



Corrosion Test Coupon Racks

BetzDearborn Corrosion Test Coupon Racks provide a convenient means of monitoring the progress of corrosion in systems such as boilers, condensate lines, open recirculating cooling water, closed circulating hot or chilled water systems, etc. The corrosion test rack creates a side stream off the main system in which corrosion test coupons can be exposed to system water under controlled and reproducible conditions.

The corrosion coupons can be periodically removed and either visually examined or returned to the laboratory for determination of weight loss, corrosion rate, and pitting severity.

BLACK IRON CORROSION RACK

The Black Iron Corrosion Rack is recommended for corrosion monitoring in high temperature and/or high-pressure installations such as steam condensate, high temperature water, hydronic heating, recirculating process systems, etc. The Black Iron Rack is constructed of 1" threaded black iron pipe. It is supplied with four 1" MNPT steel mounting plugs, and one 10 gpm Dole™ flow control valve. Caution: Maximum pressure & temperature are limited by the Dole flow control valve.

Maximum Pressure: 200 psig (13.8 bar)

Maximum Temperature: 160° F (71° C)

PVC CORROSION RACK

The PVC Corrosion Rack is recommended for corrosion monitoring in low temperature systems such as open recirculating cooling water systems, chilled

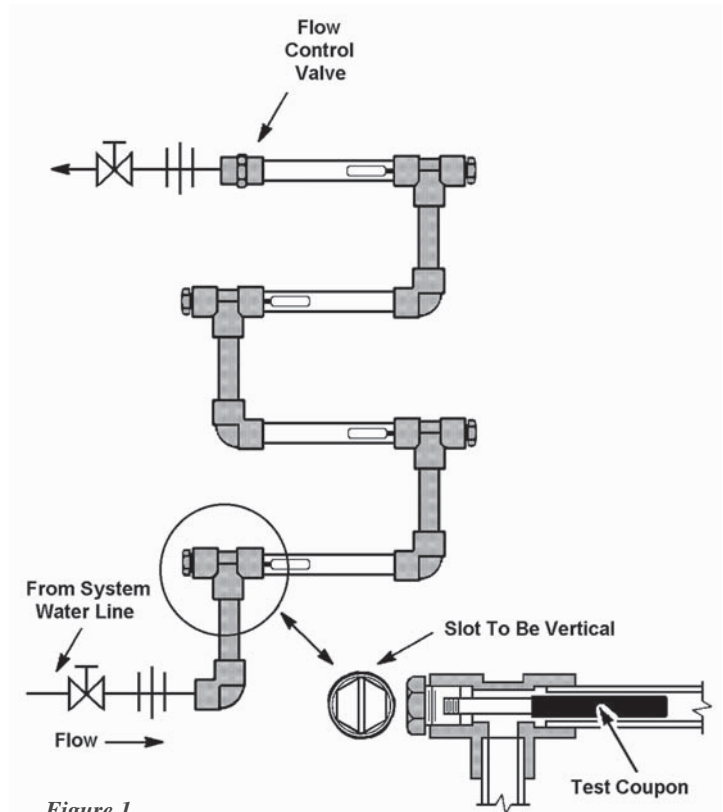


Figure 1

water, process water systems, etc. The PVC Rack is constructed of 1" threaded Sched. 80 PVC pipe. It is supplied with four 1" PVC mounting plugs and an 8 gpm Dole™ flow control valve. Two designs are available. One is constructed of all gray, opaque PVC. The other features transparent pipe sections for viewing the test coupons in place. See Figures 1 & 2. To discourage algae growth in the transparent sections, opaque snap-on pipe covering is supplied with this corrosion rack.

FLOW RATE	VELOCITY	
	1" PVC Rack	1" Black Iron Rack
5 gpm	2.2 ft/sec (0.67 m/sec)	1.9 ft/sec (0.58 m/sec)
8 gpm	3.6 ft/sec (1.1 m/sec)	3.0 ft/sec (0.91 m/sec)
10 gpm	4.5 ft/sec (1.4 m/sec)	3.7 ft/sec (1.3 m/sec)
12 gpm	5.4 ft/sec (1.6 m/sec)	4.4 ft/sec (1.4 m/sec)

Maximum Pressure:	200 psi at 70° F (13.8 bar at 21° C)
	120 psi at 120° F (6.9 bar at 49° C)
	70 psi at 140° F (4.8 bar at 60° C)

FLOW VS VELOCITY CHART

Velocities in **BOLD** indicate standard flow controller supplied with that rack. For other available Dole flow control valves, see Equipment Fact Sheet EF15-07.

OPTIONS

A Corrat[™] probe may be installed in the corrosion rack to provide instantaneous corrosion readings to supplement the data provided by the weight loss corrosion coupons.

CORROSION TEST RACK INSTALLATION

1. The Corrosion Test Rack may be assembled for vertical mounting as shown in Figure 1, or a horizontal position, Figure 2. Items shown in single line schematic are not furnished.
2. Attach the corrosion rack to a wall or column. **DO NOT** suspend it from the supply and return piping alone.
3. To avoid air binding, pipe the corrosion rack so that water will flow upward through it, and in such a way that it will remain full of water at all times and not backdrain when the main recirculating system shuts own.
4. Install gate or ball-type isolation valves of both sides of the rack.
5. **DO NOT** use this bypass loop for any other purpose such as chemical injection, or mounting of conductivity or pH sensors.

