



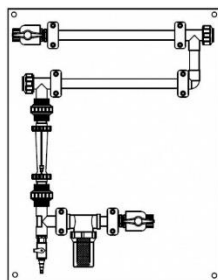
## Corrosion coupon installation and monitoring

Corrosion coupons provide an inexpensive means of on-line monitoring that will allow you to effectively measure the corrosivity within your system.

**Accurate monitoring of corrosion rates** in any environment is critical when viewed in terms of the maintenance and repair costs associated with corrosion and material failure.

**Corrosion coupons are a uniform-sized, pre-weighted strip of metal** that is representative of the metallurgy in the recirculating water system. These coupons can be installed in a corrosion coupon test rack in the system that is being checked. The coupons are then removed and returned to the laboratory for where they are cleaned and re-weighted. From the measured weight loss, a corrosion rate in mils/year (mpy) is determined. 1.0 mil/year translates into 1/1,000 of an inch of metal loss per year.

**The accepted exposure time** as recommended by the **AWT (Association of Water Technologies)** is a minimum of **90 days**. Coupons may be observed at 30 days' intervals for reference and signs of corrosive conditions, however shorter periods of time usually result in higher observed corrosion rates due to the high initial metal loss until the metal surface acquires passivation.

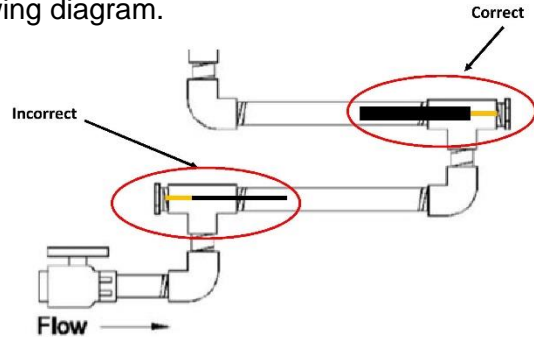


A **flow meter** or other type of flow control device is recommended.

**The flow should be adjusted** so that there is no turbulence of air mixture. To avoid erosion, a flow rate of 3-5 feet per second is recommended. That translates into;

- 5-7 gpm flow for 3/4" coupon racks
- 7-12 gpm flow for 1" coupon racks

The **large flat face of the coupon** must be installed vertically inside the test rack as indicated in the following diagram.



Due to the **galvanic series of different metallurgy**, the coupons must be installed in the following order when using multiple types of metal coupons:

### Direction of flow

- Aluminum
- Galvanized
- Mild Steel
- Brass
- Copper
- Nickel
- Stainless Steel

### Interpreting the corrosion coupon results

#### Cooling Towers – AWT Standards for HVAC

| Mild Steel  | Copper      | Comment             |
|-------------|-------------|---------------------|
| <0.50 mpy   | <0.10 mpy   | Excellent           |
| 0.5-1.0 mpy | 0.1-0.2 mpy | Very Good           |
| 1.0-2.0 mpy | 0.2-0.3 mpy | Good                |
| 2.0-3.0 mpy | 0.3-0.5 mpy | Moderate to Fair    |
| 3.0-5.0 mpy | 0.5-1.0 mpy | Poor                |
| >5.0 mpy    | >1.0 mpy    | Very Poor to Severe |

#### Closed Loops – AWT Standards

| Mild Steel  | Copper      | Comment   |
|-------------|-------------|-----------|
| <0.20 mpy   | <0.10 mpy   | Excellent |
| 0.2-0.5 mpy | 0.1-0.3 mpy | Good      |
| 0.5-1.0 mpy | 0.3-0.5 mpy | Fair      |
| >1.0 mpy    | >0.5 mpy    | Poor      |

Your Pace Technical Representative can advise you on all your water treatment and corrosion coupon monitoring requirements.