

**Solo**  
**Installation Instructions**  
**&**  
**Reference Guide**

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# Introduction

Thank you for purchasing the Solo Automatic Scoring system. The Solo hardware should be able to be easily installed by a team of two or three people with a reasonable degree of technical competence.

The Solo scoring system is designed to be self installed with a minimum of electronic hardware modules, using standard Televisions, LCD's, Plasma Panels or any other display technology that accepts an NTSC S-Video signal. These displays can be purchased and supported by a local supplier, which allows you the security of having the support of the biggest potential source of service issues close at hand.

**Note:** NTSC is the accepted video standard of the United States of America, however, displays that can accept either an NTSC or PAL signal are commonly found in countries that use the PAL standard such as Great Britain, Singapore, and Australia.

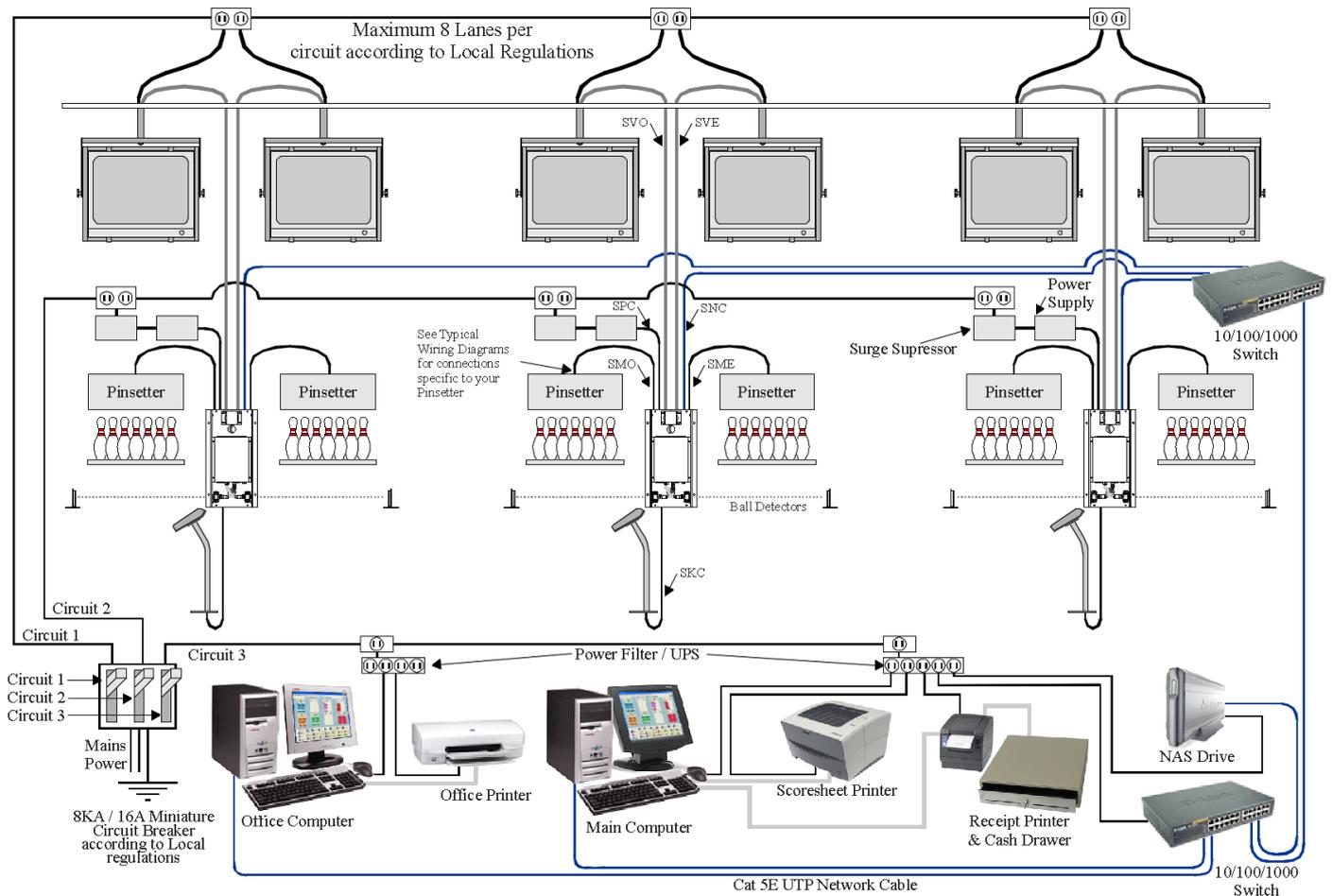
## Power Requirements

There are at least three power circuits that need to be present for the system to function:

1. Display Units. There must be a power available to the display units in the ceiling. There must be a GPO (General Purpose Outlet) for each monitor and there is a maximum of 8 lanes per circuit.
2. Solo Units. There must be power available to the power supplies along the curtain wall for the Solo Units. There must be a GPO (General Purpose Outlet) for each Solo Unit and there is a maximum of 8 lanes per circuit.
3. Computer Equipment. Finally, there must a separate circuit available for the front end Computer Equipment. It is recommended that this circuit not only be separate from the Solo Units and Monitors, but also on a separate circuit from the remainder of the center's.



**Note:** A licensed electrician MUST do Any high voltage electrical work. It may be necessary to contact a licensed electrician to pre-install these power circuits **BEFORE** starting installation.



## ***FCC Declaration of Conformity***

**PRODUCT NAME:** Solo

**MODEL NUMBER:**

**FCC RULES:** TESTED TO COMPLY WITH FCC PART 15, CLASS B

**OPERATING ENVIRONMENT STATEMENT:** COMMERCIAL USE

### **FCC COMPLIANCE STATEMENT:**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **INFORMATION TO USER:**

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient / Relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **CAUTION:**

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the users authority to operate the equipment.

## Step 1: Hang the Displays

The Solo system is designed to be used with any type of display that can accept an NTSC S-Video signal. This will often involve a TV that is either a Glass CRT (Cathode Ray Tube) or a TV that uses an LCD (Liquid Crystal Display) panel. Either way, you must also purchase and arrange for these displays to be hung from the ceiling.

There are a number of manufacturers of mounting brackets for TVs and other displays that can be readily seen in Bars, Clubs and other facilities. This is a large industry, which should have a number of local suppliers who can advise you on the various methods on mounting displays onto the ceiling.

Following are the web site addresses of some, but not all, of the major manufacturers of this type of equipment:

[www.atdec.com](http://www.atdec.com)

[www.pivotelli.com](http://www.pivotelli.com)

[www.peerlessindustries.com](http://www.peerlessindustries.com)



**Note:** Any mounting hardware should be secured to the ceiling under advice from a local structural engineer who can verify that your ceiling purlins or other suspension framework is strong enough to support the weight of the monitors.

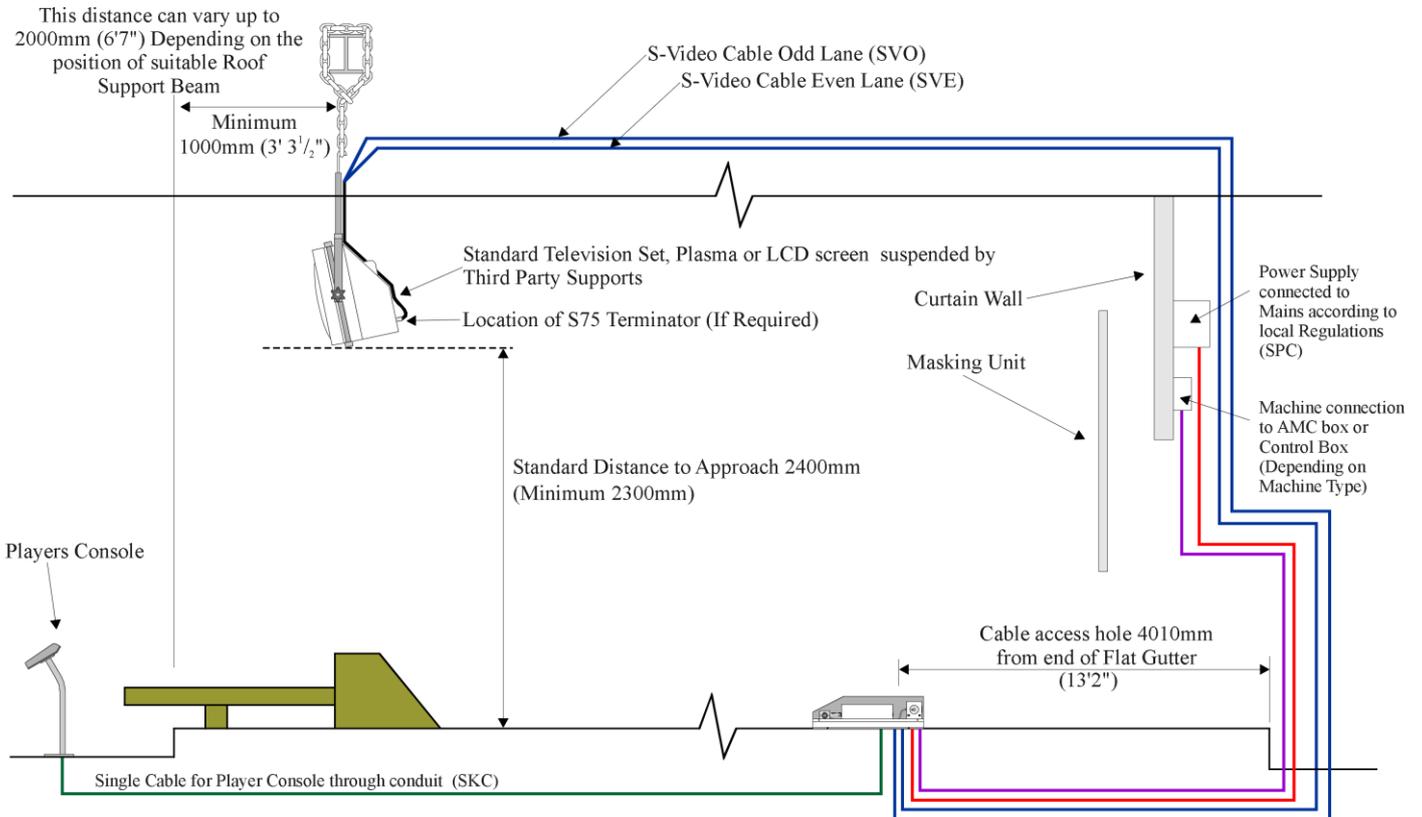
### **Comments on choosing a display**

Obviously, price can have a large bearing on the decision for which display to purchase to use with the system, but the following factors should also be taken into account when purchasing displays:

- **NTSC:** Your display **MUST** be able to accept an NTSC video signal via an S-Video connector.
- **Quality:** The cheapest display is not necessarily the best. Consider that the usual life of a scoring system is at least 10 years and that any monitor that will be reliable for that length of time must be well built. (and well maintained) As a general statement, LCD TV screens will be more reliable long term than glass CRT TV screens.
- **Presence:** Go with a supplier who is reputable and present in the market. Commonly, a manufacturer with an unknown brand may not last long term, making spares and repair work hard to achieve.
- **Service:** Choose a supplier with a local repair agent. Sometimes a manufacturer will actually include the schematic diagram for the monitor's electronics with their other documentation. This will make a repairer's job much easier.
- **Spares:** Strongly consider purchasing additional units for spare parts as insurance against failure that cannot be repaired. (Or replaced with an equivalent unit)
- **Try It:** The Solo unit is small enough that it should be possible to take one to your local TV retailer to test the quality of the TV's display of an S-Video signal. Although this is not essential, it could make your purchase decision an easier one, and allow you to be confident that your choice will work with the equipment.

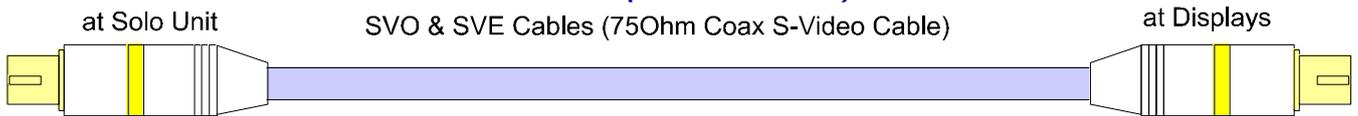
## Step 2: Run the Cables

For each pair of lanes there are six communications cables, one for each Display unit, one for each Pinsetter, one for the Bowler's Keypad and one for the optional networking to the host computer. All these cables run from the Solo Hardware Module on the lane capping to control the various scoring functions.



After all cables have been run, they should all be checked to make sure that they are not in danger of being cut by any moving parts in the pinsetter, or by a ball hitting them in the ball track area under the lanes. In addition, all the cables should be tied together at the Solo Hardware Module and securely tied up out of the way of any balls travelling past on the ball track.

