SYSTEM COMPONENTS and INSTALLATION Reference Manual

400-286-065 Rev. F **March 20, 2005**

Automated Scoring and Technology Division

Copyright © 2005 AMF Bowling Products, Inc.

Table of Contents

Page

Chapter 1 **Introduction** 1
- 1.1 How To Use This Document 4
- 1.2 Getting Started 4
  - 1.2.1 Abbreviations 4
  - 1.2.2 Tools 4
  - 1.2.3 Precautions and Warnings 5
- 1.3 Preparing For Installation 5
  - 1.3.1 Determining the Configuration 5
  - 1.3.2 Checking the Shipment 5

Chapter 2 **Installing the Curtain Wall and Lane Components** 7
- 2.1 FlexScore CPU 7
- 2.2 VGA to TV Converter 7
- 2.3 External Video Switch 7
- 2.4 Video Splitter 9
- 2.5 Machine Interface Unit 10
- 2.6 Cluster Switch 10
- 2.7 Camera 12
  - 2.7.1 Camera Power 12
  - 2.7.2 Camera Interfaces 12
- 2.8 Ball Detector 13

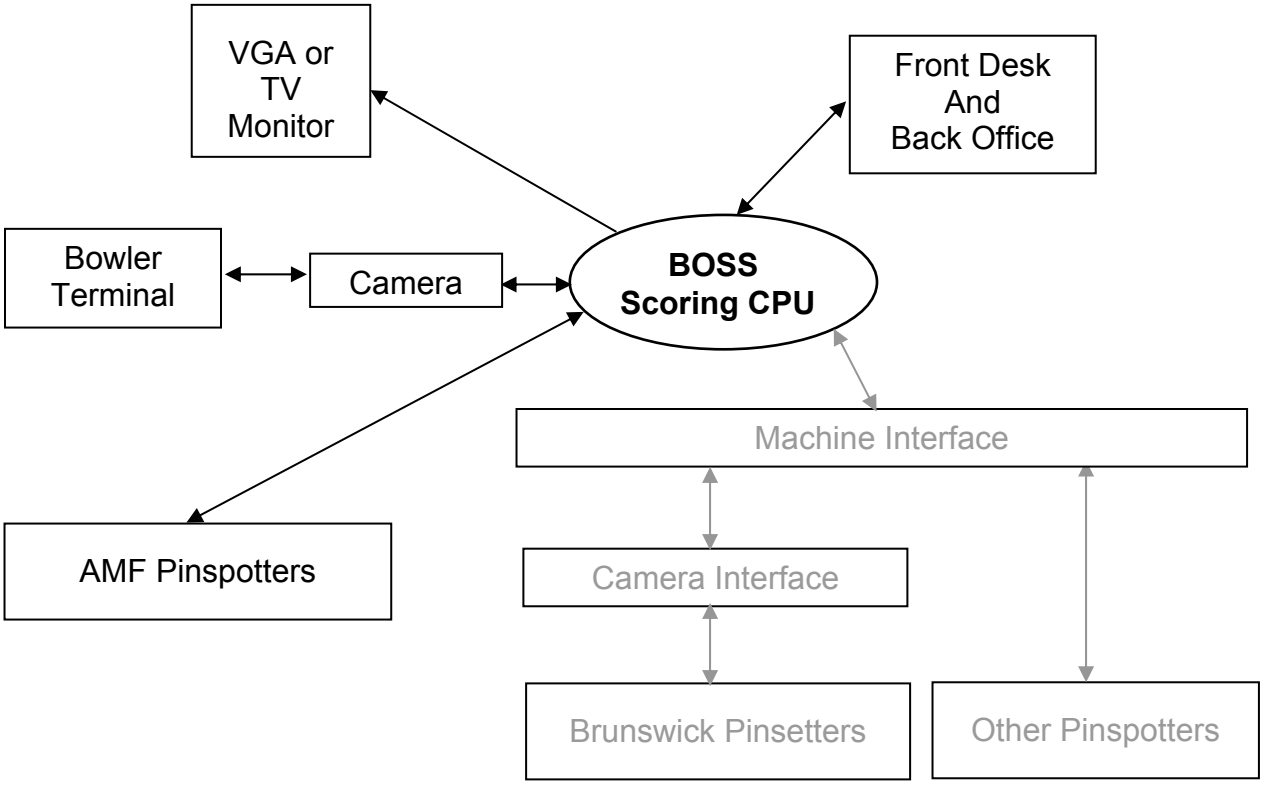
Chapter 3 **Installing the Approach and Bowlers' Area Components** 15
- 3.1 Bowler Terminals 15
- 3.2 VGA Overhead Monitor Assembly 15
- 3.3 TV Overhead Monitor Assembly 18
- 3.4 Plasma VGA Overhead Monitor Assembly 18
- 3.5 Universal AC Box 19
- 3.6 TV/Cable TV 19
- 3.7 Speakers for 33-Inch VGA Overhead Monitor Assembly 19

Chapter 4 **Installing the Front Desk and Back Office Components** 21
- 4.1 Front Desk Components 21
- 4.2 Back Office Components 21
- 4.3 Intercom 21
- 4.4 Billiards Light Controller 22

Chapter 5 **Testing the Installation** 23
Installation Checklist

INTRODUCTION

The BOSS Scoring™ system, as shown in the diagram below, is made up of a FlexScore CPU scorer that receives information from the Front Desk BOSS Scoring™ system controller, the bowler terminals, and the pinspotters; processes that information; and then displays the scoring information on the bowler terminals and overhead monitors.



NOTE: This diagram is not intended to show all the components nor all the communication links that make up the BOSS Scoring™ system.

The table below lists the components that make up or affect the BOSS Scoring™ system, the tasks they perform, and their standard location in a bowling center.

NOTE: Depending on your configuration, your system may not include all these components.

