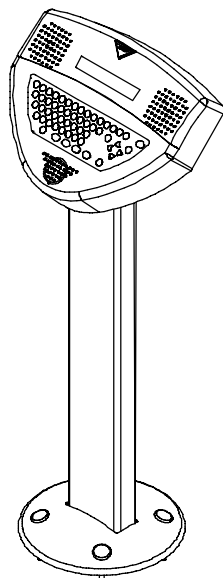


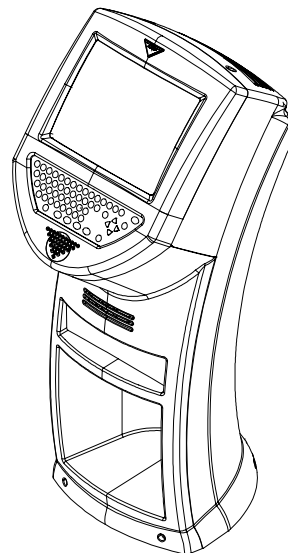


# ***Bowler Terminal Consoles***

## **Installation, Operation, Service, and Parts Manual**



**Standard**



**Lower  
Monitor**

**Revised: 11/01/01**

**P/N: 400-286-003 Rev New**



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AMF Bowling Products, Inc.  
8100 AMF Drive  
Mechanicsville, VA. 23111





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### How To Use This Manual

This manual contains information needed to properly install, operate, and maintain the Standard Bowler Terminal and the Lower Monitor Bowler Terminal. If any terms, concepts, or operations contained in this manual are not clear to you, consult an experienced professional or AMF Technical Support.

### INTRODUCTION

Before you begin the installation, check your shipment against the packing list on the next page to ensure that all parts have been included. Report missing items to AMF at 1.800.843.0682 between the hours of 8:00 a.m. and 5:00 p.m. Eastern Time. After 5:00 p.m., you can leave a message on the voice mail system. The 24-hour fax line is 1.804.730.4390. Address all faxes to AMF Technical Support.

	<b>WARNING!</b> Read This <b><u>BEFORE</u></b> Proceeding.
<b>TO AVOID INJURY:</b>  Read these safety precautions before attempting to install or modify any AMF equipment.  Failure to follow these procedures may result in severe personal injury, fire, or permanent damage to property.	

- ◆ When you see this symbol associated with an instruction,



a possible hazard is indicated. Follow these instructions carefully.

- ◆ Before installing, removing, or replacing electronic equipment, be certain that the supply power to the unit has been turned OFF at the main circuit breaker box.
- ◆ Before applying power to a Bowler Terminals, be sure that all cables have been connected properly — especially the main power cables.



## Introduction

---

### PACKING LISTS AND TOOLS

Now that you have received your new bowler terminal consoles, the first thing that you should do is to verify that you have received all of the correct parts. Refer to the appropriate list below.

If installing the Model **614-286-230** standard bowler terminal, you should receive the following parts:

<u>Part Number</u>	<u>Description</u>	<u>Quantity</u>
612-860-111	Installation, Operation, Service, and Parts Manual	1
286-002-080	Standard Bowler Terminal Assembly	1
612-860-054	Standard BT Shipping Box	1
730-013-085	20" x 10" x 36" x .002" Poly Bag	1
709-013-059	8 mm x 75 mm Hex Head Screw Bolt	4
248-001-509	Plug button	4

If installing the Model **614-286-100** lower monitor bowler terminal, you should receive the following parts:

<u>Part Number</u>	<u>Description</u>	<u>Quantity</u>
612-860-111	Installation, Operation, Service, and Parts Manual	1
286-002-025	Lower Monitor Bowler Terminal Assembly	1
612-860-052	Lower Monitor BT Shipping Box	1
612-860-053	Lower Monitor Bowler Terminal Shipping Skid	1
709-013-059	8 mm x 75 mm Hex Head Screw Bolt	4
248-001-509	Plug button	4

### Installation Tools

The following is a list of tools needed for the installation of the Boss Scoring bowler terminal consoles. Other tools may be required depending on whether you are installing the bowler terminals in a new or existing bowling center.

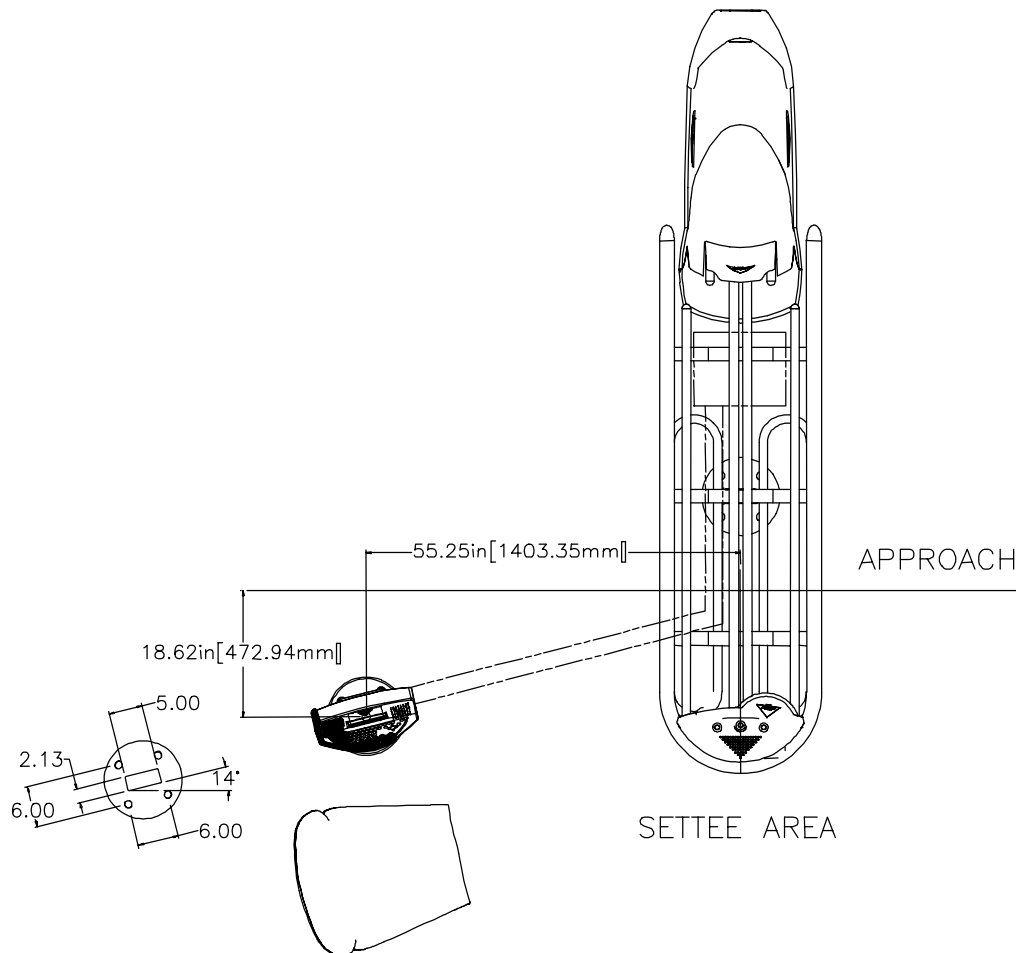
Tape Measure	Drill
3/8" Drive Ratchet	12-Inch, 3/8"-Drive Extension
Pencil / Marker	7/16", 1/2", & 12mm Sockets
Drill	#2 Phillips Screwdriver
Vacuum cleaner	5/16" Masonry (carbide tipped) Bit





## STANDARD BOWLER TERMINAL CONSOLE INSTALLATION

The installation for standard bowler terminal is easy and simple to perform. Figure 1 shows one way to position the bowler terminal in relation to the ball return. Install the bowler terminal according to the following procedure:



**Figure 1. Example Placement For Standard Bowler Terminal**

1. Position and align standard the bowler terminal so that the rear edge of the bowler terminal is facing the lanes and the bowler terminal is placed over the cable conduit approximately 9.75 inches (24.76 cm) from the ball return.
2. Drill four mounting holes to secure the bowler terminal base to the floor.
3. Vacuum and remove debris from around drilled holes.
4. Verify that the power cable from the AC power supply to the bowler terminal is NOT connected at this time.





