# BIMBO

**BIMBO BAKERIES USA**

# 2016 Body Service Manual

**2016 Morgan Olson Body
2016 Freightliner Chassis**

**FREIGHTLINER**
**Custom Chassis**
Driven By You
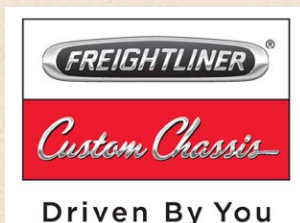
**MORGAN OLSON**

# INTRODUCTION

This catalog has been prepared to assist Bimbo West Bakeries USA in the maintenance of the Morgan Olson Walk-In Van. Inquiries on items found or not found in this manual may be made through the address and or phone numbers listed below.

Morgan Olson
1801 S. Nottawa
Sturgis, MI 49091
1-800-477-8287
(Customer Service/Fleet Warranty)

For Parts Ordering:
1-800-233-4823
1-616-659-0499 (Fax)
(Service Parts)

# Contents

# Body Tie/Downs

<u>Tie/Down Check:</u>

The floor of the truck is fastened to bolsters that extend the length of the floor.
The lower flanges of the bolsters are mounted to the chassis frame rails.
Both sets of fasteners are torqued to specifications.
All cab and body tie/downs should be checked after 3 months and annually.
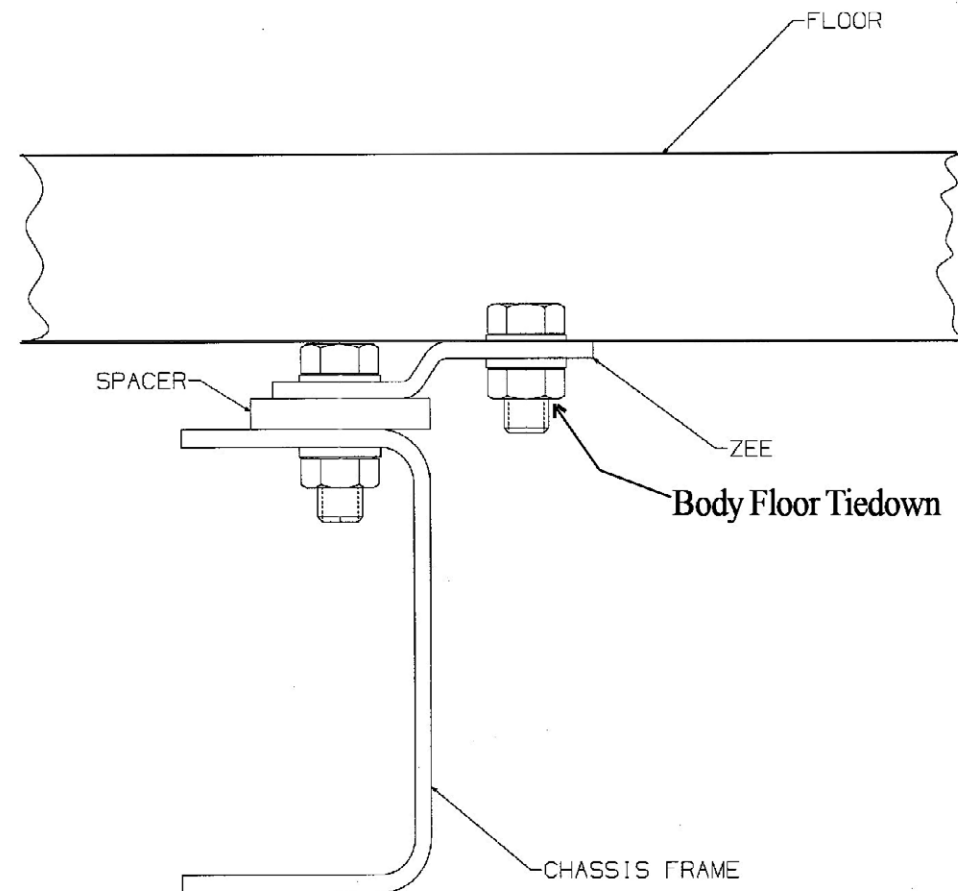


# Side Door

### Side Door

For smooth operation the locking mechanism should be oiled every 3 months or as needed.
Grease should also be added at the contact points of locking mechanism arm and striker.
(At opened and closed positions.)
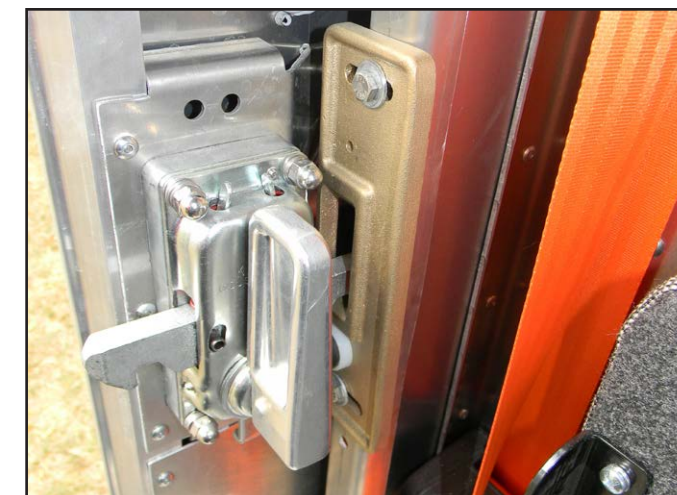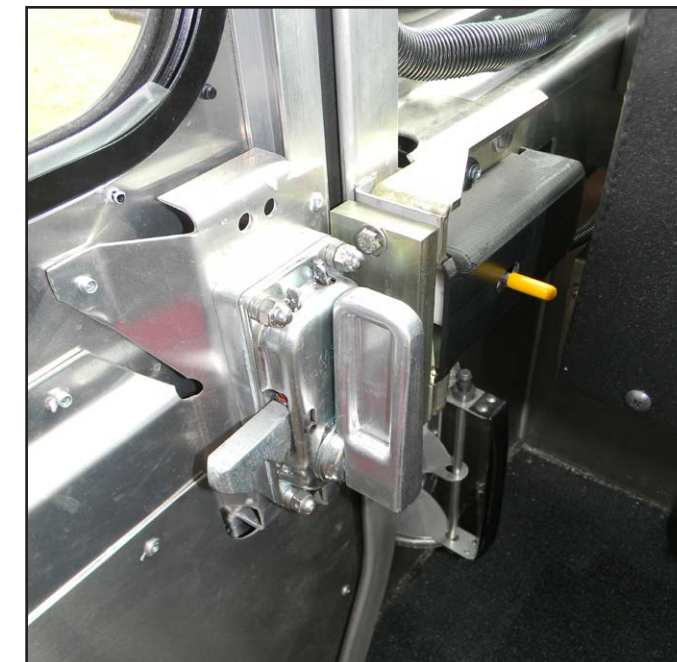
## Side Door Removal:

1. Remove screws fastening down the lower door track but leave the track in position.

2. Remove the Phillips screws and door pocket cover plate located in the upper rear corner of the door pocket.

3. Remove the 4 fasteners and the door handles (inner and outer).

4. Using a socket wrench, remove the bolts fastening the door and hanger assembly.

5. To simplify door removal, remove the grab handle located forward of the door.
   *Fold side view mirror back.

6. Holding the top of the door in position, pull out on the bottom front corner of the door until it clears the body of the truck. Then tilt the top of the door down and out and remove the door.

## Weather Seal Removal:

1. The forward and rear weather seals are installed simply by sliding into a mated part. To remove simply pull straight out from the top of the door or door frame. Install by feeding into the mated part and sliding into place.

## Handle Mechanism Removal:

1. To remove the door handles simply remove the 4 mounting screws. Pay special attention to spacer locations. You can then remove the inside and outside handles. Remember when installing the handles, position of the spacers identical to the way they were at removal.

## Door Track (Upper) Removal:

1. The upper track is mounted to the header channel. Remove the nuts, and the track. Reinstall by reversing the removal sequence.

## Wear Strip (Lower) Removal:

1. Remove side door.
2. Remove existing rivets.
3. Replace wear strip and rivet in place.

## Side Door Installation:

1. Tilt the top of the door in place first. Now position the bottom of the door into the lower door track, which is in position but not fastened down.

2. Put 1/8" shims between the lower door track and the wear strip.

3. Mount door to the hanger assembly.

4. Install door handles. See page 8.

5. Mount cover plate on upper rear door pocket.

6. Mount grab handle forward of door. *Re-adjust mirror.

7. For proper door adjustment see page 10.

## Side Door Adjustment:

1. Loosen all nuts on the top of the slotted upper door track.

2. Loosen the 3 screws fastening down the lower door track.

3. The rear holes of the lower door track are oversized to allow for adjustment. Only the rear portion of the track can be adjusted. The forward hole of the lower track is not oversized because the door must retain its forward position to ensure proper alignment when the door is closed.

4. With the door closed and engaged in the forward strike, adjust the upper track for uniform lateral placement of the door in the forward post seal. Snug the forward bolt of the upper door track.

5. With the door open and engaged in the rear strike, the rear portion of the upper and lower tracks can be adjusted laterally to ensure proper alignment with the rear striker.

6. When the door is positioned, tighten a few of the fasteners in the upper and lower tracks. Operate the sliding door to ensure that it slides and latches properly.

7. When the door is operating properly, tighten all the remaining fasteners in the upper and lower door tracks.

8. Replace any broken studs with .25 - 20x1.00 truss head screw.

9 See figure 1 on the following page.

## Door Latch Adjustment:

1. The door latches (strikers) and the mounting brackets provide for adjustment in a variety of directions.

2. Once the door has been adjusted to slide smoothly, then adjust the strikers for proper latch operation.
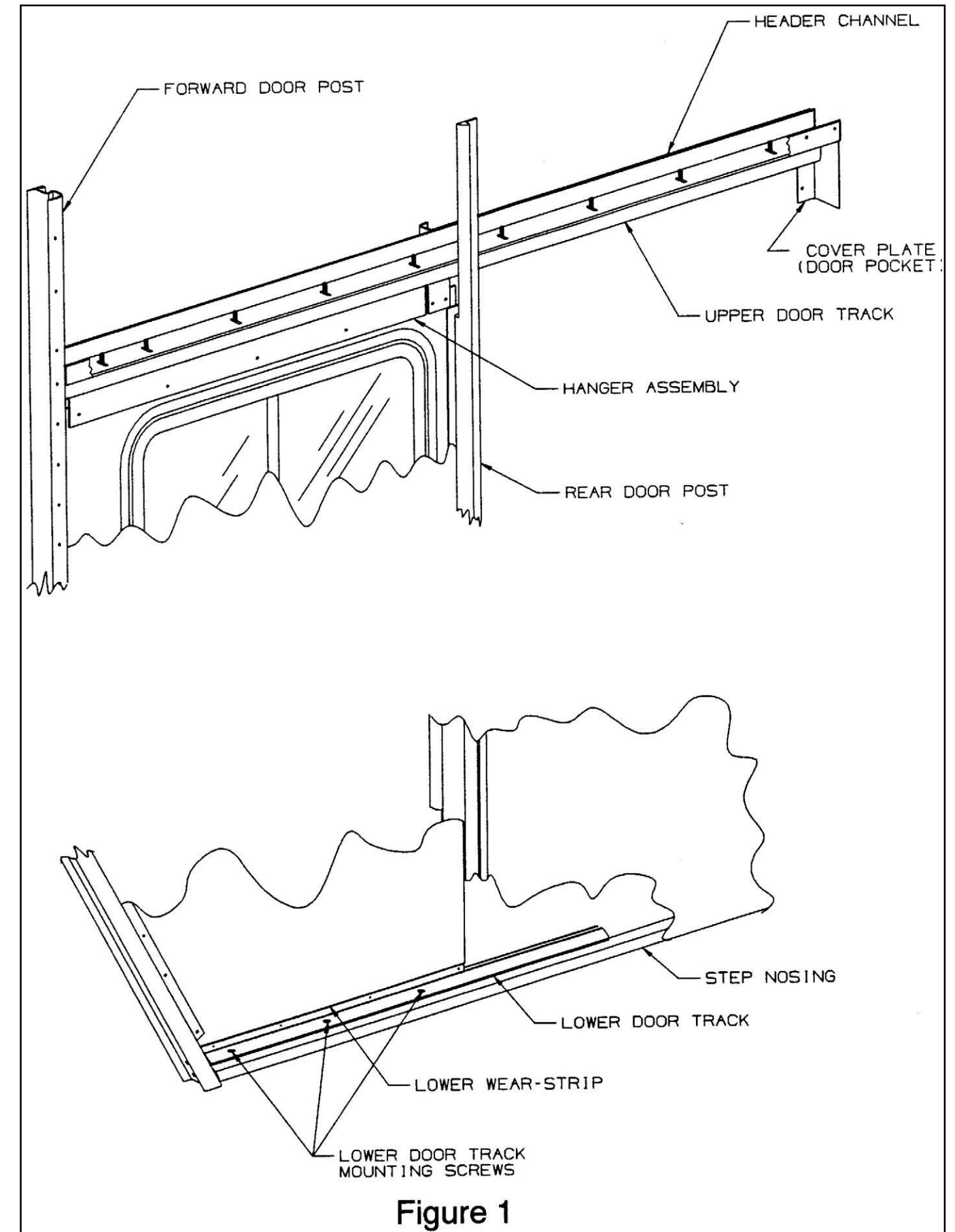


Figure 1

# Bulkhead Door

**Bulkhead Door:**

   *NOTE:  Where grease is required use a **lithium based.**


1.   The latch should be greased to prevent sticking. Grease should be applied at contact points of the latch and striker for smooth operation. This should be done every 3 months.



# Rear Door

**Rear Roll-Up Door:**

1.   Apply oil to the roller shafts and locking mechanism every 6 months.

2.   Perform a visual inspection daily checking the lifting mechanism cables and the door strap for fraying.

3.   Perform a visual inspection monthly checking for damaged parts replace immediately to prevent wear and fatigue on other components.

4.   Refer to Trans global Door Company instructions for proper rear door spring adjustment and/or replacement.
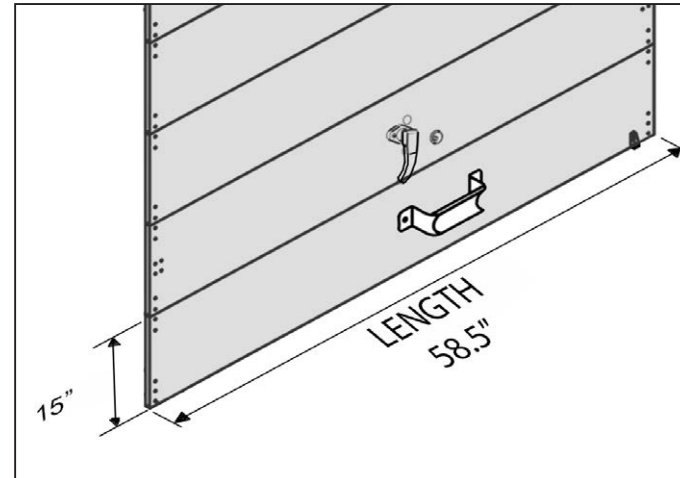
ROLL-UP DOOR SERIAL NUMBER LOCATION

WHEN ORDERING PARTS FOR ROLL-UP DOORS,
PLEASE PROVIDE THE FOLLOWING INFORMATION.
THE SERIAL NUMBER LOCATED ON THE INTERIOR TOP PANEL ROADSIDE EDGE.
THE LENGTH AND HEIGHT OF THE DOOR PANEL(S) TO BE ORDERED.

IN THE EVENT OF A DAMAGED, UN-READABLE OR MISSING SERIAL NUMBER,
PLEASE TRY TO PROVIDE THE COMPOSITION DETAILS OF THE DOOR PANEL.
(PLASTIC PANEL (WEATHERTITE), ALUMINUM CLAD, PLYWOOD, ETC.)

## WARNING

ROLL UP DOOR LOAD SPRING ASSEMBLY IS UNDER CONSIDERABLE PRESSURE

MAINTENANCE SHOULD ONLY BE PERFORMED BY TRAINED PERSONEL

REFEER TO MANUFACTURES DOCUMENTATION FOR
PROPER MAINTENANCE AND SERVICING

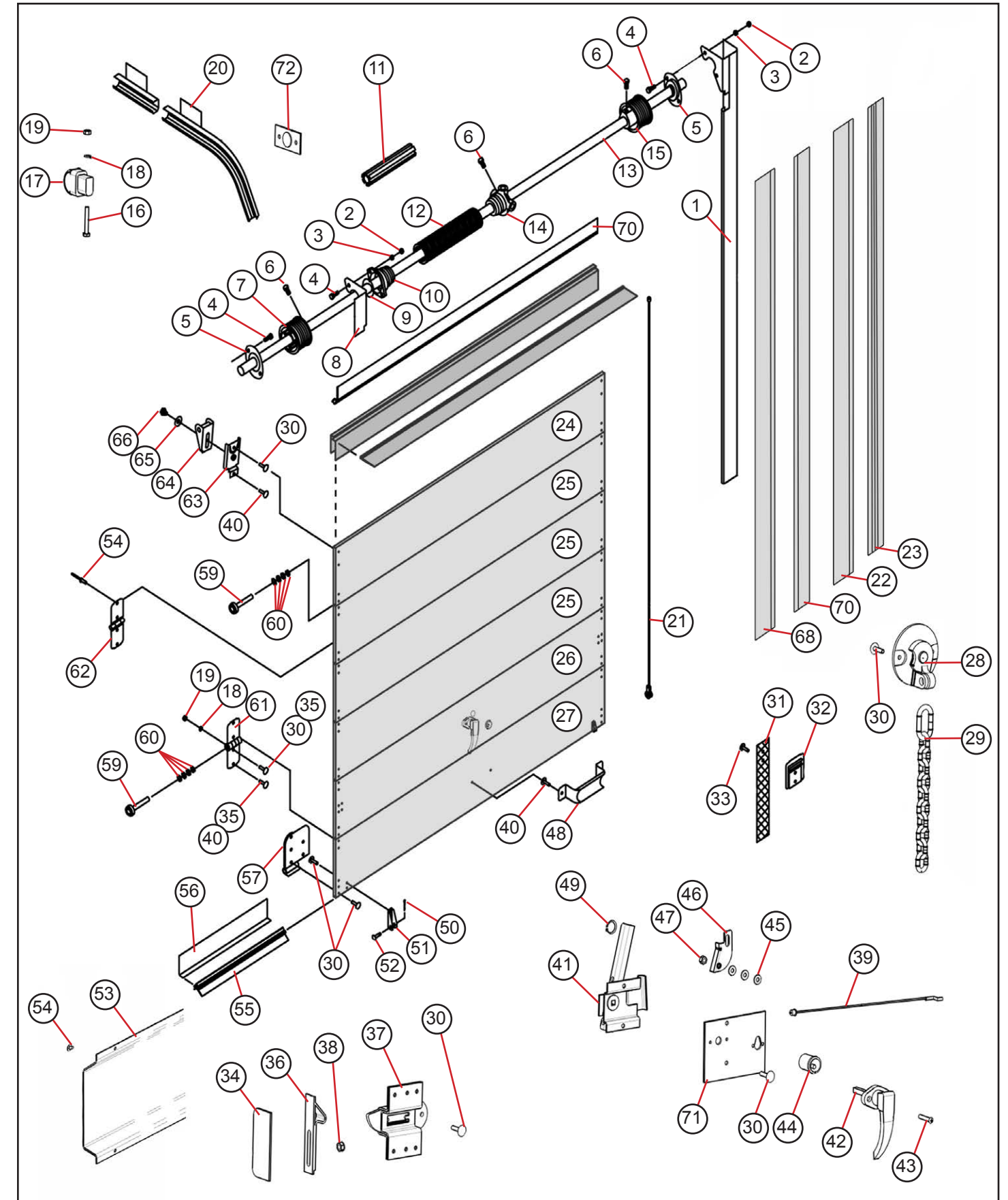| ITEM # | PART # | DESCRIPTION | QTY. | UNIT |
|--------|--------|-------------|------|------|
|  | 47009611 | ROLL-UP DOOR  FLTSTR  58W X 77.5 2PTSL | 1 | EA |
| N/S | 005774400 | MOUNTING ANGLE | 2 | EA |
| 1 | PER S/N | VERTICAL TRACK ASM.- R/H (CURBSIDE) | 1 | EA |
| N/S | PER S/N | VERTICAL TRACK ASM.- L/H (ROADSIDE) | 1 | EA |
| NS | 117073400 | TRACK KEYLESS MOD (47009726) | 1 | EA |
| 2 | N/A | HEX NUT - 5/16" NC | 6 | EA |
| 3 | N/A | LOCK WASHER - 5/16" | 6 | EA |
| 4 | N/A | HEX HEAD BOLT - 5/16" NC X 7/8" | 6 | EA |
| 5 | 61380 | BEARING ASSEMBLY | 2 | EA |
| 6 | 47009906 | HEX HEAD SET SCREW - 3/8" NC X 7/8" | 6 | EA |
| 7 | 1116524 | CABLE DRUM - L/H (ROADSIDE) | 1 | EA |
| 8 | 61379 | SPRING ANCHOR BRACKET | 1 | EA |
| 9 | 1116586 | BEARING - SPRING ANCHOR PLUG | 1 | EA |
| 10 | 47003640 | SPRING ANCHOR PLUG - 2 1/2" I.D. SPRING | 1 | EA |
| 11 | N/A | FILLER PLUG - 2 1/2" I.D. SPRING | 1 | EA |
| 12 | 47003641 | SPRING - 2 1/2"I.D. - #5 X 30" LONG | 1 | EA |
| 13 | 47003642 | COUNTERBALANCE SHAFT - 58 3/4" LONG | 1 | EA |
| 14 | 47003643 | SPRING WINDING PLUG - 2 1/2" I.D. SPRING | 1 | EA |
| 15 | 1116523 | CABLE DRUM - R/H (CURBSIDE) | 1 | EA |
| 16 | N/A | HEX HEAD BOLT - 1/4" NC X 1 3/4" | 2 | EA |
| 17 | 47003644 | HEAD PROTECTOR | 2 | EA |
| 18 | N/A | LOCK WASHER - 1/4" I.D. | 14 | EA |
| 19 | N/A | HEX NUT - 1/4" NC | 14 | EA |
| 20 | PER S/N | HORIZONTAL TRACK - R/H (CURBSIDE) | 1 | EA |
| N/S | PER S/N | HORIZONTAL TRACK - L/H (ROADSIDE) | 1 | EA |
| 21 | 61384 | CABLE ASSEMBLY - 110" LONG | 1 | PR |
| 22 | 47106602 | BRUSH SIDE SEAL - 1" X 85.75" LONG | 2 | EA |
| 23 | 47003648 | BRUSH RETAINER - SIDE SEAL - 87" LONG | 2 | EA |
| 24 | PER S/N | TOP PANEL - 10 1/8" X 58 3/4" | 1 | EA |
| 25 | PER S/N | INTERM PANEL - 15" X 58 3/4" | 3 | EA |
| 26 | PER S/N | INTERM LOCK PANEL ASM. -15" X 58 3/4" | 1 | EA |
| 27 | PER S/N | BOTTOM PANEL - 15" X 58 3/4" | 1 | EA |
| 28 | 47003653 | SAFETY CHAIN LOCK ASSEMBLY | 1 | EA |
| 29 | 76431026 | STAINLESS STEEL SAFETY CHAIN W/XM - 3343 SLEEVE | 1 | EA |
| 30 | N/A | RIVET - STAINLESS STEEL - 1 1/8" | 28 | EA |
| 31 | 47003674 | PULL STRAP - 62" LONG (BLACK) | 1 | EA |
| 32 | 47000827 | PULL STRAP RETAINER | 1 | EA |
| 33 | N/A | SPLINED CARRIAGE BOLT - 1/4" NC X 1 1/2" | 2 | EA |
| 34 | 47003675 | CATCH MOUNTING PLATE - R/H (CURBSIDE) | 1 | EA |
| N/S | 47003676 | CATCH MOUNTING PLATE - L/H (ROADSIDE) | 1 | EA |
| 35 | N/A | STEP BOLT - 1/4" NC X 1 1/4" STAINLESS STEEL | 8 | EA |
| 36 | 47003677 | LOCK CATCH | 2 | EA |
| 37 | 47000080 | END LATCH - R/H (CURBSIDE) | 1 | EA |

| ITEM # | PART # | DESCRIPTION | QTY. | UNIT |
|--------|--------|-------------|------|------|
| N/S | 47000081 | END LATCH - R/H (ROADSIDE) | 1 | EA |
| 38 | N/A | FLANGE LOCK NUT - 5/16" NC | 4 | EA |
| 39 | 47003678 | LOCK CABLE ASSEMBLY - 24 - 9/16" LONG | 2 | EA |
| 40 | N/A | RIVET - STAINLESS STEEL - 1" LONG | 46 | EA |
| 41 | 47003679 | CENTER CONTROL ASSEMBLY | 1 | EA |
| 42 | 1116535 | PLAIN "L" HANDLE | 1 | EA |
| 43 | N/A | OVAL HEAD MACHINE SCREW - #10 - 32 X 1 1/4" | 2 | EA |
| 44 | 47003680 | BEST CYLINDER KIT - (NO CORE OR KEYS) | 1 | EA |
| 45 | N/A | FLAT WASHER - 1/4" I.D. | 3 | EA |
| 46 | 47000082 | TOP CAM CATCH | 1 | EA |
| 47 | N/A | LOCK NUT - 1/4" NC | 1 | EA |
| 48 | 1116536 | LIFT HANDLE | 1 | EA |
| 49 | 47003681 | RETAINING RING | 1 | EA |
| 50 | N/A | COTTER PIN - 3/32" DIA. | 2 | EA |
| 51 | 47009923 | CABLE ANCHOR BRACKET | 2 | EA |
| 52 | 1116538 | CABLE ANCHOR PIN | 2 | EA |
| 53 | 47003682 | LOCK COVER - ALUMINUM - 58 1/4" LONG | 1 | EA |
| 54 | N/A | 1/4" POP RIVET | 30 | EA |
| 55 | 47003683 | BOTTOM SEAL - HEAVY DUTY - 58 3/4" LONG | 1 | EA |
| 56 | 47003684 | BOTTOM ANGLE - 53 3/4" LONG | 1 | EA |
| 57 | 47003685 | HEAVY DUTY BOTTOM FIXTURE - R/H (CURBSIDE) | 1 | EA |
| N/S | 47003694 | HEAVY DUTY BOTTOM FIXTURE - L/H (ROADSIDE) | 1 | EA |
| 58 | N/A | RIVET - STAINLESS STEEL - 1 1/4" LONG | 4 | EA |
| 59 | 61360 | ROLLER - SEALED | 14 | EA |
| 60 | 47009917 | SPACER WASHER - ROLLER | 16 | EA |
| 61 | 61419 | END HINGE | 10 | EA |
| 62 | 61397 | CENTER HINGE | 10 | EA |
| 63 | 1116531 | BASE - ADJUSTABLE TOP FIXTURE | 2 | EA |
| 64 | 1116530 | SLIDE - ADJUSTABLE TOP FIXTURE | 2 | EA |
| 65 | N/A | FLAT WASHER - 3/8" I.D. | 2 | EA |
| 66 | 47009912 | E-LOK BOLT - 3/8" NC | 2 | EA |
| 67 | 47003686 | HEAD SEAL RETAINER - 58 3/4" LONG | 1 | EA |
| 68 | PER S/N | BRUSH SIDE SEAL - 1 1/2" BRUSH X 86" LONG | 2 | EA |
| N/S | PER S/N | BRUSH SIDE SEAL - 1 1/2" BRUSH X 86" LONG | 2 | EA |
| N/S | PER S/N | BRUSH HEAD SEAL - 1 1/2" BRUSH X 54" LONG | 1 | EA |
| 69 | N/A | DRIVE RIVET - 3/16" X 15/32" LONG | 4 | EA |
| 70 | 47003690 | HEAD SEAL RETAINER - 54" LONG | 1 | EA |
| N/S | 47003691 | SIDE RETAINER 86" -LONG | 1 | EA |
| 71 | 47003692 | BACK PLATE-TWO-POINT LOCK W/BEST CYLINDER | 1 | EA |
| 72 | 47003693 | TRACK CLOSE-OUT | 2 | EA |
| N/S | 127050404 | WIRING COVER | 1 | EA |
| NS | 127050404 | CHANNEL WIRE COVER | 1 | EA |
| NS | 127050402 | ANGLE WIRE COVER | 2 | EA |

# Gas Spring

## Gas Spring Replacement:

1. With the hood safely propped, remove the upper and lower retainer clips. Once the clips have been removed a slight tap will remove the gas spring from the ball studs.

2. For safety reasons, when replacing the gas springs use only Morgan Olson OEM replacement parts.



**⚠ TO CLOSE HOOD**
**PRESS RED TAB**
(LOCATED ON THE GAS SPRING SHOCK)
AND *S L O W L Y*
**LOWER THE HOOD**
*IMPROPER HOOD CLOSURE*
*WILL DAMAGE THIS VEHICLE*

# Heater

## Motor and Fan Replacement:

1. The heater is mounted to the right hand dash panel.

2. With the power to the motor off, disconnect the motor leads.

3. Remove motor mounting screws. Remove the motor and the impeller wheel.

4. Take out the set screw to remove the impeller wheel (squirrel cage).

5. For installation, reverse the sequence.



# Plenum

## Plenum Replacement:

1. Detach air inlet hose from plenum.
2. Disconnect wiring harness at heater box and instrument panel harness.
3. Remove fasteners from plenum diffuser (located on top of the windshield rail).
4. Remove the fasteners located on top of the windshield rail.
5. Installation sequence is opposite of removal.

# SERVICING AND TROUBLESHOOTING

## A/C-HEATER-DEFROSTER

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# CONTROL PANEL OPERATION

**BLOWER CONTROL** The BLOWER CONTROL provides three choices of air velocity in every operating mode. When the blower switch knob is rotated fully counterclockwise (with the knob indicator pointing straight up) the blower is turned OFF. Rotating the knob clockwise will progressively increase the air velocity.

**TEMPERATURE CONTROL** The TEMPERATURE CONTROL KNOB controls the discharge air temperature in all operating modes. Turning the knob to the right (red zone) increases temperature; turning the knob to the left (blue zone) decreases air temperature. Temperature control is achieved through the regulation of engine coolant through the heater coil.
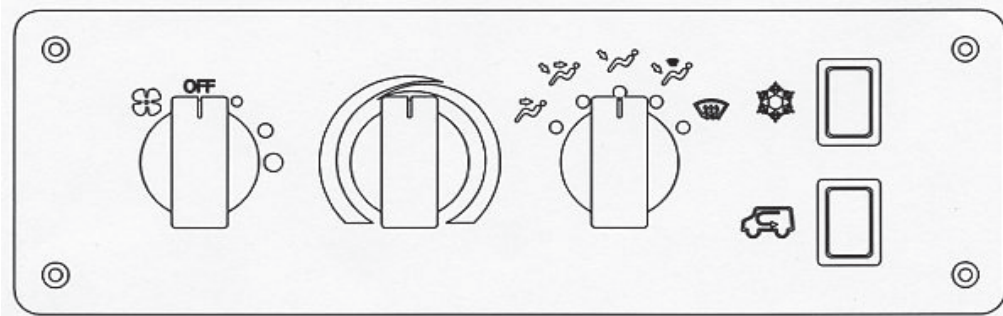
## MODE SELECTION SWITCH

**Dash** When this mode is selected, all air is discharged through the dash louvers.

**Bi-Level** With this setting, air is discharged through the dash louvers and onto the floorboard. This is the ideal mode for rapid warm-up in cold weather.

**Floor** This mode will direct all air to the floorboard. This mode is most frequently selected when heating is required.

**Floor/Windshield** When this mode is selected, air is discharged onto the floorboard and onto the windshield.

**Defrost/De-fog** This mode will direct most of the air to the windshield and provides for rapid defrosting of the outside of the windshield and defogging of the inside surface. A reduced volume of air is provided for floor heating.

## A/C CONTROL

The blue rocker switch will engage the A/C system compressor when the upper edge of the switch is pressed. Pressing the lower side of the switch will turn the A/C compressor off.

## AIR SOURCE CONTROL

The green rocker switch permits the driver to re-circulate cabin air or introduce outside air into the HVAC system. Pressing the upper edge of the green switch will block outside air and permit the re re-circulation of inside air. Pressing the lower edge of the switch will introduce outside air.

# WIRING DIAGRAM
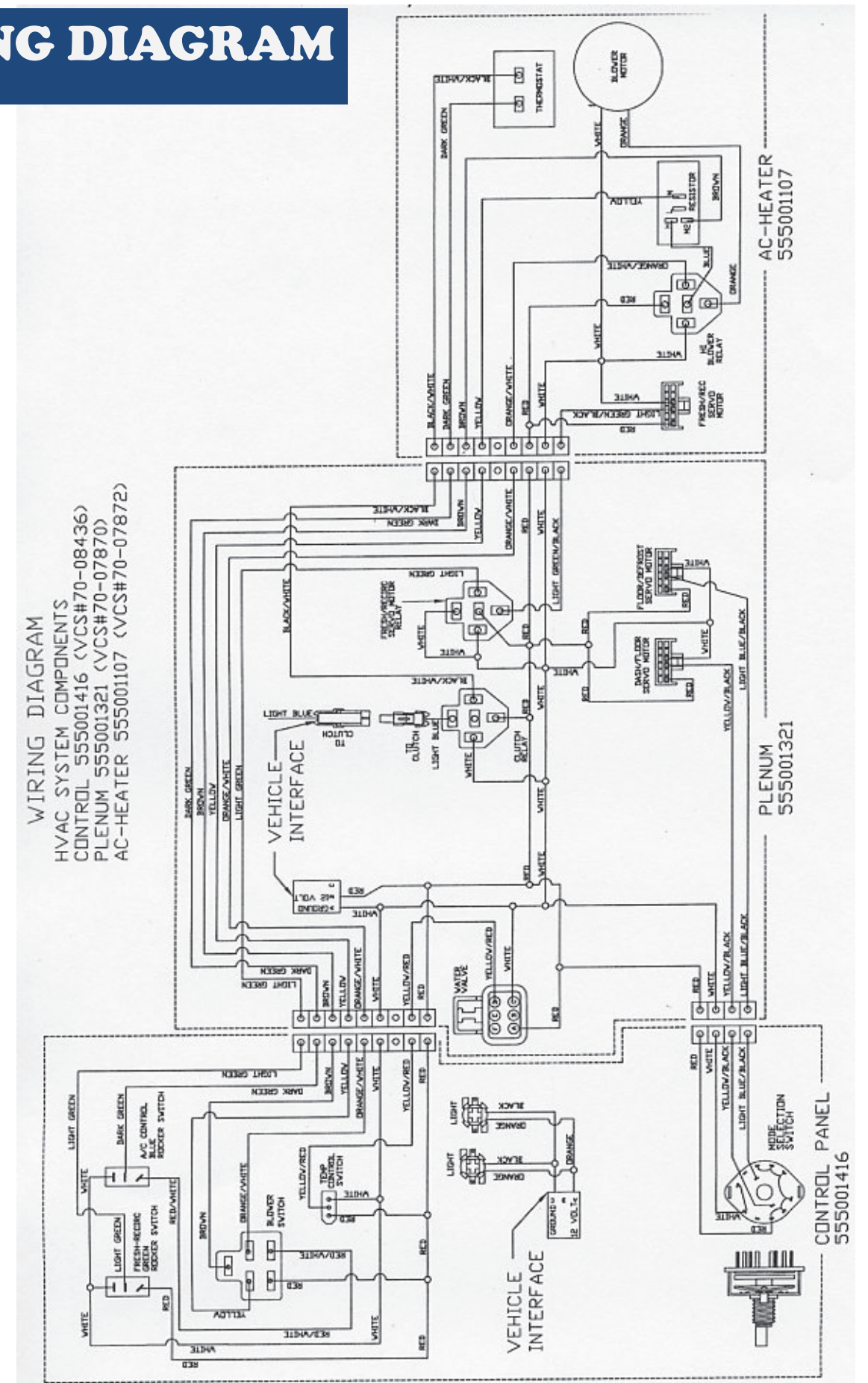
# TROUBLESHOOTING

## SECTION A:   AIRFLOW PROBLEMS

### PROBLEM A-1, *No air flow, blower does not operate*

**POSSIBLE CAUSE #1** ~ Faulty Blower Motor

**CORRECTIVE ACTION** ~ With ignition turned ON, unplug the 2-pin connector at the blower motor. Check the orange wire for +12 volts and the white wire for a fully grounded circuit. If power is present and the circuit grounded, remove the motor and wheel from the blower housing. Inspect for any evidence of entrapped debris or a broken blower wheel that might have prevented rotation. If no such evidence exists, replace the blower motor.