## S-Video Cables for Odd and Even Lane (SVO and SVE)



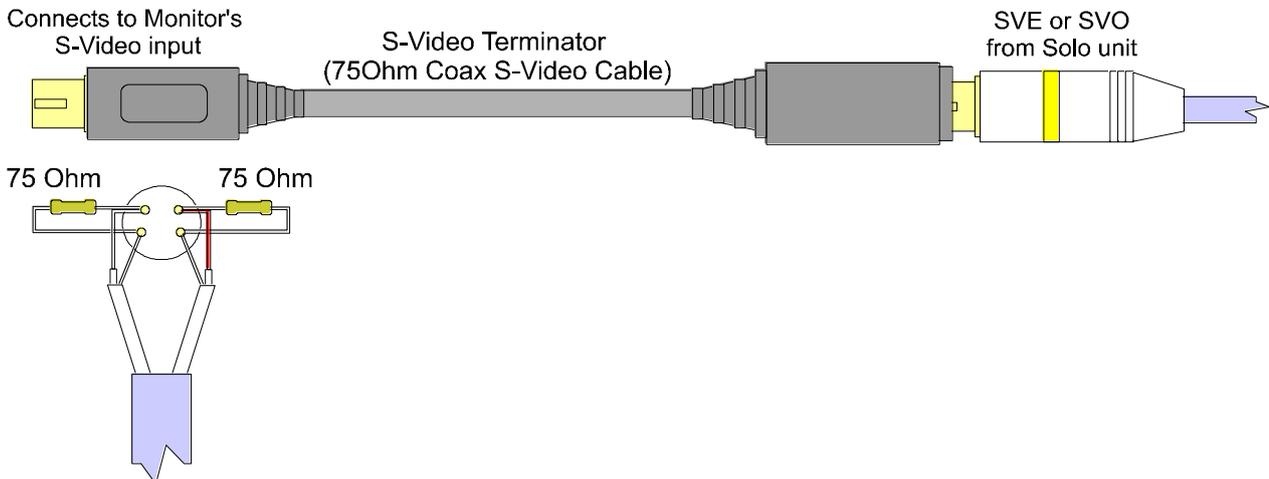
SVO is the video signal cable for the Odd lane and SVE is the video signal cable for the Even lane. Starting at the Pinsetters, pull both cables down behind the ball chute, down the kickbacks and under the capping to the Solo Unit. Then route the other ends of the cables past the pinspotter, up into the ceiling cavity and then forward to the Display units. Make sure that the cables are in no danger of being cut or damaged due to moving machinery or balls on the ball track.



**Note:** These cables should be routed as far as practical away from sources of power or RF interface such as fluorescent lights.

It is important to consider occupational health and safety issues when routing these cables. Each installation will vary depending upon the nature of the ceiling, however minimum precautions should include gloves, eye protection, and a dusk mask. An approved platform should be used to give safe access to the ceiling. Some ceilings may have insulation and therefore require protective clothing to be worn. If in doubt about the nature of this task it is advisable to contract a licensed electrical contractor to route the cables.

## 75 Ohm S-Video Terminator (S75)



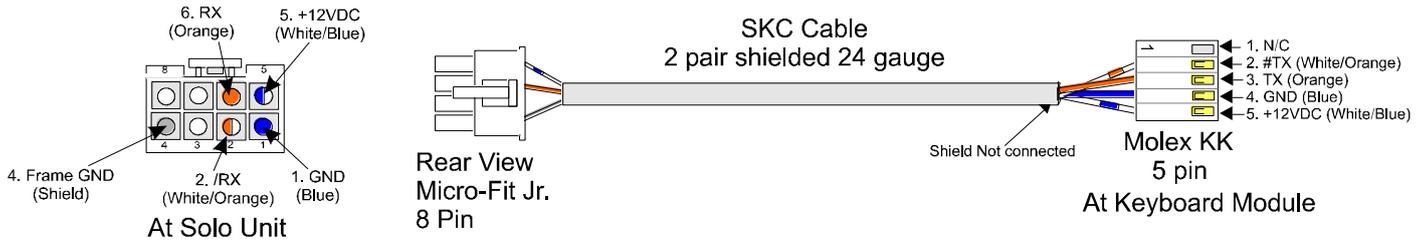
When a Video signal is transmitted on a cable over long distances, it is possible to experience a loss of video quality, (Usually shown as Picture Ghosting) should the monitor be not correctly terminated internally. Unfortunately the presence of 75 Ohm termination inside a Television varies with make and manufacturer.

If the video picture on the display shows excessive ghosting, then insert the provided S75 terminator at the Monitor end of the SVO or SVE and see if the picture quality improves.



**Note:** Excessive termination can also result in other forms of poor video quality, often as picture rolling or very low brightness. You should experiment with and without termination to determine the best picture quality. If picture quality is not improved, then you should make sure that the SVO or SVE cable has not been routed too close to any source of RF noise, such as transformers and fluorescent lights.

## Bowler's Keypad Cable (SKC)



SKC is the communications cable for the Bowler's Keypad. Run the cable from the Solo Hardware Module forward, along the ball track. Make sure that the cable is not lying across the ball track and also make sure that the cable is always on the far side of every ball track support. This way you can be sure that the cable will not be severed by a ball running down the track.

From the ball return cavity, run the cable through the conduit to the Players Console position. This is usually achieved by using one of the cables from your old system to pull in a draw cord at the same time as removing the old cable. Then, use this draw cord to pull through the SKC cable to its correct position.

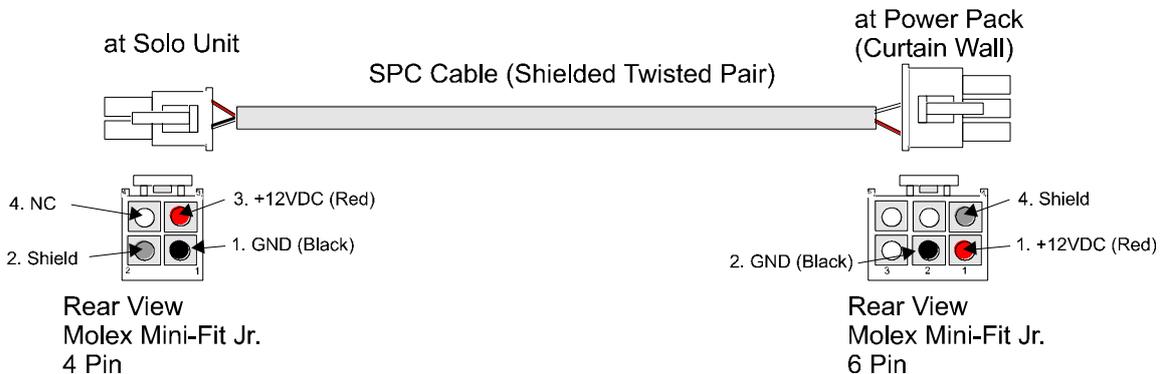


**Note:** Your old system may have used mains power at the Players Console. YOU MUST engage a licensed electrician to terminate the power back at the ball return cavity first, so that you can then safely remove the old electrical cable as it is not required for the Solo system.



**Warning:** Balls travelling down the ball track present a serious injury risk during installation of the SKC, SPC, SNC and Machine Interface cables, it is therefore necessary to power off each lane pair, including disconnecting the pinsetter mains input plug, during installation to ensure that the ball track is clear. It is not sufficient to rely upon the manager's control switch or the fact that no one is bowling as a ball may be residing in the pinsetter.

## Power Supply Cable (SPC)



The Power Supply cable is used to supply the Solo Hardware Module with low voltage power from a Power Supply attached to the curtain wall. Route this cable from the curtain wall power supply, past the pinspinner using the shortest safe route, down the kick back to the Solo Hardware Module. Again, make sure that the cable is clear from the ball track so that a ball running down the track cannot sever it.

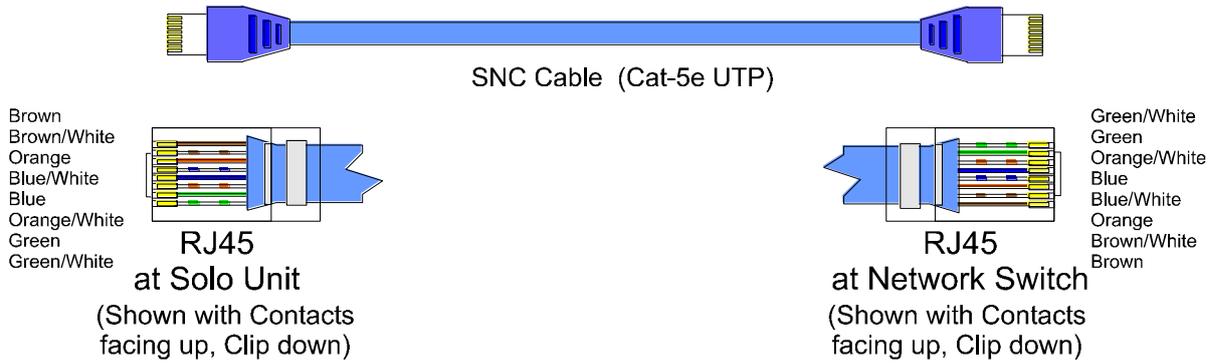


**Note:** Take note of either end connector as they vary and therefore the cable needs to be routed in the correct direction.

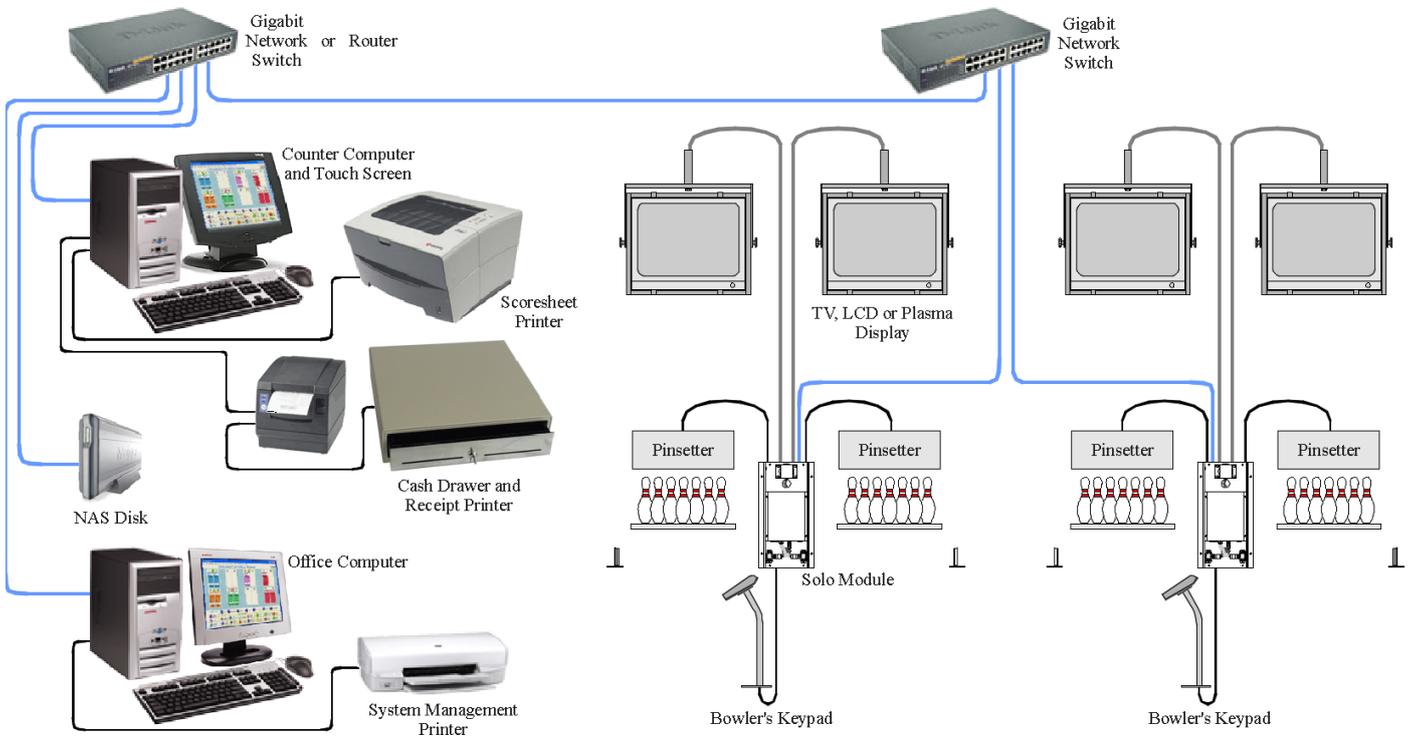


**Note:** The operation of the pinsetter and balls travelling down the ball track present a serious injury risk during installation of the SKC, SPC, SNC and Machine Interface cables, it is therefore necessary to power off each lane pair, including disconnecting the pinsetter mains input plug, during installation.

## Optional Network Cable (SNC)

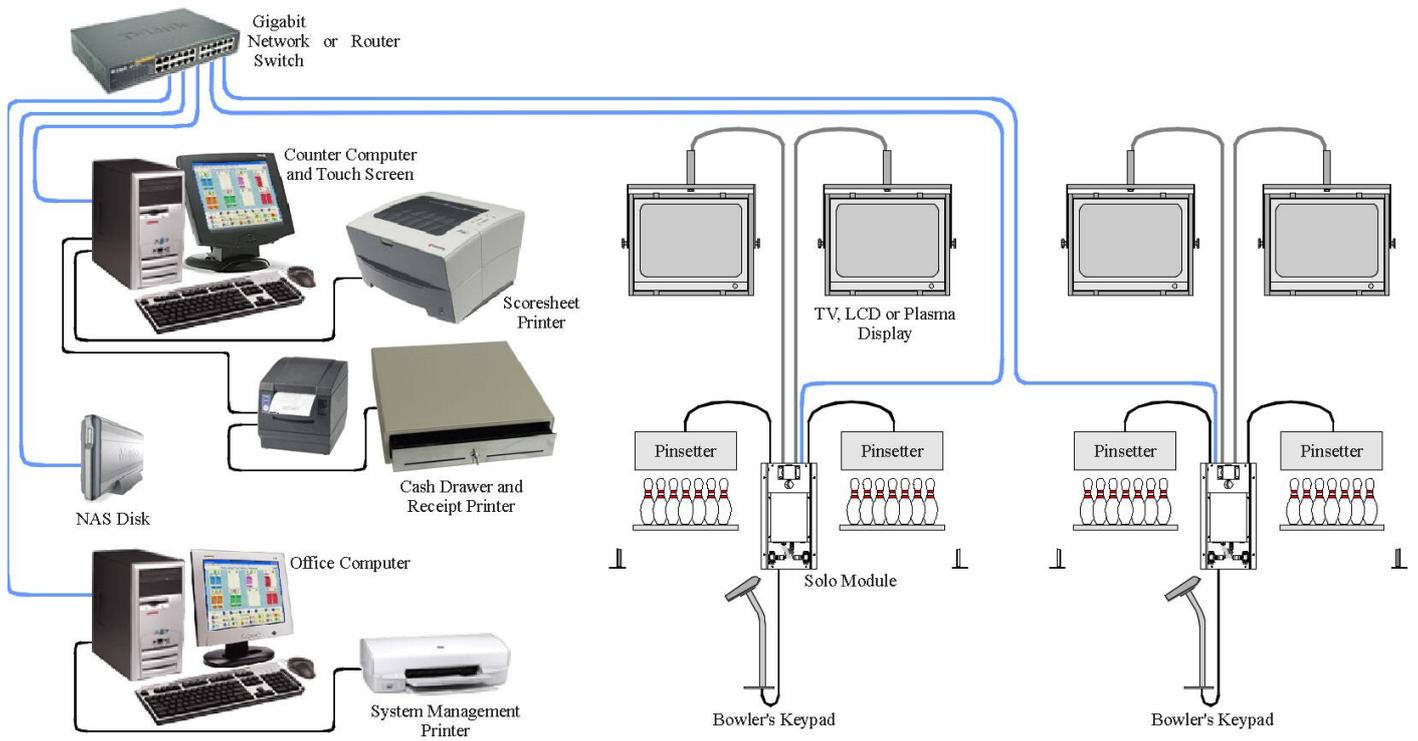


The Solo system is designed to have a stand alone basic scoring functionality, without the need to connect any computers at all. However, if you wish to control the lanes from a computer on the front counter, you will need to connect the Network Cable. (SNC) This cable is shown here in Blue. This optional CAT5e cable will allow the Solo system to interface with the Center Command software suite and allow you to fully control your systems functions including several optional software modules such as Point of Sale, League Secretarial and System Management. See Step 9 for more information on setting up your computers and printers for use with the Solo Scoring System.



