DISHWASHER and COMPACTOR

STUDY COURSE

UNDERSTANDING COMPACTOR: • ELECTRICAL COMPONENTS and CHECKING PROCEDURES





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INTRODUCTION

The material presented in this module is intended to provide you with an understanding of the fundamentals of dishwasher and trash masher[®] compactor servicing.

Major appliances have become more sophisticated, taking them out of the screwdriver and pliers category. Their electrical circuits include several different types of automatic controls, switches, heaters, valves, etc.. Semiconductors, solid-state controls, and other components usually associated with radio and television electronic circuits are being engineered into automatic washers, dryers, dishwashers and refrigerators.

The appliance technician is emerging into a professional status of his own. He must prepare himself now to be able to perform his duties today as well as to retain his professionalism in the future.

No longer is on-the-job training sufficient to prepare technicians for the complicated procedures required for todays sophisticated appliances. This training can best be obtained through organized classroom study and application. However, much of the knowledge necessary to service todays appliances can be obtained through study courses. Completion of this and other courses will provide you with sufficient understanding of appliances and their operation to enable you to do minor service. It will also serve as a valuable stepping stone to more advanced study and on-the-job training to improve your servicing skills.

Information contained in this module is used on WHIRLPOOL® appliances.

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CHAPTER 1 ELECTRICAL COMPONENTS



1992 TO CURRENT MODELS

ROTARY SWITCH (Lock/Off/On/Start)

This switch, located on the right side behind the console escutcheon starts, stops, and locks the compactor.

A safety knob is also used with this switch. The knob can be removed when the compactor is locked and not in use.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step 1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

OFF POSITION

Step3 Touch and hold one ohmmeter probe to the terminal V.

Step4 Touch the other ohmmeter probe to the terminal T-R.

Step5 The ohmmeter should show an open circuit. If not, the switch is bad and needs replacing.

Step6 Touch and hold one ohmmeter probe to the terminal V.

Step7 Touch the other ohmmeter probe to the terminal Y.

Step8 The ohmmeter should show an open circuit. If not, the switch is bad and needs replacing.

ON POSITION

Step9 Touch and hold one ohmmeter probe to the terminal V.

Step10 Touch the other ohmmeter probe to the terminal Y.

Step11 The ohmmeter should show an open circuit. If not, the switch is bad and needs replacing.

Step12 Touch and hold one ohmmeter probe to the terminal V.

Step13 Touch the other ohmmeter probe to the terminal T-R.

Step14 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

START POSITION

Step15 Touch and hold one ohmmeter probe to the terminal V.

Step16 Touch the other ohmmeter probe to the terminal Y.

Step17 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step18 Touch and hold one ohmmeter probe to the terminal V.

Step19 Touch the other ohmmeter probe to the terminal T-R.

Step20 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step21 Reconnect all the wires to the proper terminals as previously marked.



LOCK and KEY SWITCH

This switch, located on the console turns the compactor ON or OFF when the key is turned. Earlier models, the lock (key) switch was separate from the start/stop switch. Now it's all in one, that is; you have the Lock, Off, On, and Start in one switch.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 With the key lock in the OFF position, touch and hold one of the ohmmeter probes to one of the terminals.

Step4 Touch the other ohmmeter probe to the other terminal.

Step5 The ohmmeter should show an open circuit with the key lock in the OFF position. If not, the switch is bad and needs replacing.

Step6 With the key lock in the ON position, touch and hold one of the ohmmeter probes to one of the terminals.

Step7 Touch the other ohmmeter probe to the other terminal.

Step8 The ohmmeter should show ZERO resistance (continuity) with the key lock in the ON position, If not, the switch is bad and needs replacing.

Step9 Reconnect all the wires to the proper terminals as previously marked.



DENSE PACK SWITCH

This rocker type switch, located in the console, causes the ram to put constant pressure on trash keeping it from springing back.

This ram will stay in the down position. Remember, the drawer can not be opened with the ram down.

To raise the ram, either turn the key knob to START or you can move the cycle selector back to the NORMAL position.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 Push-in on the rocker switch so the dense switch is ON (red showing).

Step4 Touch and hold one ohmmeter probe to the terminal O/B or O-BK (1).

Step5 Touch the other ohmmeter probe to the terminal O (2).

Step6 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step7 There should be an open circuit between the terminals O (2) and Y (3), and between the terminals Y (3) and O/B or O-BK (1).

Step8 Push-in on the rocker switch so the dense switch is OFF (red not shown).

Step9 Touch and hold one ohmmeter probe to the terminal O (2).

Step10 Touch the other ohmmeter probe to the terminal Y (3).