## Installation

---

5. Route and attach J1 and J2 cables from the floor outlets to the bowler terminal board located in the bowler terminal console.
6. Ensure that the bowler terminal is mounted flush to the floor underneath. Insert and tighten four 8mm x 75 mm hex head screw bolts (709-013-059) to base of bowler terminal.
7. Place the four plug buttons (248-001-509) on top of the base of the pedestal to cover 8mm x 75 mm hex head screw bolts (709-013-059).
8. Set the switches on the bowler terminal board by using the switch configuration label settings (286-001-074) located on the pedestal assembly (286-002-056). For proper configuration, refer to the section called Switch Configuration Settings.

### STANDARD BOWLER TERMINAL CONSOLE (WITH INTERCOM UPGRADE)

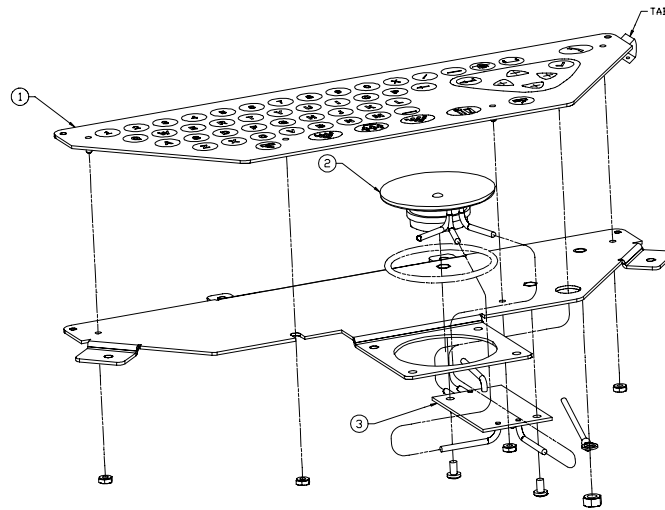
This section describes the procedures necessary to upgrade the standard bowler terminal when the intercom feature has been purchased. You will be performing some soldering tasks during this procedure so please have a soldering iron, solder, wire strippers, wire cutters, and the basic knowledge for soldering devices. See Figure 2 and Figure 3 displays the necessary information to assist you in soldering the assembly.

#### WARNING

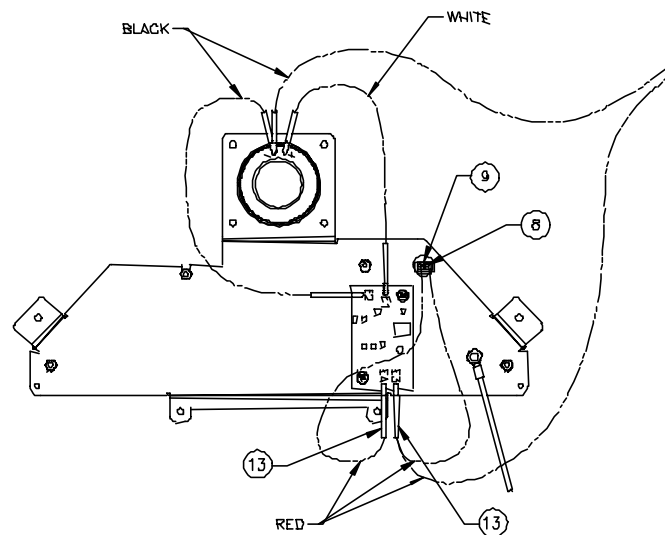
**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



1. Verify that the power to the unit is turned OFF at the main circuit breaker.
2. Open front cover on bowler terminal and remove four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from keyboard plate (286-002-037).



**Figure 2. Removing Icon Keyboard From Keyboard Plate**



**Figure 3. Attaching and Soldering Wires**

3. Remove the icon keyboard (286-001-089) from the keyboard plate (286-002-037).



## Installation

---

4. Solder 2.5 feet (76.20 cm) of #18 AWG stranded black wire (010-100-100) to 2 ¼ -inch intercom/BT speaker (770-047-175) marked by the negative (-) sign.
5. Solder 5 feet (152 cm) of #18 AWG stranded white wire (010-100-109) to 2 ¼ -inch intercom/BT speaker (770-047-175) marked by the positive (+) sign.
6. Locate and route the intercom PCB (286-001-066) through the speaker hole on the keyboard plate (286-002-037).
7. Solder 2.5 feet (76.20 cm) of #18 AWG stranded red wire (010-100-102) one end to E4 connector located on the intercom PCB and the other end attach to molex connector located on the keyboard plate (286-002-037).
8. Solder 2.5 feet (76.20 cm) of #18 AWG stranded red wire (010-100-102) one end to E3 connector located on the intercom PCB and the other end attach to molex connector located on the keyboard plate (286-002-037).
9. Place the o-ring (919-100-001) onto the speaker mounting hole. This will hold the speaker in place snugly.
10. Route the #18 AWG stranded black wire (010-100-100) already attached to the other end of the 2 ¼ -inch intercom/BT speaker (770-047-175) through the speaker hole and solder to the E2 connector located on the intercom PCB.
11. Route the #18 AWG stranded white wire (010-100-109) already attached to the other end of the 2 ¼ -inch intercom/BT speaker (770-047-175) through the speaker hole and solder to the E1 connector located on the intercom PCB.
12. Mount the intercom PCB (286-001-066) to the keyboard plate (286-002-037) using two #6-32 x ¼ phillips pan head screw (818-227-042).
13. Replace icon keyboard (286-001-089) from keyboard plate (286-002-037).
14. Replace the four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from keyboard plate (286-002-037) and close front cover on bowler terminal.
15. Set the switches on the bowler terminal board by using the switch configuration label settings (286-001-074) located on the pedestal assembly (286-002-056). For proper configuration, refer to the section called Switch Configuration Settings.
16. Vacuum and remove debris from around the bowler terminal area after performing the intercom upgrade.
17. Turn power on and verify that everything is working correctly.



### STANDARD BOWLER TERMINAL CONSOLE (WITH LCD DISPLAY UPGRADE)

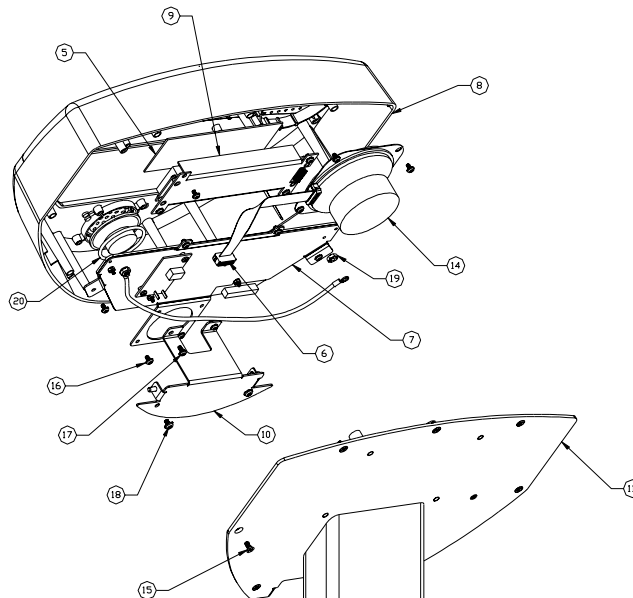
This section describes the procedures necessary to upgrade the standard bowler terminal when the LCD Display feature has been purchased. You will be installing the LCD-to-BT board cable assembly, a speaker, a LCD mount bracket and a LCD display in this procedure. Figure 4 displays the necessary information to assist you in your installation.

