

MULCAHY MINUTE

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 July 2004



McDonnell & Miller Series 750 LWCO's With Higher Sensitivity Rating, Improved Diagnostics and CSD-1 Compliance

In 2002 McDonnell & Miller announced an improved version of the Series 750 LWCO. With code changes and CSD requirements we thought it might be a good time to review this boiler control. It features a more versatile microprocessor design, allowing additional diagnostics and an increase in sensitivity. More importantly, the Series 750 family of manual reset products is CSD-1 compliant. Specifically, if a manual reset control is locked out in a low water condition before a loss of power, it will remain in lock out condition on restoration of power until water is restored to the probe *and* the manual reset switch is activated. All units include a test button and two additional models are available, 750P-MT-120 and 750P-MT-U-120. These new models include the PA-800 or PA-800-U probe so the control can be direct mounted using the knockouts on the rear of the chassis. Because the 750P-MT-120 is CSD-1 compliant, it should be used in place of the PS851-M-120 in applications requiring this feature.

- For commercial or industrial applications
- Primary or secondary control on hot water boilers
- Secondary control (manual reset models only) on steam boilers
- Manual reset models meet the requirements of **ASME Standard CSD-1.**
- Green LED power indicating light
- Red LED low water indicating light
- Test switch
- 20,000 ohms sensitivity
- Knockouts on rear of chassis for direct mounting
- **Options:**
 - Manual reset button
 - 750P-MT model includes PA-800 probe
 - 750P-MT-U model includes PA-800-U probe
- NEMA 1 enclosure
- Maximum ambient temperature 120°F (49°C)



Model Number	Part Number	Description	Weight lbs. (kg)
750-T-120	176206	Auto reset	2 (.9)
750-MT-120	176207	Manual reset	2 (.9)
750P-MT-120	176234	Manual reset and PA-800 probe	2.5 (.9)
750P-MT-U-120	176214	Manual reset and PA-800-U probe	2.5 (.9)

M & M Application tip: Use the RB-24 in overflow drains to signal an alarm of a clogged roof drain!

• Wholesalers contact your salesperson if you are interested in checking M & M orders online!

Date: September 9, 2004

Save the Date!!!

75TH ANNIVERSARY CELEBRATION

1929-2004

Come join us for the various classes we will be offering (see next page), free of charge.

We will also have demonstrations from 9:30-3:30.

Lunch will be served from 11:30-1:30.

And Enter To Win a Plasma TV, 50 sq ft of Heatweave & Much More!



B.J. Mulcahy Co., Inc.

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2700 Blue Water Rd #100

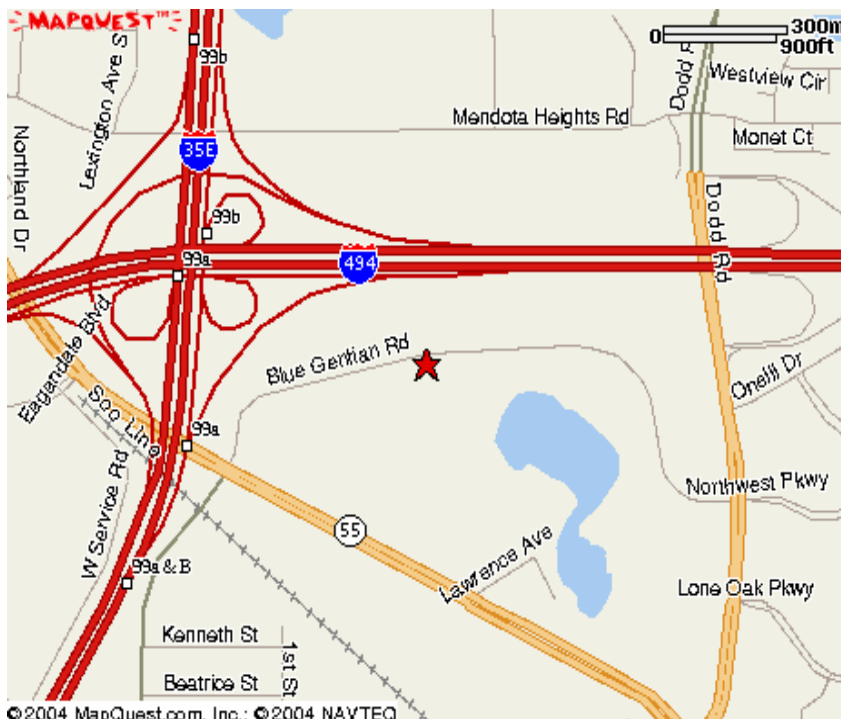
Eagan MN 55121

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Email: bjm@bjmulcahy.com

Web: www.bjmulcahy.com



See our website for directions from every direction!