Step11 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step12 There should be an open circuit between terminals O (2) and O/B or O-BK (1), and between terminals Y (3) and O/B or O-BK (1).

Step13 Reconnect all the wires to the proper terminals as previously marked.



TOP LIMIT SWITCH

This top limit switch has only one button and lever and is located in the console escutcheon area. As the ram travels up the power screws, the ram comes in contact with the lever pushing the button in, shutting the compactor OFF.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 With the button (lever) out, touch and hold one of the ohmmeter probes to one of the terminals.

Step4 Touch the other ohmmeter probe to the other terminal.

Step5 The ohmmeter should show ZERO resistance (continuity) with the button (lever) out. If not, the switch is bad and needs replacing.

Step6 Press the button (lever) all the way, then touch and hold one of the ohmmeter probes to one of the terminals.

Step7 Touch the other ohmmeter probe to the other terminal.

Step8 The ohmmeter should show an open circuit with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step9 Reconnect all the wires to the proper terminals as previously marked.

ADJUSTMENT

Step10 Turn the compactor on and run it through a complete cycle.

Step11 Open the drawer and measure the distance from the top of the drawer to the bottom of the ram cover. You should have a 1/4 -inch clearance.

Slide the bottom of the switch to readjust.

- A.Toward front of compactor will cause the ram to stop in a lower position.
- B.Toward back of compactor will cause the ram to stop in a higher position.



DIRECTIONAL SWITCH

The directional switch (double pole, double throw) has only one button and lever and is located in the console escutcheon area. As the ram travels approx. 3/4 inches down the power screws, the switch contacts change position. When the ram bottoms and the motor stalls or the circuit is interrupted, the motor will reverse and the ram will start traveling up the power screws. As the ram comes in contact with the switch lever, the lever pushes the button in, the contacts once again change the direction of electrical flow through the motor windings.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 Press the button (lever) all the way, then touch and hold one of the ohmmeter probes to the terminal R.

Step4 Touch the other ohmmeter probe to the bottom Y terminal.

Step5 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step6 Leave the one ohmmeter probe on the terminal R. With the button (lever) pressed all the way, touch the other ohmmeter probe to the rest of the terminals (not bottom Y). They should show an open circuit; it not, the switch is bad and needs replacing.



Step7 Press the button (lever) all the way, then touch and hold one of the ohmmeter probes to the terminal GY.

Step8 Touch the other ohmmeter probe to the top BU terminal.

Step9 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step10 Leave the one ohmmeter probe on the terminal GY. With the button (lever) pressed all the way, touch the other ohmmeter probe to the rest of the terminals (not top BU). They should show an open circuit; it not, the switch is bad and needs replacing.

Step11 With the button (lever) out, touch and hold one of the ohmmeter probes to the terminal R.

Step12 Touch the other ohmmeter probe to the bottom BU terminal.

Step13 The ohmmeter should show ZERO resistance (continuity) with the button (lever) out. If not, the switch is bad and needs replacing.

Step14 Leave the one ohmmeter probe on the terminal R. With the button (lever) out, touch the other ohmmeter probe to the rest of the terminals (not bottom BU). They should show an open circuit; it not, the switch is bad and needs replacing.

Step15 With the button (lever) out, touch and hold one of the ohmmeter probes to terminal GY.

Step16 Touch the other ohmmeter probe to the top Y terminal.

Step17 The ohmmeter should show ZERO resistance (continuity) with the button (lever) out. If not, the switch is bad and needs replacing.

Step18 Leave the one ohmmeter probe on the terminal GY. With the button (lever) out, touch the other ohmmeter probe to the rest of the terminals (not top Y). They should show an open circuit; it not, the switch is bad and needs replacing.

Step19 Reconnect all the wires to the proper terminals as previously marked.

COMBINATION SWITCH (Top Limit and Directional)

This type combination switch has only one button and lever and is located in the console escutcheon area. As the ram travels up the power screws, the ram comes in contact with the lever pushing it in somewhat changing the direction of electricity flow through the drive motor windings. As the ram travels farther up the power screws, it pushes the lever in all the way and shuts the compactor OFF. As the ram travels downward 1/2 inch, the top limit switch closes a parallel circuit to the start switch. At 3/4 inch the centrifugal switch opens and the combination switch changes the circuit to the reverse start windings in the motor.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

POSITION 1

Step3 Touch and hold one ohmmeter probe to the terminal Y.

Step4 Touch the other ohmmeter probe to the terminal GY.

Step5 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step6 Touch and hold one ohmmeter probe to the terminal BR.

Step7 Touch the other ohmmeter probe to the terminal O or V.

Step8 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step9 Touch and hold one ohmmeter probe to the terminal R.