**POSSIBLE CAUSE #2** ~ Blown fuse due to short in wire harness

**CORRECTIVE ACTION** ~ Refer to the **HVAC Wiring Diagram** and the Chassis Manufacturer's wiring information. Trace the entire HVAC wiring for an electrical short. Replace or repair as required.

**POSSIBLE CAUSE #3** ~ Defective Blower Switch

**CORRECTIVE ACTION** ~ Refer to the **Blower Switch Continuity Diagram** and check the blower switch for continuity through the switch in all four switch positions. Replace the blower switch as required.



BLOWER SWITCH CONTINUITY DIAGRAM

| SWITCH POSITION | CONNECTED TERMINALS |
|---|---|
| OFF | NONE |
| 1 | B+L+C |
| 2 | B+M+C |
| 3 | B+H+C |
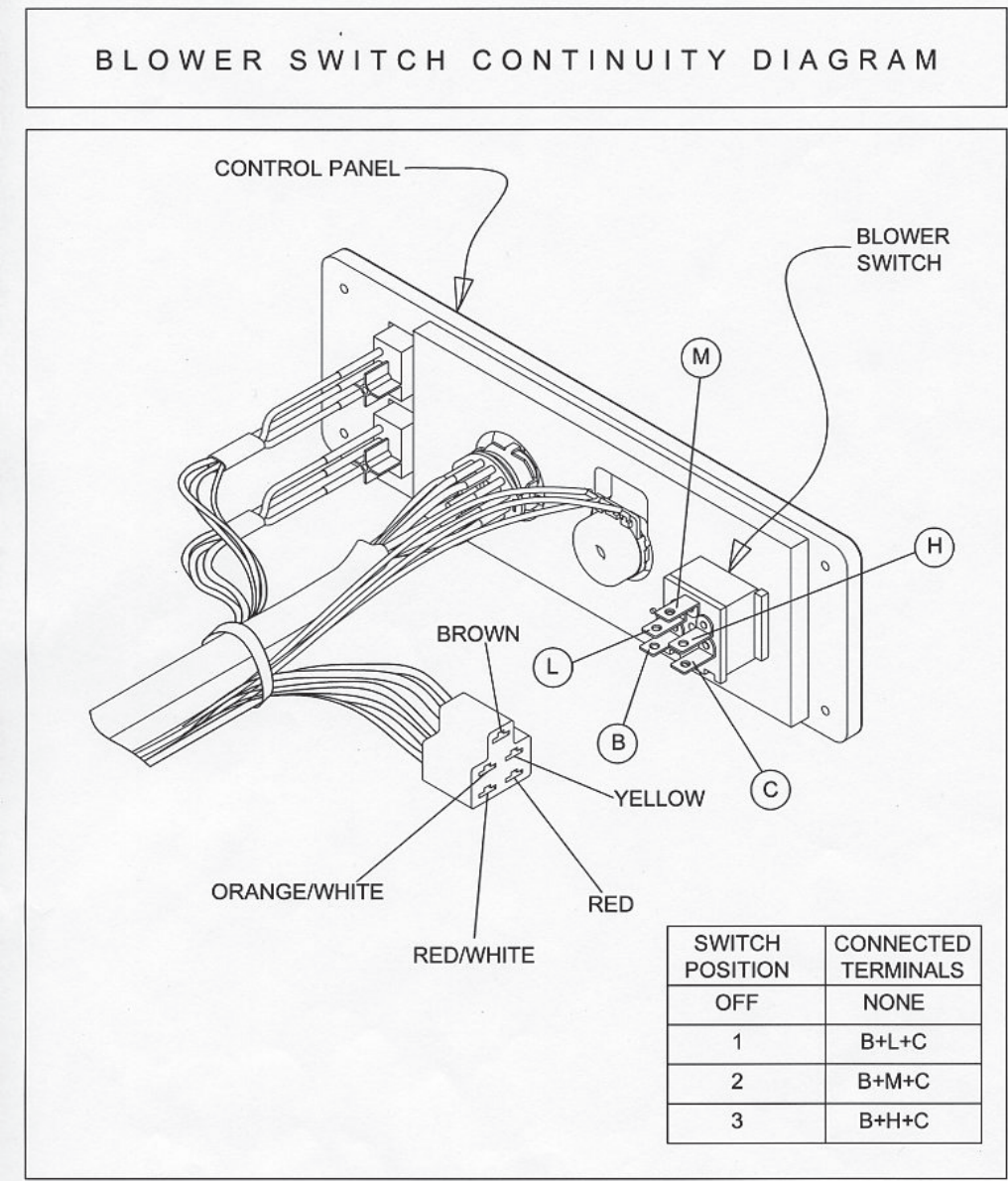
### PROBLEM A-2, *Blower operates, but not in all blower switch settings*

**POSSIBLE CAUSE #1** ~ Blower resistor failure.

**CORRECTIVE ACTION** ~ If the blower operates only on the highest blower speed (blower switch rotated fully clockwise), the blower resistor has, most likely, failed. [Hint: The resistor is bypassed when the highest blower speed is selected.] Refer to the **Blower Motor Resistor** illustration (below); remove the three-wire connector from the resistor. Check for electrical continuity between terminal 1 and 2. If an open circuit exists between 1 and 2, the thermal limiter has blown and it will be necessary to replace the resistor. [Note: A failed resistor is often the results of a problem with the blower motor. Make sure that the blower motor is fully operable and is not bound in any sort of way by a broken blower wheel or entrapped debris within the blower housing.]
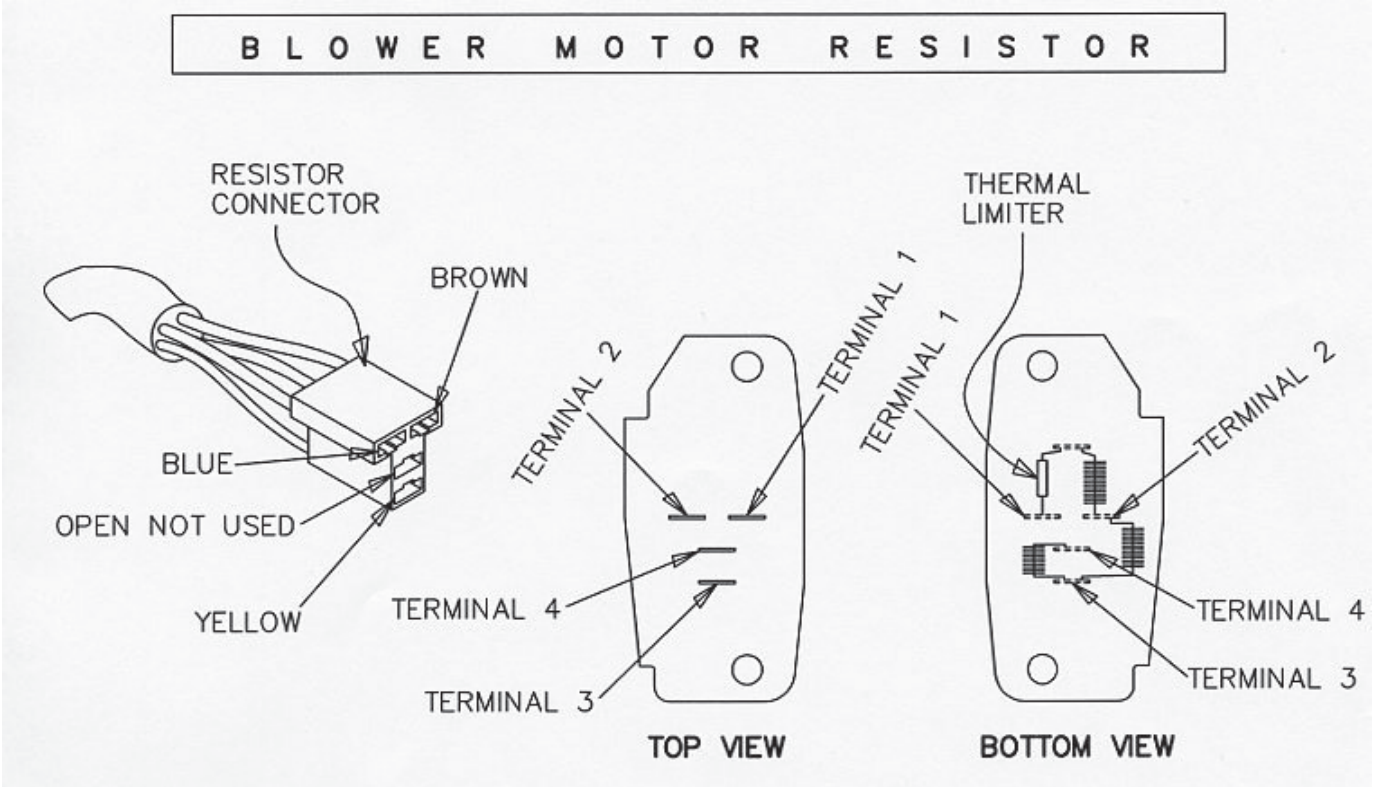


**POSSIBLE CAUSE #2** ~ High-blower relay failure

**CORRECTIVE ACTION** ~ If the blower operates in all speed selections except for the highest selection there is a possibility that the high-blower relay has failed. [Note: The high-blower relay is activated when the highest blower speed is selected. The relay extends the life of the blower switch and insures the highest voltage for the motor.] Remove the relay and test for an open circuit across terminals 85 and 86. If the circuit is open, replace the relay.
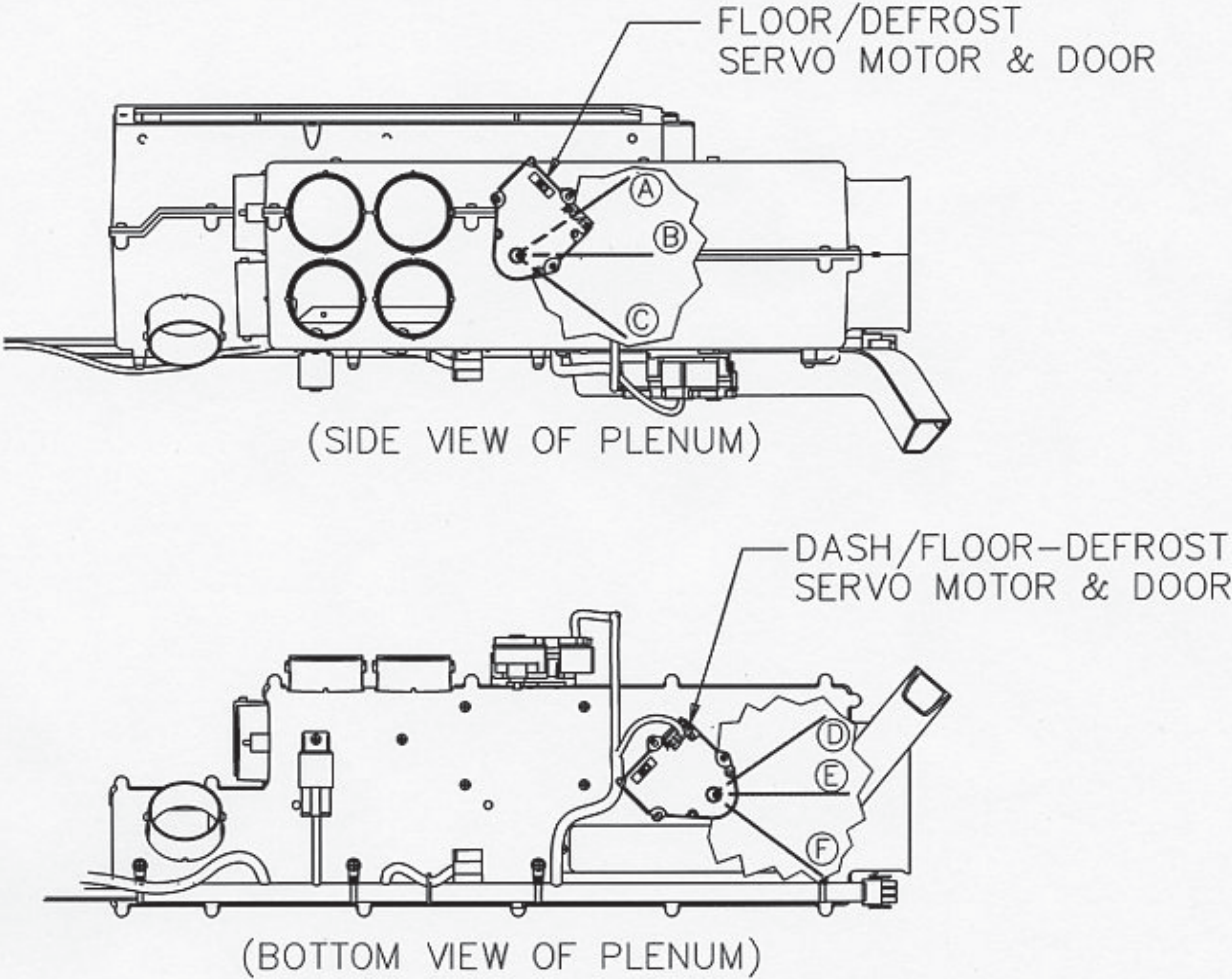
### PROBLEM A-3 ~ *Air does not flow from the selected outlets*

**POSSIBLE CAUSE #1** ~ Plenum directional doors obstructed

**CORRECTIVE ACTION** ~ Examine the air distribution Plenum for any possible obstruction that might have become entrapped internally. Refer to the **Mode Selection & Servo Motor Position Correlation Diagram** for the position of each of the doors in every mode selection. The output shafts of the servo motors can be observed, externally, as they move through their approximate 100 degrees of travel. Also, the doors can be physically touched by removing the 5" flexible inlet duct and reaching into the plenum's air intake. If a physical obstruction is suspected, it may be necessary to remove the plenum. [Note: Access to the plenum's mounting hardware will require removal of the defroster ducts from atop the dash.]
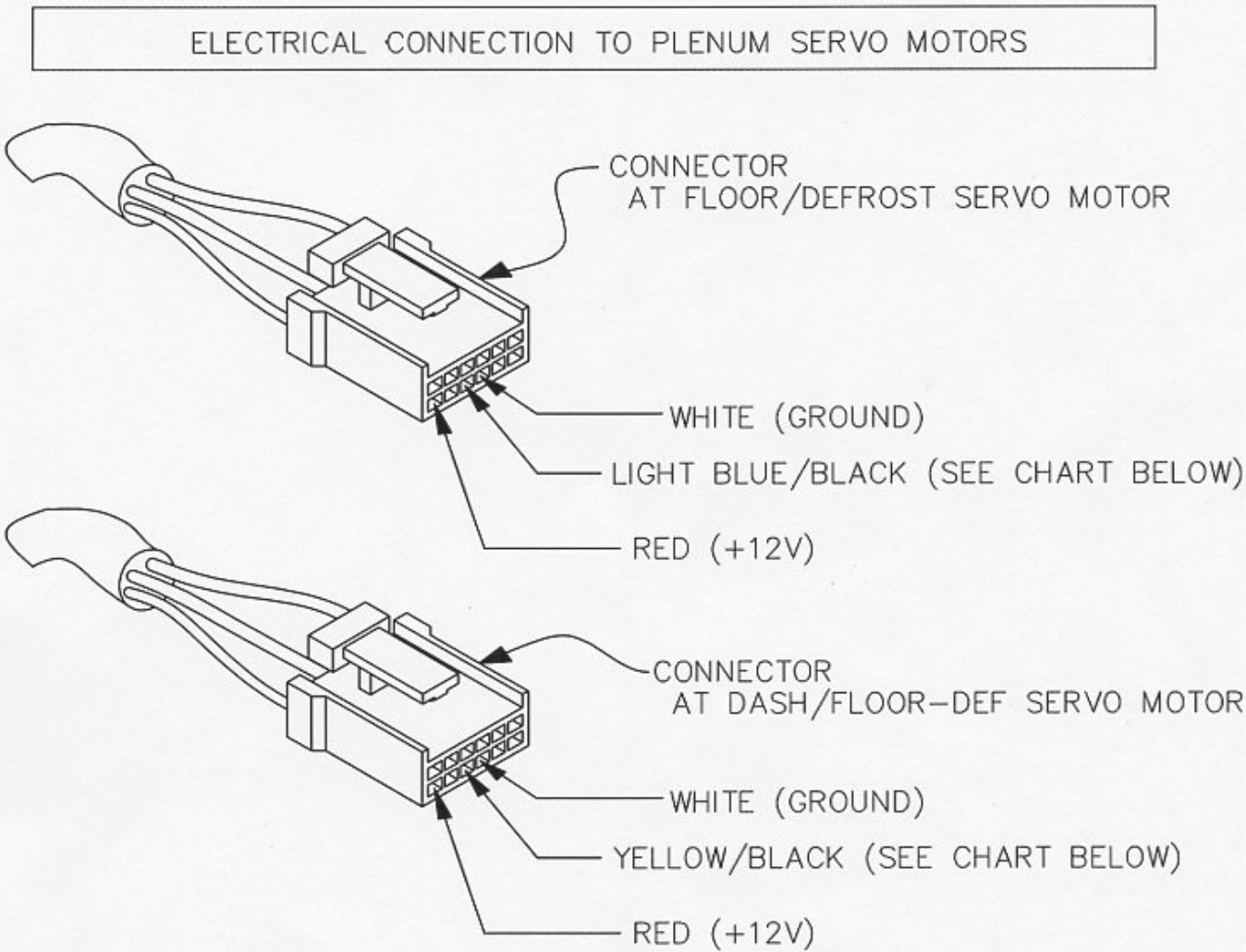
## MODE SELECTION & SERVO MOTOR POSITION CORRELATION DIAGRAM



FLOOR/DEFROST SERVO MOTOR & DOOR

(SIDE VIEW OF PLENUM)

DASH/FLOOR-DEFROST SERVO MOTOR & DOOR

(BOTTOM VIEW OF PLENUM)

| | SERVO MOTOR | | |
|---|---|---|---|
| CONTROL PANEL MODE SELECTION | FLOOR/DEFROST | DASH/FLOOR-DEFROST | AIR DISTRIBUTION |
| 〰 | B | F | DASH LOUVERS |
| 〰 | A | E | DASH LOUVERS AND FLOOR |
| 〰 | A | D | FLOOR |
| 〰 | B | D | FLOOR AND WINDSHIELD |
| 〰 | C | D | WINDSHIELD |

### POSSIBLE CAUSE #2 ~ Servo motor failure

**CORRECTIVE ACTION ~** If servo motor failure is suspected, the first step is to confirm that the electrical connections at the servo motors are delivering the correct signal to the motors. With the ignition switch turned to **Accessory**, unplug each of the servo connectors and test according to the information in the **Electrical Connection To Plenum Servo Motors Diagram**. If the electrical check is in agreement with the **Diagram** and if the directional doors are not obstructed, the likely problem is a failed servo motor. Replace servo motor as required.

## ELECTRICAL CONNECTION TO PLENUM SERVO MOTORS



CONNECTOR AT FLOOR/DEFROST SERVO MOTOR

WHITE (GROUND)
LIGHT BLUE/BLACK (SEE CHART BELOW)
RED (+12V)

CONNECTOR AT DASH/FLOOR-DEF SERVO MOTOR

WHITE (GROUND)
YELLOW/BLACK (SEE CHART BELOW)
RED (+12V)

| | SERVO MOTOR CONNECTOR | |
|---|---|---|
| | FLOOR/DEFROST | DASH/FLOOR-DEFROST |
| CONTROL PANEL MODE SELECTION | LIGHT BLUE/BLACK WIRE | YELLOW/BLACK WIRE |
| 〰 | OPEN CIRCUIT | GROUND |
| 〰 | +12V | OPEN CIRCUIT |
| 〰 | +12V | +12V |
| 〰 | OPEN CIRCUIT | +12V |
| 〰 | GROUND | +12V |

**POSSIBLE CAUSE #3** ~ Control Panel Selector Switch is defective

**CORRECTIVE ACTION** ~ With the ignition turned to Accessory, unplug each of the connectors from the Plenum servo motors and test according to the information in the **Electrical Connection To Plenum Servo Motors Diagram**. If the test fails to find agreement with the **Diagram** there is a good possibility that the Mode Selection Switch at the control panel is defective. Replace the Mode Selection Switch.
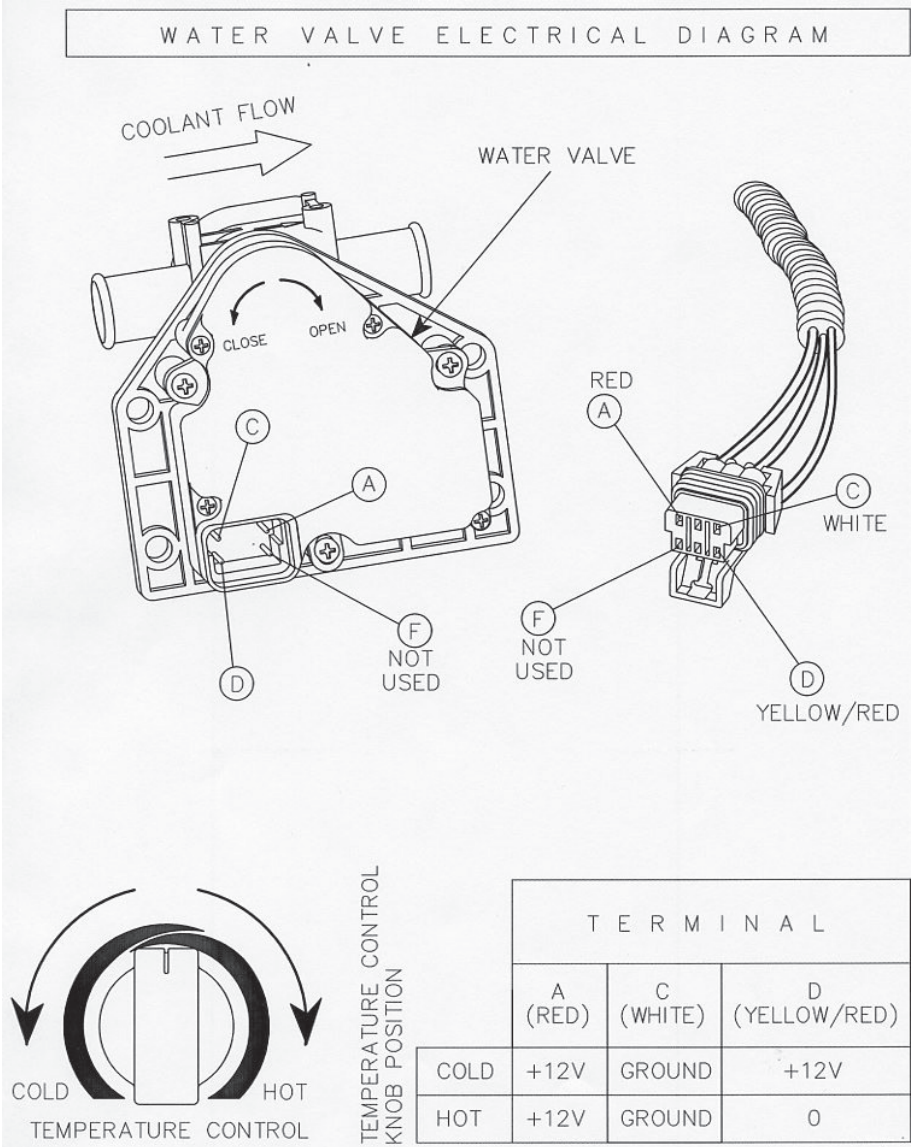
# SECTION B: TEMPERATURE CONTROL PROBLEMS

## PROBLEM B-1, *Air temperature cannot be controlled*

**POSSIBLE CAUSE #1** ~ Water valve not operating

**CORRECTIVE ACTION** ~ Valve may not be receiving a signal from control panel, or valve is defective. Disconnect the electrical connector from the valve. With the ignition switch turned to **Accessory**, check for the presence of 12 volts between the red wire (+12 V) and the white wire (ground) as noted in the **Water Valve Electrical Diagram**. The yellow/red signal wire will provide +12 V (full cold position) dropping to zero volts (full hot position) as the temperature control knob is rotated clockwise. If the condition at the connector is in agreement with the **Diagram**, proceed as follows:

Step 1  Disconnect the water valve from the 5/8" heater hoses,

Step 2  Carefully inspect the four small terminal pins on the motor, make sure that they are not damaged,

Step 2  Reconnect the valve to the electrical connector,

Step 3  Rotate the Temperature Control Knob and watch for any response from the valve,

Step 4  If no valve rotation is observed, replace the valve.



WATER VALVE ELECTRICAL DIAGRAM

| TERMINAL | | | |
|---|---|---|---|
| TEMPERATURE CONTROL KNOB POSITION | A (RED) | C (WHITE) | D (YELLOW/RED) |
| COLD | +12V | GROUND | +12V |
| HOT | +12V | GROUND | 0 |

**POSSIBLE CAUSE #2** ~ Water valve not electrically connected

**CORRECTIVE ACTION** ~ Disconnect the electrical connector from the valve. With the ignition switch turned to **Accessory**, check for the presence of 12 volts between the red wire (+12 V) and the white wire (ground) as noted in the Water Valve Electrical Diagram. The yellow/red signal wire will provide +12 V (full cold position) dropping to zero volts (full hot position) as the temperature control knob is rotated clockwise. If none of these conditions exist, refer to the **Wiring Diagram** and examine the system's wire harness for any loss of continuity. Repair as required.

## PROBLEM B-2, *A/C system not providing cool air*

**POSSIBLE CAUSE #1** ~ Loss of refrigerant

**CORRECTIVE ACTION** ~ Verify the presence of 1.75 pounds of refrigerant R134a. If the AC system is either partially low, or completely empty, a search will be required for leakage. Replace and repair as required.

**POSSIBLE CAUSE #2** ~ Compressor not engaged

**CORRECTIVE ACTION** ~ Confirm that the system is fully charged. With the ignition switch turned to **Accessory**, the blower switch turned to the highest speed and the AC (blue) rocker switch engaged, proceed as follows:

**Step 1**: Check for the presence of 12 volts at the compressor. If yes, make certain that the compressor clutch is fully grounded. If the ground circuit is intact, the compressor clutch has, most likely, failed and requires replacement.

**Step 2**: If no voltage is present at the compressor clutch, refer to the **Wiring Diagram** and check for voltage at each of the system pressure switches.[**Note**: The low pressure switch is located on the suction hose near the firewall and opens on a pressure drop to 8 psi. The binary (high/low) pressure switch is located on the liquid hose near the receiver/drier and opens on a pressure rise to approximately 400 psi and a pressure drop to 28 psi.] With the system fully charged, there should be continuity through both switches. Replace as required.

**Step 3**: If no voltage is present at the pressure switches, check for voltage at the thermostat (located externally on the HVAC housing). Assuming that the evaporator coil is fully warmed to ambient conditions, the thermostat should be a closed circuit. [**Note**: The thermostat circuit opens when the evaporator coil surface temperature drops below 32 degrees F; this action prevents the accumulation of ice on the evaporator coil surface.] If the thermostat presents an open circuit, replacement is required. Thermostat replacement requires the complete removal and disassembly of the HVAC housing. When replacing thermostat, take special care to not kink the capillary tube. Also, install the new capillary tube in the same location as the original.

**POSSIBLE CAUSE #3** ~ Perceived lack of cooling due to extreme conditions

**CORRECTIVE ACTION** ~ Note that extremely high humidity can reduce the effectiveness of the evaporator. The **Ambient Temperature vs. Relative Humidity Chart** (below) illustrates how very high humidity can raise the louver temperatures. This test is best performed with the doors and windows open, the blower turned to the highest speed and the AC system fully engaged. Run the engine at 1500 rpm and allow time for the system to stabilize. Measure the discharge air temperature at one of the dash louvers and compare to the **Chart**.

| | | AMBIENT TEMPERATURE | | | | |
|---|---|---|---|---|---|---|
| | | 60 | 70 | 80 | 90 | 100 |
| RELATIVE HUMIDITY | 10% | * | * | 38 | 48 | 58 |
| | 20% | * | * | 39 | 49 | 59 |
| | 30% | * | * | 45 | 49 | 63 |
| | 40% | * | 39 | 48 | 53 | 68 |
| | 50% | * | 42 | 53 | 57 | 73 |
| | 60% | * | 46 | 57 | 60 | 79 |
| | 70% | * | 49 | 61 | 67 | 82 |
| | 80% | 39 | 52 | 64 | 71 | 85 |
| | 90% | 42 | 55 | 68 | 74 | 88 |
| | 100% | 46 | 57 | 71 | 77 | 90 |

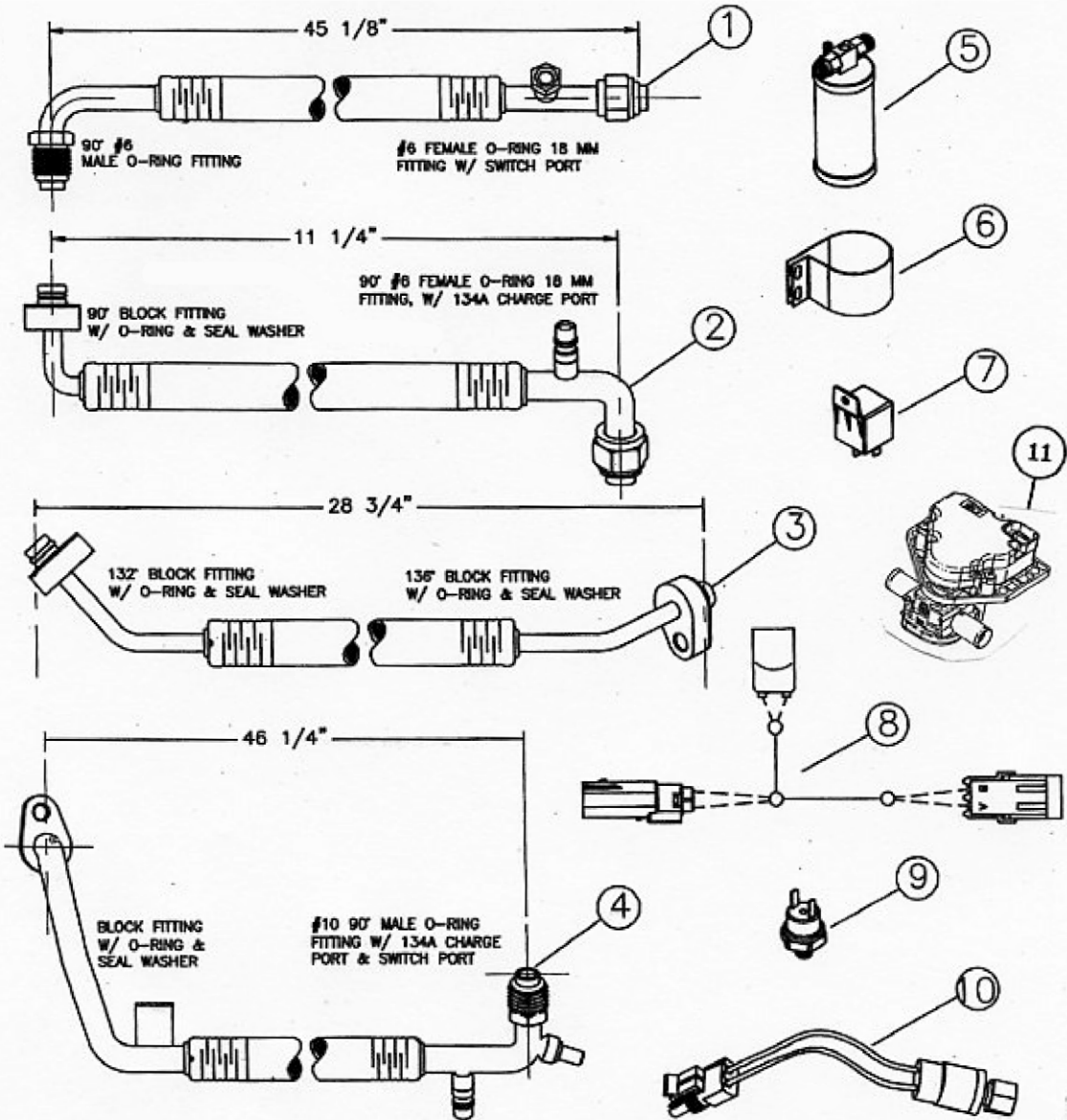* VALUES IN THE SHADED AREA SUBJECT TO FLUCTUATION DUE TO CYCLING OF THE COMPRESSOR

# SECTION C: DIAGNOSIS OF REFRIGERANT RELATED PROBLEMS

Consult the following *Refrigerant System Evaluation* chart (below) for a list of refrigerant related symptoms and their recommended resolution:

