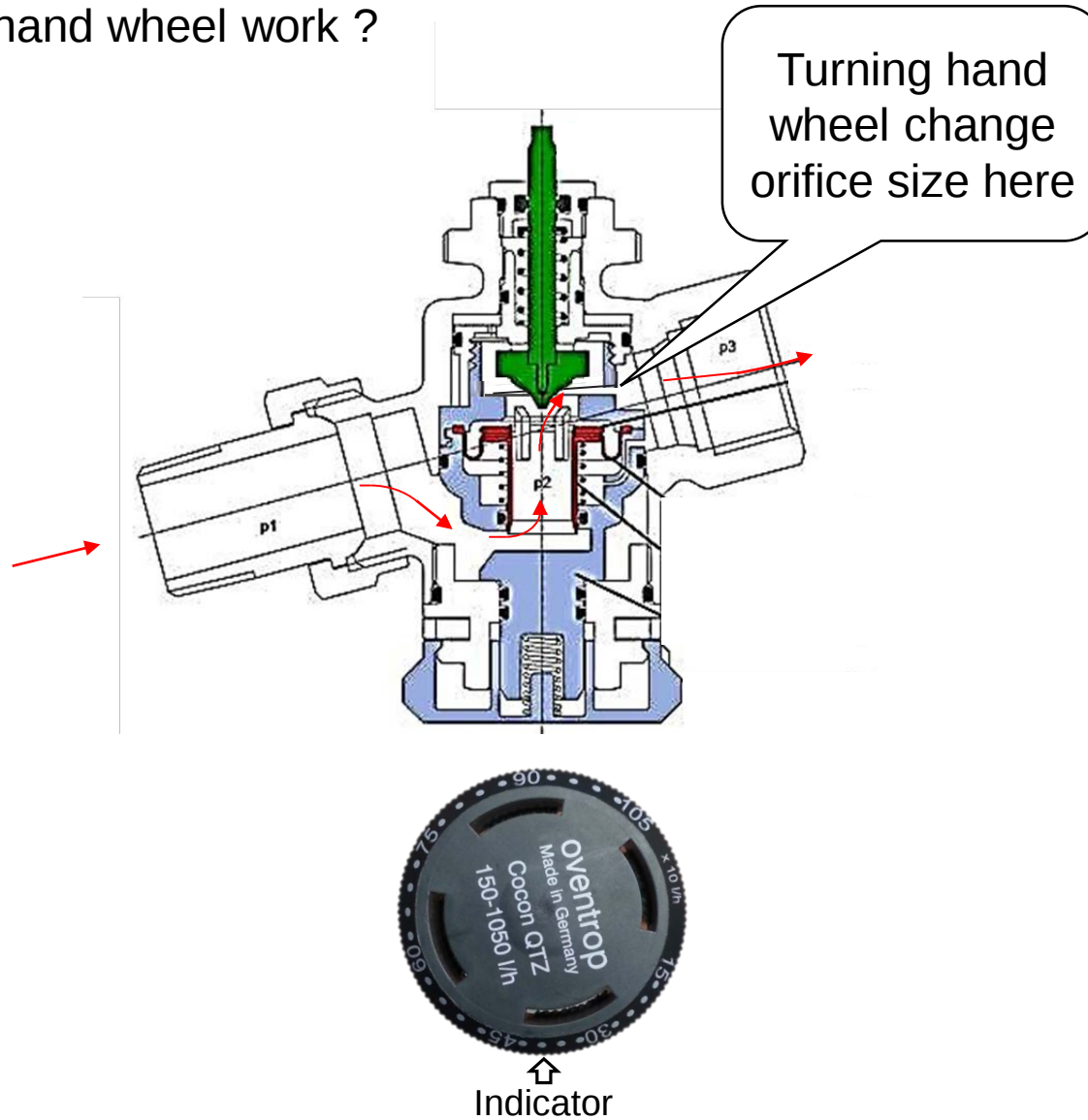
oventrop

How does the hand wheel work ?



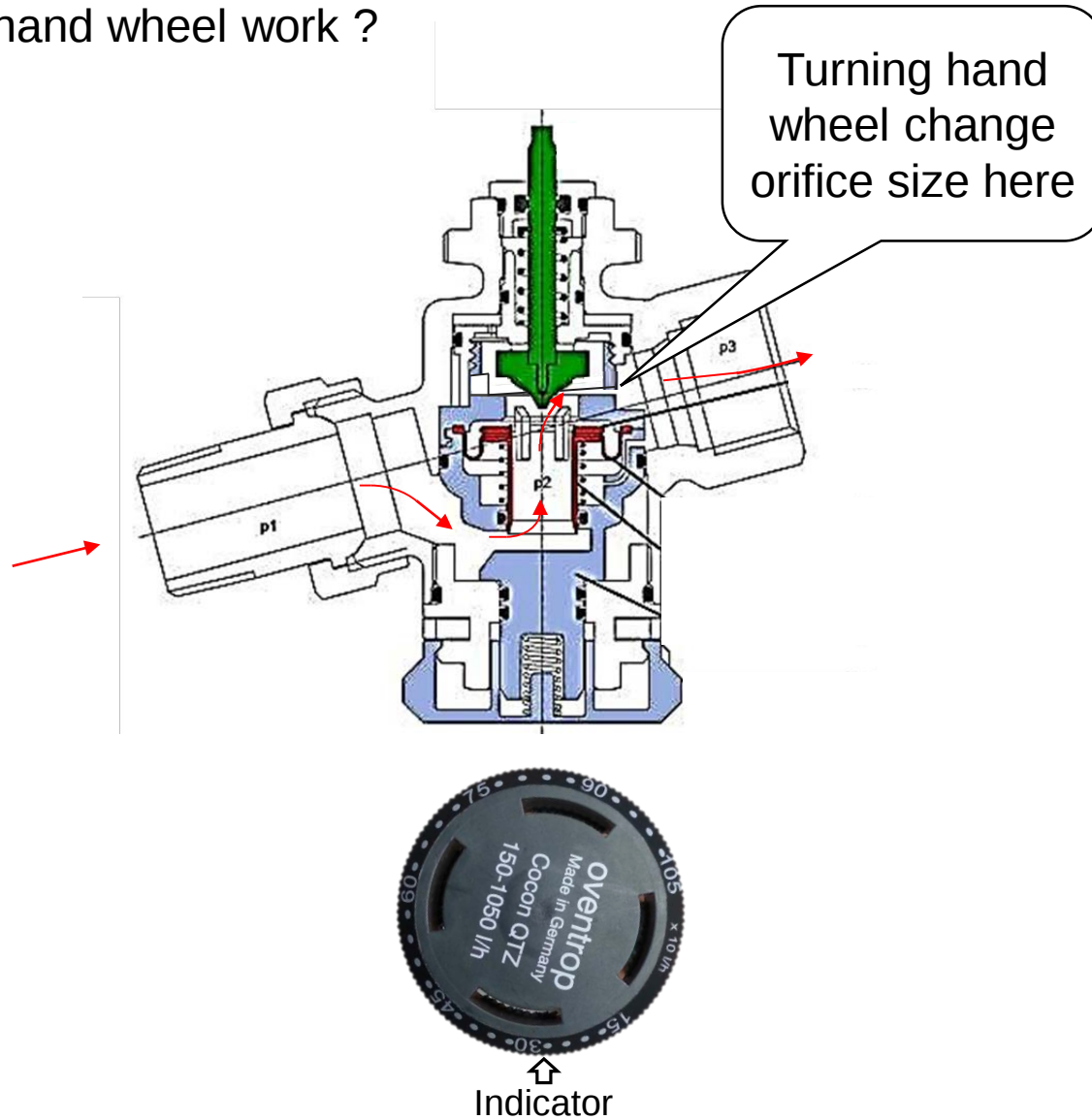
oventrop

How does the hand wheel work ?



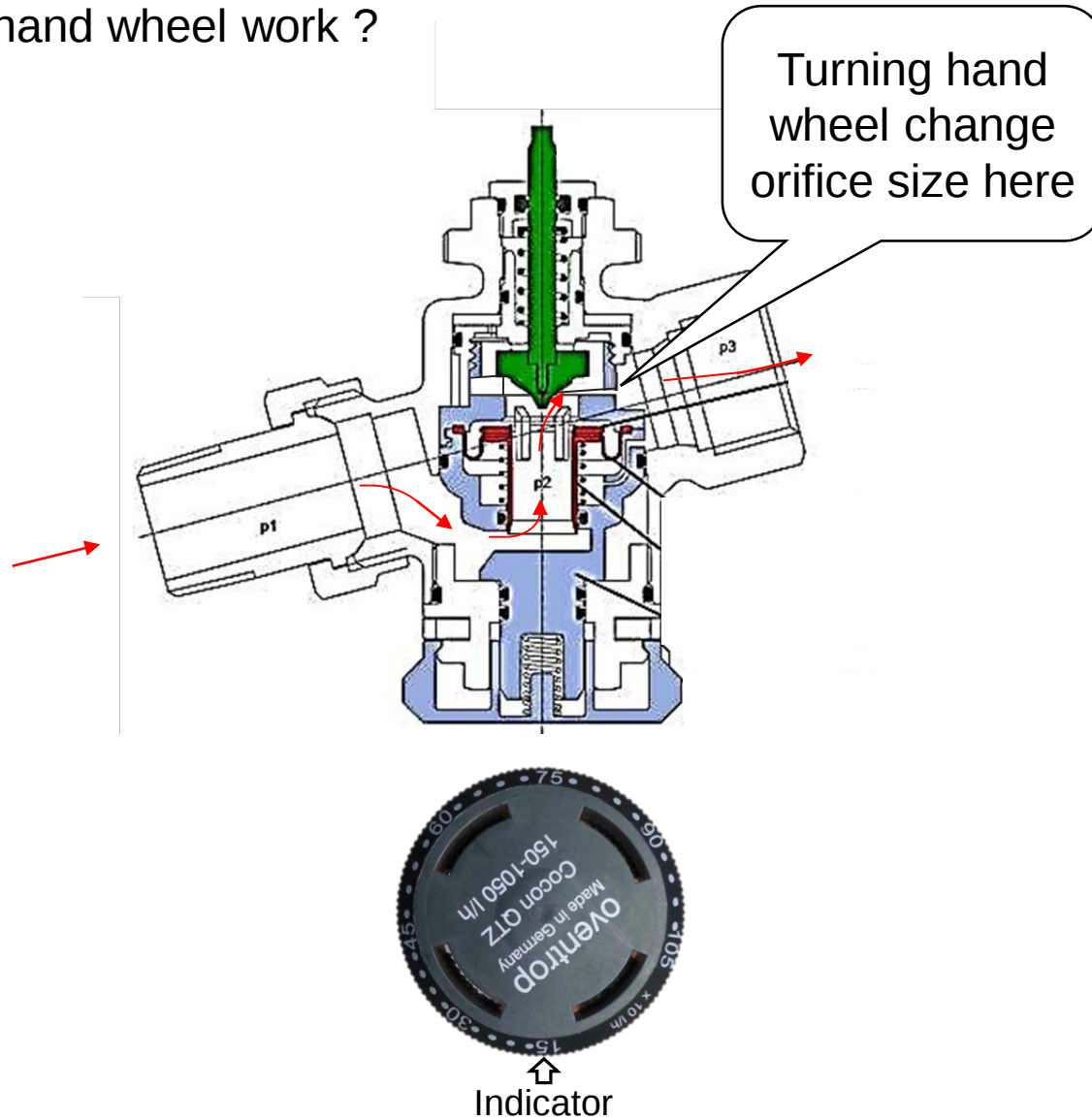
oventrop

How does the hand wheel work ?



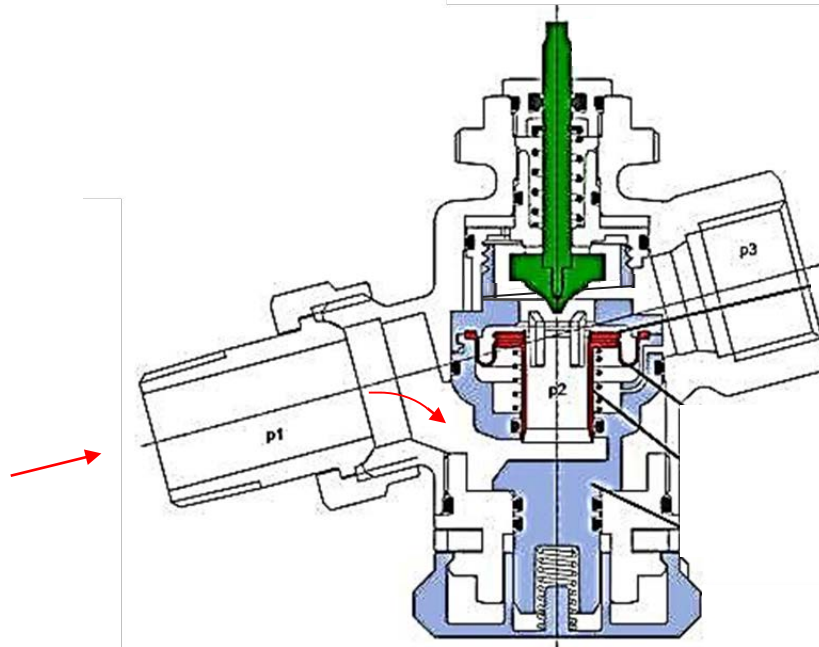
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How does the hand wheel work ?



