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HIGH PRESSURE PUMP H-SERIES

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MULTI-COUPLING SYSTEM S.r.l. designs and manufactures oil-hydraulic and hydrodinamic groups and plants for the most varied industrial sectors and for specific applications.

The company was established in Legnano (MI), but soon the development of the activity imposed a transfer of the operational headquarters to Canegrate, and later to Villa Cortese in a larger production plant.
Established in 1992, thanks to the experience gained in high and very high-pressure systems (5000 bar and above), Multi-Coupling System designs and supplies power and distribution units, test benches, quality control equipment, subsea applications, standard or special components and pipes on specific requests of its customers.

The special components are manufactured directly in-house by processing semi-finished stainless-steel products. The company has also purchased equipment allowing it to modernize its production cycles, thus obtaining a qualitative improvement of the finished product intended for large, medium and small industry, both of manufacturers and users, at national level, which require, in the production process, of a special fluidic technology.

The nature of the products manufactured and the extreme flexibility of the company, in fact, make it possible to meet the needs of all the customers who over the years have demonstrated a loyalty to the same. In 2002 Multi-coupling created the HIGH PRESSURE brand, that is a production line for high pressure components and equipment.MATERIALS

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GENERAL INFORMATION ON PUMP H SERIES

MCS® air-driven pumps operate on the simple but efficient principle of an automatic reciprocating differential area piston. A relatively large air-operated is connected to a smaller high-pressure piston to convert compressed air flow into fluid flow at high pressure.
MCS® offers a complete range of single acting ratio pumps and double ratio pumps. The single acting pumps (H series) have one air piston and one high-pressure piston. The double ratio (H2 series) have two air piston and one high pressure piston. The diameter of the hydraulic piston varies and determines the ratio of the pump: a higher ratio means a higher outlet pressure but a smaller flow.
The double ratio pumps have the same flow of a single acting pumps but the double air piston permit to have at higher outlet pressure. The air piston of the single acting and double acting pump have the same diameter.
Low noise level compared to other air-driven pumps with mechanical pilot valves. Suitable for water because all wetted parts of the MCS® pump section are made of special selected stainless steel with a special hard treatment .
Long working life of the seals because the pumps are standard provided with specially developed H-PU or UHMWPE seals for optimum plunger sealing for a wide range of liquids.
The high-pressure seal can be replaced within minutes, without dismantling the air drive section. Costly downtime is reduced to a minimum. Standard provided with packing release holes to prevent liquid from the hydraulic section escaping to the air drive section.
Check valve seats can be replaced within minutes. The check valves have soft seats, preventing capacity loss after a certain time of operating. Unlike other air driven pumps the air piston sealing of a MCS® air-driven pump is not an O-ring. It is provided with PTFE based slydrings (bearings) for excellent wear- and-slide qualities. The slydrings increase the service life of the sealing surface (air cylinder) and the air piston sealing. Excellent control of flow and output pressure due to low frictional resistance of the air piston, even at low air drive pressure.History of proven reliability under severe conditions, for instance in offshore use.
Compressed air used as a power drive offers advantages over use of other power drives: risks of excessive heat, flame, spark or shock are reduced considerably. Apart from that, both output pressure and flow can be controlled by simply regulating the air drive pressure of the air-driven pump. Varying the air inlet pressure will automatically and accurately adjust the hydraulic output pressure. Beside each MCS® pump have standard the direct control pilot that permit the start/stop pump without the use of big air control valve.
The cycling speed is at a maximum when the outlet pressure is low. As the outlet pressure builds up, the cycling speed is reduced until a stall condition is reached at the desired outlet pressure. The stall pressure can be held without any further use of energy.
The outlet pressure and flow can be controlled by regulating the air drive pressure with an air pressure regulator. When compressed air of a certain air pressure is applied to the pump, it will cycle at high speed producing high fluid flow. As the outlet pressure increases, the pump will start to cycle at a lower rate. As long as the total load in the high-pressure cylinder is less than that in the air cylinder, the pump will cycle. When a balance of loads is reached, the pump stops and no more air is used. The pump will automatically restart when the balance is disturbed by a hydraulic pressure drop or by increasing the air drive pressure. As the frictional resistance of the MCS® air-driven piston is very low, only a small pressure drop or air drive pressure increase is required to restart the pump.
The MCS® air-driven pumps can be mounted in any position. For maintenance reasons you are advised to mount pumps in vertical position, using the four thread holes in the air drive end caps or the mounting brackets.
The pumps will deliver their rated capacity at 10 bar air drive pressure with the required air flow. The air supply line requires an air pressure regulator to control the output of the pump and a pneumatic valve to stop the pilot valve. It is not necessary to mount an oil lubricator for occasional use. You are advised to mount a lubricator (set one drop each any twenty stroke) for continuous work.