Component	Task Performed	Location
CURTAIN WALL and LANE		
FlexScore CPU (with wall mount)	Processes scoring data, scoring display, and directs communication with Front Desk and Back Office components	Curtain Wall
Machine Interface (optional for non-AMF pinspotters)	Communicates with non-AMF pin setting equipment	Curtain Wall
Camera Power Supply (optional)	Transformer	Curtain Wall
Camera Interface (optional for non-AMF pinspotters)	Filters out electrical "noise"	Curtain Wall
Dual Camera Interface (optional)	Processes input from 2 single cameras as if input was from a lane-pair camera	Curtain Wall
VGA-to-TV Converter (optional for TV OHM)	Converts scoring information for display on TV overhead monitors	Curtain Wall
External Video Switch (optional for VGA OHM)	Controls and directs the type of signal (scoring or TV) displayed on VGA overhead monitors	Curtain Wall
Video Splitter	Splits single video signal input into 2 video signal outputs.	Curtain Wall
Ball Detector (optional)	Detects when a ball is thrown	On Lanes Below Mask Panel/Curtain Wall
Camera	Shows pinfall	Between Lanes/Lane Pairs
APPROACH and BOWLERS' AREA		
Universal AC Box (for Plasma VGA OHM only)	Distributes and controls power to the CPU, overhead monitors, and drink lights.	Above Approach
VGA Overhead Monitor Assembly **OR** TV Overhead Monitor Assembly	Displays scoring information	Above Approach
Keyboard Bowler Terminal **OR** Touchscreen Bowler Terminal (with Underlane Control Box)	Allows bowlers to input bowler information and commands to the scoring system and displays scoring information.	Bowlers' Area

Component	Task Performed	Location
FRONT DESK and BACK OFFICE		
15-Inch LCD Flat-Screen Monitor **OR** 15-Inch LCD Flat Touchscreen Monitor	Displays point-of-sale transaction information	Front Desk
BOSS Keyboard	Programmable keyboard with magnetic stripe reader (MSR) to control the BOSS Scoring™ system	Front Desk
Receipt Printer	Prints receipts	Front Desk
Cash Drawer	Holds money	Front Desk
Pole Display	Displays the transaction information	Front Desk
Intercom Base Station	Provides communication link to lanes	Front Desk
Keyboard	Inputs information, commands, etc.	One each, Front Desk and Back Office
Mouse	Inputs information, commands, etc.	One each, Front Desk and Back Office
Laser Printer	Prints recap sheets, league information, etc. Prints bowling center reports	One each, Front Desk and Back Office
UPS (Uninterrupted Power Supply)	Provides power for a limited amount of time to enable system shut down	One each, Front Desk and Back Office
BOSS PC	Front Desk/Back Office network computer	One each, Front Desk and Back Office
15-Inch LCD Flat-Screen Monitor	Displays information	Back Office

1.1 HOW TO USE THIS DOCUMENT

This document provides an overview of how to install the BOSS Scoring™ system components and directs you to the appropriate document in the *Installation Reference Manual* for the detailed instructions you need to install the components.

The information in this document is divided into the following chapters:

- Getting Started
- Preparing For Installation
- Installing The Components
- Testing The Installation

1.2 GETTING STARTED

This section lists the abbreviations used throughout the installation and usage documents, the tools you need to install the components, and general safety precautions you should take while installing the components.

1.2.1 ABBREVIATIONS

AWG	American Wire Gauge	MI / MIU	Machine Interface Unit
CATV	Cable TV	OHM	Overhead Monitor
CPU	Central Processing Unit (computer)		

CURTAIN WALL	Refers to both the curtain wall structure suspended from the ceiling AND the mounting panel (as described in the Curtain Wall chapter of this document) attached to it. Unless otherwise stated, all components are mounted to the mounting panel.
VOLTAGE REFERENCES	All references to 120 VAC also include 110 VAC. All references to 230 VAC also include 210 VAC through 250 VAC.

1.2.2 TOOLS

In addition to the tools listed below, you also need a standard set of slot and Phillips screwdrivers.

• 25-foot Tape measure (10 m)	• Fish Tape or similar	• Grease Pencil / Marker or similar
• Vacuum Cleaner	• 5/16-inch Nut Driver	
• Drill with Bits: – 5/16-inch (8 mm) masonry, carbide tip – #19 or 11/64-inch (4.4 mm) – 5/32-inch (4.0 mm) – 1.5-inch (38 mm) diameter hole cutter		
• 3/8-inch Drive Ratchet with: – 12-inch, 3/8-inch Drive Extension – 7/16-inch Socket – ½-inch Socket		

NOTES: These drill bits will drill a hole that is appropriate for the mounting surface recommended for the components. If mounting to a different surface, you must determine and provide the appropriate fasteners and drill bit (if needed).

Other tools may be required depending on whether you installing the components at a new bowling center or an existing bowling center. Review the instructions for the type of installation you are doing to ensure you have all the tools you'll need.

1.2.3 WARNINGS

Read and follow the safety information on the IMPORTANT SAFETY INFORMATION pages at the front of this manual.

This safety symbol indicates potential injury. It is placed at any installation step that is potentially hazardous. Follow all safety messages with this symbol to avoid injury or death.

1.3 PREPARING FOR INSTALLATION

There are specific electrical, structural, and cabling requirements that must be in place before the BOSS Scoring™ system components can be installed. These requirements include completing and sending to AMF the Pre-Installation Checklist and the Pre-Installation Certificate. Refer to the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for details.

1.3.1 DETERMINING THE CONFIGURATION

Listed below are the Installation Drawings in Section 3. Refer to these drawings to determine the overall configuration being installed:

DRAWING TITLE	DRAWING NUMBER
Solo/Twin BT Core Score Installation Print	286-002-573
TouchScreen BT Core Score Installation Print	286-002-574
VGA Overhead Assembly Installation Print	286-002-575
TV Overhead Assembly Installation Print	286-002-576
Plasma VGA Overhead Assembly Installation Print	286-002-577
Management System Installation Print (Beige)	285-000-054
Management System Installation Print Black	285-000-375
BOSS Network Installation	286-002-540

1.3.2 CHECKING THE SHIPMENT

Check the parts against the packing list to ensure all the parts were received and are in working condition. Report missing or damaged parts to AMF via the contact information given at the front of this manual.

