Autoveyor™ 2000

Technical Information Manual

Heavy Duty Autoveyor™ 2000 and IS System Included

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P/N 00634011

Autoveyor™ 2000

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Important Safety Instructions

1. READ THESE INSTRUCTIONS.

2. KEEP THESE INSTRUCTIONS.

3. HEED ALL WARNINGS.

4. FOLLOW ALL INSTRUCTIONS.

5. DO NOT CLEAN THIS APPARATUS WITH A WATER SPRAY OR THE LIKE.

6. DO NOT BLOCK ANY VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

7. DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES OR OTHER APPARATUS THAT PRODUCES HEAT.

8. ONLY USE ATTACHMENTS / ACCESSORIES SPECIFIED BY THE MANUFACTURER.

9. TURN THE POWER SWITCH TO THE "OFF" POSITION WHEN THE APPARATUS IS NOT IN USE AND BEFORE SERVICING.

10. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANY WAY, SUCH AS LIQUID HAS BEEN SPILLED OR OBJECTS FALLEN INTO THE APPARATUS, THE APPRATUS DOES NOT OPERATE NORMALLY.

Grounding Instructions

1. THIS MACHINE MUST BE CONNECTED TO A GROUNDED METAL, PERMANENT WIRING SYSTEM; OR AN EQUIPMENT-GROUNDING CONDUCTOR MUST BE RUN WITH THE CIRCUIT CONDUCTORS AND CONNECTED TO THE EQUIPMENT-GROUNDING TERMINAL OR LEAD ON THE CONVEYOR.

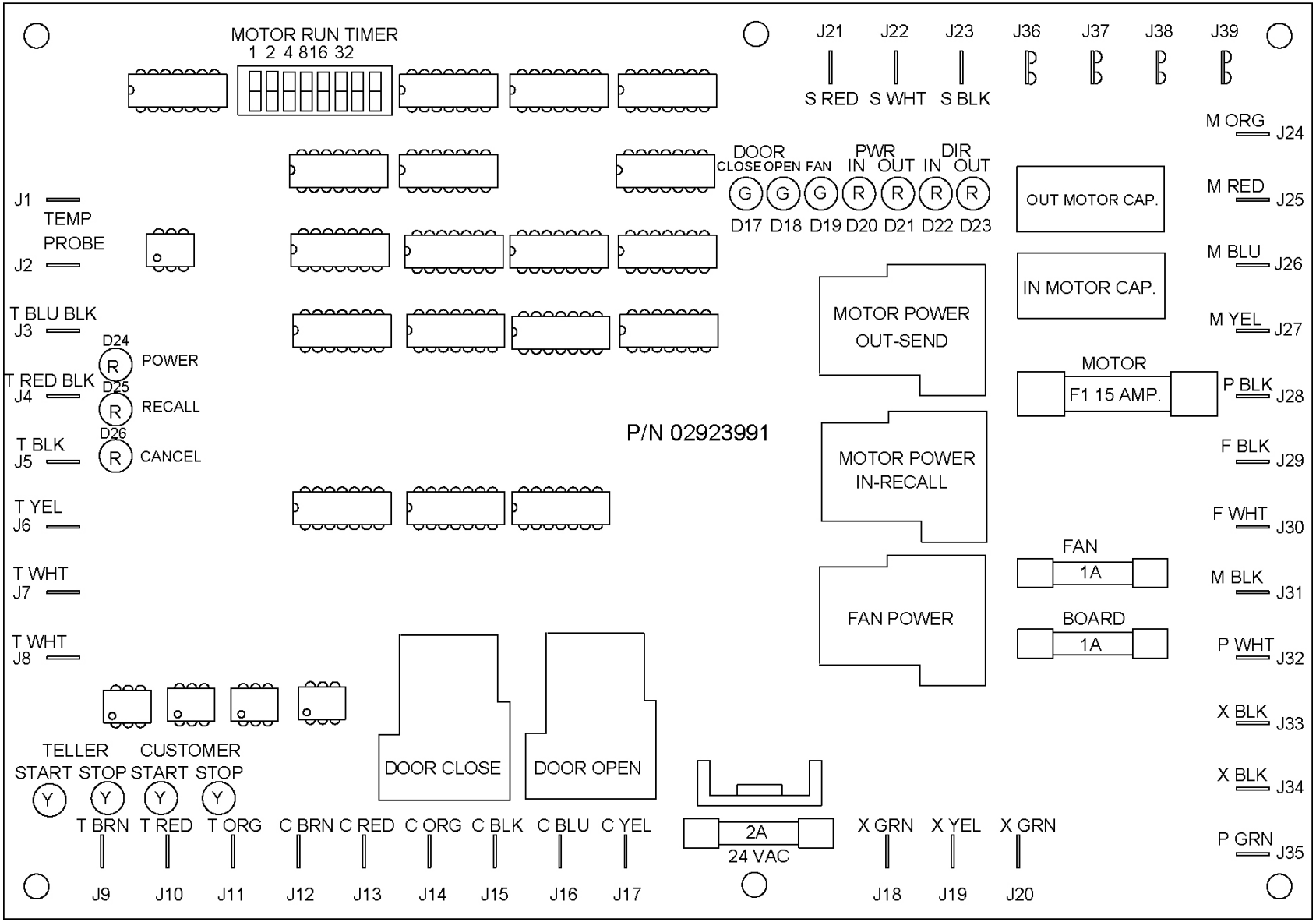
2. **DANGER** - CHECK WITH A QUALIFIED ELECTRICIAN OR SERVICEMAN IF THE GROUNDING INSTRUCTIONS ARE NOT COMPLETELY UNDERSTOOD, OR IF IN DOUBT AS TO WHETHER THE APPARATUS IS PROPERLY GROUNDED.

Autoveyor™ 2000 Control Overview

Advantages:

1. SOLID STATE CONTROL utilizes digital logic to make customer operation easier.
   a) POWER SWITCH turns unit on and off while combining the door opening and closing operation (Power on – door opens, Power off – door closes).
   b) The FAN is now controlled by the POWER SWITCH and an ELECTRONIC THERMOSTAT, such that no cold weather operating procedure need be followed to insure proper operation under cold weather conditions.
   c) CANCEL SWITCH stops the conveyor transaction, pauses, and then reverses direction. This returns the carrier to the person sending it regardless if it is teller or customer.
   d) RECALL SWITCH starts the conveyor inbound then closes the door lifting the carrier into the machine for transport in and reopens the door for service.
   e) MOTOR RUN TIMER limits the maximum run time of the conveyors to prevent catastrophic failure in the event of a hung carrier or accidental start due to replacement of the carrier in the basket.
2. SELF-INDICATING SWITCHES by virtue of mechanical screens, which flip revealing engraved messages, allow the operator to determine the system status without the need to associate position of switch levers with labels.
3. DUPLEX AUDIO built into conveyor.
   a) ELECTRET CONDENSER MICROPHONES are utilized which are compact in size and very sensitive in voice frequency range.
   b) INCOMING VOLUME CONTROL thumbwheel located on the bottom of the teller unit.
   c) CALL TONE built into AUDIO BOARD.
   d) MODULAR CONSTRUCTION of audio system components.
4. DRIVE MOTOR is of a standard versus instant reverse variety that has fewer moving parts and electrical contacts to fail.
   a) Located on the customer unit to keep noise and vibration outside.
5. DOOR MOTOR is low voltage design.
   a) Faster operation.
   b) Low maintenance chain drive that does not need extra heat for proper operation in cold weather.
6. STOP/START SWITCHES are of an improved design which are more tolerant of overloaded carriers and require no adjustment.