Step10 Touch the other ohmmeter probe to the terminal Y.

Step11 The ohmmeter should show an open circuit. If not, the switch is bad and needs replacing.



POSITION 2

Step12 Press the button (lever) somewhat or until you here the first click, then touch and hold one of the ohmmeter probes to the terminal Y.

Step13 Touch the other ohmmeter probe to the terminal R.

Step14 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed somewhat or to the first click. If not, the switch is bad and needs replacing.

Step15 Touch and hold one ohmmeter probe to the terminal O or V.

Step16 Touch the other ohmmeter probe to the terminal BR.

Step17 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed somewhat or to the first click. If not, the switch is bad and needs replacing.

Step18 Touch and hold one ohmmeter probe to the terminal GY.

Step19 Touch the other ohmmeter probe to the terminal Y.

Step20 The ohmmeter should show an open circuit with the button (lever) pressed somewhat or to the first click. If not, the switch is bad and needs replacing.

POSITION 3

Step21 With the button (lever) pressed all the way, touch and hold one of the ohmmeter probes to the terminal R.

Step22 Touch the other ohmmeter probe to the terminal Y.

Step23 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step24 With the button (lever) pressed all the way, touch and hold one of the ohmmeter probes to the terminal GY.

Step25 Touch the other ohmmeter probe to the terminal Y.

Step26 The ohmmeter should show an open circuit with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step27 With the button (lever) pressed all the way, touch and hold one of the ohmmeter probes to the terminal BR.

Step28 Touch the other ohmmeter probe to the terminal O or V.

Step29 The ohmmeter should show an open circuit with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step30 Reconnect all the wires to the proper terminals as previously marked.

CENTRIFUGAL SWITCH

This part is located on the drive motor. It is used in getting voltage to the drive motor start and run windings at the same time. As the drive motor increases in speed, an actuating arm inside the drive motor drops, causing the button on the centrifugal switch to pop out, dropping the voltage to the start windings.

Because of different drive motor brands used, it is necessary when replacing the drive motor centrifugal switch, that you use the same brand as your drive motor.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

For drive motors with 1 start winding, see steps 3-10.

For drive motors with 2 start windings, see steps 11-18



MOTOR IDLE

MOTOR RUNNING

MOTOR WITH SINGLE START WINDING



MOTOR WITH DUAL START WINDING



Step3 Touch and hold one ohmmeter probe to the terminal BK or number 4.

Step4 Touch the other ohmmeter probe to the terminal GY or number 2.

Step5 With the centrifugal switch button pushed in, the ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step6 Terminal Y to O/BK should be open.

Step7 Touch and hold one ohmmeter probe to the terminal BK or number 4.

Step8 Touch the other ohmmeter probe to the terminal GY or number 2.

Step9 With the centrifugal switch button out, the ohmmeter should show an open circuit. If not, the switch is bad and needs replacing.

Step10 Terminal Y to O/BK should show ZERO resistance (continuity).

Step11 Touch and hold one ohmmeter probe to the terminal BR or number 4.

Step12 Touch the other ohmmeter probe to the terminal BU or numbers 1 or 2.

Step13 With the centrifugal switch button pushed in, the ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step14 Terminal Y to O/BK should be open.

Step15 Touch and hold one ohmmeter probe to the terminal BR or number 4.

Step16 Touch the other ohmmeter probe to the terminal BU or numbers 1 or 2.

Step17 With the centrifugal switch button out, the ohmmeter should show an open circuit. If not, the switch is bad and needs replacing.

Step18 Terminal Y to O/BK should show ZERO resistance (continuity).

Step19 Reconnect all the wires to the proper terminals as previously marked.



DRIVE MOTOR

This motor, located in the lower back, is used to drive the power screws, causing the ram to move up or down.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

NOTE: DO NOT remove the white or blue wire coming out of the motor. These wires are connected to the overload protector.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the centrifugal switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 Touch and hold one ohmmeter probe to the terminal on the (BU) blue wire.

Step4 Touch the other ohmmeter probe to the terminal on the (Y) yellow wire.

Step5 The ohmmeter should show a reading between 3-5 ohms on the ohms scale. If not, the drive motor is bad and needs replacing.

Step6 Touch and hold one ohmmeter probe to the terminal on the (Y) yellow wire.

Step7 Touch the other ohmmeter probe to the terminal on the (W) white wire.

Step8 The ohmmeter should show a reading between 3-5 ohms on the ohms scale. If not, the drive motor is bad and needs replacing.

Step9 Touch and hold one ohmmeter probe to the terminal on the (BU) blue wire.

Step10 Touch the other ohmmeter probe to the terminal on the (W) white wire.

