

# *ECO Friendly!*

# **SUPRION<sup>®</sup>**

## **WATER TREATMENT DEVICE**

- \* Environmentally friendly zero carbon footprint
- \* Operator fool proof and self-energising with no power supply, magnets or coils
- \* No commissioning required
- \* Generally maintenance free with no filters or chemicals to replenish
- \* No electrolysis and diminishing performance evident with sacrificial electrode designs
- \* Clear and open tube construction with no flow restriction or pressure drop
- \* Standard progressive range of sizes from 10 to 450mm diameter
- \* EH prefix models specifically designed for electrically heated appliances



# **AQUAFLOW**

# AQUAFLOW SUPRION® WATER TREATMENT DEVICE



## JACK IBBOTT (1921-2004) - Scientist and Inventor of the SUPRION

Born in Australia Jack entered into electro and mechanical engineering after graduation from HOBART University and pioneered development procedures of Piezoelectric crystal production. His interest in water and inherent problems associated with dissolved mineral salts commenced in 1990 and embarked on a mission to produce a treatment device that involved considerable research and many thousands of laboratory experiments.

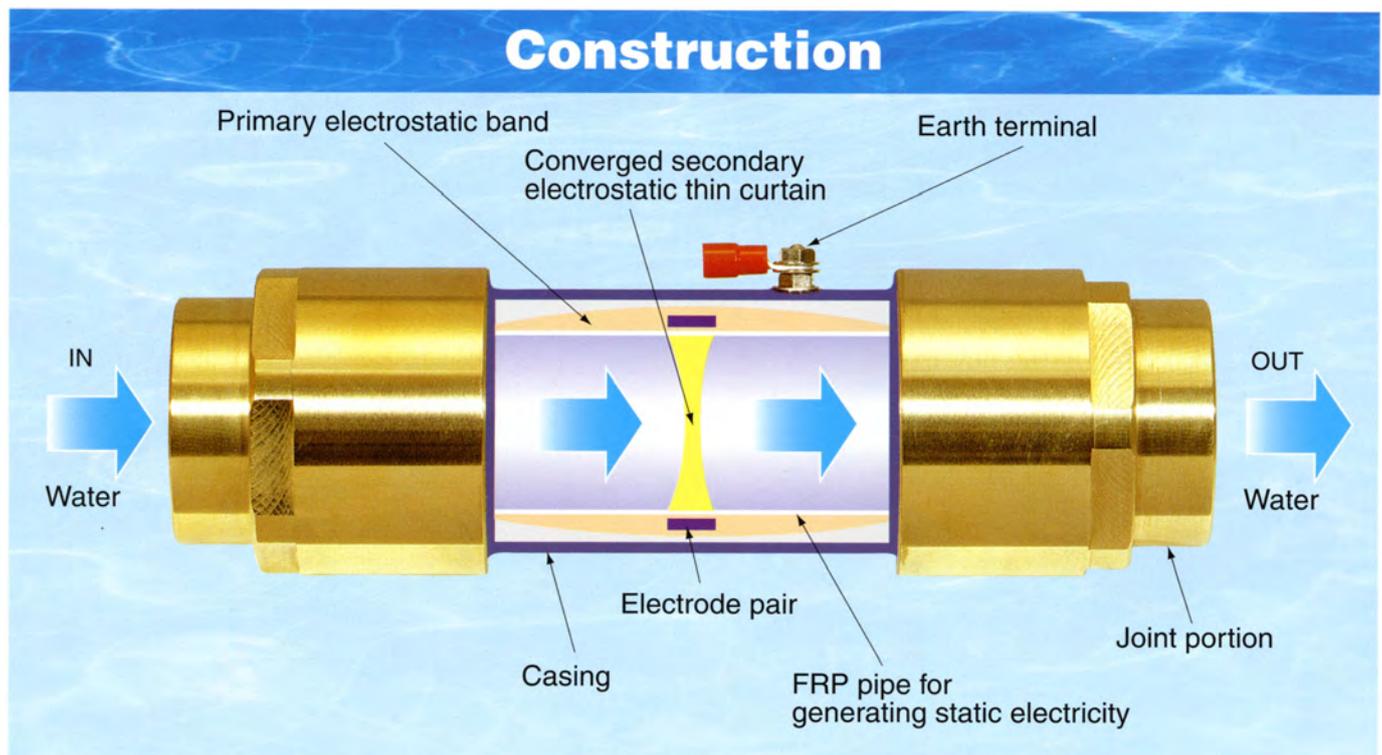
## Electrostatic applied Water Treatment Device **SUPRION**® ECO Friendly!