CONTROL BOARD P/N 02923991



Diagnostics

LED Color	Number	Name	Condition	Indicates
Yellow	D13	TELLER START	Normally off On	Normal Teller start switch activated
Yellow	D14	TELLER STOP	Normally on Off	Normal Teller stop switch activated
Yellow	D15	CUSTOMER START	Normally off On	Normal Customer start switch activated
Yellow	D16	CUSTOMER STOP	Normally on Off	Normal Customer stop switch activated
Green	D17	DOOR CLOSE	Normally off On	Normal Door closing
Green	D18	DOOR OPEN	Normally off On	Normal Door opening
Green	D19	FAN	Normally on Off	Fan on Fan off
Red	D20	POWER IN	Normally off On	Normal Motor running carrier in
Red	D21	POWER OUT	Normally off On	Normal Motor running carrier out
Red	D22	DIR IN	Normally off On	Normal Motor running carrier in
Red	D23	DIR OUT	Normally off On	Normal Motor running carrier out
Red	D24	ON/OFF	Normally on Off	Power ON/OFF switch on Power ON/OFF switch off
Red	D25	RECALL	Normally off On	Normal RECALL switch depressed
Red	D26	CANCEL	Normally off On	Normal CANCEL switch depressed

Fuses

The CONTROL BOARD has four fuses. The fuses are covered by a blue plastic cover. When replacing fuses it is important to replace the fuses with the correct size and to replace the blue plastic covers to prevent accidental shorting. Below is a list of the fuses with the name as listed on the CONTROL BOARD, size and purpose.

Name	Size	Purpose
24 VAC	MDL2	Controls the 24 vac from the transformer which powers the DOOR MOTOR, AUDIO, and START/STOP SWITCHES
BOARD	MDL1	Controls the 110 vac into the transformer which powers the CONTROL BOARD
FAN	AGC1	Controls the 110vac to FAN (normal AV 2000 no heater)
MOTOR	MDL15	Controls the 110 vac to the main DRIVE MOTOR

WARNING: For continued protection from risk of fire, only replace fuses with same type and rating.

Motor Run Timer

The MOTOR RUN TIMERS' jobs are just as the name implies, to limit the maximum length of the time the motors can run.

There are two timers on the CONTROL BOARD.

The first is the DOOR MOTOR run timer for the door open/close functions. The time is fixed at 15 seconds. If, for some reason, the door becomes jammed before the door activates its limit switch the motor will not overheat and ruin since power will be cut off in 15 seconds.

The second is the MOTOR RUN TIMER for the conveying functions. The timer is adjustable from 0 to 63 seconds by a series of DIP switches called S1 on the CONTROL BOARD. (Note: The slave board has no run limit timer of its own but is also controlled by the MOTOR RUN TIMER of the CONTROL BOARD.)

The time is set at the factory during test for approximately 15 seconds more than what is required for a normal transaction. If the CONTROL BOARD is replaced or if adverse conditions exist, the MOTOR RUN TIMER will have to be reset. There are 8 positions on the DIP switches. Positions 7 and 8 are not used. Position 1=1 sec, 2=2sec, 3=4 sec, 4=8 sec, 5=16 sec and 6=32 seconds. The time equals the sum of the number of seconds associated with each position that is turned on. Example: If positions 1, 3, and 5 are on, than the total run time would be (1)=1 sec. + (3)=4 sec. + (5)=16 sec. = 21 seconds.

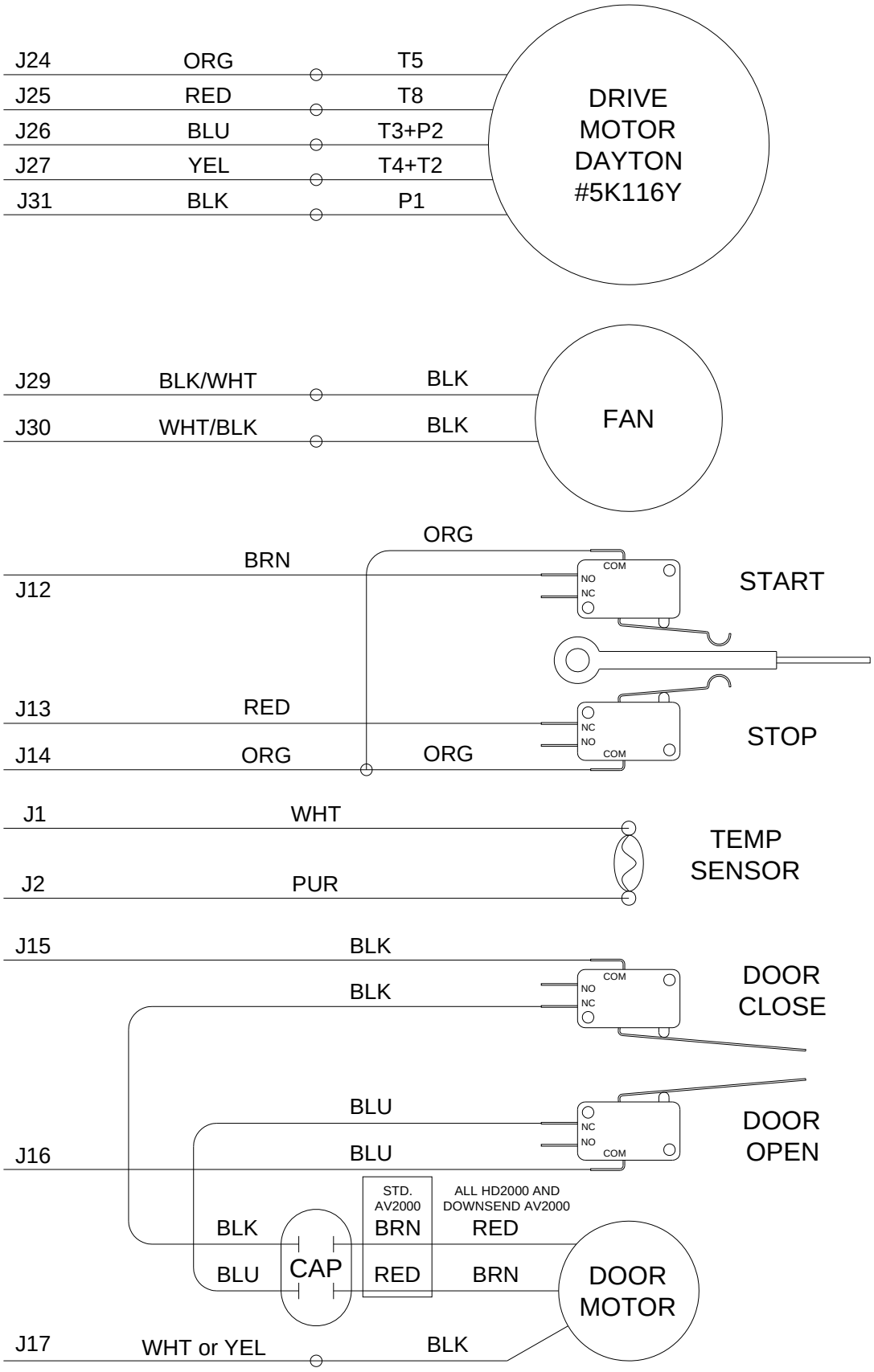
Troubleshooting Voltages

The following list is the voltage that should be present on each pin of the CONTROL BOARD, in relation to what pin, purpose, during each condition.

