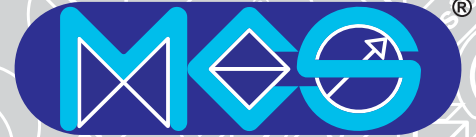


multi-coupling system



multi-coupling system

**Plant, components and devices
for very high and high pressures
(7000 bar and over)**



LIQUID PUMPS SERIES R AND R2



ISO 9001

INTRODUCTION

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 (R series) have one air piston and one high-pressure piston.

The double ratio (R2 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.

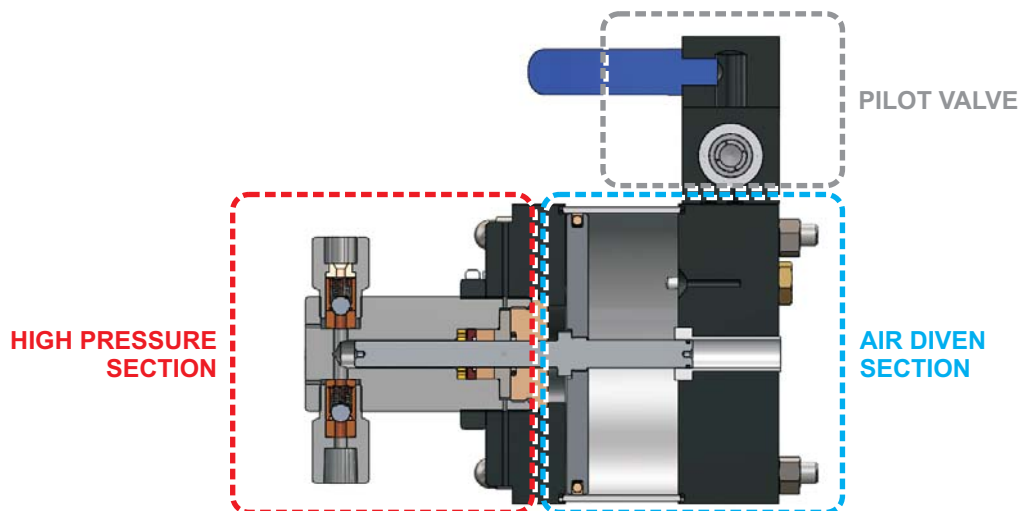
The double ratio pumps have the same flow of a single acting pumps but the double air piston permit to have at higher outlet pressure.

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 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 and the pilot valve 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/air pilot valve) 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 7 bar (101.5 psi) 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.

COMPATIBLE FLUID

The MCS® air-driven pumps are suitable for the follow fluid:

- WATER
- DISTILLED WATER
- DRINK WATER
- WATER AND GLYCOL
- GLYCOL
- SILICON OIL
- 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 46 – 68 cst
Max allowable temperature 80°C . with water 50°

AIR FEEDING

For the compressed air connection must be utilise 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.

NPT CONNECTION

NPT threads must be sealed using a high quality PTFE tape and/or paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.

- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.

- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Recommended tightening moment

1/4" NPT 30 – 35 Nm

1/2" NPT 50 – 55 Nm

3/4" NPT 75 – 80 Nm

HIGH PRESSURE CONNECTION

Dissimilar angles between the body and the tube cone provide metal to metal seal along the perimeter of a contact circle.

The sealing contact area is therefore, maintained at its practical minimum for the given tube size and a reliable seal is produced due to high sealing stresses that occur at low sealing loads.

Positive backup support occurs with the collar threaded (left-handed) directly onto the tubing to form a positive integral retaining surface.

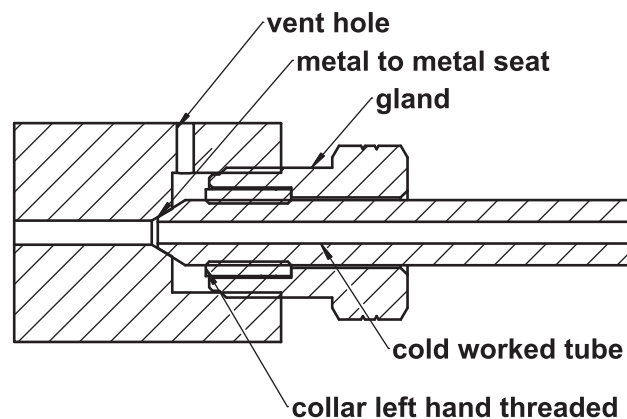
This allows for a consistent connection make up that is required at higher pressures and temperatures.