Scale deposition as a result of naturally hard water inherent with most water supplies will eventually cause potentially expensive and/or inconvenient essential maintenance, premature equipment replacement and reduced energy efficiency, together with a potential health hazard by providing the areas and nutrients where bacteria can accumulate.

The SUPRION is a remarkable advanced water treatment device that enhances hydration between water molecules and dissolved calcium, magnesium and silica mineral salts, and incorporates a unique self generating electrostatic field design feature with no dedicated external power supply.

Long term operating and process benefits will be evident since the water is not in direct contact with the non sacrificial electrodes and will reduce chemical dosing in cooling systems

- \* The SUPRION has patents granted in the US, Europe, Asia, and Japan
- \* WRAS approved for drinking water applications
- \* British Gas endorsed on technology and performance



### \* Nonconductor Resin Tube (Epoxy FRP)

Frictionless contact between the resin tube and water ensures the flow and pressure are not restricted with excellent resistance to corrosion only requiring occasional cleaning to maintain optimum performance.

### \* Electrode

Combined electrode rings with carbon and aluminium are placed around the outer periphery of the resin tube. Because the electrode does not contact with water, the effect can be maintained for long term without any damage or corrosion.

### \* Body

The electrode chamber is integrated in a sealed body and not subject to external electrical influence or humidity.

### \* Pipe Connection

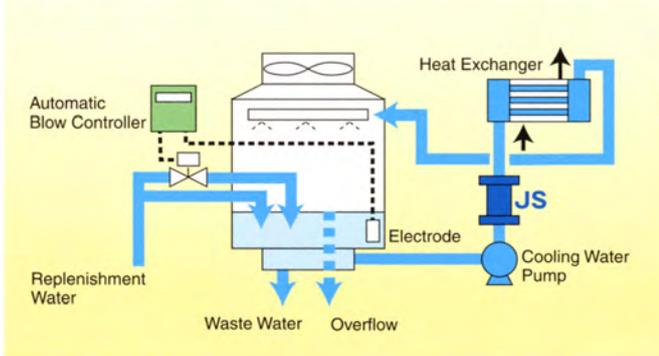
Compression, female threaded or flanged connection on larger models.

### \* Earth Terminal

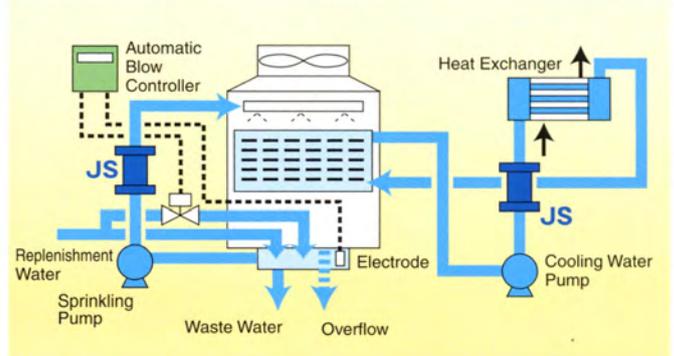
It is required to release static electricity generated in the body. The grounding is not necessary when SUPRION is connected to metallic pipe at either or both joints. The earth terminal is provided on the downstream side of SUPRION, thereby it can be used as a reference of installation, when the arrow label is missing or illegible.

