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**Bowler's LCD Touchscreen**

Bowler's LCD Touchscreen is the top of the line scoring system in the Vector family. This system offers a lower touchscreen monitor and overhead monitors. Bowler's LCD Touchscreen offers the convenience of touchscreen entry that can be free standing or integrated with Brunswick furniture in a table mount configuration. This offers the customer a full range of audio and video functionality of our Center Network systems. This system also allows the bowler the full bowler interface for name entry, score correction, and other special functions.

**Bowler's Keypad**

This system consists of the overhead monitor and a full keyboard console. This system gives the customer the full ability of the Vector scorer, but without the lower LCD Touchscreen monitors. The system enables full bowler interface into the system. This includes name entry, score correction, and the full menu options. Like Bowler's LCD Touchscreen, Bowler's Keypad is offered in both free standing and table mount configurations.
Vector and Vector Plus

Vector and Vector Plus are Brunswick's new versatile center management systems. The system is a network of Windows based PCs (clients) tied to a single server PC. The server is normally located in the back office. In some instances (when an office computer is not needed for example), the server can be located at the Control Desk and utilized as a Control Desk terminal.

Clients are used for Control Desk, snack bar, bar, pro shop, and billiards terminals, or any place a point-of-sale (POS) terminal is needed.

Each client and server is available with a standard 17” monitor. However, a 17” or 19” touchscreen monitor is also available for any POS terminal.
What to Expect When Installing Vector Scorers

**IMPORTANT:** The following is based on a typical 24 lane center. Schedules may vary depending on center configuration and product to be installed.

**Prework - Customer Preparation**

**NOTE:** All prework must be completed prior to equipment arrival. This includes Control Desk relocation.

1. Site Survey to be performed by a Brunswick Field Engineer. The Field Engineer will need to meet with the center manager/proprietor, mechanic, electrician, and architect to cover the following:
   a. Determine non-bowling hours.
   b. Provide a copy of league schedules.
   c. Review electrical system needs.
   d. Review overhead structure needs.
   e. Review control desk and back office configurations.

2. Prepare bowlers area for consoles:
   a. Trenching for using PVC conduit.
   b. Dual console risers for existing scorer replacement or surface molding.
   c. Any tile work or carpeting.

3. Prepare control desk and back office areas for routing of interconnecting cables.

4. Electrician installs electrical system and electrical outlets.

5. Construct overhead monitor support structure.

6. Center mechanic attends Scorer Maintenance school.

7. Center to have a storage area ready for arrival of new equipment.

**Paperwork - Brunswick Responsibility**

**NOTE:** An installation will not be scheduled until credit is approved and structural certificates are received.

1. Brunswick receives credit approval.

2. Brunswick receives structural certification from bowling center.

3. Brunswick or certified installer schedules installation.
**What to Expect When Installing Vector Scorers**

**IMPORTANT:** The following is based on a typical 24 lane center. Schedules may vary depending on center configuration and product to be installed.

**NOTE:** Brunswick installation completion will be delayed if Brunswick pre-installation requirements are not met.

**Installation - Certified Field Mechanic Procedure**

**Day 1**
- a. Travel to installation.
- b. Unload truck and unpack equipment.

**Days 2 and 3**
- a. Layout and routing of cables from scorer console to pinsetter area.

**Day 4**
- b. Mount equipment on curtain wall.

**Days 5 and 6**
- a. Modify pinsetters.

**Day 7**
- a. Route cables in back office and control desk areas.
- b. Remove Tel-E-Scorers in bowlers' area.

**Days 8, 9 and 10**
- a. Install Vector consoles, overheads, and associated cabling.

**Installation - Brunswick Field Engineer Procedure**

**Day 8**
- a. Travel to installation.
- b. Power audit of electronic equipment.
- c. Install control desk and back office computer systems.

**Day 9**
- a. Continue setup of control desk.
- b. Hook-up consoles and overheads.

**Day 10**
- a. Continue console and overhead hook-up.
- b. Begin setup of cameras and verify scoring.

**NOTE:** Some lanes available for use. Possible league coverage.
What to Expect When Installing Vector Scorers

Day 11
a. Continue setup of cameras and verify scoring.
b. Adjust consoles and overheads.
c. Cover leagues and open bowling.

Day 12
a. Complete system checkup and go over spare parts kits.

**IMPORTANT: The following is based on a typical 24 lane center. Schedules may vary depending on center configuration and product to be installed.**

Training - Brunswick Field Trainer Procedure

Day 9
a. Travel to installation.
b. Control desk management training.

Day 10
a. Scorer training.
b. Control desk session.
c. Possible league coverage.

Day 11
a. Continue control desk session.
b. Cover leagues and open bowling.

Days 12 and 13
a. Back office session (League Record Service, Tournament, Open Bowler Data Base, etc.)
b. Cover leagues and open bowling.
Important!

This document contains information on electrical, installation, conduit, and lighting for Brunswick automatic scorers. It also contains the information necessary for the preparation of a site conforming to Brunswick specifications. Any deviation from these specifications could cause problems to your equipment that may be difficult to detect and/or correct. If you have questions regarding this document, call the Brunswick Customer Response Center at 1-800-323-8141 (option 1).

When planning to install Brunswick electronic scoring equipment, the customer is required to provide an isolated ground (I.G.) electrical subpanel which is solely dedicated to those electronic systems with an isolated neutral and ground buss. These requirements are necessary to prevent electrical noise from compressors, game rooms, fluorescent lights, motors, etc. from interfering with sensitive computer operations. An improperly grounded system can also result in memory losses, erroneous signals, and/or component failures. The isolated ground subpanel must be installed by a licensed electrician and must meet all local and national codes.

Surge Suppression

A transient voltage surge suppressor (TVSS) is supplied with the scoring system. The installation of this device is the responsibility of the customer through a licensed electrician. The unit will be located at the I.G. subpanel that supplies the electronics. This unit is designed for the most demanding environment and incorporates multistage filtration in its design. The sine wave tracking series is engineered to remove the more complex disturbances found in the electrical environment, in particular, high and low voltage ringing transients and harmonic activity.

**NOTE:** The surge suppressor wires should be as short as possible, with no coiling when installed on the I.G. subpanel. The TVSS device is provided with a plastic coupler to insulate the unit from the subpanel.

Brunswick's Responsibility

Brunswick scorer consoles are shipped with the necessary hardware for wood and cement floor installations. The aircraft cable for suspending the overhead monitors will be supplied by Brunswick.