This page intentionally left blank.

INSTALLING THE CURTAIN WALL and LANE COMPONENTS

This chapter provides the installation instructions for the components of the BOSS Scoring™ system that are positioned on the Curtain Wall or on the lane. For some components, this chapter includes the steps you need to perform to install the component. For other components, you are directed to installation drawings or installation manuals for detailed instructions. The drawings and manuals to which you are directed are included in the *Installation Reference Manual*.

2.1 FlexScore CPU

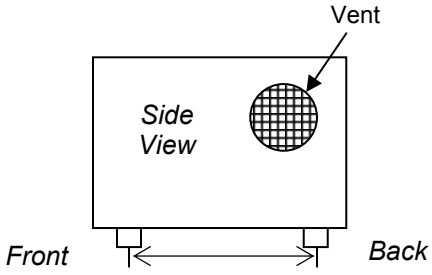
The FlexScore CPU can be positioned anywhere on the 4-foot x 4-foot (1219 mm x 1219 mm) panel mounted to the Curtain Wall. It is held against the wall by a hanging bracket mount that is made up of 2 braces and a security strap. Refer to the Curtain Wall Components chapter of the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for details about the panel and for the recommended positioning of components.

Complete the steps below to install the CPU. Refer to the Installation Drawings in Section 3 for details about the cable connections.

DANGER Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

WARNING Wear safety glasses and work gloves when drilling.

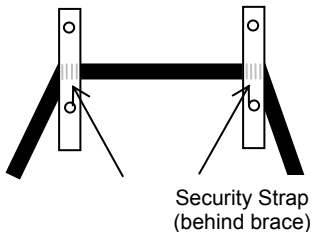
1. Measure the distance from the center of the front feet to the center of the back feet on the CPU, as shown at right.



2. Position the first brace on the Curtain Wall, ensure it is plumb, and mark the location of the mounting holes. If necessary, drill pilot holes.

3. Loosely attach the brace to the panel with the top screw only. Do not tighten the screw.

4. Slip the security strap between the panel and the brace with approximately 24 inches (610 mm) of strap to the outside of the brace, as shown at right.



5. Secure the bottom of the brace to the panel with the second screw.

6. Fully tighten the screw at the top of the brace.

7. Position the second brace so the center of the brace will be at the center of the feet on the CPU, ensure it is plumb, then mark the location of the mounting holes. If necessary, drill pilot holes.

8. Repeat steps 3 through 6 to attach the second brace.

9. Position the CPU in the hanging bracket.

   IMPORTANT: If the CPU is vented on the side, position the CPU so the side with the vent is facing AWAY from the Curtain Wall.

10. Buckle and tighten the security strap snug against the CPU. The CPU may be loose in the hanging bracket, but it will be held tight against the mounting panel.

11. Make the electrical and communication cabling connections as detailed on the appropriate installation drawing(s). Secure the cables away from the pinspotter.

2.2 VGA- to-TV CONVERTER

VGA-to-TV converters are required when you are using TVs as the overhead monitors to display the scoring information.

The VGA-to-TV converters sit on a shelf attached to the Curtain Wall. Complete the steps below to attach the shelf and 2 VGA-to-TV Converters near the CPU (1 for each TV OHM Assembly). Refer to the Installation Drawings in Section 3 for details about the cable connections.

DANGER Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

WARNING Wear safety glasses and work gloves when drilling.

1. Position the shelf on the 4-foot x 4-foot (1219 mm x 1219 mm) panel mounted to the Curtain Wall so it is within 12 inches (305 mm) of the CPU and the flange is above the shelf. Refer to the Curtain Wall Components chapter of the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for details about the panel and for the recommended positioning of components.

WRONG RIGHT

2. Ensure the shelf is level then mark the mounting holes. If necessary, drill pilot holes.
3. Secure the shelf to the panel with wood screws.
4. Attach one side of a Velcro™ strip to the bottom of the converter. Position the converter on the left side of the shelf with the remote sensor facing away from the Curtain Wall. Mark this position on the shelf.
5. Attach the other side of the Velcro™ strip to the shelf where marked.
6. Mount the converter on the shelf so the Velcro™ holds it in place.
7. Repeat steps 4 through 5 to attach the second converter, EXCEPT position the converter on the right side of the shelf.
8. Make the electrical and communication cabling connections as detailed on the appropriate installation drawing in Section 3 and in the PC to Video Component manual in Section 1.

2.3 EXTERNAL VIDEO SWITCH

The External Video Switch allows TV signals to be displayed on VGA monitors (computer). It controls the type of signal (TV or scoring) that is displayed and on what VGA Overhead Monitor Assembly it is displayed (ODD or EVEN).

Complete the steps below to attach the External Video Switch on the Curtain Wall. Refer to Section 3 for details about the cable connections.

DANGER Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

WARNING Wear safety glasses and work gloves when drilling.

1. Position the External Video Switch on the 4-foot x 4-foot (1219 mm x 1219 mm) panel mounted to the Curtain so it is within 3 feet (914 mm) of the CPU. Refer to the Curtain Wall Components chapter of the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for details about the panel and for the recommended positioning of components.

   NOTE: For cable routing, the External Video Switch **must be hung vertically**.

2. Ensure the External Video Switch is level and mark the location of the mounting holes. If necessary, drill pilot holes.
3. Secure the External Video Switch to the panel with wood screws.
4. Make the electrical and communication cabling connections as detailed on the appropriate installation drawing in Section 3.

2.4 VIDEO SPLITTER

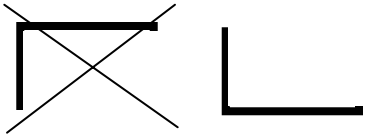
The Video Splitter splits the incoming single video signal into 2 output signals. This allows the same video signal to be displayed on two display devices (for example, you can send the same video signal to the touchscreen bowler terminal and overhead monitor for a lane).

The Video Splitter sits on a shelf that is attached to the Curtain Wall. Complete the steps below to attach the shelf. Refer to the Installation Drawings in Section 3 for details about the cable connections.