When the gland nut is threaded into the connection, the tubing is locked securely in place and the possibility for the ejection of the tubing from a properly assembled and used connection is extremely remote.

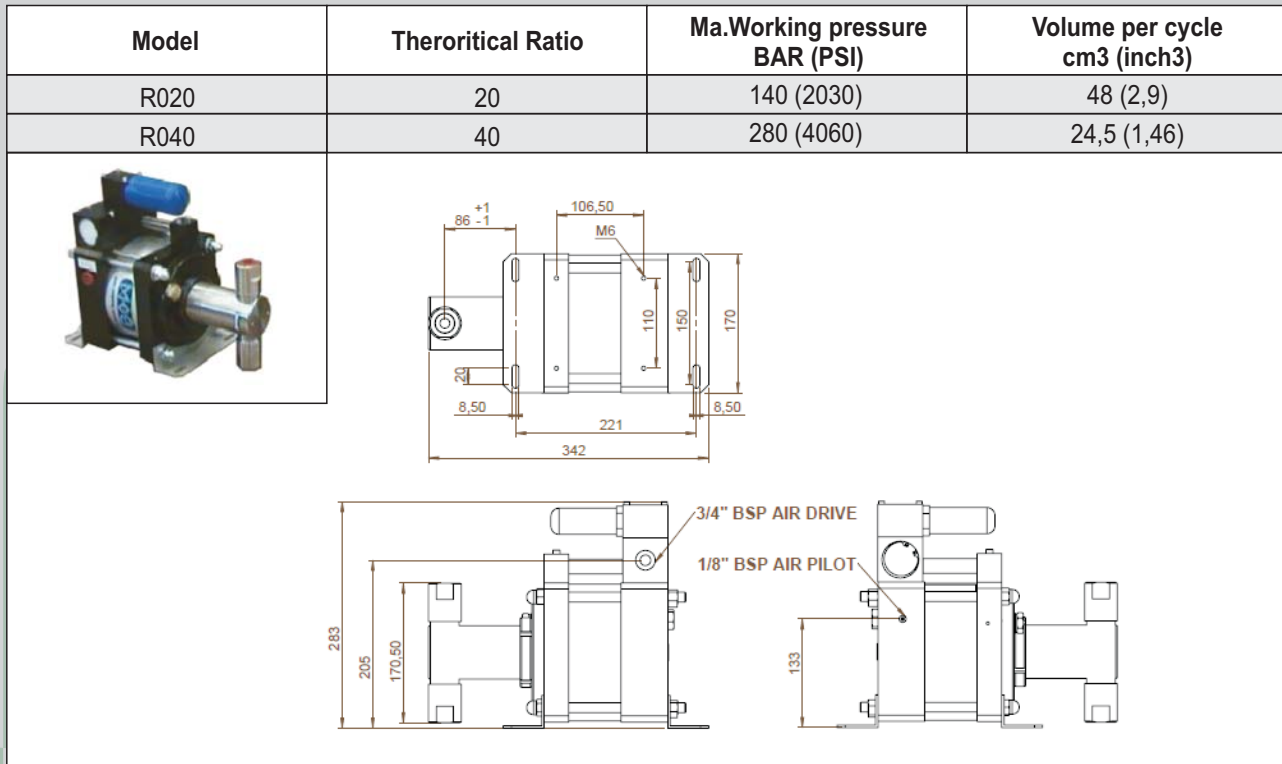
Tightening moment HP

Pipe 1/4" HP up to 4200 bar 30 – 35 Nm (ex. 17 mm)

Pipe 3/8" HP up to 4200 bar 30 – 35 Nm (ex. 22 mm)