Power Conditioning

In some areas, additional power conditioning or uninterrupted power supply (UPS) equipment may be required to insure optimum performance of your scoring equipment. The purchase and installation of any power conditioning equipment is the responsibility of the customer, including a UPS system. If the bowling center is located in an area that has a history of frequent power failures or interruptions, the customer is advised to contact the Brunswick Brunswick Rapid Exchange Department. The Brunswick Rapid Exchange Department will assist the customer with any additional equipment specifications or Brunswick approved power conditioning equipment required.
Warning
This equipment generates, uses, and can radiate radio frequency energy and if
not installed and used in accordance with the pre-installation manual, may
cause interference to radio communications. It has been tested and found to
comply with the limits for a Class A computing device pursuant to Subpart J of
Part 15 of F.C.C. Rules, which are designed to provide reasonable protection
against such interference when operated in a commercial environment.
Operation of this equipment in a residential area is likely to cause interference
in which case the user, at his own expense, will be required to take whatever
measures may be required to correct the interference.

Isolated Ground Receptacles - NEC 250-74 Exception 4
Where required, for the reduction of electrical noise (electromagnetic
interference) on the grounding circuit, a receptacle in which the grounding
terminal is purposely insulated from the receptacle mounting means shall be
permitted. The receptacle grounding terminal shall be grounded by an insulated
equipment grounding conductor run with the circuit conductors to the electronic
subpanel.

Grounding Conductor - NEC 384-27
The grounding conductor shall be permitted to pass through one or more
subpanels without connection to the panel board grounding terminal as
permitted by Section 384-27 Exception, so as to terminate directly at the
applicable derived system or service grounding terminal.

Extended Power Outage
The circuit breakers (electronic subpanel) must be clearly identified and should
be left on at all times under normal operation. If power is to be out for an
extended period of time, it is recommended that circuit breakers to the
electronic equipment be turned off. When power is restored, transient voltages
could be induced into the equipment if circuit breakers are not off.

Carpeting in Bowlers' Area
It is not recommended mounting consoles on carpeting. Carpeting may cause
static which can be induced into electronic equipment. If carpeting is necessary
in the bowlers' area, it is recommended that anti-static type of carpeting be
used.

Atmospheric Conditions
It is important that the climate control is maintained throughout the center.
Indoor humidity is a large factor in lane conditions as well preventing static
electricity. A relative level of 40% must be maintained to obtain optimum
characteristics and performance from all equipment. A minimum of 35% and a
maximum of 50% is possible if the temperature is controlled and constant.
It is the customer's responsibility to provide a raceway or means to run wires from the equipment, located at the Control Desk, to the approach area, and from the Control Desk to the Back Office. Additional low voltage cables are routed from the Back Office to the closest end lane pair pinsetter area. Various ways of doing this can be discussed with the Brunswick Service Representative at the time of the survey.

The interconnecting cables are supplied and installed by Brunswick and routed through suitable raceways.

When routing the conduit or interconnecting cables from the scorer to the Control Desk or Back Office, extra care must be exercised so as to not place them near a noisy electrical environment.

1. The cables need to be installed in conduit only when local codes require it.

2. Keep the conduit routing to a minimum, but keep in mind that routing them away from a noisy electrical environment is most important.

3. If conduit is required, only telephone or communication cables may be routed in the same conduit. Do not route them in conduit with any electrical equipment with high voltage power cables.

4. Do not lay the interconnecting cables or conduit raceways on top of, or close to fluorescent light fixtures. Route them as far from the fixtures as possible.

5. Keep cables as far away as possible from motors, compressors, and high voltage power cables. Do not lay them next to or closely parallel to existing high voltage electrical cables. When there is any doubt, contact your local representative, or contact the Brunswick Customer Response Center at 1-800-323-8141 (option 1), in the USA or Canada, or at 231-725-3300 for International. Fax number is 1-231-725-4667.

NOTE: Do not use Plumbing PVC pipe for low voltage cable runs. Electrical PVC must be used for all conduit runs.
FAILURE to COMPLY with the Electrical Quick Reference and Pre-Installation Manual specification will void ALL warranties. All electrical work must be completed before the engineer arrives on-site.

A SEPARATE and DEDICATED subpanel must be provided and DIRECTLY wired to main service, hereby called the “ELECTRONICS SUBPANEL.” If a transformer is installed, the primary of the transformer to main service must have a separate ground wire.

Split house bowling centers with multiple subpanels REQUIRE a single source of power from main service entrance.

The ISOLATED GROUND and NEUTRAL buss bars CANNOT be BONDED to the electronics subpanel. Reference NEC 250-74 Exception 4.

EARTH GROUND conductor MUST BE a minimum of #6 AWG wire or larger.

The electrician MUST perform a CONTINUITY check on the electronics subpanel to ensure NO conduit to ISOLATED GROUND and/or NEUTRAL shorts exist.

Greenfield or conduit CANNOT be used as the EQUIPMENT GROUND conductor for the system.

Each ISOLATED GROUND circuit has a SEPARATE hot, neutral, and ground wire. Example: 10 circuits = 10 hots, 10 neutrals, 10 grounds.

Nonautomatic scorer equipment CANNOT share our electronic subpanel or conduit raceways.

All branch circuit runs OVER 200 FEET from the electronics subpanel must be #10 AWG wire or larger.

Class-A CERTIFIED ground is recommended and should be measured at main service.

Floating receptacles in the consoles MUST BE insulated. Metallic electrical boxes CANNOT touch console metal base. If local code permits, you may install "SO" cords with insulated female cord cap receptacle.

NOTE: It is very important to also read the specific Pre-Installation Manual needed for your bowling center. Any deviation from these specifications could potentially cause problems to your electronic automatic scoring equipment that may be difficult to detect and/or correct.
**Electrical Quick Reference Schematic**

- **Isolated Ground System**
  - **Earth Ground Electrode or Equivalent Class “A” - 5 Ohms or Less**
  - **Earth Ground Conductor**
  - **Phase A**
  - **Phase B**
  - **Insulated Neutral Buss**
  - **Insulated Equipment Ground Conductor**
  - **Electronics Subpanel**
  - **Insulated Ground Buss**
  - **Surge Suppressor**
  - **Keep Suppressor Leads as Short and Straight as Possible**
  - **Hot**
  - **Neutral**

- **Split House Centers With Multiple Subpanels Require A Single Source of Power From Main Service Entrance**