#### WARNING

**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



1. Verify that the power to the unit is turned OFF at the main circuit breaker.
2. Open front cover on bowler terminal and remove four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from keyboard plate (286-002-037).



**Figure 4. Front Cover Of Bowler Terminal Exposing Parts To Be Installed**



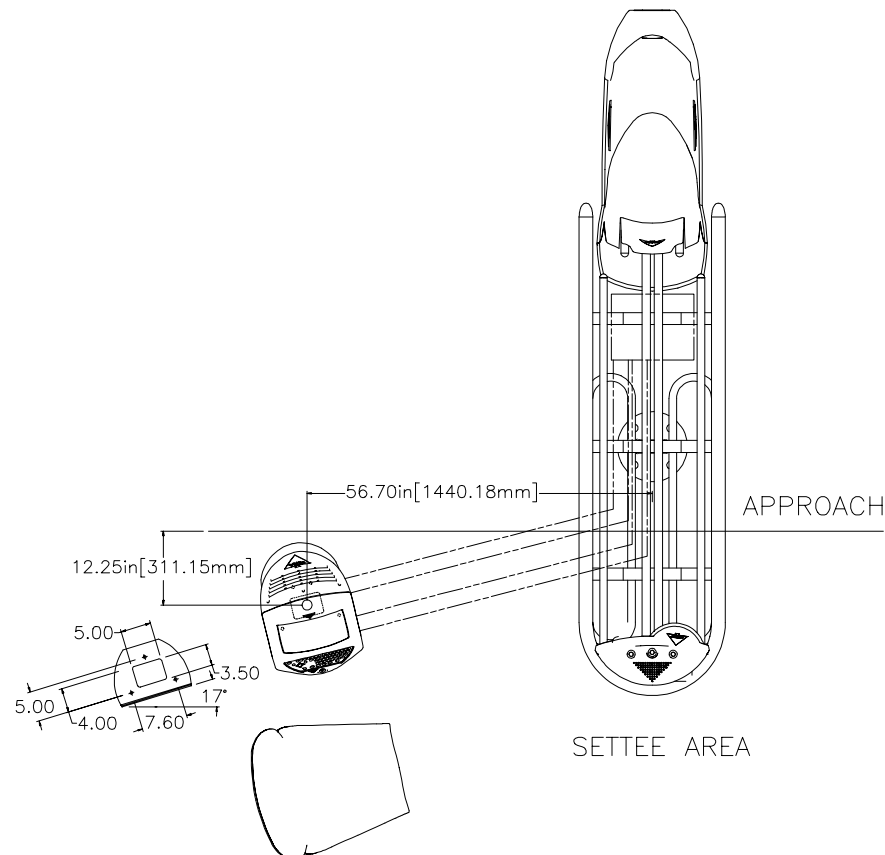
## Installation

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3. Install LCD mounting bracket (286-002-057) to the LCD display using four #4-4 pan head phillips sems (817-921-032).
4. Attach and secure the 4-inch round speaker (770-064-240) to the front cover (286-002-052) of the bowler terminal using four #6-32 x ¼ phillips pan head sems (818-227-042).
5. Attach the LCD-to-BT board cable assembly (286-002-016) to the 4-inch round speaker (770-064-240) on one end and attach the other end to the LCD final assembly (286-002-053).
6. Set the switches on the bowler terminal board by using the switch configuration label settings (286-001-074) located on the pedestal assembly (286-002-056). For proper configuration, refer to the section called Switch Configuration Settings.
7. Vacuum and remove debris from around the bowler terminal area after performing the LCD Display upgrade.
8. Turn power on and verify that everything is working correctly.

## LOWER MONITOR BOWLER TERMINAL CONSOLE INSTALLATION

The installation for the lower monitor bowler terminal is more difficult to perform. Figure 5 displays one way to position the bowler terminal in relation to the ball return. Install the bowler terminal according to the following procedure:



**Figure 5. Example Placement For Lower Monitor Bowler Terminal**

1. Remove the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026) and pull the back cover off slowly. Be very careful not to extend the cables that are attached.
2. Remove the two #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal front cover assembly (286-002-040).
3. Remove and discard the four shipping bolts from the base of pedestal (286-002-030).
4. Lift and remove the bowler terminal from the shipping container.



## Installation

---

5. Position and align the lower monitor bowler terminal so that the rear edge of the bowler terminal pedestal is facing the lanes and the bowler terminal is placed over the cable conduit approximately 9.75 inches (24.76 cm) from the ball return.
6. Drill four mounting holes to secure the bowler terminal base to the floor.
7. Vacuum and remove debris from around drilled holes.

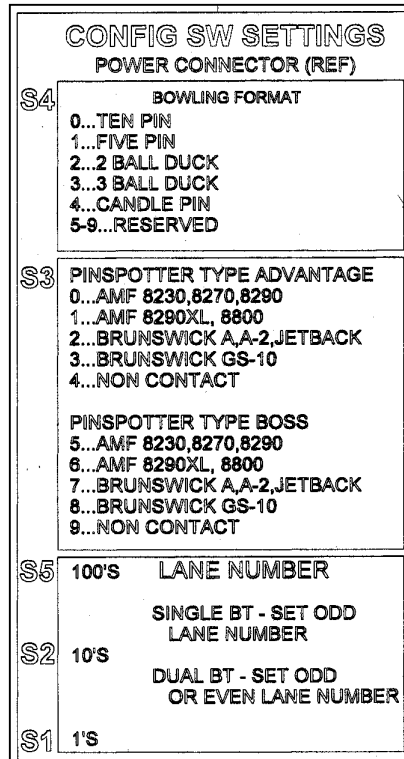


8. Verify that the power cable from the AC power supply to the bowler terminal is NOT connected at this time.
9. Route and attach J1 and J2 cables from floor outlets to the bowler terminal board located in the bowler terminal console.
10. Route the AC power cord (232-007-088), signal cables, communication cables through the hole in the pedestal.
11. Ensure that the bowler terminal is mounted flush to the floor underneath. Insert and tighten four 8mm x 75 mm hex head screw bolts (709-013-059) to base of bowler terminal.
12. Set the switches on the bowler terminal board by using the switch configuration label settings (286-001-074) located on the pedestal assembly (286-002-056). For proper configuration, refer to the section called Switch Configuration Settings.
13. Replace the front cover assembly (286-002-040) onto the bowler terminal and insert two #10-24x3/4 phillips head sems screws (818-239-122).
14. Ensure that all cables are connected properly and replace the back cover (286-002-026) onto the bowler terminal console.
15. Insert the four #10-24x3/4 phillips head sems screws (818-239-122) into the bowler terminal back cover (286-002-026).