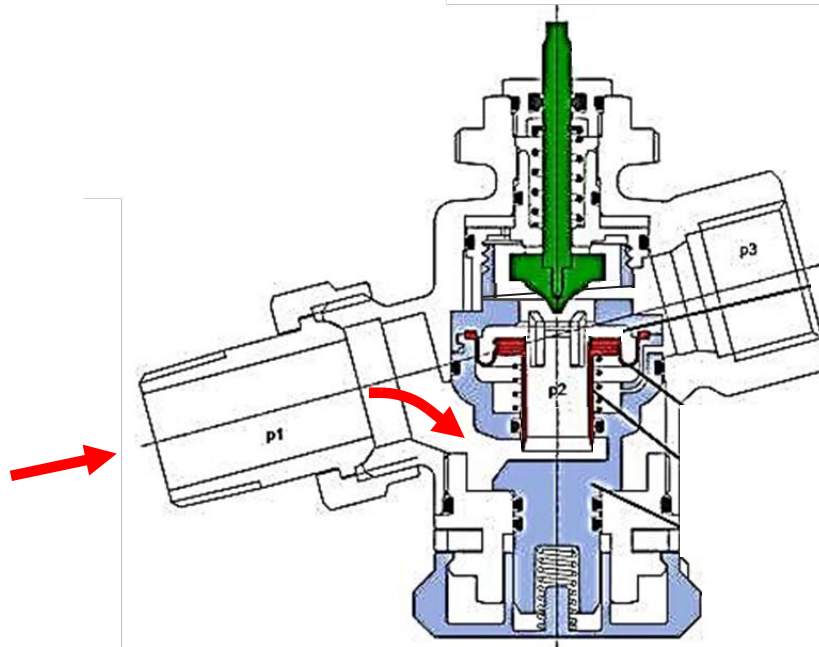
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How does the “Diff. Pressure Regulator” work ?



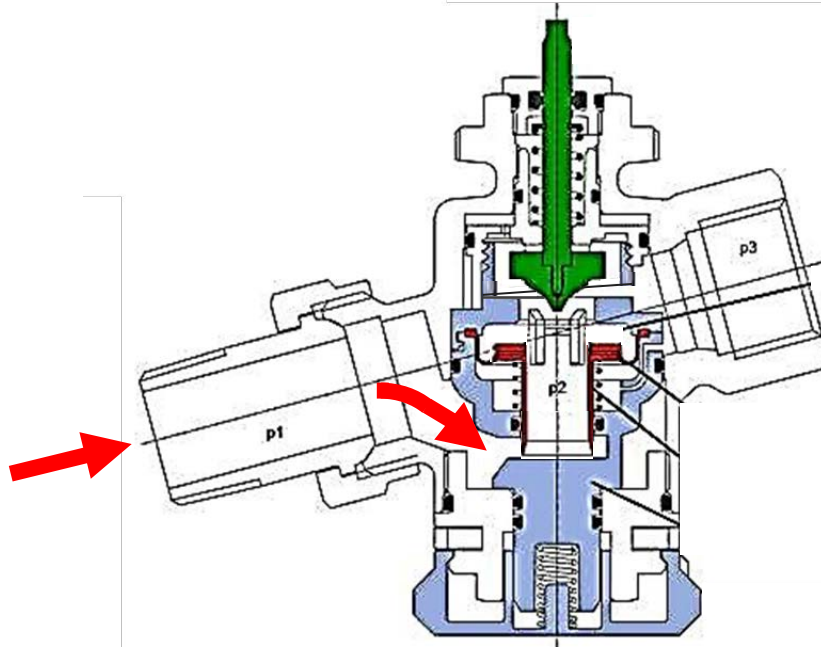
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How does the “Diff. Pressure Regulator” work ?



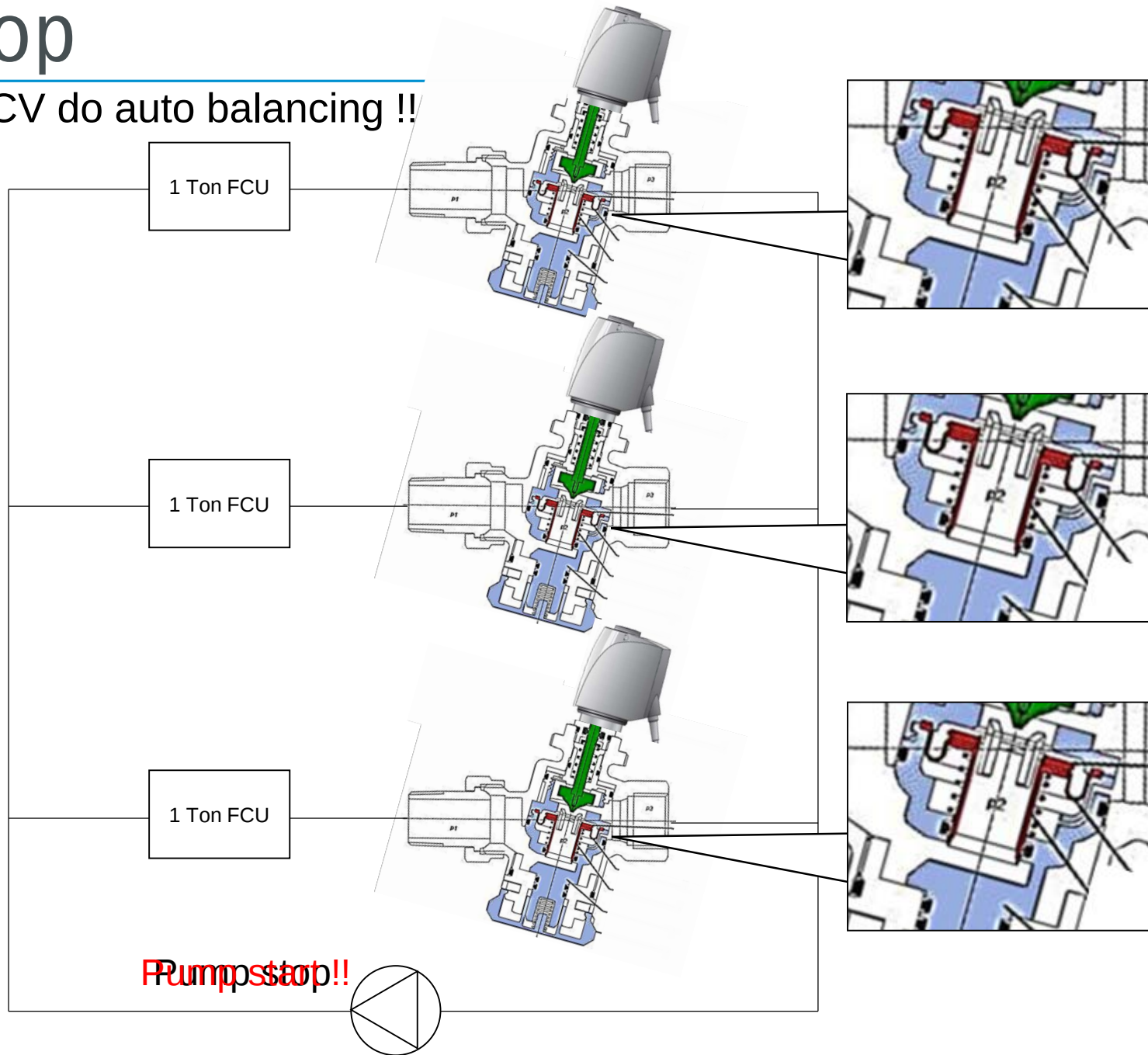
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How does the “Diff. Pressure Regulator” work ?



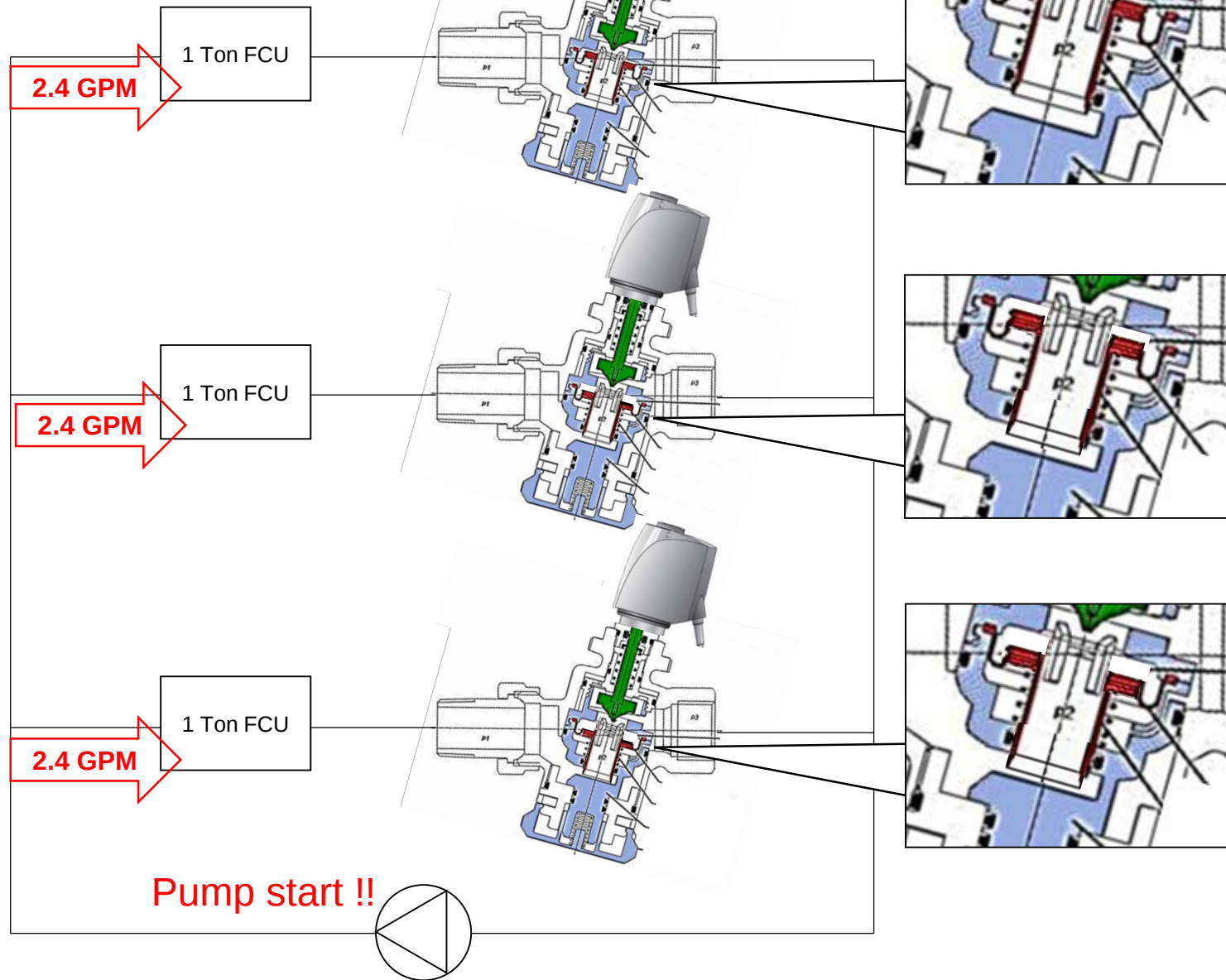
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How does PICV do auto balancing !!



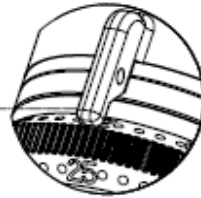
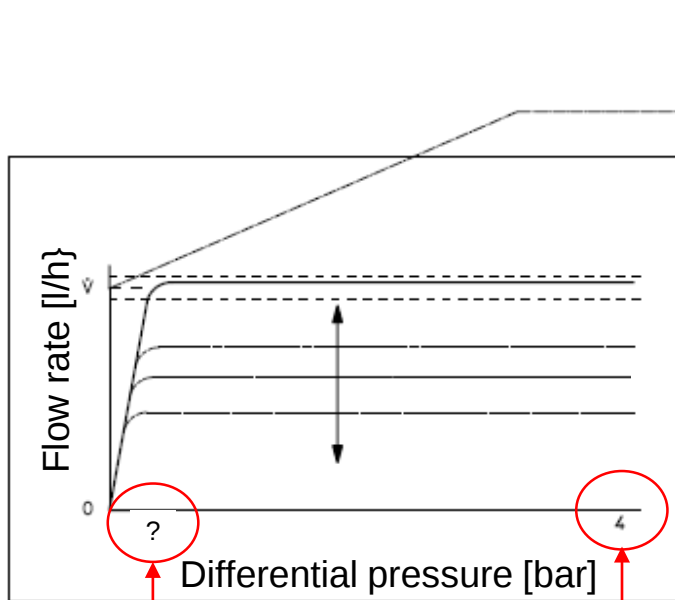
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How does PICV do auto balancing !!



