



Product Note, PN 412, Revision 6 Explosive Atmospheres and AP Tech Valves and Flow Devices

January 28, 2020

Introduction

On 29 March 2014, the Directive 2014/34/EU (commonly referred to as “ATEX”) of the European Parliament was issued regarding potentially explosive atmospheres. Advanced Pressure Technology (“AP Tech”) manufactures valves and flow devices that could be installed in such environments.

Why Explosion Protection for Valves and Flow Devices?

In the event of a leak in a flammable gas piping system, a potentially explosive atmosphere can envelop the component. While many existing standards and regulations concern electrical components and electrical equipment used in these applications, ATEX requires that all components and equipment be evaluated. AP Tech valves and flow devices are considered *components*. Based on the ATEX Directive, AP Tech considers the location where the components are installed to be classified Equipment-group II, Category 3 because flammable gases would only be present for a short period of time in the event of a leak. It is possible that the location could be classified Equipment-group II, Category 2 if a leak is likely to occur. Please note that the system owner, not AP Tech, is responsible for determining the classification of a particular installation.

Product Assessment

AP Tech performed a conformity assessment and risk analysis of all valves and flow devices with respect to the Essential Health and Safety Requirements in Annex II of the ATEX directive. The assessment found two potential ignition sources, one potential leak to atmosphere, and switches that require intrinsic safety barriers.

The Nylon 6, 30-33% glass filled knob used on models with plastic knobs has been tested in accordance with IEC:2004 60079-0 section 26.14 and confirmed not to build sufficient static charge to cause an ignition.

The other ignition source is from static charge build-up arising from the flowing media. All valves and flow devices must be connected to earth ground. The components can be grounded through the mounting holes on the body (if so equipped) or the system piping can be grounded and electrical continuity verified through the component connections. Grounding of the components should follow the same requirements as for the piping system.

A potential leak to atmosphere was determined possible due to repeated cycling of diaphragm or bellows valves that might eventually lead to diaphragm or bellows fatigue failure. Customers should be aware of the expected cycle life of the valve being used for the application. In critical applications, customers should monitor valve cycle counts and pressures, and replace the valve at an appropriate interval as part of preventive maintenance. In addition, the system should be designed to detect a leak, if one should occur, and signal an alarm.

Some pneumatic valves and manual valves have options for position indicating switches and the AP74 and AP74B flow switches have a switch incorporated into the device. These switches do not

store or generate energy and therefore, can be designated “simple devices”. To protect the switches and field wiring, an intrinsic safety barrier must be installed to limit the energy supplied to the device.

The European Commission has published guidelines that state “simple” mechanical devices that do not have an “own source” of ignition except for the flowing media are outside the scope of the directive. AP Tech valves and flow devices fall into this category.

Product Declaration

AP Tech declares that all valve and flow device models identified below fall outside the scope of the ATEX directive because the products do not have their own source of ignition and fall under the “simple” products application of the directive.

Pneumatic valves

AP3000/ AZ3000/ AK3000	AP3002/ AZ3002/ AK3002	AP3004/ AZ3004/ AK3004
AP3007/ AZ3007/ AK3007	AP3080/ AZ3080/ AK3080	AP3113
AP3130	AP3200	AP3540/AZ3540/AK3540
AP3542/ AZ3542/ AK3542	AP3550/ AZ3550/ AK3550	AP3571/ AZ3571/ AK3571
AP3580/ AZ3580/ AK3580	AP3700	AP3708
AP4000/ AZ4000/ AK4000	AP4100 / AZ4100	AP4141/ AZ4141
AP4540/ AZ4540/ AK4540	AP4542/ AZ4542/ AK4542	AP4550/ AZ4550/ AK4550
AP4571/ AZ4571/ AK4571	AP4580/ AZ4580/ AK4580	