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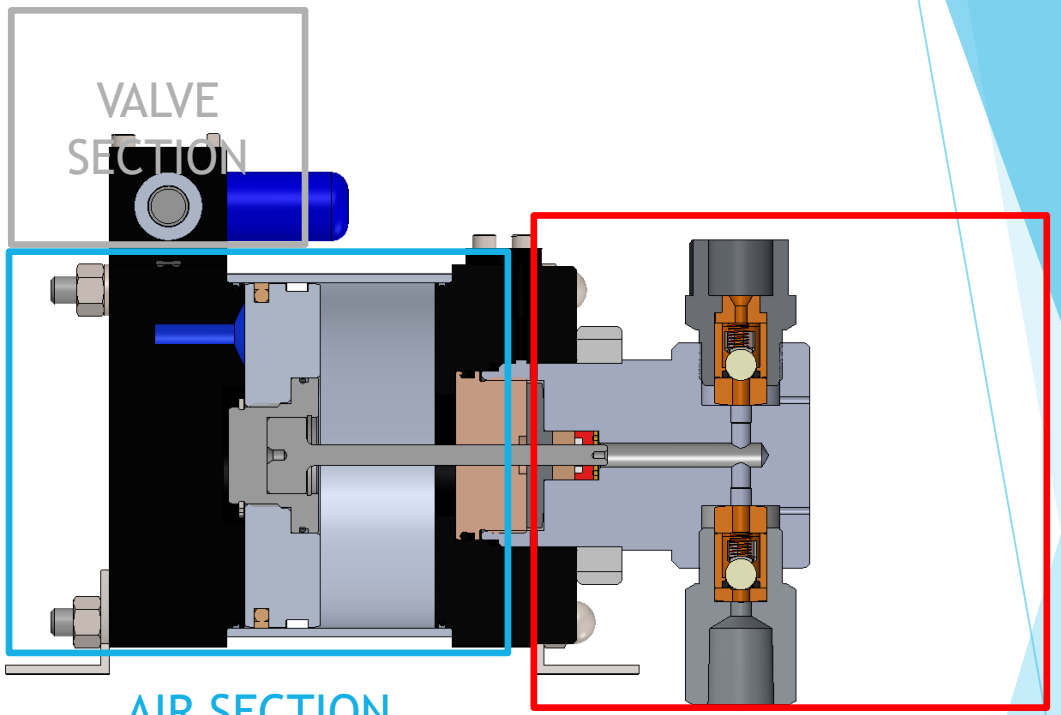

COMPATIBLE FLUID

The MCS® air-driven pumps are suitable for the follow fluid:
WATER
DISTILLED WATER
DRINK WATER
WATER AND GLYCOL
GLYCOL
SILICON OLIO
VEGETABLE OIL
ASTM 1 OIL
ASTM 3 OIL
MINERAL OIL
LUBRICATING OIL
Working media must be filtered at least 100 micron with a viscosity between 1 cst - 68 cst
Max allowable temperature 80°C . with water 50°

AIR FEEDING

For the compressed air connection must be utilize an air filter (10 micron), water separator, pneumatic oiler (optional),stop valve, pressure controller, manometer and, if necessary, safety valve. If use a pneumatic oiler set at one drops each 20 pumps cycles. Pilot air pressure must be at least the same of air supply.

