AQUARIUS
TECHNOLOGIES PTY LTD
WATER QUALITY CONTROL

Quality System
Quality Endorsed Company ISO 9001 Lic. No. 5403

AQUARIUS
Corrosion Coupon Racks

Corrosion Coupon Racks for the determination of Corrosivity of Water by evaluation of Pitting and by Weight Loss on Flat Metal Specimens

- √ For 80 x 13 x 1.6 mm Flat Specimens
- √ Rated to 1000 kPa. @ 50 ^{0}C Max. in PVC or
- √ Rated to 1000 kPa. @ 100 ^{0}C Max. in MS
- √ Models for 4 Coupons
- √ Models for 2 Coupons
- √ Velocities of 0.5 - 2.00 m/s.
- √ Similar to ASTM rack
- √ PVC Backing Board
- √ With or Without Isolation Valves

CCRACK 2

AQUARIUS TECHNOLOGIES PTY LTD ABN 94010 393 254
P.O. BOX 71, COOPERS PLAINS, Q. 4108
UNIT 1, 23 RICHLAND AVENUE, COOPERS PLAINS, Q. 4108
TELEPHONE: (07) 3274 4750 FAX: (07) 3274 4736

Aquarius Corrosion Coupon Racks

The ***Aquarius Corrosion coupon exposure racks*** are designed to retain the coupons in the laminar flow region and away from the turbulent flow areas around the Tee sections. The velocity across the coupons can be controlled via the isolation valves to represent flow conditions and velocities in heat exchangers.

Properly prepared and pre-weighted coupons or specimens of the metal of interest and approx. 75 - 80 mm in length and 13 mm width, and 1 - 2 mm thick are attached to the coupon holder via plastic screws and retaining nuts and the coupon holder screwed into the pipe rack, the specimen being held in the centre of the flowing stream and free from all but flowing debris.

As the pipe internal diameter is 22.5 mm the velocity across the specimens can be calculated by measuring the litres per minute flow through the rig with the coupons fitted.

Flow Rate Lts./min.	***Velocity m/sec***
5.92	0.25
11.84	0.50
23.68	1.00
35.52	1.50

or ***Its/min. Flow / 23.68 = Metres/second velocity***

Changes in thickness from the 2 mm thick specimens in the calculations above, to 1.0 mm thick, reduce the velocity by only 2.5% and in most cases can be ignored, or the flow rate readjusted.

System pressure should remain constant to maintain the desired velocity, or if velocity is set similar to the heat exchanger velocity then any variance in pressure and change in velocity is experienced by both and is indicative of corrosion rates under actual operating conditions.

For more information refer to ***ASTM D2688 - Standard Test Methods for Corrosivity of Water in the Absence of Heat Transfer (Weight Loss Methods)***

Units are supplied WITHOUT the actual metal specimens.

Guidelines for Installation of CCRACKS to comply with the requirements of ASTM D2688

ASTM D2688 – Standard Test Methods for Corrosivity of Water in the absence of Heat Transfer (Weight Loss Methods) is the recognised standard for corrosion monitoring by exposure of metallic coupons and measuring the weight loss over a period of time.

ASTM D2688 states in paragraph 15.6 as follows:-

"Adjust the flow of water in the test piping to a rate that gives a flow velocity that corresponds to the normal flow in those parts of the system under prime consideration. Normally the flow velocity will be in the range 0.6 m/sec to 1.8 m/sec (2 – 6 ft/sec). Check and adjust the flow as necessary to maintain the desired rate"

The Aquarius CCRACK corrosion racks are designed to comply with ASTM D2688 and require flow rates of 14.21 lts/min to provide 0.6 m/sec velocity up to 42.62 lts/min to give 1.8 m/sec flow velocity.

It is strongly recommended that CCRACK's be installed **on an entirely separate 20 mm take off point (with isolation valve) from the condenser water header,** and NOT plumbed in series or in parallel with the Water Treatment Controller manifold, as the ON/OFF operation of bleed solenoids or BCD solenoids are very likely to cause variation in flow rates in CCRACK.

