Pressurisation Unit – Fluid Category 4
"Autofill®" Models – AFS, AFP - Datasheet

Description

Autofill® AFS is a new type of pressurisation unit for filling "non-house" heating or chilled water systems. **Filling loops with a Double Check Valve must no longer be used for non-house primary circuits - see Water Regulations**. Autofill® replaces traditional pressurisation units and requires no tank or pump (except model AFP, which has a booster pump). Autofill® is exceptionally compact at just 300 mm square. The unit complies with the new Water Regulations for both filling and pressurising the primary system. The primary components consist of –

- Fluid Category 4 backflow prevention device
- Internal mechanical quick fill valve
- Top-up pressure controlling equipment
- High & low cut-out switches with BMS output
- Inlet and outlet (system) pressure gauges

The unit is supplied fully assembled and tested. Inlet and outlet stainless steel braided hoses with servicing valves and push fit connections are provided to facilitate installation.

5 YEAR WARRANTY

Model AFS *– Fluid Category 4 15 or 22 mm supplied with flexible hoses incorporating servicing valves*

Dual Filling Rates

The unit has two filling modes – quick fill and top-up. The quick fill allows for fast manual filling using the internal quick fill valve – more than 20 times faster than top-up filling. No filling loop is required. The internal quick fill valve enables rapid filling with fluid category 4 protection. No electricity is required, which is a significant benefit in plant rooms under construction. The unit incorporates a Pressure Regulating Valve, which guards against overpressure during the quick fill stage.

The normal topping-up is controlled by a small direct-acting solenoid valve. This method is accurate and reliable. Furthermore the low top-up rate avoids pressure surges, which could otherwise trigger the cut-out devices. Also the unit will not feed a major leak at high flow rates.

Filling Mode	Delta P	15 mm	22 mm
	bar	Lt/hr	Lt/hr
Quick fill (quick fill valve open)	1.0	1200	1800
Quick fill (quick fill valve open)	2.0	1650	2500
Top-up (quick fill valve closed)	1.0	50	75
Top-up (quick fill valve closed)	2.0	70	100
Suggested Boiler Size		0 – 200 kW	Above 200 kW

Two neon warning lamps are fitted to the door to illustrate filling or standby. Additional neon's are available to indicate high or low cut out with volt free common fault output.

Supply Pressure

Autofill® utilises the supply pressure for pressurising the system. Often the supply will be mains pressure. The pressure drop across the Autofill® is 0.6 bar (6 m). Therefore the mains pressure can reliably be used for single storey buildings *(although normally sufficient mains pressure for ground and 1st and possibly 2nd floors).* For taller buildings, Autofill® should be supplied from the domestic boosted cold water supply if available. Autofill's integral backflow protection means the supply can be the drinking (wholesome) water service. *Note – where the unit is installed in roof top plant room – the standard filling pressure is sufficient since the system is below.*

Pumped Version - AFP

Model AFP – features a pump for tall buildings without boosted cold water. The internal pump boosts the pressure by up to 2 bar (20 m). Assuming supply to Autofill® is 1.5 bar (15 m), the maximum possible cold fill pressure is calculated as -
Max cold fill pressure = 15 m – 6 m + 20 m = 29 m.
The maximum system height above the Autofill® is 27 m, which allows 2 m extra for venting.

Water Regulations

Clause G24.2 (page 8.24) allows a temporary connecting pipe (quick fill loop) to be used for a **house heating system only** - since the Fluid Category is 3. For non-house applications, the risk is Fluid Category 4 (unless risk assessed by the water supplier and downgraded) and a quick fill loop must not be used – **not even temporarily** (page 6.6, 4a). *For systems that have been risk assessed and downgraded to Fluid Category 3 refer to datasheet Autofill – model AFCA*. The system could be filled through a BA device, such as the Autofill®. Autofill® is therefore legally used in place of a conventional pressurisation unit for filling and pressurising.

Autofill® AFS & AFP should be commissioned and annually maintained by an accredited BA tester. This is normally in conjunction with annual inspection and testing of the pressure vessel, safety valves and switches.

A correctly sized - contact us - and pre-charged expansion vessel is required (G17.1) - normally supplied with an Autofill® – *See datasheet model EVCP*

Applications

Filling and topping up –

- Primary Heating Systems
- Under Floor Heating
- Refrigerating Equipment
- Chilled Water Circuits
- Cooling Circuits
- Industrial Processes

Expansion Vessel model - EVCP

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All unit-less dimensions in mm.
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Specification - Mechanical

Connections	½" or ¾" male BSP (for hoses)
Connection hoses (supplied)	15 or 22 mm stainless braided 300 mm metal push fit with serv. valve
Pressure Supply	10 bar max.
Pressure Outlet Max.	0.6 bar below supply to Autofill®
Enclosure	IP55 with lockable door
Mounting Height	0.3–1.5 m
Water Regulations Approval	1812353

Specification – Electrical

Pressure Switches	**Adjustable** 0.2–6.0 bar
Factory Settings –	
Cold Fill	On 1.2 bar (falling)
	Off 1.5 bar (rising)
Low cut-out	0.5 bar (falling)
High cut-out	2.8 bar (rising)
Max. Current	3 A @ 230 V ac
Switch Enclosure	IP65
Cable Entries	Two M20 holes
Solenoid	230 V 50 Hz IP65
Supply	via 5 A fused isolator (not supplied)