CODE BUILDER

Code-L(linear standard)
-A(Angle 90°)

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Technical Data	
Air drive pressure PL	1-10 bar
Pressure ratio N	10-45-70-100-150-270
Maximum cycle	180 / min
Stall pressure	PB = N x PL
Max operating temperature	60°C
Media	Hydraulic oil, Water
Materials of construction HP section	
High pressure head	EN. 1.4404 (H10-H45)EN 1.4418(H070-H400)
HP piston	Chome plated SS (H10-H45), EN 1.4112 hardened(H70-H270)
Check valves inlet components	EN 1.4542
Balls	EN 1.4034
Springs	EN 1.4310
Check valve seats	NBR + EN 1.4542
High pressure seals	HPU/UHMWPE
Check valves body	EN. 1.4404 (H10) EN 1.4418

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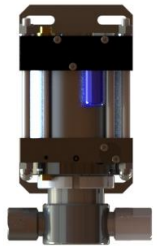
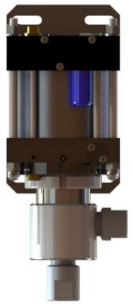
H MODELS





CODE	RATIO	MA.W.P.(bar)	AIR DRIVE CONN.	PILOT PORT	INLET CONN.	OUTLET CONN.	DISPLACEMENT PER STROKE
H-10	10	100 bar	3/8” GAS	1/8” GAS	3/4” NPT	1/2” NPT	23 CM^3
H-40	39	390 bar	3/8” GAS	1/8” GAS	1/2” NPT	1/2” NPT	5,8 CM^3
H-70	70	700 bar	3/8” GAS	1/8” GAS	1/2” NPT	M20X1.5 HP /1/2” NPT	3,7 CM^3
H-100	100	1000 bar	3/8” GAS	1/8” GAS	1/2” NPT	M20X1.5 HP	2,6 CM^3
H-150	150	1500 bar	3/8” GAS	1/8” GAS	1/2” NPT	M20X1.5 HP	1,6 CM^3
H-270	270	2700 bar	3/8” GAS	1/8” GAS	1/2” NPT	M20X1.5 HP	0,9 CM^3

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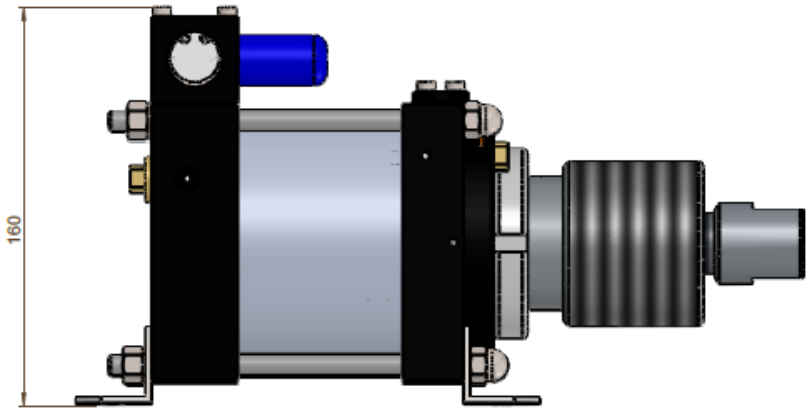