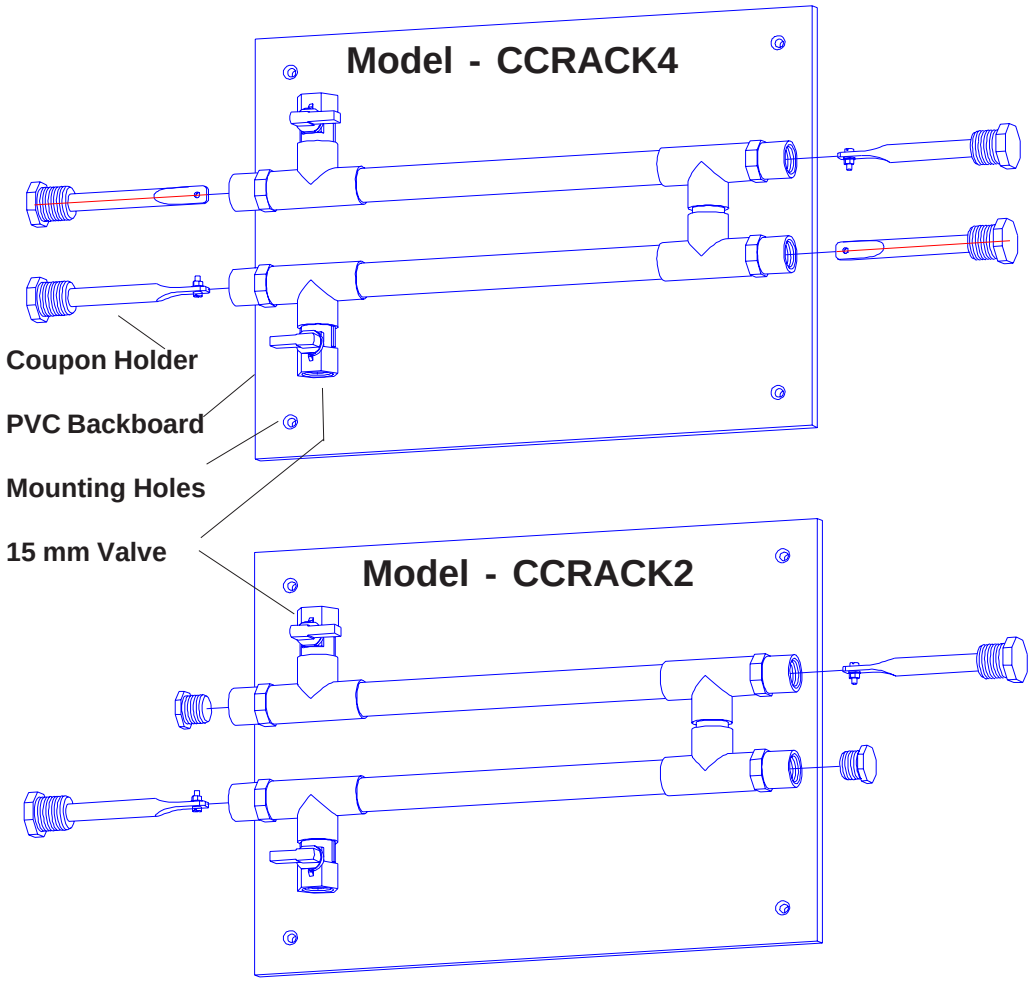
Where high velocities and flow rates are required e.g. 35.52 lts/min at 1.5 m/sec or where low pressure exists in the condenser header it will be necessary to install a booster pump to ensure the required flow and velocity is maintained.

Where a suitable circulation pump is installed and with a pressure regulator – the 25 mm discharge should be Tee'd off at 20 mm each to provide a separate water supply to each of the CCRACK and the Water Treatment controller, and with separate returns back to the cooling system.

The KPI v3 is provided with an automatic control valve to ensure a constant set velocity across the corrosion specimens but again sufficient pressure and flow are required to meet the set flow velocity.

A full copy of ASTM D2688 can be purchased from Standards Australia.

Aquarius Corrosion Coupon Racks



MODELS AVAILABLE

Model - CCRACK2 = With 2 coupon holders and two 15 mm plugs + inlet & outlet valves. Rated to 1000kPa pressure and 50^{0}C. Manufactured using PVC pipe and fittings. Coupon holders constructed from PVC rod.

Model - CCRACK4 = With Four Coupon Holders + inlet and outlet valves. Rated to 1000kPa pressure and 50^{0}C. Manufactured using PVC pipe and fittings. Coupon holders constructed from PVC rod.

Model - CCRACK2_HT = With 2 coupon holders and two 15 mm plugs + inlet & outlet valves. Rated to 1000kPa pressure and 100^{0}C. Manufactured using Galvanised steel pipe and fittings. Coupon holders constructed from Glass filled Teflon rod.

Model - CCRACK4_HT = With 4 coupon holders and two 15 mm plugs + inlet & outlet valves. Rated to 1000kPa pressure and 100^{0}C. Manufactured using Galvanised steel pipe and fittings. Coupon holders constructed from Glass filled Teflon rod.

MANUFACTURER'S PRODUCT WARRANTY

AQUARIUS TECHNOLOGIES PTY LTD. manufactures a range of equipment under a Quality Assurance system to ISO9001:1994 standards and warrants equipment of its manufacture to be free of defects in material or workmanship.

Liability under this policy extends for 12 months from the date of installation, or 24 months from the date of shipment from our factory, which ever occurs first. The manufacturer's liability is limited to repair or replacement of any failed equipment or part of, which is proven to be defective in material or workmanship upon the manufacturer's examination. This warranty does not include removal or installation costs and in no event shall the manufacturer's liability exceed its selling price of such equipment or part.

Aquarius Technologies Pty Ltd. disclaims all liability for damage to its products through improper installation, maintenance, use or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any unauthorised repair. Aquarius Technologies Pty Ltd. will not be responsible for any consequential or other damages, injuries, or expense incurred through use of its products.

This warranty is in lieu of any other warranty, either expressed or implied. Aquarius Technologies Pty Ltd. make no warranty of fitness or merchantability. No agent of ours is authorised to provide any warranty other that above.

This warranty does not exclude any condition or warranty implied by the Trade Practices Act 1974 or separate State Laws in Australia and is in addition to any other right that the original purchaser or any subsequent purchaser may have under Australian law.

Should a unit fail to function normally, please contact our Customer Service Department by phone or fax quoting, Model Number, and Serial Number, for initial discussion of the problems encountered, and if it is necessary to return the item to the factory, a Return Authorisation number will be given to facilitate return, and repair or replacement of the item.

The Item for return should be carefully packaged to prevent any damage in transit, contain the Return Authorisation identification number, customer identification, and return delivery details, and the freight prepaid to our factory. If in the opinion of our factory, after examination, the failure was due to materials or workmanship, repair or replacement will be made with out charge for parts, labour and return freight. A reasonable service charge will be made for diagnosis and/or repairs due to normal wear, abuse, tampering or damage in transit.

AQUARIUS TECHNOLOGIES PTY Ltd. reserve the right to continue development and improvement of the entire range of our equipment, and therefore minor changes may occur due to these improvements and the continuing development.