## EXAMPLE USES OF SUPRION

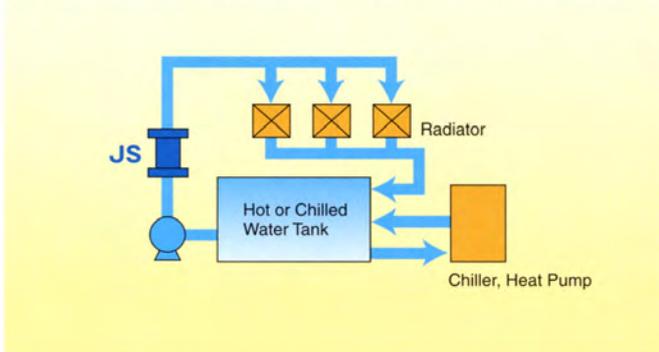
### 1 Opert-type Cooling Tower



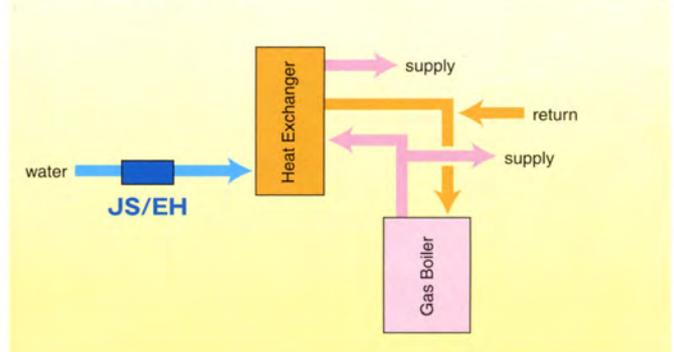
### 2 Closed-type Cooling Tower



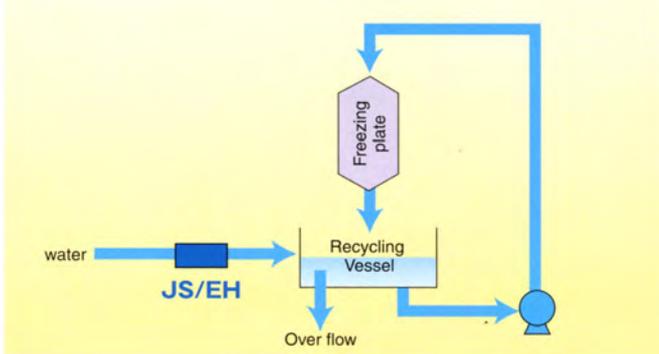
### 3 Hot and/or Chilled Water Circulating Line