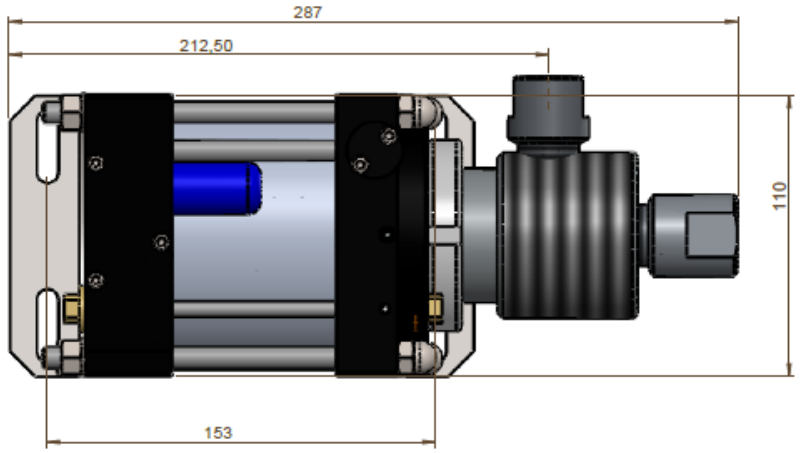

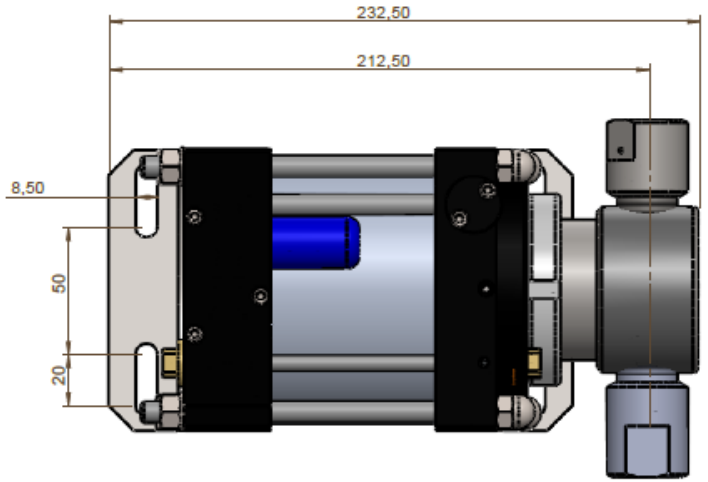

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H2 TYPES

CODE	RATIO	MA.W.P.(bar)	AIR DRIVE CONN.	PILOT PORT	INLET CONN.	OUTLET CONN.	DISPLACEMENT PER STROKE
H2-40	78	780 bar	3/8" GAS	1/8" GAS	1/2" NPT	1/2" NPT	5,8 CM^3
H2-70	140	1400 bar	3/8" GAS	1/8" GAS	1/2" NPT	M20X1.5 HP	3,7 CM^3
H2-100	200	2000 bar	3/8" GAS	1/8" GAS	1/2" NPT	M20X1.5 HP	2,6 CM^3
H2-150	300	3000 bar	3/8" GAS	1/8" GAS	1/2" NPT	M20X1.5 HP	1,6 CM^3
H2-270	540	4000 bar	3/8" GAS	1/8" GAS	1/2" NPT	M20X1.5 HP	0,9 CM^3

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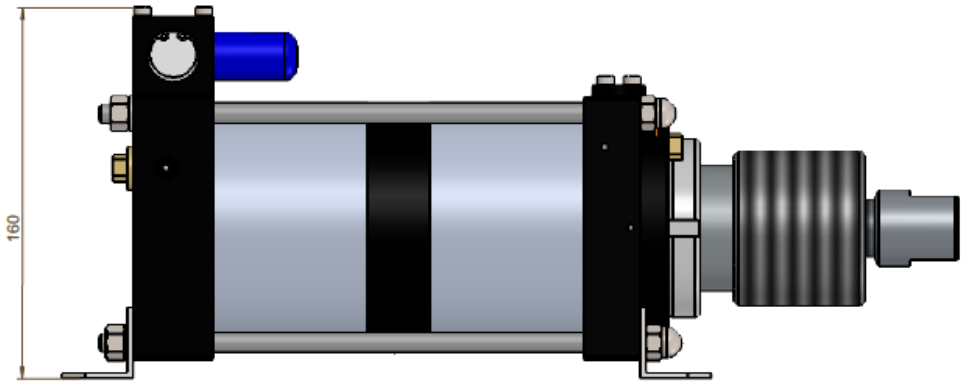