The SNC Cable is run from the Solo Hardware Module forward along the ball track and up the kickback, past the pinsetter to the curtain wall or other convenient place where a single Gigabit (1000Mbit) network switch for all lanes is located. A second switch or a router can then be placed near the optional system management computers so that just a single cable need be run to the switch at the curtain wall.

Alternatively, a single switch can be used, however in this case all network cables must be run to that position. The advantage of this is that the networking is simpler. The disadvantage is that there is more work involved in running the cables.



### **Optional Machine Interface Cable (SMO & SME)**

The Solo system is designed for simplicity with no connection to your pinsetter at all. Without these connections present, the control operator must turn the Pinsetters on and off using the existing start and cycle switches at the managers control desk. However, these optional connections can be made to start and Cycle your Pinsetters using the computer. The Machine Interface Cable is different, depending on the make and model of your pinsetters.

Brunswick A & A2 as well as AMF 82-30 & 82-70 Pinsetters are only capable accepting the basic on / off and cycle commands where as all other later Pinsetter types are capable of accepting advanced commands such as 7 - 10 pick off, strike cycles and short cycles.

The following Pinsetters use the Machine Interface Cable port on the Solo unit where as others use the Machine Communications Port as discussed in the next section. Cable designations for Pinsetters using the Machine Interface port are as follows:

<b>Pinsetter</b>	<b>Cable Designation</b>
Brunswick A and A2	SMO-A2 SME-A2
AMF 82-30	SMO-30 SME-30
AMF 82-70	SMO-70 SME-70
AMF 82-70 MP Chassis	SMO-70MP SME-70MP
AMF 82-70 MK Expander	SMO-70MK SME-70MK
AMF 82-90	SM-90

**Note:** Although the terms Pinspotter and Pinsetter refer to Brunswick or AMF machines, they are used interchangeably for the purposes of this installation guide.

## Brunswick A and A2

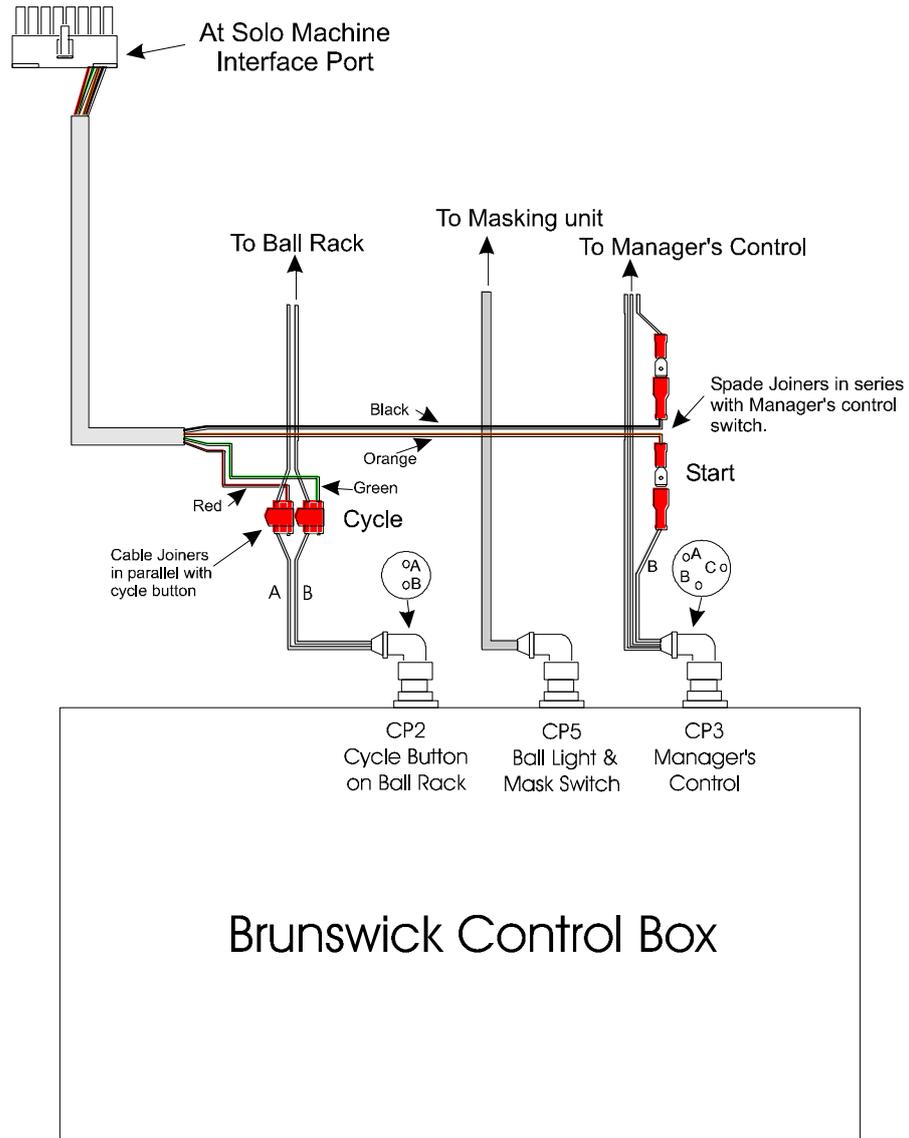
Run both the SMO-A2 and SME-A2 cables from the Solo Hardware Module, along the Ball Track, up the kickback, and then up the A-frame to the Control box on the Odd and Even lanes respectively. Make sure you route all cables away from moving parts, so there is no chance of the cables being crushed or cut.

The start contacts are connected in series to the manager's control switch and the cycle contact is wired in parallel to the cycle button from the ball return.



**Note:** *The Solo unit's start contacts must be connected in series (in line) not in parallel with (across) the manager's control switch. This is to ensure that when the manager's control switches are switched off the pinsetter will turn off. Normal operation will see the Manager's control switch turned on, the pinsetter will turn on and off with the games bowled. If, however, there is an urgent need to turn the pinsetter off it can be done quickly using the Manager's control switches.*

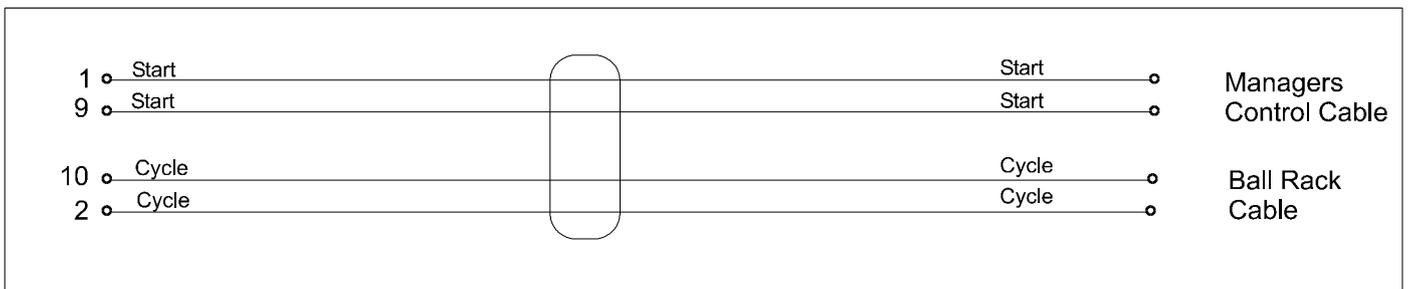
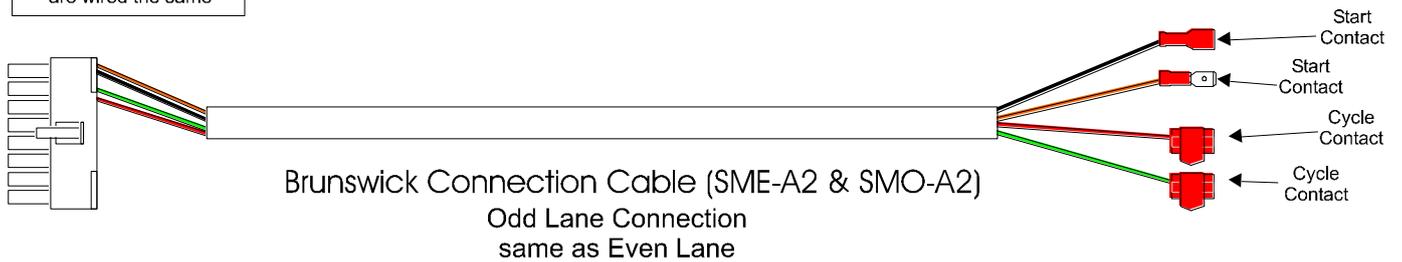
# Typical Brunswick A and A2 Connection



Pin	Function
1	Start (Black)
2	Cycle (Green)
3	Not Connected
4	Not Connected
5	Not Connected
6	Not Connected
7	Not Connected
8	Not Connected
9	Start (Orange)
10	Cycle (Red)
11	Not Connected
12	Not Connected
13	Not Connected
14	Not Connected
15	Not Connected
16	Not Connected

Rear View  
Molex MicroFit.  
16 Pin  
Odd & Even Lanes  
are wired the same



## AMF 82-30

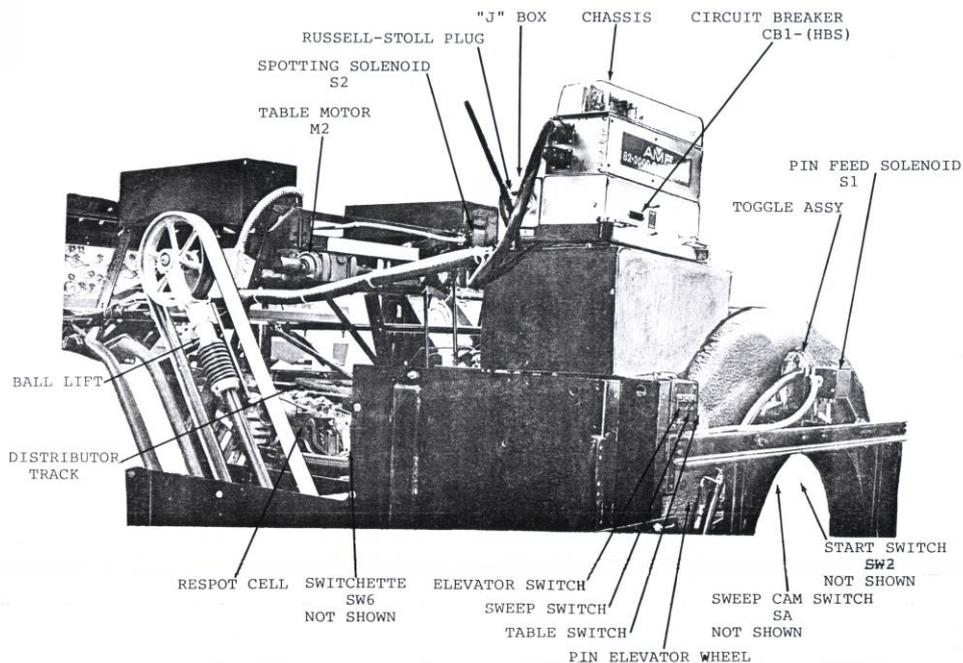
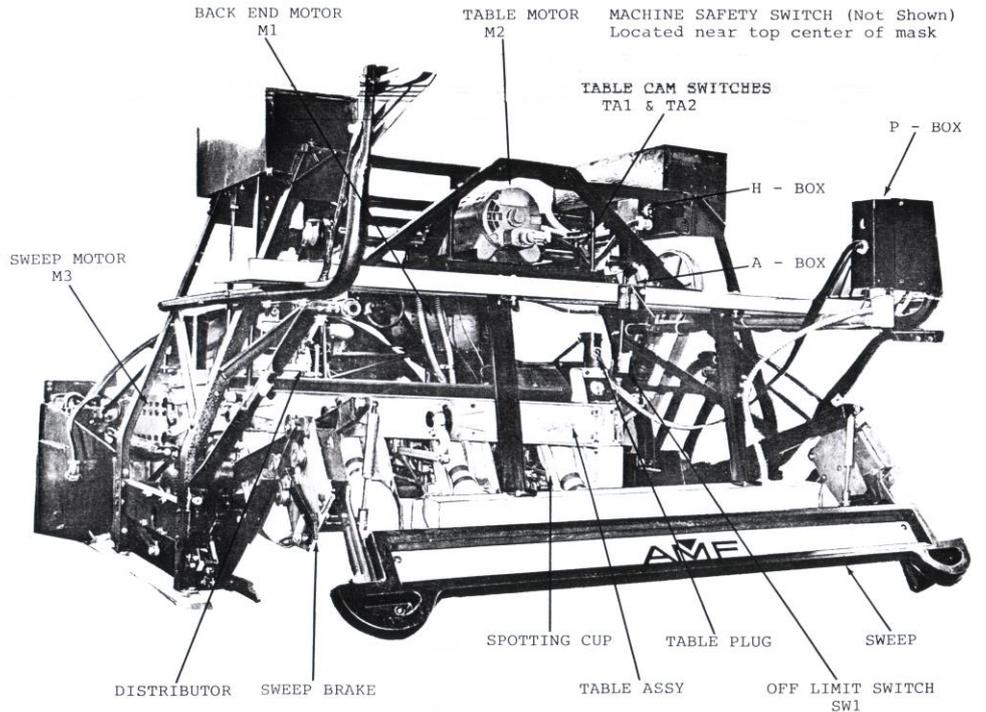
Run both the SMO-30 and SME-30 cables from the Solo Hardware Module, along the Ball Track, and up the kickback. The Start cable is wired to the "P" Box at the front of the machine and the cycle cable is wired to the "J" Box. Again, the start contact is wired in series to the managers control switch and the cycle contact is wired in parallel to the cycle button from the ball return.