DANGER Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

WARNING Wear safety glasses and work gloves when drilling.

1. Position the shelf on the 4-foot x 4-foot (1219 mm x 1219 mm) panel mounted to the Curtain Wall so it is within 12 inches (305 mm) of the CPU Refer to the Curtain Wall Components chapter of the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for details about the panel and for the recommended positioning of components.



WRONG RIGHT

2. Ensure the shelf is level the mark the mounting hole locations.
3. If necessary, drill pilot holes.
4. Secure the shelf to the panel with wood screws.
5. Place the Video Splitter on the shelf so the ports are facing away from the Curtain Wall.
6. Make the electrical and communication cabling connections as detailed in the Video Splitter documentation (included with the component).

2.5 MACHINE INTERFACE UNIT

The Machine Interface (MI) unit (MIU) is required when you are not using AMF pinspotters and with some models of AMF pinspotters, such as the 82-30 and 82-70 MP.

Complete the steps below to attach the Machine Interface unit to the Curtain Wall. Refer to the Machine Interface Installation Drawings in Section 6 for details about the cable connections.

DANGER Ensure all power to the pinspotters on both lanes is disconnected before starting these steps.

WARNING Wear safety glasses and work gloves when drilling.

1. Position the Machine Interface unit on the 4-foot x 4-foot (1219 mm x 1219 mm) panel mounted to the Curtain Wall so it is centered between the pinspotters/pinsetters for the lane pair. Refer to the Curtain Wall Components chapter of the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for the recommended positioning of components on the Curtain Wall
2. Ensure the Machine Interface unit is level then mark the position of the mounting holes. If necessary, drill pilot holes.
3. Secure the Machine Interface unit to the panel using wood screws.
4. Make the electrical and communication cabling connections as detailed on the appropriate Machine Interface Installation Drawings in Section 6.

2.6 CLUSTER SWITCH

The Cluster Switch is required when you are using Brunswick pinsetters.

Complete the steps below to attach the Cluster Switch to the pinsetter. Refer to Figure 2-1 when completing the steps. For details about the cable connections, refer to the Machine Interface Installation Drawings in the Section 6.

NOTE: If you have a Brunswick A and 90-degree overtravel, contact ATS Technical Support.

DANGER Ensure all power to the pinsetters on both lanes is disconnected before starting these steps.

Stand away from the pinsetter when it is in motion and use extreme caution when working around it.

1. Set the pinsetter to zero.
2. Set the cluster switch to zero by completing the steps below:
   a. Loosen the 2 screws on the zero degree microswitch.
   b. Move the switch until the inner cam lobe activates (you will hear a click).
   c. Re-tighten the 2 screws.
3. Set the cluster switch gear to the known zero.
4. Mount the cluster switch assembly onto the Brunswick detector.
5. Set the pinsetter to second ball.
6. Advance the pinsetter until the 4-to-1 arm reaches the tip of the rake lever.
7. Move the outer cam until the notch on the cam engages the 44/144 microswitch (you will hear a click).
8. Activate the pinsetter and ensure the following:
   a. The zero microswitch is activated when the pinsetter is at zero degrees and is not activated when the pinsetter is off zero degrees.
   b. The 44/144 microswitch is activated when the pinsetter is at 44/144 degrees and is not activated when the pinsetter is off 44/144 degrees.
9. Make the communication cabling connection as detailed on the Machine Interface Installation Drawings in Section 6.

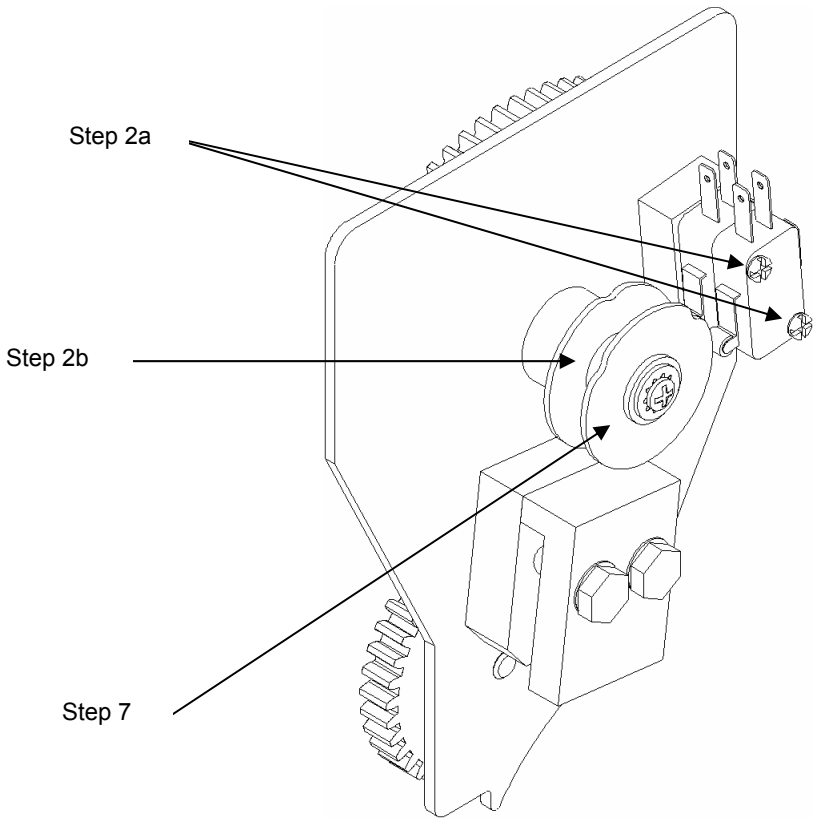


Figure 2-1
Cluster Switch

2.7 CAMERA

Depending on the configuration at your center, installing cameras may also require the installation of a camera power unit, camera interface, or a dual camera interface.

For information about installing the camera, refer to the *AccuCam 3000 Installation, Operation, and Parts Manual (*400-286-002) in Section 7. For information about installing the related components, refer to the sections below.