## SWITCH CONFIGURATION SETTINGS

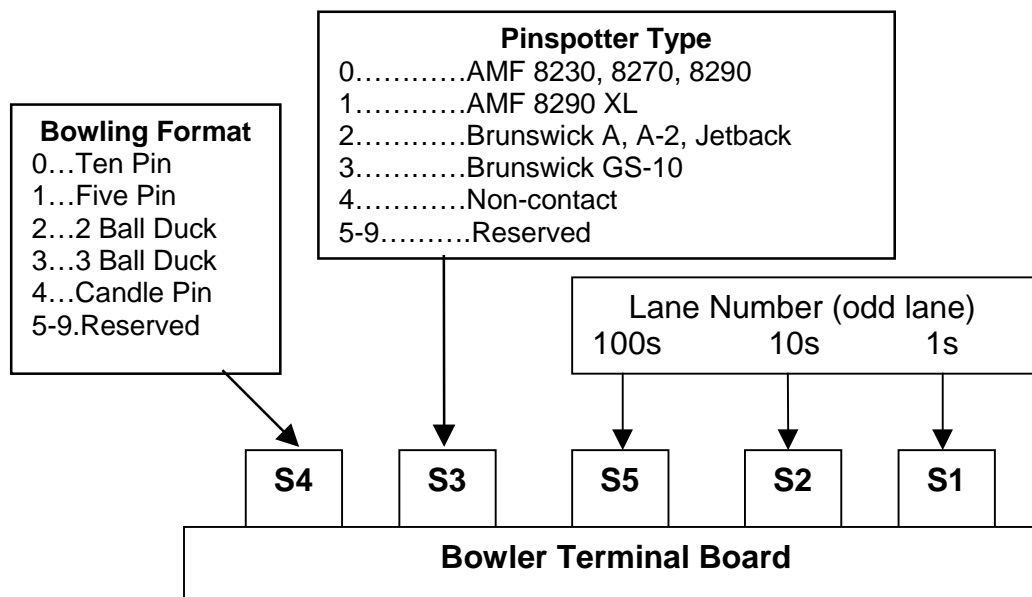
The bowler terminal installation is not complete unless the switch settings have been configured properly on the bowler terminal PCB. The bowler terminal PCB is shipped with default settings. The following procedures are necessary when making adjustments on the bowler terminal PCB. Figure 6 is a sample copy of the switch settings. Select the switch settings that best suit your bowling center needs. Configure the settings for the appropriate pinspotter type and bowling format pins.





**Figure 6. Sample Copy Of The Switch Configuration Label**

Look on the bowler terminal PCB and notice the switch settings. Figure 7 depicts the switches that are located on the board.



**Figure 7. BOSS Scoring Bowler Terminal PCB Switch Configuration Settings**



# Installation

---

## SETUP AND TESTING

After completing the installation, perform the following steps to ensure proper operation.

1. Turn on BOSS Front Desk System so that to check software operation.
2. Turn on power at the main circuit breaker, turn on the associated pinspotters, and verify that the bowler terminals operate properly.
3. Turn on the standard bowler terminal and verify that the keyboard works properly.
4. Type in your name on the bowler terminal keyboard. Wait to see if the system responds correctly and display you name on the score grid of the overhead monitor assembly.
5. If you purchased the intercom upgrade, test the system by pressing the intercom button. Wait to hear a sound from the speaker.
6. If you purchased the LCD display, test the system by typing any message on the screen. Check to see if the message is displayed correctly.
7. Turn on the lower monitor bowler terminal and that the keyboard works properly.
8. Verify that the monitors do not need to be adjusted.
9. If lower monitor adjustments are required, ensure that back cover is off the rear of the bowler terminal.
10. To adjust the Horizontal alignment, look for the "H" on the control board and turn the controls in a direction such that the horizontal alignment is set correctly.
11. To adjust the Vertical alignment, look for the "V" on the control board and turn it in a direction such that the vertical alignment is set correctly. After the necessary adjustment has been made, replace back cover on the bowler terminal and began to bowl again.
12. After all tests have been performed satisfactory, place the standard and the lower monitor bowler terminal in service for operation in the bowling center.



### OPERATION

The operation of the bowler terminal consoles is very simple. There are two bowler terminal console models: the standard bowler terminal and the lower monitor bowler terminal. When a key is depressed on the keyboard, the printed circuit board detects/transmits the signal and data to the BOSS Scoring system through the communication cables.

Using the bowler terminal is easier than prior years because everything is user friendly. The customer enters information into the keyboard and glances at the overhead monitors to see that everything has been entered correctly. If an error has been made when entering the information, then follow the procedures that are presented on the screen to correct the data. The customer can enter the information using the bowler terminals by viewing the menus as they are displayed on the screens 14-inch (35.46 cm), 27-inch (68.58 cm), or 34-inch (86.36 cm) monitors.

The standard and lower monitor bowler terminal operates from low voltage AC power that is supplied from the BOSS Scoring system. The low voltage AC power is converted to regulated DC power on the bowler terminal printed circuit board and is used to power the microprocessor chip that controls all functions in the bowler terminals.

The major components of the standard bowler terminal are the keyboard, bowler terminal PCB, pedestal, speaker and front cover assembly. If you have purchased the standard bowler terminal with the LCD display upgrade, then the additional component is the LCD display unit. If you have purchased the standard bowler terminal with the intercom upgrade, then the additional components are the intercom speaker, intercom board.

The major components for the lower monitor bowler terminal are the keyboard, bowler terminal PCB, intercom PCB, 14-inch (35.46 cm) monitor, speaker, electronic plate assembly, pedestal, and the intercom system. If any of these components are not correctly functioning, the bowler terminal will need to be serviced.

### FEATURES

The standard bowler terminal has the following features being, durable, easy to use, and easy to maintain. The latch swing door is an added feature that ensures the mechanic easy access to repair/replace any major component that fails in the bowler terminal.

The lower monitor bowler terminal is modular in design, and easy to use. It operates very similar to the standard bowler terminal. There are advantages to having the lower monitor bowler terminal. It gives the bowler an opportunity to immediately see the results of his score or data being entered without looking up at the overhead monitors. You do not need overhead monitors if you have the lower monitor bowler terminal.



## Operation

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There is a space provided at the bottom of the lower monitor bowler terminal that can be used for storage of personal items while bowling. Another feature that has been added for easy access is the electronic plate and 14-inch monitor. If you ever need to remove or replace these items the tasks has been made easier.



### SERVICE

The standard bowler terminal and the lower monitor bowler terminal require very little maintenance. There are several wear items described below that should be monitored periodically and replaced as necessary.

#### STANDARD BOWLER TERMINAL CONSOLE

The standard bowler terminal has several major components that may require replacement during its life expectancy. These parts are the keyboard assembly, and the bowler terminal printed circuit board (PCB). See Figure 8 for removing and replacing keyboard.

#### Keyboard Assembly Replacement

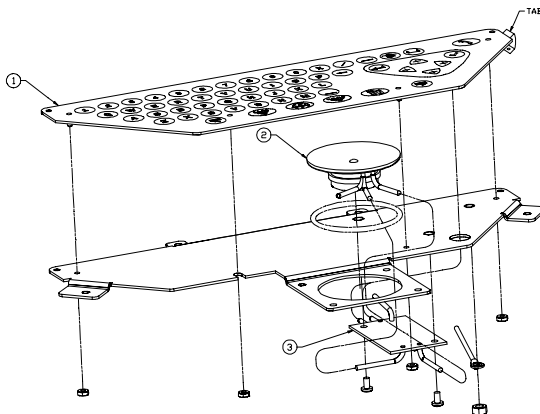
The bowler terminal keyboards can become worn or damaged to the point that replacement is necessary. If the keyboard has any tears, cracks, or have worn or missing letters, then replace. Some cracks may appear in keyboard after moderate use. If the cracks are severe, replace the keyboard assembly.

#### WARNING

**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



1. Verify that the power to the unit is turned OFF at the main circuit breaker.
2. Open front cover on bowler terminal and remove four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from keyboard assembly (286-001-089).



**Figure 8. Replacing Icon Keyboard**



## Service

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3. Disconnect ground wire (286-002041) attached to the keyboard plate (286-002-037).
4. Disconnect and remove the ribbon cable.
5. Remove the icon keyboard (286-001-089) from the bowler terminal front cover.
6. Replace the new icon keyboard (286-001-089) into the bowler terminal front cover.
7. Replace the four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) on keyboard assembly (286-001-089).
8. Re-connect the ground wire (286-002-041) to the keyboard plate (286-002-037).
9. Re-attach the ribbon cable to the keyboard assembly.
10. Close the front cover (286-002-052) on the bowler terminal.
11. Insert and tighten seven #8-32 x 3/8 phillips flat head screw (811-933-062) into pedestal assembly (286-02-056).
12. Turn the power on bowler terminal and verify that keyboard is working correctly.