COME CELEBRATE OUR 75TH ANNIVERSARY 1929-2004

We will be offering classes all day. Each class will last 1.5 hours
(see website for details on classes).

Please sign up below or online at www.bjmulcahy.com, space is limited so sign up early.

9:00

Contractor Hydronics	Dan Chudecke, BJ Mulcahy
Boiler Efficiency & Reducing Your Boiler Bills	Keith French, De Dietrich Mike Degidio, Louis Degidio Plbg. & Htg Ken Hannenin, IC Burners
Radiant & Snowmelt	Kolyn Marshall, Watts Radiant

11:00

Variable Frequency Drives	Greg Olson, B.J. Mulcahy Jim Chmielewski, Danfoss Graham
Grease Interceptors	Thomas Schoendorf, Highland Tank
New Code Requirements & Rebate Information	Nirmal Jain, State of MN Bill Conrad, Excel Energy Tom Marthauler, Minnegasco

1:00

Contractor Hydronics	Dan Chudecke, BJ Mulcahy
Fired & Unfired Water Heaters	Tim Markel, RBI Water Heaters Jason Cappell, Cemline
Radiant & Snowmelt	Kolyn Marshall, Watts Radiant

Sign up for as many classes as you would like. Please also indicate if you wish to receive CU credits. Thank you.

9:00 Classes CHOOSE ONE

- Contractor Hydronics
- Boiler Efficiency
- Radiant & Snowmelt

1:00 Classes CHOOSE ONE

- Contractor Hydronics
- Fired & Unfired Wtr Htrs
- Radiant & Snowmelt

11:00 Classes CHOOSE ONE

- Variable Frequency Drvs
- Grease Interceptors
- New Code Req & Rebate

Please indicate:

- I would like CU credits
- Sign me up for lunch

Name

Company

Address

Phone

Fax

Email

You will receive a confirmation by email or fax. Questions please call Laura at 651-686-8580.

Fax this form to Laura at 651-686-8588.



B.J. MULCAHY CO., INC.
CELEBRATING 75 YEARS IN THE HYDRONIC

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*Representing Quality Products With Quality
Engineering*

**We're closed
July 5, 2004.**

UNDERSTANDING VARIABLE FREQUENCY DRIVE BYPASSES

Written By: Greg Olson

This is just an excerpt, the entire article version is available at www.bjmulcahy.com under Mulcahy Minute.

Variable Frequency Drives (VFD's) have increased tremendously in reliability since their initial introduction. Because of this, most engineers have gone away from specifying a bypass with every drive. Applications where constant speed bypasses continue to be used are defined primarily as critical loads that have little or no tolerance for any significant downtime. Some of the candidates for bypass are an air handler for a hospital surgical suite, a cooling tower fan, or a single heating pump to a building.

It is important to understand that constant speed bypass operates the fan/pump at FULL SPEED ONLY. A system designer needs to determine if the system will be capable of handling full speed and full system flow. Early VFD installation stories for air

handlers often included a chapter on "making a square duct round" when the bypass was first turned on.

Another aspect of VFD bypass operation includes that of motor protection. Whether the VFD or utility power is driving the motor, motor protection (for both overloads and shorted circuits) needs to be covered in the circuitry. Some VFD suppliers have shipped 3rd-party built bypass enclosures that provide no protection for the motor when under bypass operation. This is definitely the case when only a large 4-position toggle switch is used in place of two interlocked starters. Used alone, these large switches rely on someone else to protect the motor (via external starters and fuses/circuit breakers) when in bypass operation. If these external devices don't exist, saving a few dollars during the initial installation of the drive could lead to a burned out motor later.

What do we do when a non-bypass

fan VFD fails and we still have to temporarily run the fan? First, VFDs operate as motor protection devices (both for short circuit and overload conditions) along with their role of motor speed controllers. By removing a non-bypass VFD from the circuit we remove those protections, and are operating the motor outside of NEC code requirements. We now need to either get a temporary motor starter in place, or take the chance of operating the motor without overload protection. Most circuit breakers and fused disconnects are sized for short circuit protection, but not for overload protection.

In short, bypass is a convenient backup plan to have available for your VFD, but it is not a cure-all for all situations. And since the marketplace offers many bypass configurations, make sure that the specifications for your bypass cover all your bases.