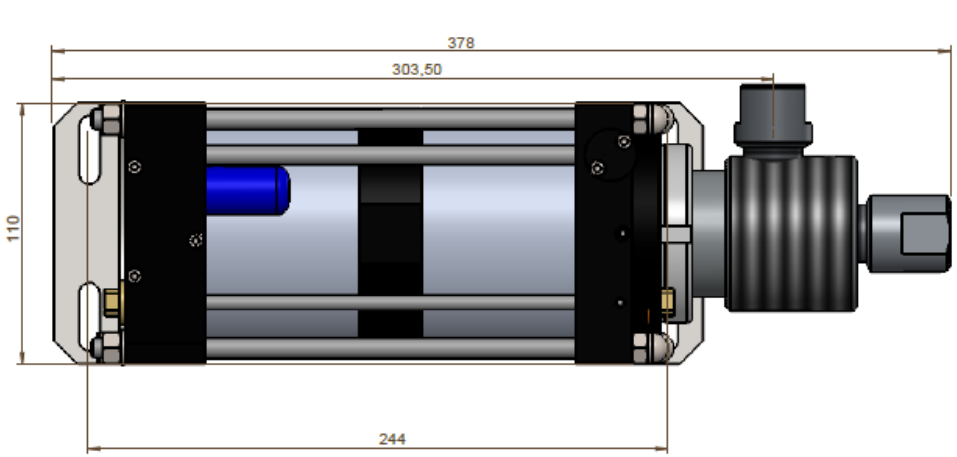

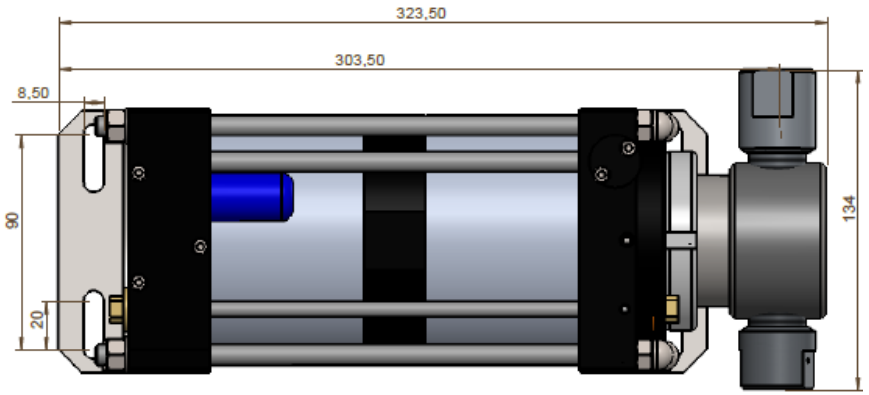

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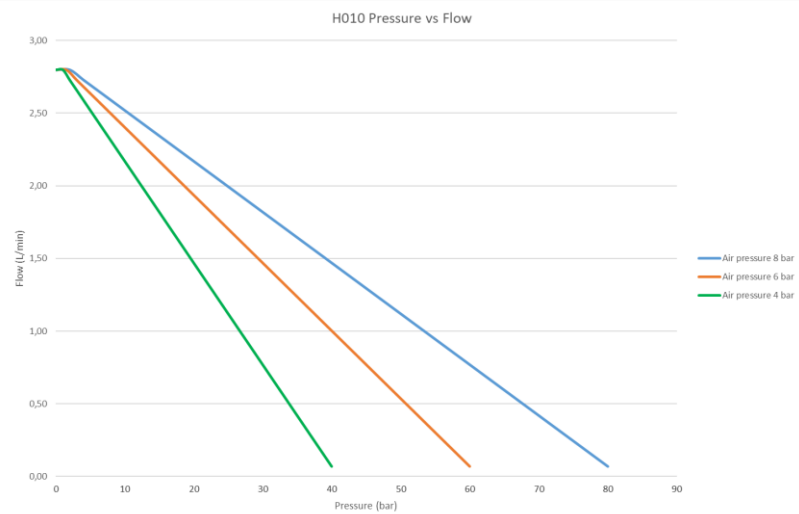
