AM2

Control Panel
For Water Wash
Hoods

For further information
Call: (919) 554-1025
Or Fax: (919)554-1525

Aqua-Matic
117 Franklin Park Ave.
Youngsville, NC 27506

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AQUA-MATIC LIMITED WARRANTY

NOTE. START-UP INSPECTION REPORT MUST BE RETURNED OR WARRANTY IS VOID!

Aqua-Matic warrants to the original purchaser/user that products manufactured by Aqua-Matic shall be free from defects in material under normal use and service for a period of twelve months from the date of startup of the system at the job site.

The obligation of Aqua-Matic under this warranty is limited to Aqua-Matic repairing or replacing, free of cost to the purchaser/user, F.O.B. factory, any part(s) that, in the judgment of Aqua-Matic show evidence of defect; provided that, upon Aqua-Matic authorization, the said part(s) be returned to Aqua-Matic; transportation prepaid, for inspection and judgment. Under this warranty Aqua-Matic assumes responsibility for the expense of labor necessary to remove a defective part or install a repaired or new parts for 90 days from startup date. Labor will be paid based on standard time conventions developed by Aqua-Matic engineers.

This warranty is issued only to the original purchaser/user, and is not transferable. This warranty applies to a unit installed worldwide and in lieu of all other warranties expressed or implied. Aqua-Matic neither assumes nor authorizes any other person to assume for Aqua-Matic any liabilities not herein stated.

Aqua-Matic shall not be liable for any damage or delays occurring in transit, for any default or delays in performance caused by any contingency beyond its control including war, government restrictions or restraints, strikes, short or reduced supply of raw materials, fire, flood, or other acts of God, nor damage or loss of any products, property, loss of income or profit due to malfunctioning of said unit.

TERMS OF SALE: Net 30 days, FOB our plant.

FREIGHT TERMS: All shipments are FOB our plant unless otherwise noted.

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, NOTWITHSTANDING THE PROVISION OF THE UNIFORM COMMERCIAL CODE, THE MAGNUSON-MOSS WARRANTY FEDERAL TRADE COMMISSION IMPROVEMENT ACT, OR ANY OTHER STATUTORY OR COMMON LAW, FEDERAL OR STATE.

INTRODUCTION

The AM2 Control Panel houses the plumbing and electrical controls for the fan operation and internal cleaning of the Aqua-Matic ventilators. The control panel enables the operator to perform three functions:

1. Engage the exhaust and/or makeup air fans (when applicable)
2. Internally dean the ventilator via 2 cycle cleaning event.
3. Provide manual and automatic secondary fire protection system within the extraction plenum.

The table below lists the results of pressing the buttons as well as the meaning of the indicating lights.

Table 1 Results of panel control and indication.

LIGHT/BUTTON	**ACTION**	**CONDITION INDICATED**
Green	Starts Fan(s)	Fan(s) ON
Blue	Stop-Fan(s) Starts Wash Cycle.	Detergent Flow
Yellow	N/A - Light Only	Water Flow
Red	Sends panel into a fire condition. Press button a second time to reset panel.	Fire Condition

INSTALLATION

- Refer to the project blueprints for proper plumbing and electrical hookup.

Caution: Do not apply power before plumbing and ventilator air handling equipment installation is complete.

The following is the recommended procedure for installing the AM2 control panel. The control panel is designed to operate at I2O VAC 50/60 Hz line to neutral voltage. Refer to the wiring diagram on the project blueprints located on the inside of the plumbing door.

PLUMBING

1. Mounted the panel on the wall (or recessed in the wall with an optional trim ring) approximately 42" from the finished floor to the bottom of the cabinet.
2. Open the cabinet and verify the pipe size. Route and connect the hot water supply piping to the manifold connection at the bottom of the cabinet.
3. Connect piping from the top connection of the manifold and route it to the ceiling. Connect a vacuum breaker at the highest point of the run to the hood.
4. Connect a tee fitting after the vacuum breaker and connect the 1/4" NPT soap injection check valve.
5. Continue the pipe to the hood and connect to the wash manifold connection on the hood.
6. Connect the tubing to the check valve and route tubing to the cabinet. At the cabinet connect tubing to the top connection on the clear block mourned on the detergent pump.

ELECTRICAL

The following connections are made to 2 rows of terminal blocks in the AM2 panel labeled TB1 and TB2 per the wiring diagram.

7. Connect the ventilator fan motor starter(s) to TB1(3) neutral and TB 1(4) line 120 VAC 50/60 Hz.
8. Connected the fire signal sensing loop to TB1(5) and TB1(6). Start the connection of the loop from TB 1(5) and wire in series through the fire system micro switch (normally closed), duct collar thermoswitch(es) (normally closed), and back to the panel connection TB 1(6). The loop circuit must be connected before the power is applied to the panel, or the panel will be tripped into a fire condition. **Caution:Run the fire loop wiring in separate conduit from the power wires.**
9. Connect any devices that need to be de-activated or activated in a fire condition to the panel's SPDT (Single Pole Double Throw) auxiliary relay contact, 2 contacts, provided for field connections. The terminal blocks are labeled COM(l), NO(1), and NC(1) for the first contact and COM(2), NO(2). and NC(2) for the second contact. (**COM** is an abbreviation for **common**, **NO** is an abbreviation for **normally open**, and **NC** is an abbreviation for **normally closed**)
10. The connections on the terminal block row labeled TB2 are used to control the items in the plumbing compartment. No field connections are required.
11. The jumper wire connected between TB 1(7) to TB 1(8) must not be removed unless multiple panels are being interconnected to trip in a fire condition. Consult factory first before removing jumper wires.
12. Verify that all connections are complete, then connect the main I2O VAC power to TB 1(1) line and TB1(2) neutral. This should be an independent power circuit.