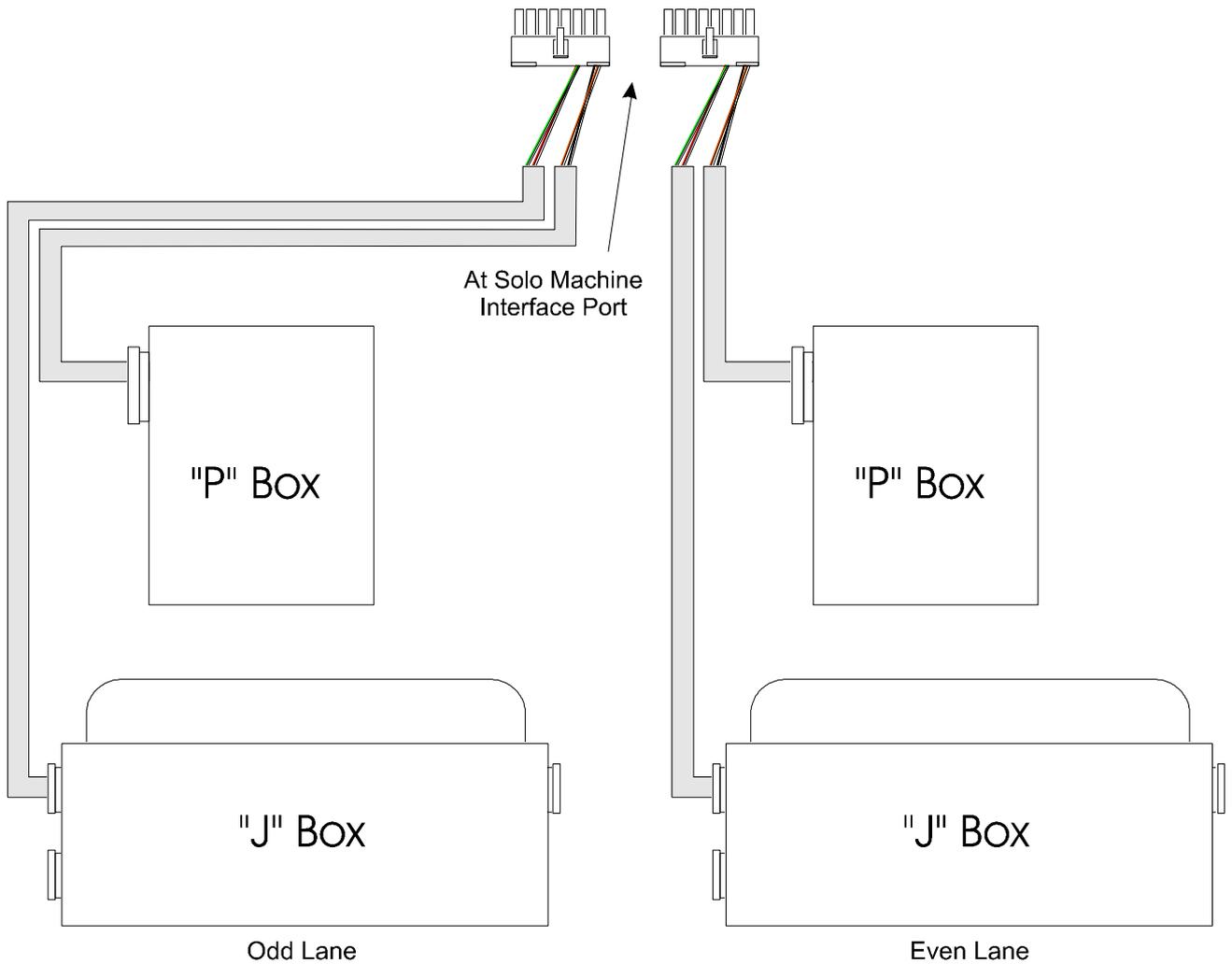
**Warning:** Beware of high voltage present in the J Box. You MUST turn off AND isolate the pinsetter BEFORE working on it.

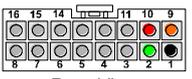


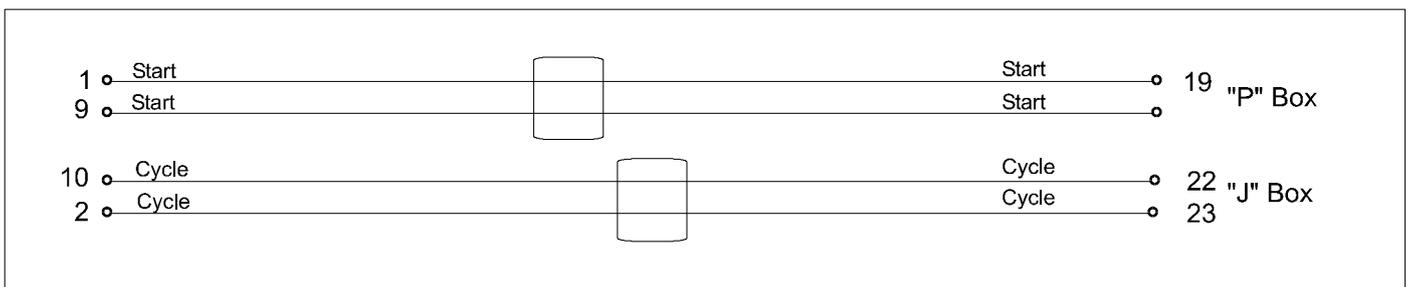
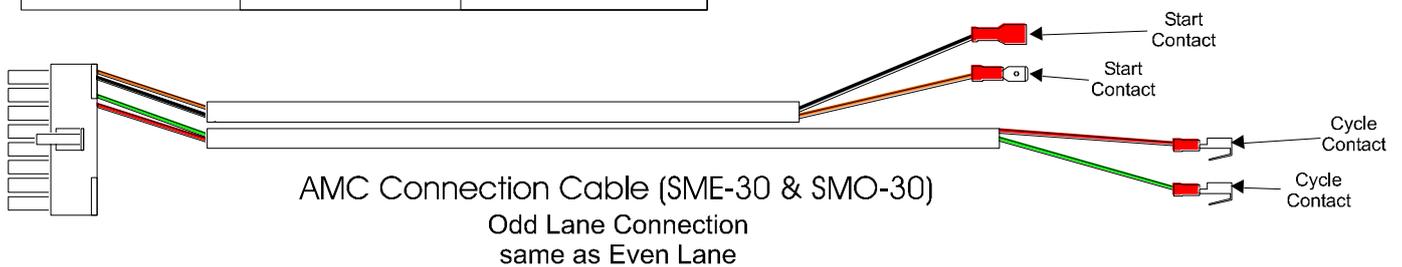
**Warning:** You MUST NOT connect the foul to the Solo Scoring Module or YOU WILL DAMAGE IT. Many 82-30 machines use a high voltage foul signal. Solo accepts the low voltage foul signal only.

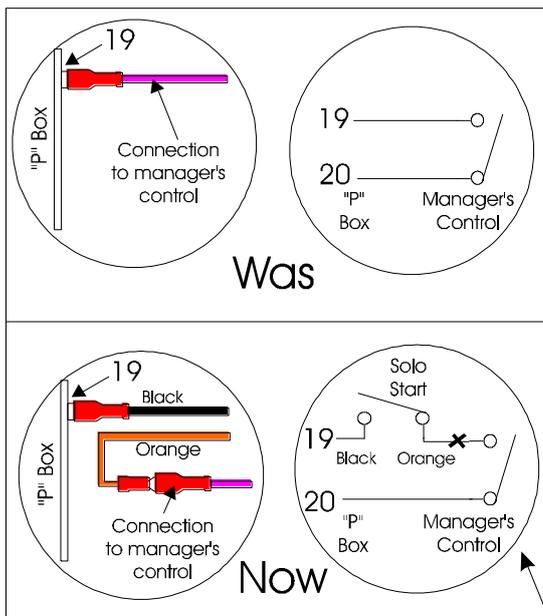


# Typical AMF 82-30 Machine Connection



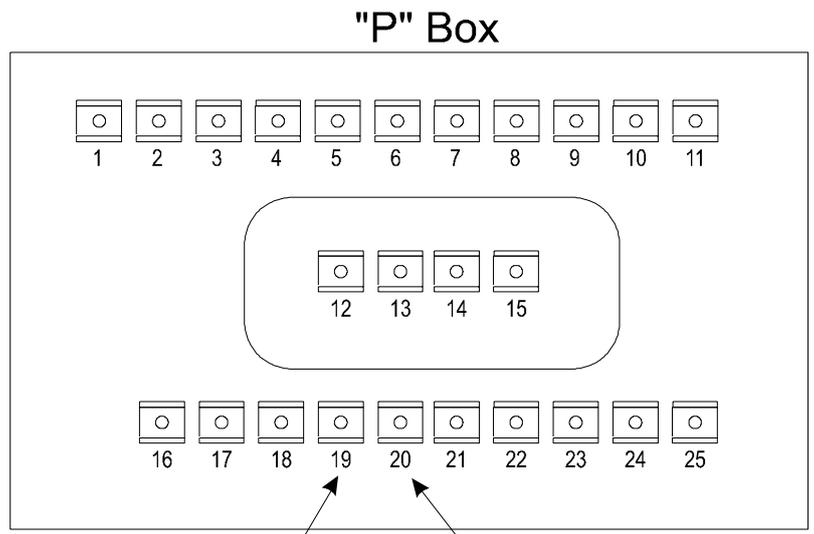
	Pin Function	Pin Function
 <p>Rear View Molex MicroFit 16 Pin Odd &amp; Even Lanes are wired the same</p>	1 Start (Black)	9 Start (Orange)
	2 Cycle (Green)	10 Cycle (Red)
	3 Not Connected	11 Not Connected
	4 Not Connected	12 Not Connected
	5 Not Connected	13 Not Connected
	6 Not Connected	14 Not Connected
	7 Not Connected	15 Not Connected
	8 Not Connected	16 Not Connected





Note! Always insulate the connection from the black to the manager's control

Connection from Manager's Control to Pin 19 is removed and connected to Orange so that Solo Start is in series with Manager's control Switch



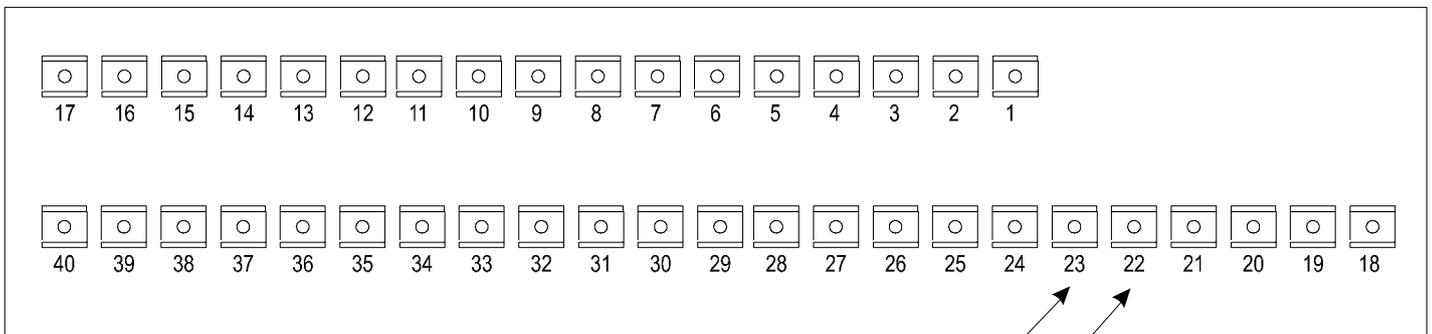
Black (Start)

Pin 20 is left as is

Orange (Start)

Previous connection to Pin 19 of Box from Manager's Control

### "J" Box



Cycle jumpers across existing connections

Cycle (Green)

Cycle (Red)

## AMF 82-70

Run both the SMO-70 and SME-70 cables from the Solo Hardware Module, along the Ball Track, up the kickback, to the A&MC box located on the curtain wall. Again, the start contact is wired in series to the managers control switch on AMC Pin 5 and the cycle contact is wired in parallel across AMC pins 1 & 2 to the cycle button from the ball return. The Foul signal is also wired to the AMC box across AMC pins 7 & 8.