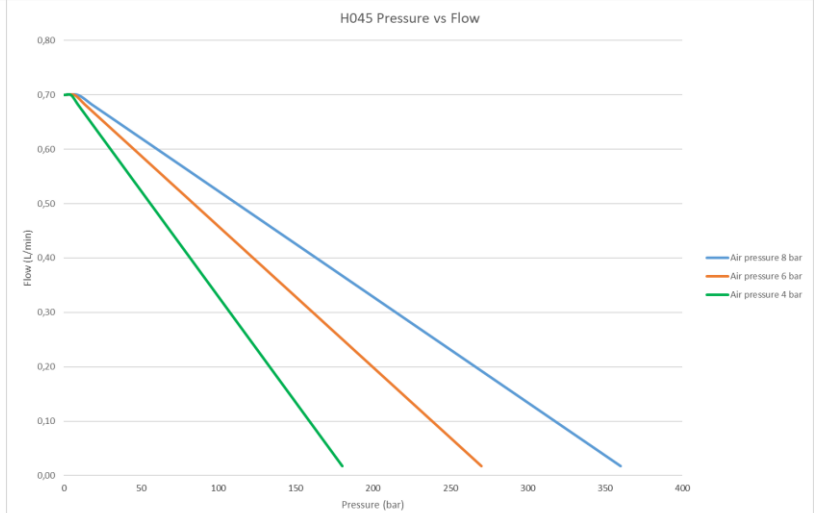
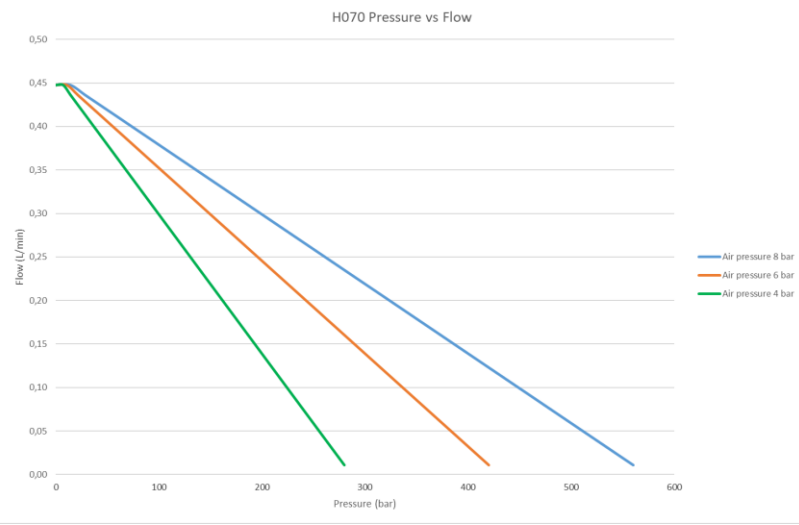
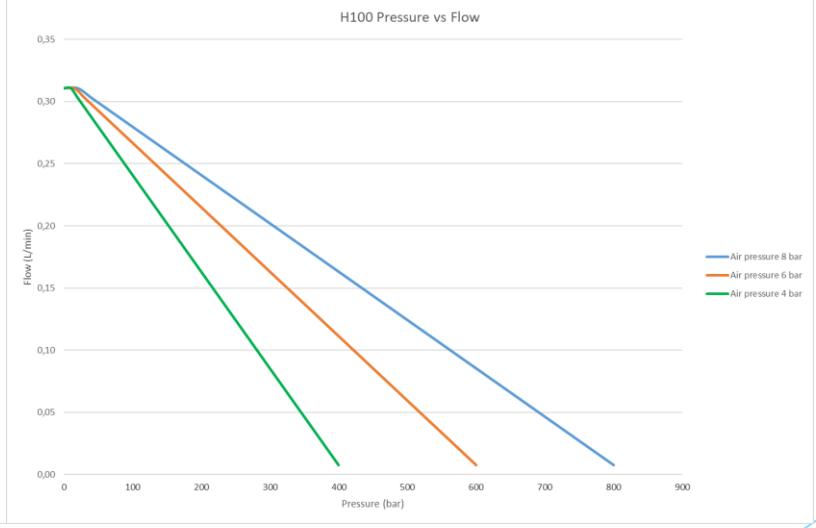
Pressure vs Flow