---

**Vector Center Network System Pre-Installation**

- **All Scoring Systems**
Electrical Quick Reference
All Scoring Systems

Vector Center Network System Pre-Installation

3 PHASE INCOMING

MAIN SERVICE ENTRANCE

PHASE A, B, C

*ELECTRONICS SUBPANEL

INSULATING SPACER MUST BE INSTALLED

SURGE SUPPRESSOR KEEP WIRES AS SHORT AND STRAIGHT AS POSSIBLE

NEUTRAL BUSS

INSULATED GROUND BUSS

INSULATED NEUTRAL BUSS

EARTH GROUND CONDUCTOR

*SPLIT HOUSE CENTERS WITH MULTIPLE SUBPANELS REQUIRE A SINGLE SOURCE OF POWER AND GROUND FROM MAIN SERVICE

INSULATED GROUND BUSS

ISOLATED GROUND RECEPTACLE HUBBELL I.G. 5252 OR EQUIVALENT

NEUTRAL

EQUIPMENT GROUND CONDUCTOR

PHASE
Selecting a Surge Suppressor
All Scoring Systems

A flow chart diagram is shown below to assist you in identifying if the I.G. subpanel is single phase or three phase and which surge suppressor is needed.

<table>
<thead>
<tr>
<th>Surge Suppressor Needed</th>
<th>Model</th>
<th>Voltage/Phase</th>
<th>Wye/Delta</th>
<th>No. of Wires</th>
<th>Brunswick Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TK-TT160-3Y208-FB</td>
<td>120/208/Three</td>
<td>Wye</td>
<td>4 Wire + Ground</td>
<td>57-861915-000</td>
</tr>
<tr>
<td>2</td>
<td>TK-TT160-1S240-FB</td>
<td>120/240/Single</td>
<td>Wye</td>
<td>3 Wire + Ground</td>
<td>57-861917-000</td>
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<tr>
<td>3</td>
<td>TK-TT160-3D240-FB</td>
<td>120/240/Three</td>
<td>Delta</td>
<td>4 Wire + Ground</td>
<td>57-861916-000</td>
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<td>TK-TT160-NN240-FB</td>
<td>240NN/Three</td>
<td>Delta</td>
<td>3 Wire + Ground</td>
<td>57-861918-000</td>
</tr>
<tr>
<td>5</td>
<td>TK-TT160-3Y380-FB</td>
<td>220/380/Three</td>
<td>Wye</td>
<td>4 Wire + Ground</td>
<td>57-861919-000</td>
</tr>
</tbody>
</table>
Isolated Ground Electrical Overview

Electrical System Overview

LEGEND

* THE ETHERNET SWITCH WILL BE POWERED FROM ONE OF THE CURTAIN WALL RECEPTACLES USED BY THE SCORING COMPUTER

** TRIPLE OVERHEADS REQUIRE A QUAD RECEPTACLE

*** ONE RECEPTACLE REQUIRED PER LANE PAIR FOR LCD TOUCHSCREEN
Isolated Ground Electrical Overview

Electrical System Overview

Note: For Bowler Keypad installations, reference the Curtain Wall Receptacle Location Chart for Bowler’s Keypad on the following page.
NOTE: This chart is based on the installation of the 8 lane scoring computers. For centers with lane breaks, multiple floors, split houses, or optional 4 lane scoring computers, contact your Brunswick Service Representative for proper location of scoring computers and electrical receptacles.

NOTE: For centers installing optional LCD Touchscreen, one electrical receptacle is required for each and every lane pair.

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</tbody>
</table>
Low Voltage Conduit Raceways Optional. See page titled "Low Voltage Conduit Optional."

The illustration on this page details the typical routing of all low voltage cables in an LCD touchscreen configuration. A network of 2 inch conduit (if required) would accommodate all low voltage cables in the system.
Low Voltage Conduit Raceways Optional. See page titled "Low Voltage Conduit Optional."

The illustration on this page, details the typical routing of all low voltage cables in a keypad configuration. A network of 2 inch conduit (if required) would accommodate all low voltage cables in the system.
Low Voltage Conduit - Optional
All Scoring Systems

The illustration below shows a typical conduit network to accommodate all cables in the system. The conduit sizes shown apply to all scoring systems.

**NOTE:** All conduit for low voltage cables must be ELECTRICAL type PVC not PLUMBING type PVC.
Overhead Wireway For Open Ceilings - Recommended
All Scoring Systems

Installation Information

Recommended: Install wireway 6' to 8' above LCD overhead weldment.
Customer Responsibility: A low voltage 2" electrical PVC from the center line of the ball lift to the pedestal is required for low voltage cables.
**Customer Responsibility:** Build raceways using 2 x 4 stringers on the existing floor. Cover with two layers of 3/4" plywood, one layer of masonite and one layer of tile. It is necessary to cut out a portion of the approach header to allow the cables to be routed under the approach. Refer to dimensions above for placement of 2 x 4 lumber.

The remaining 2 x 4s may be positioned in any manner that properly supports the floor. One suggestion is to put the lumber on 16" (406 mm) centers.
**Customer Responsibility:** Trench or route 2 each 2" electrical PVC conduit for low voltage cables. These conduits must be 3" (76 mm) below floor surface and meet local codes.

**NOTE:** A minimum space of 25" (635 mm) is required between the lane approach step and scorer.

**Brunswick Responsibility:** Supply and route low voltage cables to the Bowler’s Keypad or LCD Touch Screen.
**Customer Responsibility:** Build raceways using 2 x 4 stringers on the existing floor. Cover with two layers of 3/4” plywood, one layer of masonite and one layer of tile. It is necessary to cut out a portion of the approach header to allow the cables to be routed under the approach. Refer to dimensions above for placement of 2 x 4 lumber.

The remaining 2 x 4s may be positioned in any manner that properly supports the floor. One suggestion is to put the lumber on 16” (406 mm) centers.
Customer Responsibility: Trench or route 2 each 2” electrical PVC conduit for low voltage cables. These conduits must be 3” (76 mm) below floor surface and meet local codes.

**NOTE:** A minimum space of 25” (635 mm) is required between the lane approach step and scorer.

Brunswick Responsibility: Supply and route low voltage cables to the Bowler’s Keypad or LCD Touch Screen.
**Customer Responsibility:** Build raceways using 2 x 4 stringers on the existing floor. Cover with two layers of 3/4” plywood, one layer of masonite and one layer of tile. It is necessary to cut out a portion of the approach header to allow the cables to be routed under the approach. Refer to dimensions above for placement of 2 x 4 lumber.