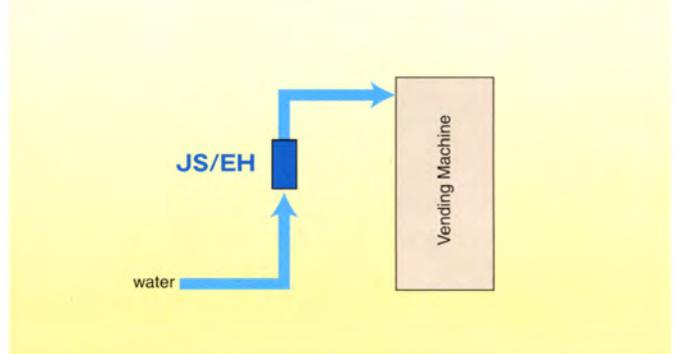
### 4 Water Heater



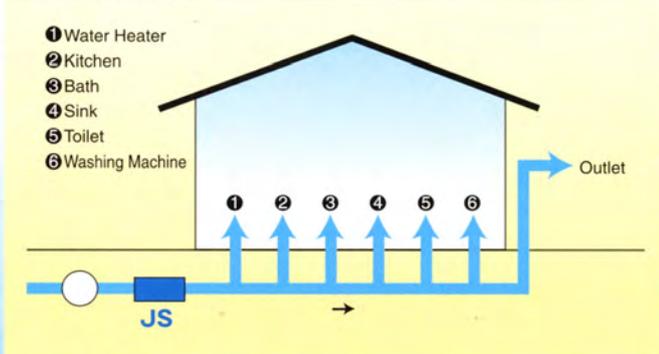
### 5 Ice Machine



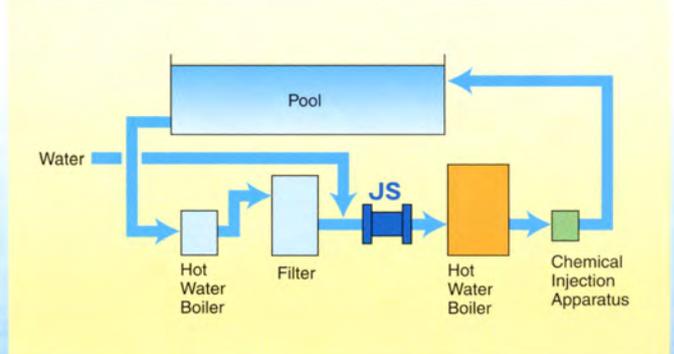
### 6 Vending Machine



### 7 Home use

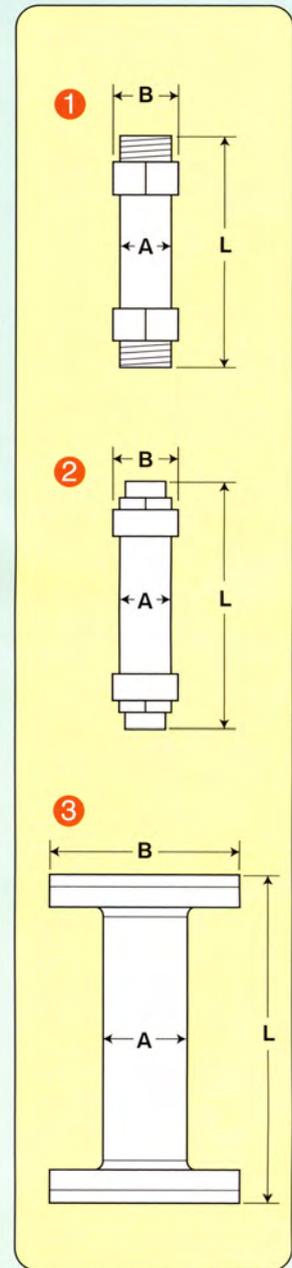


### 8 Swimming Pool



■ Dimensions and weight of SUPRION (Withstand pressure: 1.0 MPa)

Type	A mm	B mm	L mm	Connectable pipe		Weight	Shape
				mm	inch		
JS-38E12 EH-38E12	17.5	22.0	108	10	3/8	150g	①
JS-12E15 EH-12E15	22.0	25.0	115	15	1/2	200g	
JS-75E22 EH-75E22	27.2	32.0	94	20	3/4	265g	
JS-50	27.0	32.0	100	15	1/2	320g	②
JS-75	34.0	38.0	142	20	3/4	570g	
JS-100	42.7	50.0	165	25	1	930g	
JS-125	48.5	59.0	213	32	1-1/4	1,680g	
JS-150	60.5	70.0	248	40	1-1/2	2,270g	
JS-250	89.0	185.0	229	50 65	2 2-1/2	10.6kg	③ Dimensions do not include welding flanges
JS-400	139.9	250.0	193	80 100	3 4	18.4kg	
JS-600	216.0	330.0	267	125 150	5 6	32.4kg	
JS-800	267.0	400.0	345	200	8	52kg	
JS-1000	318.5	445.0	412	250	10	63kg	
JS-1200	355.6	490.0	494	300	12	85kg	
JS-1400	407.0	560.0	387	350	14	113kg	
JS-1600	457.0	620.0	446	400	16	140kg	
JS-1800	508.0	675.0	494	450	18	170kg	



