

Automatic Flow Limiting Valves – AFL

Servicing Valve with Automatic Flow Limiting Cartridge – Datasheet - Page 1 of 3

Description

Quarter turn Servicing Valve with a ball capable of accepting an Automatic Flow Limiting Cartridge to limit the flow of hot and cold water according to its flow rate. In addition to the Automatic Flow Limiting Cartridge - Strainers, Single and Double Check Valves are also available in various combinations – see AFL Cartridges Datasheet (page 3).

A side port allows the Cartridge to be fitted inside the ball after the valve has been installed. Cartridges can be removed in service through the side port without draining the system.

Knowing the maximum flow rate enables the designer to accurately size - pipes, pumps, heaters and the supply system. Limiting the flow can save water and/or assist with balancing thereby preventing some appliances - e.g. a shower - consuming all the available water whilst other appliances - at higher level or farther downstream - are starved of water.

A colour-coded Identity Disc stating the flow rate and "Arrow Valves 01442 823123" is fitted to the knurled Plug to indicate the Cartridge inside. Valves should be installed, the system flushed and chlorinated before the Cartridges are inserted.

Connection Pipes & Sizes

Copper – 15 & 22 mm Compression fittings

Steel – ½" & ¾" Female

Plastic – 12 - 20 mm Fittings available for most systems

Specification

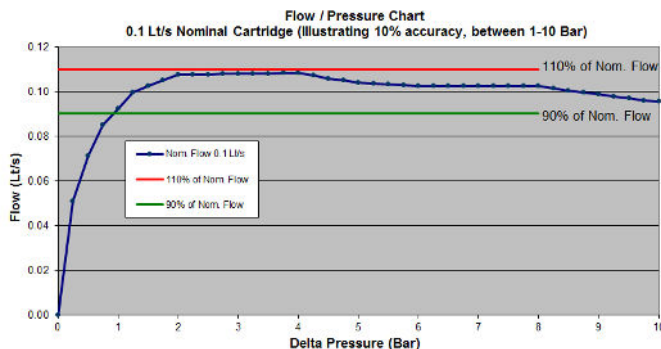
Pressure Supply	10 bar max.
Flow max.	<110% of nominal flow
Flow min.	>90% of nom flow @ 1 bar min.
Temperature	1 - 65° C max.
Strainer (optional)	260 µm (60 mesh)
Bore through valve	15 mm (for all valve sizes)
Water Regulations Approval	1805801

Materials

Body	DZR Brass – Nickel Plated
Seat	PTFE
Ball	Brass - Chrome Plated
O-rings	EPDM
Lever (Arrow shaped)	Aluminium – Green
Strainer (optional)	316 Stainless Steel

Applications

AFL Valves may be used on hot and cold water plumbing systems and clean chilled water for A/C fan coil units - not suitable for heating. Valves should be accessible and fitted at points of use. See AFL Cartridge Data Sheet. Examples include – Wash Basin, Sink, Shower, Bath, TMV, WC, Urinal, Bidet, Washing m/c, Dishwasher, etc.