OPERATION

POWER UP

Upon power up, the panel will immediately go into a wash cycle and both the yellow and blue lights will illuminate. To speed this process open the electrical door and turn the adjustment dials on the timer relays counterclockwise to their lowest setting. The wash cycle will quickly end, and the panel will be waiting for the next command. Readjust the dials on the timer relays to 3 minutes on the wash timer and 1 minute on the rinse timer.

Upon power up if the red light on the panel is illuminated, the panel is in a fire condition.

There are 2 probable causes for this state:

1. The fire loop connection on TB1(5) to TB1(6) is open. Check the fire system micro switch and ensure that the fire system is armed. If the system is armed, verify that the fire system micro switch has been wired for a normally closed condition when the system is in its armed state.
2. The red fire button on the front panel is a push-on-push-off type which may have been pressed accidentally during installation. Press it to change its position.

OPERATION

FANS

1. Push the green button, and the fan(s) will turn on.
2. The green light in the button will illuminate to indicate that the fan control circuit has power.
3. To turn off the fan(s), the wash button must be pressed, initiating the cleaning cycle.

CLEANING

1. **Push the wash button** and release. **The blue and yellow lights will illuminate**, and the **fans will shut off**. The cleaning cycle consisting of a wash and rinse will start.
2. **The wash is adjustable from 0-10 minutes** by turning the dial on the wash timer located inside the electrical side of the panel (top timer). At the end of the wash the blue light will extinguish. We recommend a minimum 3 minute wash. A longer wash might be needed for heavy cooking.
3. **The rinse is adjustable from 0-3 minutes** by turning the dial on the rinse timer located inside the electrical side of the panel (bottom timer). The rinse is indicated when only the yellow light is illuminated We recommend a minimum 1 minute rinse. A longer rinse might be needed for heavy cooking, especially if the wash timer duration has been increased.
4. At the end of the cleaning cycle all lights will be off. The cycle can be repeated by pressing the blue wash button, or the fans can be restarted by pressing the green button.

FIRE PROTECTION

The AM2 uses a series loop connected on TB 1(5) to TB 1(6) to signal a fire condition when a fire is detected. The fire condition can originate in one of three ways:

1. When the fire system discharges due to a surface fire, its fire system micro switch or
2. flow switch will change states, opening the loop circuit and tripping the AM2 panel. **Re-arm the fire system to reset the panel**
3. When a fire originates in the duct collar it will heat the thermoswitch to its trip point opening the loop circuit and signaling a fire condition. **The panel will automatically reset itself once the thermoswitch has cooled down to its reset point.**
4. The operator can trip the panel by pressing the red fire button on the door front. **Pressing the red fire button a second time will reset the panel**

When the control panel senses a fire, the red fire button will be illuminated and the AM2 panel will automatically:

- Shut off the fan(s). (The green light will extinguish.)
- Open the water valve placing the panel in a continuous rinse mode. (The yellow light will be illuminated.)
- Change the state of the auxiliary SPDT contacts and activate or de-activate controlled items connected to them. (See list of controlled items below).

CONTROLLED ITEMS

To reset the panel's sensing circuit refer to the above list items 1,2, and 3. The controlled items connected to the auxiliary contacts will also have to be reset. The following list contains items that are normally connected to the auxiliary contacts:

- Shunt trip breaker
- Gas valve and the system pilot lights.
- Building alarm system.
- Electrical outlets (contacts control a contactor).

• NOTE: When the Building Fire Alarm System has been connected to the control panel, ensure that the panel is reset and then refer to the reset procedures for the Building Fire Alarm System.

AM2 STARTUP INSPECTION REPORT

To retain the warranty on your AM2 control panel, make a copy of this startup inspection report, fill it out, and send it to Aqua-Matic directly upon completion of startup (address is listed on the inside front cover of this manual).

NOTE:Warranty is void if startup inspection report is not returned to Aqua-Matic.

JOB NAME:

STREET ADDRESS:

CITY/ STATE ZIP CODE:

HOOD MODEL #:

SERIAL#/JOB#:

STARTUP DATE:

INSPECTED BY:

DATE:

COMPANY NAME:

STREET ADDRESS:

CITY/ STATE/ ZIP CODE:

OPERATION CHECKLIST:

1. Press green button, verify that the fan(s) turn on and green light illuminates.
    - If the fans **do not** turn on but the green light does, check the fan(s) starter connections on the starters and also on TB 1(3) & (4). Also check the fan(s) motor power.
    - If the fan(s) and green light **do not** turn on, check circuit breakers on TB1(7 Amp in the panel) and the main power circuit breaker. Also check the panel power connections on TB1(1) power, and TB 1(2) neutral.
    - If fan(s) and green light turn on, continue to the next step.