## REFRIGERANT SYSTEM EVALUATION

| SYMPTOM | LOW-SIDE GAUGE | HIGH-SIDE GAUGE | DIAGNOSIS | CORRECTION |
|---|---|---|---|---|
| AIR SLIGHTLY COOL | NORMAL | NORMAL | AIR & MOISTURE IN SYSTEM | REPLACE RECEIVER/DRIVER RECHARGE |
| SYSTEM OPERATED NORMALLY FOR A SHORT PERIOD, BUT AIR WARMS AS LOW SIDE DROPS TO ZERO | INITIALLY NORMAL | INITIALLY NORMAL | EXCESS MOISTURE IN SYSTEM TURNING TO ICE WITHIN EXPANSION VALVE | REPLACE RECEIVER/DRIER, RECHARGE |
| SYSTEM OPERATED NORMALLY, BUT AIR FLOW GRADUALLY DECREASES | INITIALLY NORMAL, BUT DROPS AS AIR FLOW DECREASES | NORMAL, BUT DROPS AS AIR FLOW DROPS | THERMOSTAT FAILURE ALLOWING SURFACE OF EVAPORATOR COIL TO FREEZE | REPLACE THERMOSTAT |
| POOR COOLING | LOW | LOW | LOW REFRIGERANT CHARGE | REPAIR SYSTEM LEAKS, RECHARGE |
| POOR COOLING, ICE FORMING ON SURFACE OF EXPANSION VALVE | LOW | LOW | EXPANSION VALVE STUCK IN CLOSED POSITION | REPLACE EXPANSION VALVE, RECHARGE |
| POOR COOLING, SWEATING MAY APPEAR ON HIGH-SIDE COMPONENTS | LOW | LOW | RESTRICTED REFRIGERANT FLOW ON HIGH SIDE | REPAIR/REPLACE DEFECTIVE HIGH SIDE COMPONENTS, RECHARGE |
| POOR COOLING NOISY COMPRESSOR | LOW | LOW | COMPRESSOR MALFUNCTION | REPLACE COMPRESSOR RECHARGE |
| POOR COOLING HIGH SIDE LINES HOT | HIGH | HIGH | SYSTEM OVER CHARGE | RECHARGE SYSTEM (1.75 #R134A) |
| POOR COOLING HIGH SIDE LINES HOT | HIGH | HIGH | POOR CONDENSING | INSPECT CONDENSER FOR OBSTRUCTIONS THAT COULD REDUCE AIR FLOW |
| POOR COOLING | HIGH | HIGH | EXPANSION VALVE STUCK OPEN | REPLACE EXPANSION VALVE, RECHARGE |

## ADDITIONAL SERVICABLE ITEMS

| ITEM # | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 20-03102 | #6 HOSE ASSEMBLY, RECEIVER/DRIER TO EVAPORATOR |
| 2 | 20-03103 | #6 HOSE ASSEMBLY, CONDENSER TO RECEIVER/DRIER |
| 3 | 20-03104 | #8 HOSE ASSEMBLY, COMPRESSOR TO CONDENSER |
| 4 | 20-03106 | #12 HOSE ASSEMBLY, EVAPORATOR TO COMPRESSOR |
| 5 | 07-01231 | RECEIVER/DRIER |
| 6 | 55-05341 | RECEIVER/DRIER MOUNTING BRACKET |
| 7 | 44-00196 | RELAY |
| 8 | 12-02274 | WIRE HARNESS (FOR BINARY PRESSURE SWITCH) |
| 9 | 11-00644 | BINARY PRESSURE SWITCH |
| 10 | 11-00576 | LOW PRESSURE SWITCH |
| 11 | 70-08468 | WATER VALVE |

| ITEM # | PART # | DESCRIPTION | QTY | UNIT |
|--------|--------|-------------|-----|------|
| 1 | 555001014 | HEATER CORE ASSEMBLY | 1 | EA |
| 2 | 47008760 | HEATER COIL W/GASKET & CLAMP | 1 | EA |
| 3 | 47008753 | DOOR W/SEAL | 1 | EA |
| 4 | 47008754 | BLOWER HOUSING | 1 | EA |
| 5 | 47008755 | BLOWER ADAPTER | 1 | EA |
| 6 | 47008732 | RESISTER CAGE | 1 | EA |
| 7 | 47008357 | RESISTER | 1 | EA |
| 8 | 47008756 | BLOWER MOTOR | 1 | EA |
| 9 | 47008757 | BLOWER WHEEL | 1 | EA |
| 10 | 47008730 | VENT TUBE | 1 | EA |
| 11 | 47008731 | VENT TUBE ADAPTER | 1 | EA |
| 12 | 47008716 | RELAY | 1 | EA |
| 13 | 47008758 | HARNESS | 1 | EA |
| 14 | 47008580 | FORMED HEATER HOSE | 2 | EA |
| 15 | 555002053 | VALVE WATER | 1 | EA |
| 16 | 105080401 | PLATE MOUNTING FOOT DUMP AL .07X4.25X5.53 | 1 | EA |
| 17 | 090080401 | DUCT FT DUMP SPECIAL | 1 | EA |
| 18 | 21-01201 | GASKET - PART OF HEATER ASSEMBLY | 1 | EA |
| 19 | 21-01202 | GASKET - PART OF HEATER ASSEMBLY | 1 | EA |
| 20 | 555001416 | CONTROL PANEL ASSEMBLY | 1 | EA |
| 21 | 47008706 | KNOB | 2 | EA |
| 22 | 47008735 | KNOB | 1 | EA |
| 23 | 47008707 | DECAL | 1 | EA |
| 24 | 47008708 | LIGHT PANEL | 1 | EA |
| 25 | 47008709 | CONTROL SUB PANEL | 1 | EA |
| 26 | 47008700 | BLOWER SWITCH | 1 | EA |
| 27 | 47008710 | POTENTIOMETER SWITCH | 2 | EA |
| 28 | 47008711 | HARNESS ILLUMINATION W/BULBS | 1 | EA |
| 29 | 47008712 | HARNESS BLOWER MOTOR | 1 | EA |
| 30 | 555001721 | DEFROST DUCT CURBSIDE METAL | 1 | EA |
| 31 | 555001722 | DEFROST DUCT ROADSIDE METAL | 1 | EA |
| 32 | 093080400 | HOLD DOWN PLATE DEFROSTER DUCTS | 4 | EA |
| 33 | 555001524 | HOSE DEFROSTER 2.5X30 | 1 | EA |
| 34 | 555001525 | HOSE DEFROSTER 2.5X38 (2x DEFROSTER / 1xFOOT DUMP) | 3 | EA |
| 35 | 555002003 | COLLAR FRESH AIR INTAKE | 1 | EA |
| 36 | 555001715 | LOUVER BALL | 6 | EA |
| 37 | 555002007 | PLENUM FRESH AIR SIDE WALL (DRAIN HOSE - 555002008) | 1 | EA |
| 38 | 107027405 | BRACKET HEATER VENT | 1 | EA |
| 39 | 555001533 | HOSE BLOWER HEATER/DEFROSTER 5"X7.5" | 1 | EA |
| 40 | 005780402 | MOUNTING PLATE | 1 | EA |
| 41 | 002080400 | BRACKET HEATER CONTROL AL .102X3X11.67 | 1 | EA |
| 42 | 555001321 | DUCT HVAC | 1 | EA |
| 43 | 555001523 | HOSE DEFROSTER 2.5X16 | 1 | EA |
| 44 | 47008017 | CONNECTOR STRAIGHT .62ID BLACK NYLON | 2 | EA |
| NS | 555002164 | CAP DEFROSTER PORT 2.5IN DIA ROUND | 2 | EA |
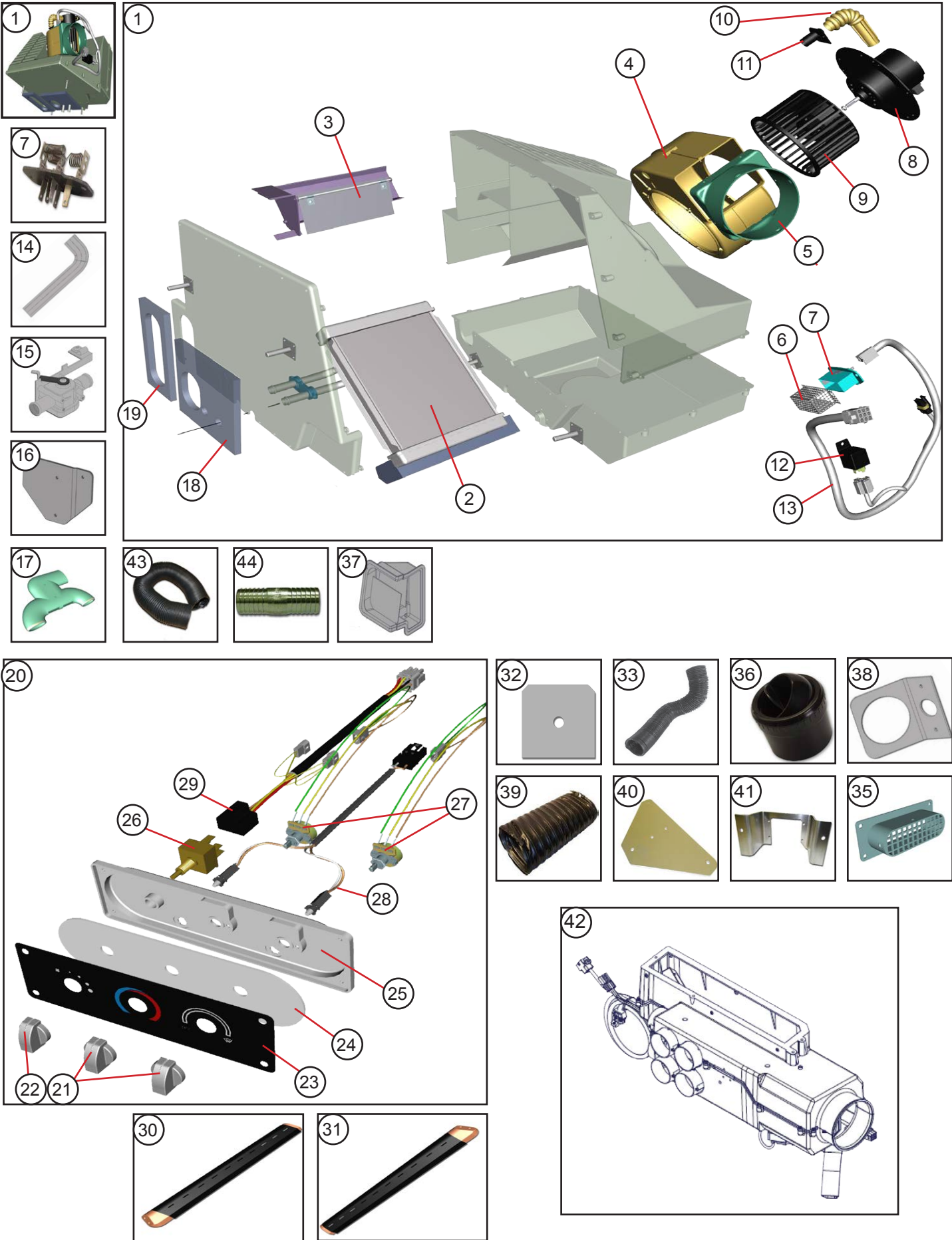
# HOOD

### Hood Removal:

1. For removal of the gas springs. See page 14.
2. Disconnect wire harness plug connections.
3. Remove the 4 bolts tying the left and right hinge assemblies to the body of the truck.
4. Disconnect hood prop.
5. At this point the hood can be removed.

### Hood Installation:

1. Before installation fasten hinge assemblies to hood assembly. Now using the original 4 fasteners install the completed assembly.
2. For installation of the gas springs, see page 14.
3. Reconnect all wiring.
4. Reconnect hood prop.

### Hinge Replacement:

1. To replace hood hinge, remove three bolts attached to hood assembly.
2. Remove two bolts attached to windshield rail.
3. Slide hinge out to the side of the truck.
4. To replace hinge, install in reverse order.

### Hood Stop Adjustment:

1. The stops that support the hood should be adjusted if the hood ever comes into contact with the cab skirts. The stop bracket is slotted to allow for vertical adjustment. Adjust brackets so that hood seats evenly and does not come into contact with cab skirts.
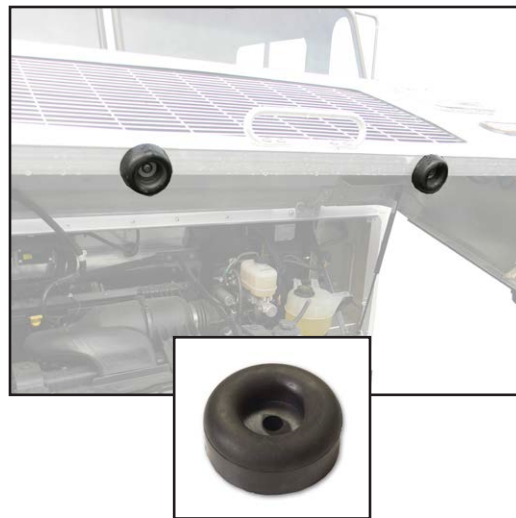
# LAMPS

### Headlight Replacement:

1. Remove screws and trim from around headlight.
2. Remove headlight.
3. Remove wiring plug from back of headlight.
4. Replace headlight.
5. For installation reverse removal sequence.

### Tail, Turn Backup and Marker Lamp Replacement:

1. Push tail, turn back-up lamp into rubber grommet and use a small flat head screw driver and pry lamp from rubber grommet.
2. Remove wiring plug from back of lamp.
3. Install new lamp by reconnecting wiring plug to new lamp and pushing lamp into rubber grommet until properly seated.

### Clearance Marker and ICC Light Replacement:

1. From inside, unplug the lamp, push lamp out of the grommet. To replace, from the outside push the lamp into grommet. Some lubrication helps installation. Install so the marking is towards the top. Hook up wiring taking care to match the polarity.

# BODY PANEL REPLACEMENTS & RIVETS

## Body Panel Replacement:

1. When replacing exterior body panels, remove rivets following procedures outlined below.

2. Apply sealant to new panel as required.

3. Install new panel in reverse order.

## Removing A Rivet:

1. When removing an existing rivet, place the drill bit on the small dot in the center of the rivet head. Twist the drill chuck by hand to enlarge the small dot. This will prevent the drill from slipping.

2. *Never drill completely through the rivet or you risk enlarging the hole which can weaken the bond when re-fastened. Drill into the center of the rivet head. With drill turned off but still in place, move it horizontally and vertically until the head of the rivet comes off. Use an awl and a mallet to tap the rivet shank out.

3. If you accidentally drill through the material, see the following instructions.
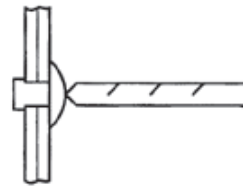
## Re-Riveting:

1. When replacing new panels, use .19 diameter rivets. The correct length rivet will measure .25-.38 beyond the material being joined. (See diagram below)

2. When ever rivets are removed there is always some enlargement to the hole. To ensure the strength of the new bond, follow these steps.

3. Drill the hole out to .25" diameter. If the hole is already .25" diameter then drill it out to .28" diameter and use a .25" bolt and nut, otherwise continue to the next step.

4. Rivet the parts using a .25" rivet. The correct length rivet will measure .25-.38 beyond the material being joined.

    NOTE: As the vehicle ages, it is not uncommon for some rivets to loosen. This can often be detected by a black ring (aluminum oxide) around the head of the rivet. If this happens replace the rivet. See Re-Riveting.
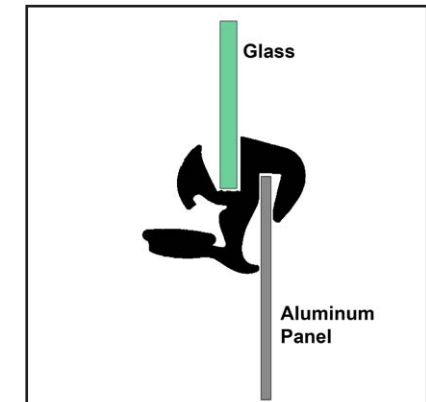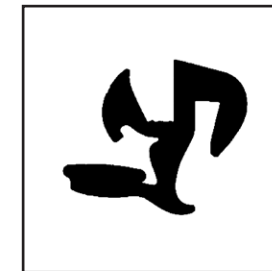
.25 TO .38
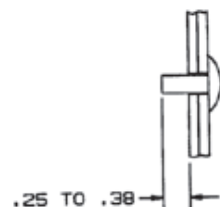
# WINDSHIELD REPLACEMENT

## Windshield Removal:

1. Special tools are required for windshield removal. Glass and Bead Tools.

2. A soap and water solution should be applied around the rubber seal. This will allow the tools to move smoothly when in contact with the rubber seal.

3. Using the glass tool pry between the windshield and the rubber seal. This will enable you to pry the glass from the seal. Leaving the tool in position work your way around the glass. Pushing the top corners of the windshield from inside the truck will get the removal process started.

**NOTE: For safety reasons this task should be performed by two people.**

Glass

Aluminum Panel

## Windshield Installation:

1. Special tools are required for windshield removal. Glass and Bead Tools.

2. Insert rubber seal into window frame.

3. A soap and water solution should be applied around the rubber seal. This will allow the tools to move smoothly when in contact with the rubber seal.

4. Position the bottom of the windshield in place first. Using the glass tool pry the lip on the seal out to allow the windshield to seat in the seal properly. Work your way around the window until it is seated properly.

5. Do this around the whole windshield until the windshield seats properly in the frame.
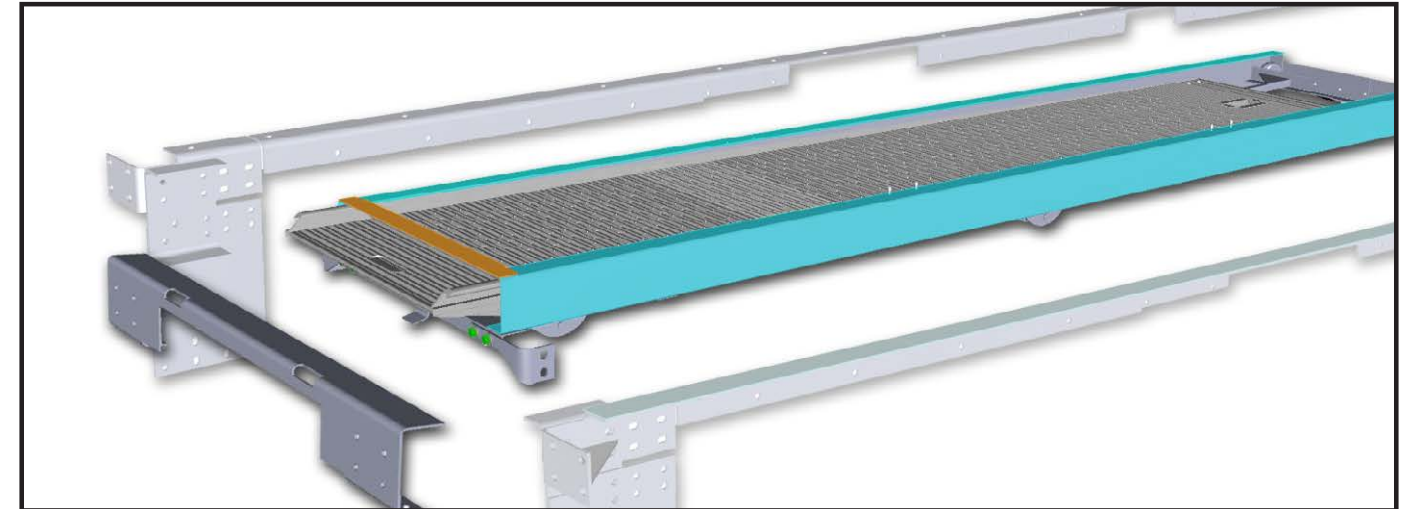
## WINDSHIELD WIPERS & MOTOR

**Windshield Wipers and Wiper Drive Assembly:**

1. Replace the wiper arm by removing the acorn nut and washer hose. To insure proper placement of the new wiper, mark the position of the old wiper arm before removing.

2. Reinstall in reverse order.
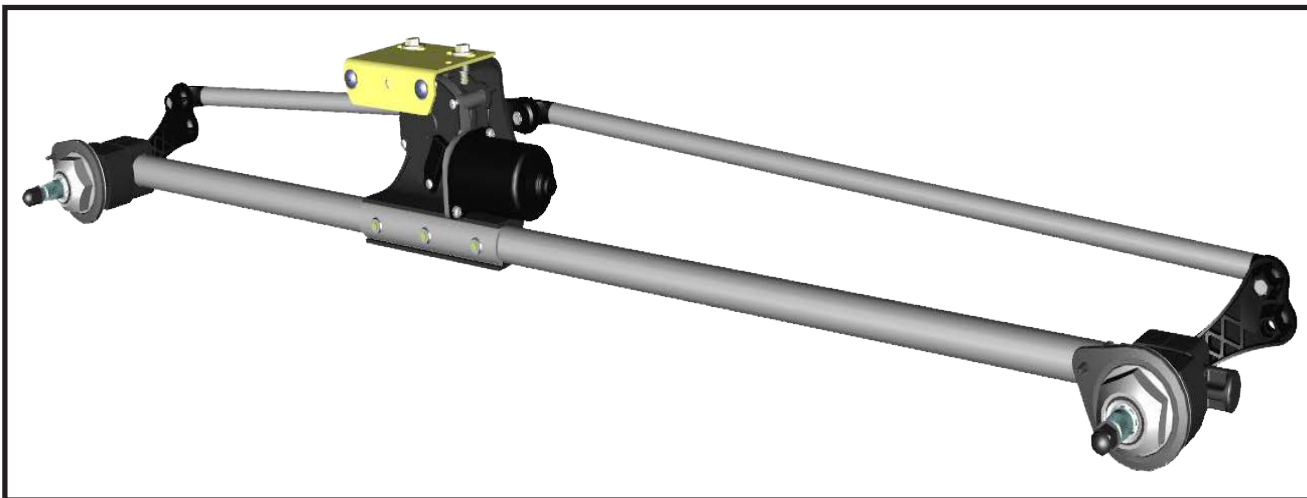




## WALK-UP RAMP SYSTEM
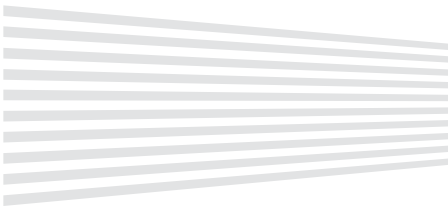


DRAFT
WAITING ON DATA FROM R.O.M.

# VX4022

6.2" Double DIN Multimedia Receiver
DVD / SiriusXM Ready™ / Built-in BT Technology /
iPhone® - iPod® / Pandora® / USB / AV In

## Operation Manual

## VX4022

### FCC Statement
1. This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
**NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.**

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

### FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 centimeters between the radiator and your body.

"Made for iPod," and "Made for iPhone" mean that an electronic accessory (This head unit) has been designed to connect specifically to iPod®/, or iPhone® , respectively, and has been certified by the developer to meet Apple performance standards.

Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this head unit with iPod® or iPhone® may affect mobile phone performance.

iPod®/ iPhone® are trademarks of Apple Inc., registered in the U.S. and other countries.

## VX4022

Thank you for choosing a Jensen product. We hope you will find the instructions in this owner's manual clear and easy to follow. If you take a few minutes to look through it, you'll learn how to use all the features of your new Jensen VX4022 Multimedia Receiver for maximum enjoyment. Please save this manual for future reference.
We recommend having your Jensen VX4022 Multimedia Receiver installed by a reputable installation shop.

## FEATURES
### DVD
- Audio Equalizer
- Next Chapter and Previous Chapter
- Play/Pause
- Track Direct Entry
- Disc Menu
- Selection Repeat / Track Repeat
- Disc Audio
- Disc Language
- Picture Control

### CD / MP3 / WMA
- CD-Text Compatible
- ID3 Tag Compatible
- Directory Search (MP3 / WMA Only)
- MP3 and WMA Files on a DVD+R / RW
- Audible Forward / Reverse Track Search (CD-DA Only)
- Random, Repeat and Intro
- Play, Pause, Stop, Next Track and Previous Track

### AM-FM
- USA / European Frequency Spacing
- 30 Station Presets (18 FM / 12 AM)
- Auto Stereo / Mono
- Local / Distance
- Auto Store / Preview Scan

### iPod®/iPhone®
- iPod®/ iPhone® via USB
- High Speed Direct Connect Interface to Access iPhone® and iPod® Playlists, Artists, Albums
- Power Management Charges iPhone® / iPod® while Connected

## VX4022

**SiriusXM Ready®**
- Satellite Channel Name, Artist, Song, and Categories Displayed on Monitor (Vehicle Tuner and Subscription required and sold separately)

**Chassis**
- 2.0 DIN (Import / ISO-DIN Mountable)
- Fixed Front Panel
- 6.2" High Definition TFT LCD
- 800h x 480v x RGB WVGA

**General**
- Beep Tone Confirmation (ON-OFF Option)
- BT / Hands-Free calling for safety and convenience and A2DP for streaming music from your smartphone.
- One Composite Video Output for Additional Screens
- Front Panel Audio/Video Input
- Front Panel USB - Playback Music / Video Files via Portable Hard Drives / USB flash drives
- Ten-Band Graphic Equalizer
- 4VRMS Front / Rear / Subwoofer RCA Line Output
- Rear Camera Input
- Touch Screen Calibration Mode
- Rotary Encoder Audio Control
- HDMI / MHL Connectivity - See and control smartphone apps on the larger TFT screen. *Some apps may not be supported.
- USB Charging Current - 2.1 Amp Support

**Rear Camera**
- The VX4022 is "camera ready." Before accessing any camera features, you must purchase and install a rear video camera.

## VX4022

**WARNING! Never install this unit where operation and viewing could interfere with safe driving conditions.**

**WARNING! To reduce the risk of a traffic accident (except when using for rear view video camera) never use the video display function while driving the vehicle. This is a violation of federal law.**

**WARNING! Never disassemble or adjust the unit.**

**WARNING! To prevent injury from shock or fire, never expose this unit to moisture or water.**

**WARNING! Never use irregular discs.**

**WARNING! Using an improper fuse may cause damage to the unit and result in fire.**

## VX4022

**NOTES ON REMOTE CONTROL USAGE**
- Aim the remote control at the TFT/screen.
- Remove the battery from the remote control or insert a battery insulator if the remote control will not be used for a month or longer.
- DO NOT store the remote control in direct sunlight or in a high temperature environment, or it may not function properly.
- The battery will last for 6 months under normal conditions. If the remote control does not work, please change the battery.
- Use lithium battery type CR2025 (3V) only.
- DO NOT recharge, disassemble, heat or expose the battery to fire.
- Insert the battery in the proper direction according to the ( + ) and ( - ) polarity marks.
- Store the battery in a place where children cannot reach it to avoid the risk of an accident.

## VX4022

**Remote Control Function Description**

1. **SOURCE (SRC) Button:** Press this button to switch between and select available sources. (Radio/Disc/Phone/USB/Phone-Audio/SWC/AUX-1/AUX-2/Camera)

2. **EJECT Button ( ▲ ):** Press this button to eject a DVD/CD/MP3 disc. Disc play is stopped, the disc is ejected and the unit will change to radio operation. If the disc is not removed from the unit and the button is pressed again, the disc will be re-loaded. If the disc is not removed from the disc slot within 10 seconds of being ejected, it will be automatically reloaded to prevent it from being accidentally damaged.

3. **AUDIO Button:** Press to display and select the audio language in DVD mode. Each time the button is pressed, the language changes. **NOTE: The languages for audio vary from disc to disc.**

4. **VOLUME Button (VOL + and -):** Press these buttons to increase or decrease the playback volume.

5. **BAND Button:** Press this button to scroll though preset stations or when in disc mode, this button is used for Fast playback / Slow playback. Press this button to answer an incoming BT phone call.

6. **REPEAT (RPT) Button:** Repeat playback

7. **MUTE Button:** Press this button to turn the audio output ON and OFF.

8. **POWER Button ( ⏻ ):** Press this button to turn the unit ON and OFF.

9. **SUBTITLE Button:** Press to display and select the subtitle language in DVD mode. Each time the button is pressed, the subtitle language changes. **NOTE: The type and number of languages for subtitles vary from disc to disc.**

10. **MENU Button:** Press this button to access the root menu of a DVD or CD during playback. The disc will return to normal playback and the root menu will disappear if no selection is made within 10 seconds. This button is also used to select photo mode of an MP3 player.

11. **FAST FORWARD [ ▶▶ ] Button:** Press this button to forward Disc play 2x, 4x, 8x or 20x normal speed. Press this button while in Radio mode to search available radio station by increasing tuning frequency.

## VX4022

### CONTROLS AND INDICATORS
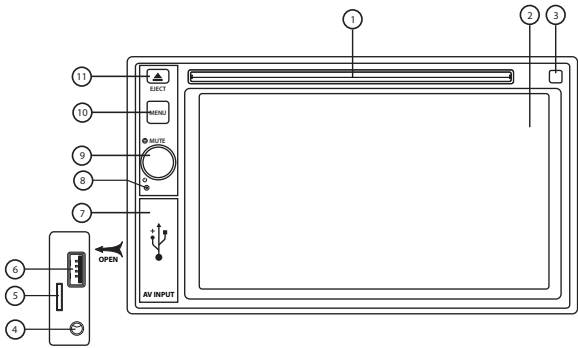


**VX4022 Controls and Indicators**

1. **Disc Slot:**
   Accepts DVD/CD/MP3 discs. If the unit is turned on, playback begins when a disc is inserted.
2. **LCD Screen and Touch Screen:**
   Touch icons on this screen to access menus or control functions.
3. **Remote Sensor:**
   Used to receive command signals from the remote control.
4. **3.5mm AV IN Jack:**
   This connector accepts a 3.5 mm jack through which signals from various audio/video devices can be applied to the unit.
5. **MicroSD Card Slot:**
   Playback of music/video files.

6. **USB Slot:**
   Used to connect an iPhone/iPod®, MP3 player or USB flash drive for playback of music/video files.
7. **Interface Cover:**
   Covers the 3.5mm AV In, microSD card and USB slot.
8. **Reset Button:**
   Press this button to reset the system settings (except password and parental lock settings) and to correct a system halt or other illegal operation. Use the tip of a pen to press the Reset button.
9. **Power On/Off ( ⏻ ) Button / Rotary Volume ( ◉ ) Knob / Mute Button**
   Press to turn the unit ON. Press and hold to turn the unit OFF.
   Rotate the knob to adjust the volume.
   Press the knob momentarily to mute the audio. Press the knob again to restore the audio.
10. **Menu Button:**
    Press this button to access the Main SRC Menu.
11. **Eject ( ▲ ) Button:**
    Press this button to eject a DVD/CD/MP3 disc. Disc play is stopped, the disc is ejected and the unit will change to radio operation. If the disc is not removed from the unit and the button is pressed again, the disc will be re-loaded. If the disc is not removed from the disc slot within 10 seconds of being ejected, it will be automatically reloaded to prevent it from being accidentally damaged.

## VX4022

12. **NEXT (▶▶I) Button:** Press this button to skip to the next chapter, track or song during playback of a disc. Press this button while in Radio mode to search available radio station by increasing tuning frequency.

13. **PLAY / PAUSE (▶/❚❚) Button:** Press this button to pause the playback of a disc. Press this button again to resume normal playback.

14. **PREVIOUS (I◀◀) Button:** Press this button to go back to the previous chapter, track or song during playback of a disc. Press this button while in Radio mode to search available radio station by decreasing tuning frequency.

15. **FAST REVERSE [ ◀◀ ] Button:** Press this button to reverse Disc play 2x, 4x, 8x or 20x normal speed. Press this button while in Radio mode to search available radio station by decreasing tuning frequency.

16. **NUMBER Buttons (1-6):** Press these buttons to directly access chapters and tracks, dialing phone numbers, or entering passwords.

17. **RANDOM (RDM) Button:** Press this button to play tracks or chapters in random order while playing a disc.

## VX4022

### EXTERNAL DEVICES

**Connecting External Devices**

External devices, including a game console, video camera, etc. can be connected to this unit using its front A/V In 3.5mm connector (AV In1), the rear RCA inputs (AV In 2) or the USB port.

You cannot directly control external devices connected to the A/V inputs using the front panel controls or this unit's remote control.

**AV In 1**

AV In1 is used for playback of audio/video from an external device connected to the unit through a 3.5mm connector. The unit can increase or decrease the volume of the connected device. All other controls are done on the connected device. Select AV In1 to playback audio/video from the front panel 3.5mm AV In.

**AV In 2**

AV In2 is used for playback of audio/video from an external device connected to the RCA connectors located on the back of the unit (see the VX4022 Installation Guide). The unit can increase or decrease the volume of the connected device. All other controls are done on the connected device. Select AV In 2 to playback audio/video from the rear RCA AV In.
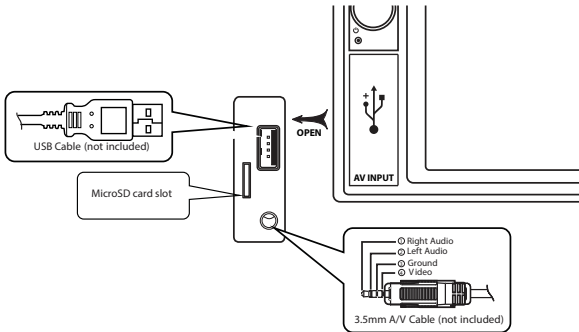


**Connecting External Devices**

## VX4022

### QUICK START GUIDE

### Turning the Unit ON or OFF
Press the front panel volume knob to turn the unit ON. Press and hold the volume knob > 1 second to turn the unit OFF.

### Selecting an Audio/Video Source, Phone, Steering Wheel Controls, Backup Camera or Pandora
To select a source:
1. Press the front panel MENU button or touch the SRC icon to view the Main Source Menu



**MENU Button**
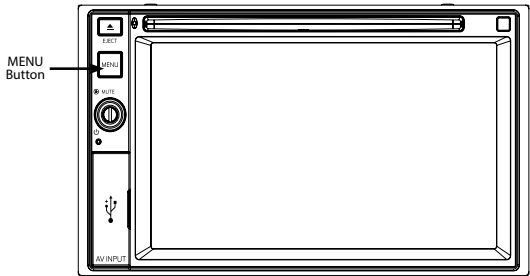
**VX4022 Front Panel**

2. Touch the desired source icon on one of the two main menu screens. Screen 1 of 2: Disc, Radio, USB, AV-IN1, Settings, Phone or Camera. Touch Next at the bottom of the screen to access Screen 2 of 2: Steering Wheel Controls (SWC), AV-IN2, Pandora or SiriusXM (SXM).

## VX4022

### Playing a Disc
To begin playback of an Audio/Video Disc:
1. Press the front panel Power On/Off ( ☉ ) button / Rotary Volume ( ◉ ) knob / Mute button to turn the unit ON.
2. Insert a disc with the label side facing up. Playback will begin automatically.

To eject a disc:
1. Press the front panel Eject ( ▲ ) button.

### Resetting the System
Soft Reset - To correct a system halt or other illegal operation, use the tip of a pen to press and release the reset button located just below the front panel interface cover.
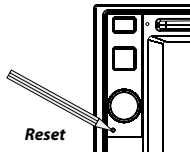


**Reset**

**System Reset Button**

After a system reset, the unit restores all factory default settings.
**Note: If the unit is reset while a DVD is playing, the unit will return to Main Menu once the reset is complete.**

### Parking Brake Inhibit
When the pink "Parking" wire is connected to the vehicle Parking Brake circuit, the front TFT monitor will display video when the Parking Brake is engaged.

