Summary:
New valves are available for Normal Phase applications and SFC.

Parts Required:
- G1312-60166  1260 Infinity Inlet Valve Type N
- G4302-60066  1260 Infinity Inlet Valve SFC
- G4220-60122  1290 Infinity Inlet Valve Type N
- G1312-60167  1260 Infinity Outlet Valve Type N/SFC
- G4220-60128  1290 Infinity Outlet Valve Type N
- 0905-1420     Piston Seals PE (2/pk)
- 0905-1718     Wash Seals PE (1/pk)

Situation:
Current valves used with 1260 and 1290 Infinity pumps do not work well with applications using non-polar solvents as for normal phase applications (e.g. hexane and heptane) or carbon dioxide in SFC. With such applications pressure drops could be observed. They are a result of particles electrostatically charging up in insulating solvents and sticking to balls inside valves such that they do not close properly any more after some time of use (can be hours).

Solution/Action:
Agilent now introduces a new second type of valves which have a design based on the existing one for 1260/1290 Infinity valves. They use a new material for valve balls which is a conductive ceramic and replaces non-conductive ruby balls. New balls do not charge up electrostatically and show good performance in normal-phase and SFC applications.

Valves are marked with N for non-polar or normal phase see image 1200InfinityValvesTypeN.png

We recommend using these valves for and only for normal phase applications and SFC. Normal phase balls/valves corrode quickly in acids (at or below pH 7) and shall not be used in aqueous solutions. Choose the appropriate part number for 1260 vs. 1290 and inlet vs. outlet valves. Please note that the SFC inlet valve has a Swagelock port and a different part number than 1260 Infinity valves.

No design change has been done for active inlet valves which have already been used successfully in the past for normal phase applications in 1200 Series and 1260 Infinity binary pumps.

Serial Numbers:
Serial Low  Serial High

Attachments:
1200InfinityValvesTypeN.png
Additional Information:

New N-Valves have been tested successfully in R&D the channel assist team and with several beta customers. Tests have been run using hexane at pressures below 100 bar; heptane can be used as a substitute for neurotoxic hexane. Other non-polar solvents have not been tested explicitly so we have no experience about performance and lifetime.

For running normal phase/SFC applications on 1200 Infinity pumps yellow PE seals are required which exist as piston seals and wash seals. Seal wash is very uncommon for normal phase applications (no buffers) but wash seals are needed for seal wash pump heads. 1290 Infinity pumps use PE seals by default. In combination with ceramic pistons PE seals are used for both reversed phase (1200 bar) and normal phase applications.

1260 Infinity pumps use sapphire pistons and black PTFE piston and wash seals by default (600 bar). Such PTFE seals create small wear particles in normal phase applications which can clog valves and other parts in the flow path.

PE seals have a limited lifetime when used with normal phase solvents and sapphire pistons (default pistons in 1260 Infinity pumps). We recommend a maximum pressure of 200 bar for this combination which shall also be applied for pressure and leak rate tests.

Please note that THF is not compatible with PE seals. Black PTFE seals should be used with THF even in 1290 Infinity pumps. In this case a maximum pressure of about 400 bar should be used. See manuals for detailed information about solvent compatibility.


Disclaimer

For a validation of new pumps we run thousands of tests over a large range of pressures and flow rates with different solvents and solvent compositions and validate results against our specifications. This effort could not be spent for this highly specific application. So far we have no long term experience with these valves with respect to performance and lifetime. All published pump specifications are based on reversed phase application measurements using standard valves.

Related Products:

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Administrative Information:

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