Pin	Voltage	Relative Pin	Purpose	Condition
J1	<+6vdc >+6vdc	J2	Control FAN	Fan off when power switch is off Fan on
J2	DC common		See J1 above	
J3	24 vac 0 vac	J6	Control power	Power switch in off position Power switch in on position
J4	24 vac 0 vac	J6	Control recall	Recall switch in normal position Recall switch depressed
J5	24 vac 0 vac	J6	Control cancel	Cancel switch in normal position Cancel switch depressed
J6	DC common		See J3 thru J5	
J7	AC common		See J8	
J8	24 vac	J7	Audio power	Normal, unit plugged in
J9	24 vac 0 vac	J11	Teller start	Normal Teller start switch depressed
J10	0 vac 24 vac	J11	Teller stop	Normal Teller stop switch activated
J11	AC common		See J9 an J10	
J12	24 vac 0 vac	J14	Customer start	Normal Customer start switch activated
J13	0 vac 24 vac	J14	Customer stop	Normal Customer stop switch activated
J14	AC common		See J12 and J13	
J15	0 vac 24 vac	J17	Door	Normal Door closing
J16	0 vac 24 vac	J17	Door	Normal Door opening
J17	AC common		See J15 and J16	
J18	24 vac	J20	24 vac power	Normal
J19	12 vac	J20	12 vac internal power	Normal
J20	AC common		See J18 and J19	
J21	0vdc -12vdc	J23	Slave board	Normal Motor running out
J22	0 vdc -12 vdc	J23	Slave board	Normal Motor running in
J23	+12 vdc com.		See J21 and J22	
J24	0 vac 0 to 120 vac	J32	Motor Interchange	Normal Motor running
J25	0 vac 0 to 120 vac	J32	Motor Interchange	Normal Motor running
J26	0 vac 0 to 120 vac	J32	Motor Interchange	Normal Motor running
J27	0 vac 120 vac	J32	Motor hot	Normal Motor running

J28	120 vac	J32	Hot power in	Normal
J29	0 vac 120 vac	J32	Fan hot	Normal Fan on
J30	120 vac	J28	Fan neutral	Normal
J31	120 vac	J28	Motor neutral	Normal
J32	120 vac	J28	Neutral power in	Normal
J33	120 vac	J28	Transformer neutral in	Normal
J34	120 vac	J32	Transformer hot in	Normal
J35	0 v		Equipment chassis ground	

CUSTOMER END WIRING AV2000



2000 Series Wiring Changes

The 16-8 VNTC and 16-2 SJO cables have been replaced with an 18-10 cable to simplify wiring. The new cable has no conductors with stripes; they are all solid colors. This has necessitated some changes which are documented as follows:

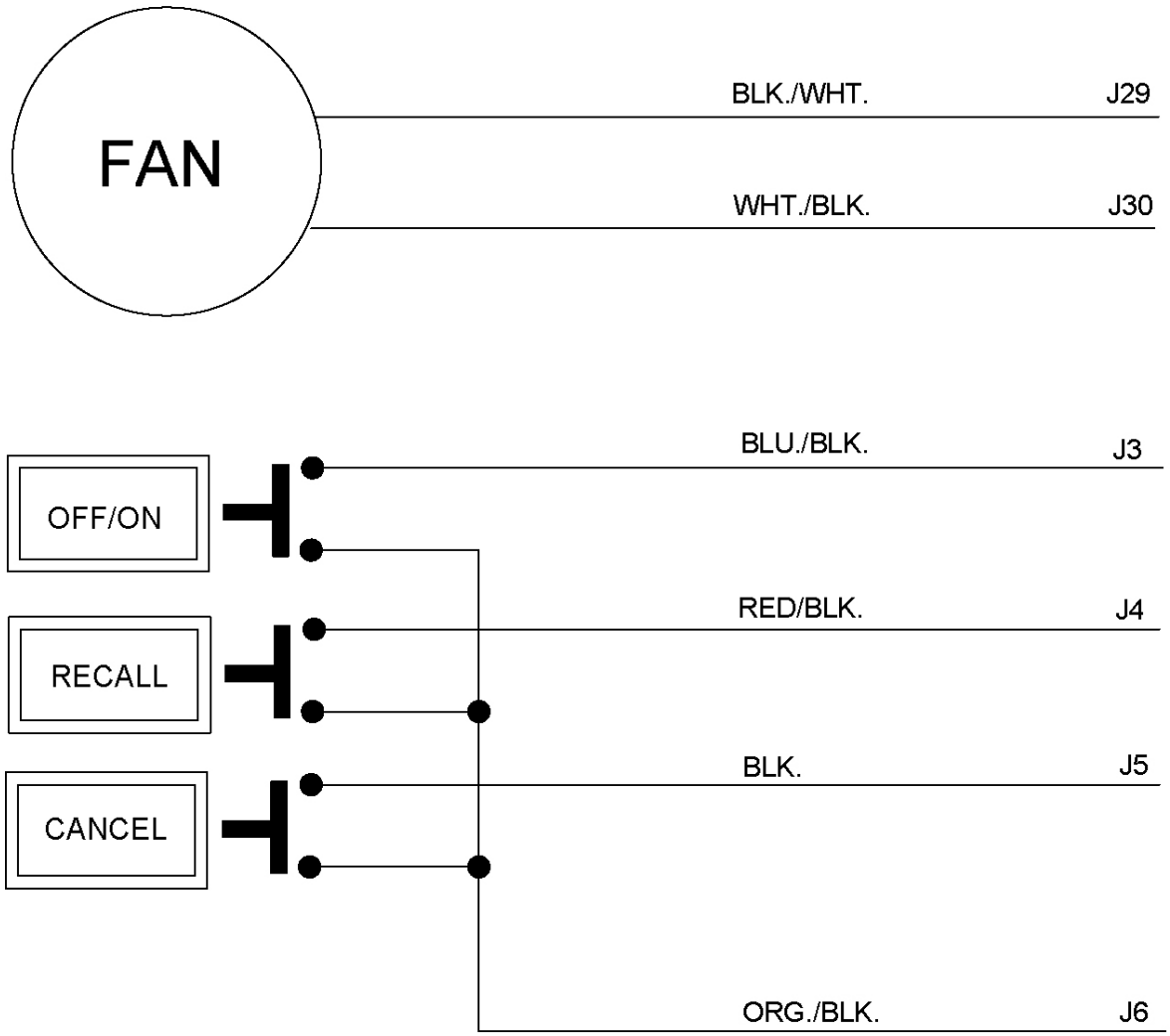
Customer End Wiring

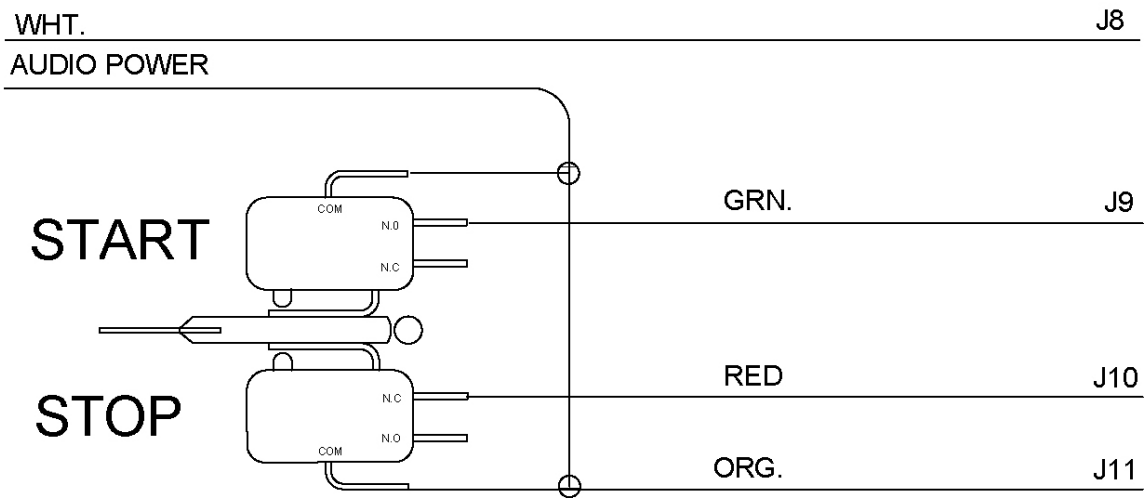
Device	Board Connection	Old Color	New Color
Temperature Probe Wire	J1	Red/black	White
Temperature Probe Wire	J2	Blue/black	Purple
Start Switch	J12	Brown	Green

Teller End Wiring

Device	Board Connection	Old Color	New Color
On/Off Switch	J3	Blue/black	Blue
Recall Switch	J4	Red/black	Red
Switch Common	J6	Orange/black	Yellow
Stop Switch	J10	Red	Purple
Blower	J29	Black	Brown
Blower	J30	White	Gray

TELLER END WIRING AV2000





Power Wiring

The current model AV-2000 is no longer supplied with a wired-in molded cord set. A ½" conduit knockout is supplied on the side of the galvanized steel heat box which encloses the vertical to horizontal transition. This is manufactured in a manner to allow the side panel to be removed for service without disturbing the line connections.

If it is acceptable to the local authority having jurisdiction to cord connect the machine, a molded cord set is supplied with each machine. Connections are as follows:

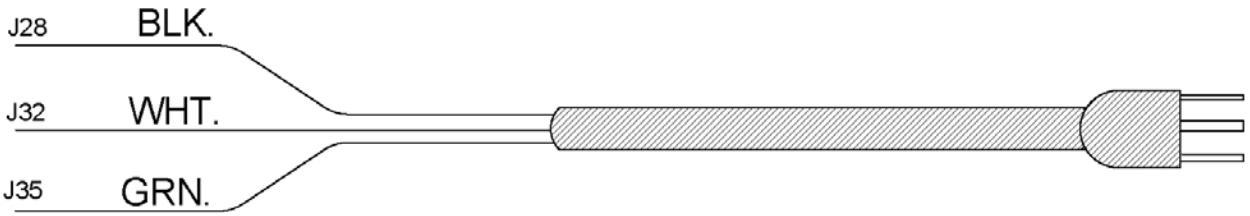
Master Control Board

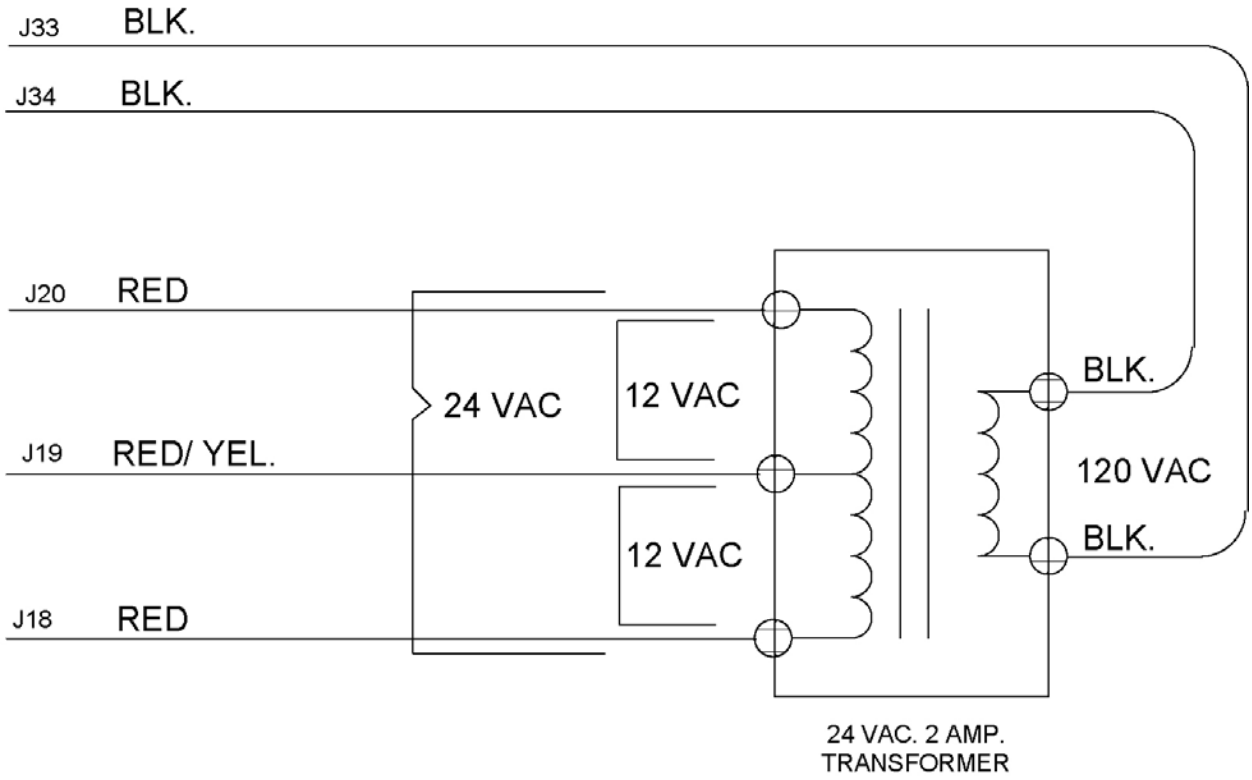
Wire	Potential	Location
Black	120vac Hot	J28 P BLK
White	120vac neutral	J32 P WHT
Green	Ground	Green screw marked GND on riser.