The remaining 2 x 4s may be positioned in any manner that properly supports the floor. One suggestion is to put the lumber on 16” (406 mm) centers.
Customer Responsibility: A low voltage 2” electrical PVC from the center line of the ball lift to the circular ball rack is required for low voltage cables. For information on installing circular ball rack on wood stringer, refer to page 26.
Customer Responsibility: A low voltage 2" electrical PVC from the center line of the ball lift to the coffee table is required for low voltage cables. For information on installing coffee table on wood stringer, refer to page
**Customer Responsibility:** Provide a suitable location on the curtain wall as shown above for the Vector Scoring computer. Install an isolated ground Hubbell receptacle or equivalent on the curtain wall. Refer to location chart for exact location.

If a curtain wall is not available, a support structure must be installed to handle the 100 lb. static weight load per lane pair.

**NOTE:** If Brunswick masking units are present, the mounting panel may be mounted to the masking unit structure with optional bracket kit.

**Brunswick Responsibility:** To install the electronics mounting plate on the curtain wall or suitable structure.
**Curtain Wall - Electronics Mounting Panel**

**All Scoring Systems with Non-Direct Pinsetters GS-10 through GS-98**

---

**Table: Electrical Information**

<table>
<thead>
<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>3.5@ 120 V</td>
<td>420</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with two 120 Volt Hubbell I.G. 5262 receptacle or equivalent. No more than 4 per 20 amp circuit.</td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>1.75@ 240 V</td>
<td>420</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with appropriate I.G. receptacle. No more than 7 per 16 amp circuit.</td>
</tr>
</tbody>
</table>

---

**Diagram:**

- **CENTER LINE:** The 8 lane Scoring Computer is centered on a bank of 8 lanes, for example: the division between lanes 4 & 5. The (optional) 4 lane Scoring Computer is centered on a bank of 4 lanes, for example: the division between lanes 2 & 3.

---

**Installation Information**

**Customer Responsibility:** Provide a suitable location on the curtain wall as shown above for the Vector Scoring computer. Install an isolated ground Hubbell receptacle or equivalent on the curtain wall. Refer to location chart for exact location.

If a curtain wall is not available, a support structure must be installed to handle the 100 lb. static weight load per lane pair.

**NOTE:** If Brunswick masking units are present, the mounting panel may be mounted to the masking unit structure with optional bracket kit.

**Brunswick Responsibility:** To install the electronics mounting plate on the curtain wall or suitable structure.
Curtain Wall - Electronics Mounting Panel
LCD Touchscreen

### Electrical Information

<table>
<thead>
<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>.5@120 V</td>
<td>60</td>
<td>2 Wires +</td>
<td>Install circuit with 120 Volt Hubbell I.G. 5262 receptacle or equivalent No more than 24 lane pairs per 20 amp circuit.</td>
</tr>
<tr>
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<td></td>
<td>Isolated Ground</td>
<td></td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>.25@240 V</td>
<td>60</td>
<td>2 Wires +</td>
<td>Install circuit with appropriate I.G. receptacle No more than 24 lane pairs per 16 amp circuit.</td>
</tr>
<tr>
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<td></td>
<td>Isolated Ground</td>
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</tr>
</tbody>
</table>

### Customer Responsibility:
- Provide a suitable location on the curtain wall as shown above for the LCD Touchscreen Power Supply. Install an isolated ground Hubbell receptacle or equivalent on the curtain wall. Refer to location chart for exact location.

**NOTE:** At locations where there is a scoring computer present, LCD Touchscreen will share the receptacle with the scoring computer.

### Brunswick Responsibility:
- To install the LCD Touchscreen power supply on the curtain wall or suitable structure.

---

**Installation Information**

**Customer Responsibility:** Provide a suitable location on the curtain wall as shown above for the LCD Touchscreen Power Supply. Install an isolated ground Hubbell receptacle or equivalent on the curtain wall. Refer to location chart for exact location.

**NOTE:** At locations where there is a scoring computer present, LCD Touchscreen will share the receptacle with the scoring computer.

**Brunswick Responsibility:** To install the LCD Touchscreen power supply on the curtain wall or suitable structure.
## Electrical Information

<table>
<thead>
<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>1.4@120 V</td>
<td>168</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with 120 Volt Hubbell I.G. 5262 receptacle or equivalent. No more than 3 lane pairs per 20 amp circuit.</td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>.7@240V</td>
<td>168</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with appropriate I.G. receptacle No more than 4 lane pairs per 16 amp circuit.</td>
</tr>
</tbody>
</table>

**NOTE:** If support beams are installed, they must be as straight as possible. Any variation in the support will affect overhead positioning.

---

### Vector Center Network System Pre-Installation

**32" Wide Screen LCD Monitor**

**All Scoring Systems**

---

**Installation Information**

**Customer Responsibility:** Using the preferred method of support, the overhead is to be suspended from beams which are supported from roof trusses. The I.G. receptacle is to be installed flush with the ceiling and located near the rear suspension wire on the center line of a pair of lanes. The customer is responsible for supplying, installing, and maintaining the proper position of the support beams or pipe. The customer is also responsible for having the structure certificate form completed by an architect or structural engineer. The method of support must be capable of supporting 396 pounds actual/static load per lane pair. Triple overheads require a quad receptacle centered to the rear of the support wire. Structure support forms are located in the back of this manual.

**NOTE:** If support beams are installed, they must be as straight as possible. Any variation in the support will affect overhead positioning.
32" Wide Screen LCD Monitor Weldment
All Scoring Systems
### Electrical Information

<table>
<thead>
<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>2.5 @ 120 V</td>
<td>300</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with 120 Volt Hubbell I.G. 5262 receptacle or equivalent. No more than 2 lane pairs per 20 amp circuit.</td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>1.25 @ 240 V</td>
<td>300</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with appropriate I.G. receptacle. No more than 2 lane pairs per 16 amp circuit.</td>
</tr>
</tbody>
</table>

### Installation Information

**Customer Responsibility:** Using the preferred method of support, the overhead is to be suspended from beams which are supported from roof trusses. The I.G. receptacle is to be installed flush with the ceiling and located near the rear suspension wire on the center line of a pair of lanes. The customer is responsible for supplying, installing, and maintaining the proper position of the support beams or pipe. The customer is also responsible for having the structure certificate form completed by an architect or structural engineer. The method of support must be capable of supporting 480 pounds actual/static load per lane pair. Triple overheads require a quad receptacle centered to the rear of the support wire. Structure support forms are located in the back of this manual.