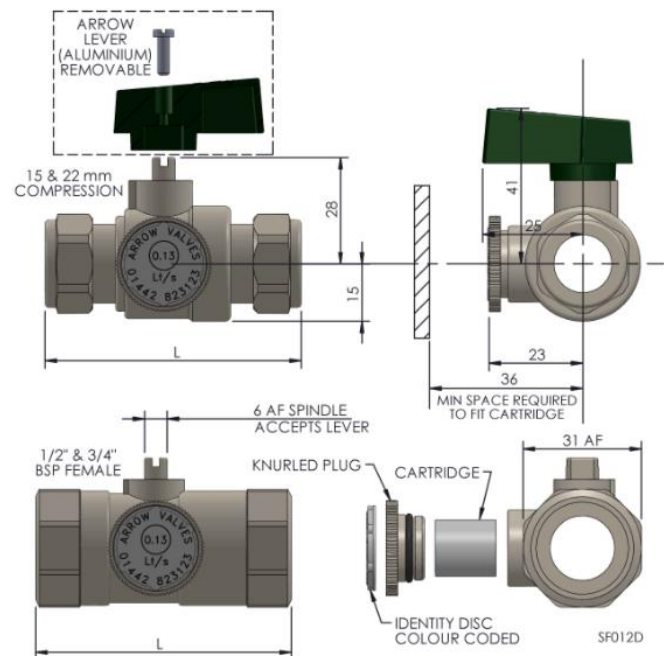
Notes

Typical flow/pressure characteristics of AFL Cartridge. Data from practical test @ 20° C. Cartridges designed for low pressure (gravity) systems under development – please enquire. If the flow rate is too low because the pressure is <1 bar, remove cartridge.

AFL15CL
Unique colour - coded
Identity Disc identifies
cartridge within.
Arrow lever indicates
flow direction



Dimensions



SIZE	15	22	½"	¾"	16	20
L	65	70	67	67	70	70
Kg	0.180	0.220	0.270	0.200	0.220	0.220

Codes and Descriptions

Size	Code	Description
15 mm	AFL15CL	AFL Valve Comp DZR Nickel c/w Lever
22 mm	AFL22CL	AFL Valve Comp DZR Nickel c/w Lever
15 mm	AFL15C	AFL Valve Comp DZR Nickel
22 mm	AFL22C	AFL Valve Comp DZR Nickel
DN15	AFL15FL	AFL Valve Female DZR Nickel c/w Lever
DN20	AFL20FL	AFL Valve Female DZR Nickel c/w Lever
DN15	AFL15F	AFL Valve Female DZR Nickel
DN20	AFL20F	AFL Valve Female DZR Nickel
20MP	AFL20MPL	AFL Valve Nickel 20MP Flat Face c/w Lever
25MP	AFL25MPL	AFL Valve Nickel 25MP Flat Face c/w Lever

Notes

Cartridges supplied separately – see Page 3 - AFL Cartridge Datasheet.

Arrow Valves Ltd

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All unit-less dimensions in mm.
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Automatic Flow Limiting Valves – Options

Push-fit / Backflow Protection – Datasheet - Page 2 of 3

Push-fit Connections

Push-fit connections assist with speed of installation on 15 mm copper or plastic pipe systems.

AFL with Single Check Valve

Single Check Valves can be used to prevent mixing of hot and cold water in mixer taps. The AFL Valve c/w Single Check Valve (model AFLEB) limits the flow of water according to the Flow Limiting Cartridge installed, balancing the flow of water from the tap and providing Fluid Category 2 backflow protection in a single fitting.

AFL with Double Check Valve

Double Check Valves can be used to prevent backflow from shower hoses. The AFL Valve c/w Double Check Valve (model AFLED) limits the flow of water according to the Flow Limiting Cartridge installed, balancing the flow of water to the hose and providing Fluid Category 3 backflow protection in a single fitting.

Pay Back Period

Whilst the initial cost of an AFL Valve is greater than that of an ordinary Servicing Valve, the AFL offers the added benefit of limiting flow and thus saving water. This water saving can be used to illustrate the "payback period" for the valve.

Based on a cold tap previously running @ 0.25 Lt/s, when fitted with AFL Valve c/w 0.10 Lt/s cartridge the payback period is only 31 days – assuming the tap runs just 15 minutes per day. The additional energy saving achieved when fitted to the hot tap is similar to the water saving and therefore payback in half the time. See website for detailed calculations.

Showers

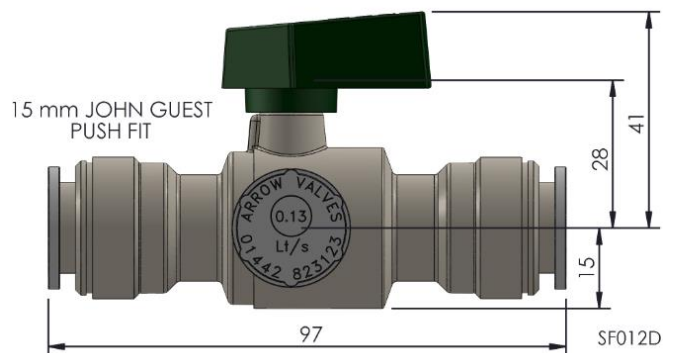
It is recommended that an automatic flow limiter is fitted to the shower hose; and not the hot and cold supplies.