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Diff. Pressure Control Range



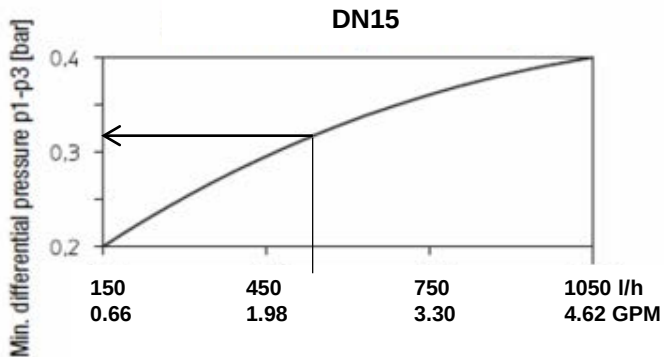
Set max. flow rate by hand wheel

Max. diff. pressure allowed = 4 bar

Min. diff. pressure required → see chart next page

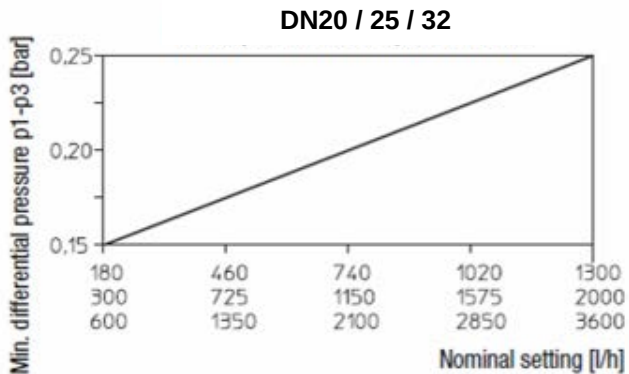
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Min. differential pressure requirement
depending on the setting of flow rate



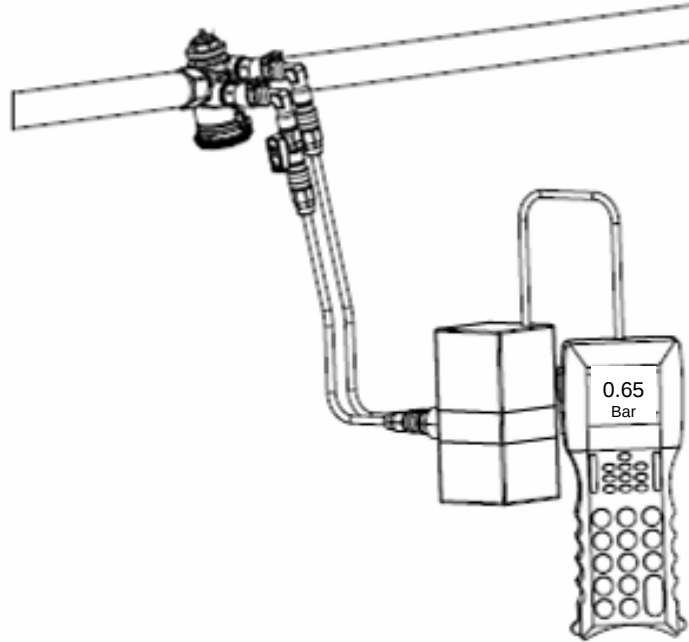
In case we set max flow rate at 2.4 GPM

It need min. Diff Pressure 0.32 bar



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Check the furthest valve.



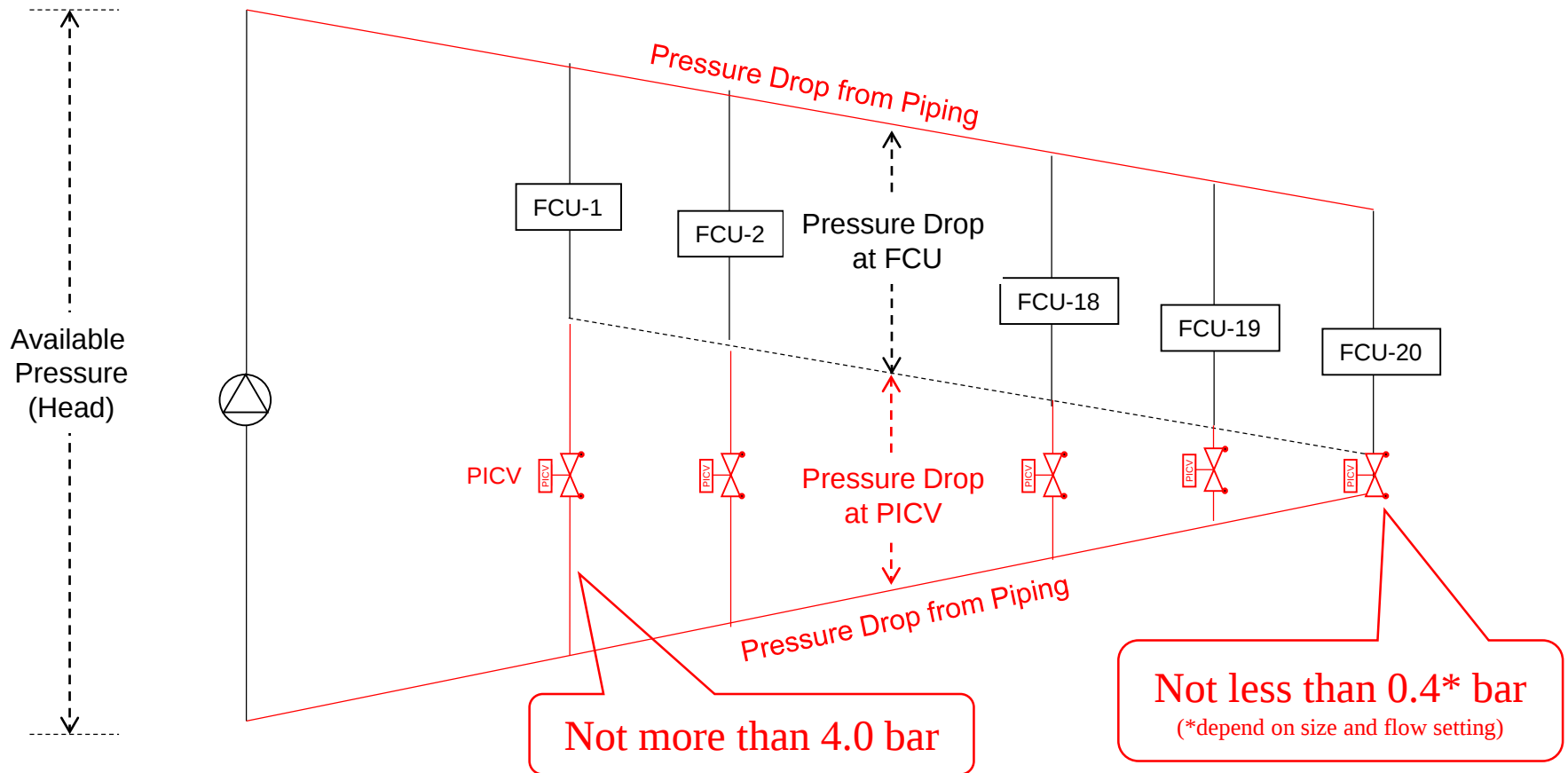
Min requirement is 0.32 bar

Actual reading is 0.65 bar

Therefore it is OK !

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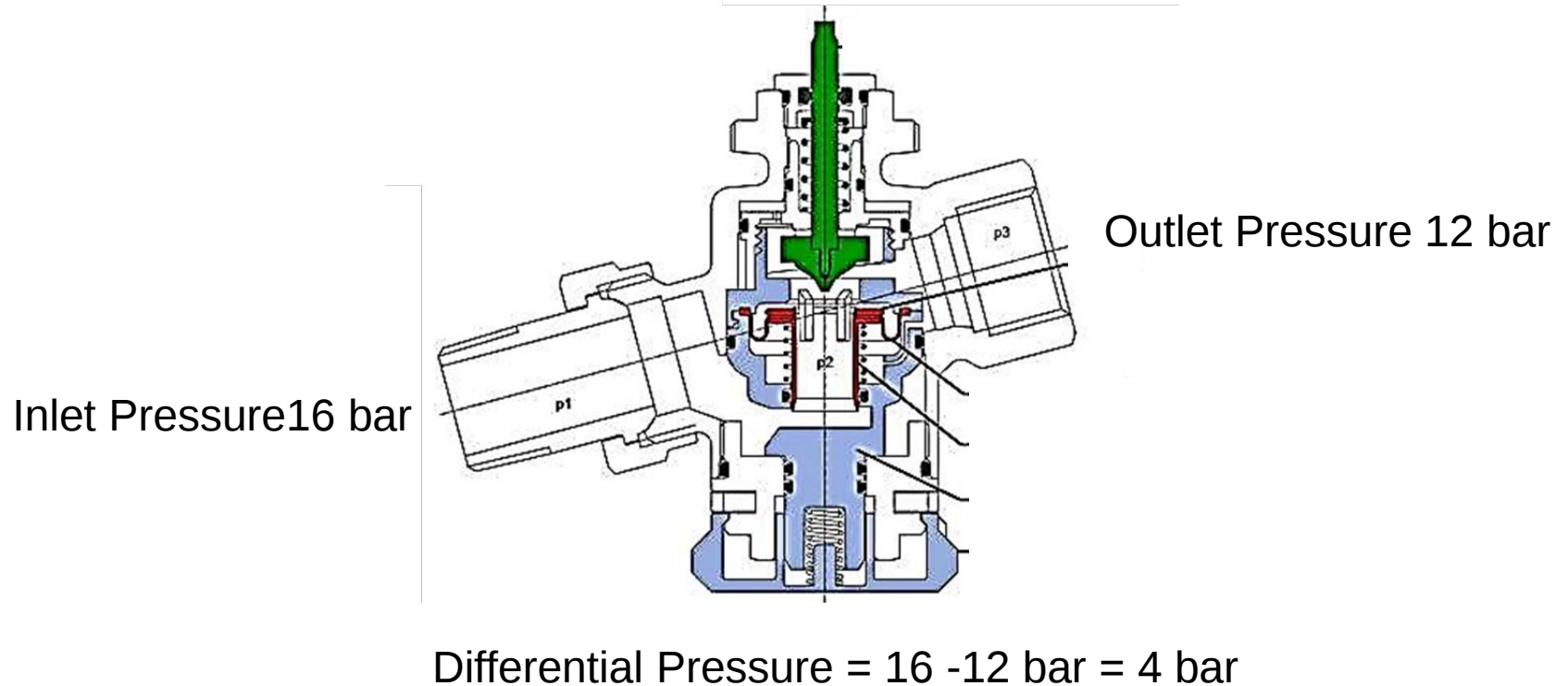
Consider max & min. diff pressure of PICV.



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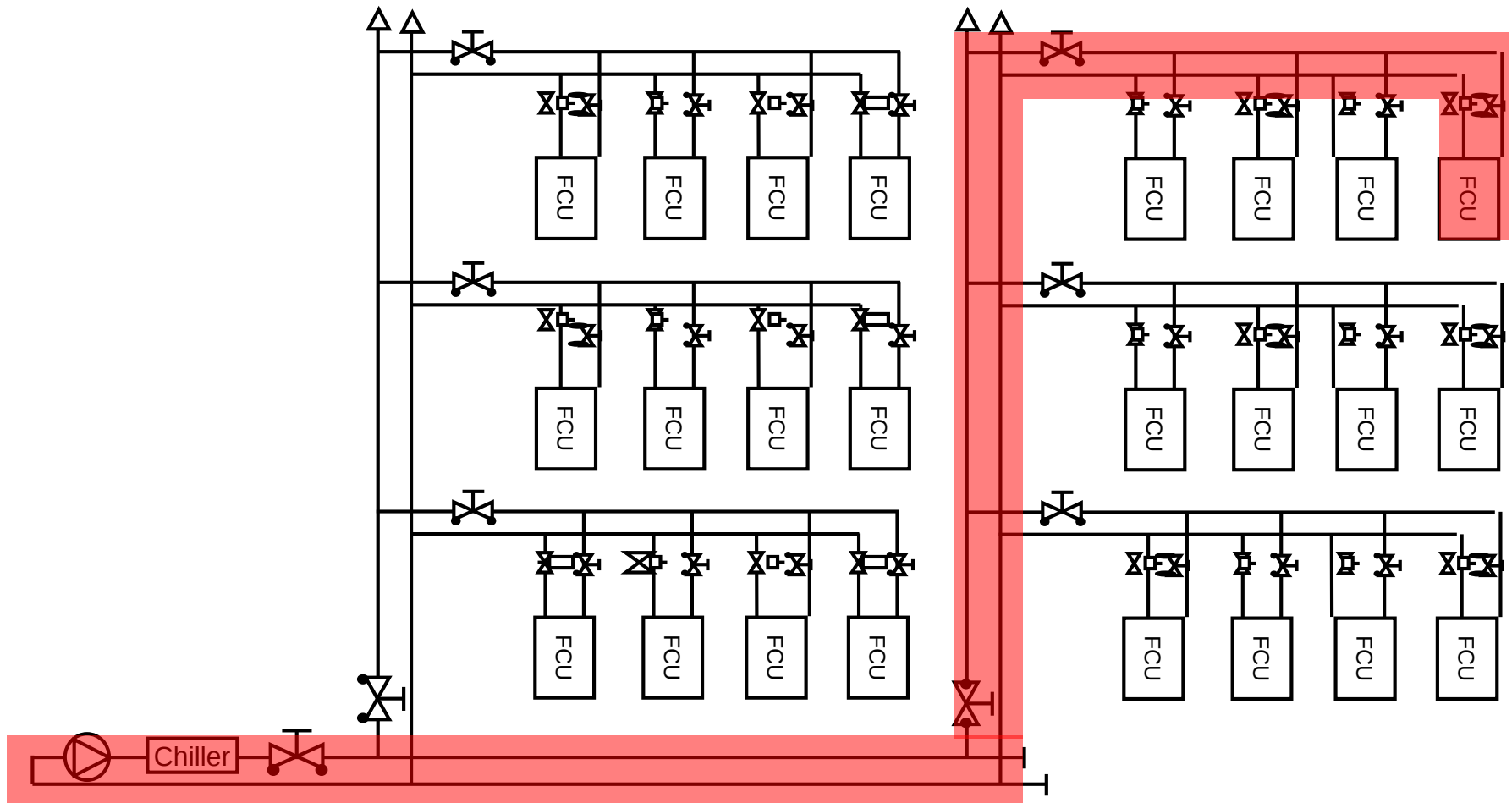
Max Working Pressure = 16 bar (to guarantee no body leakage)

Max. Differential Pressure = 4 bar (to guarantee flow rate control)