**NOTE:** If support beams are installed, they must be as straight as possible. Any variation in the support will affect overhead positioning.
40" Wide Screen LCD Monitor Weldment
All Scoring Systems

TOP VIEW

SINGLE

DOUBLE

TRIPLE

ELECTRICAL RECEPTACLE

10-3/4 in. (273 mm)
14-3/4 in. (375 mm)
18 in. (453 mm)
3-1/4 in. (83 mm)
36 in. (914 mm)

28-3/4 in. (730 mm)
28-3/4 in. (730 mm)
9-1/4 in. (242 mm)

120 in. (3.05 m)
42 in. (1.07 m)
42 in. (1.07 m)
63 in. (1.52 m)

10-3/4 in. (273 mm)

ELECTRICAL RECEPTICLES

76.00 in. (1.93 m)

18 in. (457 mm)
**Customer Responsibility:** Using the preferred method of support, the overhead is to be suspended from beams which are supported from roof trusses. The I.G. receptacle is to be installed flush with the ceiling and located near the rear suspension wire on the center line of a pair of lanes. The customer is responsible for supplying, installing, and maintaining the proper position of the support beams or pipe. The customer is also responsible for having the structure certificate form completed by an architect or structural engineer. The method of support must be capable of supporting 480 pounds actual/static load per lane pair. Triple overheads require a quad receptacle centered to the rear of the support wire. Structure support forms are located in the back of this manual.

**NOTE:** If support beams are installed, they must be as straight as possible. Any variation in the support will affect overhead positioning.
46" Wide Screen LCD Monitor Weldment
All Scoring Systems
## Electrical Information

<table>
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<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-130</td>
<td>50/60</td>
<td>A.C</td>
<td>1</td>
<td>3.0@120V</td>
<td>360</td>
<td>2 Wires + Isolated Ground #12 AWG Wire</td>
<td>Install circuit with 120 Volt Hubbell I.G. 5262 receptacle or equivalent. No more than 4 units per 20 amp circuit.</td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>A.C</td>
<td>1</td>
<td>1.5@240V</td>
<td>360</td>
<td>2 Wires + Isolated Ground #12 AWG Wire</td>
<td>Install circuit with appropriate I.G. receptacle. No more than 4 units per 16 amp circuit.</td>
</tr>
</tbody>
</table>

### Installation Information

**Customer Responsibility:** The customer must provide electrical power source that complies with local code.

**IMPORTANT:** This power source should be supplied from scorer I.G. sub-panel.
**Vector and Vector Plus**  
*All Scoring Systems*

### Electrical Information

<table>
<thead>
<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
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<tr>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>22</td>
<td>2640</td>
<td>1 ea. 2 Wires + Isolated Ground</td>
<td>Install circuit with 120 Volt Hubbell I.G. 5262 receptacle or equivalent.</td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>11</td>
<td>2640</td>
<td>1 ea. 2 Wires + Isolated Ground</td>
<td>Install circuit with appropriate I.G. receptacle</td>
</tr>
</tbody>
</table>

### Installation Information

**Customer Responsibility:** The Control Desk shown is an example of a two terminal Control Desk. The Control Desk layout varies with individual bowling centers. The decision of equipment locations should be made before power outlets and conduits are installed. Please provide outlets in similar configuration as shown.

1. The CPU must be within 3-4 ft (9-1.2 m) of the terminal and the printer.
2. Two circuits are necessary for everything at the Control Desk.

*OPTIONAL ITEMS SHOWN. REFER TO YOUR SPECIFIC REQUIREMENTS FOR CENTER CONFIGURATION.*
Customer Responsibility: Install one circuit with two each, I.G. Hubbell 5262 Duplex receptacles within three feet (914 mm) of the UPS and computer.
### General Requirements

<table>
<thead>
<tr>
<th>Humidity</th>
<th>Temperature</th>
<th>Lighting</th>
<th>Floor</th>
<th>Modem</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-60%</td>
<td>73°F +/- 5°</td>
<td>50-75 Footcandles</td>
<td>Tile</td>
<td>Dedicated Line</td>
</tr>
</tbody>
</table>

### Carpet Installation Information

**Customer Responsibility:** If carpeting is to be installed at the site, it must be a computer-grade type which will generate no more than 2,000 to 3,000 volts of static discharge at 20% relative humidity and a temperature of 22°C (72°F). If carpeting is already installed and is not of a computer-grade type, it should be treated with an antistatic or anti-shock solution after it is cleaned. The frequency of these treatments depends on the amount of floor traffic in the room. Raising the humidity level should also be considered to control the generation of static electricity. Maintain a humidity level of 40-60% to control the generation of static electricity.
## Point of Sale Terminal

**Billiards, Snack, Restaurant, and/or Pro Shop**

### Electrical Information

<table>
<thead>
<tr>
<th>Volts</th>
<th>Hertz</th>
<th>AC/DC</th>
<th>Phase</th>
<th>Amps Per Unit</th>
<th>Watts</th>
<th>Branch Circuit</th>
<th>Customer Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>12</td>
<td>1440</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with 120 Volt Hubbell I.G. 5262 receptacle or equivalent. No more than 4 point of sales terminals per circuit</td>
</tr>
<tr>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>6</td>
<td>1440</td>
<td>2 Wires + Isolated Ground</td>
<td>Install circuit with appropriate I.G. receptacle. No more than 4 point of sales terminals per circuit</td>
</tr>
</tbody>
</table>

**NOTE:** 120 VOLT SHOWN FOR ILLUSTRATION PURPOSES.

### Installation Information

**Customer Responsibility:** The Point of Sale terminal can be located in various areas of the bowling center. They are typically in the lounge, snack bar, pro shop, or billiards area. The electrical configuration is the same for each location, a suitable low voltage raceway must be installed for communication cables.
## Summary of Electrical Information
### All Scoring Systems