Manual valves

AP3100	AP3102	AP3125
AP3150	AP3157	AP3260
AP3600/ AZ3600/ AK3600	AP3604/ AZ3604/ AK3604	AP3624/ AZ3624/ AK3624
AP3625/ AZ3625/ AK3625	AP3627/ AZ3627/ AK3627	AP3650/ AZ3650/ AK3650
AP3652/AZ3652/AK3652	AP3657/AZ3657/AK3657	AP3659/AZ3659/AK3659
AP3672 / AZ3672	AP3675 / AZ3675	AP3800
AP3900	AP4127 / AZ4127	AP4150/ AZ4150
AP4600/ AZ4600/ AK4600	AP4625/ AZ4625/ AK4625	AP4650/ AZ4650/ AK4650
AP4652/ AZ4652/ AK4652	AP4657/ AZ4657/ AK4657	AP4659/ AZ4659/ AK4659
BZ91		

Flow devices

AP61	AP64	AP7
AP70	AP71	AP72

AP Tech declares that all flow devices and valve model options identified below do not require ATEX approval **when installed with ATEX approved intrinsic safety barriers**. The use of an intrinsic safety barrier would make the installation acceptable for Equipment-group II, Category 2 locations.

Pneumatic valve options that require installation with ATEX approved intrinsic safety barriers

AP3000 IS/ AZ3000 IS/ AK3000 IS	AP3002 IS/ AZ3002 IS/ AK3002 IS
AP3004 IS/ AZ3004 IS/ AK3004 IS	AP3007 IS/ AZ3007 IS/ AK3007 IS
AP3080 IS/AZ3080 IS/AK3080 IS	AP3113 IS
AP3130 IS	AP3200 IS
AP3550 ISC/ AZ3550 ISC/ AK3550 ISC	AP3550 ISO/ AZ3550 ISO/ AK3550 ISO
AP3580 ISC/AZ3580 ISC/AK3580 ISC	AP3580 ISO/AZ3580 ISO/AK3580 ISO
AP3585FA IS	AP3700 ISC
AP3700 ISO	AP3708 ISC
AP3708 ISO	AP4100 ISC/ AZ4100 ISC
AP4100 ISO/ AZ4100 ISO	AP4550 ISC/AZ4550 ISC/AK4550 ISC
AP4550 ISO/ AZ4550 ISO/ AK4550 ISO	AP4580 ISC/ AZ4580 ISC/ AK4580 ISC
AP4580 ISO/ AZ4580 ISO/ AK4580 ISO	

Manual valve options that require installation with ATEX approved intrinsic safety barriers

AP3150 ISH AP3150 ISH/3	AP3650 ISH/ AZ3650 ISH/ AK3650 ISH AP3650 ISH3/ AZ3650 ISH3/ AK3650 ISH3
AP4150 ISH/ AK4150 ISH AP4150 ISH3/ AK4150 ISH3	AP4650 ISH/ AZ4650 ISH/ AK4650 ISH AP4650 ISH3/ AZ4650 ISH3/ AK4650 ISH3

Flow devices that require installation with ATEX approved intrinsic safety barriers

AP74	AP74B
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Conditions for use

1. The body of all components must be grounded (earthed) to prevent static charge build-up due to the flowing media.
2. The use of elevated temperature fluids that affect the surface temperature of the component is outside the scope of this declaration and is the responsibility of the user.
3. Special or custom options require a review to determine acceptability with the exception that any custom body porting, weld configuration, or port size does not affect the above declaration.
4. The use of heating systems applied to the component that affect the surface temperature of the component is outside the scope of this declaration and is the responsibility of the user.
5. The user is responsible for considering the effect of a rise in surface temperature due to adiabatic compression (rapid pressurization of the system).

Conclusion

A review of the ATEX directive has determined that AP Tech valves and flow devices fall outside the scope of the directive provided models with switches are installed with intrinsic safety barriers. All components must follow the specified conditions for use.

Products that are outside of the scope of ATEX are not labeled with the CE mark unless covered by another European Directive.