2. Verify that the drains are clear, then press the blue wash button. Verify that the fan(s) and green light shut off and the blue and yellow lights illuminate. (Note -the duration of the wash and rinse times are adjustable by the dials on the timers behind the door.)
    - Verify that the water is washing the hood and the detergent pump is injecting detergent into the tubing.
    - Record pump cam setting
    - Record water pressure from gauge behind plumbing door._____PSI.
    - Record water temperature from gauge behind plumbing door._____°F.
    - Verify that the water and pump shut off at the end of the cycle.
    - Check for and repair any leaks in the plumbing.
3. Record brand of detergent installed for future use.
4. If everything checks out make a copy of this page and send it to Aqua-Matic at the address on the front cover to implement the warranty.

SYSTEM MAINTENANCE

The Aqua-Matic ventilator and control panel should operate trouble free for many years; however, to ensure peak performance at all tunes, it is recommended that the guidelines below be followed.

SYSTEM

NEW:

After the first week of operation remove and clean the line strainer screen (located in the pressure reducing valve assembly within the plumbing enclosure of the control panel). Clogging from line debris, caused by new construction, will happen more frequently until lines are flushed by repeated usage.

DAILY:

The detergent level should be checked daily to keep the detergent pump from losing its prime. Monitor the hot water temperature (140 °F.) and pressure (18 to 25 PSI) while ventilators are washing. This may be accomplished by checking the combination temperature / pressure gauge located within the plumbing enclosure of the control panel.

WEEKLY:

All external ventilator surfaces, including lights and access doors, which become soiled from daily use should be cleaned. These areas are not cleaned automatically by the water wash system.

QUARTERLY:

Visually inspect the grease extracting modules and all interior surfaces exposed to the internal wash system for accumulated grease buildup. If accumulated grease buildup is found refer to the COMPONENT MAINTENANCE section for possible causes and methods of correcting the situation.

ANNUALLY:

Inspect exhaust ducts, control panels, relays, solenoid valve(s), detergent pump, and all related control panel components for functionality or excessive wear to correct with preventive maintenance. Also inspect fan blowers and their blower belts for proper tension or replace them if necessary. Remove and clean the hot water line strainer.

COMPONENT MAINTENANCE

VENTILATOR MAINTENANCE:

An accumulation of grease on the interior surfaces of the ventilator behind the grease extraction modules may be caused by clogged nozzles, clogged line strainer, lack of detergent, loss of detergent for cleaning, low water pressure, or low water temperature.

NOZZLES:

Over time the nozzles can become clogged and will have to be removed and cleaned. To clean the nozzles:

1. Remove the nozzles with a 9/16" wrench.
2. Remove the spray head from the nozzle body, being careful to retain the spinner inside the nozzle.
3. Clean out all contaminants.
4. Reassemble nozzle.
5. Reinstall nozzle on the manifold.

LINE STRAINER:

The line strainer (located in the pressure regulator valve) can be removed and cleaned as follows:

1. Remove the bottom plug and 0-ring. The strainer is attached to the bottom plug and will be extracted when the bottom plug is removed.
2. Remove and clean strainer as required.
3. If the screen is damaged a replacement of 80 mesh screen is required.

DETERGENT PUMP:

The detergent bottle may be empty. Refill detergent jug or replace with a new container detergent.

The detergent pump may have lost its prime resulting in the detergent not being pumped into the hot water line for cleaning. The detergent pump is primed as follows:

1. Loosen the wing nut on the knurled adjustment cam nut, located behind the clear pump block.
2. Turn the pointer index until it points to setting number 6 (maximum flow). Retighten the index.
3. Ensure that the strainer assembly is below the surface of the detergent level.
4. Ensure that the tubing connection at the bottom of the clear block is snug.
5. Loosen the tubing connection on top of the clear block.

Warning: Do not let detergent spray from the loose fittings. Some detergents may cause burns on sensitive skin. Wrap a rag around loosened fitting to prevent the detergent from spraying.

6. Press the pump prime switch or rotate the knurled nut by hand until the detergent is drawn out of the loosened fitting with no air bubbles in the clear block.
7. Tighten the top fitting and press the pump prime switch or rotate the knurled nut by hand to verify that the detergent will be pumped beyond the clear block into the top tubing.
8. Loosen the wing nut and adjust the pointer to the 1.5 or 2 setting and retighten the wing nut. The pump is primed and ready for use.

WATER PRESSURE AND TEMPERATURE:

Inadequate water pressure and/or temperature could also cause the problem of insufficient cleaning, investigate and correct the building pressure and/or temperature problem.

1. Observe the water pressure and temperature on the gauge mounted on the control panel manifold. The pressure should be between 15 and 45 PSI. The recommended pressure range is 18 to 25 PSI. The water temperature should be between 140 °F and 170°F.
2. Observe the building water pressure before the panel. If the pressure is higher than the pressure exiting the control panel manifold, then adjust the water pressure regulator on the manifold, located in the control panel, until the desired pressure is obtained.
3. The water temperature is adjusted by the building water heater element.

