

Technical Bulletin

Bulletin No. 041
Subject: RME Eagle NO FLOW station fault and RME Eagle FLOW SENSING with Quick Couplers

Page 1 of 8
Product Applicability: RME Eagle
Engineering Release: R. A. Olson
Engineering Release Date: September 25, 2006
Distribution: APPROVED FOR GENERAL RELEASE

Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page</u>
1.0	Introduction	2
2.0	Requirements	2
3.0	Terminology	3
4.0	Low Volume Drip Irrigation	3
5.0	Quick Couplers	6

1.0 INTRODUCTION

This technical Bulletin addresses the features and usage of the RME Eagle NO FLOW alarm processing. The bulletin will provide guidance in the use of this feature as it applies to low flow applications, such as quick couplers (hose bibs) and low volume drip irrigation systems.

The NO FLOW station fault occurs whenever a station is activated, which has an established or learned flow limit and the station's measured flow is zero gallons-per-minute, as measured by the installed flow sensor.

In low water volume applications, such as drip irrigation systems, this alarm may be erroneously generated by the controller, do in part to the resolution of the installed flow sensor. If the volume of water is below the lower detectible limit of the flow sensor, the system assumes this to be a NO FLOW condition and generates an alarm. If the controller is part of an iCentral installation, the alarm is sent to the Rain Master website, an email and text message is sent to the iCentral user.

This technical bulletin will answer these concerns, while maintaining the other fault detection features of the system.

2.0 REQUIREMENTS

2.1 HARDWARE REQUIREMENTS

- Rain Master RME Eagle Irrigation Controller
- Rain Master Flow Sensor

2.2 DOCUMENTATION REQUIREMENTS

- RME Eagle User Manual RMIS Part No. 500042
- Rain Master Flow Sensor Selection Chart RMIS Part No. 500117

3.0 TERMINOLOGY

- **GPM-** Gallons-Per-Minute.
- **FDELAY-** “Flow Check Delay” in controller setup.
- **FLOW STA-** “Station Upper Flow Limit” station fault.
- **FLOW UN-** “Unscheduled Flow Limit” event.
- **FLOW MAIN-** “Main Line Flow Limit” event.
- **NO FLOW-** “No Flow Detected” event.

4.0 LOW VOLUME DRIP IRRIGATION

Drip irrigation also known as trickle irrigation or microirrigation is an irrigation method that applies water slowly to the roots of plants, by depositing the water either on the soil surface or directly to the root zone, through a network of valves, pipes, tubing, and emitters. The goal is to minimize water usage. Drip irrigation may also use devices called micro-spray heads, which spray water in a small area, instead of emitters. These are generally used on tree and vine crops. Subsurface drip irrigation or *SDI* uses permanently or temporarily buried dipperline or drip tape. It is becoming more widely used for row crop irrigation especially in areas where water supplies are limited.

The standard configuration of a low volume drip irrigation system is depicted in Figure 1.

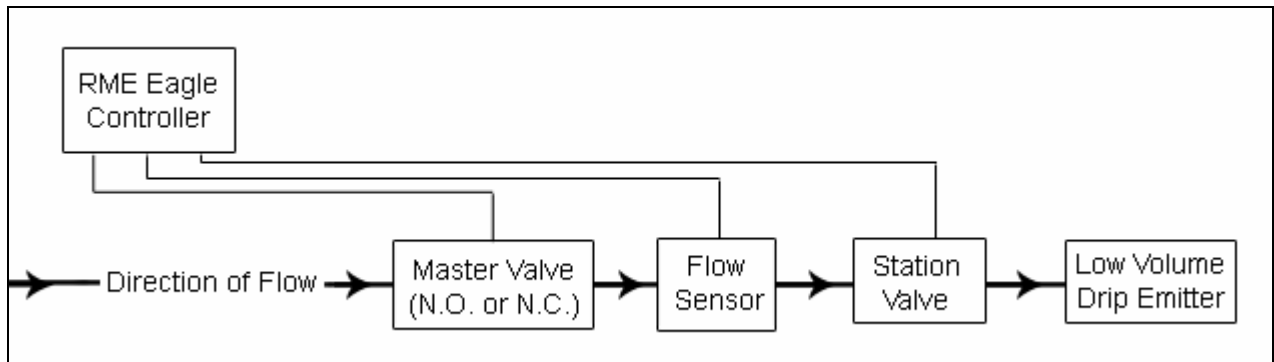


Figure 1 (Low Volume Drip Irrigation Configuration)

4.1 NO FLOW CONDITIONS

The NO FLOW station fault will occur when ALL of the following conditions are met:

- The station has an established flow limit specified in the controller setup.
- The station is activated automatically (program control) or manually at the controller.
- The detectable flow rate of the station is measured as zero GPM after the amount of time specified in the flow check delay (FDELAY) has expired.

4.2 DRIP IRRIGATION TROUBLESHOOTING

If a NO FLOW station fault is consistently preventing the irrigation cycle from completing, verify the following:

- Proper operation of the station valve
- Proper operation of the master valve and/or pump
- Proper flow sensor wiring and installation
- Main water supply to the system

NOTE: *Correct all problems before continuing to section 4.2.1*

4.2.1 FLOW SENSOR OPERATING RANGE

The NO FLOW station fault may be erroneously generated due to the resolution of the installed flow sensor. Reference the Flow Sensor Selection Chart RMIS Part No 500117 for the suggested operating range of the installed flow sensor.