■ Precautions

- Specifications are subject to change without notice for the purpose of products improvement.
- Products of flange type ③ are shipped with corresponding welding flanges.
- EH type models prevent formation of scale on an immersion-type electric heater for heating water.
- JS type models are used for general purpose water treatment; i.e., treatment other than that performed by use of EH type models.
- JS-38E12 and EH-38E12 have a withstand pressure of 0.5MPa.

## ■ Dimensions and weight of welding flange (Withstand pressure: 1.0MPa)

Type	Connectable pipe mm	Flange hole mm	Flange thickness mm	Bolt Hole mm	Number of bolt holes	Seal packing thickness mm	Bolt size	Weight kg	Connection Screw Welding
JS-250	50	56.0	18	19	8	3	M16×75	3.1	Thread
	65	72.0						2.9	
JS-400	80	90.0	20	23	8	3	M20×80	6.1	Welding
	100	115.4						5.4	
JS-600	125	141.2	22	23	12	3	M20×85	11.3	Welding
	150	166.6						10.1	
JS-800	200	218.0	24	25	12	3	M22×90	15.5	Welding
JS-1000	250	269.5	24	25	16	3	M22×90	17.9	Welding
JS-1200	300	321.0	26	25	16	3	M22×95	20.1	Welding
JS-1400	350	358.1	28	27	16	3	M24×120	30.1	Welding
JS-1600	400	409.0	30	27	20	3	M24×120	37.6	Welding
JS-1800	450	460.0	30	27	20	3	M24×120	39.0	Welding

- SUPRION products are shipped with bolts, nuts, packings and flanges.
- JS-250, 400 and 600 each fit two sizes of welding flanges. Please specify the proper size.
- Welding flanges for JS-250 are of screw-type, and those for other models are of weld type. Weld-type welding flanges are also available for JS-250, and screw-type welding flanges are also available for JS-400.

## ■ Pipe size and volumetric flow rate (Standard flow rate)

Pipe size	3m/sec		2m/sec		Pipe size	3m/sec		2m/sec	
	ℓ/min	m <sup>3</sup> /hr	ℓ/min	m <sup>3</sup> /hr		ℓ/min	m <sup>3</sup> /hr	ℓ/min	m <sup>3</sup> /hr
½B	36.6	2.2	24.4	1.5	3B	920.0	55.2	614.0	36.8
¾B	65.9	4.0	43.9	2.6	4B	1,567.0	94.0	1,045.0	62.7
1B	108.0	6.5	72.0	4.3	5B	2,420.0	145.0	1,610.0	97.0
1-¼B	180.0	10.8	120.0	7.2	6B	3,400.0	204.0	2,270.0	136.0
1-½B	245.0	14.7	163.0	9.8	8B	—	—	3,950.0	237.0
2B	395.0	23.7	264.0	15.8	10B	—	—	6,090.0	365.0
2-½B	652.0	39.1	434.0	26.1	12B	—	—	8,750.0	525.0

Hard water as a result of dissolved mineral salts naturally occurring in the majority of water supplies may be good for your health, but can prove potentially expensive and inconvenient in respect of essential maintenance or premature equipment replacement as a result of accumulated scale deposits, or even a health hazard by creating the areas and nutrients where bacteria can colonise.

Traditional Salt based ion-exchange water softening or some of the more recent innovative media processes are the only **guaranteed** protection from hard water, since the hardness salts are removed at “point of treatment”. However, all require space, capital investment, after sales service and management. There may also be logistical and/or practical issues in providing untreated bypasses for **potable** applications, particularly in commercial situations, albeit **essential** in conjunction with Laundry/Dishwashing Machines and/or steam generating or other comparable total evaporation processes.