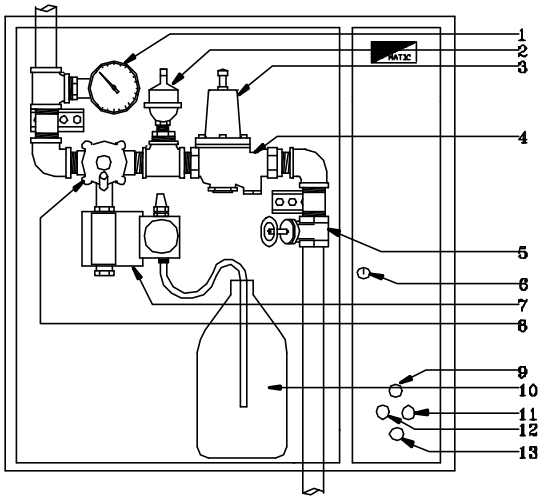
The water pressure and temperature should be adjusted for each ventilator system to provide the best cleaning process. This is determined through observation of the system under normal use.

ILLUSTRATIONS

AM-2

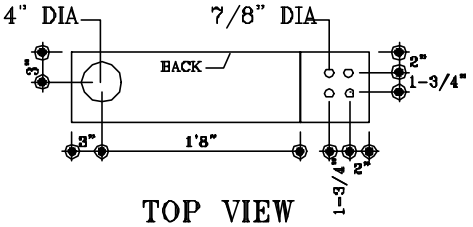
ELECTRICAL WIRING DIAGRAMS

AM-2 CONTROL BOX
1" MANIFOLD ASSEMBLY



PARTS LIST

1. COMBINATION PRESSURE TEMPERATURE GAUGE
2. SHOCK ABSORBER
3. PRESSURE REDUCING VALVE
4. LINE STRAINER
5. GATE VALVE
6. DOOR LOCK
7. DETERGENT PUMP
8. SOLENOID VALVE
9. FAN START BUTTON
10. ONE GALLON DETERGENT RESEVOIR
11. WASH START BUTTON
12. WATER VALVE OPEN LIGHT
13. FIRE BUTTON



TOP VIEW

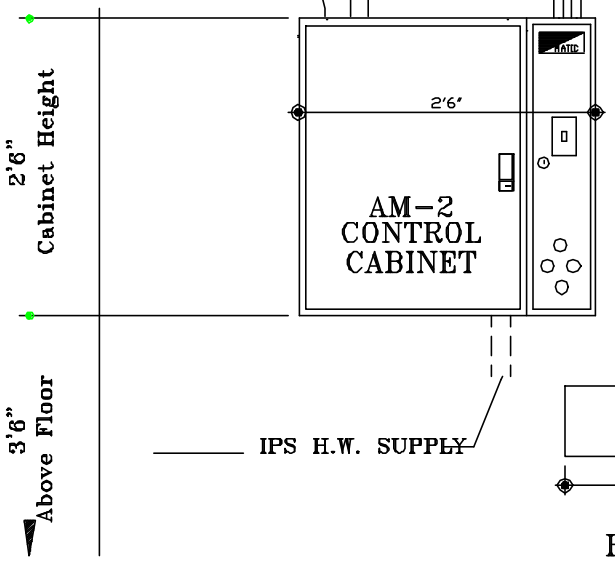
VACUUM BREAKER(S) and all necessary
PIPING beyond the AQUA-MATIC CONTROL PANEL CABINET
is ROUTED, FURNISHED, and INSTALLED
By ; PLUMBING CONTRACTORS at the JOBSITE

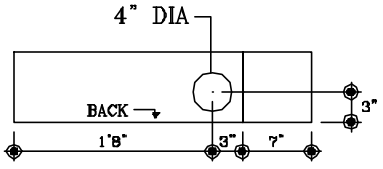
PLUMBING CONTRACTORS
to Deliver this HOT
WATER LINE to Serve Ventilators
per the Project BLUEPRINTS supplied
by ; AQUA-MATIC

1/4" NPT Antusiphon Check
VALVE , FURNISHED BY AQUA-MATIC
plumbed into HW LINE
By ; PLUMBING CONTRACTORS at the JOBSITE.