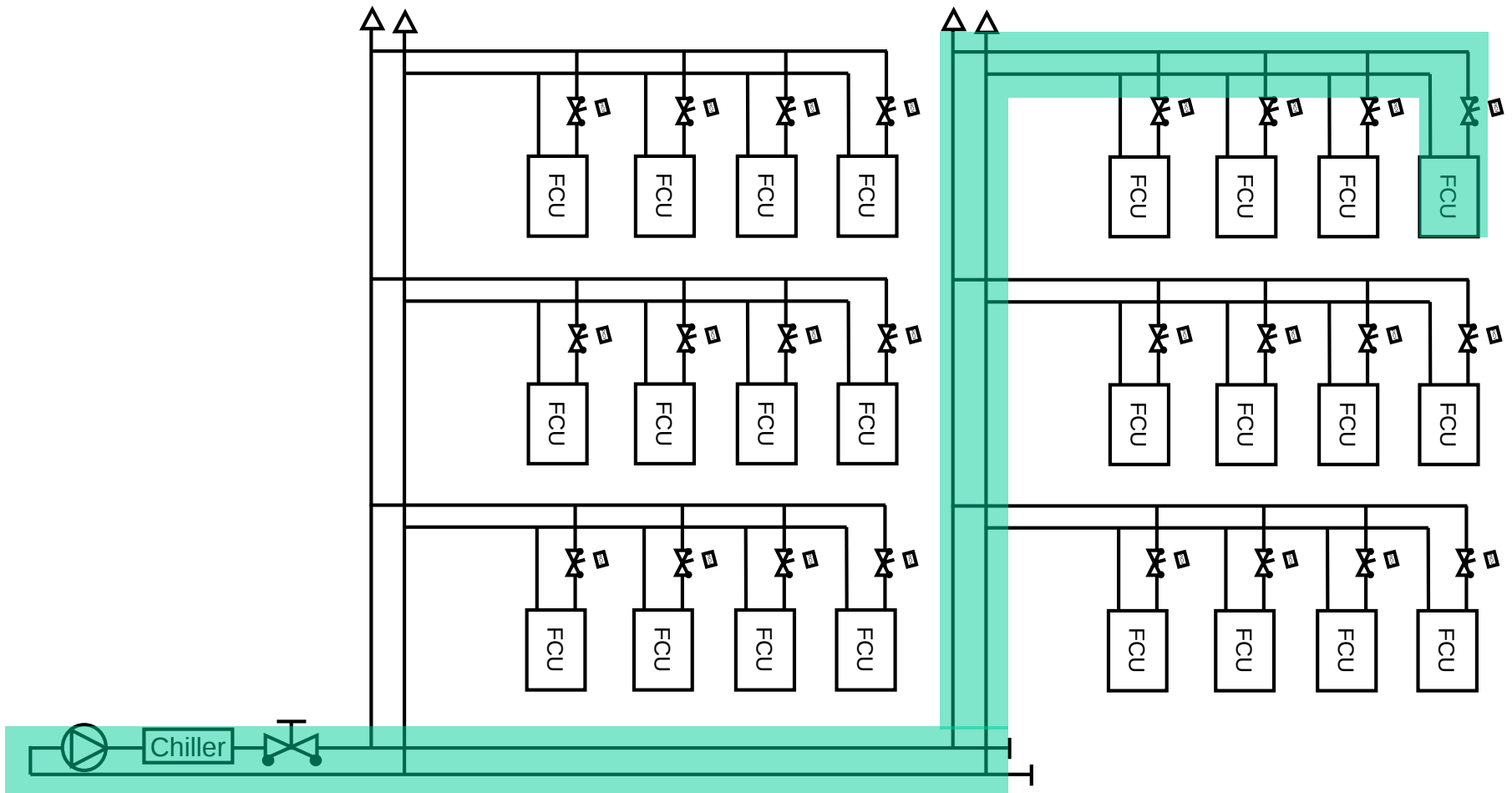
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Consider Pump Head - **Traditional Design**



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Consider Pump Head - Design with PICV



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Compare Pressure Drop

Traditional Design

Manual Balancing Valve @ Riser	(eg. 8" 1,200 GPM)	= about 0.10 bar
Manual Balancing Valve @ Branch	(eg. 5" 400 GPM)	= about 0.10 bar
Manual Balancing Valve @ The Last FCU	(eg. 3/4" 2.4 GPM)	= about 0.01 bar
2-Way Control Valve @ The Last FCU		= about 0.30 bar
Total		= about 0.51 bar

PICV Design

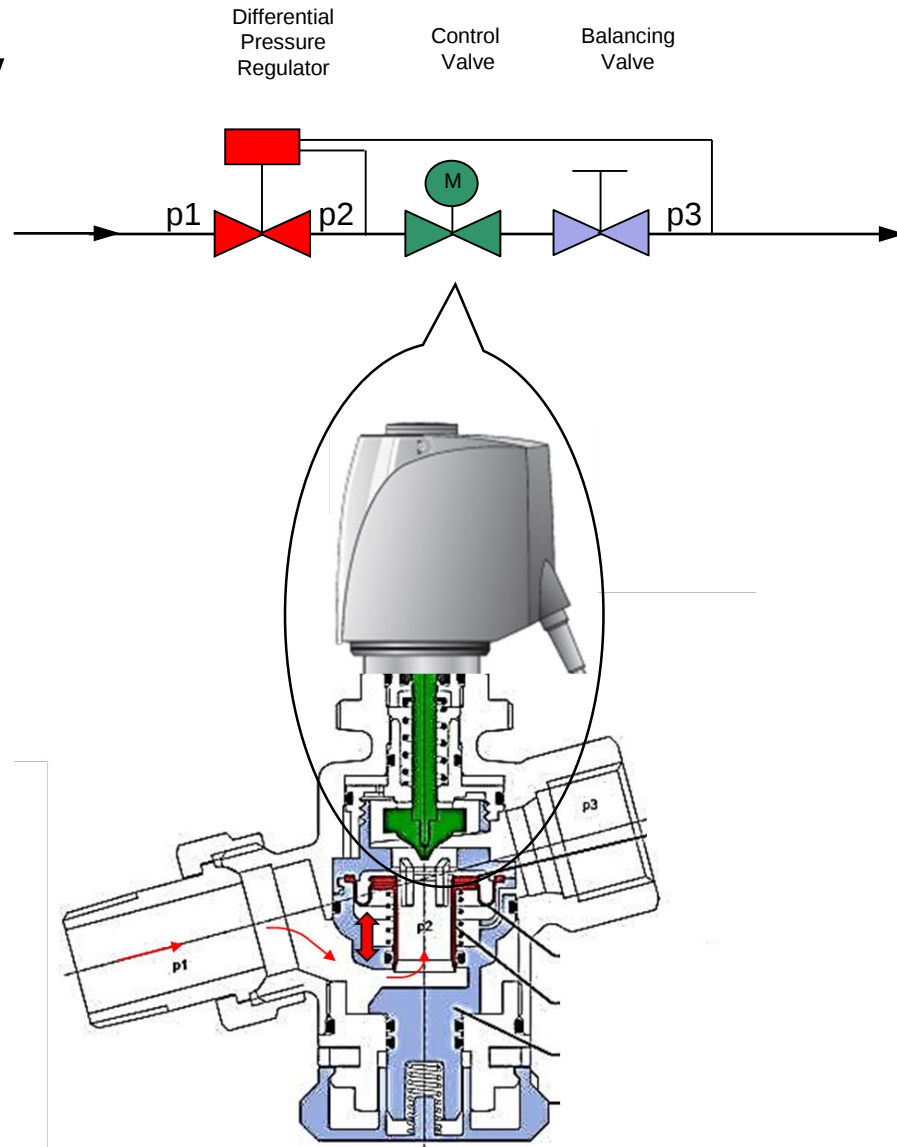
PICV @ The Last FCU (eg. 1/2" 2.4 GPM)	= about 0.32 bar
--	------------------

Pump Head Reduce
= 0.51 - 0.32 bar
= 0.19 bar



**Save
Pump
Energy !**

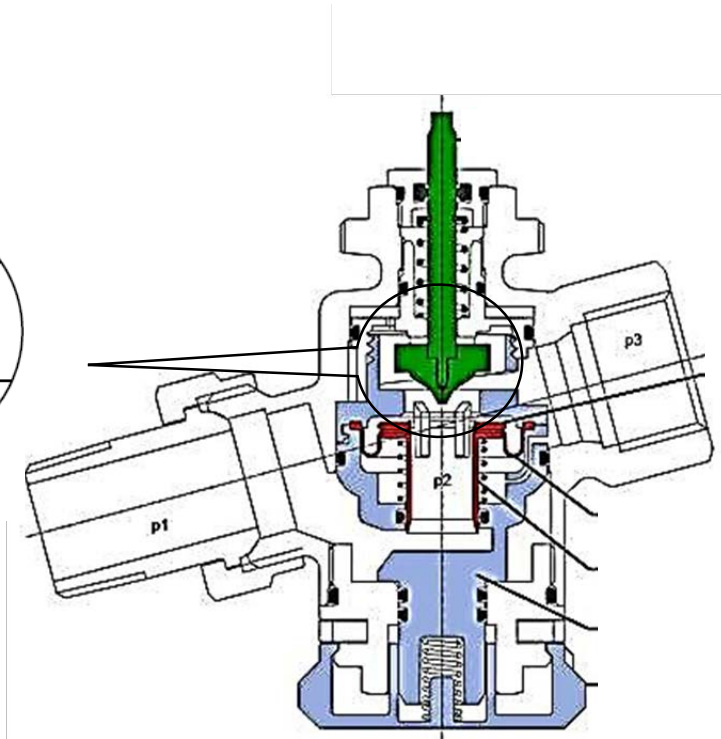
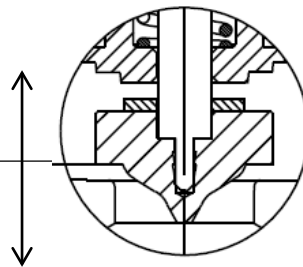
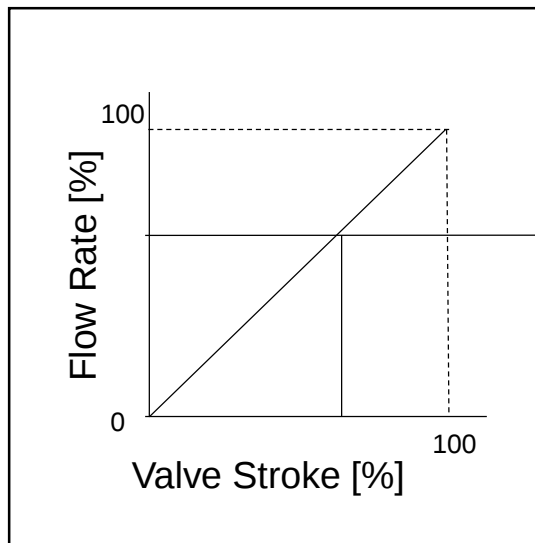
Control Valve in PICV



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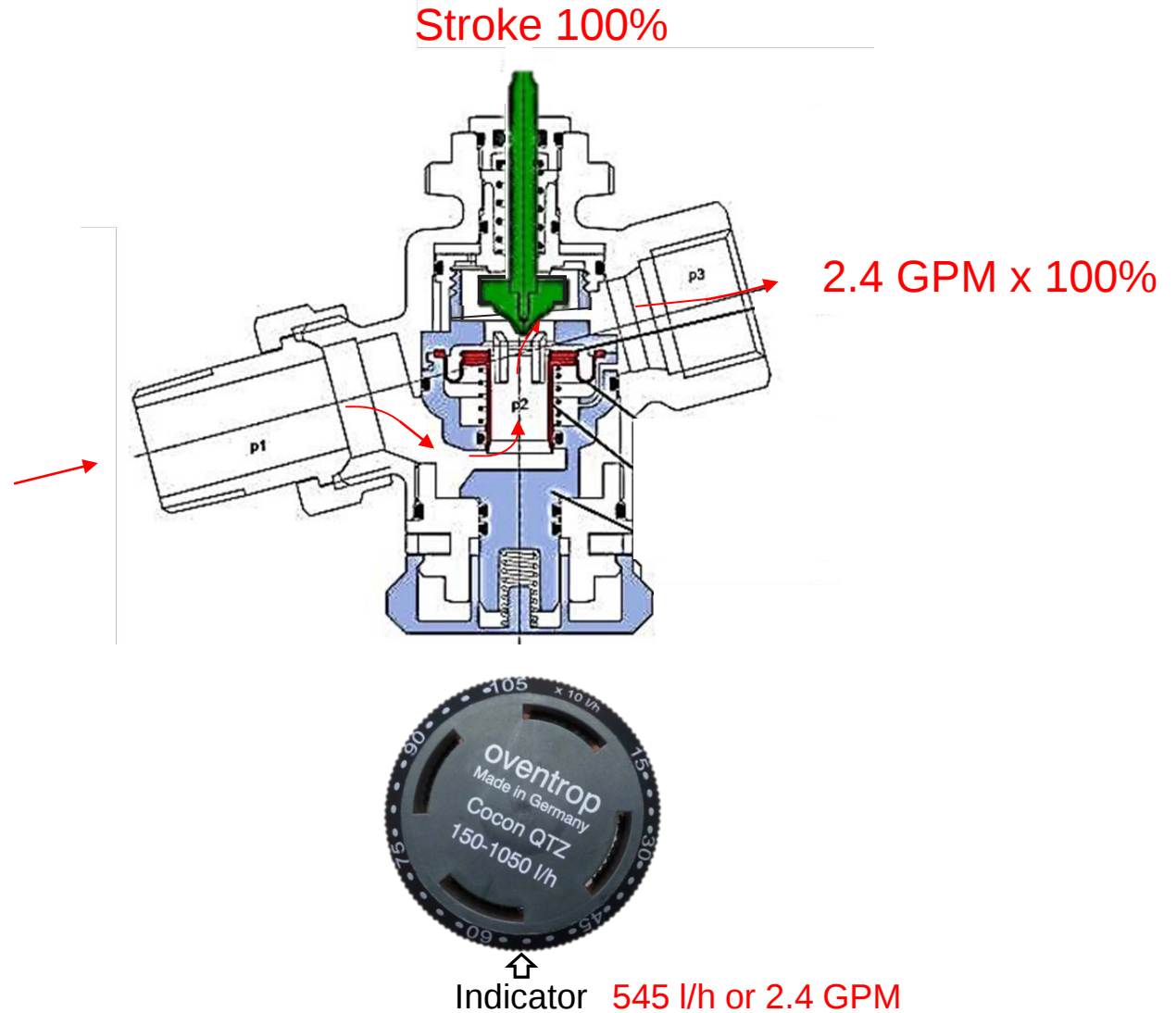
Control Valve in PICV

Valve Characteristic is Linear !