## VX4022

### System Settings Adjustment
To access and adjust system settings:
1. Touch the Settings ( ⚙ ) icon on the Main Menu screen to enter the SETTINGS MENU. Sub-menus where adjustments can be made will be highlighted.

### Volume Adjustment / Turn On Volume
To increase or decrease the volume level, rotate the rotary encoder knob. The unit's front panel screen will display the volume level for 2 seconds. The volume level ranges from 0 to 50. To set the Turn-On volume, press and hold the rotary encoder knob 1 second while the green volume bar is displayed after setting the desired volume level. You will hear 2 beeps to confirm the new Turn-On volume level.

### Audible Beep Confirmation
An audible beep tone confirms each function selection. The beep tone can be disabled through the Setup menu.

### Muting the Audio
Press the front panel volume knob ( ◉ ) to mute the audio from the unit. Mute icon is displayed on the LCD screen. Press the front panel volume knob again to restore the audio volume to its previous level. Adjusting the volume or using any of the audio setup features cancels the mute function.

### Equalizer Controls
Equalizer (**EQ**): Adjustment can be made after entering one of the audio/video sources (Disc, Radio, USB, AV-IN or SXM).
Touch the Equalizer (**EQ**) icon to view the Equalizer Control Screen to select a desired preset setting (Optimal, Classic, Rock, Jazz, Techno or Pop), Flat setting, custom User setting, make adjustments to the audio Balance and Fader levels or to turn the Loudness option ON or OFF. Touch the SRC icon to return to the current source.

## VX4022

### EQUALIZER CONTROL MENU

### Adjusting Equalizer Controls
The Equalizer adjustment screen allows the user to easily adjust the audio system to meet the acoustical characteristics of the vehicle. The acoustical characteristics vary depending on the type of vehicle and measurements.

The Balance/Fader levels and Loudness ON/OFF option of a selected audio/video source (Disc, Radio, USB/iPod®, AV-IN1, AV-IN2 or SXM) is also adjusted through the Equalizer adjustment screen.

### Equalizer (EQ) (10 Band)
1. Touch the Equalizer (EQ) icon to view and select a desired preset setting (Optimal, Classic, Rock, Jazz, Techno or Pop) or Flat setting.
   **Note: The equalizer will automatically change to "USER" when individual audio functions are adjusted.**



**Equalizer Adjustment Screen**

2. Select a desired frequency range to be adjusted (31.5, 62.5, 125, 250, 500, 1K, 2K, 4K, 8K or 16K).
3. Touch and move the slide bar Up / Down to adjust the amount of boost/cut from +10/-10dB.

### User Setting
Touch the User icon to customize each of the equalizers 10 frequency bands.

### Flat Setting
Touch the Flat icon to set the equalizers frequencies to the midpoint (0dB).

## VX4022

### Reset
Touch the Reset icon to reset the 10 equalizer band frequencies to the mid point.

### Loudness
Touch the Loud icon to turn the loud option ON or OFF. The loud option automatically alters the frequency response curve of audio to make it sound more natural when played at a lower volume level.

### Exiting the Equalizer
To exit the Equalizer menu touch the SRC icon to return to the current source.

### Fader-Balance
Balance - Touch the **FAD-BAL** icon on the left side of the equalizer screen to display the balance/fader screen.



**Fade-Balance Adjustment Screen**

**Balance** - This feature is used to balance the audio output levels between the left and right side of the vehicle. Touch the ◄ or ► icons to change the balance control settings -20 (Left) to +20 (Right). The setting can also be changed by touching screen within the grid to move the sphere.

**Fader** - This feature is used to fade the audio output levels between the front and rear of the vehicle. Touch the ▲ or ▼ icons to change the fade control settings -20 (Rear) to +20 (Front). The setting can also be changed by touching screen within the grid to move the sphere.

**Sub (Subwoofer)** - This feature is used to reduce or increase the subwoofer sound level. Touch the slide bar ▲ or ▼ icons to adjust the settings.

### Exiting the Balance-Fader
To exit the balance-fader touch the SRC icon on the top left corner of the screen.

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**Beep** - Touch ON or OFF to turn the selection confirmation beep ON or OFF.

**Wallpaper** - Touch wallpaper selection to select wallpaper. Touch again to confirm and set the wallpaper.

**Calibration** - The Touch Screen Calibration adjustment is used to set the parameters of the touch screen to ensure that when the screen is touched, it corresponds to the feature desired.

**Note: Never use a pen or sharp object to calibrate the touch screen as this will damage the panel.**
1. Touch the Calibrate icon and the first screen will appear with instructions.
2. Follow the instructions on the screen touching and momentarily holding finger or a stylus to the center of the target for 2 seconds. Repeat as the target moves to each corner of the screen and finally to the center.



**Calibration Screen**

3. The second screen will appear:



**Calibration Screen Confirmation**

4. If the screen is touched, the new calibration parameters will be accepted. If the screen is not touched within thirty seconds, the new parameters will be disregarded.

## VX4022

### SYSTEM SETTINGS
To access System Settings, touch the ⚙ icon on the Main Menu screen. There are seven System Settings Sub-Menus (General, Audio, Time, Language, BT, DVD or Volume) that are used to adjust the performance of each option of the VX4022. The Version Sub-Menu is for information only. Touch a desired Sub-Menu and the Sub-Menu will appear highlighted. The features available for adjustment will appear on the screen.



**System Settings Screens**

### Adjusting a Sub-Menu Feature
1. Touch the Sub-Menu feature to be adjusted.
2. Touch the ▲ or ▼ icon to view the previous or next feature page, if applicable. An options list appears on the right.
3. Touch the desired feature option once to make selection then touch again to confirm the selection.

### General Sub-Menu Features - Radio Region/Frequency Spacing
USA - FM - 200kHz / AM - 10kHz
China - FM - 50kHz / AM - 9kHz
Japan - FM - 100kHz / AM - 9kHz
Europe - FM - 50kHz / AM - 9kHz
Europe (LW) - FM - 50kHz / AM - 9kHz / LW - 30kHz
OIRT - FM - 50kHz / AM - 9kHz / OIRT - 30kHz

**Radio Lo/Dx** - Touch the Distance or Local to increase or decrease radio tuning sensitivity to receive local or distant stations.

**TFT Standby** - Touch OFF, 10s or 20s to set the unit's front panel TFT LCD screen to stay ON continuously or to turn off the screen after 10 or 20 seconds.

**Display Adjust** - Touch Night, Dark, Normal or Bright to set the unit's front panel TFT LCD screen to be adjusted for day and night conditions.

## VX4022

**Illumination** - Customize the front panel illumination. Touch to change the illumination color. Select a color or touch Custom > Adjust to select the color palette.

**UI Color** - Touch green, red, amber, blue or purple to select the user interface color. Touch again to confirm and set the color.

**Demo** - Touch ON or OFF to turn the demonstration mode ON or OFF. The factory default setting is ON.

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### Audio Sub-Menu Features
The Audio Sub-Menu is used to turn the Subwoofer output ON or OFF and to select a Subwoofer crossover frequency.

**Audio Sub-Menu Screen**

**Subwoofer** - Touch ON or OFF to turn the subwoofer output ON or OFF.

**Subwoofer Crossover** - Touch a crossover frequency (80Hz, 120Hz or 160Hz) to set a cut-off frequency for the subwoofer's low-pass filter (LPF).

### Time Sub-Menu Features
The clock appears in the top right corner of the screen during certain operations.
**Note: The AM/PM indication will change as you continue to adjust the hour past 12.**

**Time Sub-Menu Screen**

**Date** - Touch the Date icon and use the ▲ or ▼ icons to set the day, month, and year. After setting the date, touch Save. The date will appear to the right of the Date option.

**Clock Mode** - Touch 12Hr to set the clock display to 12 hour time intervals using AM and PM. Touch 24Hr to set the clock display to a 24 hour time interval (or military time).

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### BT Sub-Menu Features
The BT audio capabilities can be used for hands free applications. Before attempting to use the BT functions on this unit, please make sure the mobile phone to be connected supports BT functions.
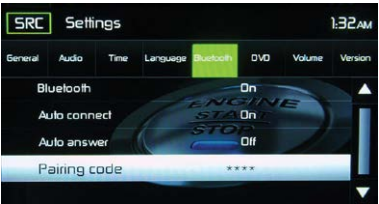
**BT Pairing Code Screen 2**

**BT** - Touch ON or OFF to turn the BT function ON or OFF.

**Auto-Connect** - Touch ON or OFF to turn the BT Auto-Connect function ON or OFF.

**Auto-Answer** - Touch ON or OFF to turn the BT Auto-Answer function ON or OFF.

**Pairing** - This feature allows the user to create a unique 4 digit code for pairing BT devices to the unit. The factory default pairing code is "5309".

1. Touch the Paring Code icon and the Pairing Code entry screen will appear.
2. Use the keyboard to enter a unique 4-digit Pairing Code.
3. Touch OK to confirm 4 digit pairing code.
   **Note: If a wrong digit is entered touching the arrow will remove the number.**
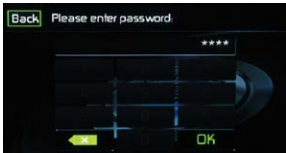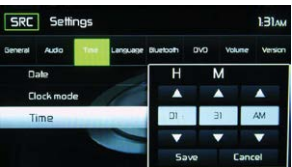
**Pairing Code Entry Screen**  **Pairing Code Confirm tion Screen**

**Pairing Code Screens**

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**Time** - Touch the Time icon and use the ▲ or ▼ icons to set the hour, minute, and either AM or PM. After setting the time, touch Save. The time will appear to the right of the Date option.

**Date Settings**  **Time Settings**

**Date and Time Setting Screens**

### Language Sub-Menu Features
If a DVD supports more than one Subtitle or Audio language, all the languages are available for selection during playback. If the selected language is not supported by the DVD, then the default language is used.

**Language Sub-Menu Screen**

**On Screen Display (OSD)** - Touch English, Spanish or French to select the language for the OSD Display.

**DVD Audio** - If available, this feature allows the user to select one of the languages contained on the disc for the DVD audio.

**DVD Subtitle** - If available, this feature allows the user to select one of the languages contained on the disc for the DVD subtitles.

**Disc Menu** - Allows the user to select one of the languages contained on the disc menu.

## VX4022

### DVD Sub-Menu Features
The DVD system has a built-in parental lock feature to prevent unauthorized persons from viewing restricted disc content. By default, the rating system is unlocked. Once set up, the parental lock is released only by entering the correct password. Once the password is entered, rating is available for setup.

**DVD Sub-Menu Screen**

**Set Password** - This feature allows the user to create a unique 4-digit password to activate or deactivate the "Rating" option.
1. Touch the Set Password Code icon and the Password entry screen will appear.
2. Use the keyboard enter a unique 4 digit Password.
   **NOTE: If a wrong digit is entered touching the green arrow will remove the number.**
3. Touch OK to confirm 4 digit Password.
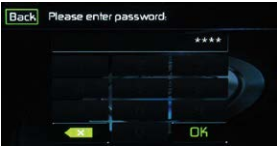
**Password Entry Screen**  **Password Confirm tion Screen**

**DVD Password Screens**

**Rating Level** - Select the appropriate rating level for the intended viewing audience (Kid Safe, G, PG, PG-13, PG-R, R, NC-17, and Adult). The user may override higher ratings by using the password.

**DRC** - This feature allows the user to turn the Dynamic Range Control ON for better playback for low volumes or OFF.

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**Load Factory** - This feature allows the user to "Reset" the factory default settings (Rating system only).
To reset the password, access the "RATING" menu and enter the current password. Once the correct password is entered, you can access the "Password" field and enter a new one.
**Note: Record the password and keep it in a safe place for future reference. The rating for each disc is marked on the disc, disc package, or documentation. If the rating is not available on the disc, the parental lock feature is unavailable. Some discs restrict only portions of the disc, allowing the appropriate content will play. For details, please refer to the disc description.**

### Volume Sub-Menu Features
The Volume Sub-Menu allows the user to increase or decrease the relative volume (+/- 6dB) of the audio output of each source individually.

**Volume Sub-Menu Screen 1**  **Volume Sub-Menu Screen 2**

**Volume Sub-Menu Screens**

**DVD** - Touch the DVD icon to enter the setting, then use the ▲ or ▼ icons increase or decrease the relative volume level between -6 to +6.

**USB** - Touch the USB icon to enter the setting of the connected device, then use the ▲ or ▼ icons to increase or decrease the relative volume level between -6 to +6.

**Radio** - Touch the Radio icon to enter the setting, then use the ▲ or ▼ icons increase or decrease the relative volume level between -6 to +6.

**BT** - Touch the BT icon to enter the setting of the connected device, then use the ▲ or ▼ icons to increase or decrease the relative volume level between -6 to +6.

## VX4022

### DISC OPERATION

#### Compatible Audio Discs Types
This system will play the following types of discs:
- DVD - DVDs that contain audio and/or video.
- Audio discs - Audio CDs that contain audio files.
- MP3 discs - A disc that contains audio, video and image files (for example, a CD-R with downloaded MP3 files).

**Note: This unit is designed to play pre-recorded (original) CD/DVDs. Some burned CD/DVD's may not play due to different recording formats/speeds.**

#### DVD Operation
**Note: When properly installed, DVD video cannot be displayed on the main TFT screen unless the parking brake is applied. If you attempt to play a DVD while the vehicle is moving, the TFT screen displays:**

> **Warning:** It is illegal to view video while driving or operating a motor vehicle. Set parking brake to view video.

From the Main Menu Screen touch the DISC Icon or insert a disc into the disc slot, label side up. Playback begins when a disc is inserted correctly.

#### DVD Main Menu
When a DVD is playing, touch the TFT LCD screen to view the DVD main menu. The on-screen icons and touch key areas are outlined below.

**DVD Main Menu**

**SRC Icon** - Touch this icon to return to the Main Menu Screen.

**DVD** - Displays the current source.

## VX4022

**AV In 1** - Touch the AV In 1 icon to enter the setting of the connected device then use the ▲ or ▼ icons to increase or decrease the relative volume level between -6 to +6.

**AV In 2** - Touch the AV In 2 icon to enter the setting of the connected device then use the ▲ or ▼ icons to increase or decrease the relative volume level between -6 to +6.

**iPod** - Touch the iPod icon to enter the setting then use the ▲ or ▼ icons to increase or decrease the relative volume level between -6 to +6.

**SXM** - Touch the SXM icon to enter the setting then use the ▲ or ▼ icons to increase or decrease the relative volume level between -6 to +6.

The default relative volume level setting for all available sources is "0".

### Version Sub-Menu Features
The Version Sub-Menu is used to identify the model and resident operating system as well as the hardware and software versions.

**Version Sub-Menu Screen 1**  **Version Sub-Menu Screen 2**

**Version Sub-Menu Screens 1 and 2**

### Exiting the System Setup Menu
To exit setup mode and resume normal playback, touch the SRC icon on the screen.

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**Title/Chapter Information** - The title/chapter information displayed is the current number of the track playing, the total number of tracks on the disc, the current chapter playing and the total number of chapters on the disc.

**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.

**Chapter Elapsed Playback Time** - The elapsed playback time of chapter is displayed on the screen.

**Total Playback Time** - The total playback time of disc is displayed on the screen.

**More** ( ▲/▼ ) - Touch the ▲/▼ icons to display the next or previous page of the Disc menu.

**( EQ ) Equalizer** - Touch this icon to access the Equalizer Control Menu. (See "Adjusting Equalizer Controls")

**(I◄◄) Previous** - Touch this icon to play the previous track.

**(►/II) Play/Pause** - Touch this icon to begin disc playback. Touch this icon again to pause disc playback.

**(►►I) Next** - Touch this icon to play the next track.

**Direct Entry** - Touch this icon to the display the Direct Entry Screen.

**Menu** - Touch this icon to view the DVD root menu.

**A-B** - Touch to repeat a specific po tion from point A to point B of the disc. During playback touch A-B to set the starting point A. Touch A-B a second time to set the ending point B. The player will repeatedly play the part between Point A and Point B. Touch A-B a third time to cancel A-B repeat and resume playback.

**Audio** - Touch this icon to select an audio language for DVD playback. The audio language selection depends on the languages contained on the disc.

**Language** - Touch this icon to select a subtitle language for DVD playback. The subtitle language selection depends on the languages contained on the disc.

## VX4022

**( ⟳ ) Repeat** - Touch this icon during playback to repeat the current chapter. The icon on the screen will light and small letter C will appear below the icon and the chapter will repeat. Touch this icon a second time to repeat the current title. The icon on the TFT LCD screen will light and small letter T will appear below the icon and the title and chapter will repeat. Touch the icon a third time to repeat the title and chapter. The icon on the main TFT LCD screen will light and small letter A will appear below the icon and the title and chapter will repeat. Touch the icon again the repeat function will be cancelled. The icon on the main TFT LCD screen will dim and playback of the remainder of the disc will resume.

**PIC** - When the PIC icon is touched the picture adjust screen appears. Touch this icon during playback to adjust the color brightness, contrast, saturation and hue. The levels can be adjusted to suit the users preferences. The adjustments are accomplished by touching the + or - icons to decrease or increase the desired setting. The settings have range of 1 to 20.
**Note: The Picture Adjustment Screen will turn OFF automatically if no adjustment is made within five seconds or any other part of the screen is touched.**



**DVD Picture Adjustment Screen**

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### Multi-Language Discs (DVD Only)
**Changing Audio Language** - If you are watching a disc recorded in multiple languages, touch the TFT LCD screen, then touch AUDIO to choose a language. Each time the icon is touched the language will change.

**Changing Subtitle Language** - If you are watching a disc recorded in multiple languages with subtitles, touch the TFT LCD, then touch Language screen to choose the language that you would like the subtitles to appear.

### Playback Information
During DVD and VCD playback, touch the TFT LCD screen to display playback information on the screen, including the current playback time.

### DVD Playback Information
• DVD Video – Format of current disc.
• Time 00:01:30/00:36:10 – Indicates the playback time of the current track.
• Title 5/08 – Indicates the fifth of 8 titles on the DVD is currently playing.
• Chapter 2/16 – Indicates that the second of 16 chapters on the DVD is currently playing.

### VCD Playback Information
• VCD2.0 – Format of current disc.
• Time 00:01:30/00:36:10 – Indicates the playback time of the current track.

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### Direct Entry
When the Direct Entry icon is touched the Direct Entry Screen appears. The user can manually select a title or a chapter. By touching ▼ icon, the user can select a chapter or title. The title or chapter can be selected by touching the corresponding number for a title or chapter. After entering the numbers, touch the OK icon. If a wrong digit is entered, touching the arrow will remove the number. After touching OK, playback will begin.



**DVD Chapter and Title Direct Entry Screen**

### Inserting a Disc
Upon inserting a DVD disc, DVD mode is entered and disc play begins. A disc cannot be inserted if there is already a disc in the unit or if the power is off.
**Note: If Parental Lock (Rating) is activated and the disc inserted is not authorized, the 4-digit code must be entered and/or the disc must be authorized.**

**Note: DVD-R and DVD-RW will not play unless the recording session is finalized and the DVD is closed.**

**Ejecting a Disc**- Press the Eject ( ▲ ) button on the front of the unit to eject the disc. The unit automatically reverts to Tuner mode. You may eject a disc with the unit powered off. The unit will remain off after the disc is ejected.

**Resetting the Loading Mechanism** - If the disc loads abnormally or an abnormal core mechanism operation occurs, press and hold the Eject ( ▲ ) button on the front of the unit to reset the loading mechanism. Normal operation resumes.

**Accessing DVD Mode** - To switch to DVD mode when a disc is already inserted, touch **SRC** on the TFT LCD screen to access the source menu. Touch the disc icon.

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### General Disc Information

**Disc Properties**

| Symbol | 12cm Disc Properties | Max Play Time |
|---|---|---|
| DVD VIDEO | Single side single layer (DVD-5) Single side double layer (DVD-9) Double side single layer (DVD-10) Double side double layer (DVD-18) | (MPEG 2 Method) 133 minutes 242 minutes 266 minutes 484 minutes |
| DVD | | |
| CD | Single side single layer (VCD) | (MPEG 1 Method) 74 minutes |
| CD | Single side single layer | 74 minutes |

**Disc Symbols**

| Symbol | Meaning |
|---|---|
| ⑧⟫ | Number of voice languages recorded. The number inside the icon indicates the number languages on the disc (maximum of 8). |
| 32 | Number of subtitle languages available on the disc (maximum of 32). |
| ⊞ | Number of angles provided (maximum of 9). |
| 16:9 LB | Aspect ratios available. "LB" stands for Letter Box and "PS" stands for Pan/Scan. In the example on the left, the 16:9 video can be converted to Letter Box video. |
| ⊕ | Indicates the region code where the disc can be played. • Region 1: USA, Canada, East Pacific Ocean Islands • Region 2: Japan, Western Europe, Northern Europe, Egypt, South Africa, Middle East • Region 3: Taiwan, Hong Kong, South Korea, Thailand, Indonesia, South-East Asia • Region 4: Australia, New Zealand, Middle and South America, South Pacific Ocean Islands/Oceania • Region 5: Russia, Mongolia, India, Middle Asia, Eastern Europe, North Korea, North Africa, North-West Asia • Region 6: Mainland China • ALL: All Regions |

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### CD Operation
From the Main Menu Screen touch the DISC icon or insert a CD into the disc slot, label side up. Playback begins in CD mode when a disc is inserted correctly.

### CD Main Menu
The on-screen icons and touch key areas are outlined below.
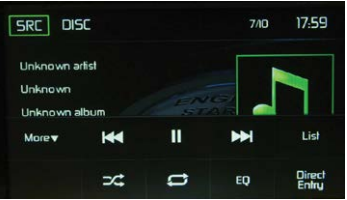


**CD Main Menu**

**SRC Icon** - Touch this icon to return to the Main Menu Screen.

**DISC** - Displays the current source.

**Track Number-** Lists the current track playing and the total number of tracks contained on the disc.

**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.

**CD Disc Information Display** - Displays the artist, the title of the track and the title of the album.

**More** ( ▲/▼ ) - Touch the ▲/▼ icons to display the next or previous page of the Disc menu.

**( ◄◄ ) Previous** - Touch this icon to play the previous track.

**( ►/Ⅱ ) Play/Pause** - Touch this icon to begin disc playback. Touch this icon again to pause disc playback.

**( ►►Ⅰ ) Next** - Touch this icon to play the next track.

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### CD List
Touching the List icon will display the CD List Screen. The CD List Screen illustrates the contents of a CD disc. The contents are divided into folders and various file types. Touching the icon will display the files present on the disc.



**CD List Screen**

**( ♫ ) Audio Files** - Touch the audio file icon to display the audio file. Touch the audio file icon to select a track. Touch the audio file icon again to confirm and playback will begin.

**( ⊞ ) Video Files** - Touch the video file icon to display the video file. Touch the video file icon to select a video file. Touch the video file icon again to confirm and playback will begin.

**( ⊡ ) Image Files (JPEG etc)** - Touch the image icon to display a folder or individual JPEG file. Touch the image icon to select a folder or an individual JPEG file. In the case of a JPEG folder touch the folder icon twice and the contents of the folder will be displayed. Touch the JPEG image icon to select and view an individual JPEG file.

**( ⊡ ) Folders** - Touch the icon to display the folder/file hiearchy. Touch the folder icon twice and the contents of the folder will be displayed. Touch the file icon to select a file. Touch the icon again to confirm and open the file.

## VX4022

**List** - Touch this icon to access the list of tracks contained on the disc. Touch a desired track icon twice and the track will begin playing.

**( ⤬ ) Shuffle** - Touch this icon to play tracks in the directory in a random order. The icon will light on the main CD screen.

**( ⟳ ) Repeat** - Touch this icon to repeat playback of the current track. The icon on the TFT LCD screen will light and small number 1 will appear below the icon and the track will repeat. Touch this icon a second time and the album will repeat. The icon on the TFT LCD screen will light and small letter a will appear below the icon and the album will repeat. Touch the icon again the repeat function will be cancelled. The icon on the TFT LCD screen will dim and playback of the remainder of the disc will resume.

**( EQ ) Equalizer** - Touch this icon to access the Equalizer Control Menu. (See "Adjusting Equalizer Controls")

**Direct Entry** - Touch this icon to the display the Direct Entry Screen.

**Track Elapsed Playback Time** - The elapsed playback time of track is displayed on the on the TFT LCD screen.

**Track Total Playback Time** - The total playback time of track is displayed on the main CD screen.

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### Track Direct Entry
When the Direct Entry icon is touched the Direct Entry Screen appears. The user can manually select a track by touching the corresponding number. After entering the track numbers touch the OK icon. If a wrong digit is entered touching the arrow will remove the number. After touching OK playback will begin.



**CD Track Direct Entry Screen**

### Controlling Playback
**Inserting a Disc** - Upon inserting a CD, disc play begins. You cannot insert a disc if there is already a disc in the unit or if the power is off.

**Ejecting a Disc** - Press the Eject ( ▲ ) button on the front of the unit to eject the disc. The unit automatically reverts to Tuner mode. You may eject a disc with the unit powered off. The unit will remain off after the disc is ejected.

**Resetting the Loading Mechanism** - If the disc loads abnormally or an abnormal core mechanism operation occurs, press and hold the Eject ( ▲ ) button on the front of the unit to reset the loading mechanism. Normal operation resumes.

**Pausing Playback** - Touch the Play/Pause ( ►/Ⅱ ) icon to suspend or resume disc play.

**Moving Through Tracks** - Touch the Next ( ►►Ⅰ ) icon to advance to the next track on the disc. Touch the Previous ( ◄◄ ) icon to move to the previous track.

**Repeat Playback** - Touch the ⟳ icon to alter repeat mode according to the following:
• CD-DA: Repeat Track > Repeat Album > Repeat Off
• CD-R/RW: Repeat Track > Repeat Album > Repeat Off

**Random Play Select** - Touch the Random ( ⤬ ) icon to play the tracks on the disc in a random, shuffled order. Touch the Random ( ⤬ ) icon again to cancel Random Play mode.

**Note: CD-R and CD-RW will not play unless the recording session is finalized.**

## VX4022

### MP3/WMA Operation

MP3 is a format for storing digital audio. An audio CD-quality song can be compressed into the MP3 format with very little loss of quality, while taking up much less space. Insert a MP3 Disc into the disc slot, label side up. Playback begins in MP3 mode when a disc is inserted correctly. The unit plays the songs in the order they were burned on to the disc. The menu for playing audio MP3 music files is the same as previously described for CD discs.

### Media and File Requirements

This player allows you to play back MP3 and WMA files recorded onto CD-R/RWs, DVD+R/RWs, and DVD-R/RWs. For CD-RW discs, please make sure it is formatted using the full method and not the quick method to prevent illegal disc operation. For the greatest file capacity, Dual Layer DVD's can be used when burning music to a disc.

### MP3 Format Compatibility

The file naming formats listed below are compatible with this unit:

- ISO 9660 – file name: 12 characters, file extension: 3 characters
- ISO 9660 – file name: 31 characters, file extension: 3 characters
- Joliet – 64 characters

If the file or older name does not conform to ISO 9660 file system standards, it may not be displayed or played back correctly. Use the following settings when compressing audio data for your MP3 disc:

- Transfer Bit Rate: 128kbps
- Sampling Frequency: 48kHz

When recording MP3 up to the maximum disc capacity, disable additional writing. For recording on an empty disc up to maximum disc capacity, use the "Disc at once" setting.

### MP3 Playing Order

When selected for play, files and olders are accessed in the order they were written by the CD writer. As a result, the order in which they are expected to be played may not match the order in which they are actually played. You may be able to set the order in which MP3/WMA files are to be played by writing them onto a medium such as a CD-R with their file names beginning with play sequence numbers such as "01" to "99".
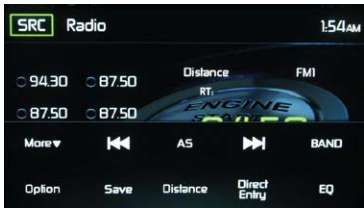
## VX4022

### RADIO TUNER OPERATION

From the main menu screen touch the radio icon. The radio tuner display screen appears.

### Radio Tuner TFT Display

The on-screen icons and touch key areas are outlined below.

**Radio Tuner TFT Display Screen**

**SRC Icon** - Touch to view the SOURCE MENU and select a new playback source.
**Radio -** Displays the current source.
**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.
**Preset List** - Provides a display of the preset frequencies. Touch to recall a preset station. The radio can store 6 FM1, 6 FM2, 6 FM3, 6 AM1, and 6 AM2 frequency presets.
**Local/Distance** - Displays the Local /Distance setting.
**RT (Radio Text)** - Allows a radio station to transmit a 64-character free-form text that can be either static (such as station slogans) or in sync with the programming (such as the title and artist of the currently playing song).
**PS (Programme Service)** - An eight-character static display that represents the call letters or station identity name. Most RDS capable receivers display this information. Touch "PS" or "RT" to alternate between RT / PS / PTY feature.
**Stereo** - Displays stereo radio signal reception.
**FM1** - Displays the current preset frequency band.
**P1 through P6** - Displays the current preset frequency within the preset frequency band that currently playing.

**107.7 MHz** - Displays the radio station frequency that is currently playing.

## VX4022

### Controlling Playback

**Inserting a Disc**- Upon inserting a MP3/WMA disc, disc play begins. You cannot insert a disc if there is already a disc in the unit or if the power is off.

**Ejecting a Disc** - Press the Eject ( ▲ ) button on the front of the unit to eject the disc. The unit automatically reverts to Tuner mode. You may eject a disc with the unit powered off. The unit will remain off after the disc is ejected.

**Resetting the Loading Mechanism** - If the disc loads abnormally or an abnormal core mechanism operation occurs, press and hold the Eject ( ▲ ) button on the front of the unit to reset the loading mechanism. Normal operation resumes.

**Playing MP3/WMA Files** - After inserting a MP3/WMA disc, files will play in the sequence of the "Root' directory.

**Note: When burning MP3 / WMA files onto a DVD disc, use folders when burning large numbers of songs / files to a disc for easy music navigation. Select the "Disc at Once" option and close your disc.**

**Note: CD-R and CD-RW will not play unless the recording session is finalized.**

**Pausing Playback** - Touch the Play/Pause ( ►II ) icon to suspend or resume playback.

**Moving Through Tracks** - Touch the Next ( ►►I ) icon to advance to the next track Touch the Previous ( I◄◄ ) icon to move to the previous track on the MP3 disc.

**Repeat Playback** - Touch the Repeat ( ⟳ ) icon to alter repeat mode as follows: Repeat Single > Repeat Folder > Repeat All > Repeat Off.

**Random Play Select** - Touch the Random ( ✕ ) icon to play the tracks on the MP3 disc device in a random, shuffled order. Touch the Random ( ✕ ) icon again to cancel Random Play mode.

## VX4022

**More** ( ▲/▼ ) - Touch the ▲/▼ icons to display the next or previous page of the Disc menu.

**( I◄◄ ) Seek Down / Manual Seek** - Touch this icon to seek the previous available radio station. Touch and hold this icon (Until "Manual Seek -" is displayed) to manually tune the radio in increments. Default Seek Down mode is resumed after 5 seconds of inactivity.

**( AS ) Auto Store** - Touch to automatically search and store all strong stations.

**( ►►I ) Seek Up / Manual Seek** - Touch this icon to seek the next available radio station. Touch and hold this icon (Until "Manual Seek +" is displayed) to manually tune the radio in increments. Default Seek Up mode is resumed after 5 seconds of inactivity.

**Band** - Touch to change between AM/FM bands.

**Option** - Touch this icon to display the Options screen.

**Save** - Touch this icon to save a radio station frequency in one or all six preset stations on FM band 1, 2, 3 or AM band 1 and 2.

**Local (LO) /Distance (DX)** - Touch to select and activate local and distance station reception. When the Local function is on, only radio stations with a strong radio signal are tuned in.

**Direct Entry** - Touch this icon to the display the Direct Entry Screen.

**( EQ ) Equalizer** - Touch this icon to access the Equalizer Control Menu. (See "Adjusting Equalizer Controls")

**Option Screen**
Touching the Options icon will display RDS, CT and PTY function options.

**Radio Tuner Option Screen**

## VX4022

**RDS ON/OFF** - Radio Data System (RDS) is a communications protocol standard for embedding small amounts of digital information in conventional FM radio broadcasts.
**CT ON/OFF** - (Clock Time) Some stations broadcast the time and date within the encoded RDS signal. The clock time is automatically adjusted when 'CT' is set to 'ON'.
**Note: Stations broadcasting close to time zones may not broadcast the correct time in your particular area. In this case, turn CT Off and manually set the time.**
**PTY** - The Program Type (PTY) function displays the program category of the current station such as category (news, sports, talk etc.) Use the scroll bar to select various categories. Touching the Back icon returns the user to main tuner screen.

**PTY Screen**
There are 27 categories in the PTY function.

| 1. None | 8. Adult Hits | 15. Jazz | 22. Personality |
|---|---|---|---|
| 2. News | 9. Soft Rock | 16. Classic | 23. Public |
| 3. Info | 10. Top 40 | 17. RGB | 24. College |
| 4. Sports | 11. Country | 18. Soft RGB | 25. Weather |
| 5. Talk | 12. Oldies | 19. Language | 26. Test |
| 6. Rock | 13. Soft | 20. Religious Music | 27. Alert |
| 7. Classic Rock | 14. Nostalgia | 21. Religious Talk | |

## VX4022

3. Touch the preset number in which you would like to store the current station. The station frequency is displayed at the top of the menu. The preset number will appear highlighted. The station frequency will be stored in the highlighted preset. The station will be displayed Tuner TFT LCD screen. Station can also be stored by touching and holding the preset icon to store the station currently tuned as a preset.

### Recalling a Station
1. Select a preset band (if needed).
2. Touch an on-screen preset icons (P1 through P6) to select the corresponding stored station.

**Preset Station Screen**

### Auto Store (AS)
To select six strong stations and store them in the current band. This feature is most useful when travelling in an area where you are not familiar with the local stations.

1. Select a band (if needed).
2. Touch the AS icon to activate the Auto Store function. FM Band 1 will be filled if enough stations are detected. The AM Bands function in a similar manner. As new stations are found they will replace stations already stored in that band.
   Note: If stations have already been set as favorites, activating the Auto-Store feature will erase those stations and enter the new strong stations.

### Local (LOC) / Distance (DX) Settings
When the Local function is on, only radio stations with a strong radio signal are played. To activate the Local function in the AM/FM tuner mode, touch "More" on the Tuner user interface (UI) screen. The Local/Distance icon is displyed. Touch Local / Distance to turn the function ON or OFF. When the Local or Distance function is active, the Local / Distance text in the UI is displayed.

## VX4022

### Direct Entry Tuning
When the Direct Entry icon is touched the Direct Entry Screen appears. The user can enter the desired radio station frequency using the on-screen number pad. After entering the radio station frequency touch the OK icon. If a wrong digit is entered touching the green arrow will remove the number. After touching OK the radio will tune to the entered station. Playback will begin.