R SERIES LOW PRESSURE HIGH VOLUME PUMP



All dimension are for reference only and are subject to change


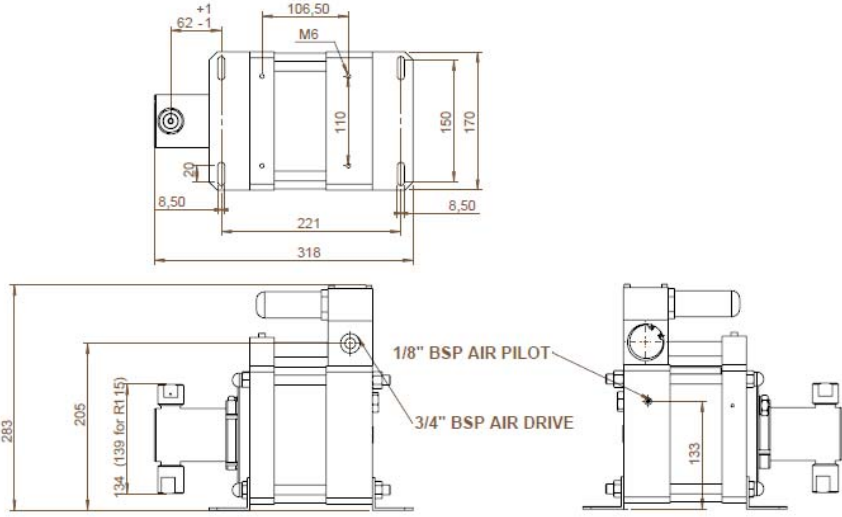
Technical Data	
Air drive pressure PL	1-7 bar / 14,5-145 psi
Minimum Suction pressure PA	1 bar
Maximum cycle	180 / min
Stall pressure	PB = N x PL
Max operating temperature	60° C
Media	Hydraulic oil, water .. Group 2 fluid 97/23/CE

Standard Connection	
Air drive	3/4" BSP
Air pilot	1/8" BSP
Media inlet	3/4" NPT
Media outlet	1/2" NPT

Materials of construction HP section	
High pressure head	EN 1.4404
HP piston	EN 1.4404
Check valves inlet components	EN 1.4404
Balls	EN 1.4034
Springs	EN 1.4310
Check valve seats	NBR + EN 1.4404
Check valves body	EN 1.4404
Seal	Water resistant Turcon

R SERIES HIGH PRESSURE LOW VOLUME PUMP

Model	Theoretical Ratio	Ma.Working pressure BAR (PSI)	Volume per cycle cm ³ (inch ³)
R115	112	780 (11300)	9 (0,55)
R180	176	1235 (17900)	5,8 (0,35)
R250	253	1750 (25380)	4 (0,24)
R400	396	2750 (39880)	2,5 (0,15)

All dimension are for reference only and are subject to change

Technical Data	
Air drive pressure PL	1-7 bar / 14,5-145 psi
Minimum Suction pressure PA	1 bar
Maximum cycle	180 / min
Stall pressure	PB = N x PL
Max operating temperature	60° C
Media	Hydraulic oil, water .. Group 2 fluid 97/23/CE


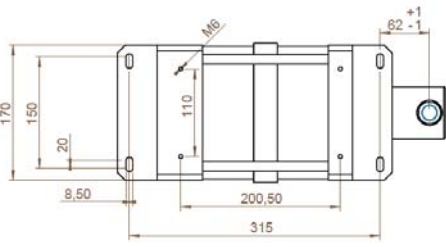
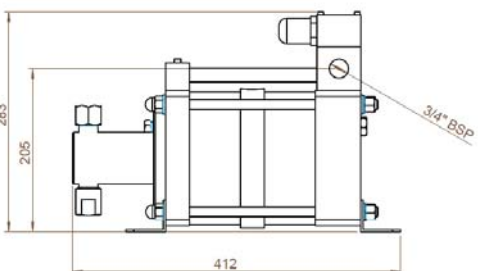
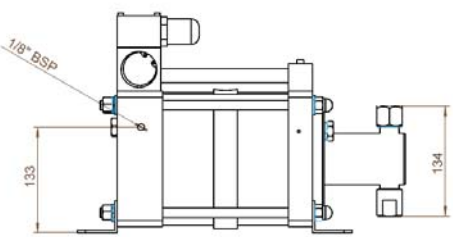
Standard Connection	
Air drive	3/4" BSP
Air pilot	1/8" BSP
Media inlet	1/2" NPT
Media outlet	M20 X 1.5 (3/8" hp tube) *