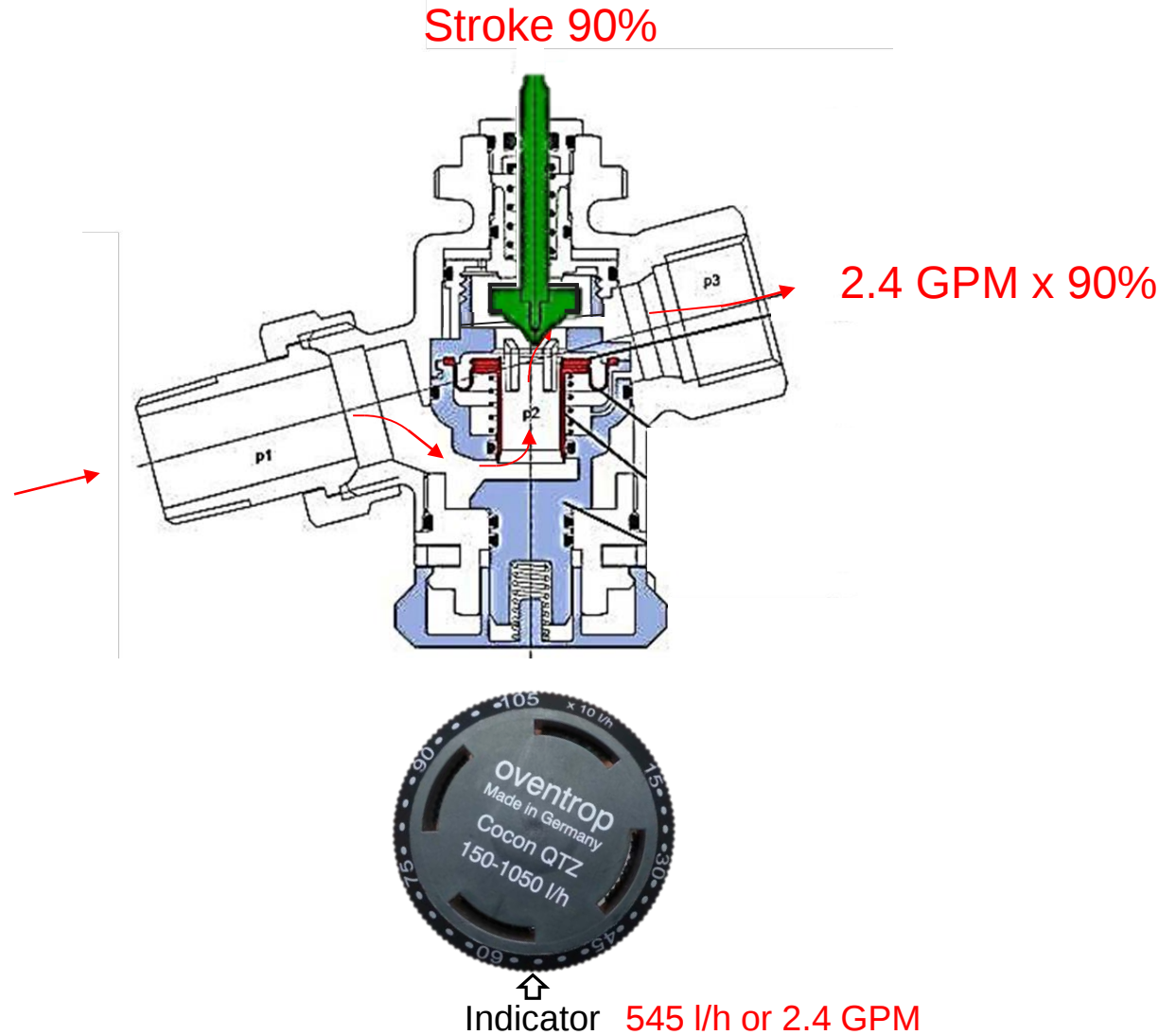
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How does control valve work ?



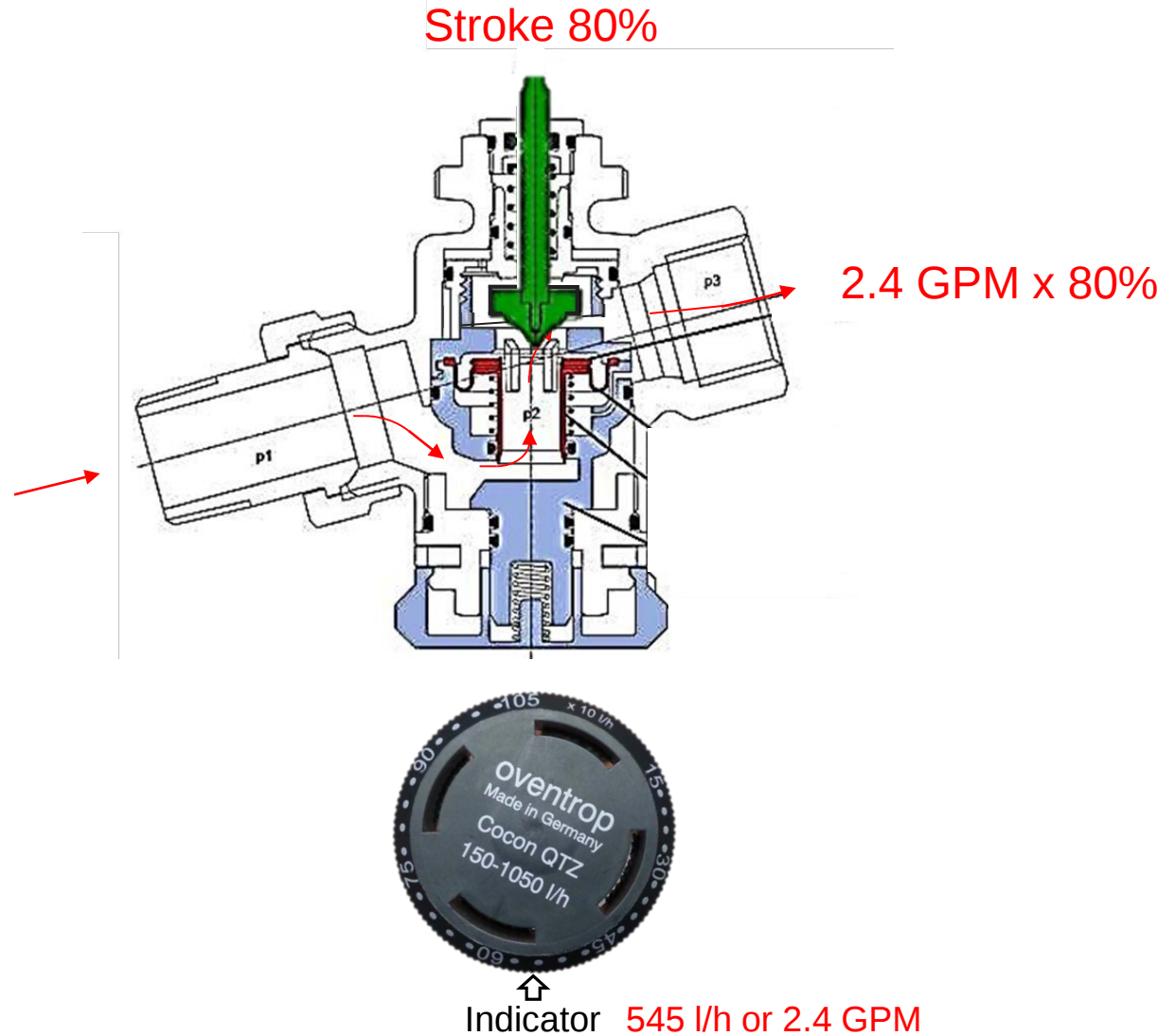
oventrop

How does control valve work ?



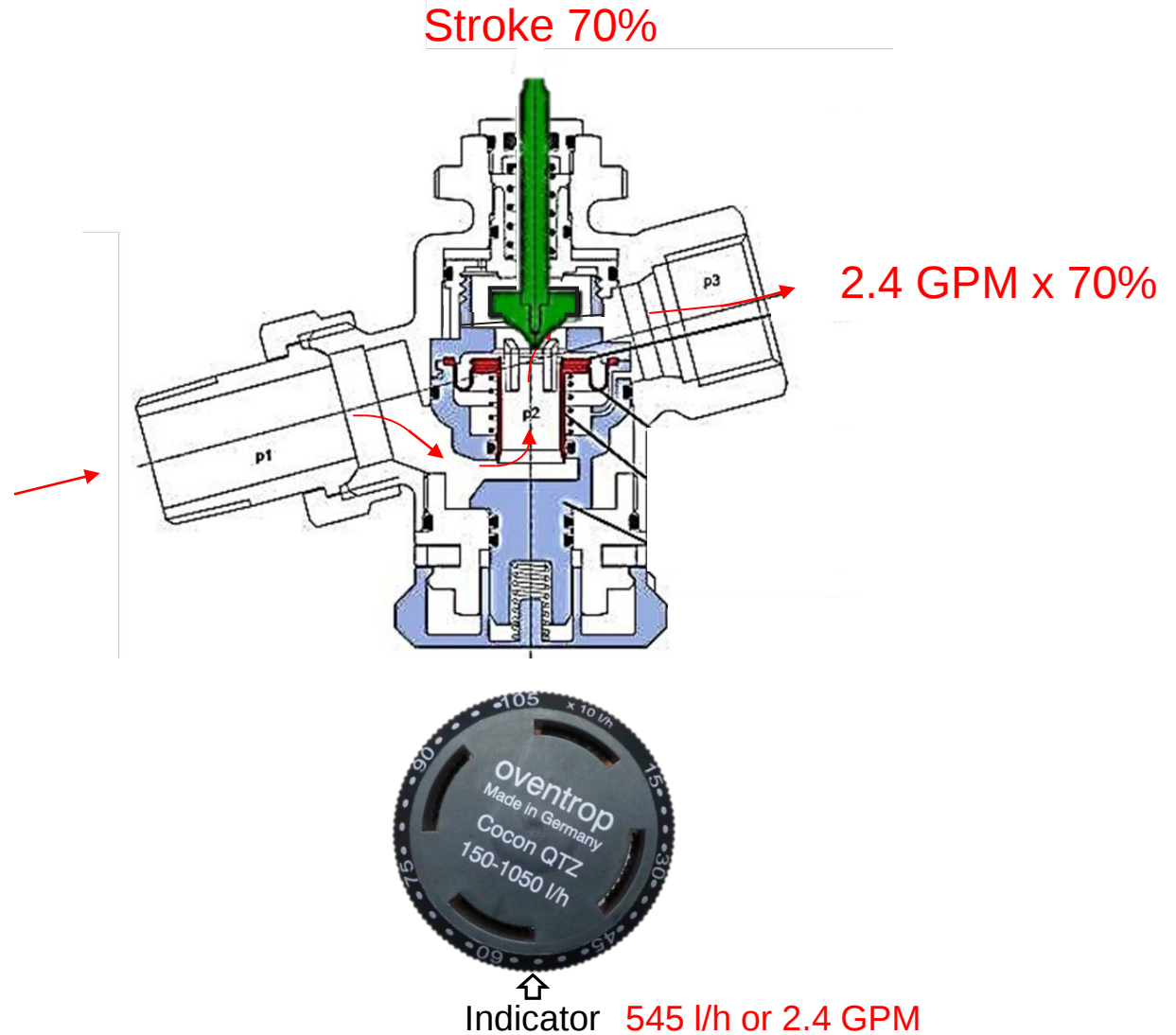
oventrop

How does control valve work ?



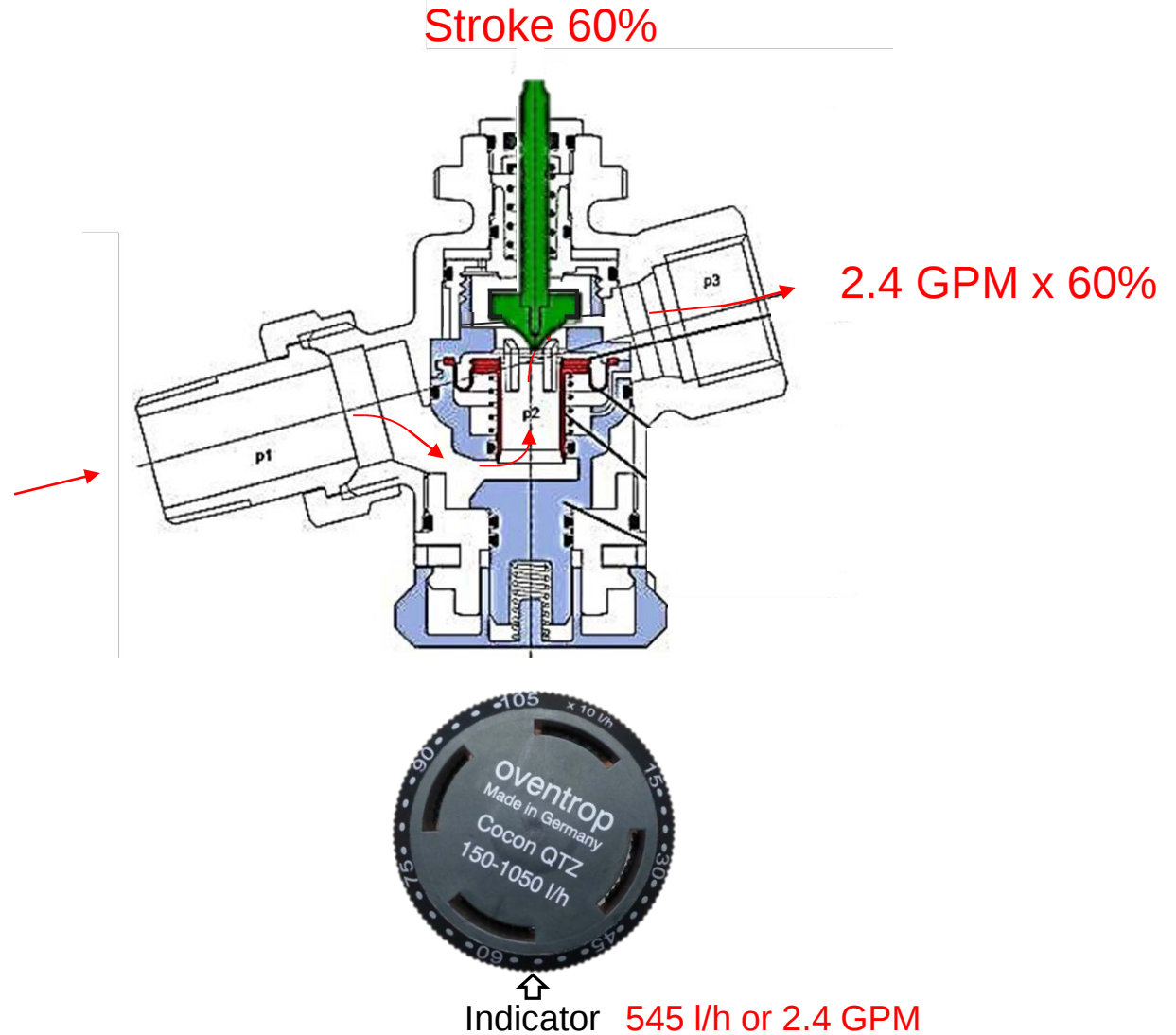
oventrop

How does control valve work ?