**Radio Direct Entry Screen**

### Using Preset Stations
Six numbered preset icons store and recall stations for each band. All six stored stations (P1 through P6) for the current band appear on the screen.

### Storing a Station
1. Select a band (if needed), then tune to a desired radio station frequency.

2. Touch the on-screen Save icon. The following screen will appear.

**Preset Save Screen**
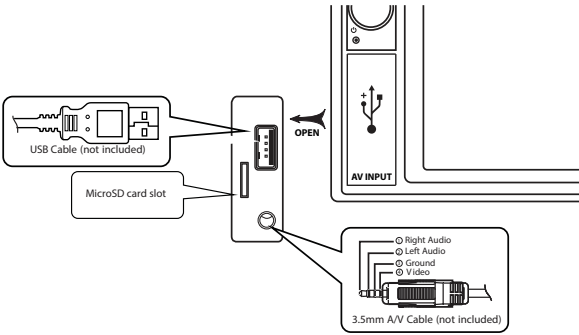
## VX4022

### USB / MicroSD Card OPERATION
The unit will read the audio/video files on USB / MicroSD card devices automatically.

**NOTE: The USB port will recognize most USB flash memory devices and portable hard drives. Hard drives must be formatted to FAT32. NTFS is not supported. Up to 32GB SD cards are supported.**

### Inserting / Removing a USB / MicroSD card Device
To insert a USB device:
1. Locate the Interface Cover on the front of the radio.

**USB Slot and microSD Card Slot Location**
2. Lift the protective cover to reveal the USB slot.
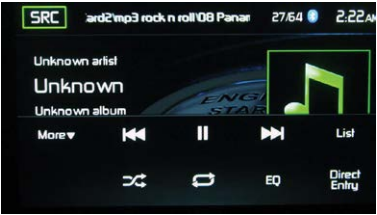3. Insert the USB device into the USB port.

## VX4022

### USB / MicroSD Card Operation
From the main menu screen touch the USB icon.

### USB / MicroSD Card Main Menu
The on-screen icons and touch key areas are outlined below.

**USB Main Menu**

**SRC Icon** - Touch this icon to return to the Main Menu Screen.

**Scrolling Display** - Displays current track information.

**Track Number** - Lists the current audio track playing and the total number of audio tracks in audio mode. Lists the current video folder and the total number of video folders in video mode.

**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.

**More** ( ▲/▼ ) - Touch the ▲/▼ icons to display the next or previous page of the USB menu.

( ◄◄ ) **Previous** - Touch this icon to play the previous track.

( ►/II ) **Play/Pause** - Touch this icon to begin playback. Touch this icon again to pause playback.

( ►►I ) **Next** - Touch this icon to play the next track.

## VX4022

### USB / MicroSD Card List
Touching the "List" icon will display the USB List Screen. The USB List Screen displays the audio and video files present on the USB device. The contents are divided into folders and various file types. The file types consist of audio and video files. Touching the folder icon will display the files present in the folder.

**USB List Screen**

( ♫ ) **Audio Files** - Touch the audio file icon to display the audio file. Touch the audio file icon to select a track. Touch the audio file icon again to confirm and playback will begin.

( ▤ ) **Video Files** - Touch the video file icon to display the video file. Touch the video file icon to select a video file. Touch the video file icon again to confirm and playback will begin.

( ▨ ) **Image Files (JPEG etc)** - Touch the image icon to display the image file. Touch the image file icon to select an image file. Touch the image file icon again to confirm and view the image.

( ▣ ) **Folders** - Touch the icon to display the folder/file hiearchy. Touch the folder icon and the contents of the folder will be displayed. Touch the file icon to select a file. Touch the icon again to confirm and open the file.

## VX4022

**List** - Touch this icon to access the list of audio and video files contained on the USB device. Touch a folder icon and the contents of the folder will be displayed. Touch a desired track icon twice and the track will begin playing.

( ✕ ) **Shuffle** - Touch this icon to play audio or video tracks in a random order. The icon will be displayed on the TFT.

( ↻ ) **Repeat** - In audio mode touch this icon to repeat playback of the current audio track. The icon on the TFT will be displayed and a small letter "A" will appear below the icon and ALL audio tracks will repeat. Touch this icon again and the current track will repeat (Single track). The icon on the TFT will display and small number "1" will appear below the icon. Touch the icon again and the repeat function will be cancelled.

In video mode touch this icon during playback to repeat the current track. The icon on the TFT will display and small number "1" will appear below the icon and the track will repeat. Touch the icon again to repeat all the tracks. The icon on the TFT will display and a small letter "A" will appear below the icon and all the tracks will repeat. Touch the icon again the repeat function will be cancelled.

( EQ ) **Equalizer** - Touch this icon to access the Equalizer Control Menu. (See "Adjusting Equalizer Controls")

**Direct Entry** - Touch this icon to the display the Direct Entry Screen.

## VX4022

### Direct Entry
When the Direct Entry icon is touched the Direct Entry Screen appears. The user can manually select a track by touching the corresponding number. After entering the track numbers touch the OK icon. If a wrong digit is entered use the arrow/backspace key to remove the number. After touching "OK" playback will begin.

**USB Track Direct Entry Screen**

### Moving Through Tracks
Touch the Next ( ►►I ) icon to advance to the next track on the USB device.
Touch the Previous ( ◄◄ ) icon to move to the previous track on the USB device.

### Pausing Playback
Touch the Play/Pause ( ►II ) icon to suspend or resume playback.

**PIC** - When the PIC icon is touched the "Picture Adjust" screen appears. Touch this icon during playback to adjust the brightness, contrast, saturation and hue. These levels can be adjusted to suit user preferences. The adjustments are accomplished by touching the + or - icons to decrease or increase the desired setting. The settings have range of 1 to 20.

**USB Picture Adjust Screen**
**Note: The Picture Adjustment Screen will turn OFF automatically if no adjustment is made within five seconds or if any other part of the screen is touched.**

## VX4022

### iPod®/iPhone® Controls

### Accessing iPod® Mode
The user can control an iPod®/iPhone® using the touch screen to access, albums, songs, etc.

The unit will automatically switch to iPod® mode when an iPod®nano, iPod® touch or iPhone® is plugged into the front panel USB connector. Also the iPod® can be accessed from the Main Menu Screen by touching the iPod® icon (only available when an iPod® or iPhone® is connected to the front panel USB connector).

### iPod®/iPhone® Main Menu
The on-screen icons and touch key areas are outlined below.

**iPod®/iPhone® Main Menu**

**SRC Icon** - Touch this icon to return to the Main Menu Screen.

**iPod** - Displays the current source.

**Track Number** - Lists the current audio track playing and the total number of audio tracks in audio mode. Lists the current video folder and the total number of video folders in video mode.

**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.

**More** ( ▲/▼ ) - Touch the ▲/▼ icons to display the next or previous page of the iPod® menu.

## VX4022

**iPod®/iPhone® List Screen**
( ♫ ) **Audio Files** - Touch the audio file icon to display the audio file. Touch the audio file icon to select a track. Touch the audio file icon again to confirm and playback will begin.

( ▤ ) **Video Files** - Touch the video file icon to display the video file. Touch the video file icon to select a video file. Touch the video file icon again to confirm and playback will begin.

( ▨ ) **Image Files (JPEG etc)** - Image files are selected and controlled by the iPod®.

( ▣ ) **Folders** - Touch the icon to display the folder/file hiearchy. Touch the folder icon and the contents of the folder will be displayed. Touch the file icon to select a file. Touch the icon again to confirm and open the file.

### Controlling Playback

### Direct Entry
When the Direct Entry icon is touched the Direct Entry Screen appears. The user can manually select a track by touching the corresponding number. After entering the track numbers touch the OK icon. If a wrong digit is entered touching the arrow will remove the number. After touching OK playback will begin.

**iPod®/iPhone® Track Direct Entry Screen**

### Moving Through Tracks
Touch the Next ( ►►I ) icon to advance to the next track on the iPod®.
Touch the Previous ( ◄◄ ) icon to move to the previous track on the iPod®.

## VX4022

( ◄◄ ) **Previous** - Touch this icon to play the previous track.

( ►/II ) **Play/Pause** - Touch this icon to begin playback. Touch this icon again to pause playback.

( ►►I ) **Next** - Touch this icon to play the next track.

**List** - Touch this icon to access the list of audio and video files contained on the iPod®. Touch a folder icon and the contents of the folder will be displayed. Touch a desired track icon twice and the track will begin playing.

( ✕ ) **Shuffle** - Touch this icon to play audio or video tracks in a random order. The icon will light on the main TFT LCD screen.

( ↻ ) **Repeat** - In audio mode touch this icon to repeat playback of the current audio track. The icon on the TFT will display and a small letter "A" will appear below the icon and the all the audio tracks will repeat. Touch this icon again and single track will repeat. The icon on the TFT will display and small number "1" will appear below the icon. Touch the icon again the repeat function will be cancelled. The icon on the main TFT LCD screen will dim and playback of the remainder of the tracks will resume.

( EQ ) **Equalizer** - Touch this icon to access the Equalizer Control Menu. (See "Adjusting Equalizer Controls")

**Direct Entry** - Touch this icon to the display the Direct Entry Screen.

### iPod® List
Touching the List icon will display the iPod® List Screen. The iPod® List Screen illustrates the audio and video files present in the iPod®. The contents are divided into folders and various file types. The file types consist of audio and video file. Touching the folder icon will display the files present in the folder.

## VX4022

### Pausing Playback
Touch the Play/Pause ( ►II ) icon to suspend or resume playback.

**PIC** - When the PIC icon is touched the picture adjust screen appears. Touch this icon during playback to adjust the color brightness, contrast, saturation and hue. The levels can be adjusted to suit the users preferences. The adjustments are accomplished by touching the + or - icons to decrease or increase the desired setting. The settings have range of 1 to 20.

**Note: The Picture Adjustment Screen will turn OFF automatically if no adjustment is made within five seconds or if any other part of the screen is touched.**

**iPod®/iPhone® Picture Adjust Screen**

## VX4022

### Connecting External Devices

#### AV In 1 / AV In 2

#### AV In 1
AV In 1 is used for playback of audio/video from an external device connected to the unit through a 3.5mm jack located on the front panel. The unit can increase or decrease the volume of the connected device. All other controls are done on the connected device.


**AV In 1 Screen (No Signal)**

#### AV In 2
AV In 2 is used for playback of audio/video from an external device connected through RCA connectors located on the back of the unit. The unit can increase or decrease the volume of the connected device. All other controls are done on the connected device.


**AV In 2 Screen (No Signal)**

**NOTE: Audio/Video devices must be connected to this unit using an audio/video adapter cable that is available separately.**
**NOTE: Video will only play when the vehicle parking brake is engaged. The parking brake wire must be connected for this feature to operate.**

## VX4022

### Interfacing your Smartphone - iPhone 6® / iPhone 6 Plus® / iPhone 5® / iPhone 5S® / iPhone 5C®
**Note: In order to connect your smartphone, you will need the "Apple Lightning Digital AV adapter" (HDMI adapter). No app or software is needed for Apple devices.**

Apple HDMI adapters are available at your local mobile phone retailer. **Apple devices do not require a BT connection.**

#### Mirror Mode (iPhone Supports Mirror Mode Only)
Mirror Mode allows the image from the smartphone to be displayed on the larger head unit screen. There is no touch screen control from the head unit screen. You must control the apps from the smartphone.

**Note: All apps may not be supported / displayed when connected via the Apple Lightning Digital AV adapter.**

#### General
1. Incoming calls or messages may pause media output. Media will resume after the call or message.
2. Simultaneously running multiple apps on your smartphone while screen sharing places heavy demand on the smartphone, potentially affecting its performance. Close unused apps on your smartphone to enhance the screen sharing feature of the head unit.
3. If you are having trouble seeing your smartphone display on the head unit screen, try connecting your smartphone (With Apple Lightning AV or HDMI / MHL adapter) to another device such as a flat panel TV with HDMI input. If you cannot see the smartphone display on the flat panel TV, the smartphone does not support HDMI.

## VX4022

### Using a Smartphone via HDMI / MHL

What is HDMI? HDMI (High Definition Multimedia Interface) is a digital interface for audio and video sources. HDMI is a digital replacement for analog video standards (Such As "Audio-Video Input" via RCA Cables).

What is MHL? MHL (Mobile High-Definition Link) is an industry standard for a mobile audio / video interface that allows consumers to connect mobile phones, tablets, and other portable consumer electronics (CE) devices to high-definition televisions (HDTVs) and mobile multimedia receivers.

HDMI / MHL allows you to use the multimedia touch screen to control your mobile device.

**Note: It may not be legal to view apps on a smartphone while driving or controlling a vehicle. It is the drivers responsibility to obey local and federal laws while driving or controlling a vehicle.**

### Interfacing your Smartphone - Android
Depending on your model and brand of smartphone HDMI / MHL may not be supported. Check your smartphone documentation for supported features. Most Android smartphones will require an app that must be downloaded from Google Play Store. Search for "Jensen HDMI / MHL Connect" in the search bar.

**Note: In order to connect your smartphone, you will need an HDMI / MHL adapter for your particular brand of smartphone. In some cases, you may need to connect the additional micro USB port (On the adapter itself) to a power source in order for the HDMI / MHL adapter to function properly.**

Smartphone HDMI / MHL adapters are available at your local mobile phone retailer. For example, if you have a Samsung S3 / S4 / S5 or Note 2, you would buy the below HDMI / MHL adapter:

**Samsung**
**ET-H10FAUWESTA Micro USB to HDMI 1080P HDTV Adapter Cable (For Samsung Galaxy S3 / S4 / S5 and Note 2)**

Smartphone brands are usually only compatible with the same brand of HDMI / MHL adapter.

## VX4022

### Connecting Your Smartphone - Android / Apple

**1. Jensen HDMI / MHL Connect App Installation Procedure**
Download and install the Jensen HDMI / MHL Connect app from Google Play (Android Devices Only) onto your smartphone.

**2. Smartphone / Head Unit BT Connection**
In order to have full touch screen control (Android Devices Only) from the head unit screen (via the HDMI / MHL Connect app), a BT connection is required between your smartphone and head unit. Refer to the head unit / smartphone documentation for further information on pairing / connecting devices.

**3. Connect Your Smartphone (Refer to Wiring Diagram)**
Connect your smartphone to the HDMI / MHL adapter. Connect one end of the HDMI cable to the HDMI / MHL adapter. Connect the remaining end of the HDMI cable to the Jensen multimedia head unit HDMI input (Rear chassis panel). Consult your smartphone documentation for instructions on how to access HDMI / MHL on your device.

**4. Touch Screen Calibration Start**
Launch the HDMI / MHL Connect app on your smartphone (Android Devices Only). Using the head unit touch screen, go to Settings in the HDMI/MHL Connect app. Scroll down and press the Touch Screen Calibration "Start" button.

**5. Touch Screen Calibration**
Once the touch screen is calibrated (Android Devices Only), scroll up, and press System Settings to return to the main HDMI / MHL Connect page. Press "Mobile Home Page" to access your smartphone from the touch screen of the Jensen multimedia head unit. Touch the "Car Home Page" to return to the Main Source Menu of the head unit. This calibration is performed once per phone when initially set-up.

## VX4022

### BT OPERATION

**NOTE: The line-of-sight distance between this unit and your mobile phone must be 8 feet (2.4 meters) or less for sending and receiving voice and data via BT wireless technology.**

Please make sure your mobile phone supports BT. (Headset or Handsfree profiles or both and A2DP). Adhere to the following guidelines for successful operation.
• Before using BT functions, you must pair your mobile phone to the VX4022 unit (see "Pairing the Your Mobile Phone with the Unit". To ensure the best reception for pairing and re-connection, please make sure the mobile phone battery is fully charged before you begin.
• Try to perform pairing within a few minutes of the mobile phone being turned on.
• Once the unit has been paired with the mobile phone, the unit's model number, "VX4022", will be displayed on the mobile phone.
• To achieve the best performance, always keep the mobile phone within 10 feet (3 meters) of the unit.
• Always keep a clear path between the mobile phone and the unit. Never place a metal object or any other obstacle between the mobile phone and the unit.
• Some mobile phones may have a "Power Saving Mode" option. PLEASE DO NOT use the power saving mode with the VX4022.
• Before accepting or making a call, make sure your mobile phone's BT function is turned on.
• To ensure the best conversation quality/performance, stay within 3 feet (1 meter) of the unit's microphone when talking.
• To manually disconnect the mobile phone from the unit, touch the "Chain Link" icon on the BT user interface (next to the mobile phone name) and the BT device will be "disconnected", but still paired.

## VX4022

The user can make or receive phone calls with BT enabled phones through the unit. The user can also listen to music from a BT enabled device.

#### Pairing BT Devices
To connect your BT phone to the unit, the user needs to pair the phone to  the unit. Pairing only needs to be done once per phone. **The user can pair up to five (5) phones**. Use your mobile phone to begin the BT pairing process.

1. Touch the MENU on the front panel to access the source menu.
2. Touch the BT icon on the source menu and the BT user interface screen will appear.
3. Touch the Options icon and the following screen will appear.
4. On the Options submenu set the BT function to ON.
5. On the Options submenu set the Auto Connect function to ON.
6. Set the mobile phone BT discover mode to ON.
   **Note: Some discovery modes have a time limit, usually a minute, before they are automatically turned OFF.**
7. Touch the "Scan" icon on the unit's BT user interface screen. Available devices will appear with the "Pair" icon next to it.

## VX4022

### BT User Interface
The on-screen icons and information for BT functions are outlined below.

**SRC** - Touch this icon to return to the Main Menu Screen.

**BT** Displays the current source.

**LGVX9200** - Indicates the device that is paired with the unit.

(👁) - Indicates whether the unit is connected with a BT device. Touch to connect to a BT device.

(🔗) - Touch to disconnect from a BT device.

**VX4022 Device Name** - Provides the name that will appear on the BT device.

**Scan** - Touch the icon to search for BT devices.

**Options** - Touch to display the BT options page.

## VX4022

8. Touch the "Pair" icon on the unit's BT user interface screen.
9. A prompt to pair or bond should appear on your mobile phone. Accept the request and initiate the process.
   **NOTE: Some mobile phones require a "pass key" or pairing code to connect. If your phone requires a pass key or pairing code, you will need to enter this number. The default pairing code for the VX4022 is "5309".**
10. A prompt to enter a PIN number or passkey for the unit should appear. The default passkey for the unit is "5309".
11. At this point a prompt stating pairing successful should appear. Another prompt should appear asking connect to the unit, Yes or NO. Touch Yes. The mobile phone and the unit should connect. The mobile phone should display a message similar to "Device Connected" and the mobile phone and the unit are now connected. VX4022 will appear on the mobile phone list of devices.

### Managing Incoming Calls
When connected to a BT mobile phone, the unit will mute audio output, pause CD play, and change to the BT screen below when a call is received. The incoming phone number or assigned name for that number will appear on the screen. An audible tone will sound from the unit and a graphic display will appear on the front panel.


**BT Incoming Call Screen**
1. 📞 icon: Touch to answer an incoming call.
2. 📵 icon: Touch to end an incoming call.

## VX4022

### Making an Outgoing Call
Outgoing calls can be performed in two manners. The outgoing call can be direct dialed using the front panel keypad or the by touching either the Phonebook or Call History icons, selecting a name and touching the phone number.

### Phonebook Synch / Importing Contacts / Call History
1. Select BT function (Handset icon) from the BT Home Menu.
2. Press "Option". Go to > "Phone Synch". Press "Synch" to import the mobile phone contacts. If you have many contacts, this may take up to 4-5 minutes initially. **Up to 2000 contacts can be imported.**

### Direct Dialing:
1. Press the front panel MENU button and then touch the BT icon to access the BT main menu. The following screen will appear:

**BT Direct Dial Screen**

2. Use the 0-9, */+, and # icons to input the phone number. If necessary touch the green arrow icon to clear the last digit or the entire number and start over.
3. After entering the phone number, touch the 📞 icon to dial the call. The number dialed will be displayed on the screen.
4. To end the call, touch the ☎ icon.

### Answering an Incoming Call
To answer an incoming call touch the 📞 icon. For best reception, speak loudly and clearly into the units microphone. To end the conversation, touch the ☎ icon.

### Rejecting an Incoming Call
Touch the **Transfer to Phone** icon to reject an incoming call. The call will revert to your mobile phone and be left for voice mail.

### Volume Control
To increase or decrease the volume level of an incoming call, turn the rotary knob on the front panel or press the VOL+/ VOL- icons on the remote control.

## VX4022

### Call Transfer
While talking, to transfer audio from the unit back to the mobile phone, touch the **Transfer to Phone** icon. You can only transfer a call after it has been answered. Touching the **Transfer to Radio** icon will return the audio from the mobile phone to the unit. Touch the **Transfer Call** icon and the following screen will appear:

**Transfer to Phone Screen**     **Transfer to Radio Screen**

**Call Transfer Screens**

### BT Music Function
BT provides A2DP (Advanced Audio Distribution Profile) profile for streaming music from a mobile phone or a portable multimedia player (PMP), sometimes referred to as a MP3 player. The unit allows you to play back audio files from your mobile phone using a BT connection.
**Note: Please quit A2DP mode before attempting to make a phone call, as unexpected results may occur depending on your mobile phone model.**

The unit can control a BT audio player via AVRCP (Audio/Video Remote Control Profile). BT audio players compatible with these profiles can be connected to this unit. The following screen is used for streaming music:

**BT Audio Control Screen**

## VX4022

### Audio Mute
To mute the phone call audio from the unit when a call is received, press the front panel rotary knob. Press the front panel rotary knob again and phone call audio will be restored to the unit.

### Call Log
The call log consists of dialed numbers, received calls and missed calls. **Note: Not all mobile phones allow access to missed, received or dialed calls and some will not allow uploading of your mobile phone's address book.**

**BT Call Log Screen**

**Missed Calls List** - The Missed Calls List retrieves the list of missed numbers from your mobile phone if your mobile phone allows the function. The last missed number is the first number on the list . Touch the Missed Calls menu option to view the list. To make a call from the Missed Calls list, touch the call's name. Touch the phone number and it will be dialed.

**Received Calls** - The Received Calls list retrieves the received numbers stored on your mobile phone if your mobile phone allows the function. To access the Received list, touch the Received Calls menu option. The last received number is the first number on the list . To make a call from the Received Calls list, touch the name. A new screen will appear with the name on the top and the phone number below. Touch the phone number and it will be dialed.

**Dialed Calls** - The Dialed Calls list retrieves the list of dialed numbers from your mobile phone if your mobile phone allows the function. The last dialed number is the first number on the list . Touch the Dialed Calls menu option to view the list. To make a call from the Dialed Calls list, touch the name. A new screen will appear with the name on the top and the phone number below. Touch the phone number and it will be dialed.

## VX4022

While listening to audio the following functions are available:
1. Pause/Play (▶II) icon: Touch to pause playback. Touch again to resume playback.
2. Previous (I◀◀) icon: Touch to play the previous track.
3. Next (▶▶I) icon: Touch to play the next track.

Functionality varies depending on the profile used:
• A2DP: Stream audio from your BT compatible audio player and listen to the music through the unit.
• AVRCP: Play back, pause, select songs, etc. while streaming audio from your BT compatible audio player to the unit.

**Note: Song information (e.g. elapsed playing time, song title, song index, etc.) cannot be displayed on this unit. Since there are a number of BT audio players available on the market, operations with your BT audio player while using this unit may vary greatly. Please refer to the instruction manual that came with your BT audio player.**

When there is an incoming call, the song will be paused. After the incoming call is finished, the screen will return to the music function screen and playback will continue.

### PTT (Push to Talk) Function
The VX4022 has a PTT button to allow you to access Siri or Google Voice through the head unit when connected via BT. You mobile phone must support Siri or Google Voice in order for this feature to be supported on the head unit.
**NOTE: Samsung "S" Voice and other third-party apps may not be supported.**

## VX4022

### REAR CAMERA OPERATION
This unit is "camera ready." Before accessing any camera features, you must install a rear video camera.
When the camera is not installed and the function is accessed by the gear selector being placed in reverse or by the unit's menu, the message "No Signal!" will be displayed and the following screen will appear.

**Rear Camera Screen**

When the camera is installed, the rear view image of what is behind the vehicle will appear when the vehicle is placed in reverse gear. When leaving reverse gear, the unit displays the previous screen.

## VX4022

### PANDORA® RADIO OPERATION
Pandora Radio is available on your iPhone® / iPod® touch via USB cable or an Android™ device via BT. Data usage may occur.
**Note: Pandora is available in the United States, Australia and New Zealand.**
**Note: The Pandora Radio app must be installed on your iPhone®/iPod® touch or Android device. For iPod®/ iPhone® connectivity, you can use the cable that comes with your Apple device for audio connectivity. To play Pandora Radio using an Android device, it is necessary to pair your mobile phone via BT to the VX4022. A cable connection for Pandora via Android is not supported.**

### Pandora Radio
The on-screen indicators and touch key areas for Pandora Radio functions are outlined below.

**Pandora Radio User Interface Screen**

**SRC Icon** - Touch this icon to return to the Main Menu Screen.

**Pandora** - Displays the current source.

**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.

**Pandora Radio Information Display** - Displays the Pandora station, artist, song, and album information.

**Elapsed Time Indicator** - Displays the elapsed and total playing time of the current track playing.

**Pandora Preview Window** - Displays album art, if available.

**More ▲** - Touch to display the bookmark sub-menu.

## VX4022

### SWC Ready
The built-in SWC Interface is compatible with PAC steering wheel control modules. The PAC SWI-RC is recommended.
A third-party adapter **must** be used in order for the VX4022 to be compatible with any steering wheel controls.
**Note:**
**Not all OE steering wheel functions may be supported by the VX4022. PTT - Will activate Siri / Google Voice if mobile phone supports the feature. Not compatible with all phones/vehicles.**
The following controls are available for most vehicles:

| 1. Volume Up (+) | 4. Preset (+) | 7. Seek / Track + | 10. BT Send |
|---|---|---|---|
| 2. Volume Down (-) | 5. Preset (-) | 8. Seek / Track - | 11. BT End |
| 3. Mute | 6. Source | 9. Band | 12. PTT |

### PAC SWI-RC Installation Hints
1. Set "Radio Select Switch". Set the SWI-RC to position 7 - "Pioneer/Other/Sony".
2. Programming - Use the Pioneer/Sony/Other radio function mapping order for Jensen branded head units.
3. When programming the SWI-RC, if a function is not supported (or not desired), then the function **MUST** be skipped as per the PAC SWI-RC instructions.
4. The SWC function **MUST** be programmed in the correct order per the PAC SWI-RC radio function mapping order instructions.

| SWI-RC (5VDC Reference) | | |
|---|---|---|
| Function Mapping | Center Pin Voltage (Function Select) | Tip Pin Voltage |
| Volume + | H 5.0v | 2.89 |
| Volume - | H 5.0v | 3.40 |
| Mute | H 5.0v | 1.37 |
| Preset + | L 0.0v | 2.15 |
| Preset - | L 0.0v | 2.56 |
| Source | H 5.0v | 0.79 |
| Seek + / Track + | H 5.0v | 2.15 |
| Seek - / Track - | H 5.0v | 2.56 |
| Band | H 5.0v | 3.94 |
| BT Answer Call | L 0.0v | 1.37 |
| BT End Call | L 0.0v | 1.79 |
| PTT / Voice Activation | L 0.0v | 3.94 |

## VX4022

(II / ▶) **Pause / Play Icon** - Touch the II icon to pause playback. Touch the ▶ icon to begin playback.

(▶▶I) **Next Icon** - Press this icon skip a song, subject to the skip limit.

(👍) **Thumbs Up** - Press thumbs up to tell Pandora® you like the track currently playing, and Pandora will play more tracks like it.

(👎) **Thumbs Down** - Press thumbs down to tell Pandora not to play this track. Pandora will skip to the next track. If the skip limit has been reached, Pandora will continue to play but your feedback will be recorded.

**Station List Icon** - Press this icon to access the Station List Screen.
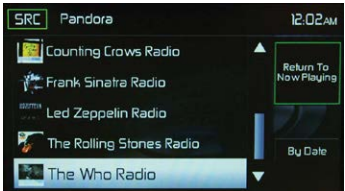
### Bookmark Sub-Menu

**Pandora Bookmark Sub-Menu**

Touch the Bookmark Track icon to bookmark a track.
Touch the Bookmark Artist icon to bookmark an artist.
Touch the More ▼ icon to return to the Pandora Radio user interface screen.

## VX4022

### Station List Screen
The Station List Screen allows you to search for music by stations you created.



**Pandora® Radio Station List Screen**

Touch a station on the list to choose that station.
Touch the Scroll Down (▼) icon to view the next page in the list or the Scroll Up (▲) icon to view the previous page.
Touch the Return to Now Playing icon to return to the Pandora Radio user interface screen.

### To Launch/Stop Pandora Radio
1. Launch the Pandora app on the iPhone®, iPod® or Android device.
2. Touch the Pandora icon on the main menu screen. If only one device is connected to the radio, the Pandora Radio user interface screen appears.



**Pandora Radio User Interface Screen**

## VX4022

### SiriusXM® RADIO OPERATION

Only SiriusXM® brings you more of what you love to listen to, all in one place. Get over 140 channels, including commercial-free music plus the best sports, news, talk, comedy and entertainment. Welcome to the world of satellite radio. A SiriusXM Vehicle Tuner and Subscription are required. For more information, visit www.siriusxm.com.

### Activating SiriusXM® Radio

After installing your SiriusXM Connect Vehicle Tuner and antenna, power on your radio and select SiriusXM mode. You should be able to hear the SiriusXM preview channel on Channel 1.

After you can hear the Preview channel, tune to Channel 0 to find the radio ID of your tuner.

**Note: The SiriusXM Radio ID does not include the letters I, O, S or F.**

In the USA, you can activate online or by calling SiriusXM Listener care:
- Visit www.siriusxm.com/activatenow
- Call SiriusXM Listener Care at 1-866-635-2349

For Canadian Subscriptions, please contact:
- Visit www.siriusxm.ca/activatexm
- Call XM customer Care at 1-877-438-9677

Activation typically takes 10-15 minutes, but may take up to one hour. It is recommended to leave your vehicle on until the "Subscription Updated" message appears.

This Jensen unit is compatible with the following SXM Vehicle Connect Tuners:
- SXV200
- SXV300

## VX4022

3. If both an Android and iPhone®/ iPod® device are connected to the radio, the select Android or Apple device screen appears.



**Select Android or Apple device screen**

4. To stop Pandora,® exit the Pandora app on the iPhone®, iPod® or Android device.

### Pandora Error Messages

| Message Displayed | Cause | Corrective Action |
|---|---|---|
| BookMark Track Error | Software Error | The track could not be bookmarked, please try again in a moment. |
| BookMark Artist Error | Software Error | The song could not be bookmarked, please try again in a moment. |
| Thumbs Up / Down Error "Error Track Rating" | Software Error | Song feedback could not be sent, please try again in a moment. |
| No Active Station Error | Software Error | This account has no stations in it. Please visit Pandora.com and login to your account and add stations. |
| Skip Limit Reached | Software Error | Please note that Pandora limits skips to a maximum of six skips per station, per hour. |

## VX4022

### SiriusXM® User Interface
The on-screen indicators and touch key areas for SiriusXM® functions are outlined below.



**SiriusXM® Menu Page 1**

**SRC Icon** - Touch to return to the unit's Main Menu Screen.

**Band indicator (SXM1 icon)** - Displays SiriusXM® radio band currently selected. Three bands are available: SXM1, SXM2, and SXM3.

**Time Display** - This indicator displays the time as entered by the user in the Settings Menu.

**Signal Strength Indicator** 📶 - As the strength of the satellite radio signal increases, the number of illuminated segments will increase.

**Program Information:**
Channel Number - Channel numbers are used to designate the channel along with the channel name and are useful for identifying/loading a channel via the "direct entry" method.
Channel Name - The channel name is used to identify the channel and is usually related to that channel's musical content.
Category Name - A category may contain one or more channels grouped by their similar content into a "Category".
Artist Name - This area displays the name of the artist currently playing.
Song - This area displays the name of the song currently playing.
Info - This area contains additional information related to the song/track now playing.

**More ▲ Icon** - Touch to go to SiriusXM® Menu Page 2.

**Direct Entry Icon** - Touch to display the Direct Entry Menu.

## VX4022

**Previous (◄◄) Icon** - Touch to tune to the previous channel.

**Channel/Category Icon** - Touch to toggle the icon displayed between Category and Channel. When Channel is displayed, touching ►►I or I◄◄ tunes channels up or down. When Category is displayed, touching ►►I or I◄◄ tunes channels within a category up or down.

**Next (►►I) Icon** - Touch to tune to the next channel.

**List Icon** - Touch to select a channel search criteria. Presets lists preset channels stored by the user. Channels lists all SXM channels. Category lists SXM channels by categories.

## VX4022

### Switching to SiriusXM® Radio
- Touch the top left corner of the screen (the **SRC** box) to view the Main Menu screen. From the Main menu screen, touch the **SiriusXM** icon.
- Press the **MENU** button on the front panel to switch to the SXM source.

### Selecting the SiriusXM® Band
Touch the **Band** icon on the SXM Menu screen to change between the following bands: SXM1, SXM2, and SXM3.

### Seek Tuning
- To fast seek the next higher channel, touch and hold the ►►I icon.
- To fast seek the next lower channel, touch and hold the I◄◄ icon.

### Direct Tuning
To enter a SiriusXM® radio channel directly:
1. On the SiriusXM® menu page 1, touch the **Direct Entry** icon to display the Direct Entry Menu.



**SXM Direct Entry Screen**

2. Enter the desired SiriusXM® radio channel using the on-screen number pad then touch the **Ok** icon. If you wish to delete an entry number touch the **X** icon.
3. To exit the screen without changing the channel, touch the **Back** icon.

## VX4022



**SiriusXM® Menu Page 2**

**More ▼ Icon** - Touch to go to SiriusXM® Menu Page 1.

**Band Icon** - Touch to select a band of preset channels. Three bands are available: SXM1, SXM2, and SXM3. Each band can store up to ten preset channels. (Preset channels are accessed from the List icon.)

**Mem Icon** - Touch to display screen used to enter current channel into preset memory.

**Scan Icon** - Touch to scan all channels starting at channel 1. The tuner will pause for approximately five seconds at that channel. Touch scan again to listen to that channel. If scan is not touched, the tuner will automatically seek the next channel.

**Lock Icon** - Touch to display the SXM Lock Screen.

**CHG PWD Icon** - Touch to go to the change password screen.

**EQ Icon** - Touch to access the Equalizer level settings menu.

## VX4022

### Using Preset Channels
A preset is a channel name that is stored for instant access to that channel. Ten numbered preset buttons store and recall channels for each band.

**Storing a Channel**
1. Select a band (if needed), then select a channel.
2. On the SiriusXM® menu page 2, touch the **Mem** icon to access the Preset Channel Screen.