Materials of construction HP section	
High pressure head	EN 1.4418
HP piston	EN 1.4418 diamond graphite coated
Check valves inlet components	EN 1.4542
Balls	EN 1.4034
Springs	EN 1.4310
Check valve seats	NBR + EN 1.4542
Check valves body	EN 1.4418
Seal	Water resistant HPU-pom

* All pumps are supplied with gland and collar

R2 SERIES HIGH PRESSURE LOW VOLUME PUMP

Model	Theoretical Ratio	Ma.Working pressure BAR (PSI)	Volume per cycle cm ³ (inch ³)
R2-115	220	1550 (22480)	9 (0,55)
R2-180	350	2450 (35530)	5,8 (0,35)
R2-250	500	3500 (50760)	4 (0,24)
R2-400	790	4500 (65260)	2,5 (0,15)

All dimension are for reference only and are subject to change

Technical Data	
Air drive pressure PL	1-7 bar / 14,5-145 psi
Minimum Suction pressure PA	1 bar
Maximum cycle	180 / min
Stall pressure	PB = N x PL
Max operating temperature	60° C
Media	Hydraulic oil, water .. Group 2 fluid 97/23/CE

Standard Connection	
Air drive	3/4" BSP
Air pilot	1/8" BSP
Media inlet	1/2" NPT
Media outlet	M20 X 1.5 (3/8" hp tube) *

Materials of construction HP section	
High pressure head	EN 1.4418
HP piston	EN 1.4418 diamond graphite coated
Check valves inlet components	EN 1.4542
Balls	EN 1.4034
Springs	EN 1.4310
Check valve seats	NBR + EN 1.4542
Check valves body	EN 1.4418
Seal	Water resistant HPU-pom

* All pumps are supplied with gland and collar

STANDARD DELIVERY OPTIONS

H-PU seal

Head connection straight

NBR check valve seal

Mounting brackets and pneumatic screws steel zinc plated

OPTIONS ON REQUEST

- A (head connection 90°) example R-115-A

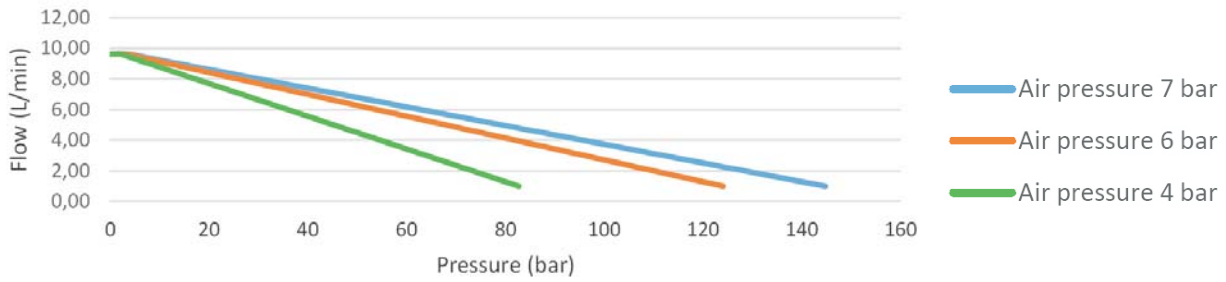
- U34 (mounting high pressure outlet connection size $\frac{3}{4}$ " -16 unf only for high pressure model) example R-115-U34

- U916 (mounting high pressure outlet connection size 9/16-18 unf only for high pressure model) example R-115-U916