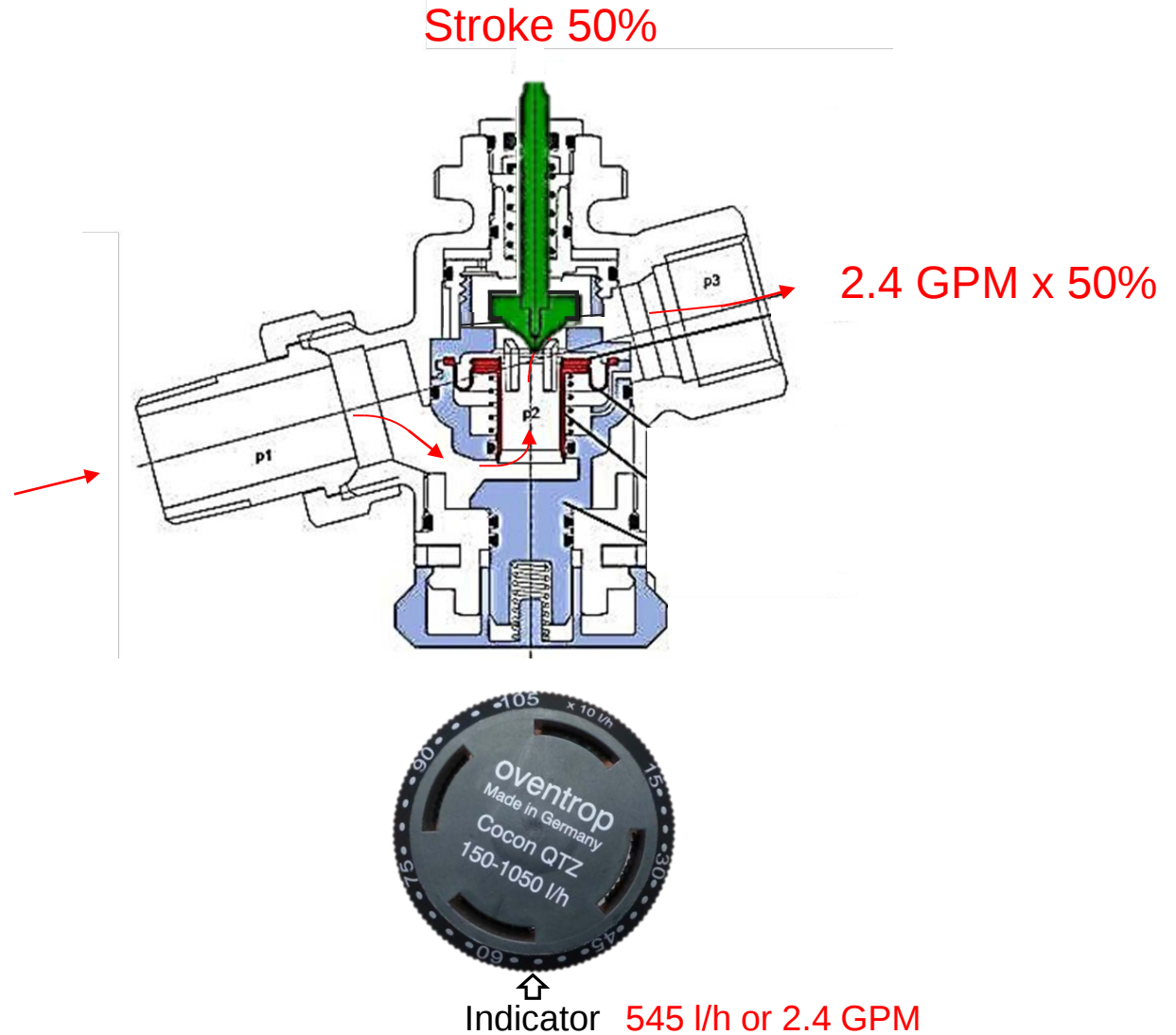
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How does control valve work ?



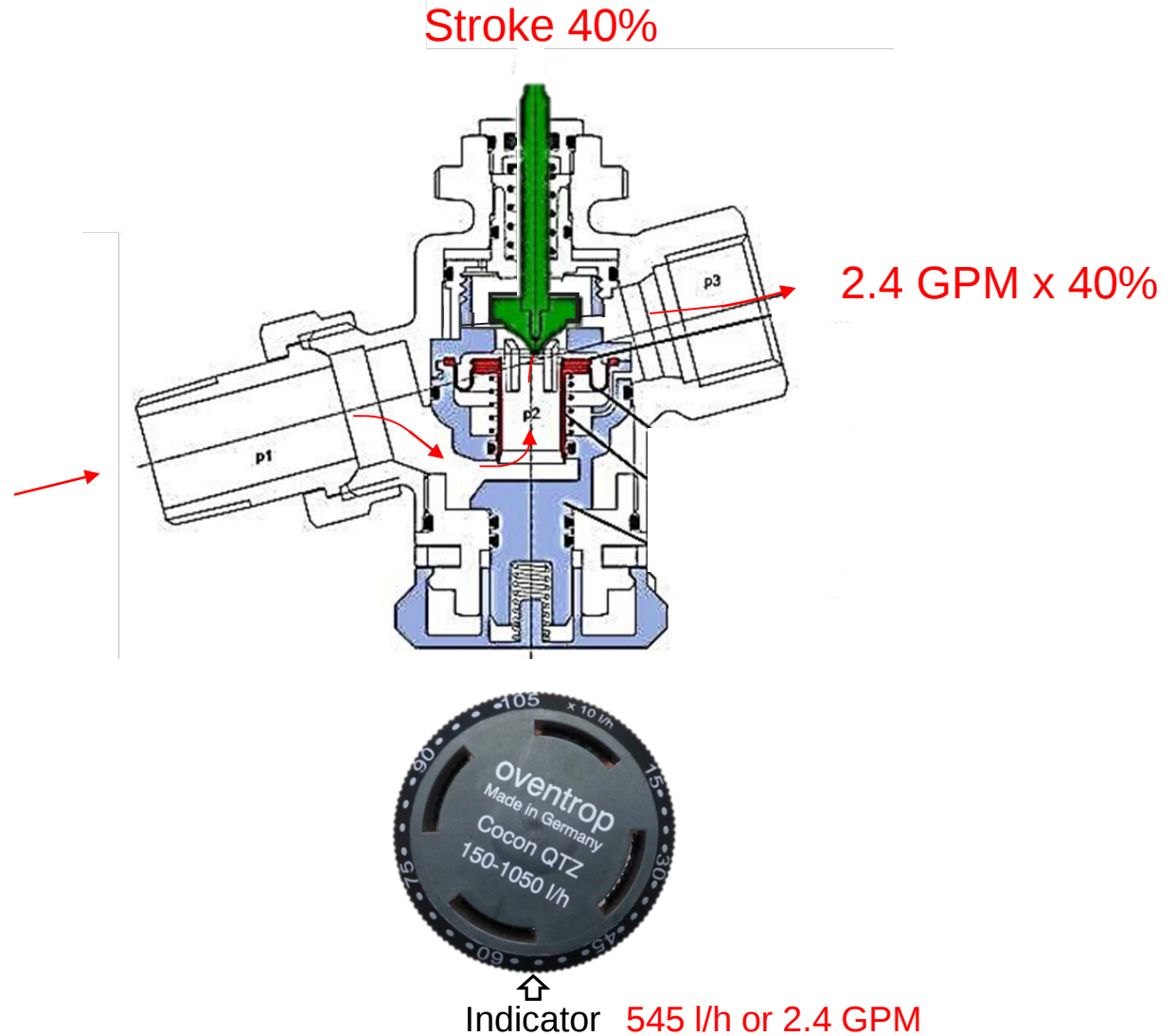
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How does control valve work ?



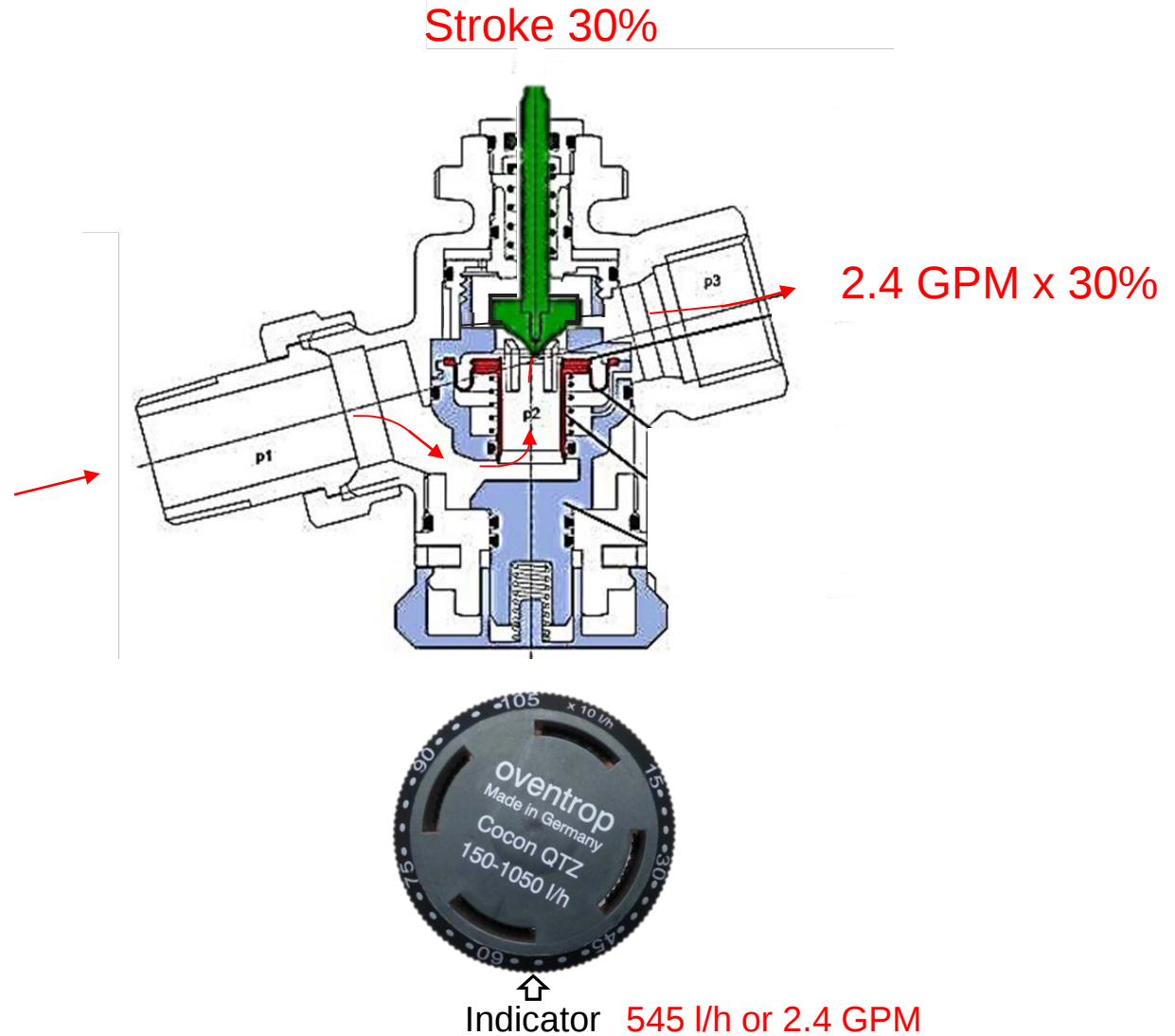
oventrop

How does control valve work ?