Step11 The ohmmeter should show ZERO resistance (continuity). If not, the drive motor is bad and needs replacing.

Step12 Touch and hold one ohmmeter probe to the terminal on the (R) red wire.

Step13 Touch the other ohmmeter probe to the terminal on the (GY) gray wire.

Step14 The ohmmeter should show a reading between 3-7 ohms on the ohms scale. If not, the drive motor is bad and needs replacing.

Step15 Touch and hold one ohmmeter probe to the terminal on the (R) red wire.

Step16 Touch the other ohmmeter probe to the terminal on the (BK) black, the (BR) brown, or the (O) orange wire.

Step17 The ohmmeter should show a reading between 1-4 ohms on the ohms scale. If not, the drive motor is bad and needs replacing.

Step18 Touch and hold one ohmmeter probe to the terminal on the (GY) gray wire.

Step19 Touch the other ohmmeter probe to the terminal on the (BK) black, the (BR) brown, or the (O) orange wire.

Step20 The ohmmeter should show a reading between 1-4 ohms on the ohms scale. If not, the drive motor is bad and needs replacing.

GROUNDING CHECK

Step21 Touch and hold one ohmmeter probe to the metal frame of the drive motor.

Step22 One at a time, touch the other ohmmeter probe to all the terminals on the wires coming out of the drive motor.

Step23 The ohmmeter should show an open circuit when touching these terminals. If not, the drive motor is bad and needs replacing.

Step24 Reconnect all the wires to the proper terminals as previously marked.



DRAWER SAFETY SWITCH

This drawer safety switch is located in the back right side, and prevents the ram from operating if the drawer is removed or pulled out somewhat.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 With the button (lever) out, touch and hold one of the ohmmeter probes to one of the terminals.

Step4 Touch the other ohmmeter probe to the other terminal.

Step5 The ohmmeter should show an open circuit with the button (lever) out. If not, the switch is bad and needs replacing.

Step6 Press the button (lever) all the way, then touch and hold one of the ohmmeter probes to one of the terminals.

Step7 Touch the other ohmmeter probe to the other terminal.

Step8 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step9 Reconnect all the wires to the proper terminals as previously marked.





LOWER BACK OF FRAME

DRAWER TILT SWITCH (Lever)

This drawer tilt switch is located in the back left side, and in-line with the end of the drawer track. If the drawer is open or tilted during compaction because of improper loading, the compactor will stop. To restart the compactor the start switch must be restarted. When the ram comes to the top, open drawer and redistribute the trash.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 With the button (lever) out, touch and hold one of the ohmmeter probes to one of the terminals.

Step4 Touch the other ohmmeter probe to the other terminal.

Step5 The ohmmeter should show an open circuit with the button (lever) out. If not, the switch is bad and needs replacing.

Step6 Press the button (lever) all the way, then touch and hold one of the ohmmeter probes to one of the terminals.

Step7 Touch the other ohmmeter probe to the other terminal.

Step8 The ohmmeter should show ZERO resistance (continuity) with the button (lever) pressed all the way. If not, the switch is bad and needs replacing.

Step9 Reconnect all the wires to the proper terminals as previously marked.



DRAWER TILT SWITCH (Plunger)

This part is located on the front of the frame. When the drawer is closed, the plunger is depressed. The plunger contacts are open at this time. As the ram starts its downward travel and the trash causes the door to pop open somewhat, the contacts close causing current flow through the reverse start windings in the motor. This causes the motor to stall, reverse and return the ram to the top.

CHECKING PROCEDURE

Obtain an ohmmeter from your local store. We will be doing RESISTANCE checks. This is the safest way because the compactor is unplugged from the power source and avoids the possibility of receiving an electrical shock.

Step1 Remove one wire at a time, carefully labeling each wire according to the terminal marking on the switch. This procedure should assure that the right wire is reconnected to the right terminal after checking or replacement.

Step2 Set the ohmmeter scale to the lowest ohms setting and ZERO the meter.

Step3 Push in on the plunger of the switch which simulates the drawer being closed.

Step4 Touch and hold one ohmmeter probe to the terminal BU.

Step5 Touch the other ohmmeter probe to the terminal BR.

Step6 The ohmmeter should show an open circuit with the plunger pressed. If not, the switch is bad and needs replacing.

Step7 Leave the plunger out as if the drawer is open.

Step8 Touch and hold one ohmmeter probe to the terminal BU.

Step9 Touch the other ohmmeter probe to the terminal BR.

Step10 The ohmmeter should show ZERO resistance (continuity). If not, the switch is bad and needs replacing.

Step11 Reconnect all the wires to the proper terminals as previously marked.



NOTES

NOTES