**Warning:** *Be careful when pulling out the existing AMC connections that you do not pull out more than the intended connector by exerting too much force. Also, make sure that no connectors are shorting out with any others, otherwise machine faults like continual cycling could occur.*



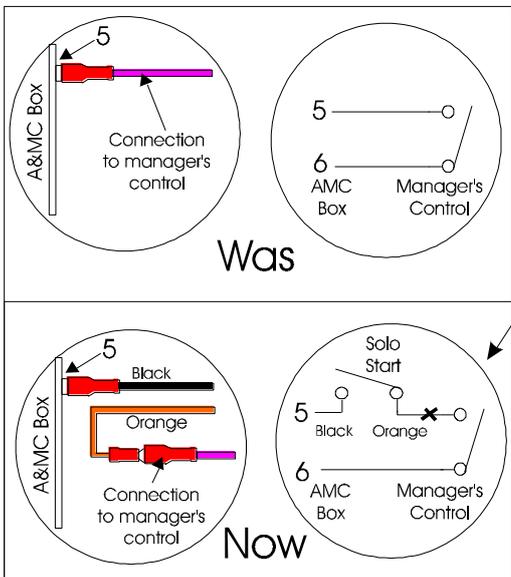
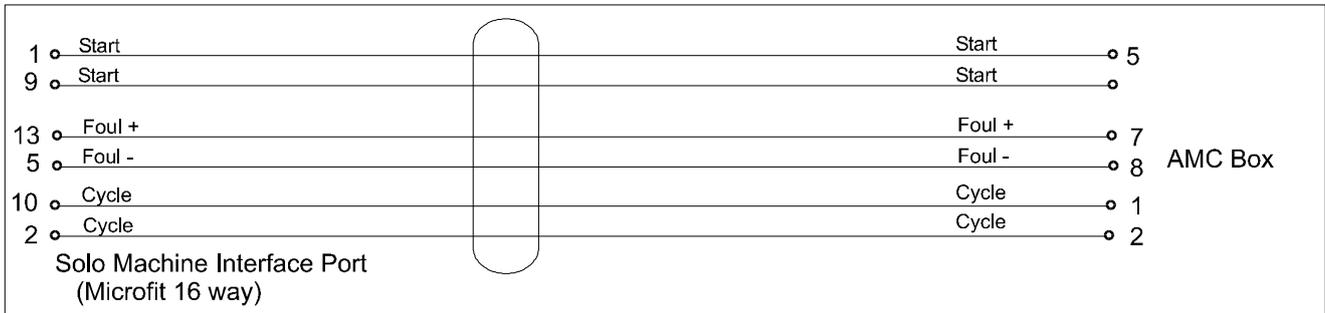
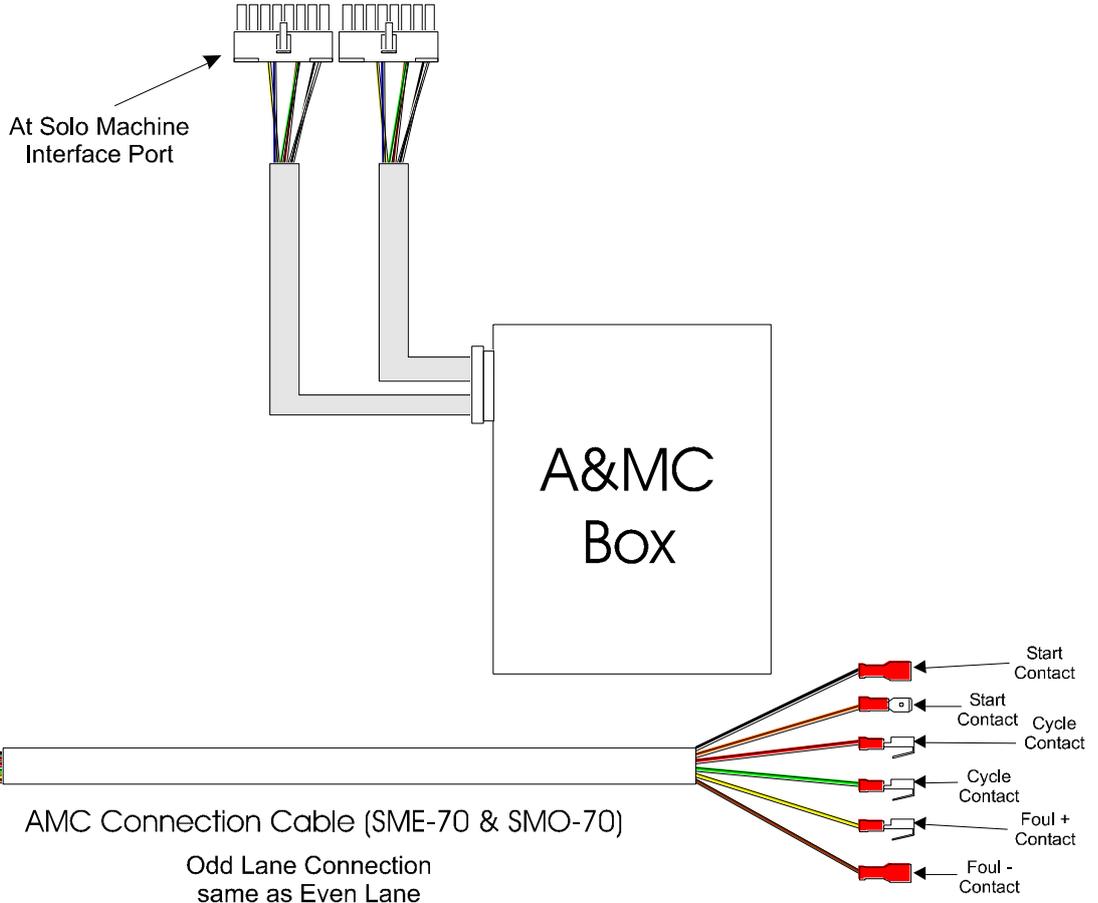
**Note:** *The Solo unit's start contacts must be connected in series (in line) not in parallel with (across) the manager's control switch. This is to ensure that when the manager's control switches are switched off the pinsetter will turn off. Normal operation will see the Manager's control switch turned on, the pinsetter will turn on and off with the games bowled. If, however, there is an urgent need to turn the pinsetter off it can be done quickly using the Manager's control switches.*

# Typical AMF 82-70 Machine Connection

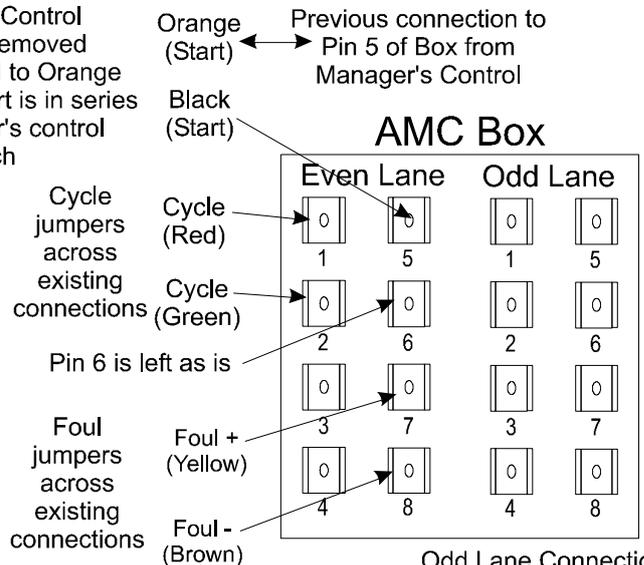
Pin	Function
1	Start (Black)
2	Cycle (Green)
3	Not Connected
4	Not Connected
5	Foul - (Brown)
6	Not Connected
7	Not Connected
8	Not Connected
9	Start (Orange)
10	Cycle (Red)
11	Not Connected
12	Not Connected
13	Foul + (Yellow)
14	Not Connected
15	Not Connected
16	Not Connected

Rear View  
Molex MicroFit.  
16 Pin  
Odd & Even Lanes  
are wired the same



Connection from Manager's Control to Pin 5 is removed and connected to Orange so that Solo Start is in series with Manager's control Switch



Odd Lane Connection same as Even Lane

Note! Always insulate the connection from the black to the manager's control

Step 2: Run the Cables

## AMF 82-70 with MP Chassis

Run both the SMO-70MP and SME-70MP cables from the Solo Hardware Module, along the Ball Track, up the kickback. One cable is then run to the A&MC box located on the curtain wall and the other is run to the MP chassis. Again, the start contact is wired in series to the managers control switch on AMC Pin 5.

The tenth frame cycle contact, foul and second ball input are included in the round APS plug that is present on the MP chassis. The APS commands also allow more advanced pinsetter functions such as short strike cycle, sweep reverse on 1<sup>st</sup> ball miss and 7 – 10 pick off.



**Warning:** *Be careful when pulling out the existing AMC connections that you do not pull out more than the intended connector by exerting too much force. Also, make sure that no connectors are shorting out with any others, otherwise machine faults like continual cycling could occur.*

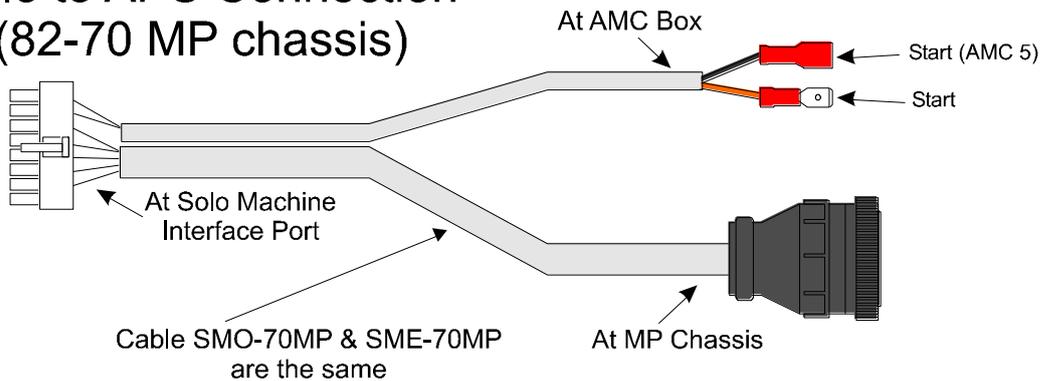


**Note:** *The Solo unit's start contacts must be connected in series (in line) not in parallel with (across) the manager's control switch. This is to ensure that when the manager's control switches are switched off the pinsetter will turn off. Normal operation will see the Manager's control switch turned on, the pinsetter will turn on and off with the games bowled. If, however, there is an urgent need to turn the pinsetter off it can be done quickly using the Manager's control switches.*

The take data delay in the [Fine Tune the Scoring Setup](#) screen must be set to allow enough time for the score to be taken and the APS input to the pinspotter MP chassis to be driven prior to the pinspotter table starting to move. The default setting is 3.0 seconds for the MP chassis. The MP Chassis must receive the APS scoring input prior to the table operating, so that any advanced functions such sweep reverse can occur if necessary. If the table starts moving, it is too late for any advanced commands to be received.

This Take Data Delay should be set as long as possible to give the maximum time for any unsteady pins to fall, but not too long so that the MP chassis times out and ignores 7-10 pick off or short strike cycles.

# Solo to APS Connection (82-70 MP chassis)



Pin	Function
1	Start (Black)
2	Cycle 1
3	Not Connected
4	Not Connected
5	Foul -
6	2nd Ball -
7	APS Clk
8	APS Com
9	Start (Orange)
10	Cycle 2
11	Not Connected
12	Not Connected
13	Foul +
14	2nd Ball +
15	APS Data
16	Not Connected

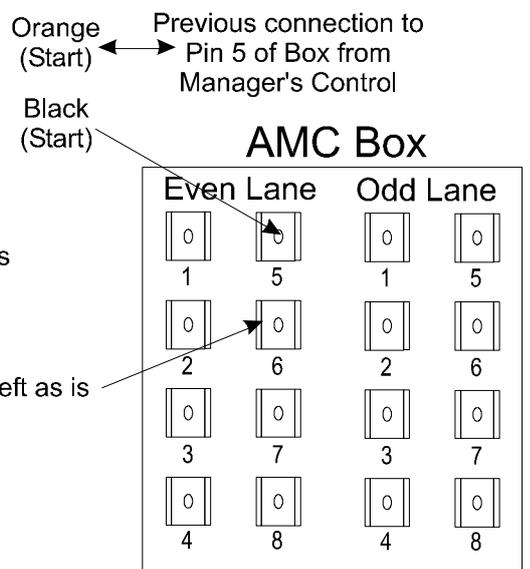
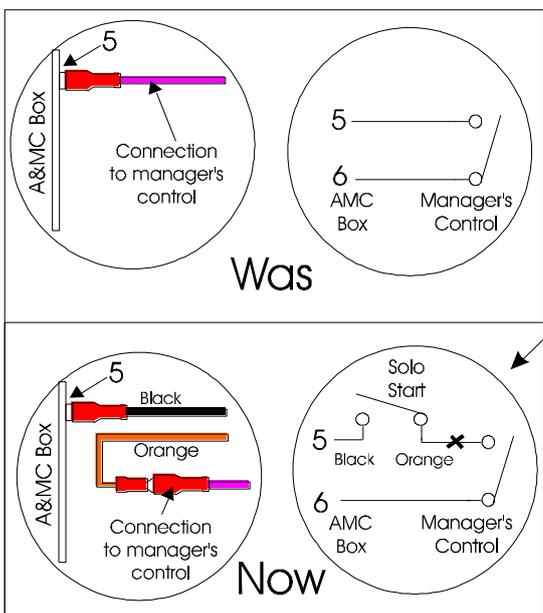
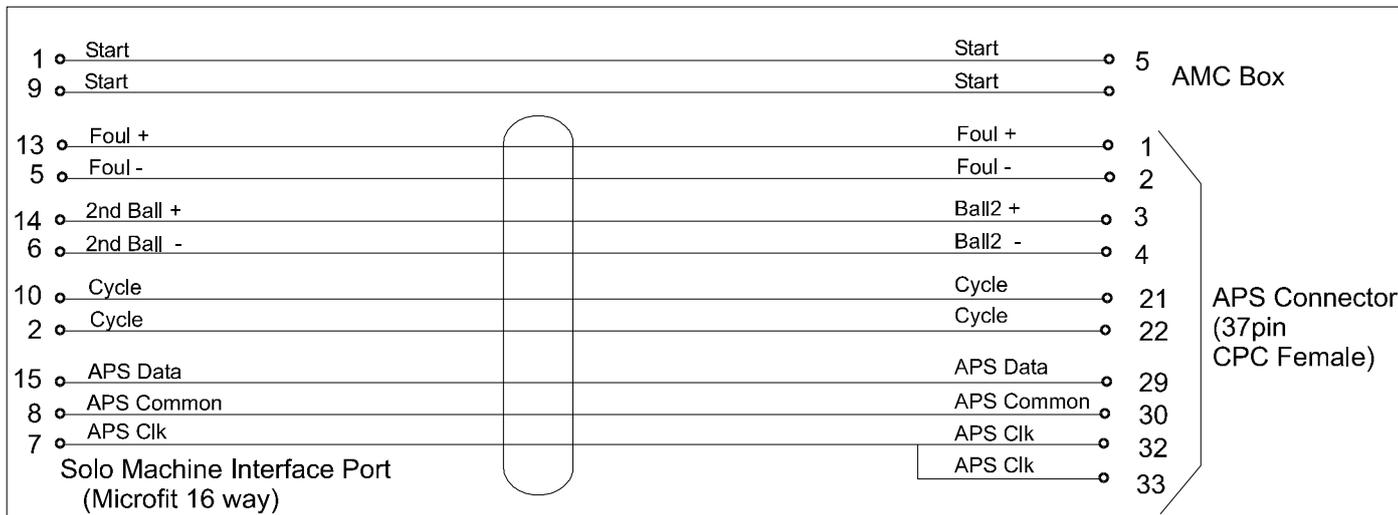
  