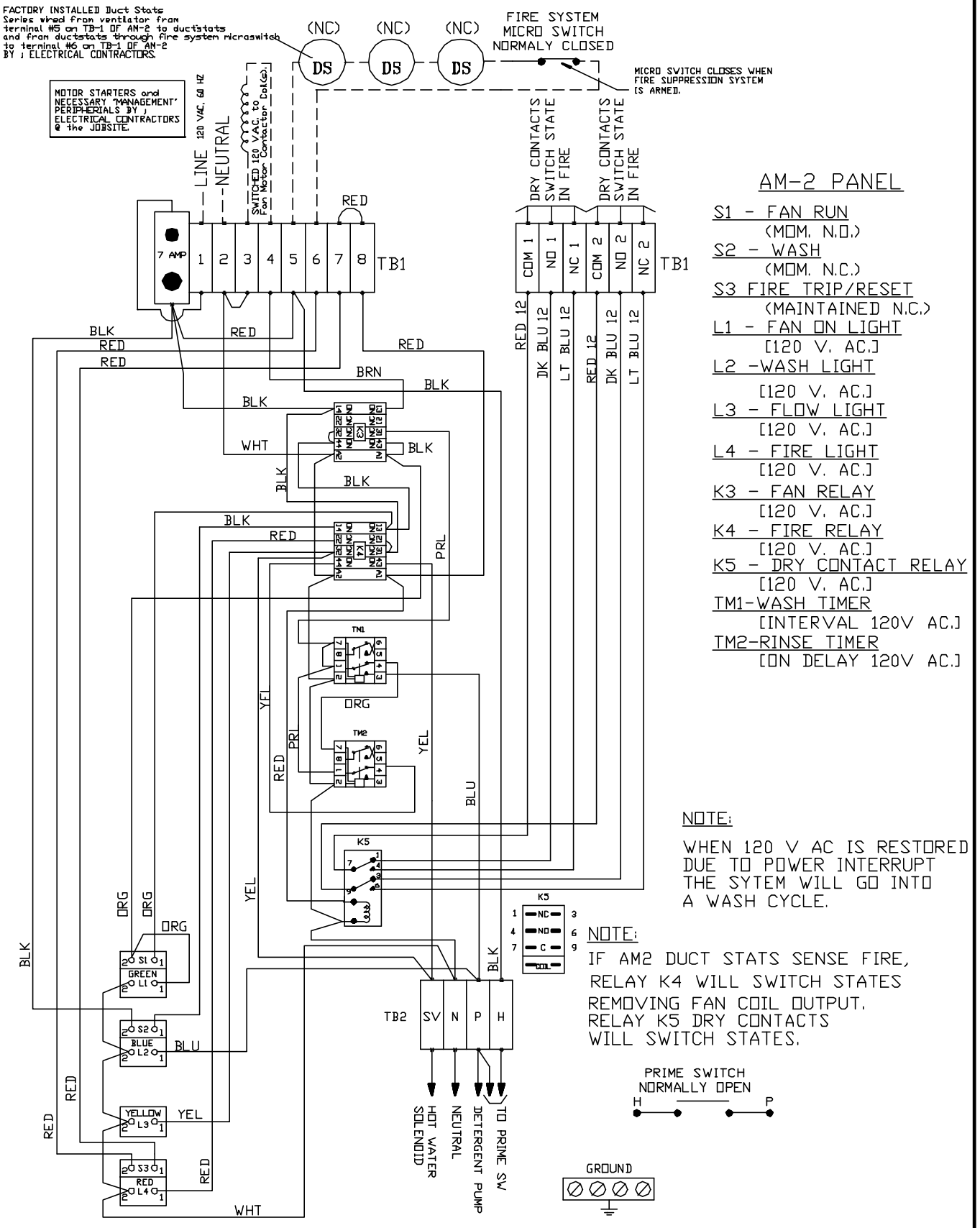
ALL WIRE and CONDUIT
from the AQUA-MATIC CONTROL PANEL CABINET
is ROUTED, FURNISHED, and INSTALLED
by ; ELECTRICAL CONTRACTORS at the JOBSITE.

1/4" O.D. POLYETHYLENE Detergent
Delivery Tubing FURNISHED BY AQUA-MATIC
routed from panel to Check Valve
By ; PLUMBING CONTRACTORS at the JOBSITE.





BOTTOM VIEW



AM-2 PANEL

S1 - FAN RUN
(MOM. N.O.)
S2 - WASH
(MOM. N.C.)
S3 FIRE TRIP/RESET
(MAINTAINED N.C.)
L1 - FAN ON LIGHT
[120 V. AC.]
L2 -WASH LIGHT
[120 V. AC.]
L3 - FLOW LIGHT
[120 V. AC.]
L4 - FIRE LIGHT
[120 V. AC.]
K3 - FAN RELAY
[120 V. AC.]
K4 - FIRE RELAY
[120 V. AC.]
K5 - DRY CONTACT RELAY
[120 V. AC.]
TM1-WASH TIMER
[INTERVAL 120V AC.]
TM2-RINSE TIMER
[ON DELAY 120V AC.]

NOTE:

WHEN 120 V AC IS RESTORED
DUE TO POWER INTERRUPT
THE SYTEM WILL GO INTO
A WASH CYCLE.

NOTE:

IF AM2 DUCT STATS SENSE FIRE,
RELAY K4 WILL SWITCH STATES
REMOVING FAN COIL OUTPUT.
RELAY K5 DRY CONTACTS
WILL SWITCH STATES.