Despite intensive **R & D** in the development of alternative water conditioners/scale inhibitors over the last decade, the subject is still contentious and there are numerous systems now available with varying operating parameters comprising hydro magnetic, electro magnetic, permanent magnetic, ultra-sonic, electric field, Electrostatic, Electrolytic, catalytic and so on, some have even used radio waves. However, all are designed to maintain “mineral suspension” and most effective when the water is constantly flowing.

Selection can however be challenging as a result of over enthusiastic sales claims, inappropriate applications or simply inferior technology and some are seriously expensive with micro processors, programming, commissioning and potential **BMS** options.

In the absence of any empirical evidence or definitive conclusions published by independent recognised bodies, **British Gas** conducted their own investigative product comparison evaluations several years ago, subsequently **endorsed** performance of the **SUPRION** and now installed over **70,000** units for protection of water heating appliances.

Full technical details and sample applications have been illustrated, together with a presentation explaining the inherent technology in development of the **SUPRION** – drawing your attention to the numerous **unique** design features and long term operating benefits:

- \* **Environmentally friendly zero carbon footprint**
- \* **Operator fool proof with self-energising design**
- \* **No power supply, magnets or coils**
- \* **No micro-processors with potential BMS requirement**
- \* **No commissioning required**
- \* **Generally maintenance free with no filters or chemicals**
- \* **No electrolysis evident with sacrificial electrode designs**
- \* **Clear and open tube construction with no flow restriction or pressure drop.**
- \* **Standard progressive range of sizes from 10 to 450mm diameter**
- \* **EH prefix models specifically designed for electrically heated appliances**
- \* **WRAS approved for drinking water applications**
- \* **Five year manufacturer's warranty - minimum ten years operation**
- \* **British Gas endorsement on performance**
- \* **Simple installation with either compression, screwed or flanged ends**
- \* **No minimum linear length before/after elbows, tees etc**
- \* **Vertical or horizontal orientation**

There are numerous and more obvious wide ranging situations where water is heated and calcium precipitation occurs, but **ICE-MAKERS** and/or **REFRIGERATED WATER DISPENSERS** have proved a particularly economic, practical and effective application since the internal areas provide the perfect environment for bacteria if not regularly maintained, de-scaled or appropriate treatment included to the feed water supply; artificially softened water should **not** be used as the sodium concentration is increased as a result of the "ion-exchange" process and not therefore compliant with **PCV's** (prescribed concentration values). Water Softeners can also be subject to bacterial contamination if not regularly serviced and chlorinated.

Standard carbon filters will only remove dirt, rust, sediment taste and odour and the addition of polyphosphates will apply a film to internal waterways to inhibit scale formation, albeit not guaranteed.

Reverse Osmosis (RO) will certainly prove effective, but not generally practical unless available from a central plant and food grade resin based systems can prove extremely expensive to maintain a calcium free supply, especially in respect of single feed "self flushing" machines.

The **SUPRION** was first trialed in this context at **The London Hilton** back in 1990 on a common manifold supplying several Banqueting Ice-Makers and resolved regular quarterly scale related issues, resulting in additional large units being incorporated during plant room refurbishments.

It was then adopted by **FOSTER REFRIGERATOR** being one of the **UK's** most reputable and respected refrigeration equipment manufacturers and fitted to Ice-Makers in a major high street restaurant chain throughout the **UK**.

Although not published, there have been other less obvious applications and benefits of the technology and "ionised" water including:

#### **ORCHID GROWERS**

Enhanced blooms have been recorded with similar strains and controlled nutrient feed water, one being passed through a **SUPRION**

#### **KOI CARP ENTHUSIASTS**

A better environment with water circulated through a **SUPRION**

#### **WINE & WHISKEY**

Have seemingly matured a year for every 24 hour circulation through a **SUPRION**