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Volts</th>
<th>Hertz</th>
<th>AC or DC</th>
<th>Phase</th>
<th>Amp per Unit @120VAC</th>
<th>Amp per Unit @240VAC</th>
<th>Lanes per Fused Circuit</th>
<th>Wires per Fused Circuit</th>
<th>Circuit Breaker Size</th>
<th>Watts per pair of Lanes</th>
<th>Connector (Female) Supplied by Customer</th>
<th>Special Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curtain Wall Electronics</td>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>2.5</td>
<td>–</td>
<td>3</td>
<td>20</td>
<td>240</td>
<td>I.G. 5262 Hubbell</td>
<td>Flush Mount Receptacle or Female Cord</td>
<td></td>
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<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>–</td>
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<td>3</td>
<td>16</td>
<td>240</td>
<td></td>
<td>I.G. receptacle</td>
<td></td>
</tr>
<tr>
<td>32” Overhead LCD</td>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>1.4</td>
<td>–</td>
<td>6</td>
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<td>168</td>
<td>I.G. 5262 Hubbell</td>
<td>Quad Needed for Triple</td>
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<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>–</td>
<td>.7</td>
<td>8</td>
<td>3</td>
<td>16</td>
<td>168</td>
<td>I.G. receptacle</td>
<td></td>
</tr>
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<td>2.5</td>
<td>–</td>
<td>4</td>
<td>3</td>
<td>20</td>
<td>300</td>
<td>I.G. 5262 Hubbell</td>
<td>Quad Needed for Triple</td>
</tr>
<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>–</td>
<td>1.25</td>
<td>6</td>
<td>3</td>
<td>16</td>
<td>300</td>
<td>I.G. receptacle</td>
<td></td>
</tr>
<tr>
<td>46” Overhead LCD</td>
<td>100-130</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>3</td>
<td>20</td>
<td>360</td>
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<td>Quad Needed for Triple</td>
</tr>
<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
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<td>1.5</td>
<td>6</td>
<td>3</td>
<td>16</td>
<td>360</td>
<td>I.G. receptacle</td>
<td></td>
</tr>
<tr>
<td>Vector and Vector Plus Client Computer</td>
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<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>5</td>
<td>–</td>
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<td>3</td>
<td>20</td>
<td>600</td>
<td>I.G. 5262 Hubbell</td>
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</tr>
<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
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<td>3</td>
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<td>600</td>
<td>I.G. receptacle</td>
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<tr>
<td>Vector and Vector Plus Server Computer</td>
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<td>50/60</td>
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<td>–</td>
<td>--</td>
<td>3</td>
<td>20</td>
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<td>I.G. 5262 Hubbell</td>
<td>500 VA UPS Supplies power to computer</td>
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<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>–</td>
<td>4</td>
<td>--</td>
<td>3</td>
<td>16</td>
<td>960</td>
<td>I.G. receptacle</td>
<td></td>
</tr>
<tr>
<td>Point of Sale Terminal</td>
<td>100-130</td>
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<td>12</td>
<td>–</td>
<td>--</td>
<td>3</td>
<td>20</td>
<td>2880</td>
<td>2 Each I.G. 5262 Hubbell</td>
<td>Quad Receptacle</td>
</tr>
<tr>
<td></td>
<td>200-240</td>
<td>50/60</td>
<td>AC</td>
<td>1</td>
<td>–</td>
<td>6</td>
<td>--</td>
<td>3</td>
<td>16</td>
<td>2880</td>
<td>2 Appropriate I.G. receptacle</td>
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<tr>
<td>Automated Bumpers</td>
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<td>50/60</td>
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<td>3</td>
<td>–</td>
<td>8</td>
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<td>20</td>
<td>360</td>
<td>I.G. 5262 Hubbell</td>
<td>Quad Duplex per circuit</td>
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<td>50/60</td>
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<td>8</td>
<td>3</td>
<td>16</td>
<td>360</td>
<td>I.G. receptacle</td>
<td></td>
</tr>
</tbody>
</table>
IMPORTANT: Failure to comply with lighting specifications may adversely affect the performance of your electronic equipment.

Of all the "mental hazards" in the design of a bowling center, lane lighting is recognized as one of the most important, yet it is often skipped over in the interest of saving the cost, effort, or time involved in a proper analysis of the problem. Each installation has individual problems and is worthy of considerable study. It is recommended that time be taken to review the following lighting specifications carefully.

Objectives
There are certain constraints and suggestions worth passing on to a bowling center. First, the need for even light intensity on the lanes is paramount. Over the high reflective playing surface, extreme care must be taken to avoid "hot spots" of illumination. In addition to careful planning of the spacing of lights, if "hot spots" do occur, they can usually be washed out by tilting or shimming the light fixtures before they are permanently fastened.

Footcandles
Concourse, spectator area, or other public space illumination intensity is optional, but the location and type of fixture and intensity must be subject to the restriction of not washing out the score image. Illumination of 10-30 footcandles from flush-mounted or recessed ceiling fixtures is recommended. There should be no direct exposure of light sources into the seating and approach areas.

Bowlers' Area (Suggested 10-15 Footcandles)
General lighting intensity in the bowlers' seating area should be 10-15 footcandles. Use of recessed ceiling fixtures (fluorescent single lamp) will provide the recommended zone light levels.

Special consideration should be given to the color treatment of walls and ceiling, and to the use of low-reflective carpet or tile in the seating area.

Approach (Suggested 5-10 Footcandles)
Approach lighting intensity should be 5-10 footcandles. This level can be obtained through incidental light from the seating area and lane surface. If additional approach lighting is used, it should be separately switched from the Control Desk or on dimmer controls.

Lane Surface (Required 15-20 Footcandles)
Lane surface illumination level should be 15-20 footcandles of even diffused lighting measured at floor level. The amount of incident light directly illuminating the masking units should be 10-15 footcandles.
**Lighting Specifications**  
**All Scoring Systems**

**Pinsetter Area (Suggested 30-35 Footcandles)**
While proper pin lighting is installed on the automatic pinsetter, general lighting in the pinsetter area should be about 35 footcandles of even illumination over the machines for servicing.

**Pin Light Specifications**
For Brunswick "A" and A-2 Pinsetters, the pin lights should be 40 watt, soft white or cool white tubes. For AMF Pinspotters, the pin lights should be 30 watt, soft white or cool white tubes. The pin light reflectors should be cleaned and, if necessary, painted prior to the arrival of the Brunswick Field Engineer to allow optimum light required for proper scoring.

*NOTE:* For Cosmic or Glow in the Dark Bowling, different lighting specifications may apply. Contact the Customer Response Center for proper specification.

**Mechanic's Work Area (Suggested 75-100 Footcandles)**
The mechanic's work area should have 75-100 footcandles in the bench area.

**In Summary**
In general, what the above recommendations are trying to accomplish is a gradual increase of light level from low in the seating area, to high on the pins. The pins should have the bowler's attention.

Air conditioning heat load is also a factor in planning the lights. Each watt hour of light introduces 3.4 BTU of heat which must be taken into consideration for the air conditioning equipment. Excessive high humidity can also unfavorably affect the operation of some fluorescent lamps.