NOTE: *If the expected flow rate DOES NOT meet the suggested operating range of the installed flow sensor either install a flow sensor capable of detecting the expected flow rate or proceed to section 4.3.*

NOTE: *If the expected flow rate DOES meet the suggested operating range of the installed flow sensor revisit section 4.2 or call Rain Master Technical Support for further assistance at 800-777-1477.*

4.3 STATION RULES - FLOW LIMIT CHECKING DISABLED

In the event that a station's flow rate is below the detectible limit of the installed flow sensor, the flow limit check for that station can be disabled through controller setup. When disabling the flow limit check on a station the following rules will govern the station as it applies to flow:

- NO FLOW- station fault WILL NOT be detected by the controller.
- FLOW STA- station fault WILL NOT be detected by the controller.

5.0 QUICK COUPLERS

Quick coupler and hose bib valves are connection points that are installed along the main line of an irrigation system. These connection points are typically installed for system pressure release and manual hose usage access.

The standard installation of a quick coupler valve is depicted in Figure 2.

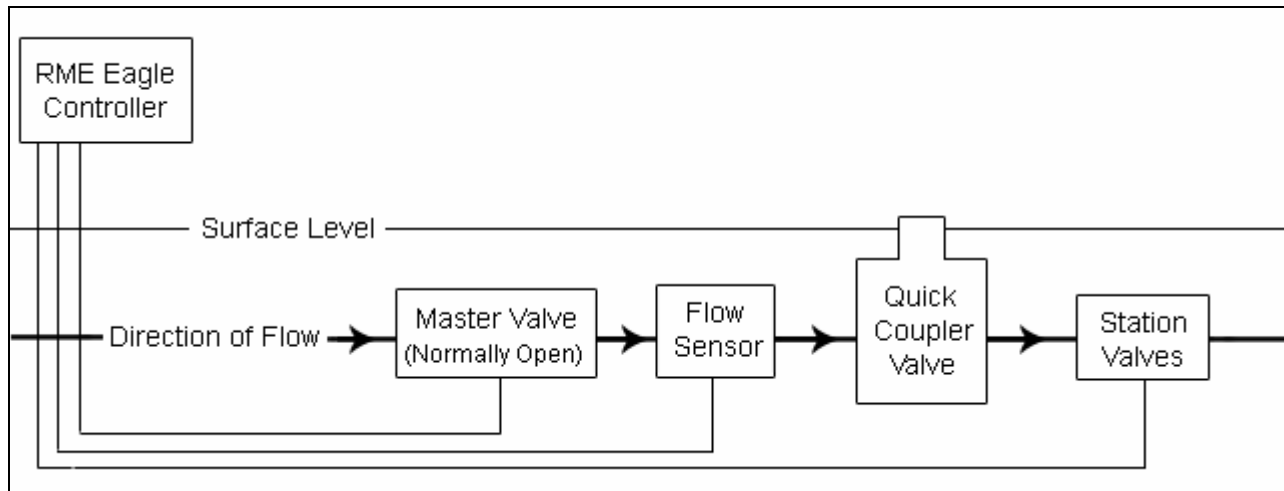


Figure 2 (Quick coupler valve installation)

5.1 FLOW SENSING WITH QUICK COUPLERS

The RME Eagle controller utilizing a flow sensor will monitor *all* flow passing through the flow sensor regardless of whether or not an irrigation schedule is active. A quick coupler application creates concerns regarding the unscheduled flow limit. If the flow rate of a quick coupler connection exceeds the unscheduled flow limit, then the quick coupler connection must have an irrigation schedule allocated to prevent shutting down of the main line during usage.

5.1.1 QUICK COUPLER SCHEDULING EXAMPLE

The following example will configure the RME Eagle controller to utilize a single program (Program 4) and an unused station output (Number 18) as the station for usage of a quick coupler valve every Monday at 9:00am and to remain on for one hour. The flow limit checking on the unused station will be disabled to prevent the "NO FLOW" station violation fault from being generated.

EXAMPLE: Set the Controller to Program Four (4)

Press:

EXAMPLE: Set Program Four (4) of the Controller to water every Monday

Press: **WATER DAYS** **MON** **2** **ENTER** **QUIT**

The controller returns to the Automatic Mode.

EXAMPLE: Set station number eighteen (18) to water for one hour.

Press: **STATIONS** **SUN** **1** **8** **ENTER** **SUN** **1** **0** **0** **ENTER**
QUIT

The controller returns to the Automatic Mode.

EXAMPLE: Set Program Four's (4) Start Time 1 to start at 9:00 AM

Press: **START TIMES** **9** **0** **0**

Continue to Press: **AM** **PM** **Until display indicates:** **4 - 9:00AM**
PROGRAM

Press: **ENTER** **QUIT**

The controller returns to the Automatic Mode.

EXAMPLE: Disable Flow Limit Check on station eighteen (18)

Continue to Press: **SETUP** **Until display indicates:** **LIMITS**
PROGRAM

Press: **SUN** **1** **8** **ENTER**

Controller will display: **18 - 200**
PROGRAM

Press: **0** **ENTER**

Controller will display: **LIMITS**
PROGRAM

Press: **QUIT**

The controller will return to the Automatic Mode.

This completes the setup example.

END OF BULLETIN