2.7.1 Camera Power

The Camera Power unit is required when the Machine Interface unit is not used.

Complete the steps below to install the camera power unit.

DANGER Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

WARNING Wear safety glasses and work gloves when drilling.

1. Position the camera power unit on the 4-foot x 4-foot (1219 mm x 1219 mm) panel mounted to the Curtain Wall so it is within 12 inches (305 mm) of the MI unit. Refer to the Curtain Wall Components chapter of the *Pre-Installation Requirements Manual* (400-286-058) in Section 2 for details about the panel and for the recommended positioning of components.

2. Ensure the camera power unit is level then mark the position of the mounting holes. If necessary, drill pilot holes.

3. Secure the camera power unit to the panel with wood screws.

4. Make the electrical and communication cabling connections as detailed for the configuration you are installation in the Installation Drawings in Section 3.

2.7.2 Camera Interfaces

A Camera Interface is required with Brunswick pinsetters to filter electrical noise and other interference from the camera signals. The interface is mounted on the Curtain Wall. For installation instructions, refer to the Camera Interface Installation drawing (244-001-185) in Section 6 and the *AccuCam 3000 Installation, Operation, and Parts Manual* in Section 7.

A Dual Camera Interface is required when there is an obstruction between the lanes that requires the use of single cameras on each lane in the lane pair. The Dual Camera Interface converts the signals from the two single cameras into one signal so the two cameras "act as one." The Dual Camera Interface is mounted on the wide lane capping. For installation instructions, refer to the *Dual Camera Installation* drawing (244-001-182) in Section 6 and the *AccuCam 3000 Installation, Operation, and Parts Manual* in Section 7.

2.8 BALL DETECTOR

The Ball Detector is required by the BOSS Scoring™ system to provide the ball speed. It may also be required by non-AMF pinsetters or by older versions of AMF pinspotters to trigger the pinspotter/pinsetter.

The Ball Detector system is made up of the detector head that sends/receives the optical signal, two reflectors, and communication cables. The detector heads are mounted either on the wide lane capping or on the kickback on the wide lane capping; the reflectors are mounted on the thin lane capping or on the kickbacks of thin lane capping.

To install the Ball Detector assembly, refer to the *Ball Detector Installation Reference Manual* (400-286-030) in Section 1.

This page intentionally left blank.

INSTALLING THE APPROACH and BOWLERS' AREA COMPONENTS

This chapter describes how to install the components that are placed on the approach or within the bowlers' area. For some components, this chapter includes the steps you need to perform to install the component. For other components, you are directed to installation drawings or installation manuals for detailed instructions. The drawings and manuals to which you are directed are included in the *Installation Reference Manual*.

3.1 BOWLER TERMINALS

Refer to the *Bowler Terminal Installation and Troubleshooting Manual (*400-286-056) in Section 4.

3.2 VGA OVERHEAD MONITOR ASSEMBLY

The BOSS Scoring™ system can display the scoring information on both VGA (computer) and TV monitors. The VGA and TV overhead monitors use different support structures and mounting components. Refer also to the TV Overhead Monitor Assembly section later in this document.

The VGA monitors are inserted into an overhead monitor assembly that is suspended from the mounting support structure. The mounting support structure is created as part of the pre-installation process. For information about the mounting support structure, refer to the Overhead Components chapter in the *Pre-Installation Requirements Manual* (400-286-058) in Section 2.

The CPU from which the VGA monitors receive the display signals is mounted on the Curtain Wall. The cabling and other connections are then run as appropriate for the configuration you are installing. To determine the cable configuration for your installation, refer to the VGA Overhead Assembly Installation Print (286-002-575) in Section 3.

For additional information about mounting the monitors, refer to the following Overhead Monitor Installation Drawings in Section 5:

DRAWING TITLE	DRAWING NUMBERS
27-Inch Single Overhead Monitor Installation	286-002-247
27-Inch Dual Overhead Monitor Installation	286-002-626
33-Inch Single Overhead Monitor Installation	286-003-001
33-Inch Dual Overhead Monitor Installation	286-003-002

Complete the steps below to install the VGA Overhead Monitor assemblies and VGA monitors.

DANGER Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

WARNING Scaffolding must be used when installing overhead monitors and related components.

CAUTIONS Personnel should use proper grounding techniques to prevent electrostatic discharge damage to components.

Ensure cables are placed so they are not run over by balls and cannot be caught by moving equipment.

Do not crimp or twist cables, or use excessive force when pulling them.

1. Erect scaffolding in place under the area of where the monitors are to be mounted.
2. Determine the placement and approximate length of the chains. The chain length is the amount required to wrap around the mounting support structure, the distance required to position the overhead frame assembly approximately 8 feet (2438 mm) above the approach floor, the length of the turnbuckle (to create the safety chain), plus 5 or so links to provide slack while installing the monitors (unused links will be cut off).
3. **If your center has a suspended ceiling**, drill a 2-inch (51 mm) hole in the suspended ceiling for each chain to allow chains to hang from the mounting support structure through the suspended ceiling to the overhead frame assembly.
4. Using a rapid link, attach the chain to the mounting support structure, as shown in Figure 3-1.

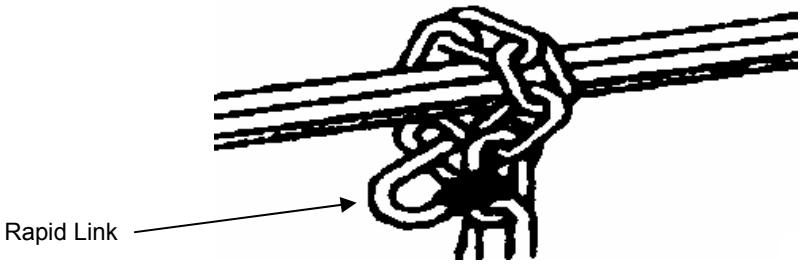


Figure 3-1

5. Attach a turnbuckle to the chain link that positions the overhead frame assembly just below the desired final placement height (the turnbuckle will be used to “fine tune” the height placement). Repeat steps 3 through 5 to hang the other side of the overhead frame assembly.
6. Attach the bottom the turnbuckles with rapid links to the attachment points on each side of the overhead frame assembly, as shown in Figure 3-2.