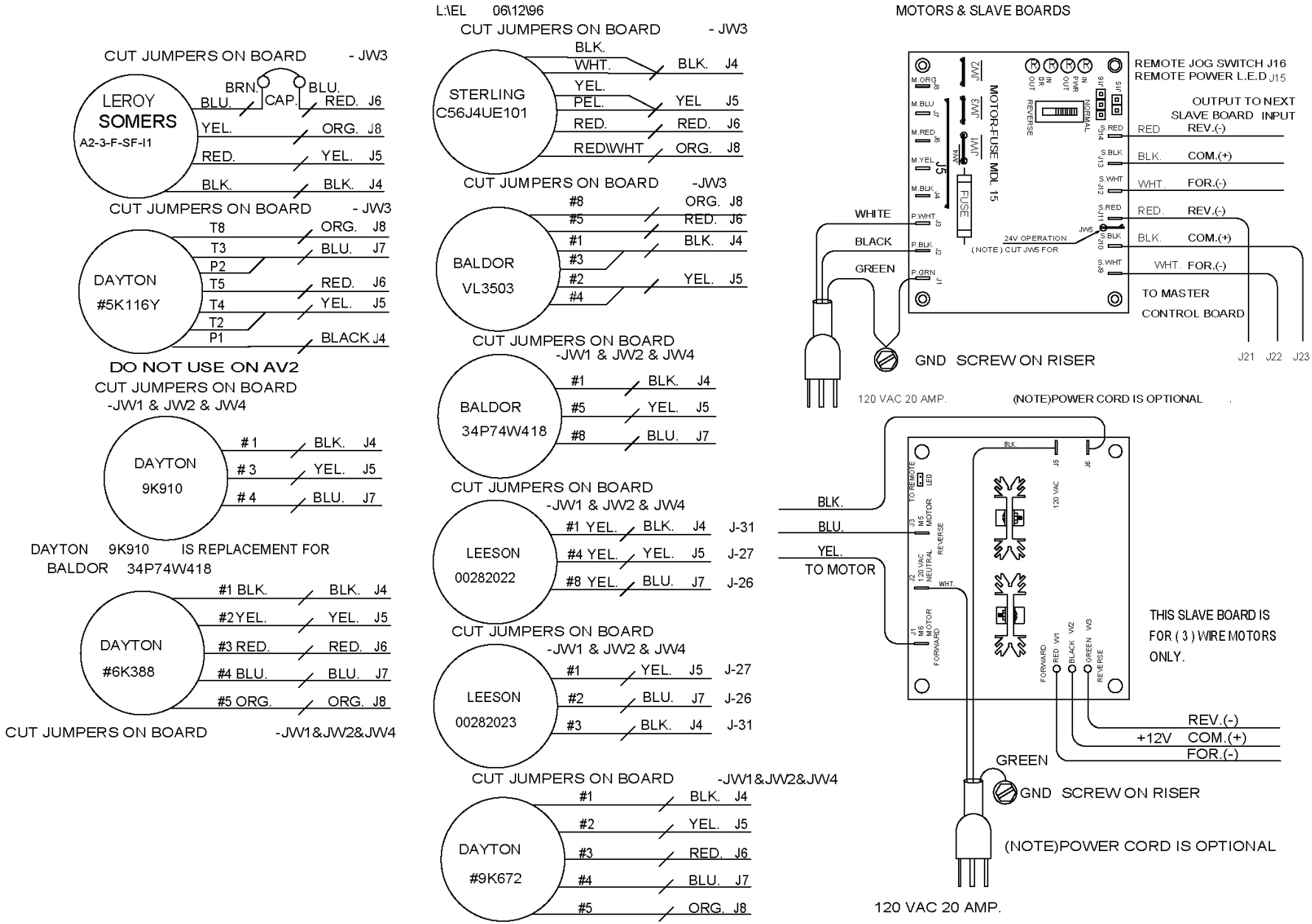
Slave Board

Wire	Potential	Location
Black	120vac Hot	J2 P BLK
White	120vac neutral	J3 P WHT
Green	Ground	Green screw marked GND on riser.