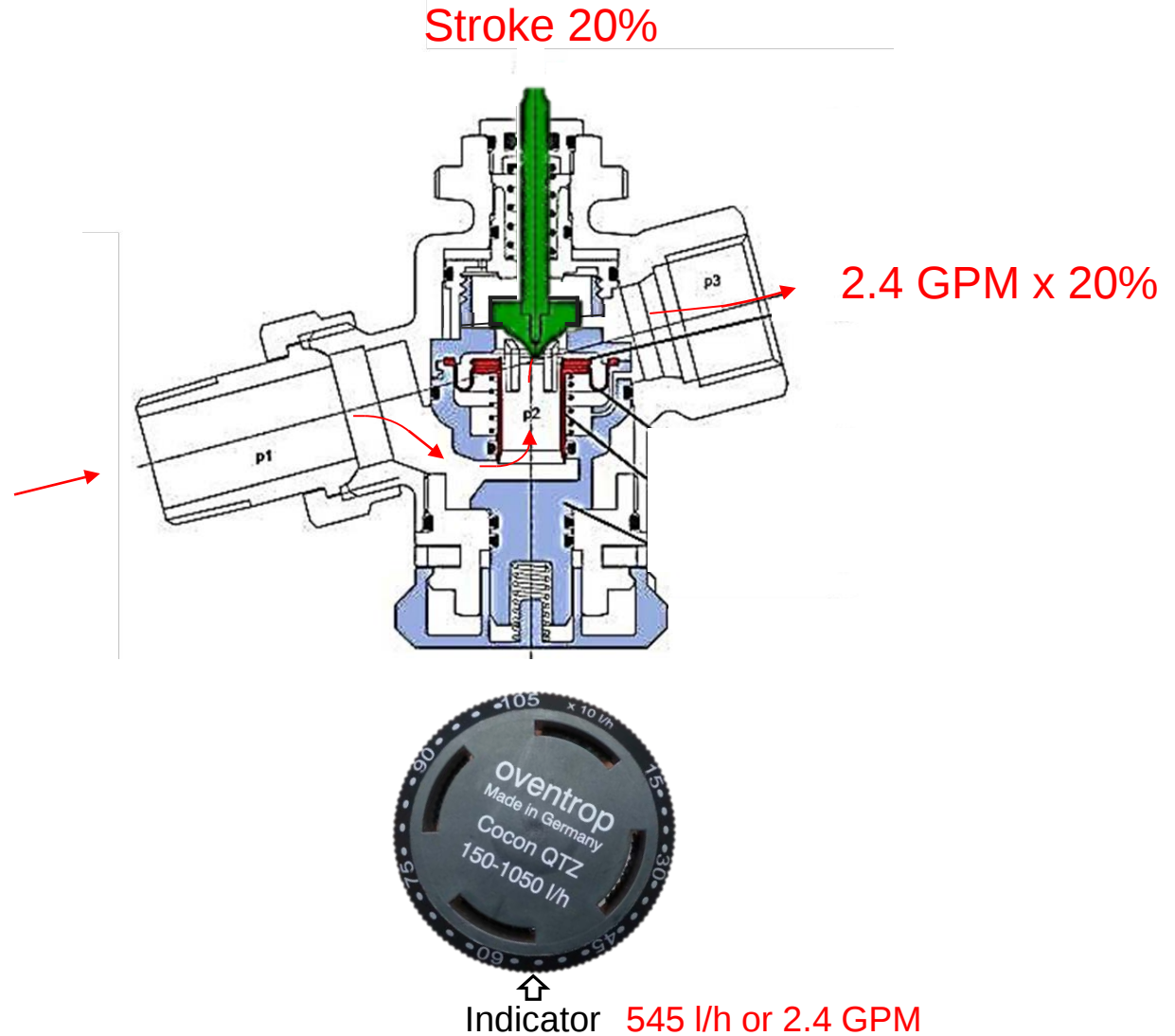
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How does control valve work ?



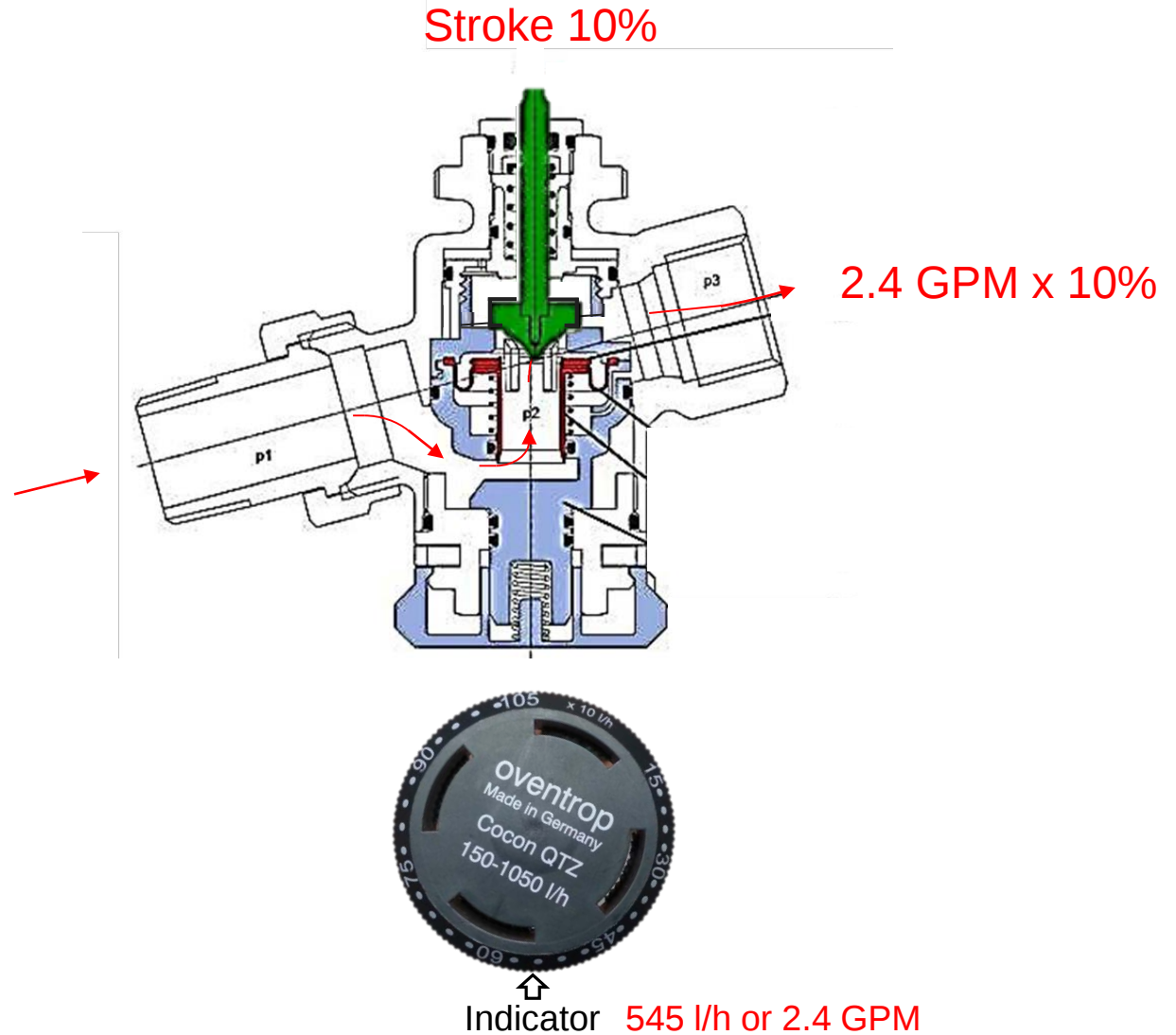
oventrop

How does control valve work ?



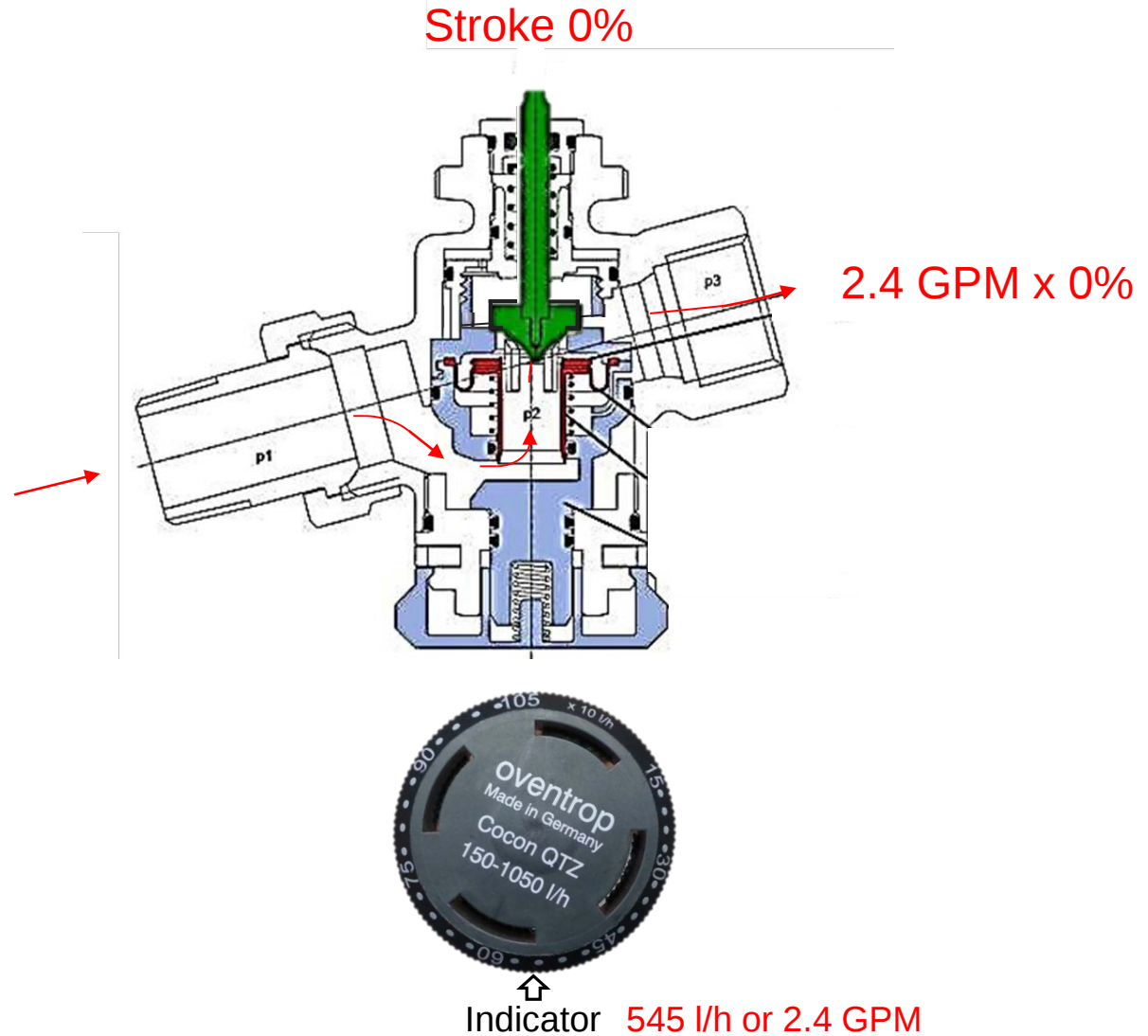
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How does control valve work ?



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How does control valve work ?



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Various actuator types are available



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Matching Table of PICV

Actuator										
Model	101 24 15 or 16	101 29 53	101 27 06	115 80 10	115 80 20	115 80 22	115 80 30	115 80 32		
Type	On-Off	Proportional								
Power Supply	220VAC or 24VAC	24VAC								
Control Signal Received	None	0-10VDC				0-10VDC / 4-20mA				
Positioning Feedback	None		0-10VDC							
Failsafe Function to BMS	Spring return		No spring return			Spring return	No Spring return	Spring return		
	●	●	●						1/2"	0.67 - 4.62
	●	●	●						3/4"	0.80 - 5.72
	●	●	●						1"	1.33 - 8.81
	●	●	●						1-1/4"	2.65 - 15.85
				●		●			1-1/2"	6.61 - 33.03
				●		●			2"	11.01 - 44.03
					●	●			2-1/2"	22.02 - 88.07
					●	●			3"	33.03 - 132.10
					●	●			4"	55.05 - 220.17
							●	●	5"	118.90 - 475.56
							●	●	6"	158.63 - 660.50
							●	●	8"	242.19 - 836.63

Size

Flow (GPM)

Valve

Size

Flow (GPM)

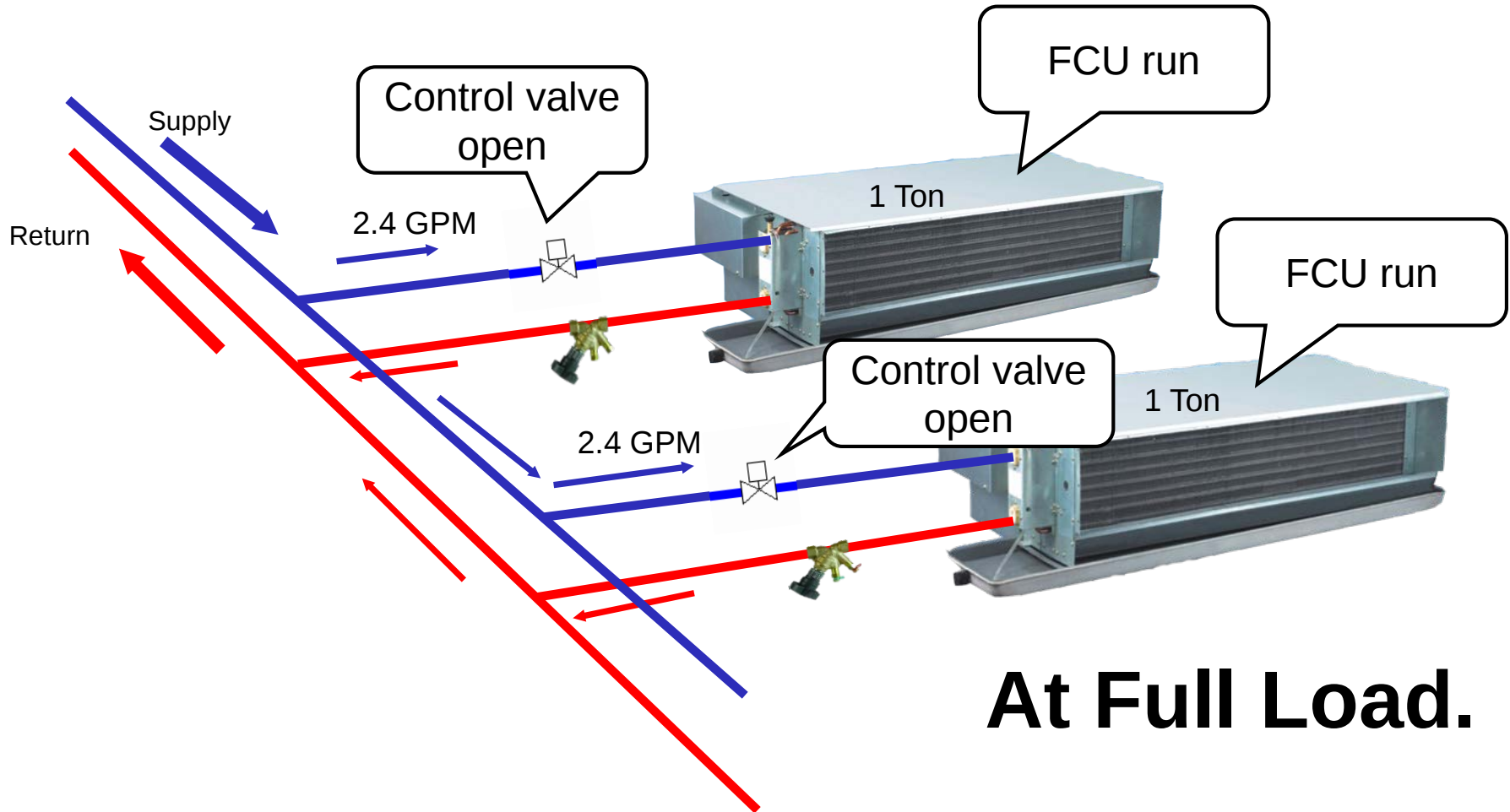
Options

Adaptor with Stem model 114 91 90

(ใช้สำหรับ PICV ขนาด 1/2" ถึง 1-1/4" เพื่อยึดระยะระหว่าง Actuator กับ Valve ให้น้ำออกมาอีก 1" เพื่อให้หุ้มฉนวนง่าย ส่วน PICV ขนาด 1-1/2" ถึง 8" มีระยะห่างระหว่าง Actuator กับ Valve มากพออยู่แล้ว)