IMPORTANT: You must make this connection with a rapid link. DO NOT directly connect the turnbuckle to the attachment point.

7. Adjust the turnbuckles to level the overhead frame assembly and obtain its final height position.
8. Create a safety chain by using rapid link to attach the chain to the attachment points on each side of the overhead frame assembly as shown in Figure 3-2. The safety chain should be as short as possible with some slack.

   If you are not using turnbuckles, you must use a rapid link to attach the chain to the attachment points on each side of the overhead frame assembly.
9. Cut off the unused links (all links below the end of the safety chain).

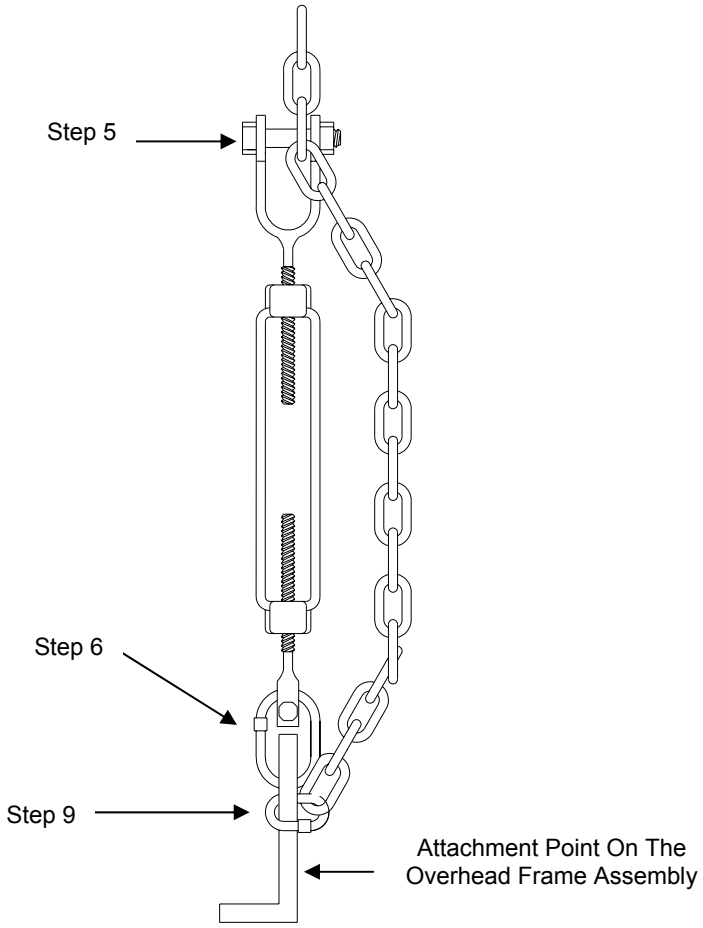


Figure 3-2
VGA Overhead Assembly Attachments

10. Slip the chain covers over the chains and turnbuckles. Trim off any excess chain cover.
11. For instructions about inserting and securing the monitors, and finalizing their installation, refer to the overhead installation drawing in Section 5. Be sure to refer to the drawing specific to your configuration.

12. For instructions about making the cable and wiring connections, refer to the overhead installation drawing in Section 3. Be sure to refer to the drawing specific to the configuration.

    NOTE: If your configuration includes making connections to the control board, dress the wire bundle and secure it with wire ties before re-inserting the control board. Also, segregate and route other wiring to the middle area of the base plate.

3.3 TV OVERHEAD MONITOR ASSEMBLY

The BOSS Scoring™ system can display the scoring information on both VGA (computer) and TV monitors. The VGA and TV overhead monitors use different support structures and mounting components. Refer also to the VGA Overhead Monitor Assembly section earlier in this document.

The TV monitors are inserted into an overhead monitor assembly that is suspended from the mounting support structure. The mounting support structure is created as part of the pre-installation process. For information about the mounting support structure, refer to the *Pre-Installation Requirements Manual* (400-286-058) in Section 2.

To determine the cable configuration for your installation, refer to the TV OHM Assembly Install Print (286-002-576) in Section 3.

To mount the TV Overhead Monitor Assembly and TV monitors, refer to the Peerless® Jumbo 2000 installation instructions in Section 1.

WARNING Scaffolding must be used when installing overhead monitors and related components.

3.4 PLASMA VGA OVERHEAD MONITOR ASSEMBLY

The BOSS Scoring™ system can display the scoring information on standard and plasma VGA monitors. The standard and plasma VGA overhead monitors use different support structures and mounting components. Refer also to the TV Overhead Monitor Assembly section earlier in this document.

The plasma monitors are attached to a mounting plate that is suspended from the mounting support structure. The mounting support structure is created as part of the pre-installation process. For information about the mounting support structure, refer to the *Pre-Installation Requirements Manual* (400-286-058) in Section 2.

To determine the cable configuration for your installation, refer to the Plasma VGA Overhead Assembly Installation print (286-002-577) in Section 3.

To mount the Plasma TV Overhead Monitor Assembly and plasma monitor, refer to the Peerless® Solid•Point Mount installation instructions in Section 1.

WARNING Scaffolding must be used when installing overhead monitors and related components.

3.5 UNIVERSAL AC BOX

The Universal AC Box is required only for Plasma Overhead Monitor assemblies. One Universal AC Box controls two plasma monitors.

Complete the steps below to install the Universal AC Box.

DANGER	Disconnect all power sources at the main circuit breaker box before installing, removing, or replacing electronic equipment.

1. Position the Universal AC Box on the mounting support structure so it is within 12 feet (3658 mm) of the Plasma Overhead Monitor assembly and within 6 feet (1829 mm) of the receptacle for the Plasma Overhead Monitor assembly.
2. Secure the component to the mounting support structure using the #10 wood screws (supplied).
3. Make the electrical and communication cabling connections as detailed on the Installation Drawings in Section 3 for the configuration you are installing.