### Bowler Terminal Printed Circuit Board (PCB) Replacement

This section describes the procedures necessary to upgrade the standard bowler terminal when the LCD Display feature has been purchased. You will be installing the LCD-to-BT board cable assembly, a speaker, a LCD mount bracket and a LCD display in this procedure. Figure 9 displays the necessary information to assist you in your installation.

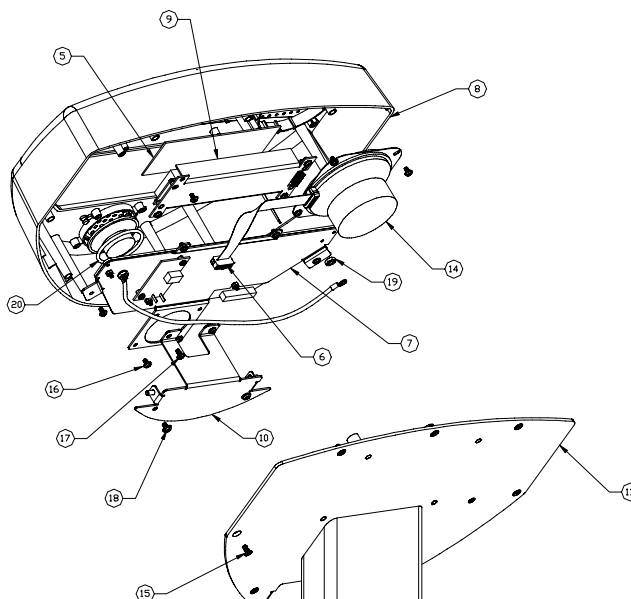
#### WARNING

**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



1. Verify that the power to the unit is turned OFF at the main circuit breaker.

2. Open the front cover on bowler terminal and remove four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from the keyboard plate (286-002-037).



**Figure 9. Printed Circuit Board Removal**

3. Install LCD mounting bracket (286-002-057) to the LCD display using four #4-4 pan head phillips sems (817-921-032).
4. Attach and secure the 4-inch round speaker (770-064-240) to the front cover (286-002-052) of the bowler terminal using four #6-32 x ¼ phillips pan head sems (818-227-042).
5. Attach LCD-to-BT board cable assembly (286-002-016) to the 4-inch round speaker (770-064-240) on one end and attach the other end to LCD final assembly (286-002-053).
6. Set the switches on the bowler terminal board by using the switch configuration label settings (286-001-074) located on the pedestal assembly (286-002-056). For proper configuration, refer to the section called Switch Configuration Settings.
7. Vacuum and remove debris from around the bowler terminal area after performing the intercom upgrade.



## Service

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### LOWER MONITOR BOWLER TERMINAL CONSOLE

The lower monitor bowler terminal has several components that may break or become worn from usage. These parts must be replaced as soon as possible to keep the unit functioning properly.

#### Keyboard Assembly Replacement

1. Refer to paragraph “Standard Bowler Terminal Console” for information on how to service and repair this component.

#### Bowler Terminal (Printed Circuit Board (PCB) Replacement

1. Refer to paragraph “Standard Bowler Terminal Console” for information on how to service and repair this component.

#### Intercom Speaker Replacement

The intercom speaker can become worn or damaged from normal operation of the bowler terminal. If the intercom speaker becomes worn, replace the component.

#### WARNING

**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



1. Verify that the power to the unit is turned OFF at the main circuit breaker.
2. Remove the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026) and pull the back cover off slowly. Be very careful not to extend the cables that are attached.
3. Remove the two #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal front cover assembly (286-002-040) and pull the front cover away from the bowler terminal pedestal (286-002-030).
4. Remove the four #8-32x1/2 phillips head sems screws (818-233-082) from the front cover (286-002-027).





5. Remove the four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from keyboard plate (286-002-037).
6. Remove the 4-inch round speaker (770-064-240) to the front bezel (286-002-028) of the bowler terminal using four #6-32 x 1/4 phillips pan head sems (818-227-042).
7. Attach LCD-to-BT board cable assembly (286-002-016) to the 4-inch round speaker (770-064-240) on one end and attach the other end to LCD final assembly (286-002-053).
5. Replace the new speaker (770-064-240) to the front bezel (286-002-028) of the front cover (286-002-027).
6. Replace the four #4-40 hex nuts (843-121-002) and faston tabs (760-022-262) from the keyboard plate (286-002-037).
7. Replace the front cover (286-002-057) onto the front bezel (286-002-028).
8. Replace the four #8-32x1/2 phillips head sems screws (818-233-082) from the front cover (286-002-027).
9. Replace the front cover assembly (286-002-040) onto pedestal (286-002-030).
10. Replace the two #10-24x3/4 phillips head sems screws (818-239-122) into the bowler terminal front cover assembly (286-002-040).
11. Replace back cover (286-002-026) onto bowler terminal.
12. Replace the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026).
13. Turn the power on the bowler terminal and verify that the bowler terminal is working correctly.

### AC Control Box Assembly Replacement

The AC control box assembly can become worn or damaged from normal operation of the bowler terminal. If the AC control box assembly becomes worn, replace the component.

#### **WARNING**

**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



## Service

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1. Verify that the power to the unit is turned OFF at the main circuit breaker.
2. Remove the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026) and pull the back cover off slowly. Be very careful not to extend the cables that are attached.
3. Unloosen the two wing nuts (855-527-002) from the AC control box assembly (286-002-032).
4. Rotate the and remove the AC control box assembly (286-002-032) from the bowler terminal pedestal (286-002-030).
5. Replace new AC control box assembly onto the bowler terminal pedestal (286-002-030).
6. Tighten the two wing nuts (855-527-002).
7. Replace the bowler terminal back cover (286-002-026).
8. Replace the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026).
9. Turn the power on the bowler terminal and verify that the bowler terminal is working correctly.

### Monitor Assembly Replacement

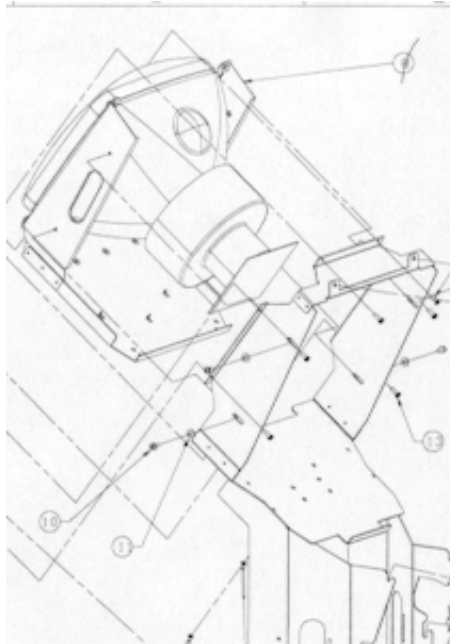
The monitor can become worn or damaged from normal operation of the bowler terminal. If the monitor becomes worn, replace the component.

#### WARNING

**Do NOT enter the bowler terminal until all power to the unit is turned off at the main breaker box or serious injury could result.**



1. Verify that the power to the unit is turned OFF at the main circuit breaker. See Figure 10.
2. Remove the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026) and pull the back cover off slowly. Be very careful not to extend the cables that are attached.