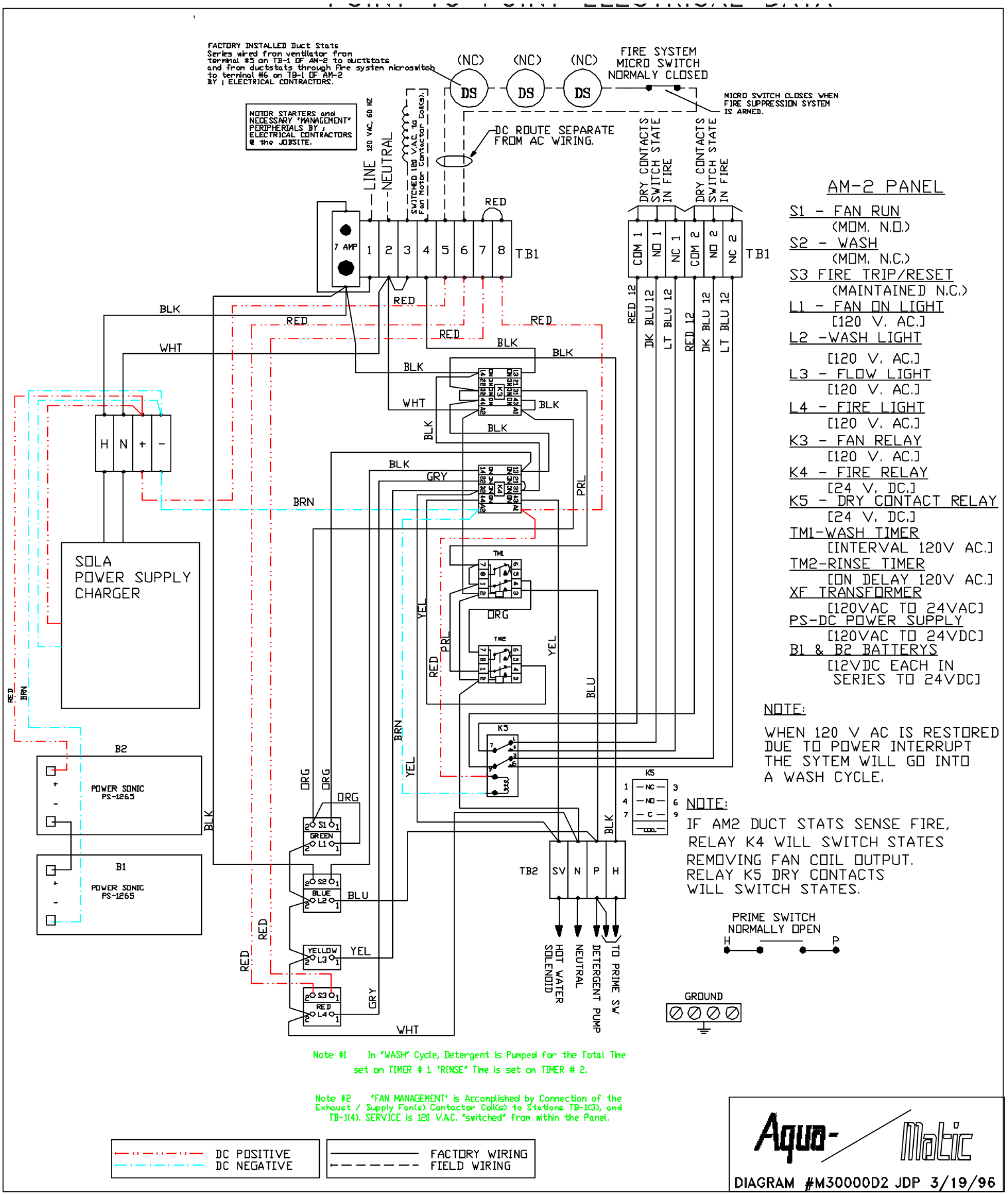
Note #1 In "WASH" Cycle, Detergent is Pumped for the Total Time set on TIMER # 1. "RINSE" Time is set on TIMER # 2.

Note #2 "FAN MANAGEMENT" is Accomplished by Connection of the Exhaust / Supply Fan(s) Contactor Coil(s) to Stations TB-1(3), and TB-1(4). SERVICE is 120 V.A.C. "switched" from within the Panel.

FACTORY WIRING
FIELD WIRING

Aqua-Matic

DIAGRAM #M30000DO JDP 5/27/94



AM-2 PANEL

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(MOM. N.O.)
S2 - WASH
(MOM. N.C.)
S3 FIRE TRIP/RESET
(MAINTAINED N.C.)
L1 - FAN ON LIGHT
[120 V. AC.]
L2 -WASH LIGHT
[120 V. AC.]
L3 - FLOW LIGHT
[120 V. AC.]
L4 - FIRE LIGHT
[120 V. AC.]
K3 - FAN RELAY
[120 V. AC.]
K4 - FIRE RELAY
[24 V. DC.]
K5 - DRY CONTACT RELAY
[24 V. DC.]
TM1-WASH TIMER
[INTERVAL 120V AC.]
TM2-RINSE TIMER
[ON DELAY 120V AC.]
XF TRANSFORMER
[120VAC TO 24VAC]
PS-DC POWER SUPPLY
[120VAC TO 24VDC]
B1 & B2 BATTERYS
[12VDC EACH IN
SERIES TO 24VDC]

NOTE:

WHEN 120 V AC IS RESTORED DUE TO POWER INTERRUPT THE SYTEM WILL GO INTO A WASH CYCLE.