POWER WIRING AV2000





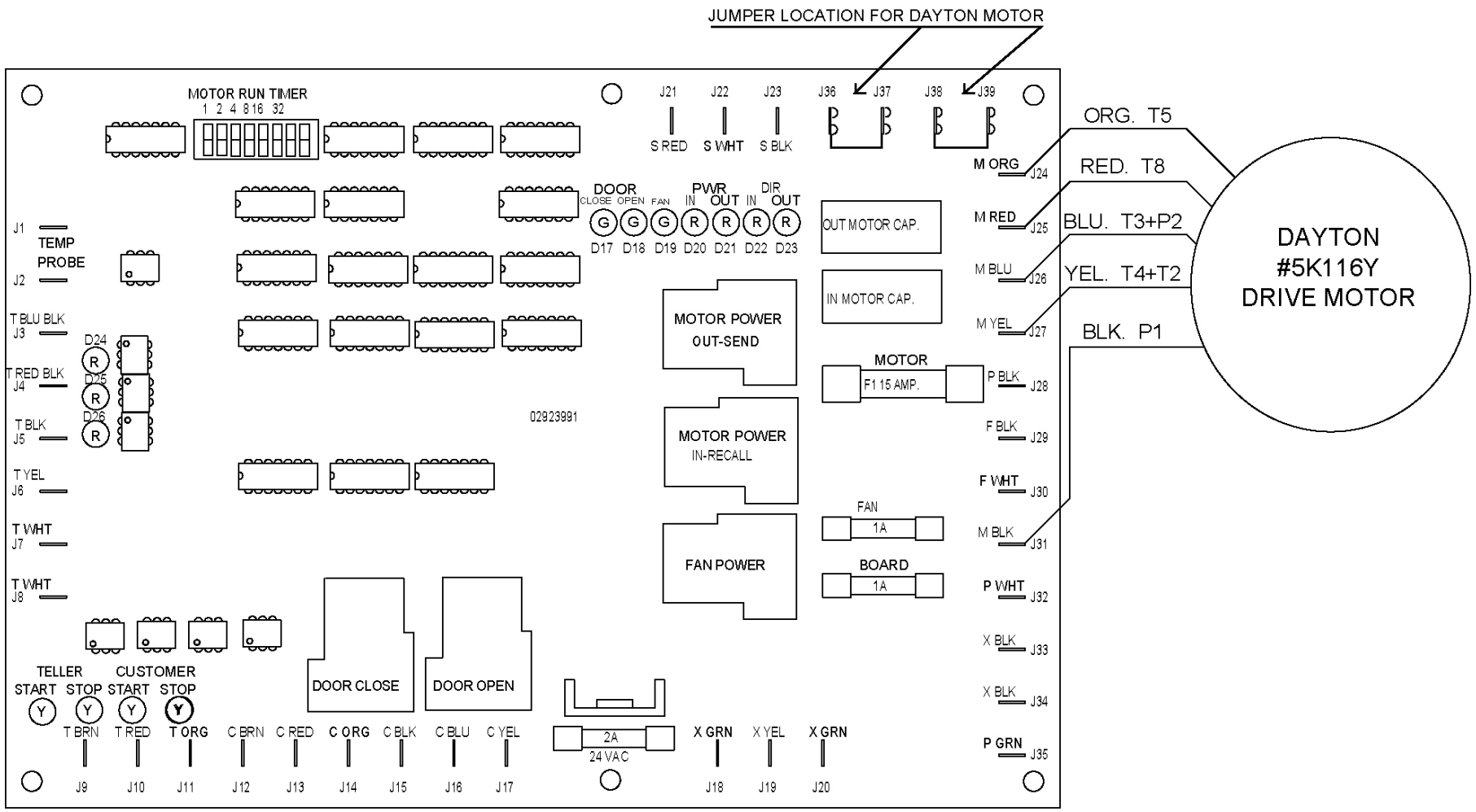

CUT JUMPERS ON BOARD - JW3
LEROY SOMERS
A2-3-F-SF-I1
BRN. BLU. CAP.
BLU. RED. J6
YEL. ORG. J8
RED. YEL. J5
BLK. BLK. J4
CUT JUMPERS ON BOARD - JW3
DAYTON #5K116Y
T8 ORG. J8
T3 BLU. J7
P2
T5 RED. J6
T4 YEL. J5
T2
P1 BLACK J4
DO NOT USE ON AV2
CUT JUMPERS ON BOARD
-JW1 & JW2 & JW4
DAYTON 9K910
#1 BLK. J4
#3 YEL. J5
#4 BLU. J7
DAYTON 9K910 IS REPLACEMENT FOR
BALDOR 34P74W418
DAYTON #6K388
#1 BLK. BLK. J4
#2 YEL. YEL. J5
#3 RED. RED. J6
#4 BLU. BLU. J7
#5 ORG. ORG. J8
CUT JUMPERS ON BOARD -JW1&JW2&JW4
CUT JUMPERS ON BOARD - JW3
STERLING C56J4UE101
BLK.
WHT. BLK. J4
YEL.
PEL. YEL J5
RED. RED. J6
RED\WHT ORG. J8
CUT JUMPERS ON BOARD -JW3
BALDOR VL3503
#8 ORG. J8
#5 RED. J6
#1 BLK. J4
#3
#2 YEL. J5
#4
CUT JUMPERS ON BOARD
-JW1 & JW2 & JW4
BALDOR 34P74W418
#1 BLK. J4
#5 YEL. J5
#8 BLU. J7
CUT JUMPERS ON BOARD
-JW1 & JW2 & JW4
LEESON 00282022
#1 YEL. BLK. J4 J-31
#4 YEL. YEL. J5 J-27
#8 YEL. BLU. J7 J-26
CUT JUMPERS ON BOARD
-JW1 & JW2 & JW4
LEESON 00282023
#1 YEL. J5 J-27
#2 BLU. J7 J-26
#3 BLK. J4 J-31
CUT JUMPERS ON BOARD -JW1&JW2&JW4
DAYTON #9K672
#1 BLK. J4
#2 YEL. J5
#3 RED. J6
#4 BLU. J7
#5 ORG. J8
MOTORS & SLAVE BOARDS
MOTOR-FUSE MDL 15
FUSE
24V OPERATION
(NOTE) CUT JW5 FOR
REMOTE JOG SWITCH J16
REMOTE POWER L.E.D J15
OUTPUT TO NEXT SLAVE BOARD INPUT
RED REV.(-)
BLK. COM.(+)
WHT. FOR.(-)
RED. REV.(-)
BLK. COM.(+)
WHT. FOR.(-)
TO MASTER CONTROL BOARD
J21 J22 J23
WHITE
BLACK
GREEN
GND SCREW ON RISER
120 VAC 20 AMP.
(NOTE)POWER CORD IS OPTIONAL
BLK.
BLU.
YEL.
TO MOTOR
THIS SLAVE BOARD IS FOR (3) WIRE MOTORS ONLY.
REV.(-)
+12V COM.(+)
FOR.(-)
GREEN
GND SCREW ON RISER
(NOTE)POWER CORD IS OPTIONAL
120 VAC 20 AMP.

Jumpers

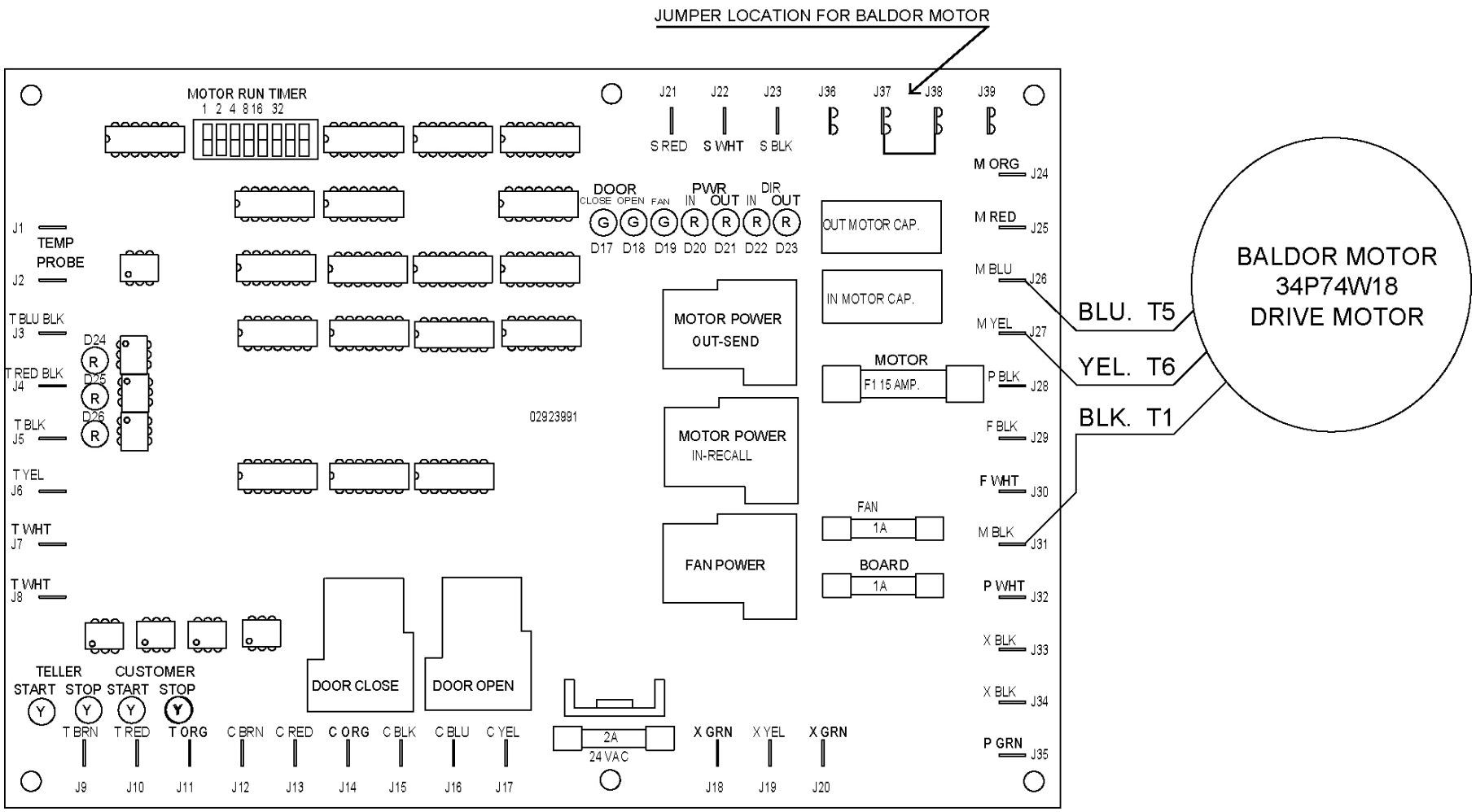
The CONTROL BOARD has three jumpers that have to be configured for the style motor it is being used in conjunction with. The jumper system used prior to August 23, 1989 required that the jumpers be soldered in. The current version utilizes quick slide connectors. Pleas note that the quick slide connectors are the fully insulated version to prevent accidental shorting. If only one jumper is used, the remaining two connectors on the board should have blank insulated connectors installed on them.

