| YORK BY JOHNSON CONTROLS | SB0119 | 110 |
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| | File In: N/A | |
| SERVICE BULLETIN | Affected Equipment: YPAL Mod D, E, and F with the Danfoss VLT HVAC Drive | |

**Subject: Supply, Exhaust, and Return Fan VFD Setup**

**Issue Date: 01/20/2010** **Withdrawal Date: N/A**
**Materials Needed: None**
**Tools Required: Standard Hand Tools**
**Est. Time Required: 1 hour**

**Warranty: Yes**
**Revision Notes: N/A**

## GENERAL

In August of 2008 2HTM and THTM serial number prefix we changed production over to the new Danfoss VFD drive for the supply, exhaust, and return fans on the YPAL product. The new style drive can be identified by the arrangement of the up, down, left, and right arrow keys. On the new drive they form a circle around the "OK" key.

The parameters tables are totally different for this drive, but the Factory Drive Set Up instruction were not updated for these new parameters. Three items are performed at the factory during programming of the drive. The first is the programming of the motor information for the motor connected to the drive; for example Motor Power, Motor Voltage, Motor Current, Motor Rated Speed and Warning Current High. The second is the correct Set Up; Set Up 1 for the Supply Fan, Set Up 2 for the Exhaust Fan, and Set Up 3 for the Return Fan. The last programming function that is performed is the Automatic Motor Adaptation.

In the majority of cases the first two items are being performed; however, evidence indicates the Automatic Motor Adaptation is not being performed. In the majority of cases this will have no effect on the operation of the unit. However, if the airflow requirements are such that the motor needs to operate at the upper end of its rating the drive will indicate Warning / Alarm 13 – Overcurrent, even though the actual motor current is below the rated value. In most cases if the Maximum Reference is reduced from 60 HZ to a lower value the drive operates properly but the unit is low on airflow.

## SOLUTION

If the unit is experiencing the problem described above, first verify the drive is programmed correctly per the following table for the respective VFD function, Supply, Exhaust, or Return fan.

**Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.**

**The instructions on this service bulletin are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.**

**Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.**

FC 102 Parameters

| # | Description | Setup 1 Supply Fan/ERV | Setup 2 Exh Fan | Setup 3 Return Fan |
|---|---|---|---|---|
| 0-01 | Language | [22] English US | [22] English US | [22] English US |
| 0-03 | Regional Settings | [1] North America | [1] North America | [1] North America |
| 0-05 | Local Mode Unit | [1] % | [1] % | [1] % |
| 0-10 | Active Setup | [1] Set-up 1 | [2] Set-up 2 | [2] Set-up 3 |
| 0-22 | Display Line 1.3 small | [1611] Power [hp] | [1611] Power [hp] | [1611] Power [hp] |
| 1-21 | Motor Power {HP} | specific to motor | specific to motor | specific to motor |
| 1-22 | Motor Voltage | specific to motor and power line | specific to motor and power line | specific to motor and power line |
| 1-24 | Motor Current | specific to motor | specific to motor | specific to motor |
| 1-25 | Motor Nominal Speed | nominal 1750 60Hz* | nominal 1750 60Hz* | specific to motor |
| 1-73 | Flying Start | [1] Enabled | [1] Enabled | [1] Enabled |
| 3-02 | Minimum Reference | 25 Hz | 6 Hz | 15 Hz |
| 3-03 | Maximum Reference | 60 Hz* | 60 Hz* | 60 Hz* |
| 3-41 | Ramp 1 Ramp-up Time | 10 s | 10 s | 10 s |
| 3-42 | Ramp 1 Ramp-down Time | 60 s | 60 s | 30 s |
| 4-12 | Motor Speed Low Limit [Hz] | 25 Hz | 6 Hz | 15 Hz |
| 4-14 | Motor Speed High Limit [Hz] | 60 Hz* | 60 Hz* | 60 Hz* |
| 4-51 | Warning Current High | specific to motor | specific to motor | specific to motor |
| 5-40 | Function Relay [Relay 1] | [14] Current high | [14] Current high | [14] Current high |
| 6-10 | Terminal 53 lLow Voltage | 0 V DC | 0 V DC | 0 V DC |
| 6-14 | Terminal 53 Low Ref./Feedback Value | 25 Hz | 6 Hz | 15 Hz |
| 6-15 | Terminal 53 High Ref./Feedback Value | 60 Hz* | 60 Hz* | 60 Hz* |

* reset at JCI for 50Hz operation

If this is correct then the following Automatic Motor Adaptation procedure should be performed. The motor must be off to perform this procedure.

1. Push the OFF buttom on the VFD
2. Press the “Quick Menu” key
3. Use the down arrow key to move to “02 Quick Setup”
4. Press “OK”
5. Use the down arrow key to go to “5-12 Terminal 27 Digital Input”
6. Press “OK”
7. Use the down arrow key to change to (0) “No Operation”
8. Press “OK”
9. Press the “Quick Menu” key
10. Use the down arrow key to move to 03 “Function Set Ups”
11. Press “OK”
12. Use the down arrow key to move to 03-1 “General Settings”
13. Press “OK”
14. Use the down arrow key to move to 03-10 “Adv Motor Settin”
15. Press “OK”
16. Use the down arrow key to move to 1-29 “Automatic Motor Adaptation (AMA)”
17. Pre the “OK” key
18. Use the down arrow key to move to (1) “Enable Complete AMA”
19. Press “OK”
20. The display will say “Press (Hand On) to start”
21. Press “Hand On”. A progression bar indicates if AMA is in progress.

## Successful AMA

1. The display shows “Press (OK) to finish AMA”
2. Press the “OK” key to exit the AMA state
3. Press the “Quick Menu” key
4. Use the down arrow key to move to “02 Quick Setup”
5. Press “OK”
6. Use the down arrow key to go to “5-12 Terminal 27 Digital Input”
7. Press “OK”
8. Use the down arrow key to change to (2) “Coast Inverse”
9. Press “OK”

## Unsuccessful AMA

1. The VFD enters into alarm mode. A description of the alarm can be found in the troubleshooting section of the Instruction Manual shipped with the unit.
2. “Report Value” in the alarm Log shows the last measuring sequence carried out by the AMA before the VFD entered into alarm mode. This number, along with the description of the alarm, will assist in troubleshooting.
3. An unsuccessful AMA is often caused by incorrectly entered motor name plate data or too big a difference between the motor and the VFD power size.

The manufacturing documentation is being revised and any unit produced with a February 2010 serial number prefix 2BWM or TBWM should not experience this problem.

## WARRANTY

No action is required unless the unit experiences the operational issue identified above. This problem should be identified while the unit is under warranty so all claims should be submitted under the normal warranty process. If labor warranty was not purchased on the unit we would still cover the labor under the Known Defect policy. We will allow up to $200.00 for this repair. Reference this Service Bulletin, SB0119, in the Description section of the submittal.