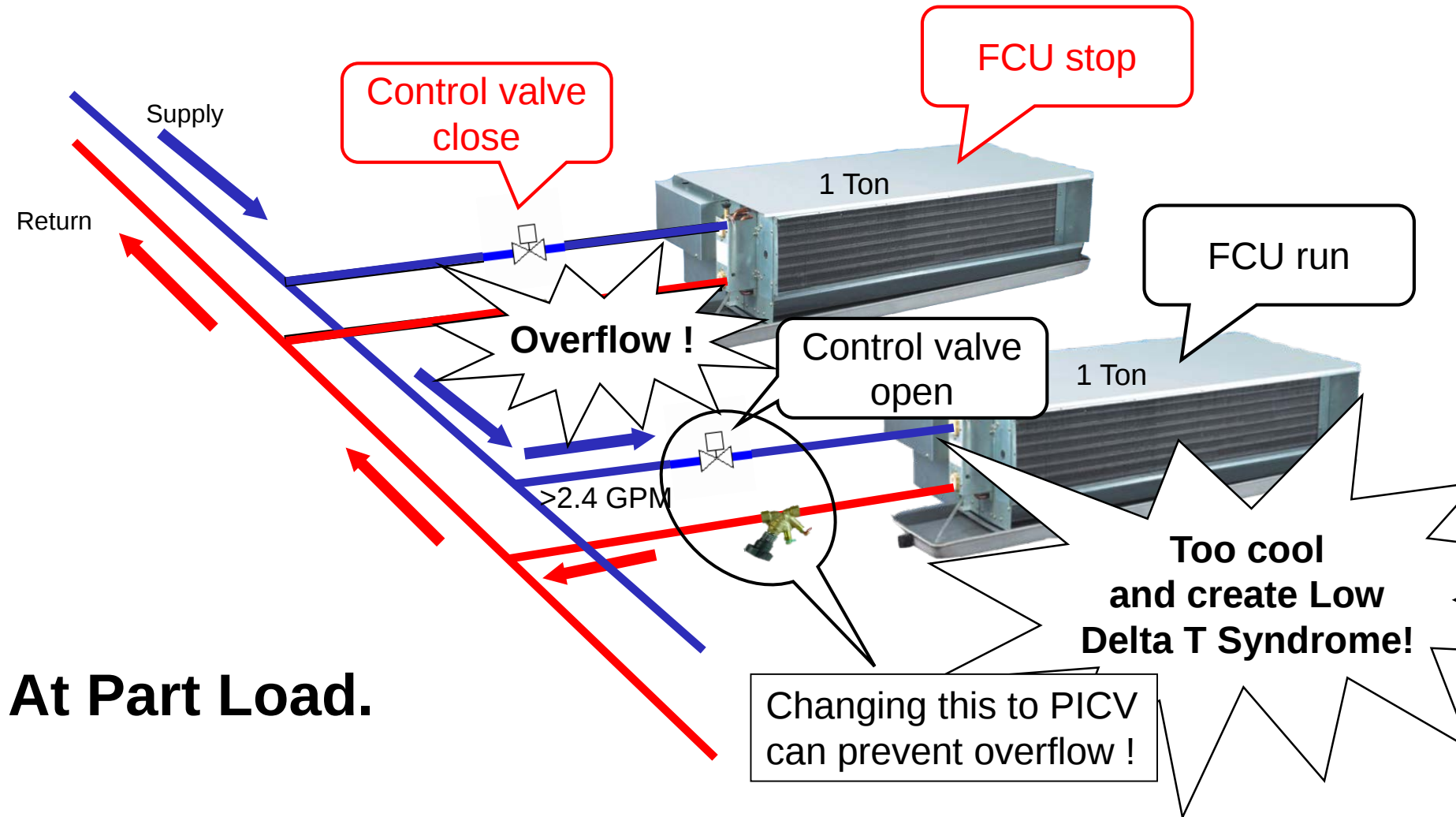
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How PICV prevent overflow during building part load.



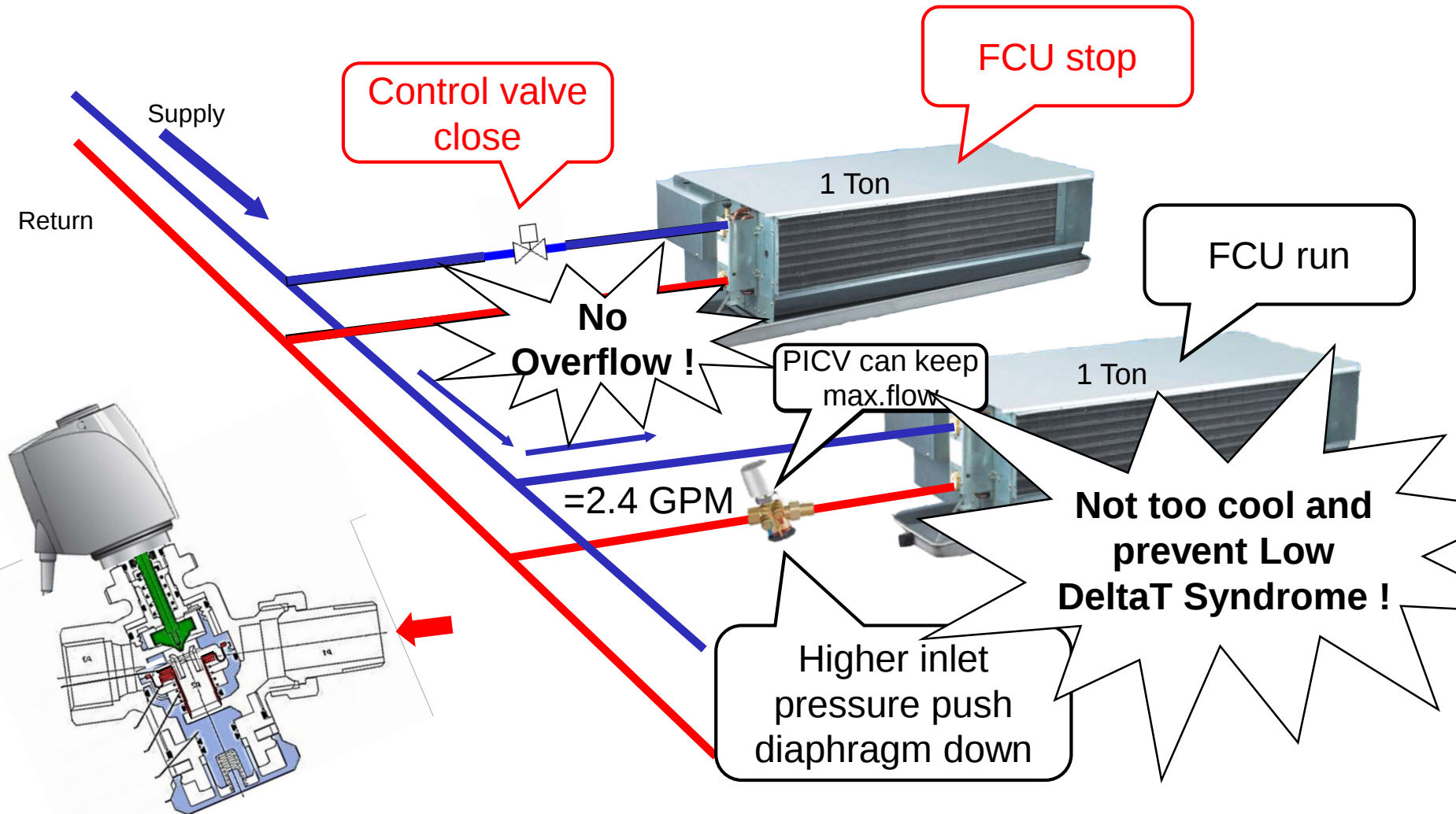
overtrop

How PICV prevent overflow during building part load.



overtrop

How PICV prevent overflow during building part load.

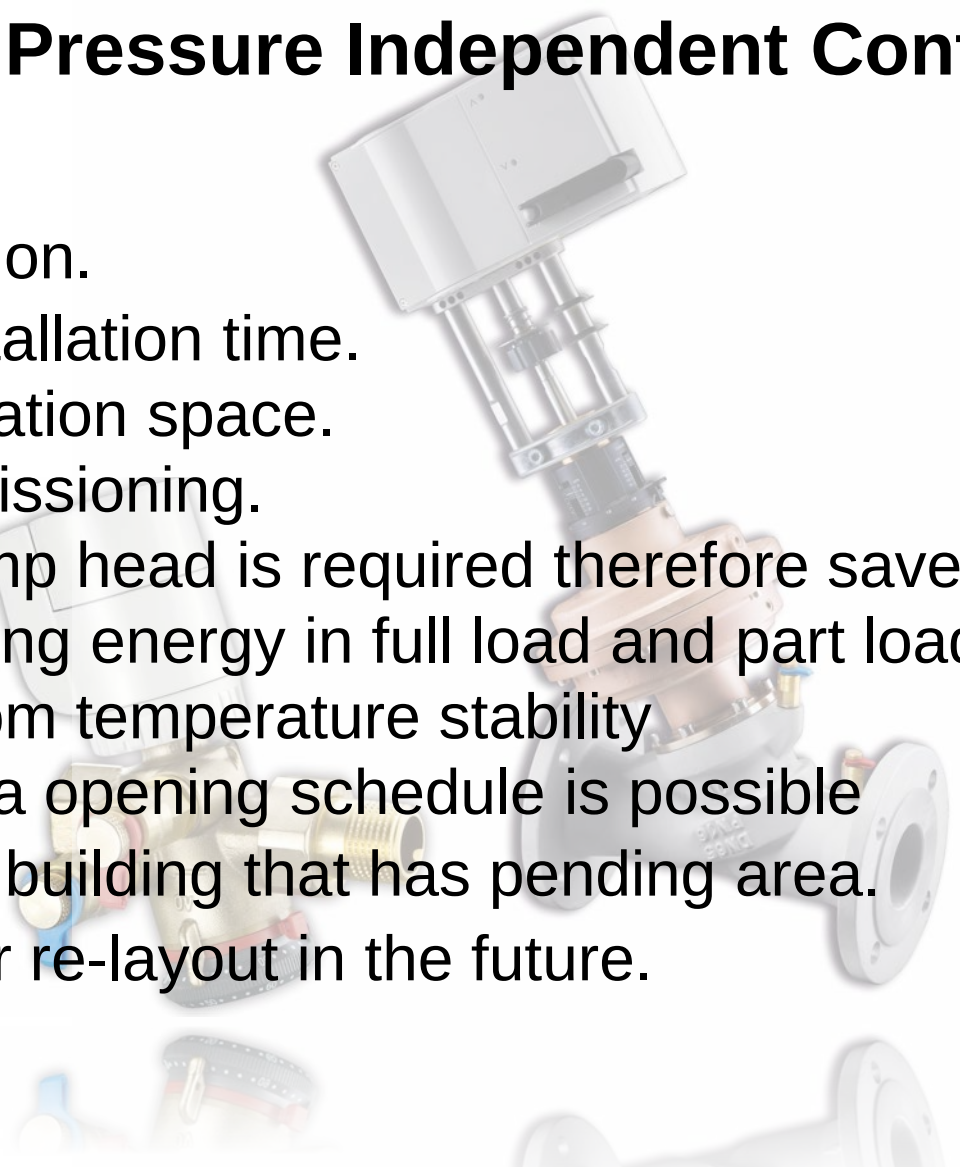


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Installation examples



Benefit of Pressure Independent Control Valve

- 
1. Easy selection.
 2. Reduce installation time.
 3. Save installation space.
 4. Easy commissioning.
 5. Smaller pump head is required therefore save investment cost
 6. Save pumping energy in full load and part load.
 7. Improve room temperature stability
 8. Area by area opening schedule is possible
 9. Suitable for building that has pending area.
 10. Flexible for re-layout in the future.

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Thank you very much for your attention!