The configuration is as follows:

Motor	**JW1**	**JW2**	**JW3**
Connect	J38-J39	J36-J37	J37-J38
Dayton 5K116	IN	IN	OUT
Dayton 9K672	OUT	OUT	IN
Dayton 6K388	OUT	OUT	IN
Baldor 34P74	OUT	OUT	IN

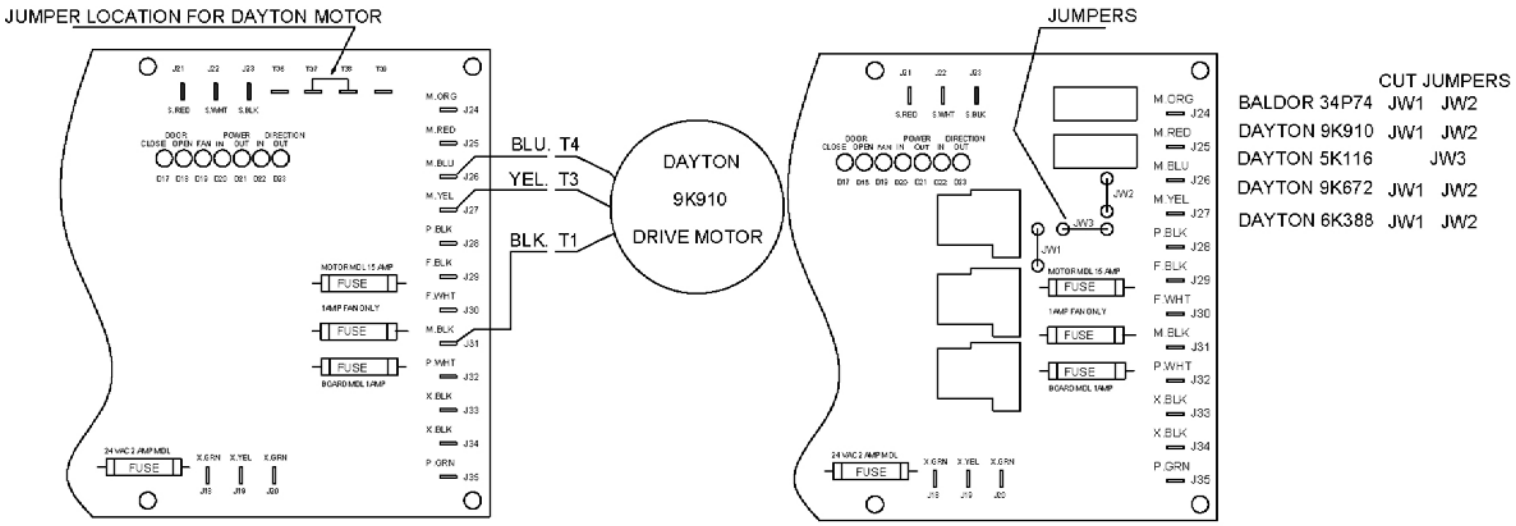


CONTROL BOARD P/N 02923991

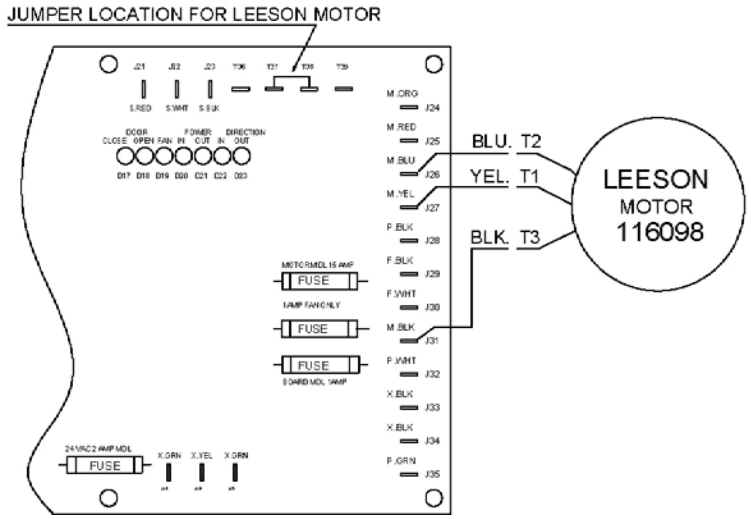


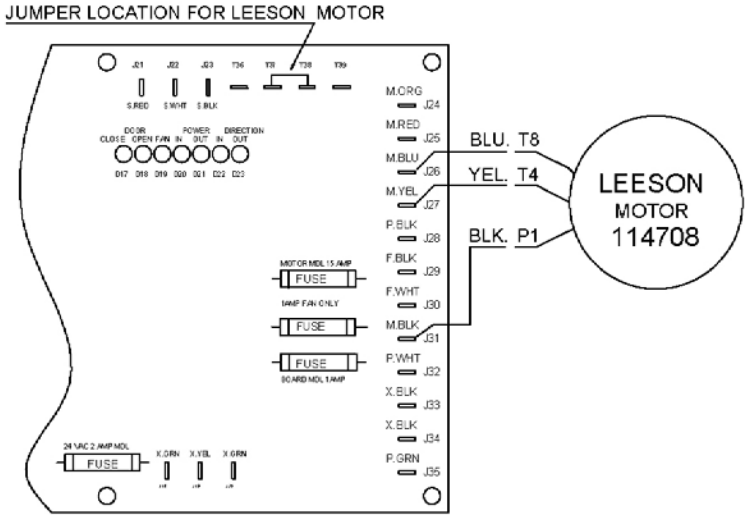
CONTROL BOARD P/N 02923991

JUMPER LOCATIONS 2000 CONTROL BOARD



CUT JUMPERS		
BALDOR 34P74	JW1	JW2
DAYTON 9K910	JW1	JW2
DAYTON 5K116		JW3
DAYTON 9K672	JW1	JW2
DAYTON 6K388	JW1	JW2





Audio Overview

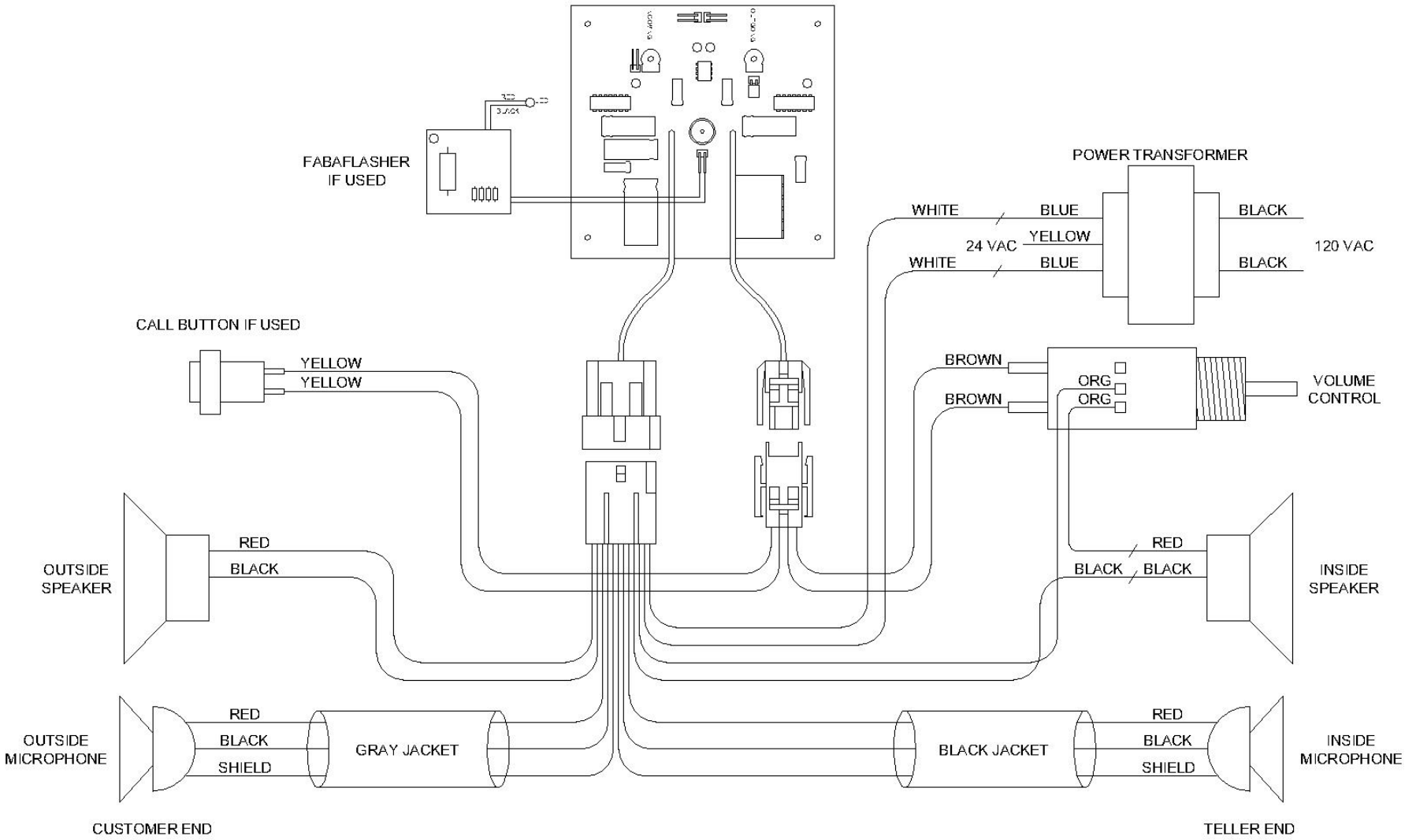
The audio system that the Autoveyor™ 2000 is equipped with is a new design. The microphones are of the ELECTRET CONDENSER variety, which vastly improves the quality of the audio over previous systems. The format is FULL DUPLEX which has no voice switch. As a result both teller and customer can carry on a simultaneous conversation. A teller alert tone is built into the AUDIO BOARD and will work if the AUDIO SWITCH is on or off.

Audio Adjustment

If field adjustment of the AUDIO SYSTEM is necessary, it should be performed as follows. The TELLER INCOMING VOLUME CONTROL should be turned to minimum. With the teller speaking into the INSDIE MICROPHOME and a vehicle present at the CUSTOMER UNIT, the OUTGOING VOLUME CONTROL on the AUDIO BOARD should be adjusted for satisfactory volume.

The TELLER INCOMING VOLUME CONTROL should now be adjusted to maximum. The INCOMING VOLUME CONTROL on the AUDIO BOARD should be adjusted clockwise until feedback occurs, then counterclockwise until feedback stops. This should complete adjustment.

If the incoming level is not sufficient high enough the outgoing level will have to be reduced to be able to get additional incoming volume. The gain levels are a balance; adjustment of each has an effect on the other. If the incoming level is too high, the TELLER INCOMING VOLUME CONTROL can be adjusted to lower level.