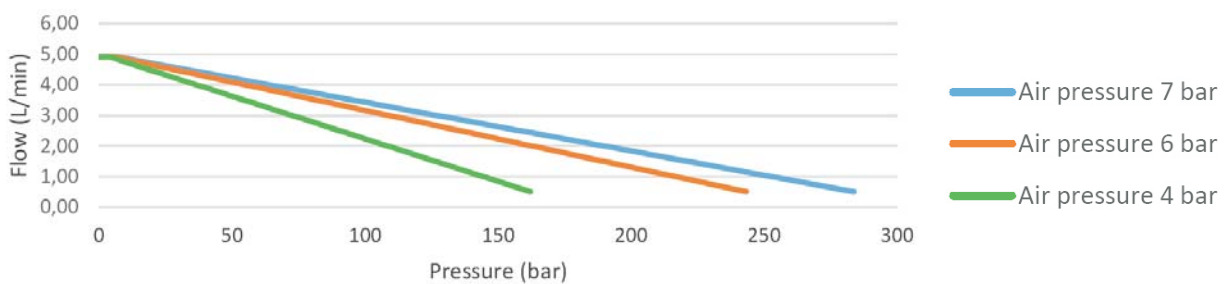
- V viton check valve seal

Other options are available on request

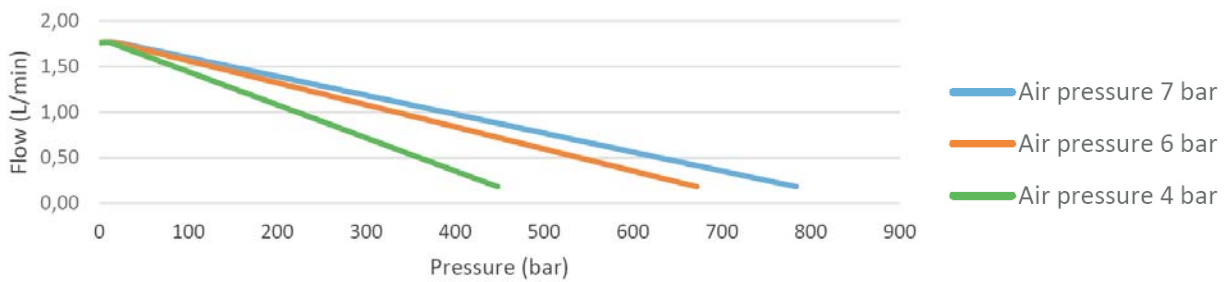
R020 Pressure vs Flow



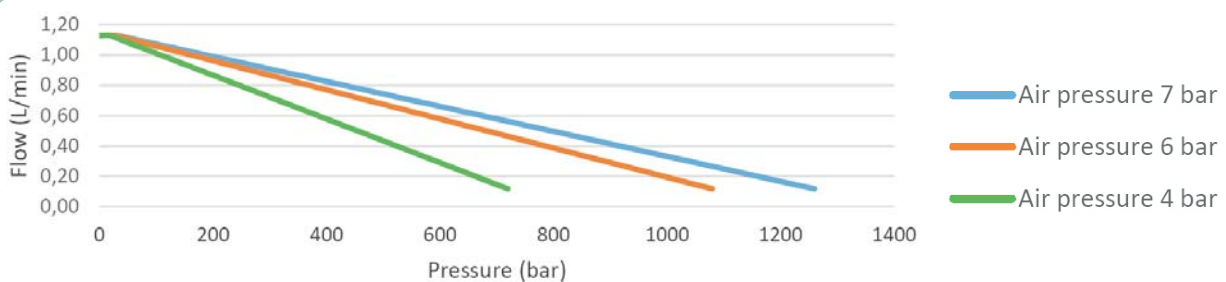
R040 Pressure vs Flow



R115 Pressure vs Flow

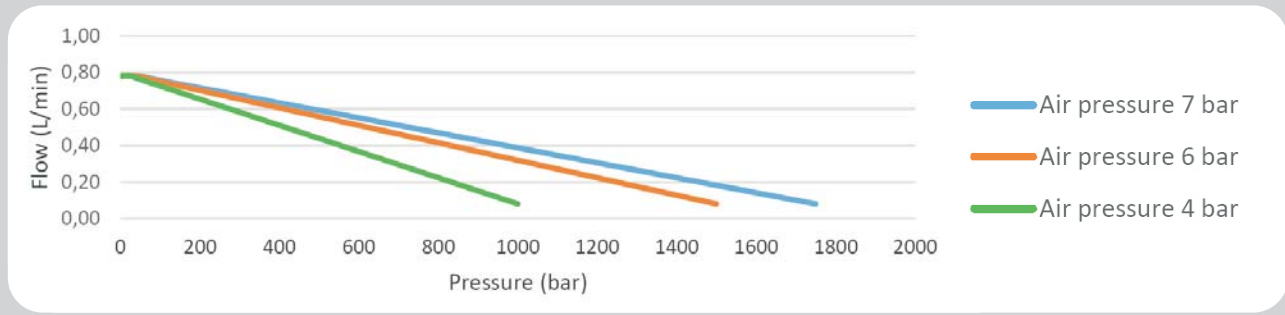


R180 Pressure vs Flow

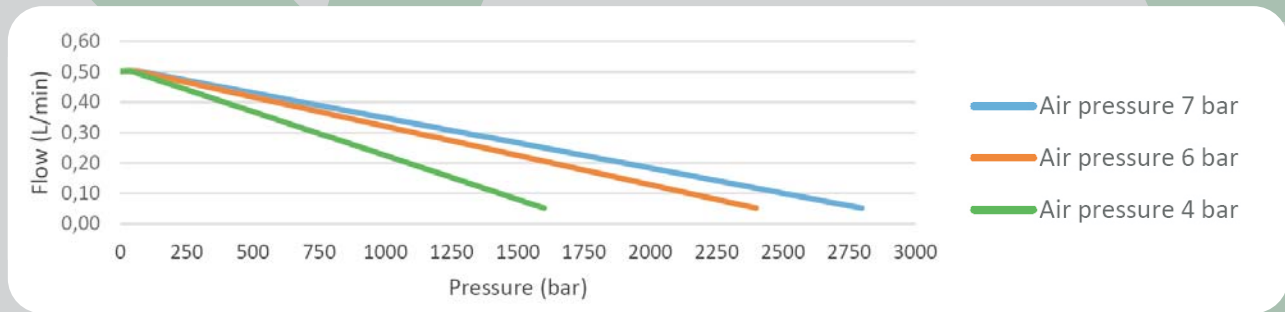


All graph are for reference only and are subject to change

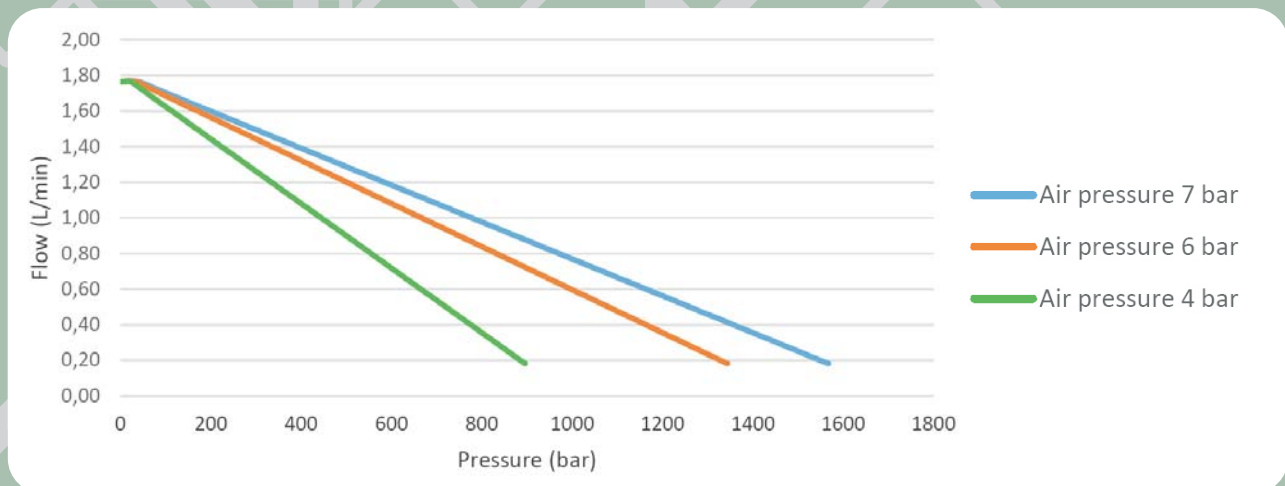
R250 Pressure vs Flow



R400 Pressure vs Flow

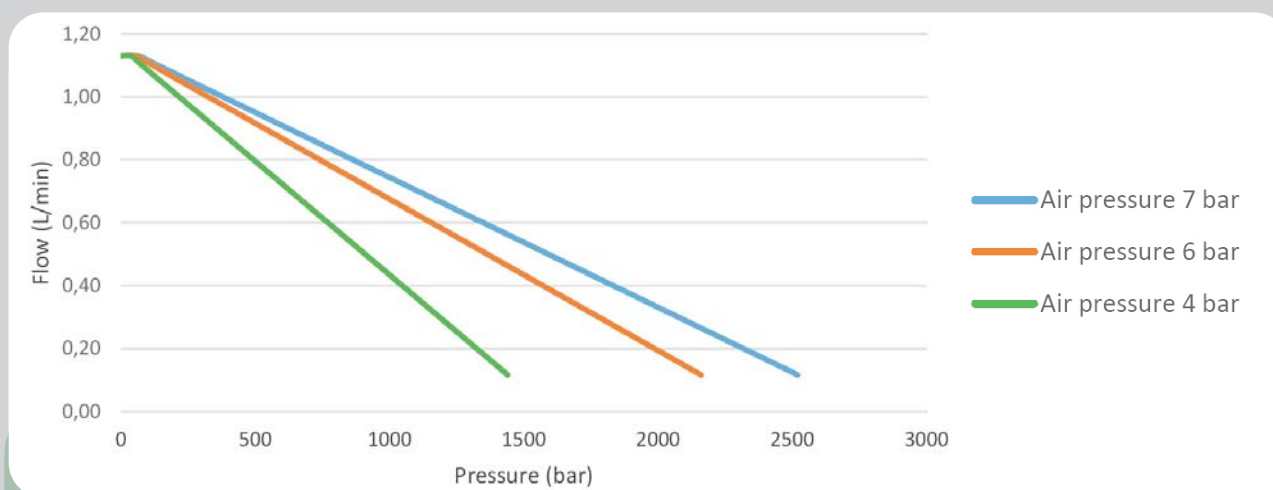


R2-115 Pressure vs Flow