The "Equi-Flow" Shower Flow Limiter can be supplied separately or as an assembly with the ED235 Double Check Valve – pictured below. See "Equi-Flow" datasheet.

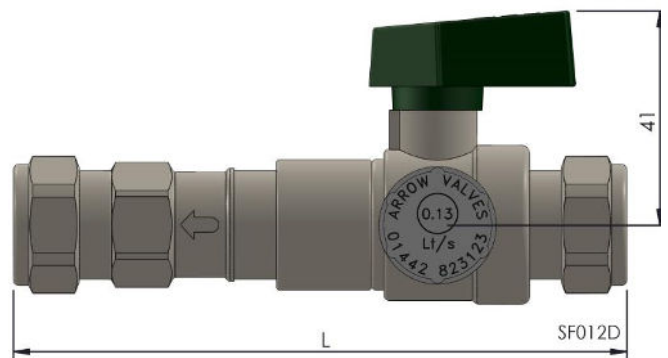


"Equi-Flow"
AFLE15FMWT – Automatic
Flow Limiter for shower hoses
with 0.13 Lt/s cartridge for
limiting flow of water

ED235WT – Double Check Valve
and Automatic Shower Flow Limiter
with 0.13 Lt/s cartridge



AFL with backflow protection
Single (EB) or
Double check (ED)



SIZE	15 EB	15 ED	22 EB	22 ED
L	112	131	70	145
Kg	0.304	0.307	0.220	0.427

Codes and Descriptions

Size	Code	Description
15 mm	AFL15PL	AFL Valve 15 mm Push Fit c/w Lever
15 mm	AFLEB15CL	AFL and EB Valve DZR Nickel c/w Lever
15 mm	AFLED15CL	AFL and ED Valve DZR Nickel c/w Lever
22 mm	AFLED22CL	AFL and ED Valve DZR Nickel c/w Lever

Notes

Cartridges supplied separately – see Page 3 - AFL Cartridge Datasheet.
EB = Single Check, ED = Double Check.

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AFL Cartridges

For installation into AFL Valves – Datasheet – Page 3 of 3

Description

Range of Cartridges for installation into AFL Valves. All sizes of AFL Valve use the same size Cartridge. There are several Cartridges available –

- Automatic Flow Limiting
- Auto Flow Limiting & Strainer
- Strainer only

AFL Cartridges with corresponding Identity Disc



All Cartridges have identical external dimensions and incorporate a stainless steel Cross Pin, which enables easy extraction with long nose pliers. Where space prohibits pliers, a wire hook can be used instead. There is no Circlip required because the “on” position prevents the Cartridge moving.

AFL Cartridges limit the flow by automatically varying the size of the orifice of the Cartridge. As the flow approaches the specified rate, the orifice contracts – like a camera lens. The regular flexing of the cartridge material avoids build-up of scale and allows small particles to pass through. The properties have been tested over 20 years and are stable up to 65°C.

Valves should be installed, the system flushed and chlorinated before Cartridges are fitted. Cartridges can be installed with system fully pressurised. To install –

1. Close Valve
2. Unscrew Knurled Plug
3. Insert Cartridge - push to limit
4. Replace Knurled Plug – finger tight only
5. Fit colour-coded Identity Disc to Plug
6. Turn Valve on

For Shower Flow Limiter see “Equi-Flow” (model AFLE) datasheet.

Specification

Flow max.	<110% of nominal flow
Flow min.	>90% of nom flow @ 1 bar min.
Temperature	1 - 65° C max. (90° C Valve only)
Strainer & AFL	260 µm (60 mesh)
Strainer only	260 µm (60 mesh)
Water Regulations	
Approval	1805801

Materials

Housing	POM
O-rings	EPDM
Strainer	316 Stainless

Applications

AFL Cartridges can be used for any hot or cold water fitting.