FABAFLASHER
IF USED
POWER TRANSFORMER
WHITE
BLUE
BLACK
24 VAC
YELLOW
120 VAC
WHITE
BLUE
BLACK
CALL BUTTON IF USED
YELLOW
YELLOW
BROWN
ORG
VOLUME
CONTROL
BROWN
ORG
OUTSIDE
SPEAKER
RED
BLACK
RED
BLACK
BLACK
INSIDE
SPEAKER
OUTSIDE
MICROPHONE
RED
BLACK
SHIELD
GRAY JACKET
BLACK JACKET
RED
BLACK
SHIELD
INSIDE
MICROPHONE
CUSTOMER END
TELLER END

Wiring Connections

The wiring system on the Autoveyor™ 2000 Series equipment is all connectorized with pin and socket style connectors. The wiring simply plugs together, typically at vertical to horizontal junctions.

The audio circuits are 9 position connectors, master control circuits are 12 position connectors and slave control circuits are 3 position connectors.

After plugging connectors together, it is important to secure wiring away from all moving parts and sharp edges.

Belting

Our experience has shown that the round belting used in Autoveyors™ loses tension during its life. The belting is factory set at the following tensions:

AV Vertical..... 6%
AV Horizontal..... 8%
All Power Belts..... 8%
HD Verticals 8%

When performing a tune-up and removing belting to get it to the proper design length, it is important to cut out the old splice to have only one splice per belt.

The only reasons that we support for replacement of the belting are as follows:

1. Damaged belting due to running with one end of the belt off the pulley sliding on the stainless steel shafting. This results in a flat spot on the belting.

2. Belting that, due to elongation, has reduced its diameter to the point that it rides in the bottom of the pulley groove and is not higher than the running surface of the pulley.

3. The belting has been frozen while containing excess moisture. This results in many tiny cracks that will eventually fail. This typically only happened in northern areas next to oceans, lakes, etc.

4. Power belts, due to higher loads, should be inspected and or replaced annually.