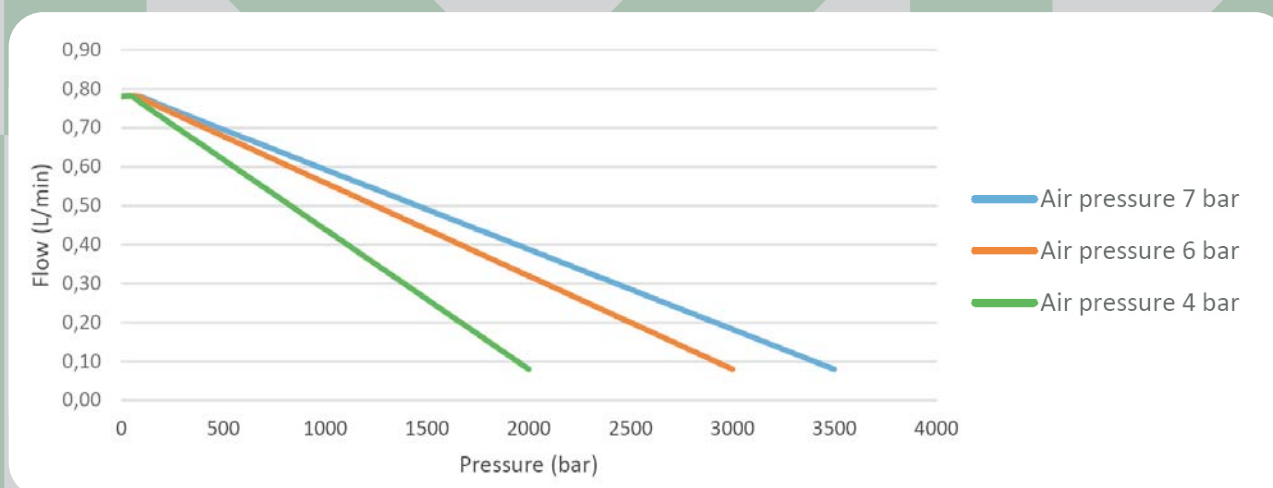


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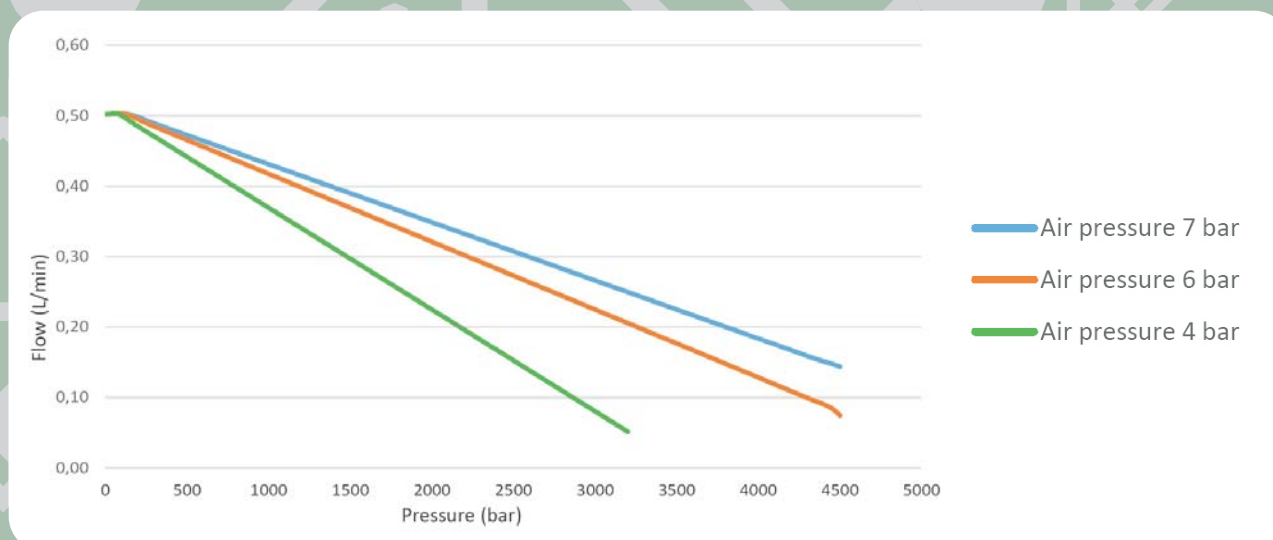
R2-180 Pressure vs Flow



R2-250 Pressure vs Flow



R2-400 Pressure vs Flow



All graph are for reference only and are subject to change

COMPANY PROFILE

MULTI-COUPLING SYSTEM S.r.l. plans and produces hydrodynamic and hydraulic units and plants for the most various industrial fields and for specific applications.

The factory was born in Legnano but because of its development it was necessary its transferring in Canegrate and following in Villa Cortese in a bigger productive plant.

