

NOTICE TO SERVICE PERSONNEL

INSTALLATION

Improper installation of Wascomat laundry and wet cleaning equipment can result in personal injury and severe damage to the machine.

REFER INSTALLATION TO QUALIFIED PERSONNEL!

RISK OF ELECTRIC SHOCK

The equipment utilizes high Voltages. Disconnect electric power before servicing.

The use of proper service tools and techniques, and the use of proper repair procedures, is essential to the safety of service personnel and equipment users.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL!

RISK OF PERSONAL INJURY

This equipment contains moving parts, and some components that may have sharp edges. Improper or careless service procedures may result in serious injury to service personnel.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL!

ABOUT THIS MANUAL

This manual is intended to provide service guidance to qualified service personnel.

Wascomat and its authorized dealers make no determination regarding the qualification of individuals requesting this service manual. The service provider assumes all risks inherent to the servicing of this equipment and any risks that arise as result of the lack of knowledge or ability of any person servicing this equipment.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL!

NOTE:

Improper installation or servicing of Wascomat equipment will void the manufacturer's warranty!

WET PRODUCTS

Front Load Washers

ISSUE: Diagnosing the DC Motor Models of the Front Load Washer

The older models (as well as some of the newer models) use the DC motor that we used exclusively, (it can be a SOLE or an AEG) before December 15th, 1999. For a description of the differences between these two motors, how to test the SOLE motor, and to determine which model you are diagnosing see the **Service Bulletin March 2000**. What we will be discussing here is how to diagnose the DC motor models.

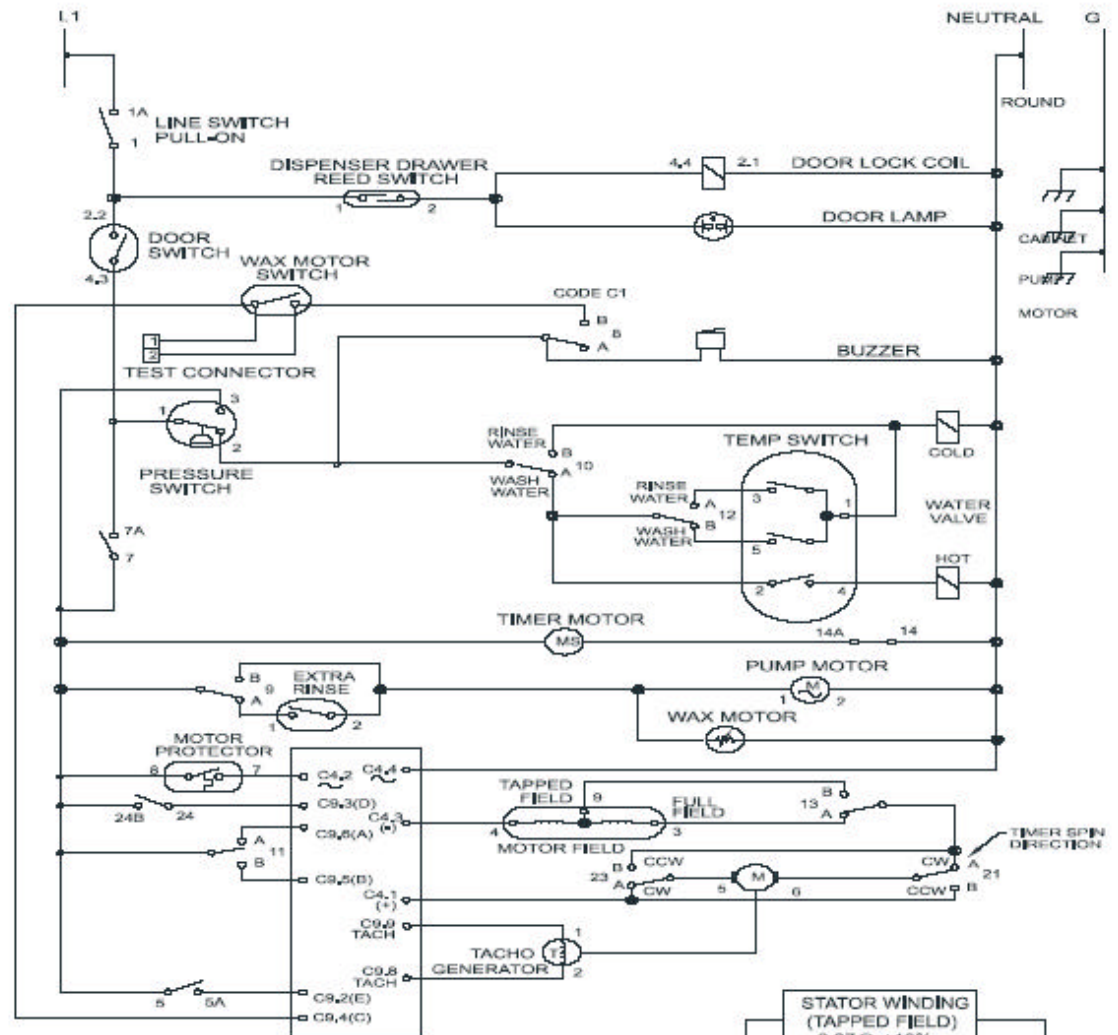
SOLUTION: The procedures for diagnosing the DC motor models are very similar to diagnosing the AC motor models, with a few important differences:

1. The DC motor changed direction by a reversal of polarity controlled by the **TIMER**. The SOLE motor also changes direction by a reversal of polarity, but this polarity change is controlled by the **SPEED CONTROL BOARD**.
2. To diagnose the DC motor models, you absolutely must have the **wiring diagram** (an example of which is shown on the next page). Take note of the three elements on the next page that you will need; the **Wiring Diagram**, the **Speed Control Operation chart** and the **Motor Diagnosis chart** (Other elements that are included with the documentation provided with the machines are unneeded for our purposes here and have been omitted). To diagnose the SOLE motor model, you must have both the **wiring diagram** and the **timer chart** that came with the machine.
3. On the models with the DC motor, the timer motor runs continually from start to finish. On the AC 3- phase models, the timer only runs when the board supplies power to the timer motor.