**SXM Preset Channel Screen**

3. Touch the preset number (P1 through P10) in which you would like to store the current channel (or touch the **Back** icon to cancel and close the menu). The channel will be stored and displayed in that preset. Touch the ▲ or ▼ icon to scroll up or down the list.
4. Touch the **Back** icon to return to the SXM Menu screen.

**Recalling a Channel**
1. Touch the List icon.
2. Touch the Preset icon to access the Recall Preset Channel Screen.



**Recall Preset Channel Screen**

3. Touch a channel on the preset channel list to select the corresponding stored channel. Touch the ▲ or ▼ icon to scroll up or down the list.

## VX4022

### Searching for a Channel

#### Search by Channel
To search by channel:
1. On the SirusXM® menu page 1, touch the **Category/Channel** icon (if needed) to select **Channel**.
2. Touch **List** to display the Channel Search Screen:



**Channel Search Screen**

3. Touch a channel to tune to that channel. Touch the ▲ or ▼ icon to scroll up or down the list.

#### Search by Category
Categories group music by type such as jazz, rock, classical, etc. To search by category:
1. On the SirusXM® menu page 1, touch the **Category/Channel** icon (if needed) to select **Category**.
2. Touch **List** to display the Category Search Screen:



**Category Search Screen**

3. Touch a category item. A channel list screen appears.
4. Touch a channel to tune to that channel. Touch the ▲ or ▼ icon to scroll up or down the list.

## VX4022

### Temporarily Unlock a Mature Channel
When the global "Mature Lock" is enabled, a mature channel can be temporarily unlocked. All mature channels are temporarily unlocked (but still hidden when channel browsing) until the SXM source is changed, Accy (Key) is cycled or the "Power Button" on front panel of radio turns the Radio off.
This mode is useful for listening to mature/adult content on a temporary basis, allowing you to listen on a locked channel without having to disable the global "Mature Lock."
To temporarily unlock a mature channel:
1. Tune to a mature channel. If the channel is locked, **Ch Locked, Code?** will appear on the SirusXM® User Interface tuner screen.



**Channel Locked Screen**

2. Enter the 4-digit password and then press the **OK** icon to unlock the channel to tune it.

## VX4022

### Locking SXM Mature Channels
SirusXM® attaches a label to channels with mature content. The radio recognizes these channels as "Mature". The Mature Channel Lock option allows you to lock out channels with "Mature" labels. These channels will still appear in the channel listing (with a lock [🔒] icon), but will not be tunable unless the parental lockout password is correctly entered.
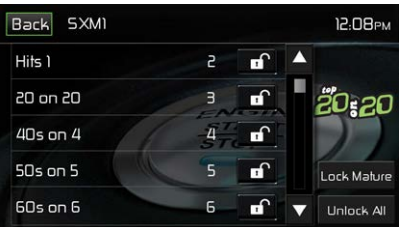
### Lock Mature Channels
To lock mature channels:
1. On the SirusXM® menu page 2, touch the **Lock** icon. The following screen appears:



**Enter Lock Password Screen**

2. Enter your 4-digit password and then press the **OK** icon. The following screen appears:



**Lock Screen**

3. Touch the **Lock Mature** icon. The mature channels are now locked.

## VX4022

### Unlock All Mature Channels
To unlock all mature channels:
On the SirusXM® menu page 2, touch the **Lock** icon. The following screen appears:



**Enter Lock Password Screen**

3. Enter your 4-digit password and then press the **Ok** icon. The following screen appears:



4. Touch the **Unlock All** icon. All channels are now unlocked.

## VX4022

### Locking Individual SXM Channels
An user can lock individual channels. When locked, a channel has the lock ([🔒]) icon next to it on the channel list.

### Locking a Channel
To lock an individual channel:
1. On the SirusXM® menu page 2, touch the **Lock** icon. The following screen appears:



**Enter Lock Password Screen**

2. Enter your 4-digit password and then press the **OK** icon. The following screen appears:



**Lock Screen**

3. Touch an unlocked ([🔓]) icon. The icon is replaced by a lock ([🔒]) icon. The channel is now locked.

## VX4022

### SiriusXM® Radio Advisory Messages
SiriusXM® user advisory messages are listed below:

| Advisory Displayed | Cause |
| --- | --- |
| Check SXM Tuner | Check the SiriusXM® tuner connection on the back of the unit to ensure that it's correctly connected. |
| Check SXM Antenna | Ensure the SiriusXM® antenna cable is connected to the SiriusXM® tuner correctly.<br>Check the SiriusXM® antenna wire for breaks or sharp bends.<br>Replace the antenna if necessary. If the message remains, the antenna may have been damaged. |
| No SXM Signal | The vehicle must be outside, and the antenna must have a clear view of the southern sky. The magnetic antenna must be mounted on the outside of the vehicle for the best reception. |
| Channel Not Subscribed | This channel is not included in your SiriusXM® subscription plan. Call 1-866-635-2349 to subscribe. |
| Channel Not Available | This channel is not a valid SiriusXM® channel. The channel number has been entered incorrectly, or the channel was removed from the SiriusXM® channel lineup. |
| Channel Locked | The selected channel has been locked by the parental controls, or a mature channel has been selected. A prompt to enter the unlock code will appear. Enter the unlock code. |

## VX4022

### Unlocking a Channel
To unlock an individual channel:
1. On the SirusXM® menu page 2, touch the Lock icon. The Enter Password Screen appears appears.
2. Enter your 4-digit password. The following screen appears:



**Unlock Screen**

3. Touch a lock ([🔒]) icon to unlock a channel. The icon is replaced by an unlocked ([🔓]) icon. The channel is now locked.

### Change Lock Password
The Change Lock Password option allows you to change the password from the default or current custom password to another password.
**NOTE: The default password is 0, 0, 0, 0.**
To change a password:
1. Touch the **CHGPWD** icon. The following screen appears:



**Change Password Screen**

2. Enter your 4-digit password and press the **OK** icon.
3. Enter the new 4-digit password and press the OK icon. The new password is set.

## VX4022

### User Up-Loadable Wallpaper
In addition to the 5 selectable wallpaper selections, you can up load your own wallpaper image to the VX4022.
**Note: The wallpaper image must have a .bmp file extension and the size / resolution must be 800 x 480, 24 or 32 bit. Other file sizes / resolutions will result in the image being enlarged or reduced and may appear distorted.**

### Uploading User Wallpaper
Only one user wallpaper can be loaded at a time into the VX4022. However, the user wallpaper can be loaded an infinite amount of times.

1. Insert a MicroSD card with the wallpaper images into the MicroSd card slot.

2. Go to Settings > General > Wallpaper > Custom.

3. Select a wallpaper image and press "OK" to load the new wallpaper image.

4. Remove MicroSD card.

## VX4022

### TROUBLESHOOTING

**Troubleshooting**

| Problem | Cause | Corrective Action |
|---|---|---|
| **GENERAL** | | |
| Unit will not power on | Radio Fuse open | Install new fuse with correct rating |
| | Car battery fuse open | Install new fuse with correct rating |
| | Illegal operation | Press the RESET button located in the middle of the left side of the front panel |
| No/low audio output | Improper audio output connection | Check wiring and correct |
| | Volume set too low | Increase volume level |
| | Improper "MUTE" connection | Review wiring diagram and check "MUTE" connection |
| | Speakers damaged | Replace speakers |
| | Heavily biased volume balance | Adjust the channel balance to the center position |
| | Speaker wiring is in contact with metal part of car | Insulate all speaker wiring connections |
| Poor sound quality or distortion | Pirated disc is in use | Use original copy |
| | Speaker power rating not compatible with unit | Connect proper speakers |
| | Speaker is shorted | Check speaker contact |
| Unit resets itself when engine is off | Incorrect connection between ACC and positive battery wire | Check wiring and correct |

## VX4022

| Problem | Cause | Corrective Action |
|---|---|---|
| Disc does not play back | Disc is warped or scratched | Use disc in good condition |
| | Disc is dirty or wet | Clean disc with soft cloth |
| | Laser pickup is dirty | Clean laser pickup with cleaning disc |
| | Incompatible disc is used | Use compatible disc |
| | Disc rating exceeds Parental Lock rating limit | Change Parental Lock settings to lower restriction |
| | Disc region code is not compatible with unit | Use disc with proper region code |
| | Disc is inserted upside down | Insert disc with label side up |
| **MP3** | | |
| Interruption occurred during playback | Disc is dirty or scratched | Clean disc or replace |
| | File is damaged/bad recording | Recreate disc with good file |

## VX4022

| Problem | Cause | Corrective Action |
|---|---|---|
| **TFT Monitor** | | |
| No image | Incorrect connection to parking brake wire | Check wiring and correct |
| | Parking brake is not engage | Stop vehicle in safe place and apply parking brake |
| Flashing image or interference appears on screen | DVD is not compatible with current TV system settings | Change setup to accommodate disc |
| | Improper video signal connections | Check wiring and correct |
| Prolonged image or improper height/width ratio display | Improper aspect ratio setup | Use correct aspect ratio setting |
| **TUNER** | | |
| Weak station searching | Auto antenna is not fully extended | Extend antenna fully or connect the auto antenna control cable properly |
| | Auto antenna not properly connected | Connect the auto antenna control cable properly |
| | LOCAL function is activated | Turn LOCAL function off |
| **DISC** | | |
| Cannot insert disc | Disc already inside unit | Eject current disc and insert new one |
| Image blurred, distorted or dark | Disc is illegally copied | Use original disc |

## VX4022

### Disc Error Messages

| Message Displayed | Cause | Corrective Action |
|---|---|---|
| Loading | Disc is being read | |
| No Disc | Disc is dirty | Clean disc with soft cloth |
| | Disc is upside down | Insert disc with label side up |
| | Disc not present in loading compartment | Insert disc |
| Bad Disc | Disc is dirty | Clean disc with soft cloth |
| | Disc is upside down | Insert disc with label side up |
| Unknown disc | Disc format is not compatible with this unit | |
| Region Error | DVD is not compatible with region code of unit | |
| Error | Illegal mechanism operation | Press EJECT button for 5 seconds to reset loading mechanism |

## VX4022

### CARE AND MAINTENANCE

1. Use only a clean silicone cloth and neutral detergent to clean the front panel or monitor. A rough cloth and non-neutral detergent (such as alcohol) may result in scratching or discoloration.
2. Do not get water or cleaning fluids on the unit.
3. If the temperature inside the player gets too hot, a protective circuit automatically stops play of the disc. If this occurs, allow the unit to cool before operating the player again.
4. Never insert anything other than a 12 cm (5") compact disc into the player as the mechanism can be damaged by foreign objects.
5. Do not attempt to use a 8 cm (3") CD-Single disc in this unit, either with or without an adapter, as damage to the player and/or disc may occur. Such damage is not covered by the Warranty on this product.
6. The CD player may not operate properly in extreme hot or cold. If such conditions occur, allow the interior of the vehicle to reach a normal temperature before using player.
7. When the vehicle warms up during cold weather or under damp conditions, condensation may appear on the LCD panel. Should this occur, the screen will not operate properly until the moisture has evaporated.
8. We suggest you use a cleaning disc in this unit more frequently than in the unit in your home due to the environmental conditions of the vehicle.

## VX4022

### SPECIFICATIONS

**DVD/CD Player**
Compatible Disc Media: DVD $\pm$ R / RW (Single and Dual Layer) and CD-R / RW
Compatible Media Formats: CD-DA, MP3, WMA, VCD, SVCD, Xvid, AVI, MPEG 1/2 and AAC
Signal to Noise Ratio: >95dBA
Dynamic Range: >95dB
Frequency Response: 20Hz to 20 kHz, -3dB
Channel Separation: > 60dB @ 1 kHz
D/A Converter: High Performance Multi-Bit Sigma-Delta Modulator

**Video**
Format: NTSC, PAL (auto-detection)
Output: 1Vp-p (75-ohm)
Input: 1Vp-p (75-ohm)

**FM Tuner**
Tuning Range: 87.5MHz - 107.9MHz
Mono Sensitivity (-30dB): 9dBf
Quieting Sensitivity (-50dB): 15dBf
Alternate Channel Selectivity: 70dB
Signal to Noise Ratio @ 1 kHz: 58dB
Image Rejection: 80dB
Stereo Separation @ 1 kHz: >30dB
Frequency Response: 30Hz - 15 kHz, -3db

**AM Tuner**
Tuning Range: 530 kHz - 1720 kHz
Sensitivity (-20dB): 15uV
Signal to Noise Ratio @ 1 kHz: 50dB
Image Rejection: 60dB
Frequency Response: 50Hz - 2 kHz, -3dB

**Monitor**
Screen Size: 6.2" (Measured diagonally), 16:9 Widescreen
Screen Type: TFT LCD
Resolution: 800h x 480v x RGB WVGA

## VX4022

**General**
Auxiliary (Audio) Input Impedance: 10k -Ohm
Power Supply: 11 to 16VDC, negative ground
Power Antenna / Amp Remote (Blue): 500mA max (Current limited protection)
Operating Temperature: 0C ~ 65C / 32F ~ 149F
Fuse: 15-Amp, ATO type
Chassis Dimensions: 7" X 7" X 4" (178mm x 178mm x 100mm)

**CEA Power Ratings**

Power Output: 13 Watts RMS x 4 channels into 4-Ohms @ < 1% THD+N
Signal to Noise Ratio: 70dBA below reference (Reference: 1 Watt, 4-Ohms)
Frequency Response: 20 Hz - 20 kHz, -3dB. (Aux Input used as reference input)
Reference Supply Voltage: 14.4VDC

*Specifications are subject to change without notice.

# MORGAN OLSON
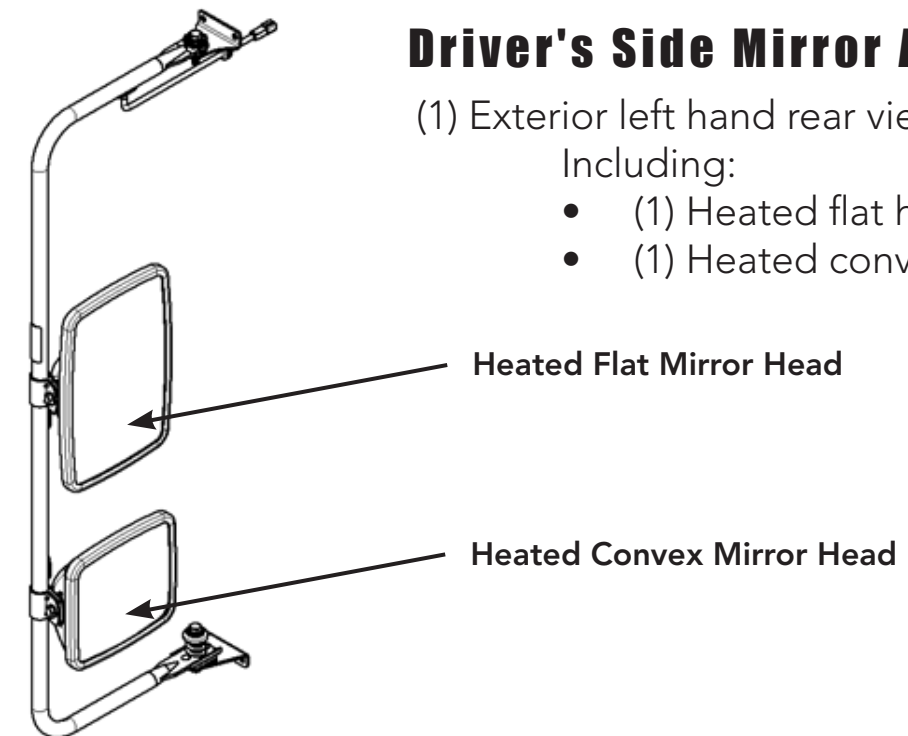
*REARVIEW MIRROR SYSTEM*

## COMPONENTS LIST AND DESCRIPTIONS

### Driver's Side Mirror Assembly

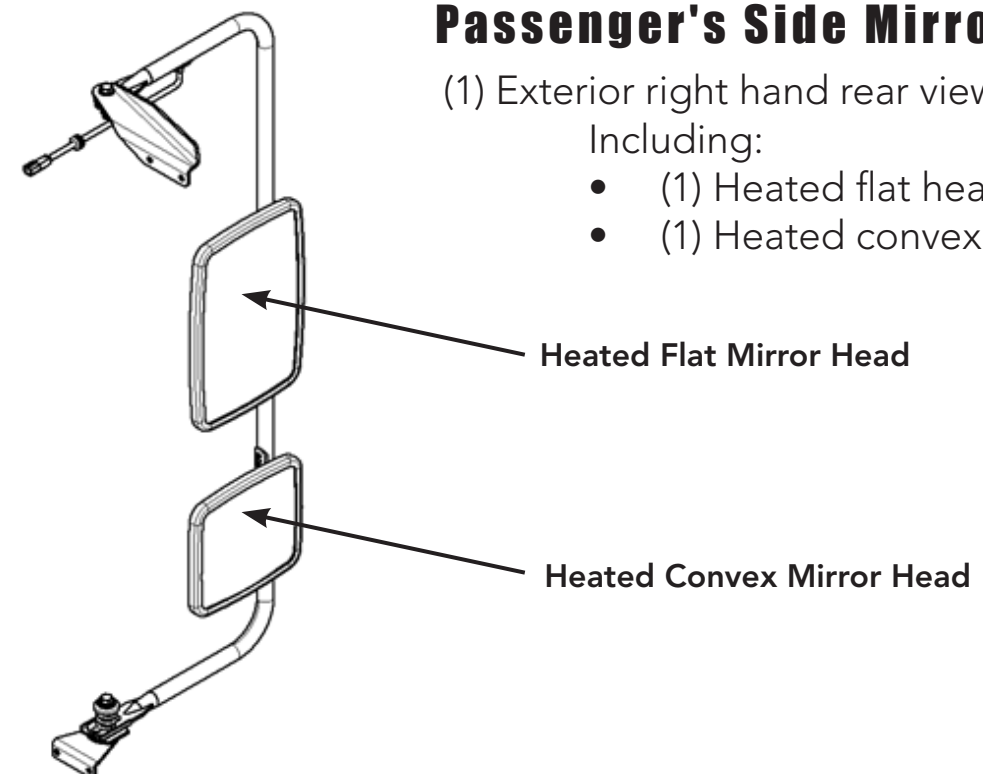(1) Exterior left hand rear view mirror assembly
Including:
- (1) Heated flat head
- (1) Heated convex mirror head

**Heated Flat Mirror Head**

**Heated Convex Mirror Head**

### Passenger's Side Mirror Assembly

(1) Exterior right hand rear view mirror assembly
Including:
- (1) Heated flat head
- (1) Heated convex mirror head

**Heated Flat Mirror Head**

**Heated Convex Mirror Head**

## MIRROR SYSTEM ADJUSTMENT

Each rearview mirror head is 4-way hand adjustable (up/down/left/right).



DOWN TILT    REGULAR    UP TILT

LEFT PAN    REGULAR    RIGHT PAN
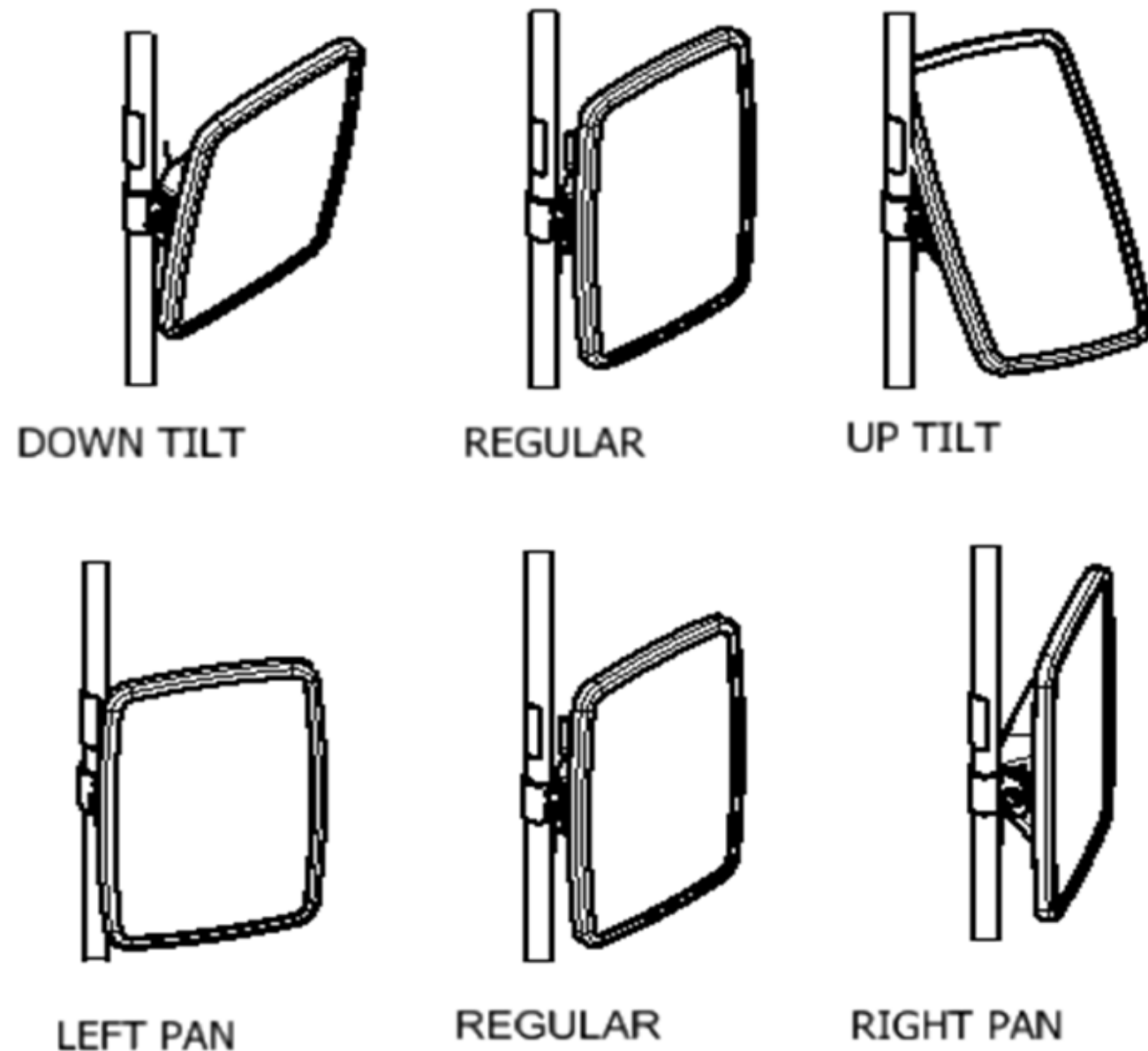
According to FEDERAL MOTOR VEHICLE SAFETY STANDARDS No.111, rearview mirrors must be adjusted "…so as to provide the driver a view to the rear along both sides of the vehicle and shall be adjusted both in the horizontal and vertical directions to view the rearward scene."

Adjust the lookdown mirror head so as to provide the driver a view in front of the bumper and to the right of the front-right wheel.

## OPERATING HEATED MIRRORS

Each rear view mirror head has a heating element behind the glass to assist with defogging / defrosting. When needed, simply depress the heater control switch. A small light (LED) on the bottom will confirm that heaters are on. Heaters will automatically turn off after 12 minutes.

## MIRROR STORAGE

To collapse the mirror assemblies for vehicle storage, transport, or parking in areas where the width profile of the truck should be minimized, the driver should hold the vertical mirror arm between the mirror heads, and rotate it forward or rearward to preference.

⚠️ CAUTION - be careful not to forcefully push the mirror assembly into the vehicle side or window so as to cause damage or bodily harm.

# WEAR COMPONENT REPLACEMENT

During the life of the mirror assembly, the upper and lower locking mechanism components may wear out and need to be replaced. This is normal. See diagram below for details -- use wrenches compatible with 5/16" fasteners and apply tightening torque accordingly. Wear components are the same between LH and RH assemblies, except upper mounting bases.

TIGHTENING TORQUE 132± 12 IN. LBS.

SCR7010
UPPER SWIVEL MECHANISM

ARM3331

6610SSPHM

HAR3542

BAS3039
LH UPPER MOUNTING BASE

OR

BAS3217
RH UPPER MOUNTING BASE

660DSSPHM

TIGHTEN TO 200± 10 IN.LBS.

SCR7011
LOWER LOCKING MECHANISM

APPLY GREASE BETWEEN WEAR
PLATE AND LOCK PLATE

BAS3218
LOWER MOUNTING BASE

SCR3504
5/16 - 18 X 1-1/2
HEX HEAD CAP SCREW SS
TIGHTENING TORQUE 132±12IN.LBS

5/16
S/S FLAT WASHER

INT-EXT TOOTH
WASHER, 5/16
4 PCS

5/16 STEEL
FLAT WASHER
TEFLON COATED
4 PCS

Teflon coated side
assemble as shown

5/16 S/S
FLAT WASHER

NUT2001, 5/16 - 18
ELASTIC HEX STOP NUT

5/16 S/S
FLAT WASHER

5/16 - 18 X 2.25
HEX CAP, SCREW

5/16 PLASTIC
FLAT WASHER

CAP
RETAINING CAP

SPRING

PLT3007
CHANNEL
(GREASE)

TEN2007
LOCK PLATE

INT-EXT TOOTH
WASHER

WAS2002
5/16 S/S
FLAT WASHER

NUT2001, 5/16 - 18
ELASTIC HEX STOP NUT
TIGHTEN
TO 200IN.LBS±10IN.LBS

## HEATED MIRROR REPLACEMENT

Replace mirror heads when glass is broken, or when the heating element fails to heat the glass. The following steps apply to either a flat or convex mirror head.

Step 1: Pull out black grommet and cable from oval hole, and expose butt spliced connections. Cut wires as shown.
Step 2: Remove 5/16-18" hex head screw and lock washer to disassemble defective mirror head. Remove defective mirror head. Ensure that remaining mirror head harness stays in place.
Step 3: Loosely attach new mirror head to the clamp. Run heater harness through the oval into the tubular arm until the end reaches the other oval hole.
Step 4: Using provided butt splices, crimp black and white wires accordingly. Push wires inside the tubing towards the flattened end and re-attach oval grommet.
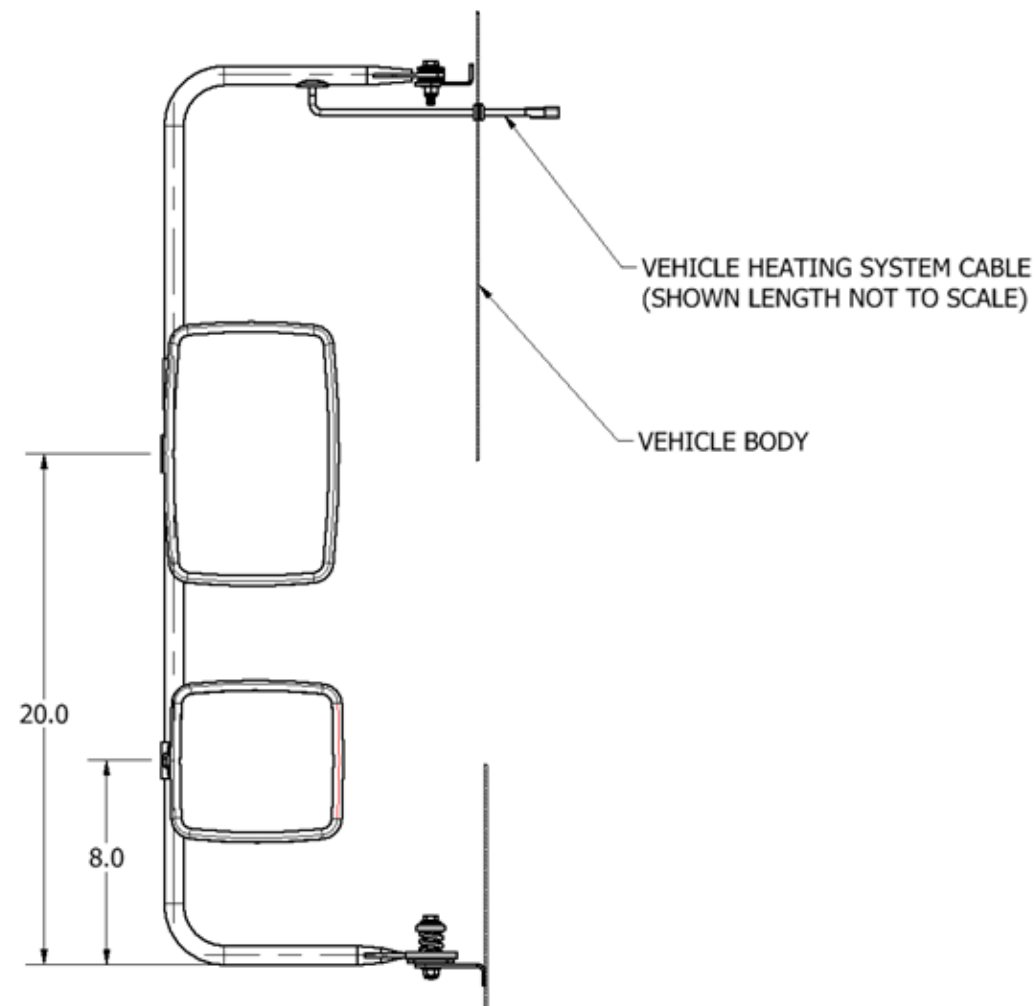
Step 5: Tighten mirror head hardware on the clamp to 200 in. lbs. be sure that clamp location on the tube is correct per below diagram:

VEHICLE HEATING SYSTEM CABLE
(SHOWN LENGTH NOT TO SCALE)

VEHICLE BODY

20.0

8.0

TIGHTEN TO 200± 10 IN.LBS.
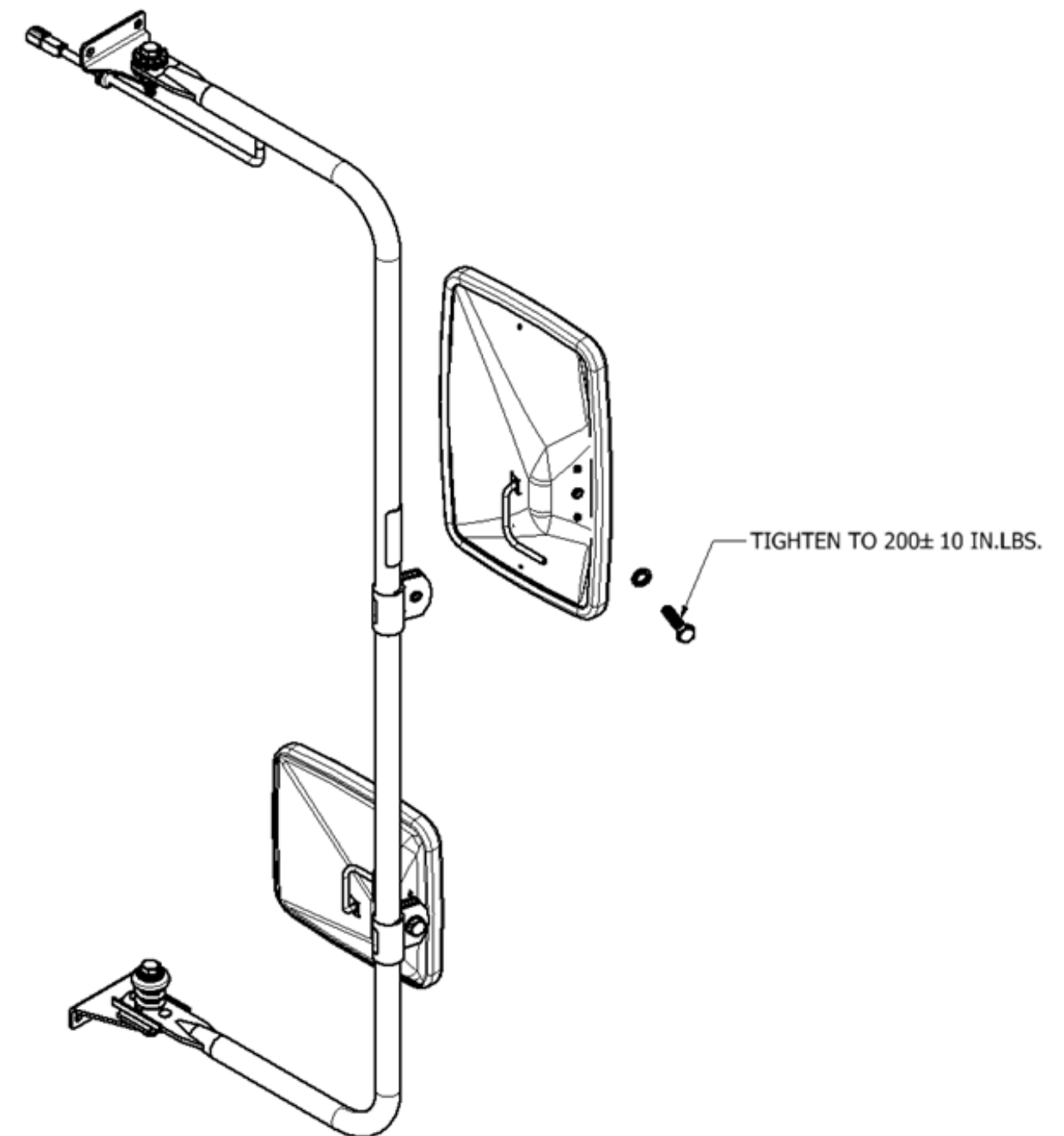
# Morgan Olson Operator & Service Manual
## for Keyless Entry Controller Diagnostics
### PN 46029040

**DELIVERY VEHICLE ★SOLUTIONS**

**MORGAN ★OLSON.®**

1801 South Nottawa Road
Sturgis, MI 49091
(800) 233-4823

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Transmitters / Keyfobs

Receiver / Control Module

GREEN Power/Status LED — Antenna
RED "Learn" LED — 10 Pin Connector

### Cab Keyless Unlock
**Curbside Door Unlock**
Press and release the fob button.
The curbside and roadside doors unlock.
Auto relocks in 6-seconds.

### Cab Manual Unlock
Press and release dash switch.
The curbside and roadside doors unlock.
Auto relocks in 6-seconds.
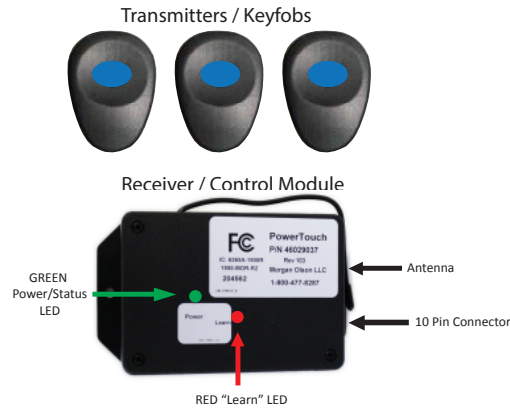
| LED | Operation | Status |
|---|---|---|
| **Green** LED | Flashes once every 5-seconds | System ON |
| | ON solid 6-seconds | Curbside and roadside doors unlocked (Cab Area) |
| **Red** LED | ON solid | Unlock request from unlock switch or fob |

**Status LED on receiver located over driver door.**

## Keyfob Replacement & Code Management

**Note:
Both code enrollment options 1 & 2 acheive the same results.**

### Code Enrollment Option 1
1. Unplug 10-pin connector on the receiver, then reconnect it.
2. During the 1st 10-seconds after reconnecting the receiver,
   Press and hold the dash unlock switch for 5-seconds.
   Release the dash switch when you observe the red LED start to flicker flash.
   This means the receiver is in "learn" mode. The receiver will be in "learn" mode for 5-seconds.
3. When the receiver is in "learn" mode, press the button on the hand-held fob.
4. The red LED will double flash indicating the new fob has been enrolled.
5. Press the fob button once to test.
   If the green status LED turns on solid for 6-seconds, the fob has been enrolled successfully.