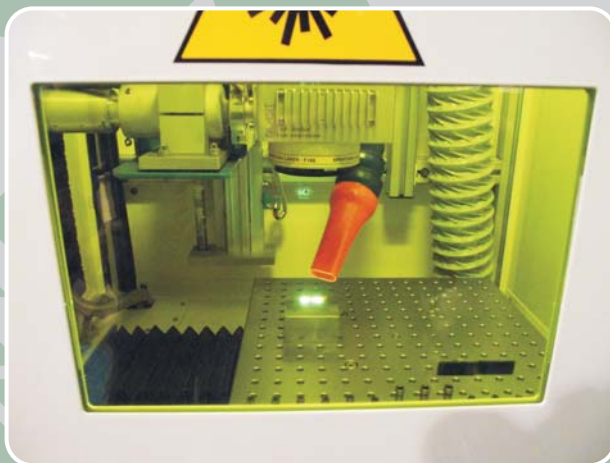
Multi-Coupling System was born in 1992 and thanks to the experience made in the very high and high pressures (5000 bar and over), it plans and supplies distribution and power supply plants, test benches, devices for quality controls, submarine applications, standard or special pipes and components according to the customers' requests.

The special components are produced directly of its own through stainless steel semi-finished products workings.

Therefore, with new devices, the factory has been able to modern the production cycles getting a better finished product for the national small, medium and big industry, both of builder than users which require a special fluidic technology in the productive process.

In fact, its products and flexibility allow to satisfy all the customers' requirements.

In 2002 Multi-Coupling makes HIGH PRESSURE mark, that is a production line of high pressure devices and components.



LIQUID PUMPS SERIES R AND R2



COMPONENTS



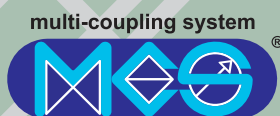
PRESSURE GENERATORS



TEST BENCHES



OEM SYSTEMS



Multi-Coupling System S.r.l.

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