NOTE:

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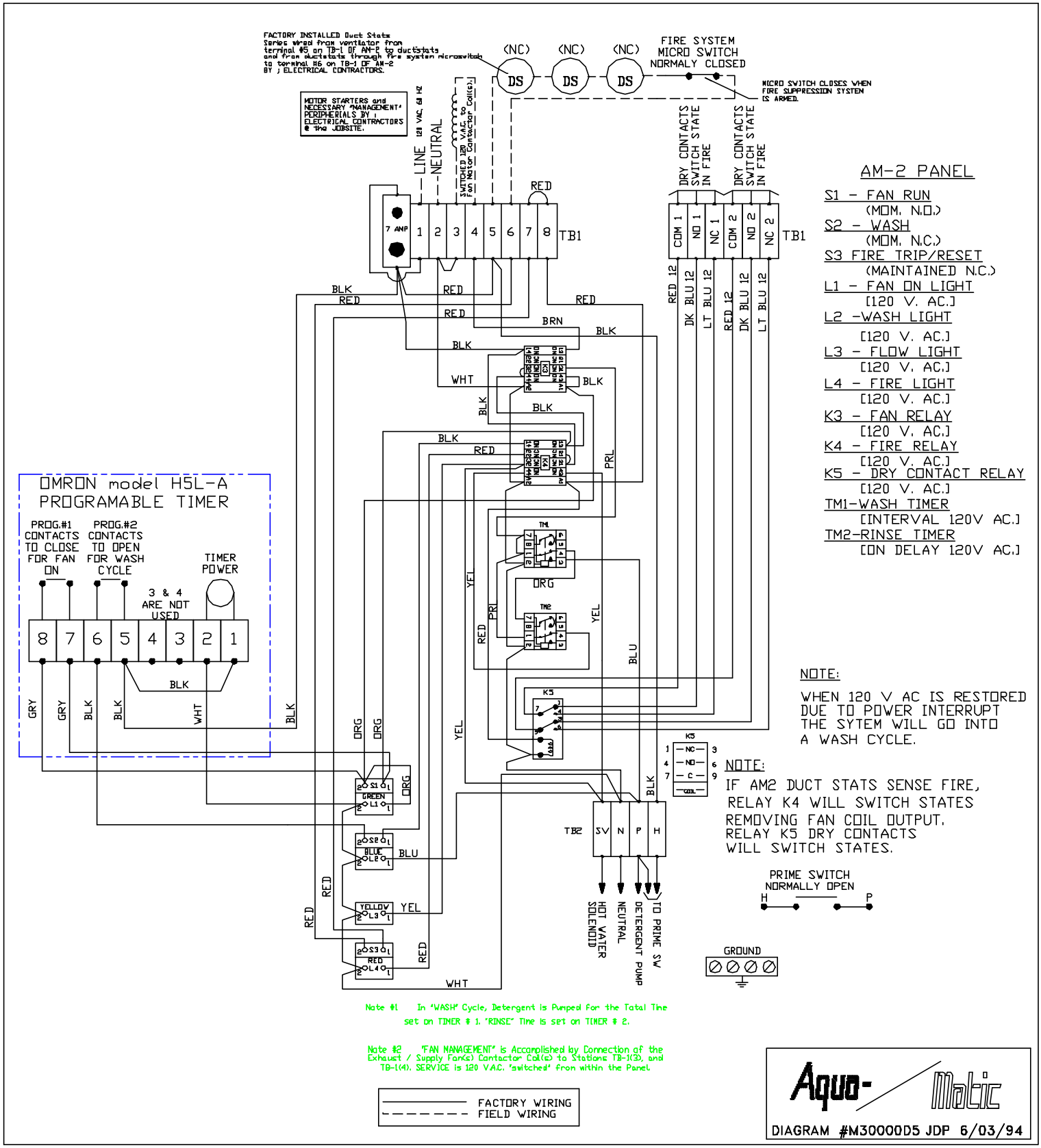
DC POSITIVE
DC NEGATIVE
FACTORY WIRING
FIELD WIRING