**Figure 10. Monitor Assembly Replacement**

3. Remove the two #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal front cover assembly (286-002-040) and pull the front cover away from the bowler terminal pedestal (286-002-030).
4. Remove the four #8-32x1/2 phillips head sems screws (818-233-082) from the front cover (286-002-027).
5. Disconnect intercom cable and the ground wire to remove front cover.
6. Remove the four screws from the inside front cover.
7. Remove 10 screws to remove keyboard bracket.
8. Place grounding tab underneath the bracket of the keyboard.
9. Place new monitor into the monitor bracket frame.
10. Replace 10 sems screws into keyboard bracket and align screws .
11. Replace front cover assembly (286-002-040) onto the bowler terminal.
12. Replace the two #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal front cover assembly (286-002-040).



## Service

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13. Replace the bowler terminal back cover (286-002-026).
14. Replace the four #10-24x3/4 phillips head sems screws (818-239-122) from the bowler terminal back cover (286-002-026).
15. Turn the power on the bowler terminal and verify that the bowler terminal is working correctly.

## TROUBLESHOOTING

The standard and lower monitor bowler terminal can have several problems that can occur during normal operation of the system. The following table includes some of the problems that can exist in the bowler terminal.

**Bowler Terminal Malfunctions**

PROBLEM	CHECK
Keyboard not responding to commands.	<ul style="list-style-type: none"><li>• Check 24 VAC at BT. If none, ensure that power is on BT.</li><li>• Check for loose cables. If loose cables are found, reconnect cables and try keyboard.</li><li>• Check for correct switch configuration settings. If, not correct, change settings and try again.</li><li>• If none the above work, replace keyboard.</li></ul>
Keyboard responds with wrong characters.	<ul style="list-style-type: none"><li>• Check for damaged keyboard cable.</li><li>• Replace keyboard.</li></ul>
Intercom speaker does not work.	<ul style="list-style-type: none"><li>• Check for damaged speaker cable.</li><li>• Replace speaker.</li></ul>