### Code Enrollment Option 2
1. Open the receiver by removing the lid.
2. Identify the tact switch location on the PCB, small square component with a round button, which is near relays.
3. Press the tact switch once. The receiver will enter "learn" mode, indicatd by the red status LED flicker flashing.
   The receiver will remain in "learn" mode for 20-seconds.
4. Press the button on the new hand-held fob.
5. The red LED will double flash indicating the new fob has been enrolled.
6. Press the fob button once to test.
   If the green status LED turns on solid for 6-seconds, the fob has been enrolled successfully.

### Code Removal OR Code Erase
1. Place receiver into "learn" mode as indicated above in Code Enrollment Option 2.
2. BUT instead of releasing the tact switch button, continue to press and hold it for a full 10-seconds.
3. When all codes are erased, the red status LED will double flash and exit "learn" mode automatically.
5. All codes will be erased.

---

## Status & Diagnostic LEDs

**Green LED**
**Power Reset**
    Both Red & Green LED ON for 10-seconds solid.
**Quick Learn**
    Both Red & Green LEDs will turn OFF then Red LED will
        flicker flash for 5-seconds.
    If a new fob is enrolled, it will double flash and turn OFF.
**Power**
    Green status LED flashes once every 5-seconds.
**Curbside and Roadside Doors**
    Green status LED turns on solid for 6-seconds.

**Red LED**
**Input signals**
    When any input signal is detected (from fob or switch),
        the red LED will remain ON solid as long as the
        signal is present.
**"Learn" Mode**
    Red LED flicker flashes in "learn" mode and double flashes
        when a new fob is enrolled or "learn" mode exits.

**Error Code for continuous inputs signal from A1 dash switch or RF fob.**
- A1 dash switch - single flash approximately once every 2- 3 seconds.
- RF fob enrolled - triple flash approximately once every 2 - 3 seconds.

### System Specifications

| P/N#46029040 / Model #P1550-R | |
|---|---|
| RANGE | 100 Feet Typical Up to 300 Feet |
| OUTPUT | 4 Relays, Positive, 5A |
| INPUT | 2 Inputs, +12V |
| FREQUENCY | 433 MHz |
| CODES | Rolling Codes Secure Encryption |
| VOLTAGE | 12VDC |
| CURRENT | 5 Amps Max per Output, (Relay) 10 Amp, Input (Max) |
| ANTENNA, OPTIONAL | Fixed, Standard (shown) |
| BATTERY | Coin Style, Lithium, CR2032 100,000 1-second pulses 10 year shelf life |

### Part Numbers

**Transmitter - FOB 46029111**

**Receiver 46029040**

THREE FOBs PER KIT

**OPERATION**
Press ONCE to unlock curbside & roadside doors. Doors auto-relock in 6-sec.

VIEW CONNECTOR
①②③④⑤
⑥⑦⑧⑨⑩

ANTENNA

POWER +12VDC

RECEIVER 46029040

DASH UNLOCK SWITCH   5A   F1

INPUT   POWER

| | | |
|---|---|---|
| UNLOCK SWITCH | 1 | GREEN / YELLOW   RED |
| EMPTY | 2 | NC |
| GROUND | 3 | RED |
| +12V POWER | 4 | |
| +12V POWER | 5 | |
| CURBSIDE SOL | 6 | GREEN / BLACK +12V |
| EMPTY | 7 | NC |
| EMPTY | 8 | NC |
| ROADSIDE SOL | 9 | PINK / BLACK +12V |
| +12V POWER | 10 | |

WHITE

CHASSIS GROUND

Roadside Sol 46029041

Curbside Sol 46029042
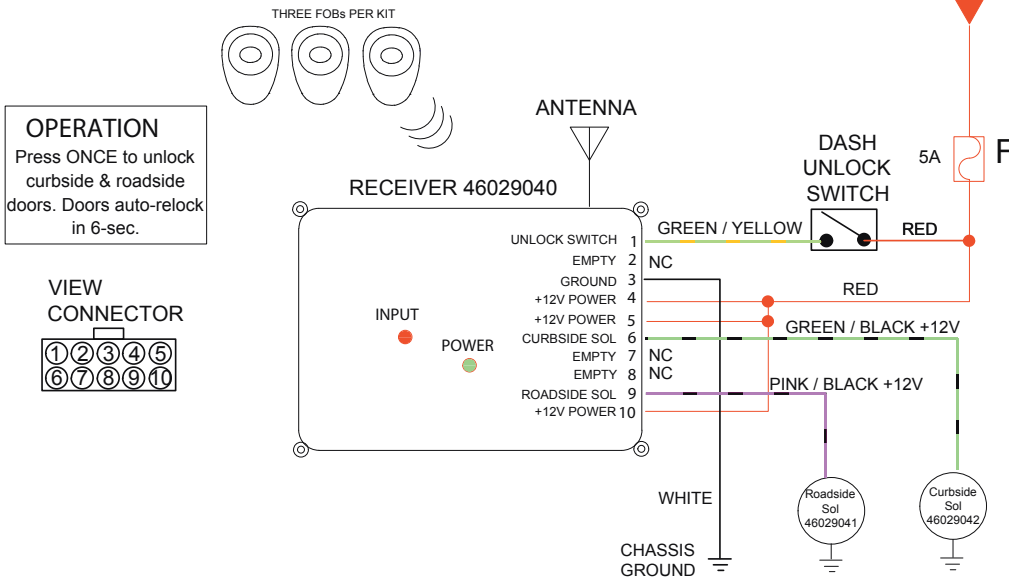
**Sympton 1**
**No output from one or more outputs on receiver when transmitter buttons are pressed**

| Possible Cause | Corrective Actions |
|---|---|
| **1.1** No signal from transmitter | **1.1.1** Verify that transmitter is sending a signal and that transmitter is coded correctly. See Symptom 3. |
| **1.2** One or more of the outputs have failed | **1.2.1** Open receiver and observe yellow LEDs. The yellow output LED should turn ON as long as relay is ON. |
| | **1.2.2** Press each transmitter button in sequence. Using a volt meter, check each output. there should be a +12v present anytime the corresponding transmitter button is pressed. If no outputs, call factory for assistance. |
| **1.3** Receiver outputs OK, but relays or equipment do not operate | **1.3.1** Check wire and equipment for problem. |
| **1.4** Fuse is blown | **1.4.1** Check the F2 fuse in fuse block. If it is blown, replace it. |
| **1.5** Wire harness problem | **1.5.1** Check dash switch input wire connection on P1 green/yellow wire. If no voltage, correct wiring. |

**Sympton 2**
**Receiver is Dead. Does not operate, no green power LED.**

| Possible Cause | Corrective Actions |
|---|---|
| **2.1** Logic ground or power connection to receiver has failed | **2.1.1** Check logic ground and logic power +12v. Use a voltmeter probe when checking voltage. |
| | **2.1.2** If either ground or power is not present, locate failure in wire harness |
| **2.2** Chassis ground connection has failed | **2.2.1** Check chassis ground connection. It should be clean and tight, no paint on metal, an external tooth star washer should be present, no rust or dirt in connections. |
| | **2.2.2** Chassis ground should be located on vehicle frame or directly to battery. |
| **2.3** Receiver and / or microprocessor has failed | **2.3.1** Check heart beat LED. If it is not flashing the microprocessor has failed. Call factory for assistance (in either case). |
| | **2.3.2** Check yellow output LEDs. If they DO NOT flash each time corresponding channel is activated, the receiver has failed. |

## Sympton 3
**Poor range 0' to 25' (pulsating 0' to 25')**

| Possible Cause | Corrective Actions |
|---|---|
| **3.1** <br> Antenna damaged or grounded | **3.1.1** <br> Check antenna placement.  It should not be touching any metal or tinted glass. <br><br> **3.1.2** <br> It should not be closer than 6' to any motors or relays / contactors. <br><br> **3.1.3** <br> If antenna is cut or damaged, call factory for assistance. <br><br> ***Please Note:  Antenna can NOT be shortened or altered in any way.*** |
| **3.2** <br> Poor ground connection | **3.2.1** <br> Remove any paint or residue from metal.  Using an external tooth star washer, tighten chassis ground ring terminal securely to vehicle frame. |
| **3.3** <br> Transmitter battery low | **3.3.1** <br> Replace battery if voltage is 2.8 volts or below. <br> All transmitters use: Lithium Coin Style - # CR2032 |
| **3.4** <br> Interference | **3.4.1** <br> Electromagnetic interference (EMI) can be generated by motors, welding equipment, relays, RF from other radio frequency devices, etc. which may be in close proximity to the receiver or transmitter. <br><br> **3.4.2** <br> Move closer to antenna or move vehicle out of range of EMI cause by high levels of RF from devices such as welding equipment, as this is a temporary problem. <br><br> **3.4.3** <br> If EMI is cause by relays, door motors or lift motors then the receiver must be moved or shielded or the EMI noise diverted to ground.  Call factory for detaiils / assistance. |
| **3.5** <br> Receiver component damaged or defective | **3.5.1** <br> Call factory for assistance. |
| **3.6** <br> Other equipment installed in vehicle causing voltage drop when initially turning on | **3.6.1** <br> Remove all other equipment from logic ground and power.  Check range. If ok, move other antennas, route wires away from the receiver, move unit away from large motors or run logic power & ground directly from battery. |

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1801 South Nottawa Road
Sturgis, MI 49091
(800) 233-4823

## VEHICLE JACKING POINTS



**Front**
Under the Frame just behind the Front Bumper.





**Rear**
Under the Frame just behind the Rear Bumper Shocks.
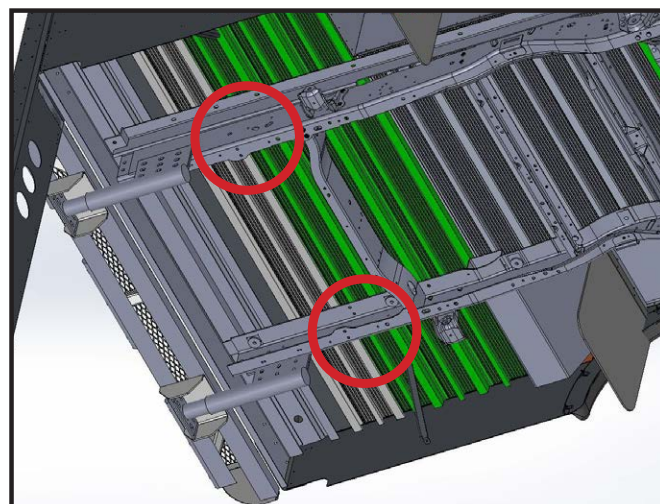


## SCHEDULED MAINTENANCE

2016 calendar year 6.8L-2V/3V engines will change to SAE 5W-20 engine oil from SAE 5W-30 engine due to dynamometer certification requirements for 6.8L-3V engines.

MFG recommendation is to follow OEM maintenance schedules outlined in the owner's manual. Please follow the severe duty cycle as it pertains to engine oil changes at 5000 mile intervals or at 200 hours of operation.

# Recommended Maintenance Schedule For Extreme Duty Extensive idling and/or driving at low speeds

| Mileage | 5K | 10K | 15K | 20K | 25K | 30K | 35K | 40K | 45K | 50K | 55K | 60K | 65K | 70K | 75K | 80K | 85K | 90K | 95K | 100K | 105K | 110K | 115K | 120K | 125K | 130K | 135K | 140K | 145K | 150K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEMO: Gas engine; Up to 6.0 quarts of oil | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Replace platinum-tipped spark plugs | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | |
| Inspect complete exhaust system and heat shields | | | X | | | | | | X | | | | | | X | | | | | | X | | | | | | X | | | |
| Replace front 4x2 wheel bearings and grease seals, lubricate and adjust bearings | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Replace accessory drive belts (if not replaced within last 100,000 miles) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Change Premium Gold engine coolant | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | X |
| Replace rear axle lubricant | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Inspect and lubricate all non-sealed steering linkage, ball joints, suspension joints, half and drive-shafts and u-joints | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | |
| Inspect 4x2 front wheel bearings; replace grease and grease seals, and adjust bearings | | | | | | X | | | | | | X | | | | | | X | | | | | | X | | | | | | X |
| Change rear axle fluid (vehicles equipped with Dana axles) | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Change automatic transmission fluid and filter | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | |
| Inspect brake pads/shoes/rotors/drums, brake lines and hoses, and parking brake system | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | |
| Inspect cooling system and hoses | | | X | | | | | | | | | | | | X | | | | | | X | | | | | | X | | | |
| Inspect accessory drive belt(s) | | | | | | | | | X | | | | | | X | | | | | | X | | | X | | | | | | |

Genuine OEM Parts          1.800.233.4823          www.morganolsonparts.com

Bimbo West Delivery Vehicle  2016

**MORGAN OLSON**

## Left Diagram (Page 78)

DRAWING NO. 0073B1203

NOTES:
1. SXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE (111098): 6" AT BREAKOUTS AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED W/ CRIMP, HEAT SHRINK TUBING, HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE FOR M-O FABRICATION IF NECESSARY.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.

PROPRIETARY

HARNESS MID-BODY MARKERS 2008 (SEED TRUCK)
P&P .180 BLLTS

| HARNESS AND LOOM TOLERANCES | |
|---|---|
| UP TO 60" | -0/+2" |
| 60" TO 100" | -0/+4" |
| 100" TO 200" | -0/+5" |
| 200" TO 400" | -0/+6" |
| 400" TO 600" | -0/+7" |
| OVER 600" | -0/+8" |
| BO TO BO | -0/+2" |

TOLERANCE IS NOT ACCUMULATIVE. LENGTH APPLIES TO OVERALL HARNESS LENGTH, BREAKOUT TO END, OR LOOM.

| CIRCUIT | GAUGE, COLOR | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 16 WHT | A1,A2,B1,B2 | GROUND |
| 001 | 16 BRN | A1,A2,B1,B2 | SIDE MARKER LAMPS |

300"

72"

42"

1"

1"

LOOM

RH MID-BODY MKR LAMP (A1)

LH MID-BODY MKR LAMP (A2)

TO LH REAR SIDE MARKER LAMP (B1)

TO REAR WIRING HARNESS (REAR SIDE MARKER LAMP LEADS) (B2)

.180 BLLT 16 WHT GROUND
.180 BLLT 16 BRN RH MID BODY MKR

.180 BLLT 16 WHT GROUND
.180 BLLT 16 BRN LH MID BODY MKR

.180 BLLT 16 WHT GROUND
.180 BLLT 16 BRN MKR LPS

NOTE: .180 FEMALE BLLTS

NOTE: .180 MALE BLLTS

## Right Diagram (Page 79)

DRAWING NO. 0073B300

NOTES:
1. SXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE (111098): 6" AT BREAKOUTS AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED W/ CRIMP, HEAT SHRINK TUBING, HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE FOR M-O FABRICATION IF NECESSARY.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.

PROPRIETARY

HARNESS JUMPER 8" 1W "Y" (.180F TO .180F/.180M)

FIRST USE: BASIC CIRCUIT SPLITTER

| HARNESS AND LOOM TOLERANCES | |
|---|---|
| UP TO 60" | -0/+2" |
| 60" TO 100" | -0/+4" |
| 100" TO 200" | -0/+5" |
| 200" TO 400" | -0/+6" |
| 400" TO 600" | -0/+7" |
| OVER 600" | -0/+8" |
| BO TO BO | -0/+2" |

TOLERANCE IS NOT ACCUMULATIVE. LENGTH APPLIES TO OVERALL HARNESS LENGTH, BREAKOUT TO END, OR LOOM.

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 16 BLK | A1,B1,B2 | GENERIC |

MINIMAL OVERALL LENGTH (6" MAX)

THIS HARNESS TO BE BUILT WITH MINIMUM LENGTH.

VENDOR TO USE SXL WIRE TO INCREASE RESISTANCE TO MECHANICAL DAMAGE.

TAPE OR LOOM TO BE USED IF REQUIRED

ALL FEMALE BULLET TERMINALS TO BE GREASED

.180"F 16 BLK MOLDED BULLET   GENERIC (A1)   MIN"

.180"M 16 BLK MOLDED BULLET   GENERIC (B1)   MIN"

.180"F 16 BLK MOLDED BULLET   GENERIC (B2)   MIN"

## Page 80 (Drawing 0073BB322)

DRAWING NO. 0073BB322
REV.
DESCRIPTION: RELEASE TO PRODUCTION

**NOTES:**
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
5. SPLICES TO BE AUTOMATED WITH HEAT SHRINK TUBING. HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE IF NECESSARY. FABRICATION.
4. TAPE [111096]: 6" AT BREAKOUTS AND 2" AT LOOM ENDS.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER AND REVISION LEVEL, AND DATE OF MANUFACTURE.
2. SPLIT POLY LOOM UNLESS JACKETED CABLE IS USED.
1. JACKETED CABLE AS NOTED.

PROPRIETARY

MORGAN OLSON

TMC  TMC  07-0743
09JUL07  09JUL07
DO NOT SCALE  SCALE: NONE

HARNESS, JUMPER, 120" 2W "Y" (180F TO 180F/180M EACH CKT)
SHT 1 of 1   0073BB322

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 16 WHT | A1,B1,B2 | GROUND |
| 001 | 16 BLK | A2,B3,B4 | POWER |

ALL FEMALE BULLET TERMINALS TO BE GREASED

INSERT .180"M SEAL 1 PLC
INSERT .180"M SEAL 1 PLC

GROUND 16 WHT MOLDED BULLET
GROUND 16 WHT MOLDED BULLET
POWER 16 BLK MOLDED BULLET
POWER 16 BLK MOLDED BULLET

OVERALL LENGTH - 120" CIRCUIT COLORS MUST BE VISIBLE AT EACH BULLET TERMINAL TO IDENTIFY THE CIRCUIT.

VENDOR TO USE WAYTEK WG16-2 BRAKE CABLE OR COMPARABLE SAE GPT VINYL JACKETED CABLE

OPTIONAL "NON-PREFERRED" CONSTRUCTION: GXL WIRE COVERED WITH LOOM

GROUND A1 16 WHT MOLDED BULLET
POWER A2 16 BLK MOLDED BULLET
ALL FEMALE BULLET TERMINALS TO BE GREASED

## Page 81 (Drawing 0073912I0)

DRAWING NO. 0073912I0
REV. A
DESCRIPTION: RELEASE FOR PRODUCTION / REDRAWN & REVISED

**NOTES:**
10. VENDOR TO GREASE FEMALE BULLET TERMINALS.
9. THIS IS A PURCHASED HARNESS. NO BILL OF MATERIAL EXISTS.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
5. SPLICES TO BE AUTOMATED WITH SOLDER, AND ADHESIVE LINED HEAT SHRINK TUBING.
4. TAPE [111096]: 6" AT BREAKOUTS, 2" AT 18" INTERVALS FOR UNINTERRUPTED LOOM LENGTHS GREATER THAN 24", AND 2" AT LOOM ENDS.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER AND REVISION LEVEL, AND DATE OF MANUFACTURE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
1. GXL WIRE.

PROPRIETARY

MORGAN OLSON

TMC  TMC  07-1B52
20DEC07  20DEC07
2008 SEED TRK
DO NOT SCALE  SCALE: NONE

HARN ROOF NOSE 2008 SEED TRUCK 2P DYN PK WPR
SHT 1 of 2   0073912I0
BASED ON 005391200

RIGHT CLER LAMP — 16 WHT GROUND / 16 BRN CLER LP
RIGHT ICC LAMP — 16 WHT GROUND / 16 BRN RH ICC LP
CAM
CAMERA MONITOR — 16 WHT GROUND / 16 GRN/YEL ACCESSORY / 16 PNK BACK-UP SIGNAL
CONN 3 CKT [111943]

DASH FAN WITH SWITCH ON DASH
EMPTY (A) / FAN LOW (B) / FAN HIGH (C)
304 16 YEL/BLK FAN LOW
305 16 GRN/BLK FAN HIGH
CONN 3 CKT [111943]

FAN

CENTER ICC LAMP — 16 WHT GROUND / 16 BRN CTR ICC LP

GROUND — 12 WHT GROUND
.25" (#1) RING WITH INTEGRAL INTERNAL TOOTH LOCK WASHER, SOLDERED WITH HEAT SHRINK

AUX

AUXILIARY SWITCHED POWER
304 14 WHT MOLDED BLLT GROUND
224 14 RED/GRN MOLDED BLLT SWITCHED BATTERY
226 16 ORN/GRN MOLDED BLLT SWITCHED ACCESSORY

9" FROM C TO D

CONTINUED ON SHEET 2

TAPE BACK AND MARK LEAD AS SHOWN

**Left diagram — Drawing No. 090086203**

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 14/16 WHT | A1,A2,B1,C1,C2,D1 | GROUND |
| 001 | 16 BRN | A1,A2,B1,D1 | TAIL/SIDE MARKER LPS |
| 002 | 16 GRN | A1,A2,D1 | RH TURN/COMBO LP |
| 004 | 16 PNK | A1,C1 | BACK-UP LP |
| 005 | 16 RED | A1,D2 | ISO STOP LP |
| 090 | 16 BLU/WHT | A1,C2 | 3-WAY SWITCH |
| 091 | 16 BLU/YEL | A1,C2 | 3-WAY SWITCH |

NOTES:
1. GXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE (111096): 6" AT BREAKOUTS, 2" AT 18" INTERVALS FOR UNINTERRUPTED LOOM LENGTHS GREATER THAN 24", AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED WITH SOLDER AND ADHESIVE LINED HEAT SHRINK TUBING.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE. UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS, PIGTAILS SHOWN IN TERMINAL VIEW.
9. WHEN ISOLATED STOP CIRCUIT 005 IS USED CIRCUIT 002 CAN REMAIN AS COMBINATION OR CAN BECOME DEDICATED TURN USING THE BRAKE FEED INTO TURN SIGNAL SWITCH.

HARNESS AND LOOM TOLERANCES
UP TO 60" = -0/+2"
60" TO 100" = -0/+4"
.100" TO 200" = -0/+5"
.200" TO 400" = -0/+6"
400" TO 600" = -0/+7"
OVER 600" = -0/+8"
B0 TO B0 = -0/+2"

NAME: HARN RR WRG RH BK PNL BBU EAST 2009 M-100

DWG NO. 28704
DATE 16OCT09

FIRST USE:
CV100634
BASED ON:
092088205

DO NOT SCALE

**Right diagram — Drawing No. 09008B326**

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 14 WHT | A1,B1,B2 | GROUND |
| 001 | 14 BLK | A2,B3,B4 | POWER |

NOTES:
1. GXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE (111096): 6" AT BREAKOUTS AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED WITH SOLDER AND ADHESIVE LINED HEAT SHRINK TUBING.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS, PIGTAILS SHOWN IN TERMINAL VIEW.

OVERALL LENGTH - 72" MUST BE VISIBLE AT EACH BULLET TERMINAL TO IDENTIFY THE CIRCUIT.

HARNESS AND LOOM TOLERANCES
UP TO 60" = -0/+2"
60" TO 100" = -0/+4"
.100" TO 200" = -0/+5"
200" TO 400" = -0/+6"
400" TO 600" = -0/+7"
B0 TO B0 = -0/+2"

NAME: HARNESS JUMPER 72" 2W "Y" (18OF/18OM EACH CKT)

DWG NO. 27B01
DATE 31JUL09

FIRST USE:
CV100598
BASED ON:
0073B8326

DO NOT SCALE

PROPRIETARY

MORGAN ★OLSON

**Left diagram (Drawing No. 090093202, Rev A):**

TO ROOF HARNESS

.180"W ← (000) 16 WHT - GROUND MOLDED BULLET

.180"W ← (007) 16 ORN - DM LP MOLDED BULLET

1"

B

LOOM

80"

A

1"

TO DOME LAMP

A .180"F ← (000) 16 WHT - GROUND MOLDED BULLET

.180"F ← (007) 16 ORN - DM LP MOLDED BULLET

FEMALE BULLET TERMINALS TO BE GREASED

NOTES:
1. GXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE [111096] 6" AT BREAKOUTS, 2" AT INTERVALS FOR UNINTERRUPTED LOOM LENGTHS GREATER THAN 24", AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED WITH ADHESIVE LINED HEAT SHRINK TUBING.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.
9. THIS IS A PURCHASED HARNESS. NO BILL OF MATERIAL EXISTS.

REV A DESCRIPTION: RELEASE FOR PRODUCTION: 80" WAS 64"

HARNESS AND LOOM TOLERANCES
UP TO 60" = -0/+2"
60" TO 100" = -0/+4"
100" TO 200" = -0/+5"
200" TO 400" = -0/+6"
400" TO 600" = -0/+7"
OVER 600" = -0/+8"
BO TO BO = -0/+2"

LENGTHS APPLY FROM BREAKOUT TO BREAKOUT, OR BREAKOUT TO WIRE ENTRY OF CONNECTOR, OR END OF COVER.

HARN JPR ORG D/LP GEN - BORLLT

DRAWING NO. 090093202

DFW 26OCT09 260CT09

FIRST USE: CV100632 BASED ON: 007388328

PROPRIETARY

**Right diagram (Drawing No. 093051201, Rev B):**

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 16 WHT | B3,B5,C1,C2 | GROUND |
| 00B | 16 BLU | B5,C1,C2 | PANEL LAMPS |
| 206 | 14 ORN/BLK | B1,B5 | ACCESSORY POWER |
| 212 | 14 PPL | B3,B5 | SWITCHED POWER |
| 300 | 14/16 WHT/RED | A1,A2,B2 | GROUND MIRRORS |
| 312 | 14 RED | A1,A2,B3,B5 | HEATED MIRRORS / PILOT |
| JPR1 | 14 GRY | B4,B4 | JUMPER LEAD FOR NO TIMER |

THIS HARNESS MAX. CURRENT USAGE RATINGS
WITHOUT OPT. TIMER: 15 AMPS
WITH OPT. TIMER: 10 AMPS

EMPTY (1)
(206) 14 ORN/BLK (2) ACCY
(212) 14 PPL (3) SWITCHED PWR
EMPTY (4)
(312) 16 RED (6) PILOT
(00D) 16 WHT (7) GROUND
(00B) 16 BLU (8) PANEL LPS

8 7
1 4
3 6
CONN 8 CKT
480-3550

(00B) 16 BLU (A) PANEL LPS
EMPTY (B)
(00D) 16 WHT (C) GROUND
A B C [111943] CONN 3 CKT
TO HVAC CONTROL PANEL

(00B) 16 BLU (A) PANEL LPS
EMPTY (B)
(00D) 16 WHT (C) GROUND
A B C [111992] CONN 3 CKT
TO HVAC PANEL LP CONNECTOR FROM I/P HARNESS

(JPR1) 14 GRY (A) JUMPER 1
(JPR1) 14 GRY (B) JUMPER 1
EMPTY (C)

(212) 14 PPL (A) SWITCHED PWR
(312) 16 RED (B) HEATED MIRRORS
(00D) 16 WHT (C) GROUND

TIMER ASM MUST INCLUDE RELAY (REF - 006039201)

MATE TO B4 TO B3

MATE TO CONN AT B3 (B+)

A B C [111992] CONN 3 CKT MIRROR TIMER (B3)

TIMER

MIRROR SWITCH

RUN CIRCUIT 312 AS 14 RED FROM B/O "B3" TO AREA "A", AND SPLICE (2) 16 FOR MIRRORS, OTHER SPLICING PER VENDOR

RUN CIRCUIT 300 AS 14 WHT/RED FROM B/O "B2" TO AREA "A" AND SPLICE (2) 16 WHT/RED FOR MIRRORS

LH HEATED MIRRORS
.180"F (300) 16 WHT/RED MOLDED BULLET
.180"F (312) 16 RED MOLDED BULLET FOR MIRRORS

RH HEATED MIRRORS
.180"F (300) 16 WHT/RED MOLDED BULLET
.180"F (312) 16 RED MOLDED BULLET FOR MIRRORS

54"
54"
2"
2"

BODY GROUND (300) 16 WHT/RED - GROUND

EMPTY (A)
EMPTY (B)
(206) 14 ORN/BLK (C) ACCY
A B C [111992] CONN 3 CKT

PLUGS INTO STANDARD POWER INTERFACE CONNECTOR ON I/P HARNESS

NOTES:
1. GXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE [111096] 6" AT BREAKOUTS, 2" AT INTERVALS FOR UNINTERRUPTED LOOM LENGTHS GREATER THAN 24", AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED WITH ADHESIVE LINED HEAT SHRINK TUBING.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.
9. THIS IS A PURCHASED HARNESS. NO BILL OF MATERIAL EXISTS.
10. VENDOR TO GREASE FEMALE BULLET TERMINALS.

HARNESS AND LOOM TOLERANCES
UP TO 60" = -0/+2"
60" TO 100" = -0/+4"
100" TO 200" = -0/+5"
200" TO 400" = -0/+6"
400" TO 600" = -0/+7"
OVER 600" = -0/+8"
BO TO BO = -0/+2"

LENGTHS APPLY FROM BREAKOUT TO BREAKOUT, OR BREAKOUT TO WIRE ENTRY OF CONNECTOR, OR END OF COVER.

HARN RKR SW FOR MIR RSW 2009 MI100 RGSCO

DRAWING NO. 093051201 REV B

DFW 210CT09 210CT09

FIRST USE: C100804 BASED ON: 09505.1202 & 88117494

PROPRIETARY

# Sheet 1 of 2

DRAWING NO. 093093203  REV. B

**NOTES:**

10. MAIN TRUNK OF HARNESS MUST FIT IN A .75 DIA. WIRE CHANNEL.

9. THIS IS A PURCHASED HARNESS. NO BILL OF MATERIAL EXISTS.

8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS-PIGTAILS SHOWN IN TERMINAL VIEW.

7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.

6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.

5. SPLICES TO BE AUTOMATED WITH HEAT SHRINK BUTT SPLICES. HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE FOR M-O FABRICATION IF NECESSARY.

4. TAPE [111096]: 6" AT BREAKOUTS AND 2" AT LOOM ENDS.

3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.

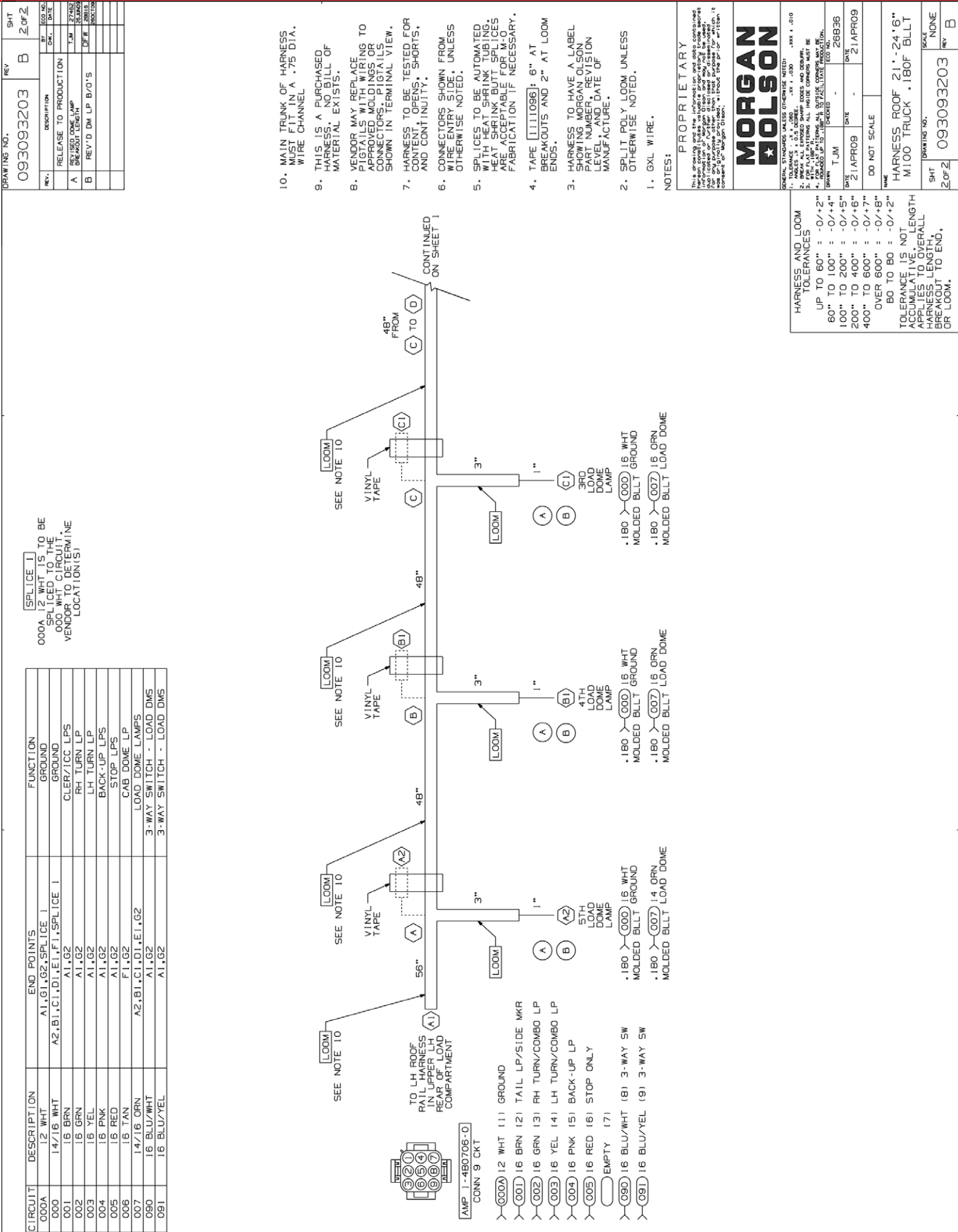2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.

1. GXL WIRE.

**HARNESS AND LOOM TOLERANCES**

| | |
|---|---|
| UP TO 60" : | -0'/+2" |
| 60" TO 100" : | -0'/+4" |
| 100" TO 200" : | -0'/+5" |
| 200" TO 400" : | -0'/+6" |
| 400" TO 600" : | -0'/+7" |
| OVER 600" : | -0'/+8" |
| BO TO BO : | -0'/+2" |

TOLERANCE IS NOT ACCUMULATIVE. LENGTH APPLIES TO OVERALL HARNESS LENGTH, BO TO BO, OR LOOM.