Let's examine two of the three main elements from the wiring diagram page.

WIRING DIAGRAM:

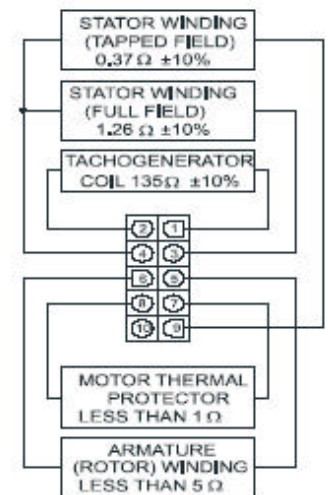
Look at the Speed Control Board. It is at the bottom of the Ladder Diagram, just above the Speed Control Unit Operation chart. On the left side of it you will notice six terminals; C4.2, C9.3 (D), C9.6 (A), C9.5 (B), C9.2 (E) and C9.4 (C). The A, B, C, D and E (in parenthesis) are codes that when compared to the Speed Control Operation chart, make reference to the voltage that should be present at these connections when the timer is telling the speed control board what to instruct the motor to do.



SPEED CONTROL UNIT OPERATION

DRUM RPM	PHASES DESCRIPTION	CODE	E D C B A				
			5 A B	24B	8B	11B	11A
0	NO ACTION	/	X	0	0	0	X
0	NO ACTION	/	X	X	0	0	0
0	NO ACTION	/	X	0	0	1	X
0	NO ACTION	/	X	X	0	1	1
0	NO ACTION	/	X	0	X	1	1
0	NO ACTION	/	X	X	1	1	1
52	AGIT-CONTINUOUS	N	X	1	0	0	1
52	AGIT-DUTY CYCLE	D	X	1	0	1	0
450	INTERVAL SPIN	S1+S1	X	X	1	0	1
450	SPIN-CONTINUOUS	S1	X	X	1	0	0
650	SPIN-CONTINUOUS	S2	1	X	1	1	0
850	SPIN-CONTINUOUS	S3	0	X	1	1	0

1=120 VAC 0=0 VAC X=DONT CARE (1 OR 0)



MOTOR CONNECTOR

Front Load Washers

ISSUE: Diagnosing the DC Motor Models of the Front Load Washer continued,

SPEED CONTROL UNIT (SCU) OPERATION

First, notice the codes E, D, C, B and A listed at the top of the chart. Next, notice the DRUM RPM and PHASES DESCRIPTION on the left side of the chart. Now, notice the legend at the bottom of the box; 1 = 120 VAC, 0 = 0 VAC and X = DON.T CARE (1 or 0).

Let's say that you are diagnosing a machine that the Consumer says will not spin. Previously, we discussed where you should begin in the diagnosis. If you have completed this check and found that the machine **will not spin** and there is nothing wrong with the pressure switch or the pump, proceed as follows. In the regular cycle, the spin speed is 650 rpm and then increases to 850 rpm in the last part of the spin cycle. The SCU Operation chart shows that at 650 rpm, you (when measuring the voltages at the SCU) should read:

1. 120 volts at code E (terminal C9.2)
2. It doesn't matter what voltage that you read at code D (terminal C9.3)
3. 120 volts at code C (terminal C9.4)
4. 120 volts at code B (terminal C9.5)
5. 0 volts at code A (terminal C9.6)

If you **are** reading those voltages at the board, but the machine is not spinning (remember that when you advance the machine into spin, it will first tumble for about 180 seconds before it should start to spin), then you know that there is nothing wrong with the timer. The timer is doing what it is supposed to do; namely, supply power to the board. This means that the fault is with either the **SCU** or the **Motor**.

Now look at the final element; the MOTOR CONNECTOR chart:

This chart shows the resistances that you should read at the motor connector. If the motor windings and the tachogenerator are reading the proper resistances then you know that there is nothing wrong with the motor. By process of elimination, you now know that the fault lies with the SPEED CONTROL UNIT or the motor harness (possible broken wire or poor crimp of a wire to a terminal).

Every operation that the machine performs with regard to the motor can be diagnosed in this same way.

One other note: The SPEED CONTROL UNIT OPERATION chart also lists the timer contacts below the codes that close, to supply (to each of the five terminals on the board) the voltage that the board interprets, to tell the motor what to do. You can test voltage at the timer contact terminals directly to back-up your diagnosis.

If you are not reading the voltage at the board that corresponds to what the motor should be doing, but you **are** reading correct voltage at the timer terminal itself, then you have a break or poor connection in the wire somewhere between the timer and the SCU.

Note: If the paperwork is missing from the machine, call the Tech Line from the home for help in making the diagnosis.