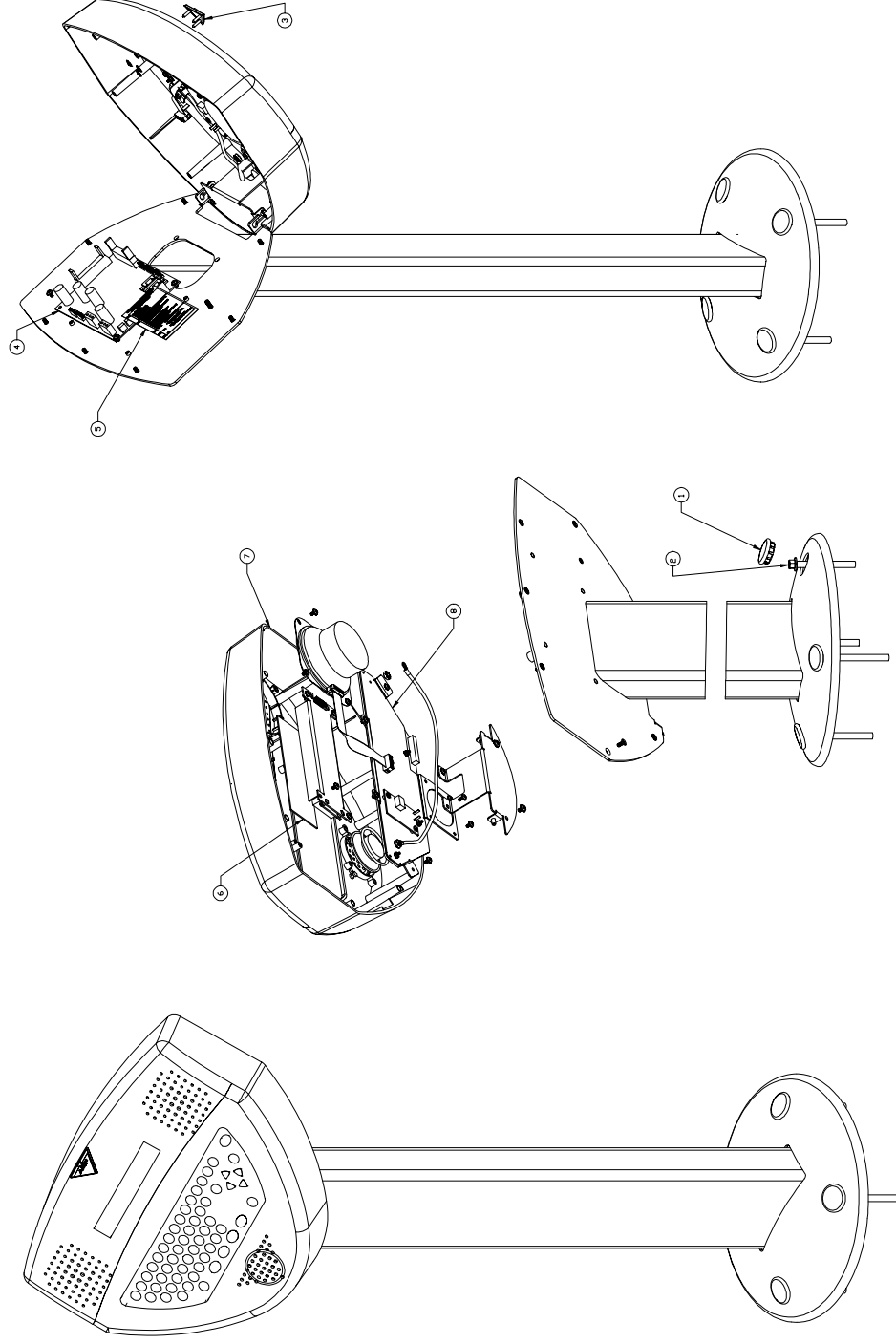


# Standard Bowler Terminal & Lower Monitor Bowler Terminal Consoles

Drawings & Parts Lists



## Parts



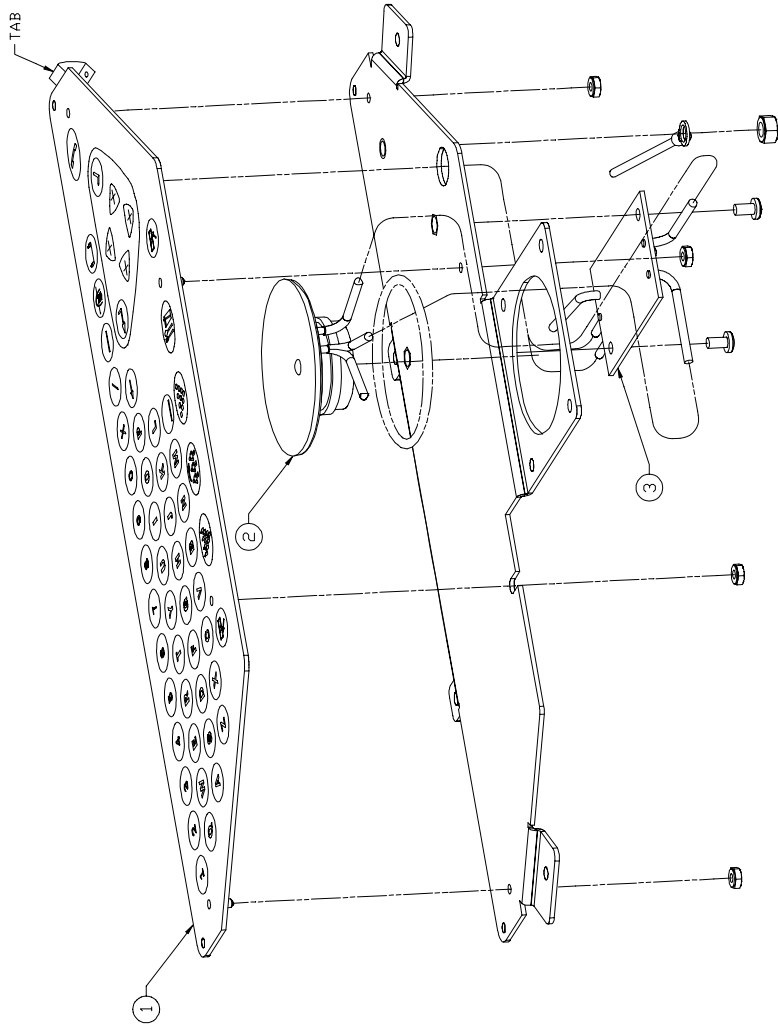
286-002-080

### Standard Bowler Terminal Assembly



**286-002-080**  
**Standard Bowler Terminal Assembly**

Part No.		Description	Qty
1	248-001-509	Plug Button	4
2	709-013-059	Screw bolt 8mm x 7.5 mm Hex Head	4
3	286-001-031	Nameplate	1
4	286-001-050	Bowler Terminal PC Board	1
5	286-001-074	Label, Configuration Setting	1
6	286-002-009	Lens, LCD	1
7	286-002-052	LCD Bowler Terminal Cover	1
8	286-002-038	Keyboard Assembly	1



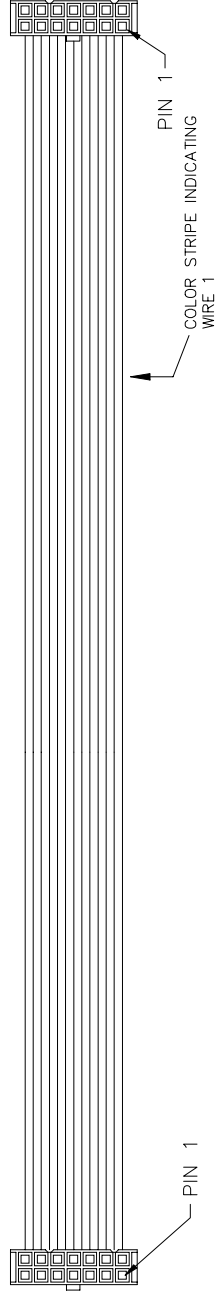
286-002-038  
Keyboard Assembly

Part No.		Description	Qty
1	286-001-089	Icon Keyboard	1
2	770-047-175	Speaker	1
3	286-001-066	Intercom PCB	1