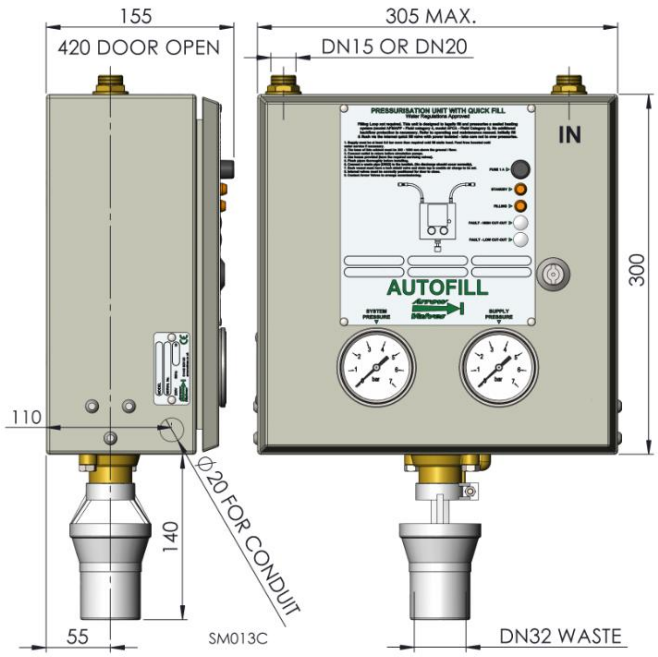
Materials

Cabinet	Steel (powder coated RAL 7032)
Fittings	Brass or stainless steel

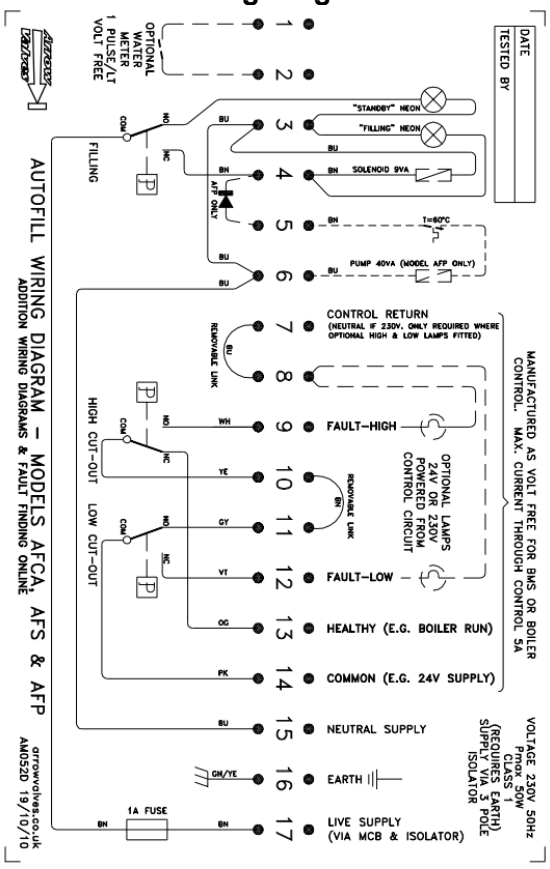
Discharge

BA devices are permitted for Fluid Category 4 because the relief valve can open under fault conditions to prevent backflow. Normally there is no discharge from Autofill®, even during operation. Under fault conditions and during testing, a small flow may occur. The waste pipe can be reduced to 22 mm. The waste should be run to a gully in the plant room or externally with a warning pipe.

Dimensions



Wiring Diagram



Notes 1. *Two neon's indicate standby and filling*
2. *Optional two additional neon's indicate high or low faults*

Ancillaries

The sealed heating system requires a correctly sized Expansion Vessel and controls.
Available from Arrow Valves –

- Wall Mounting Bracket - AFBRA
- Expansion Vessels - EVCP
- Expansion Vessel Servicing Valve c/w Drain Tap – BVEV
- Dosing Pots - DP
- Dirt & Air Removers (de-aerators) – ADR
- Water Meters – WMV4P15MPAF

A water meter should be fitted on the supply to Autofill (this will be cold). This indicates system volume, which enables the quantity of inhibitor to be added via a dosing pot. Also a meter indicates any system leakage, which again helps with re-dosing after repair. Model WMV is a volumetric meter (Class C) and therefore detects the smallest of flows. The digital mechanical display is easy to read to 0.1 litres.
Volt free output 1 pulse/litre for BMS.

Codes and Descriptions

Size	Code	Description
15 mm	AFS15	Autofill® Pressurisation Unit
22 mm	AFS22	Autofill® Pressurisation Unit
15 mm	AFP15	Autofill® Pressurisation Unit c/w Pump
22 mm	AFP22	Autofill® Pressurisation Unit c/w Pump
15/22	AFBRA	Autofill® Wall Mounting Bracket - Stainless
DN15	WMV4P15MPAF	AF Water Meter Class C 1 Pulse/Lt Cold MUBSP
DN20	WMV4P20MPAF	AF Water Meter Class C 1 Pulse/Lt Cold MUBSP

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