**AMP 1-480709-0   CONN 12 CKT**

| CKT | DESCRIPTION | FUNCTION |
|---|---|---|
| 000A | 12 WHT | GROUND |
| 001 | 16 BRN (2) | TAIL LP/SIDE MKR |
| 002 | 16 GRN (3) | RH TURN/COMBO LP |
| 003 | 16 YEL (4) | LH TURN/COMBO LP |
| 004 | 16 PNK (5) | BACK-UP LP |
| 005 | 16 RED (6) | STOP ONLY |
| 006 | 16 TAN (7) | CAB DOME LP |
| 008 | 16 BLU/WHT (8) | 3-WAY SW |
| 09D | 16 BLU/YEL (9) | 3-WAY SW |
| 091 | 16 BLU/YEL (9) | EMPTY (10) |
| 007 | 14 ORANGE | LOAD DOME LP |
| | | EMPTY (12) |

HARNESS ROOF 21'-24'6" M100 TRUCK .180F BLLT

PROPRIETARY

MORGAN OLSON

# Sheet 2 of 2

DRAWING NO. 093093203  REV. B

**NOTES:**

10. MAIN TRUNK OF HARNESS MUST FIT IN A .75 DIA. WIRE CHANNEL.

9. THIS IS A PURCHASED HARNESS. NO BILL OF MATERIAL EXISTS.

8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS-PIGTAILS SHOWN IN TERMINAL VIEW.

7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.

6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.

5. SPLICES TO BE AUTOMATED WITH HEAT SHRINK BUTT SPLICES. HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE FOR M-O FABRICATION IF NECESSARY.

4. TAPE [111096]: 6" AT BREAKOUTS AND 2" AT LOOM ENDS.

3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.

2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.

1. GXL WIRE.

**HARNESS AND LOOM TOLERANCES**

| | |
|---|---|
| UP TO 60" : | -0'/+2" |
| 60" TO 100" : | -0'/+4" |
| 100" TO 200" : | -0'/+5" |
| 200" TO 400" : | -0'/+6" |
| 400" TO 600" : | -0'/+7" |
| OVER 600" : | -0'/+8" |
| BO TO BO : | -0'/+2" |

TOLERANCE IS NOT ACCUMULATIVE. LENGTH APPLIES TO OVERALL HARNESS LENGTH, BO TO BO, OR LOOM.

**SPLICE 1**

000A, 12 WHT IS TO BE SPLICED TO THE 00D WHT CIRCUIT. VENDOR TO DETERMINE LOCATION(S).

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000A | 12 WHT | A1,G1,G2,SPLICE 1 | GROUND |
| 00D | 14/16 WHT | A2,B1,C1,D1,E1,F1,SPLICE 1 | GROUND |
| 001 | 16 BRN | A1,G2 | CLER/ICC LPS |
| 002 | 16 GRN | A1,G2 | RH TURN LP |
| 003 | 16 YEL | A1,G2 | LH TURN LP |
| 004 | 16 PNK | A1,G2 | BACK-UP LPS |
| 005 | 16 RED | A1,G2 | STOP LPS |
| 006 | 16 TAN | F1,G2 | CAB DOME LAMPS |
| 007 | 14/16 ORN | A2,B1,C1,D1,E1,G2 | LOAD DOME LAMPS |
| 090 | 16 BLU/WHT | A1,G2 | 3-WAY SWITCH - LOAD DMS |
| 091 | 16 BLU/YEL | A1,G2 | 3-WAY SWITCH - LOAD DMS |

**AMP 1-480706-0   CONN 9 CKT**

| | | |
|---|---|---|
| 000A | 12 WHT (1) | GROUND |
| 001 | 16 BRN (2) | TAIL LP/SIDE MKR |
| 002 | 16 GRN (3) | RH TURN/COMBO LP |
| 003 | 16 YEL (4) | LH TURN/COMBO LP |
| 004 | 16 PNK (5) | BACK-UP LP |
| 005 | 16 RED (6) | STOP ONLY |
| | | EMPTY (7) |
| 090 | 16 BLU/WHT (8) | 3-WAY SW |
| 091 | 16 BLU/YEL (9) | 3-WAY SW |

HARNESS ROOF 21'-24'6" M100 TRUCK .180F BLLT

PROPRIETARY

MORGAN OLSON

MORGAN OLSON

## Left Diagram (093093205 Rev B)

DRAWING NO. 093093205  REV. B  SHT 1 of 1

| REV. | DESCRIPTION | DFW | DATE |
|---|---|---|---|
| A | RELEASE TO PRODUCTION | | |
| | REDRAWN & REVISED | | |
| B | ADDED SIGNAL 002 TO CONNECTOR AT H2 | | |

**NOTES:**

1. GXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE [111096]: 6" AT BREAKOUTS AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED WITH SOLDER, AND ADHESIVE LINED HEAT SHRINK TUBING.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.
9. THIS IS A PURCHASED HARNESS, NO BILL OF MATERIAL EXISTS.
10. VENDOR TO GREASE FEMALE BULLET TERMINALS.

PROPRIETARY

HARNESS TRANSOM SEED TRUCK CHMSL READY .16 BF BLLT

DRAWING NO. 093093205  SHT 1 of 1

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000A | 12 WHT | A1,B1,H1,SPLICE 1 | GROUND |
| 000 | 14/16 WHT | A2,C1,D1,E1,F1,G1,H1,H2,SPLICE 1 | GROUND |
| 001 | 16 BRN | A1,A2,C1,D1,F1,B1,H1,H2 | CLER/ICC/MARKER LAMPS |
| 002 | 16 GRN | A1,E1,H1,H2 | RH TURN/COMBO LP |
| 003 | 16 YEL | A1,E1,H1,H2 | LH TURN/COMBO LP |
| 004 | 16 PNK | E1,H1,H2 | BACK-UP LAMPS |
| 005 | 16 RED | A1,E1,H1,H2 | STOP ONLY LAMPS |
| 090 | 16 BLU/WHT | A1,H1 | 3-WAY SWITCH |
| 091 | 16 BLU/YEL | A1,H1 | 3-WAY SWITCH |

## Right Diagram (097091201)

DRAWING NO. 097091201  REV. NONE

**NOTES:**

1. GXL WIRE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.
4. TAPE [111096]: 6" AT BREAKOUTS AND 2" AT LOOM ENDS.
5. SPLICES TO BE AUTOMATED WITH SOLDER, AND ADHESIVE LINED HEAT SHRINK TUBING.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.
9. THIS IS A PURCHASED HARNESS, NO BILL OF MATERIAL EXISTS.

PROPRIETARY

HARN JPR RR 3WAY RKR 2009 CFF

DRAWING NO. 097091201  SHT 1 of 1

**ADD 5" OF 46020207 .25 LOOM OVER 46012046 PIGTAIL. TAPE BOTH ENDS WITH 1111096.**

1 - WHT
2 - BLK
3 - RED

**DIGITAL PHOTO DRAWING**

MORGAN ★OLSON

GENERAL STANDARDS UNLESS OTHERWISE NOTED:
1. TOLERANCE- .X ± .060 .XX ± .030 .XXX ± .010
   ANGLES- .X ± .5 DEGREES
2. BREAK ALL EXPOSED SHARP EDGES AND DEBURR.
3. FOR FLAT PATTERNS ALL INSIDE CORNERS MUST BE WITH .188" R.
4. FOR FLAT PATTERNS ALL OUTSIDE CORNERS MAY BE ROUNDED UP TO .188" R TO FACILITATE PRODUCTION.

| | DRAWN | CHECKED | RELEASE NO. |
|---|---|---|---|
| | TJM | | 31075 |

| A | LOOM 46020207 WAS 46020201 | MTS | 43454 | DATE 12MAY10 | DATE | DATE 12MAY10 |
| | | | 6/10/14 | | | |
| REV | DESCRIPTION | BY | REL NO. | DO NOT SCALE | | |
| | | CHK. | DATE | NAME | | |

**PROPRIETARY**

This drawing and the information and data contained hereon constitutes valuable proprietary trade secret information of Morgan Olson Corp. and may not be used, duplicated or further disclosed or disseminated for any purpose other than that purpose for which it was originally provided, without the prior written consent of Morgan Olson Corp.

**HARN A S/T/T WITH LOOM (LOOM OVER 46012046)**

| SHT | DRAWING NO. | SCALE |
|---|---|---|
| 1 of 1 | 100081201 | NONE |
| | | REV A |

## Left Diagram (Sheet 1 of 1, Drawing No. 100081203, Rev A)

SHT 1 of 1
REV A
Drawing No. 100081203

A

**ADD 5" OF 46020207 .25 LOOM OVER 46012049 PIGTAIL.
TAPE BOTH ENDS WITH 1111096.**

6 1/2 ± 1/2

1 - WHT
2 - N/A
3 - RED

.180" Male Bullet (TYP)

### DIGITAL PHOTO DRAWING

# MORGAN ★OLSON

**GENERAL STANDARDS UNLESS OTHERWISE NOTED:**
1. TOLERANCE- .X ± .060   .XX ± .030   .XXX ± .010
   ANGLES- .X ± .5 DEGREES
2. BREAK ALL EXPOSED SHARP EDGES AND DEBURR.
3. FOR FLAT PATTERNS ALL INSIDE CORNERS MUST BE
   WITH .188" R.
4. FOR FLAT PATTERNS ALL OUTSIDE CORNERS MAY BE
   ROUNDED UP TO .188" R TO FACILITATE PRODUCTION.

| | | |
|---|---|---|
| DRAWN TJM | CHECKED | RELEASE NO. 31075 |
| MTS 43454 6/10/14 | | |

A   LOOM 46020207 WAS 46020201

DATE 12MAY10   DATE   DATE 12MAY10

BY   REL NO.   **DO NOT SCALE**
CHK.   DATE   NAME

REV   DESCRIPTION

### PROPRIETARY
This drawing and the information and data contained hereon
constitutes valuable proprietary trade secret information of
Morgan Olson Corp. and may not be used,
duplicated or further disclosed or disseminated for any
purpose other than that purpose for which it was originally
provided, without the prior written consent of Morgan Olson
Corp.

**HARN A S/T/T WITH LOOM
(LOOM OVER 46012049)**

| SHT 1 of 1 | DRAWING NO. 100081203 | SCALE NONE |
|---|---|---|
| | | REV A |

## Right Diagram (Drawing No. 11B084201)

SHT 1 of 3
DRAWING NO. 11B084201
RELEASE FOR PRODUCTION

# MORGAN ★OLSON

PROPRIETARY

DRAWING NO. 11B084201
33505
2011 CCC M-100
2011 FCC FCC
12" TO ROOF
W/ 46023310 WPR SW

**NOTES:**
9. THIS IS A PURCHASED HARNESS. NO BLOW OF MATERIAL EXISTS.
8. VENDOR MAY REPLACE PIGTAILS WITH APPROVED MOLDINGS OR APPROVED CONNECTORS AS SHOWN IN TERMINAL VIEW.
7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.
6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.
5. SPLICES TO BE AUTOMATED WITH SOLDER AND ADHESIVE LINED HEAT SHRINK TUBING.
4. TAPE (1111096): 6" AT BREAKOUTS, 2" AT 18" INTERVALS FOR LENGTHS GREATER THAN 24", AND 2" AT LOOM ENDS.
3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, NAME, AND DATE OF MANUFACTURE.
2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.
1. GXL WIRE.

HARNESS AND LOOM TOLERANCES
UP TO 60" : -0/+2"
60" TO 100" : -0/+4"
100" TO 200" : -0/+5"
200" TO 400" : -0/+6"
400" TO 600" : -0/+7"
OVER 600" : -0/+8"

FIRST USE: CV100904 BASED ON: 09B084204

## Sheet 2 of 3 — Drawing No. 11B084201

PROPRIETARY

MORGAN OLSON

HARN. COM. CTR. FCC
2011 M-100
LP TO ROOF
W/ 46023310 WPR SW
DWG: DFW — DATE: 1 JAN 11
SCALE: NONE — SHT 2 of 3
DRAWING NO. 11B084201

**CONN. 15 CKT — AMP 1-480710-0 — USE FEMALE TERMS — TO ROOF NOSE WRG HARNESS AT TOP OF DRIVERS DOOR "A" POST**

| Circuit | Gauge/Color | Pin | Function |
|---|---|---|---|
| 000A | 12 WHT | (1) | GROUND |
| 001 | 16 BRN | (2) | CLER/ICC LPS |
| 004 | 16 BLK | (3) | BACK-UP SIG |
| 106 | 16 LBL | (4) | WIPER PARK B+ |
| | EMPTY | (5) | |
| 107 | 16 ORN/WHT | (6) | WIPER MOTOR LOW |
| 108 | 16 RED/WHT | (7) | WIPER MOTOR HIGH |
| | EMPTY | (8) | |
| 109 | 16 ORN | (9) | WIPER MOTOR PARK SW OUT |
| 224 | 16 RED/GRN | (10) | BATT (SWITCHED) |
| | EMPTY | (11) | |
| 226 | 14 ORN/GRN | (12) | ACCY (SWITCHED) |
| 304 | 16 YEL/BLK | (13) | FAN LOW |
| 305 | 16 GRN/BLK | (14) | FAN HIGH |
| 405 | 14 ORN | (15) | ACCY (NO SWITCH) |

**CONN 12 CKT — AMP 1-480708-0 — USE FEMALE TERMS — TO ROOF WRG HARNESS TOP OF DRIVERS "A" POST**

| Circuit | Gauge/Color | Pin | Function |
|---|---|---|---|
| 000A | 12 WHT | (1) | GROUND |
| 001 | 16 BRN | (2) | TAIL LP/SIDE MKR |
| 002 | 16 GRN | (3) | RH TURN/COMBO LP |
| 003 | 16 YEL | (4) | LH TURN/COMBO LP |
| 004 | | (5) | BACK-UP LP |
| 005 | 16 RED | (6) | STOP ONLY |
| 006 | 16 TAN | (7) | CAB DOME LP |
| 090 | 16 BLU/WHT | (8) | 3-WAY SW |
| 091 | 16 BLU/YEL | (9) | 3-WAY SW |
| | EMPTY | (10) | |
| 007 | 14 ORN | (11) | LOAD DOME LAMPS |
| | EMPTY | (12) | |

**460129S4 — CONN 4 CKT — RADIO SPEAKERS**

| Circuit | Gauge/Color | Pin | Function |
|---|---|---|---|
| 400 | 16 GRY/BLK | (A) | RH SPEAKER-NEG |
| 401 | 16 GRY/WHT | (B) | RH SPEAKER-POS |
| 402 | 16 WHT/BLK | (C) | LH SPEAKER-NEG |
| 403 | 16 WHT/GRN | (D) | LH SPEAKER-POS |

**111194J — CONN 3 CKT — AUX POWER**

| Circuit | Gauge/Color | Pin | Function |
|---|---|---|---|
| 204 | 14 RED/BLK | (A) | BATT-AUX 1 |
| | EMPTY | (B) | |
| 214 | 14 ORN/WHT | (C) | ACCY-AUX 2 |

**460132S4 — CONN 6 CKT — TO FUSE CENTER HARNESS**

| Circuit | Gauge/Color | Pin | Function |
|---|---|---|---|
| 207 | 12 YEL | (A) | BATT |
| | EMPTY | (B) | |
| 009 | 12 RED | (C) | BATT-DOMES |
| 116 | 14 RED/GRN | (D) | BATT-12V OUT |
| 204 | 14 RED/BLK | (E) | BATT-AUX |
| | EMPTY | (F) | |

**46013253 — CONN 6 CKT — TO FUSE CENTER HARNESS**

| Circuit | Gauge/Color | Pin | Function |
|---|---|---|---|
| 203 | 12 ORN | (A) | ACCY |
| | EMPTY | (B) | |
| 206 | 14 ORN/BLK | (C) | ACCY-AUX 1 |
| 214 | 14 ORN/WHT | (D) | ACCY-AUX 2 |
| 303 | 16 ORN/YEL | (E) | ACCY-FAN |
| 212 | 14 PPL/BLK | (F) | ACCY-RADIO |

TAPE WRAP / LOOM (various)
70" FROM (E) TO (D) — CONTINUED FROM SHEET 1

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## Sheet 3 of 3 — Drawing No. 11B084201

PROPRIETARY

MORGAN OLSON

HARN. COM. CTR. FCC
2011 M-100
LP TO ROOF
W/ 46023310 WPR SW
DWG: DFW — DATE: 1 JAN 11
SCALE: NONE — SHT 3 of 3
DRAWING NO. 11B084201

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---|---|---|---|
| 000 | 16 WHT | E1,F2,F3,G2,SPLICE1 | GROUND |
| 000A | 12 WHT | A1,A2,E3,F1,G1,SPLICE1 | GROUND |
| 001 | 16 BRN | A1,A2,F1 | CLER/ICC LAMPS |
| 002 | 16 GRN | A2,F1 | RIGHT HAND TURN LAMP |
| 003 | 16 YEL | A2,F1 | LEFT HAND TURN LAMP |
| 004 | 16 PNK | A1,A2,F1 | BACK-UP LP SIGNAL |
| 005 | 16 RED | A2,F1 | STOP ONLY LAMP |
| 006 | 16 TAN | A2,G2 | CAB DOME LAMP |
| 007 | 14 ORN | A2,G2 | LOAD DOME LAMP(S) |
| 008 | 16 BLU | F2,G1,G3 | DASH ILLUM |
| 008B | 16 BLU | C1,G1 | BATTERY-DOME LAMP RELAY FEED |
| 009 | 12 RED | A2,G1 | LOAD DM 3W SW |
| 090 | 16 BLU/WHT | A2,G1 | LOAD DM 3W SW |
| 091 | 16 BLU/YEL | G2,G1 | ELECTRIC HVAC GROUND |
| 101 | 12 ORN | G1,G3 | ELECTRIC HVAC GROUND |
| 103 | 14 YEL | G2,E3 | ACCESSORY WIPER FEED |
| 106 | 16 GRN/WHT | F3,G3,SPLICE 2 | WIPER POWER (B+) |
| 107 | 16 RED/WHT | A1,SPLICE 2 | WIPER MOTOR LOW |
| 108 | 16 LBL | A1,F3 | WIPER MOTOR HIGH |
| 109 | 16 ORN | A1,F3 | WPR MOTOR PARK SWITCH OUTPUT |
| 111 | 16 PNK/BLK | A1,F3 | WASHER PUMP |
| 11B | 14/16 RED/GRN | F3,G1 | BAT-12V OUTLET/LTR/RADIO |
| 203 | 16 BLK/RED | C1,E1,G1,G1 | LOAD DOME RELAY COIL (B+) |
| 204 | 14 RED/BLK | B2,C1,G1 | ACCESSORY TO FUSE BLOCK |
| 204 | 14 ORN/BLK | D1,G1 | BATTERY-AUXILIARY 1 |
| 207 | 12 YEL | C1,G3 | ACCESSORY-AUXILIARY 1 |
| 212 | 14 PPL/BLK | D1,E1 | BATTERY TO FUSE BLOCK |
| 214 | 14 ORN/WHT | B2,D1 | ACCESSORY-RADIO |
| 224 | 14 RED/GRN | A1,G2 | ACCESSORY-AUXILIARY 2 |
| 226 | 14 ORN/GRN | A1,G2 | BATTERY-AUXILIARY SWITCHED |
| 303 | 16 ORN/YEL | D1,G1 | ACCESSORY-AUXILIARY SWITCHED |
| 305 | 16 GRN/BLK | A1,G2 | ACCESSORY-DASH FAN |
| 304 | 16 YEL/BLK | D1,G1 | DASH FAN LOW |
| 400 | 16 GRY/BLK | A1,G2 | DASH FAN HIGH |
| 401 | 16 GRY/WHT | B1,G2 | RH SPEAKER (-) |
| 402 | 16 WHT/BLK | B1,G2 | RH SPEAKER (+) |
| 403 | 16 RED/BLK | B1,G2 | LH SPEAKER (-) |
| 405 | 14/16 RED/YEL | B1,G2 | LH SPEAKER (+) |
| | 14 GRY | A1,E1,G1 | ACCY RADIO/CAM |
| JPR1 | 14 BLK | E1,E1 | BATTERY-LOW VOLTAGE SWITCH |
| | | E1,E1 | ACCESSORY-LOW VOLTAGE SWITCH |

**SPLICE 1**
VENDOR TO SPLICE
000A 16 WHT TO
000A 12 WHT IN
SUITABLE LOCATIONS.

* OPTIONAL: CIRCUITS 400 & 401 MAY BE SUPPLIED AS STANDARD SPEAKER "ZIP CORD" PAIRS. CIRCUIT NUMBER AND CONNECTOR INDEXING MUST BE MAINTAINED AS SHOWN.
* OPTIONAL: CIRCUITS 402 & 403 MAY BE SUPPLIED AS STANDARD SPEAKER "ZIP CORD" PAIRS. CIRCUIT NUMBER AND CONNECTOR INDEXING MUST BE MAINTAINED AS SHOWN.

## Page 104

NOTES:

8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.

7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.

6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.

5. SPLICES TO BE AUTOMATED WITH HEAT SHRINK TUBING. HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE FOR M-O FABRICATION IF NECESSARY.

4. TAPE (111096): 6" AT BREAKOUTS AND 2" AT LOOM ENDS.

3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.

2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.

1. GXL WIRE.



.25" FEMALE SPADE INSULATED
204 16 GRN - GENERIC
204 16 GRN - GENERIC

.180" MALE MOLDED BULLET
204 16 GRN - GENERIC

.25" MALE SPADE INSULATED
204 16 GRN - GENERIC

| HARNESS AND LOOM TOLERANCES | |
|---|---|
| UP TO 60" | -0/+2" |
| 60" TO 100" | -0/+4" |
| 100" TO 200" | -0/+5" |
| 200" TO 400" | -0/+6" |
| 400" TO 600" | -0/+7" |
| OVER 600" | -0/+8" |
| B0 TO B0 | -0/+2" |

TOLERANCE IS NOT ACCUMULATIVE. APPLIES TO OVERALL HARNESS LENGTH, BREAKOUT TO END, OR LOOM.

GENERAL STANDARDS UNLESS OTHERWISE NOTED:
TOLERANCE : .X ± .060　　.XXX ± .010
ANGLES : X ± .030　.XX ± .115°

HARNESS JPR Y CAB DOME W/ WORK LAMP

DRAWING NO. 1473922200
SCALE NONE
REV REL
DRAWN 12JAN15
ECO NO. 44507
SHT 1 OF 1
DO NOT SCALE

## Page 105

| REV | DESCRIPTION | BY | REL NO | DATE |
|---|---|---|---|---|
| | RELEASE TO PRODUCTION | | | |

THIS ASSEMBLY IS MADE USING 46025603 AND 46025604.

1) CUT RED AND BLACK WIRES ON 46025603.

2) CRIMP ONE END OF BUTT CONNECTOR 111797 TO THE RED WIRE FROM 46025306 AND THE RED WIRE FROM 46025604. DO THE SAME FOR THE BLACK WIRES.

3) CRIMP THE OPEN END OF THAT SAME BUTT CONNECTOR TO THE RED WIRE ON THE OTHER SIDE OF 46025603. DO THE SAME FOR THE BLACK WIRES.

4) SECURE WITH 46025604 END WITH LOOM 46020206 AND TAPE 111096. SEUCRE 46025603 END WITH 46020201 AND TAPE 111096

GENERAL STANDARDS UNLESS OTHERWISE NOTED:
1. TOLERANCE: .X ± .060　.XX ± .030　.XXX ± .010
   ANGLES: .X ± .5 DEGREES
2. BREAK FLAT EXPOSED SHARP EDGES AND DEBURR
3. FOR FLAT PATTERNS ALL INSIDE CORNERS MUST BE WITH .188" R
4. FOR FLAT PATTERNS ALL OUTSIDE CORNERS MAY BE ROUNDED UP TO .188" R TO FACILITATE PRODUCTION

HARN A CAM CBL ADAP 4PIN TO RCA

DRAWN MTS
DATE 05/15/2015
CHECKED
DATE
RELEASE NO. 45279
DATE 05/15/2015
SHT 1 of 1
DRAWING NO. 152079201
SCALE NONE
REV REL
DO NOT SCALE



RED AND BLACK WIRES GOING TO PIGTAIL 46025604

DRAWING NO. 152079201
SHT 1 of 1
REV REL

**MORGAN OLSON**

**Left diagram (Drawing No. 46010846):**

DRAWING NO. 46010846  REV.  SHT 1 OF 1

RELEASE FOR PRODUCTION

NOTES:

10. VENDOR TO GREASE FEMALE BULLET TERMINALS.

9. THIS IS A PURCHASED HARNESS. NO BILL OF MATERIAL EXISTS.

8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.

7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.

6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE, UNLESS OTHERWISE NOTED.

5. SPLICES TO BE AUTOMATED WITH SOLDER AND ADHESIVE LINED HEAT SHRINK TUBING.

4. TAPE [111096]: 6" AT BREAKOUTS, 2" AT 18" INTERVALS FOR UNINTERRUPTED LOOM LENGTHS GREATER THAN 24", AND 2" AT LOOM ENDS.

3. HARNESS TO HAVE A LABEL SHOWING MORGAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.

2. SPLIT NYLON LOOM, BLACK WITH GRAY STRIPE, UNLESS OTHERWISE NOTED.

1. GXL WIRE.

PROPRIETARY

HARN ALM B/U 18"  .18BLLT  +.ORG

46010846

SHT 1 OF 1

HARNESS AND LOOM TOLERANCES

| | |
|---|---|
| UP TO 60" | -0'/+2" |
| 60" TO 100" | -0'/+4" |
| 100" TO 200" | -0'/+5" |
| 200" TO 400" | -0'/+6" |
| 400" TO 600" | -0'/+7" |
| OVER 600" | -0'/+8" |
| BO TO BO | -0'/+2" |

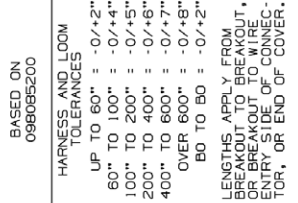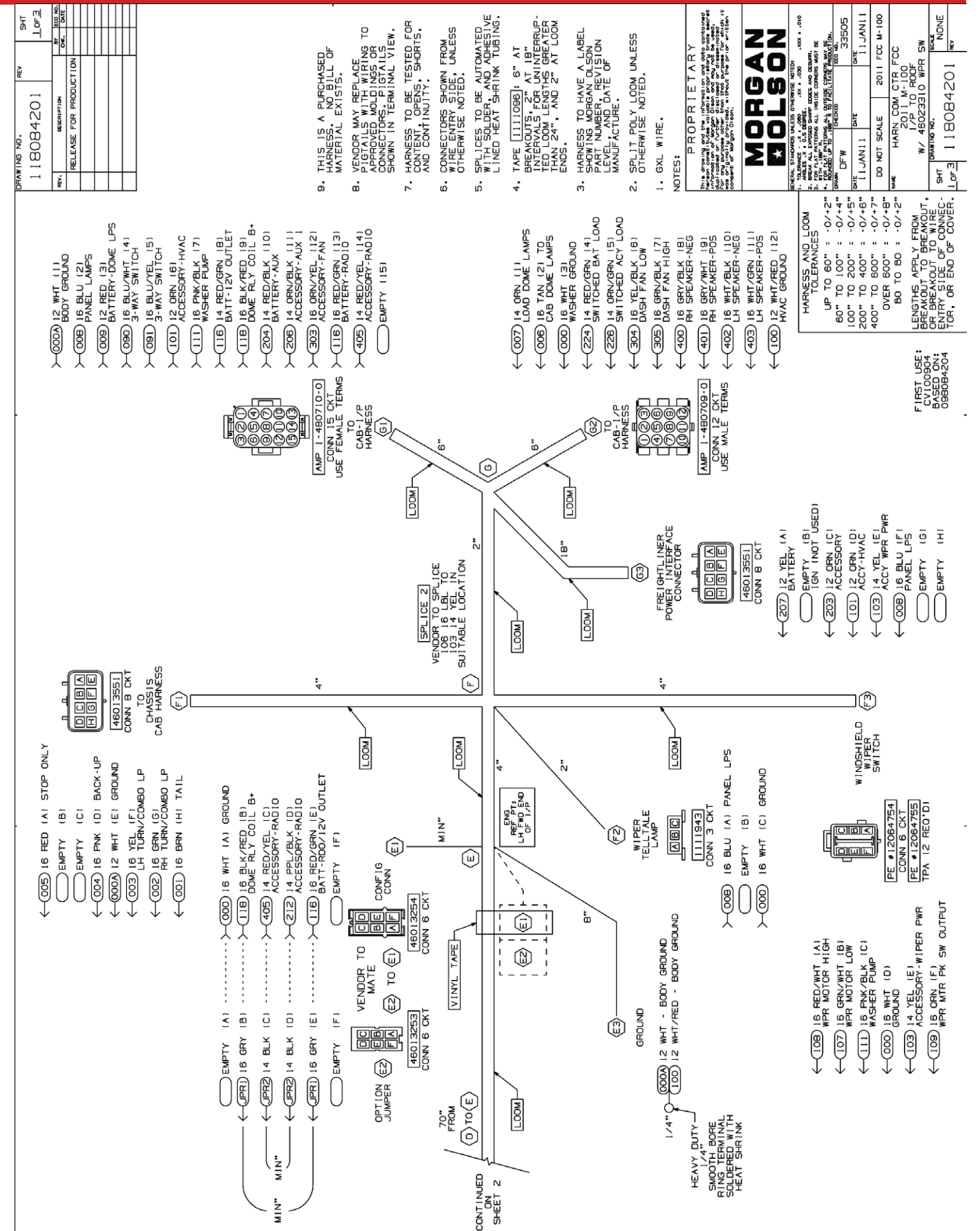LENGTHS APPLY FROM BREAKOUT TO BREAKOUT, OR BREAKOUT TO WIRE ENTRY SIDE OF CONNECTOR, OR END OF COVER.

FIRST USE:
JV000359
BASED ON:
46010845

TO REAR LAMP HARNESS (A)

180-M ← (000) 16 WHT - GROUND
MOLDED BLLT

180-M ← (004) 16 PNK - BACK UP
MOLDED BLLT

TO B/U ALARM

16 WHT - GROUND
16 PNK - BACK UP

SOLDER CRIMP AND HEAT SHRINK

---

**Right diagram (Drawing No. 31400009):**

DESIGN REVISIONS / REVISION HISTORY

| REV | DATE | |
|---|---|---|
| A | 10/14/11 | ORIGINAL |

PROPRIETARY

HARN SPKR ASA# MCSPKHRN
USE WITH 46025590

**ASI electronics**
2602 Marina Drive
Elkhart, IN 46514

31400009  REV A

46025591  SHT 1 of 1

PART #: 31400009-A-1

HARNESS, 4 PIN PACKARD TO FASTON SPEAKERS

.250 INSULATED FEMALE FASTON  MOLEX P/N AA-2201C

GRAY WIRE

BLACK WIRE

.188 INSULATED FEMALE FASTON  MOLEX P/N AA-2203

BROWN WIRE

WHITE WIRE

.188 INSULATED FEMALE FASTON  MOLEX P/N AA-2203

.250 INSULATED FEMALE FASTON  MOLEX P/N AA-2201C

BLACK ELECTRICAL TAPE

.250 BLACK LOOM

.375 BLACK LOOM

BLACK ELECTRICAL TAPE

40.00 ±1.00

18.00 ±.50

20.00 ±.50

4.00 ±.25

4.00 ±.25

4-PIN FEMALE PACKARD
CONNECTOR P/N 12015024
PACKARD PINS P/N 12124582
PACKARD SEAL P/N 12015323

PART NUMBER LABEL SEE NOTE 1

SOLD IN:
NOTES:
1) LABEL TO HAVE PART NUMBER, REVISION, AND DATE.
2) ALL WIRES TO BE 20 GAUGE.

VIEW A-A
WIRE INSERTION VIEW

| PIN NO. | WIRE COLOR | DESCRIPTION |
|---|---|---|
| A | BLACK | RIGHT SPEAKER (-) |
| B | GRAY | RIGHT SPEAKER (+) |
| C | BROWN | LEFT SPEAKER (-) |
| D | WHITE | LEFT SPEAKER (+) |

| CIRCUIT | DESCRIPTION | END POINTS | FUNCTION |
|---------|-------------|------------|----------|
| B01A | 14 BRN 008 1111944 OE STR .25 | A1,A3 | GENERIC |
| B01B | 14 BRN 005 1111944 OE STR .25 | A2,SPLICE 1 | GENERIC |
| B02A | 14 RED 008 1111944 OE STR .25 | A1,A3 | GENERIC |
| B02B | 14 RED 004 1111944 OE STR .25 | A2,SPLICE 2 | GENERIC |
| B03A | 14 WHT 008 1111944 OE STR .24 | A1,A3 | GENERIC |
| B03B | 14 WHT 004 1111944 OE STR .24 | A2, SPLICE 3 | GENERIC |

NOTES:

1. GXL WIRE.

2. SPLIT POLY LOOM UNLESS OTHERWISE NOTED.

3. HARNESS TO HAVE A LABEL SHOWING GRUMMAN OLSON PART NUMBER, REVISION LEVEL, AND DATE OF MANUFACTURE.

4. TAPE [111096]: 6" AT BREAKOUTS AND 2" AT LOOM ENDS.

5. SPLICES TO BE AUTOMATED WITH HEAT SHRINK TUBING. HEAT SHRINK BUTT SPLICES ARE ACCEPTABLE FOR GO FABRICATION IF NECESSARY.

6. CONNECTORS SHOWN FROM WIRE ENTRY SIDE. UNLESS OTHERWISE NOTED.

7. HARNESS TO BE TESTED FOR CONTENT, OPENS, SHORTS, AND CONTINUITY.

8. VENDOR MAY REPLACE PIGTAILS WITH WIRING TO APPROVED MOLDINGS OR CONNECTORS. PIGTAILS SHOWN IN TERMINAL VIEW.

| | | |
|---|---|---|
| DRAWN | TMC | DATE 27FEB02 | RELEASE NO. 2BFEB02 |
| CHECKED | SEH | DATE 28FEB02 | RELEASE DATE 2BFEB02 |

PRODUCTION NO. 02-0241

DO NOT SCALE

NAME
JUMPER-HARN TEE-GENERIC

DRAWING NO. BB117437

SCALE NONE

SHT 1 OF 1

DRAWING NO. BB117437

RELEASE TO PRODUCTION

HARNESS AND LOOM TOLERANCES

| | |
|---|---|
| UP TO 60" | = -0/+2" |
| 60" TO 100" | = -0/+4" |
| 100" TO 200" | = -0/+5" |
| 200" TO 400" | = -0/+6" |
| 400" TO 600" | = -0/+7" |
| OVER 600" | = -0/+8" |
| BO TO BO | = -0/+2" |

TOLERANCE IS NOT ACCUMULATIVE. LENGTH APPLIES TO OVERALL HARNESS LENGTH, BREAKOUT TO END, OR LOOM.