	Description	Max ¹ Lt/s	Suggested ² Lt/s	Min ¹ Lt/s
Conservation & Balancing	Handbasin / Washbasin	0.15	0.13	0.10
	Kitchen Sink 15 mm	0.20	0.17	0.10
	Kitchen Sink 22 mm	0.30	0.25	0.20
	WC Flushing Trough	0.15	0.13	0.10
	Shower – use “Equi-Flow”, which fits to shower hose – see AFLE Datasheet			
	Bidet	0.20	0.10	0.10
AFL can save water filling WC since less water is used during flush!				
Balancing	Bath 15 mm	0.30	0.28	0.20
	Bath 22 mm	0.43	0.43	0.28
	WC Cistern	0.13	0.10 plus Strainer	0.10
	Washing Machine ³	0.20	0.2	0.15
	Dishwasher ³	0.15	0.13	0.10

Notes

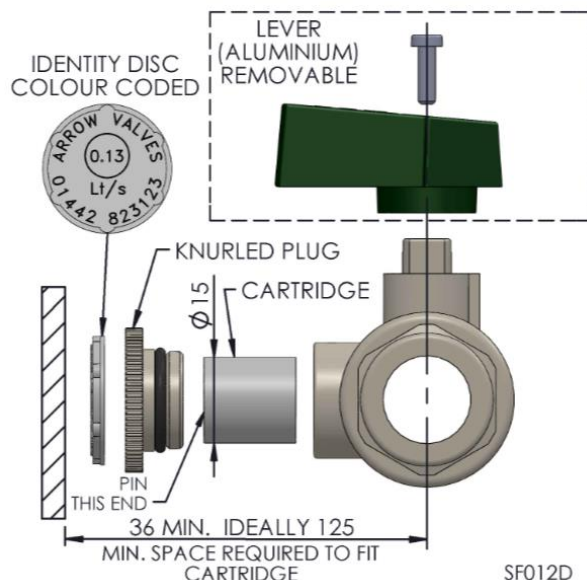
1. Min. and max. flow rates from BS6700 1997 Table 3.
2. Arrow Valves suggested rate based on compromise between max. and min. BS6700 design flow rates.



Illustration of long-nosed pliers removing a Cartridge in service

Water Regulations

Clause G11.1 deals with the provision of servicing valve for appliances. G11.2 requires the valve to be as close as practical to the appliance. G11.3 allows spherical valves to be used. R25.6 requires a strainer to be fitted upstream of compact WC Float Valves (as used in modern cisterns).



Automatic Flow Limiting Cartridges

Fit all sizes. Supplied with Identity Disc

Description	Code ²	Colour (new)	Flow Rate				Pipe Velocity ¹	
			Lt/s	Lt/min	m ³ /hr	Gal/min	m/s 15	m/s 22
AFLC07		Light Grey	0.07	4	0.24	0.88	0.46	0.21
AFLC10		Black	0.10	6	0.36	1.32	0.69	0.31
AFLC13		White	0.13	8	0.48	1.76	0.92	0.42
AFLC17		Blue	0.17	10	0.60	2.20	1.15	0.52
AFLC20		Red	0.20	12	0.72	2.64	1.38	0.62
AFLC25		Lime Green	0.25	15	0.90	3.30	1.72	0.78
AFLC28		Grey	0.28	18	1.02	3.74	1.95	0.88
AFLC43		Purple	0.43	26	1.56	5.68	3.00	1.35

Notes

1. Pipe velocity based on bore of 15 & 22 mm copper tube, table X
2. To specify Strainer inside AFL Cartridge, add suffix S to code. A strainer is not necessary to protect an AFL Cartridge.

Strainer Cartridge

Size	Code	Description
All	AFLS260	Strainer only Cartridge (260 µm / 60 mesh) ID

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