# Parts

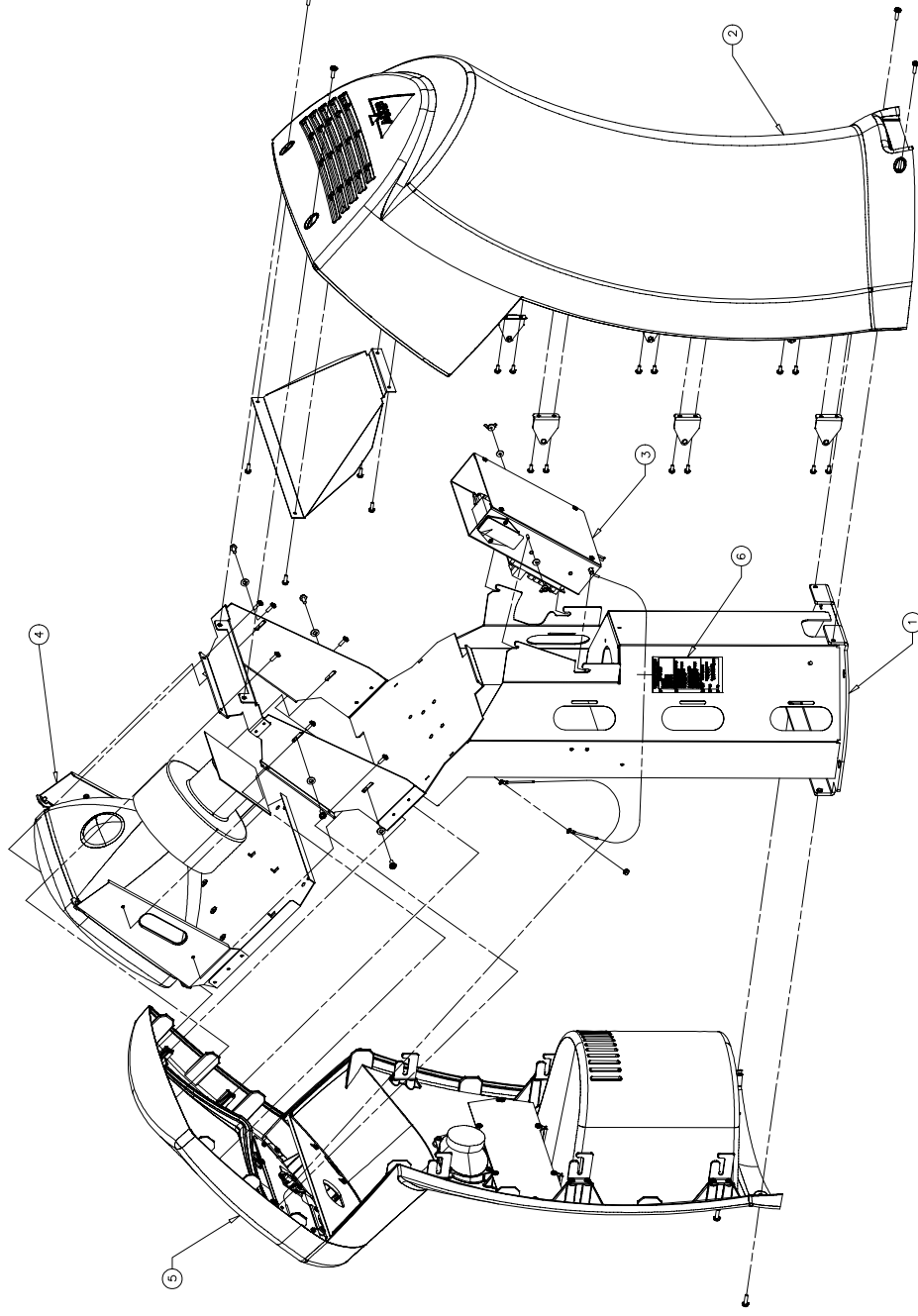


**Cable Assembly  
286-002-016**

Part No.	Description	Qty
1	286-002-016 Cable Assembly	1



## Parts



### 286-002-025 Lower Monitor Bowler Terminal Assembly

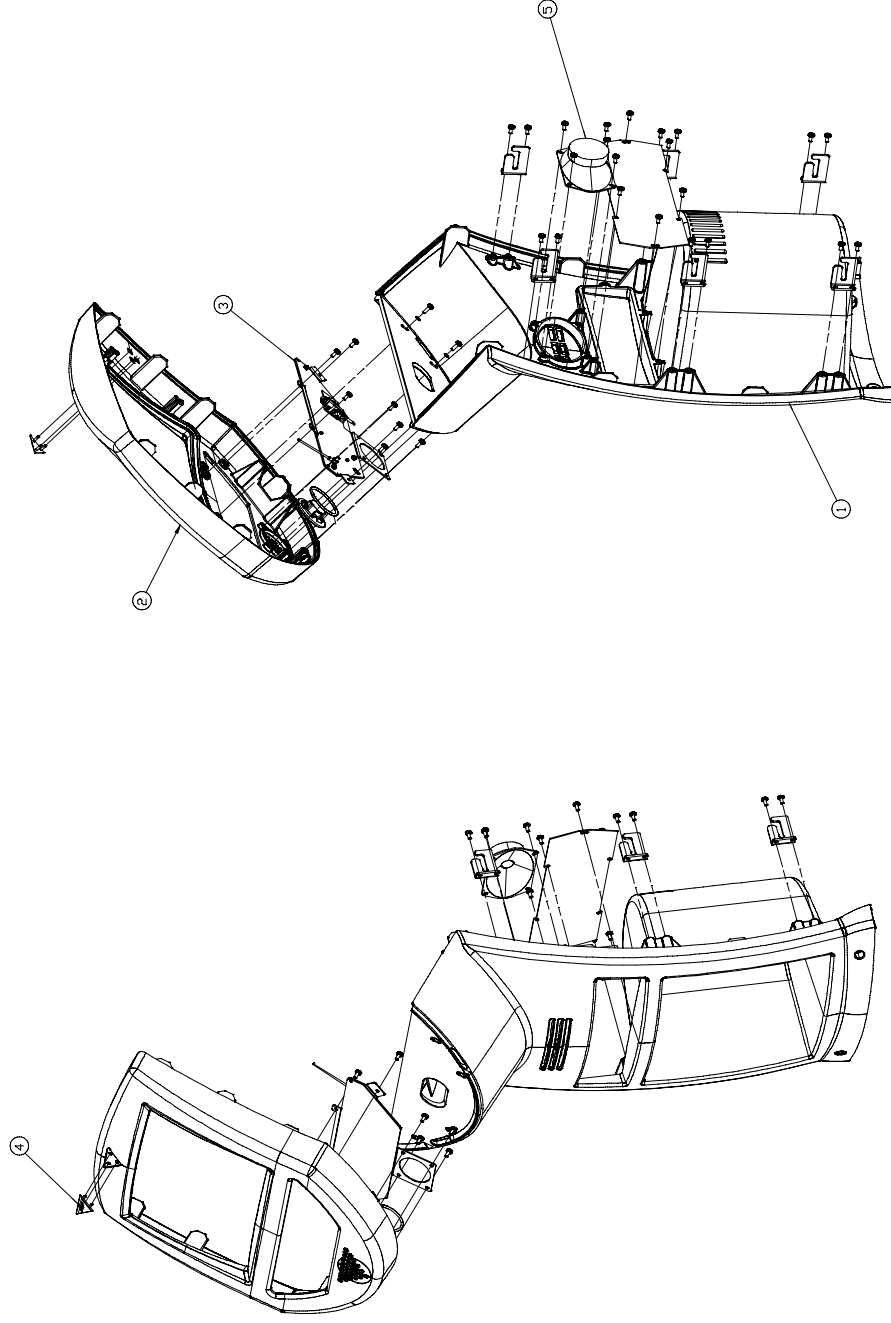


**286-002-025**  
**Lower Monitor Bowler Terminal Assembly**

Part No.	Description	Qty
1	286-002-030 Pedestal Options B. T.	1
2	286-002-026 Back cover Options B. T.	1
3	286-002-032 Electronic plate assembly	1
4	286-001-011 Monitor assembly	1
5	286-002-040 Front cover assembly	1
6	286-001-074 Configuration settings label	1
7	232-007-068 Power cord (not shown)	1
8	709-013-059 8.0 mm x .75mm screwbolt (not shown)	4



## Parts



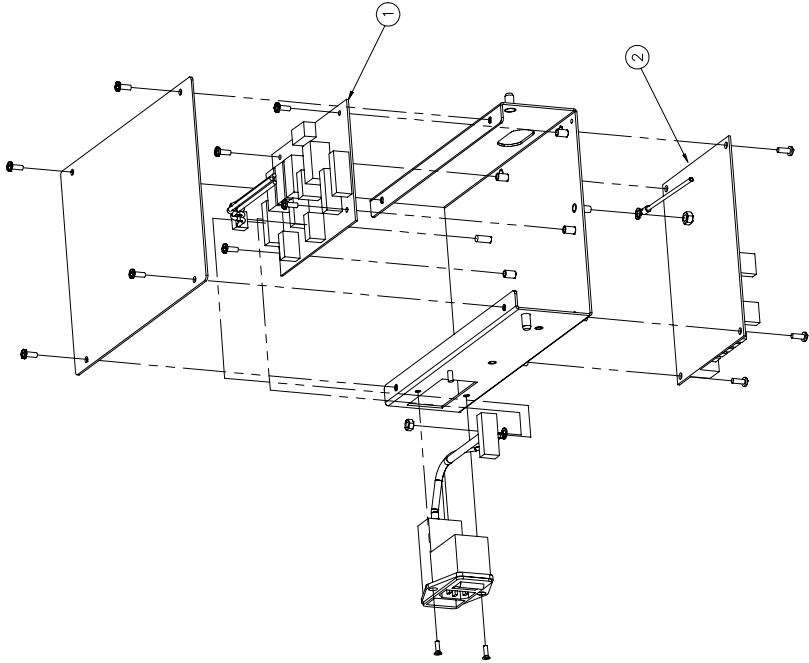
286-002-040

Front Cover Assembly



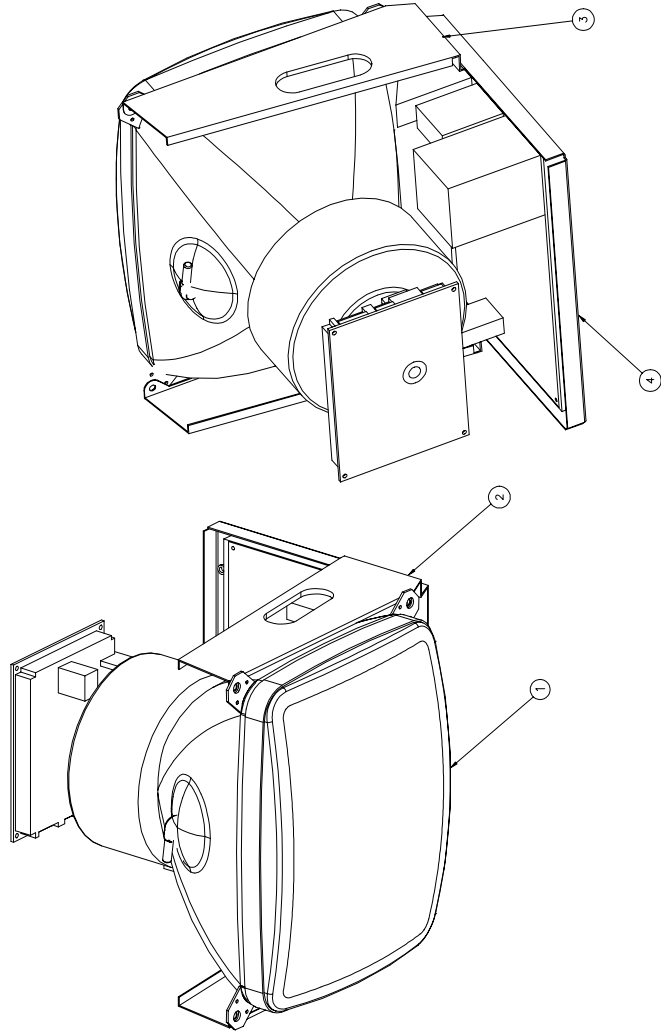
**286-002-040**  
**Front Cover Assembly**

Part No.		Description	Qty
1	286-002-027	Front Cover	1
2	286-002-028	Bowler Terminal bezel	1
3	286-002-038	Keyboard assembly	1
4	286-001-031	Nameplate	1
5	286-001-046	Speaker 3 x 5	1



286-002-032  
AC Control Box Assembly

Part No. Description		Qty
1	286-002-032 AC printed circuit board	1
2	286-002-028 Bowler Terminal printed circuit board	1



**286-001-011  
Monitor Assembly**

Part No.	Description	Qty
1	14-inch Monitor	1
2	Monitor bracket right side	1
3	Monitor bracket left side	1
4	Monitor base bracket	1



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