Rear View  
Molex MicroFit.  
16 Pin  
Odd & Even Lanes  
are wired the same

Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Foul +	11	Not Connected	21	Cycle 1	31	Not Connected
2	Foul -	12	Not Connected	22	Cycle 2	32	APS Clk
3	2nd Ball +	13	Not Connected	23	Not Connected	33	APS Clk
4	2nd Ball -	14	Not Connected	24	Not Connected	34	Not Connected
5	Not Connected	15	Not Connected	25	Not Connected	35	Not Connected
6	Not Connected	16	Not Connected	26	Not Connected	36	Not Connected
7	Not Connected	17	Not Connected	27	Not Connected	37	Not Connected
8	Not Connected	18	Not Connected	28	Not Connected		
9	Not Connected	19	Not Connected	29	APS Data		
10	Not Connected	20	Not Connected	30	APS Common		

Rear View  
AMP CPC  
37 Pin



Note! Always insulate the connection from the black to the manager's control  
**Step 2: Run the Cables**

Odd Lane Connection same as Even Lane

## AMF 82-70 with MK Expander

Run both the SMO-70MK and SME-70MK cables from the Solo Hardware Module, along the Ball Track, up the kickback.

The First cable is run to the A&MC box located on the curtain wall. Again, the start contact is wired in series to the managers control switch on AMC Pin 5 and the cycle contact is wired in parallel across AMC pins 1 & 2 to the cycle button from the ball return. The Foul signal is also wired to the AMC box across AMC pins 7 & 8.



**Warning:** *Be careful when pulling out the existing AMC connections that you do not pull out more than the intended connector by exerting too much force. Also, make sure that no connectors are shorting out with any others, otherwise machine faults like continual cycling could occur.*

The second cable is run to the MK Expander PC Board in the control chassis, where the four pin connector is plugged into the top right corner of the Printed Circuit Board. The APS commands allow more advanced pinsetter functions such as short strike cycle, sweep reverse on 1<sup>st</sup> ball miss and 7 – 10 pick off.

The third cable is run to the masking unit, where it is connected across the 2<sup>nd</sup> Ball light. Check the polarity of the connection by making sure that the 2<sup>nd</sup> Ball Indicator on the Solo Hardware unit comes on when the pinsetter is on second ball.



**Note:** *The Solo unit's start contacts must be connected in series (in line) not in parallel with (across) the manager's control switch. This is to ensure that when the manager's control switches are switched off the pinsetter will turn off. Normal operation will see the Manager's control switch turned on, the pinsetter will turn on and off with the games bowled. If, however, there is an urgent need to turn the pinsetter off it can be done quickly using the Manager's control switches.*

The take data delay in the [Fine Tune the Scoring Setup](#) screen must be set to allow enough time for the score to be taken and the APS input to the MK expander chassis to be driven prior to the pinspotter table starting to move. The default setting is 3.0 seconds for the Omega-Tek chassis fitted with MK expanders. The MK expander must receive the APS scoring input prior to the table operating, so that any advanced functions such as sweep reverse can occur if necessary. If the table starts moving, it is too late for any advanced commands to be received.

This Take Data Delay should be set as long as possible to give the maximum time for any unsteady pins to fall, but not too long so that the MK expander times out and ignores 7-10 pick off or short strike cycles.



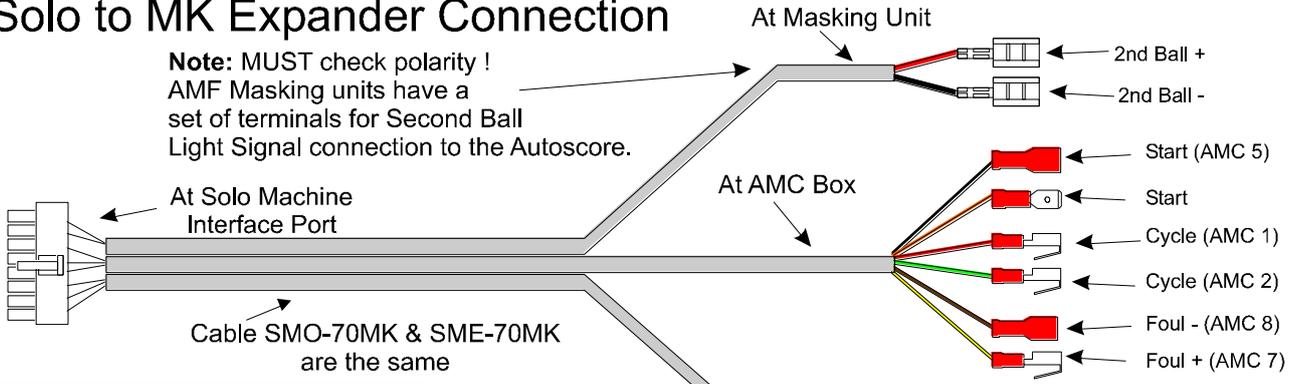
**Note:** *Make sure that the Pinsetter Model Type in the Setup Wizard is set to [AMF 82\\_70MP](#). The MP Chassis and the MK Expander behave in the same way, so the one Pinsetter Model Type will operate both types of chassis.*



**Tip:** *Some pinspotters have the MK expander fitted, but have not been re-wired to enable reversing of the sweep motor. It is possible to enable or disable the sweep reverse function for the APS in the [Check Pinsetter Connections](#) screen in the troubleshooting menu of the Solo.*

# Solo to MK Expander Connection

**Note: MUST check polarity !**  
 AMF Masking units have a set of terminals for Second Ball Light Signal connection to the Autoscore.

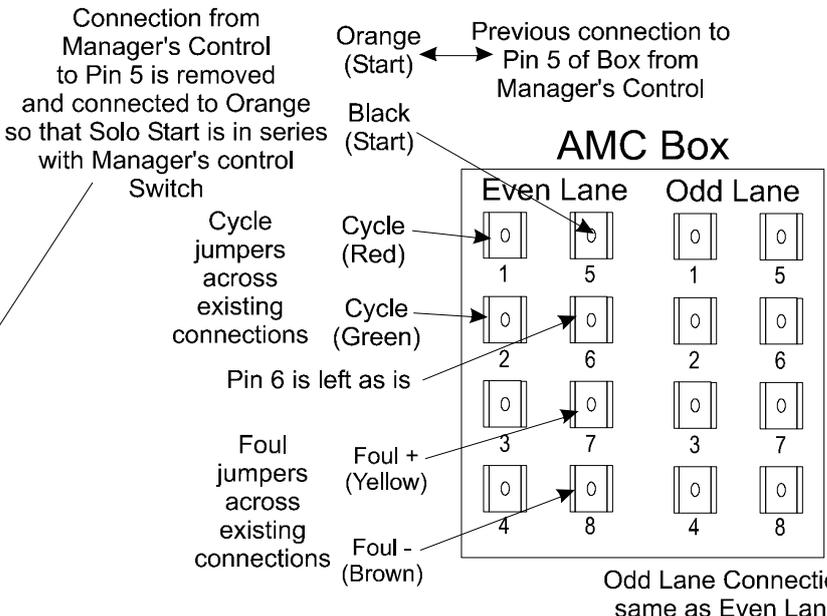
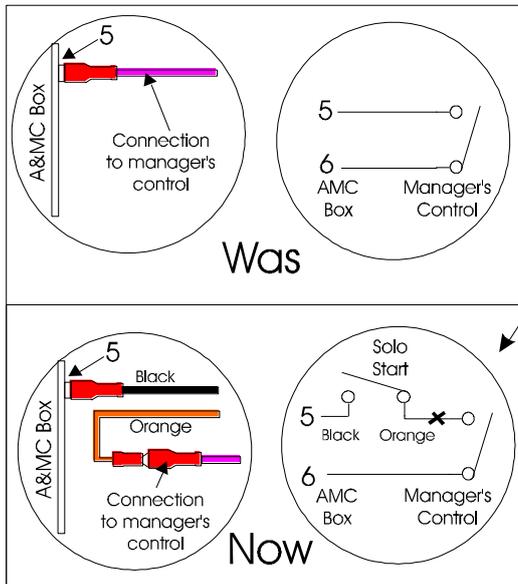
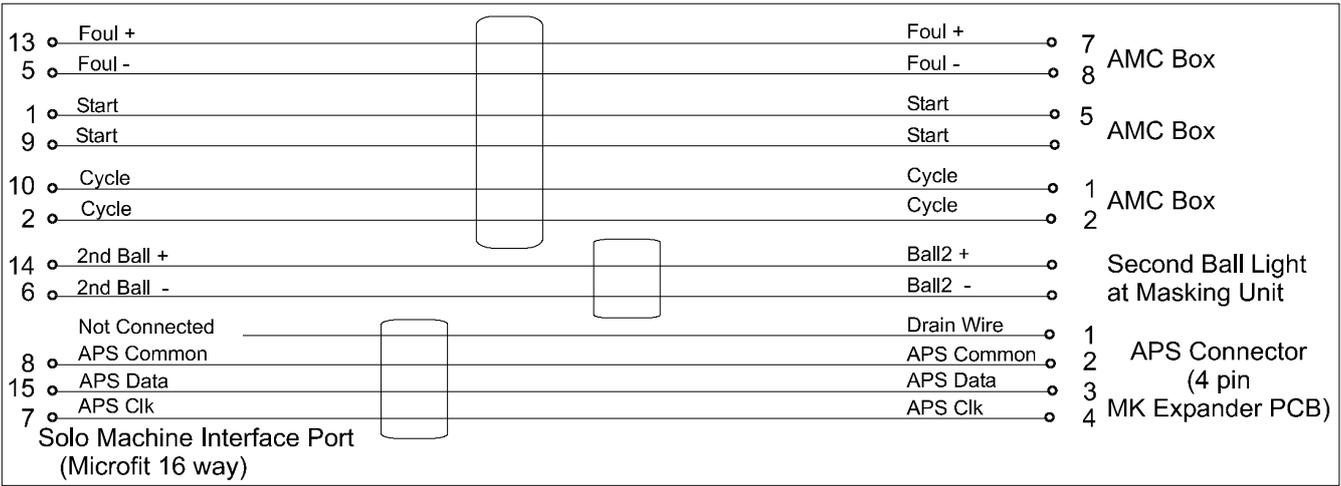
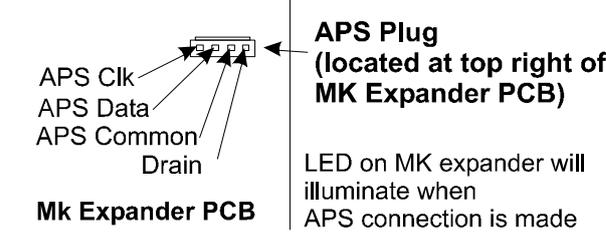


Pin	Function	Pin	Function
1	Start (Black)	9	Start (Orange)
2	Cycle (Green)	10	Cycle (Red)
3	Not Connected	11	Not Connected
4	Not Connected	12	Not Connected
5	Foul - (Brown)	13	Foul + (Yellow)
6	2nd Ball - (Black)	14	2nd Ball + (Red)
7	APS Clk	15	APS Data
8	APS Com	16	Ball2 AMF

Rear View Molex MicroFit 16 Pin  
 Odd & Even Lanes are wired the same

Pin	Function
1	Shield Drain
2	APS Common
3	APS Data
4	APS Clk

Rear View Molex KK Connector 4 Pin  
 Odd & Even Lanes are wired the same



Note! Always insulate the connection from the black to the manager's control

## Step 2: Run the Cables

## AMF 82-90 (Large Chassis)

Run both the SM-90 cables from the Solo Hardware Module, along the Ball Track, up the kickback, to the 82-90 chassis at the rear of the Pinsetter, and plug into the APS connection at the back of the chassis. The SM-90 cable gives the Solo Hardware Module signals for Cycle, Foul, Rake Down and Pinsetter Status.