3.6 TV/CABLE TV

The BOSS Scoring™ system provides the option of adding television and cable television display through the VGA Overhead Monitor Assemblies and TV Overhead Monitor Assemblies. If you are adding TV/cable TV display to your configuration, refer to the Cable TV for TV OHM drawing (286-002-501) or the Cable TV for VGA OHM drawing (232-008-552) in Section 8.

3.7 33-INCH SPEAKERS FOR VGA OVERHEAD MONITOR ASSEMBLIES

If 33-inch VGA Overhead Monitor Assemblies are used to display TV or cable TV, you need to install speakers. For installation instructions, refer to the TV Speaker Installation 33-Inch OHM drawing (286-002-588) in Section 8.

WARNING	Scaffolding must be used when installing overhead monitors and related components.

CAUTIONS	Personnel should use proper grounding techniques to prevent electrostatic discharge damage to components. Ensure cables are placed so they are not run over by balls and cannot be caught by moving equipment. Do not crimp or twist cables, or use excessive force when pulling them.

This page intentionally left blank.

INSTALLING THE FRONT DESK and BACK OFFICE COMPONENTS

The BOSS Scoring™ system is controlled and operated by hardware components and software modules that are positioned at the Front Desk and in the Back Office. The sections below list the possible hardware components that can be included in a BOSS Scoring™ system and optional components that can be added to the system. Installing these components requires placing them in the Front Desk and Back Office configuration wanted at the bowling center then connecting the communication and power cables.

For additional information about Front Desk and Back Office installations, refer to the Front Desk and Back Office chapter in the *Pre-Installation Requirements Manual* (400-286-058) in Section 2.

For information about cabling, refer to the *Management System Installation Print* (Beige) drawing (285-000-054) or the *Management System Installation Print Black* drawing (285-000-375), the BOSS Network Installation drawing (286-002-540), and the *Installing Ethernet* document (400-286-040) in Section 3.

4.1 FRONT DESK

The Front Desk configuration for the BOSS Scoring™ system can include the following components:

- BOSS Scoring™ system PC, touchscreen monitor or flat-screen monitor, keyboard, mouse
- Laser printer
- UPS
- Intercom base station
- Cash drawer
- Pole display
- Receipt printer

4.2 BACK OFFICE

The Back Office configuration for the BOSS Scoring ™ system can include the following components:

- BOSS computer with monitor, keyboard, mouse
- Laser printer
- UPS

4.3 INTERCOM

The BOSS Scoring™ system supports an intercom system between bowler terminals and the Front Desk. If you are installing this option, refer to the Intercom and PA System Installation drawing (249-001-000) in Section 9.

4.4 BILLIARD LIGHT CONTROLLER

The BOSS Scoring™ system can be configured to control the lighting of billiard tables from the Front Desk. If you are installing this option, refer to the *Billiard Light Controller Installation Reference Manual* (285-000-167) and the Billiard Light Controller System Configuration / Installation Diagram drawing (285-001-166) in Section 9.

TESTING THE INSTALLATION

The installer must complete the tests and record the information on the Installation Checklist, make and leave a copy at the bowling center, and mail the original to

AMF
AST Technical Support
8100 AMF Drive
Mechanicsville, VA 23111

A blank check list is provided on the following pages.

This page intentionally left blank.

INSTALLATION CHECKLIST

This check list is to be completed by the installer to ensure the system has been installed properly and is working correctly.

The installer must initial each item in each item as the test is completed.

NOTE: If a test does not apply to the bowling center, enter Not Applicable in the Comments area.

The installer must sign and date the checklist when all the items on the list have been completed, then make and leave a copy of this checklist at the bowling center and send the original to:

AMF
ATS Technical Support
8100 AMF Drive
Mechanicsville, VA 23111

BOSS SCORING™ SYSTEM TESTS

Initial	Test	Lanes	Comments
	1st Ball scored	1-___	
	2nd Ball scored	1-___	
	1st Ball Foul scored	1-___	
	2nd Ball Foul scored	1-___	
	Pins reset (RPO) from Front Desk	1-___	
	Pins reset (RPO) from Bowler Terminal (Mechanic's function)	1-___	
	Pinspotters turned ON/OFF from Front Desk	1-___	
	Pinspotters turned ON/OFF from Bowler Terminal		
	Instructomat turned ON from Front Desk (if applicable)	1-___	
	Keyboard Bowler Terminal functional **OR** Touchscreen Bowler Terminal calibrated and functional	1-___	

BOSS SCORING™ SYSTEM TESTS

Initial	Test	Lanes	Comments
	Scoring CPU controlled from Front Desk	1-___	
	Scoring CPU controlled from Bowler Terminal		
	VGA monitors adjusted for Score Grid **OR** TV monitors adjusted for Score Grid	1-___	
	Television video adjusted	1-___	

FRONT DESK AND BACK OFFICE TESTS

Initial	Test	Comments
	Front Desk Ticket Printer functional	
	Front Desk terminal(s) functional	
	Back Office printer functional	
	Back Office Monitor and Keyboard functional	
	Back Office Modem functional Modem#_____	
	Cash Drawer(s) functional	
	Pole Display(s)	
	Receipt Printer(s) functional	
	Back Office printer functional	
	Back Office Monitor and Keyboard functional	
	Back Office Modem functional Modem#_____	
	Additional Back Office Terminals functional	

SYSTEM LAYOUT

Diagram cable runs. For Ethernet, show Repeater locations, if used.