**Operation**
It is desirable to control lane lighting longitudinally in bays of four lanes per switch at the Control Desk. A more compact panel board can be planned if the electrician uses low voltage from the Control Desk to activators at the light panel. Brunswick suggests tamper-proof switches for lighting in the public areas, or switching public area lighting from circuit breaker panels.

Group replacement of lamps on a regular basis insures a high level of light output for the same current costs and minimizes bowling delays due to a defective or blown out lamp.

**Planning**
Correlate the light plan with the reflected acoustic ceiling plan and also with the layout of air conditioning ducts, louvers, grills, and thermostats.

Electrical conduit or raceways of adequate size should be imbedded in the concrete to provide for Frameworx cabling.
Lighting Details Overview
All Scoring Systems
Scorer Equipment Specifications

LCD Touchscreen Pedestal

Keypad Pedestal

Vector Center Network System Pre-Installation
Scorer Equipment Specifications

LCD Overheads
Scorer Equipment Specifications

LCD Overheads

46" LCD Single Overhead

43-1/4" (1.10 m)

36" (914 mm)

25-7/8" (657 mm)

46" LCD Double Overhead

76" (1.93 m)

25-7/8" (657 mm)

87-1/2" (2.22 m)

1" (25 mm)

46" LCD Triple Overhead

120" (3.05 m)

25-7/8" (657 mm)

130-3/4" (3.32 m)
Scorer Equipment Specifications

Keypad 3 Tier Ball Rack

Keypad 2 Tier Ball Rack

LCD Touchscreen 3 Tier Ball Rack

LCD Touchscreen 2 Tier Ball Rack
Scorer Equipment Specifications
Scorer Equipment Specifications

Vector Center Network System Pre-Installation
Scorer Equipment Specifications

Vector Center Network System Pre-Installation
Scorer Equipment Specifications

Scoring Computer and Curtain Wall Mounting Bracket

Scoring Computer and Side View with Access Panel Open

Uninterruptible Power Supply (UPS)

Vector Center Network System Pre-Installation
Center Management System Equipment Specifications

Optional 17” Touch Screen
Point of Sale Terminal and Cash Drawer

Optional 19” Touch Screen
Point of Sale Terminal and Cash Drawer

Customer Display

Receipt Printer
Center Management System Equipment Specifications

Client Computer

Server Computer

Scoresheet Printer

Audio/Video Interface Box

Video Cassette Player
Miscellaneous Equipment Specifications

Surge Suppressors

- Dimensions: 7-3/8" (187 mm) x 5" (127 mm)
- 4" (102 mm) protrusion

Ethernet Switch

- Dimensions: 8-1/2" (216 mm) x 6-1/4" (159 mm) x 1-1/4" (32 mm)

LCD Touchscreen Power Supply

- Dimensions: 8-3/4" (222 mm) x 4-1/4" (108 mm) x 5" (127 mm)
I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below that:

1. I am an engineer/architect licensed by and in good standing with the State of ______________________; and

2. I have examined the bowling center premises known as __________________________________________ , located at ___________________________________________________________________________ ; and

3. The curtain wall structure of the bowling center is fully and safely capable of supporting the configuration of curtain wall electronic units, not exceeding 100 pounds actual/static weight for each scoring computer to be attached to the curtain wall or suitable structure by the means and methods set forth in the support specifications on the reverse side of this sheet.

Print or Type Name of Architect or Structural Engineer

_____________________________
Signature of Architect or Structural Engineer

Title____________________________

Seal ________________________________ Date ________________________________

Certification and Release of Brunswick by Proprietor

I, ________________________________, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor's own benefit; and

2. The proprietor is not relying upon Brunswick for assurance that the curtain wall or suitable structure described in the Structure Certification will support the curtain wall electronic units selected by the proprietor and installed by Brunswick.

In consideration for Brunswick’s agreement to install the curtain wall electronic units, and by signing below, proprietor for proprietor’s own self and for proprietor’s heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives (“Proprietor Group”), releases and agrees to indemnify Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors, and subcontractors from all claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group may have or which may subsequently accrue to a member of the Proprietor Group arising out of or connected with, directly or indirectly, the inability of the curtain wall or suitable structure described in the above Structure Certification to support the curtain wall electronic units installed by Brunswick in accordance with the support specifications on the reverse side of this sheet.

Print or Type Name of Proprietor or Corporate Officer

_____________________________
Signature

_____________________________
Title

_____________________________
Date

Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364
Using the preferred method of support for the curtain wall electronics, the customer is responsible for supplying, installing, and maintaining the proper position of the electronics located on the curtain wall. If a curtain wall is not available, a support structure must be installed to accommodate the 100 pounds actual/static weight load per lane pair.

**Curtain Wall Mounting**

**CENTER LINE**

THE 8 LANE SCORING COMPUTER IS CENTERED ON A BANK OF 8 LANES, FOR EXAMPLE: THE DIVISION BETWEEN LANES 4 & 5.

THE (OPTIONAL) 4 LANE SCORING COMPUTER IS CENTERED ON A BANK OF 4 LANES, FOR EXAMPLE: THE DIVISION BETWEEN LANES 2 & 3

**Note:** For Bowler Keypad installations, reference the Curtain Wall Receptacle Location Chart for Bowler’s Keypad, found earlier in this manual.

120V HUBBELL I.G. 5262 RECEPTACLE OR EQUIVALENT. ONE REQUIRED PER SCORING COMPUTER.
I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below, that:

1. I am an engineer/architect licensed by and in good standing with the State of _____________________; and

2. I have examined the bowling center premises known as __________________________________________ located at: ___________________________________________________________________________ and

3. The roof structure of the bowling center is fully and safely capable of supporting a minimum of 480 pounds of additional static weight for each pair of bowling lanes in the center. Display support to be attached to the roof structure by the means and methods set forth in the support specifications on the reverse side of this page, together with a number of 40" & 46" overhead video displays.

________________________
Print or Type Name of Architect or Structural Engineer

________________________
Signature of Architect or Structural Engineer

________________________
Title

Seal Date

Certification and Release of Brunswick by Proprietor

I, __________________________________________, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor's own benefit; and

2. The proprietor is not relying upon Brunswick for assurance that the roof structure described in the Structure Certification will support the 40" & 46" Overhead Video Display units selected by the proprietor and installed by Brunswick.

3. The proprietor will not hang anything other than the Brunswick-provided video displays from the display supports, and will monitor the bowling center to ensure that customers of the center do not hang or place weight in any way on the display supports.