6. For measurement of corrosion at points of highest temperature in the circulating system, the water supply to the corrosion rack should be from the exit of the heat exchanger(s). Average corrosion rate measurements may be obtained by supplying the corrosion rack with water from the main cooling tower riser, etc.
7. Return water may be piped to the recirculating pump suction header, cooling tower basin, or other suitable point with sufficiently low pressure to insure flow through the rack.
8. Flow velocities should not be variable. Avoid extremely high or low velocity conditions. A Dole[™] or other suitable flow control valve is recommended to insure constant velocity.
9. For PVC Test Racks with transparent viewing sections, install the slotted polyfoam pipe insulation over the transparent sections to discourage algae growth.

CORROSION TEST COUPON INSTALLATION

1. Keep the metal test coupon in the special treated envelope **BEFORE AND AFTER** exposure.
2. **DO NOT** leave fingerprints on the coupon. They will cause false corrosion readings.
3. Attach the coupon to the mounting stud using the special nut and bolt provided.

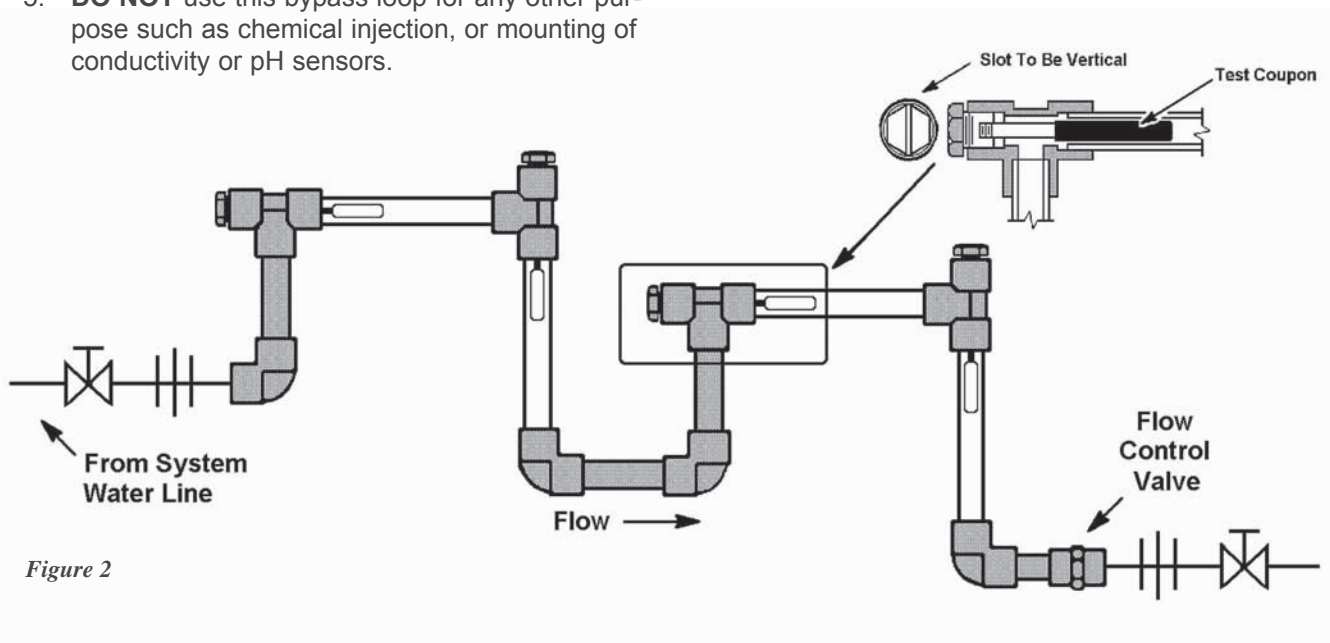


Figure 2

4. Corrosion coupons should always be installed so the water flow first over the plastic mounting rod and then over the coupon. Water flowing directly onto the coupon may cause erosion-corrosion and lead to false weight loss measurements.
5. Use **ONLY** Teflon™ thread sealing tape on mounting plug threads. **DO NOT** use pipe dope.
6. The witness slot on the coupon mounting plug should be parallel with the flat surface of the corrosion test coupon. Install the mounting plug in the tee and align the witness slot (and coupon) in the **VERTICAL** position as shown in Figure 1.
7. Note the date of installation on back of the white Tyvek™ Coupon Return Envelope (ENG 322) and retain both the Coupon Return Envelope and the treated brown envelope.
8. When removing, each test coupon should be carefully dismantled from the holder and immediately dried with a blast of hot air or blotted with a paper towel or clean rag. **DO NOT CLEAN.** Reinsert the coupon in the treated brown envelope in which it was received.
9. Complete the back of the white Coupon Return Envelope, insert the treated brown envelopes with coupons inside, and return the envelope with the coupons to the Woodlands laboratory.

Part Numbers

- 2013971 Corrosion Rack, PVC, 1" NPT, w/ 4 coupon holders & 8 gpm flow control valve.
- 2042205 Corrosion Rack, PVC, 1" NPT w/ 4 coupon holders, 8 gpm valve and 4 TRANSPARENT viewing sections.
- 2029978 Corrosion Rack, Black Iron, 1" NPT, w/ 4 coupon holders & 10 gpm flow control valve.
- 2032806 Corrosion Rack, 304 SS, 1" NPT, w/ 4 coupon holders.
- 2015850 Replacement Coupon Holder, 1" PVC w/ 6" stem.
- 2041977 Replacement Coupon Holder, 1" Black Iron w/ 6" Teflon™ Stem and Teflon nut & Screw

Corrosion test coupons and mounting screws are not supplied with the corrosion rack and must be ordered separately from the BetzDearborn Woodlands, TX laboratory.