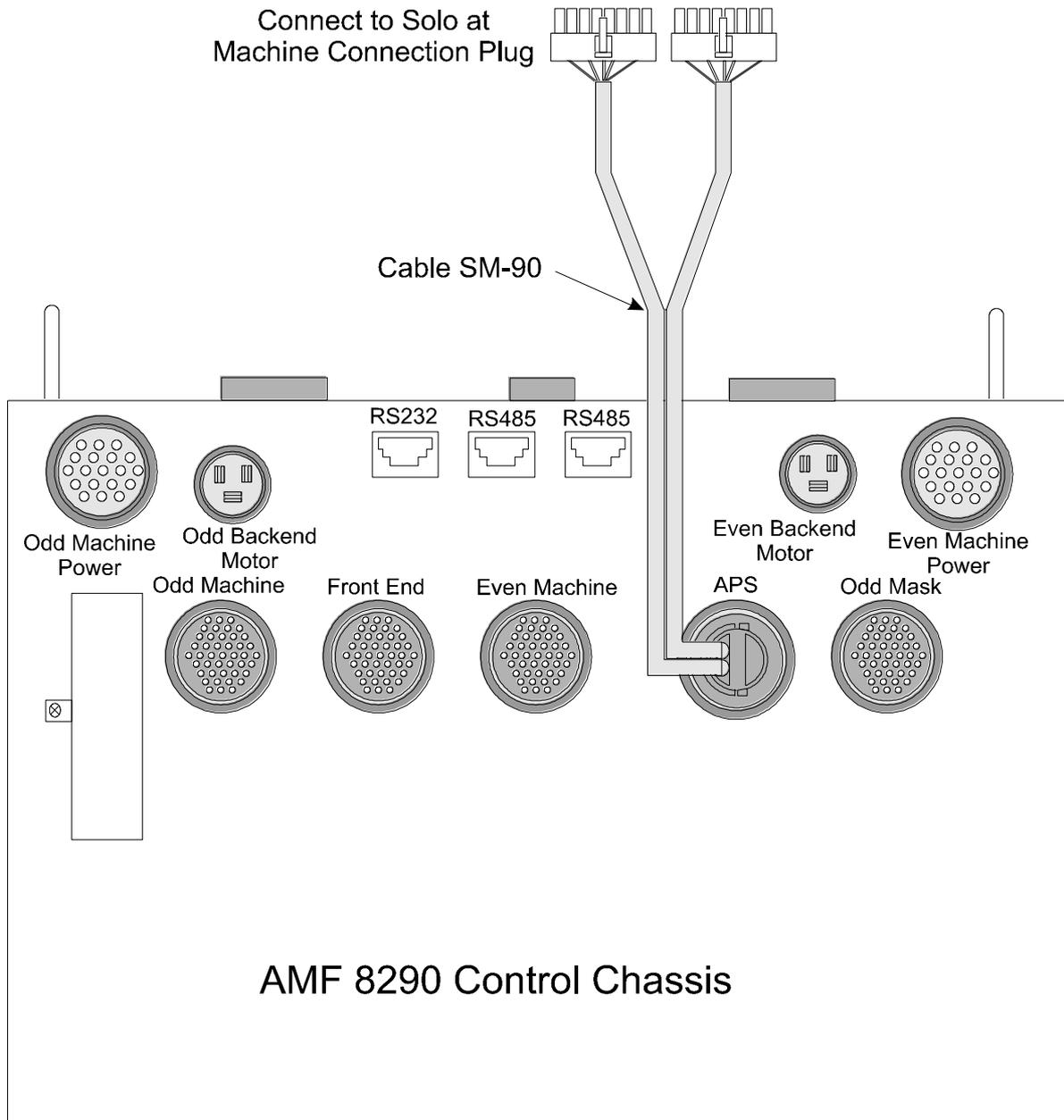
However, it DOES NOT contain signals to turn the Pinsetters On and Off from the Solo unit. To enable this optional feature, the optional Lane Control Computers must be connected to the MCU (Managers Control Unit) and software run to enable the MCU commands to be sent from the computer to the Pinsetters.

For more information on connecting the MCU to the Lane Control Computers, Appendix C in this manual.



**Note:** The take data delay in the [Fine Tune the Scoring Setup](#) screen must be set to allow enough time for the score to be taken and the APS input to the 82-90 chassis to be driven prior to the pinspotter table starting to move. The default setting is 3.0 seconds for the 82-90 pinsetter model type. The 82-90 must receive the APS scoring input prior to the table operating, so that any advanced functions such as sweep reverse can occur if necessary. If the table starts moving, it is too late for any advanced commands to be received. This Take Data Delay should be set as long as possible to give the maximum time for any unsteady pins to fall, but not too long so that the 82-90 chassis times out and ignores 7-10 pick off or short strike cycles.

## AMF 82-90 Scoring Connection

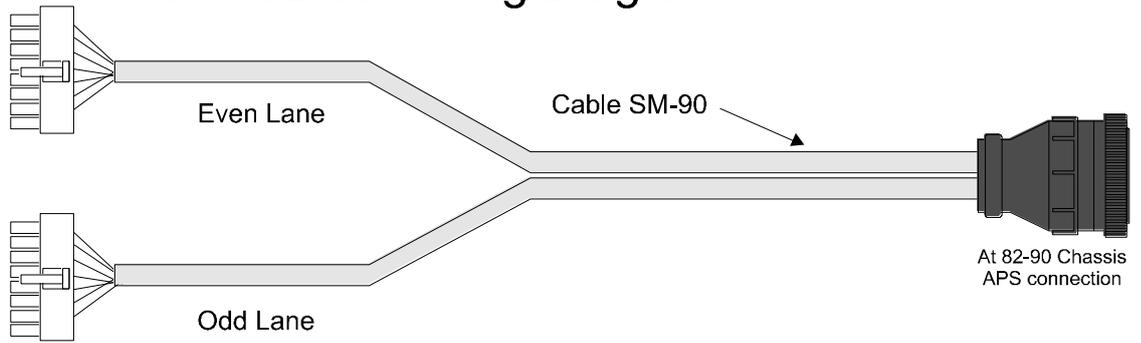


# AMF 82-90 Wiring Diagram

Pin	Function
1	Not Connected
2	Cycle 1
3	Not Connected
4	Not Connected
5	Foul -
6	2nd Ball -
7	APS Clk
8	APS Com
9	Not Connected
10	Cycle 2
11	Not Connected
12	Not Connected
13	Foul +
14	2nd Ball +
15	APS Data
16	Not Connected

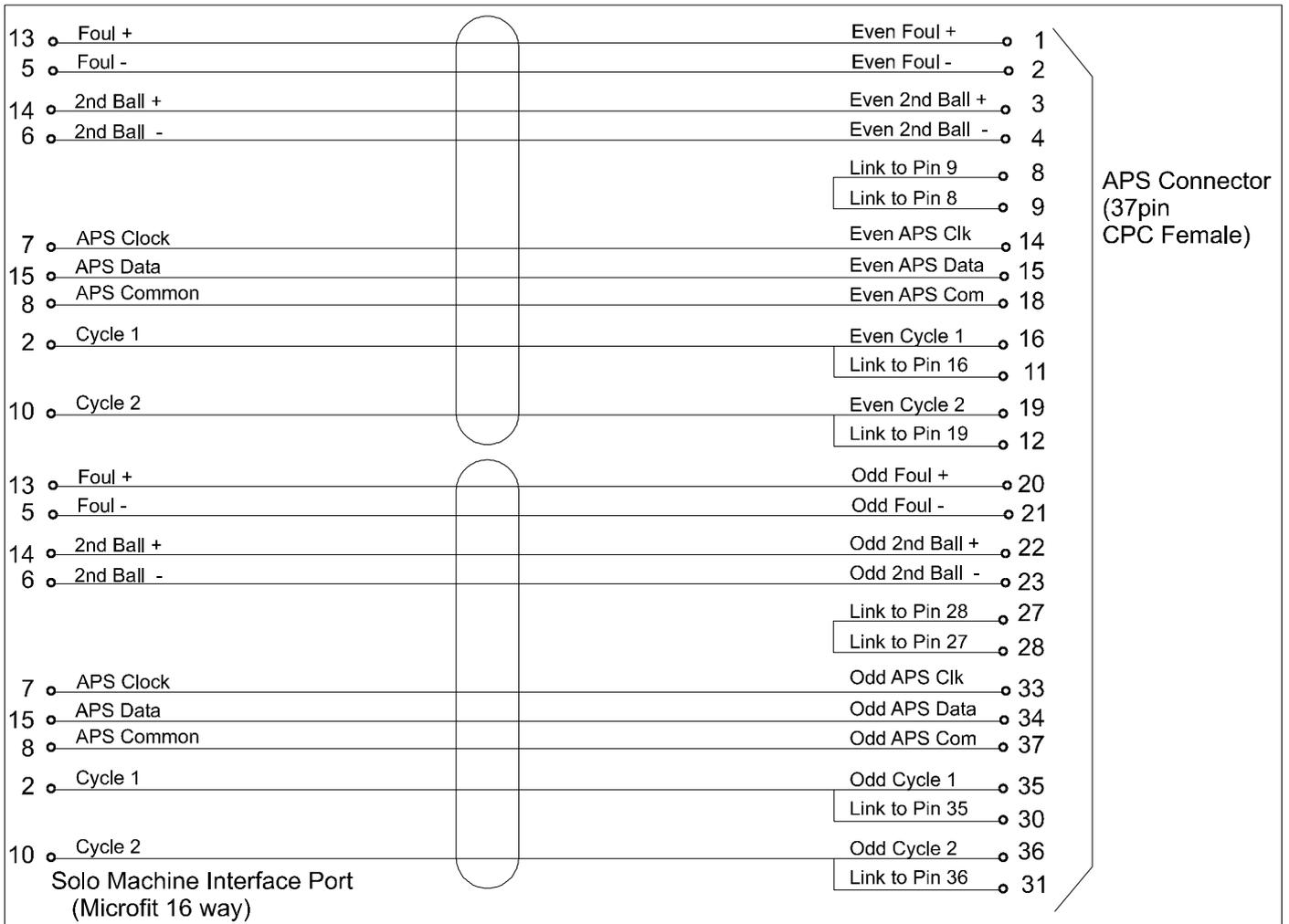
Rear View  
Molex MicroFit.  
16 Pin  
Odd & Even Lanes  
are wired the same



Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Even Foul +	11	Linked to Pin 16	21	Odd Foul -	31	Linked to Pin 36
2	Even Foul -	12	Linked to Pin 19	22	Odd 2nd Ball +	32	Not Connected
3	Even 2nd Ball +	13	Not Connected	23	Odd 2nd Ball -	33	Odd APS Clk
4	Even 2nd Ball -	14	Even APS Clk	24	Not Connected	34	Odd APS Data
5	Not Connected	15	Even APS Data	25	Not Connected	35	Odd Cycle 1
6	Not Connected	16	Even Cycle 1	26	Not Connected	36	Odd Cycle 2
7	Not Connected	17	Not Connected	27	Linked to Pin 28	37	Odd APS Com
8	Linked to Pin 9	18	Even APS Com	28	Linked to Pin 27		
9	Linked to Pin 8	19	Even Cycle 2	29	Not Connected		
10	Not Connected	20	Odd Foul +	30	Linked to Pin 35		

Rear View  
AMP CPC  
37 Pin



### **Machine Communications Cable (SXL SGX or SG9)**

This cable will allow the Solo unit to communicate with advanced Pinsetters such as the AMF 8800Gold, AMF 82-90XL and 90XLi as well as the Brunswick GS-X machine.

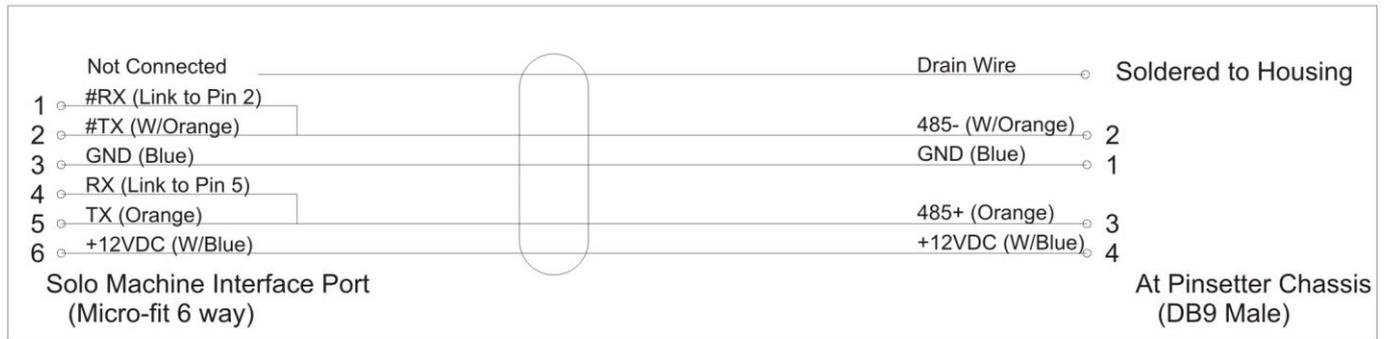
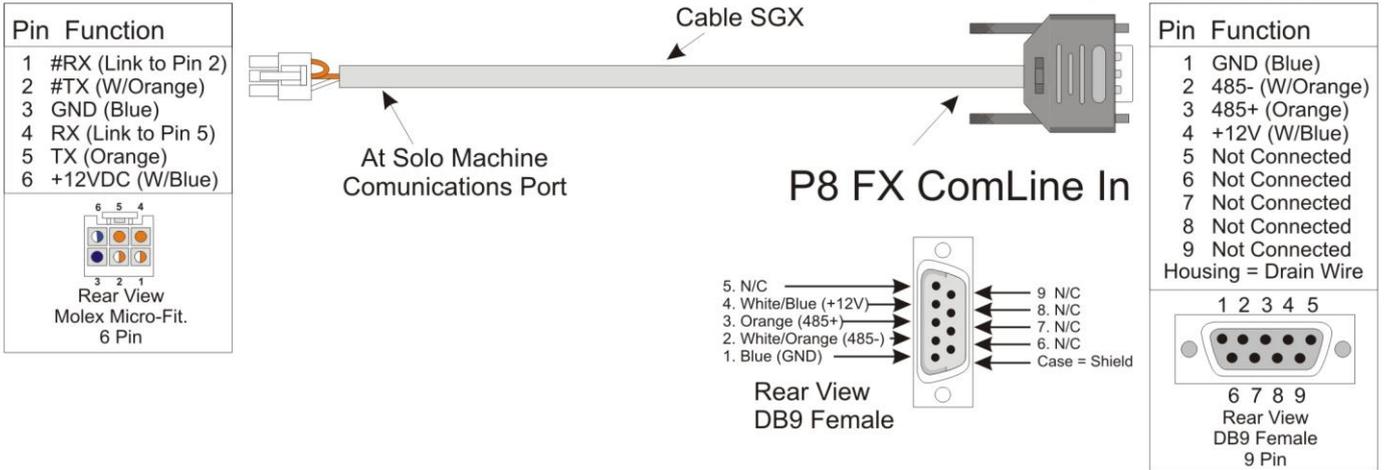
The cable designation is as follows:

