

## Technical Service Bulletin 120717

### COOLING SYSTEM PREPARATION/CLEANING

Service Bulletin 120717 applies to all Comark DCX and \*Paragon transmitters.

Use this procedure for any of these three conditions with a cooling system:

- 1) A new cooling system is being prepared for use or
- 2) The existing cooling system has had any major modifications or
- 3) An existing cooling system has become contaminated for any reason.

\*If the reason for flushing your cooling system is not one of the three reasons listed above, please refer to **Service Bulletin 030629: Cooling System Flush** – this is the “typical” flush procedure.

#### Overview

Cleaning of the cooling system prior to attaching the IOT is accomplished by running a mixture of 1% concentration of X800 or X300 from Sentinel through the cooling system at a temperature of approximately 120 degrees F. During this process, the IOTs and RF load must be bypassed. A portable propane heater may be used to heat the solution to temperature. Successive “clean” flushes are performed to remove the X300/X800 from the cooling system.

#### Preparation

Purchase enough distilled or de-mineralized water to fill the cooling system to capacity for at least three flushes and the final fill. The use of other types of water is not suggested and may void the IOT manufacturer’s warranty.

For example, a cooling system that has a capacity of 150 gallons would need 450 gallons (3 x 150) for the flushes. If the final fill was to be 50% mixture of Dowtherm SR-1, 75 gallons (150 x 0.5) of water would be needed. The total amount of water would be 525 gallons (450 + 75).

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**IMPORTANT:** Prepare the solution by mixing 1.28 ounces of X800 or X300 per 1 gallon of water. The solution should be premixed using hot water before adding it to the system. DO NOT pour the X800/X300 directly into the cooling system! It may not dissolve properly and deposits may remain in the cooling system.

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For example, if a cooling system has a capacity of 150 gallons,  $150 \times 1.28 = 192$  ounces of X300 would be needed. A clean 5 gallon bucket should be used to premix the solution.

The temperature of the cooling system can be elevated by turning off the fans to the heat exchanger, covering the top and 3 sides with a tarp, and directing the heat toward the heat exchanger.

\*For Water/Glycol portion of cooling system only. **DO NOT perform on “Oil” side.**

**Instructions**

- 1) Make sure the IOTs and liquid cooled RF loads have been bypassed.
- 2) The easiest way to premix the solution is to fill the cooling system with distilled water and heat (using the portable heater) until it reaches 120 degrees. (NOTE: Perform checks on the flow rates and trip systems at this time.)
- 3) Using a clean 5 gallon bucket, drain off a few gallons. Pour half the predetermined amount of X300/X800 into the bucket and stir with the hot water until dissolved. The solution can then be poured into the cooling system. Repeat the process with the remaining half.
- 4) After adding the solution of X300/X800, run the system for at least 2 hours, preferably 3 hours with external heat applied.
- 5) Drain the system completely per the manufacturer's instructions.
- 6) After the solution has been completely drained from the transmitter, close the drains and refill with distilled water only.
- 7) Run with heat for another ½ hour.
- 8) Flush, drain and again refill with distilled water only, purge the air and run WITHOUT heat for at least 30 minutes.
- 9) Next, take a sample of this water and shake it in a bottle and compare the bubbling action to a sample of pure water shaken in the same manner. If there is more foaming action as compared to the pure water sample, more flushes are necessary.
- 10) Once the flushing is complete, the IOTs and RF system can be re-connected to the system and it can be filled with the final cooling fluid mixture. (Commonly a 50 – 50 mixture of distilled water and Dowtherm SR-1 or equivalent)

X300 cooling system cleaner can be ordered in two sizes:

609916-01 CLEANER, COOLING SYSTEM 32oz

609917-01 CLEANER, COOLING SYSTEM 128oz

For instructions on how to flush your transmitter's cooling after it has been in use, please reference Comark Technical Service Bulletin 030629

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