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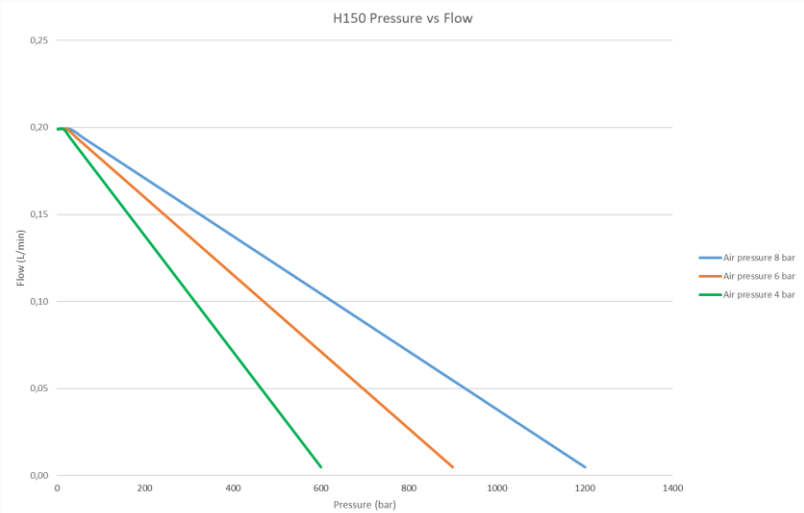

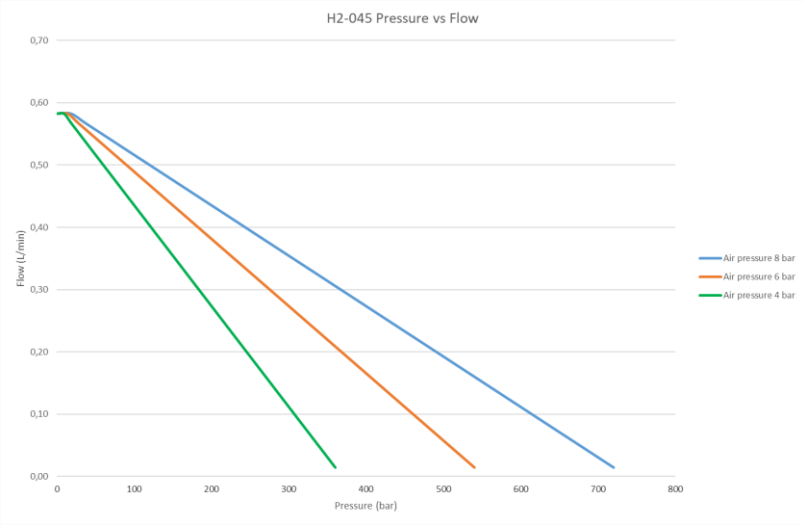

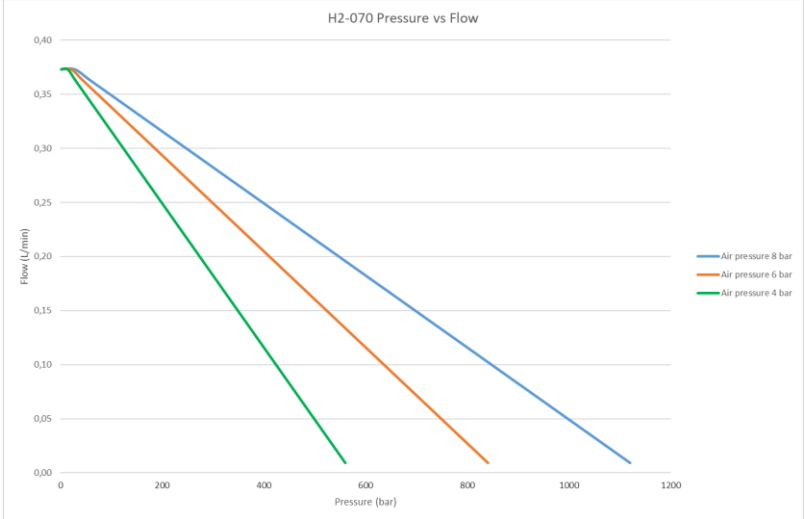

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