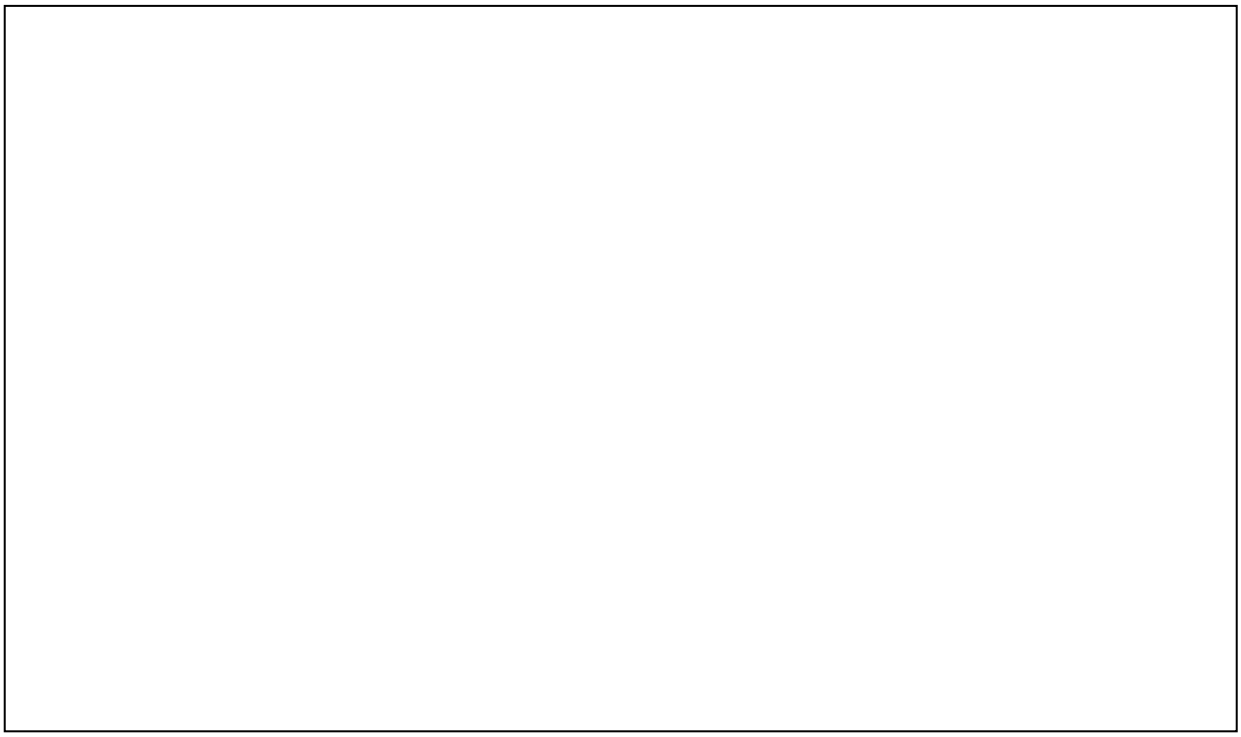
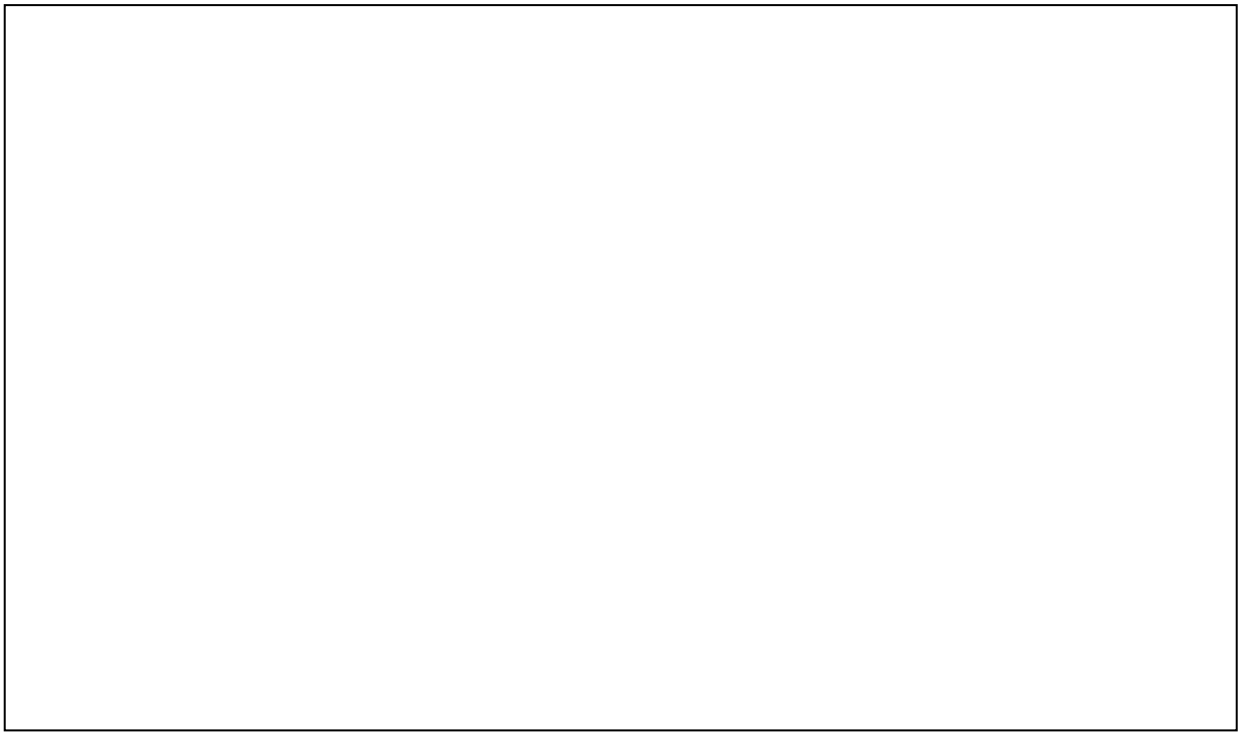


Diagram video system cable runs.



SYSTEM LAYOUT, continued

List locations of auxiliary overhead monitors and the CPUs to which they are attached:

Monitor Between Lanes	CPU	Monitor Between Lanes	CPU
:		:	
:		:	
:		:	
:		:	
:		:	
:		:	

Record additional information on layouts, unusual conditions, etc.

By _____ *(Installer Signature)*

_____ (*Installer Printed Name)*

Date completed _____