Aqua-Matic

DIAGRAM #M30000D2 JDP 3/19/96


FACTORY INSTALLED Duct State Series wired from ventilator fron terminal #5 on TB-1 OF AM-2 to ductstats and fron ductstats through fire system microswitch to terminal #6 on TB-1 OF AM-2 BY ; ELECTRICAL CONTRACTORS.
MOTOR STARTERS and NECESSARY "MANAGEMENT" PERIPHERIALS BY ; ELECTRICAL CONTRACTORS @ THE JOBSITE.
(NC)
(NC)
(NC)
DS
DS
DS
FIRE SYSTEM MICRO SWITCH NORMALY CLOSED
MICRO SWITCH CLOSES WHEN FIRE SUPPRESSION SYSTEM IS ARMED.
LINE
NEUTRAL
121 VAC, 60 HZ
SWITCHED 120 V.A.C. to Fan Motor Contactor Coil(s).
DRY CONTACTS SWITCH STATE IN FIRE
DRY CONTACTS SWITCH STATE IN FIRE
7 AMP
1 2 3 4 5 6 7 8 TB1
COM 1 NO 1 NC 1 COM 2 NO 2 NC 2 TB1
RED
BLK
RED
RED
RED
BRN
BLK
BLK
WHT
BLK
BLK
BLK
BLK
RED
PRL
TM1
ORG
YEL
PRL
RED
TM2
YEL
BLU
K5
ORG
ORG
YEL
BLK
TB2 SV N P H
OMRON model H5L-A PROGRAMABLE TIMER
PROG.#1 CONTACTS TO CLOSE FOR FAN ON
PROG.#2 CONTACTS TO OPEN FOR WASH CYCLE
TIMER POWER
3 & 4 ARE NOT USED
8 7 6 5 4 3 2 1
BLK
GRY
GRY
BLK
BLK
WHT
BLK
GREEN
BLUE
YELLOW
RED
BLU
YEL
RED
RED
RED
WHT
HOT WATER SOLENOID
NEUTRAL
DETERGENT PUMP
TO PRIME SW
PRIME SWITCH NORMALLY OPEN
H
P
GROUND
AM-2 PANEL
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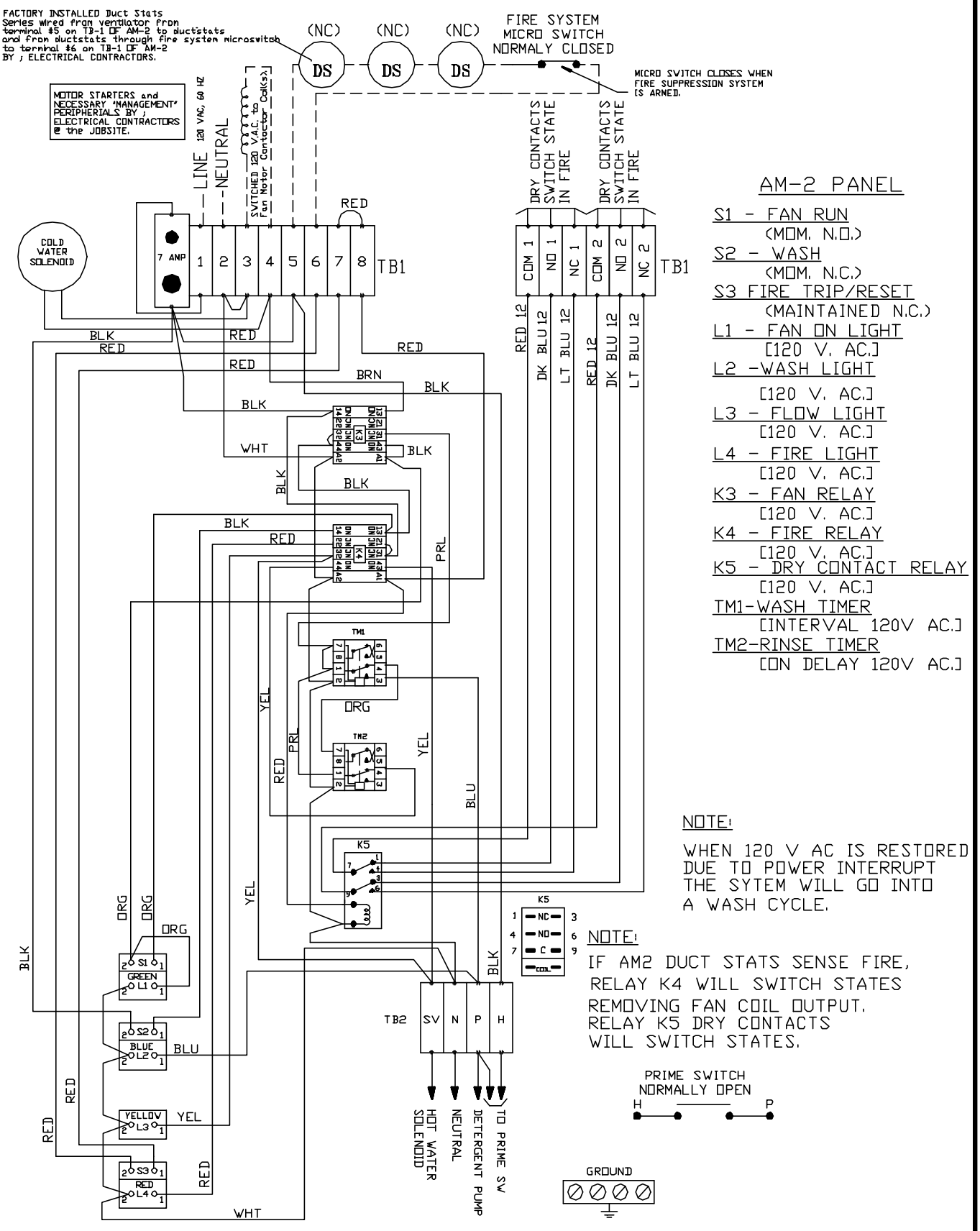
FACTORY WIRING
FIELD WIRING
Aqua-Matic
DIAGRAM #M30000D5 JDP 6/03/94



AM-2 PANEL

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IF AM2 DUCT STATS SENSE FIRE, RELAY K4 WILL SWITCH STATES REMOVING FAN COIL OUTPUT. RELAY K5 DRY CONTACTS WILL SWITCH STATES.

Note #1 In "WASH" Cycle, Detergent is Pumped for the Total Time set on TIMER # 1. "RINSE" Time is set on TIMER # 2.

Note #2 "FAN MANAGEMENT" is Accomplished by Connection of the Exhaust / Supply Fan(s) Contactor Coil(s) to Stations TB-1(3), and TB-1(4). SERVICE is 120 V.A.C. "switched" from within the Panel.

FACTORY WIRING
FIELD WIRING

Aqua-Matic

DIAGRAM #M30000D7 JDP 6/03/94