In consideration of Brunswick’s agreement to install the 40" & 46" Overhead Video Display units, and by signing below, proprietor, for proprietor’s own self and for proprietor’s heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives (“Proprietor Group”), releases and agrees to indemnify and hold harmless Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors and subcontractors (collectively, “Brunswick”) from all liability, claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group or Brunswick may have or may subsequently accrue to any member of the Proprietor Group or Brunswick arising out of or connected with, directly or indirectly, (i) the inability of the roof structure described in the Structure Certification to support the 40" & 46" Overhead Video Display units installed by Brunswick in accordance with the support specifications on the reverse side of this sheet, or (ii) the inability of the display supports to support any weight placed upon it in excess of the weight of the Brunswick-provided video displays.

________________________
Print or Type Name of Proprietor or Corporate Officer

________________________
Signature

________________________
Title

________________________
Date

Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364
40" & 46" Wide Screen LCD Overhead Video Display Structure Specifications

The customer is responsible for supplying, installing, and maintaining the proper position of these beams or pipe (refer to figures below) and for having certification from an architect or structural engineer that the method of support will be capable of supporting a minimum of 480 pounds of additional static weight per lane pair for up to triple overheads.

---

**Side View**

**Top View**

**Electrical Receptacles**

**Single**
- Width: 14.24" (375 mm)
- Height: 3.14" (83 mm)
- Front of LCD: 18" (453 mm)

**Double**
- Width: 28.34" (730 mm)
- Height: 28.34" (730 mm)
- Front of LCD: 76" (1,93 m)

**Triple**
- Width: 5.14" (127 mm)
- Front of LCD: 42" (1,07 m)
- Height: 16" (406 mm)
I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below, that:

1. I am an engineer/architect licensed by and in good standing with the State of _____________________; and

2. I have examined the bowling center premises known as __________________________________________ located at; ___________________________________________________________________________ and

3. The roof structure of the bowling center is fully and safely capable of supporting a minimum of 396 pounds of additional static weight for each pair of bowling lanes in the center. Display support to be attached to the roof structure by the means and methods set forth in the support specifications on the reverse side of this page, together with a number of 32"'' overhead video displays.

Print or Type Name of Architect or Structural Engineer

__________________________
Signature of Architect or Structural Engineer

Title

 SEAL Date

Certification and Release of Brunswick by Proprietor

I, __________________________________________, as the proprietor or as duly-authorized representative of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor’s own benefit; and

2. The proprietor is not relying upon Brunswick for assurance that the roof structure described in the Structure Certification will support the 32” Overhead Video Display units selected by the proprietor and installed by Brunswick.

3. The proprietor will not hang anything other than the Brunswick-provided video displays from the display supports, and will monitor the bowling center to ensure that customers of the center do not hang or place weight in any way on the display supports.

In consideration of Brunswick’s agreement to install the 32” Overhead Video Display units, and by signing below, proprietor, for proprietor’s own self and for proprietor’s heirs, successors, assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses and relatives (“Proprietor Group”), releases and agrees to indemnify and hold harmless Brunswick, its officers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers, agents, contractors and subcontractors (collectively, “Brunswick”) from all liability, claims, demands, actions, causes of action, or their functional equivalent, that any member of the Proprietor Group or Brunswick may have or may subsequently accrue to any member of the Proprietor Group or Brunswick arising out of or connected with, directly or indirectly, (i) the inability of the roof structure described in the Structure Certification to support the 32” Overhead Video Display units installed by Brunswick in accordance with the support specifications on the reverse side of this sheet, or (ii) the inability of the display supports to support any weight placed upon it in excess of the weight of the Brunswick-provided video displays.

Print or Type Name of Proprietor or Corporate Officer

__________________________
Signature

Title

 Date

Send To:
Contract Management
Brunswick Bowling and Billiards Corporation
Post Office Box 329
Muskegon, MI 49443-0329
or Fax: 231-725-3364
32" Wide Screen LCD Overhead Video Display Support Specifications

The customer is responsible for supplying, installing, and maintaining the proper position of these beams or pipe (refer to figures below) and for having certification from an architect or structural engineer that the method of support will be capable of supporting an additional 396 pounds actual/static weight per lane pair for up to triple overheads.

---

**Side View**

**Top View**

---

Certificates
I, by signing this document, certify to Brunswick Bowling and Billiards Corporation and to the proprietor named below that:

1. I am an engineer/architect licensed by and in standings with the State of _________________; and

2. I have examined the bowling center premises known as __________________________________
   Located at; __________________________________________________________________ and

3. The roof structure of the bowling center is fully and safely capable of supporting a 45 pound over-
   head display support (to be attached to the roof structure by the means and methods set forth by the
   engineer/architect of the State), in addition to a number of the proprietor’s supplied overhead dis-
   plays, which support ______ pounds actual/static weight for each pair of bowling lanes in the center.

Print or Type Name of Architect or Structural Engineer

Signature of Architect or Structural Engineer

Title

Seal Date

Certification and Release of Brunswick by Proprietor

I, __________________________________________, as the proprietor or as duly-authorized representative
of the proprietor, certify to Brunswick Bowling and Billiards Corporation that:

1. The proprietor has obtained the above Structure Certification for the proprietor’s own benefit; and

2. The proprietor is not relying upon Brunswick for assurance that the roof structure described in the
   Structure Certification will support the Overhead Video Display units selected by the proprietor and
   installed by the proprietor.

In consideration of the proprietor’s agreement to install the Overhead Video Display units selected by the
proprietor, and by signing below, proprietor, for proprietor’s own self and for proprietor’s heirs, successors,
assigns, employees, agents, representatives, insurers, contractors, subcontractors, invitees, and their spouses
and relatives (“Proprietor Group”), releases and agrees to indemnify and hold harmless Brunswick, its offi-
cers, directors, employees, shareholders, parent company, subsidiaries, and affiliated companies, insurers,
agents, contractors and subcontractors (collectively, “Brunswick”) from all liability, claims, demands, actions,
causes of action, or their functional equivalent, that any member of the Proprietor Group or Brunswick may
have or may subsequently accrue to any member of the Proprietor Group or Brunswick arising out of or
connected with, directly or indirectly, (i) the inability of the roof structure described in the Structure Certifica-
tion to support the Overhead Video Display units installed by proprietor in accordance with the support
specifications on this sheet, or (ii) the inability of the display supports to support any weight placed upon it in
excess of the weight of the proprietor-provided video displays.

Send To:
  Contract Management
  Brunswick Bowling and Billiards Corporation
  Post Office Box 329
  Muskegon, MI 49443-0329
  or Fax: 231-725-3364
Intentionally Blank