Pinsetter	Cable Designation
Brunswick GS-X	SGX
Brunswick GS-10/96 (with Pinsetter Interface Controller fitted).	SG9
AMF 8800 Gold AMF 82-90XL AMF 90XL	SXL

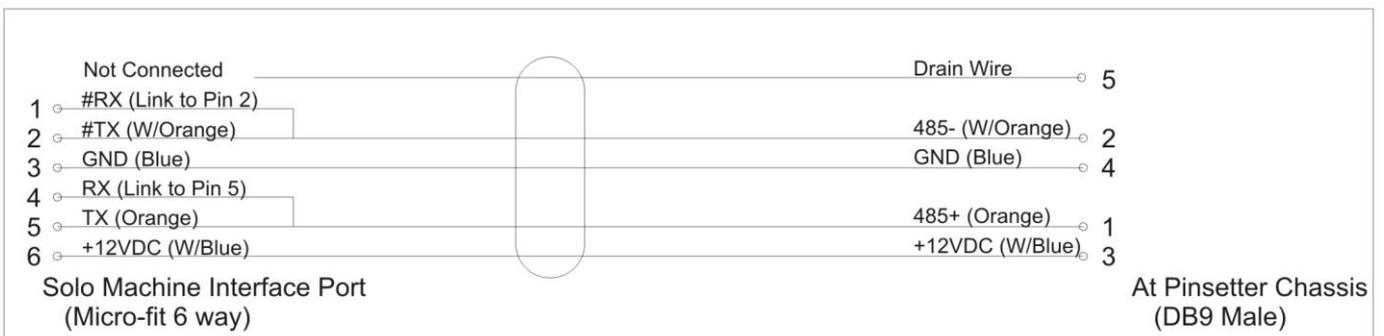
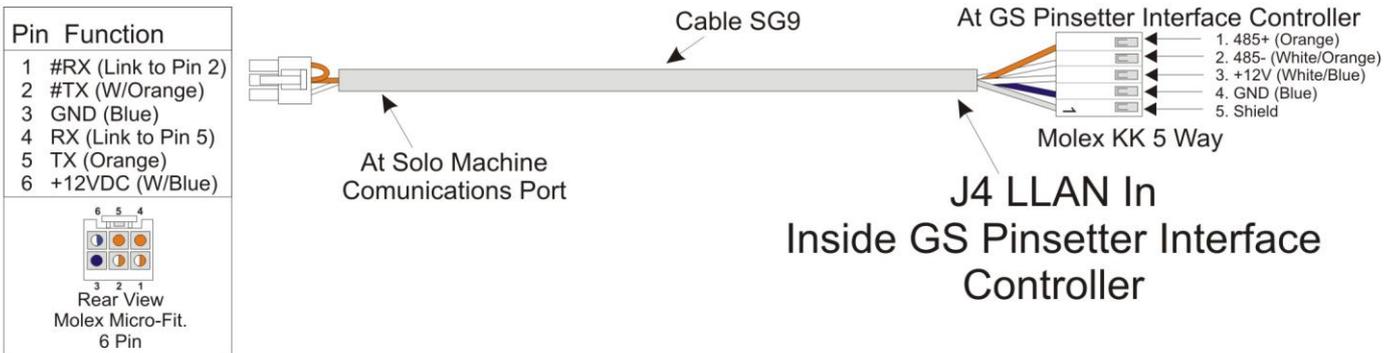
### **Brunswick GS-X (SGX) or Brunswick GS-10/96 with Pinsetter Interface Controller fitted (SG9).**

Route the SGX or SG9 cable from the Solo Hardware Module, along the Ball Track, up the front of the kickback (following existing low voltage cables) to the GSX control chassis or the Pinsetter Interface Controller.

# Brunswick GS-X Connection



# Brunswick GS-10/96 with Pinsetter Interface Controller Connection



## AMF 8800 Gold, 82-90XL and 90XLi

Route the SXL cable from the Solo Hardware Module, along the Ball Track, up the kickback, inside the cable channel, to the 8290XL, 8800 Gold or 90XLi chassis at the rear of the Pinspotter. The cable is connected to the CAM/SCORE connector for the 90XLi chassis and the SCORING connector for the 8290XL and 8800 Gold pinspotters. The SXL cable is a serial communications link that transmits data between the Solo Hardware Module and the pinspotter.



**Note:** *82-90XL & 8800 Gold DO NOT recognise codes to turn the pinspotters On and Off from the Solo unit. To enable this optional feature, the Lane Control Computers must be connected to the MCU (Managers Control Unit) and software run to enable the MCU commands to be sent from the computer to the pinspotters. For more information on connecting the MCU to the Lane Control Computers, see the [Install and Configure Software](#) section in this manual.*

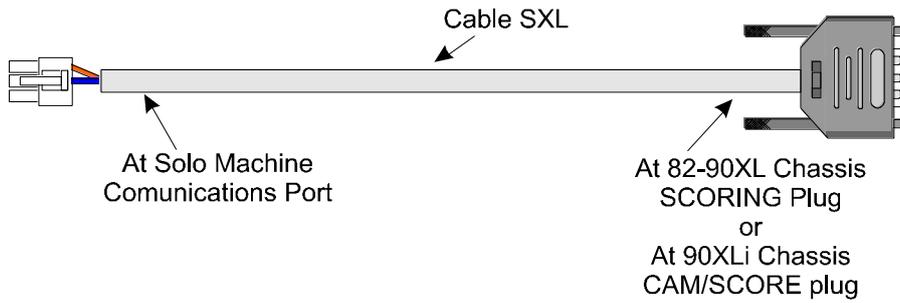
The 90Xli DOES contain codes to turn the Pinsetters On and Off without the need for an MCU interface.

# AMF 8800 Gold & 82-90XL and 90XLi Scoring Connection

Pin	Function
1	#RX (W/Orange)
2	#TX (Blue)
3	Not Connected
4	RX (Orange)
5	TX (W/Blue)
6	Not Connected

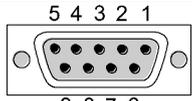


Rear View  
Molex Micro-Fit.  
6 Pin

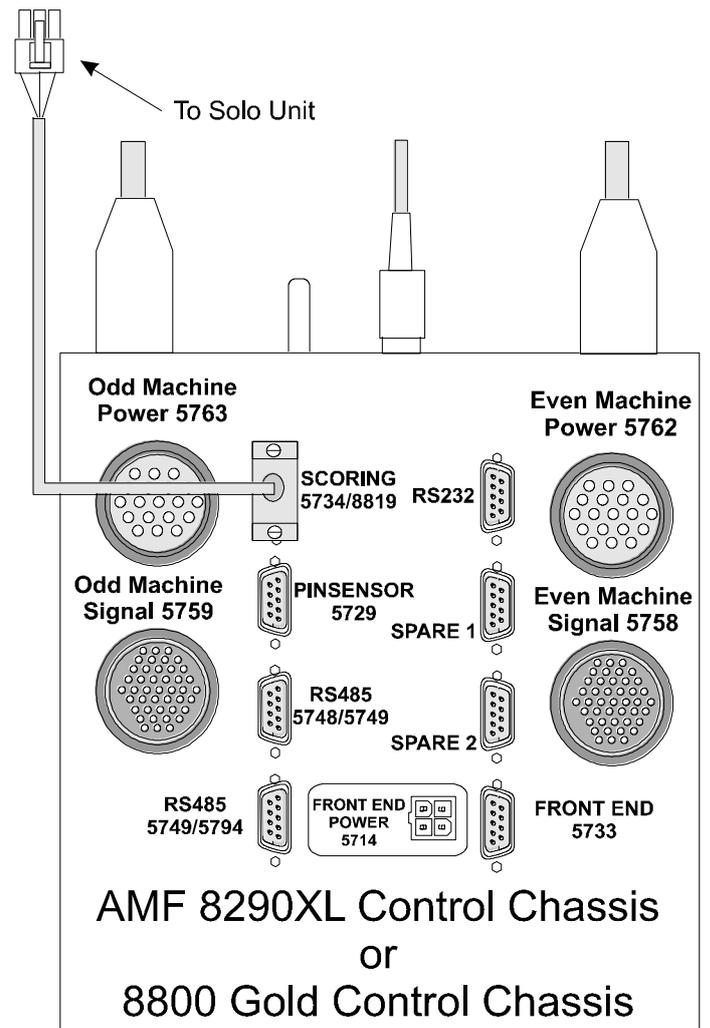
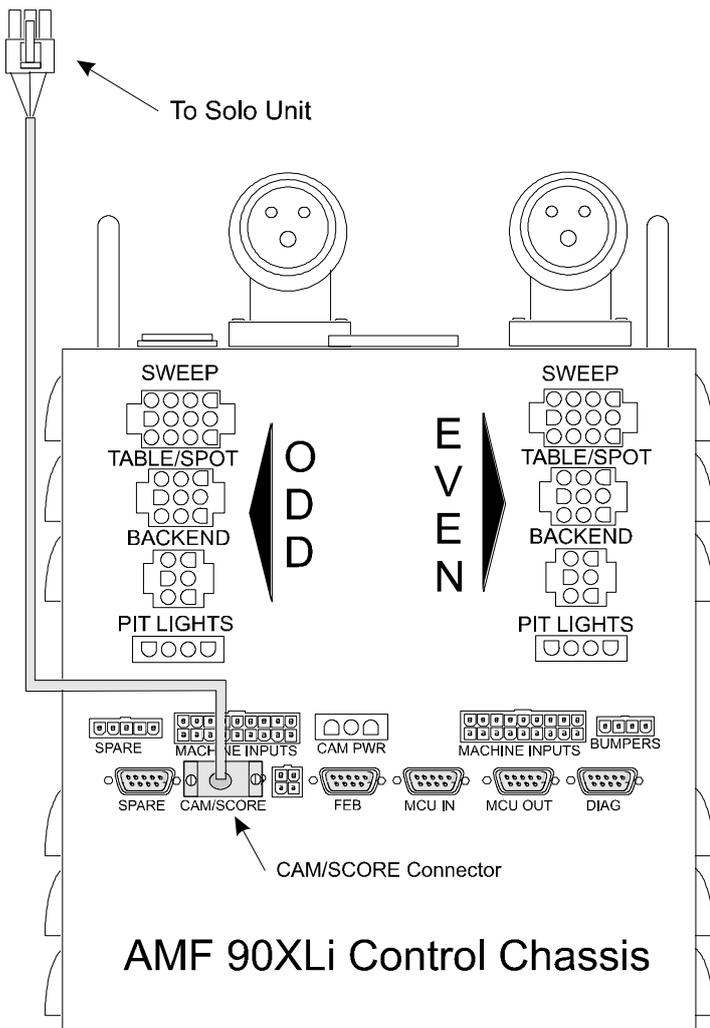
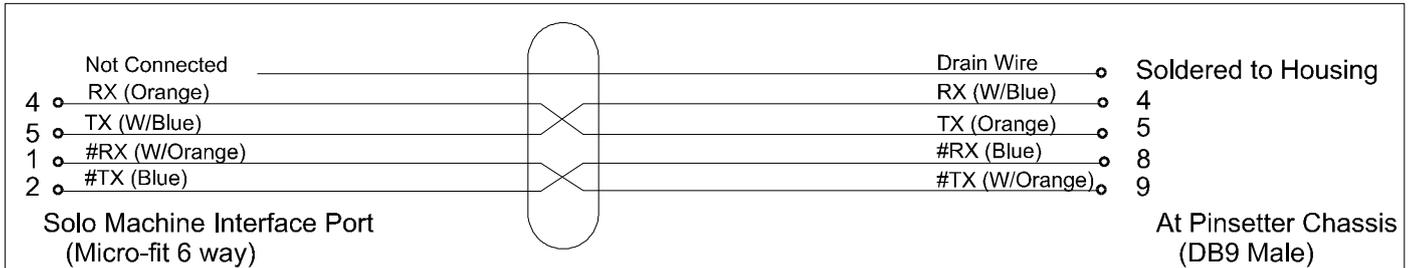


Pin	Function
1	Not Connected
2	Not Connected
3	Not Connected
4	RX (W/Blue)
5	TX (Orange)
6	Not Connected
7	Not Connected
8	#RX (Blue)
9	#TX (W/Orange)

Housing = Drain Wire



5 4 3 2 1  
9 8 7 6  
Rear View  
DB9 Male  
9 Pin



Chassis must be set to accept Pin Data Camera Interface as **SCORING**  
refer Pinspotter and Manager's Control Unit manuals  
(Special Functions 14 verses 15)

Chassis must be set to use Pin Data Camera Interface from the **SCORING** Connector  
refer Pinspotter and Manager's Control Unit manuals  
(Special Functions 14 verses 15)

## Step 3: Mount the Bowler's Keypad console

The Bowler's Keypad console must be secured to the floor very tightly, as this unit often must adsorb a large amount of abuse from the public. Even when properly secured, it is necessary to periodically check to make sure that all fittings are still tight. Vandals will exploit any looseness or slack and may result in damage to the pedestal base or the floor itself.

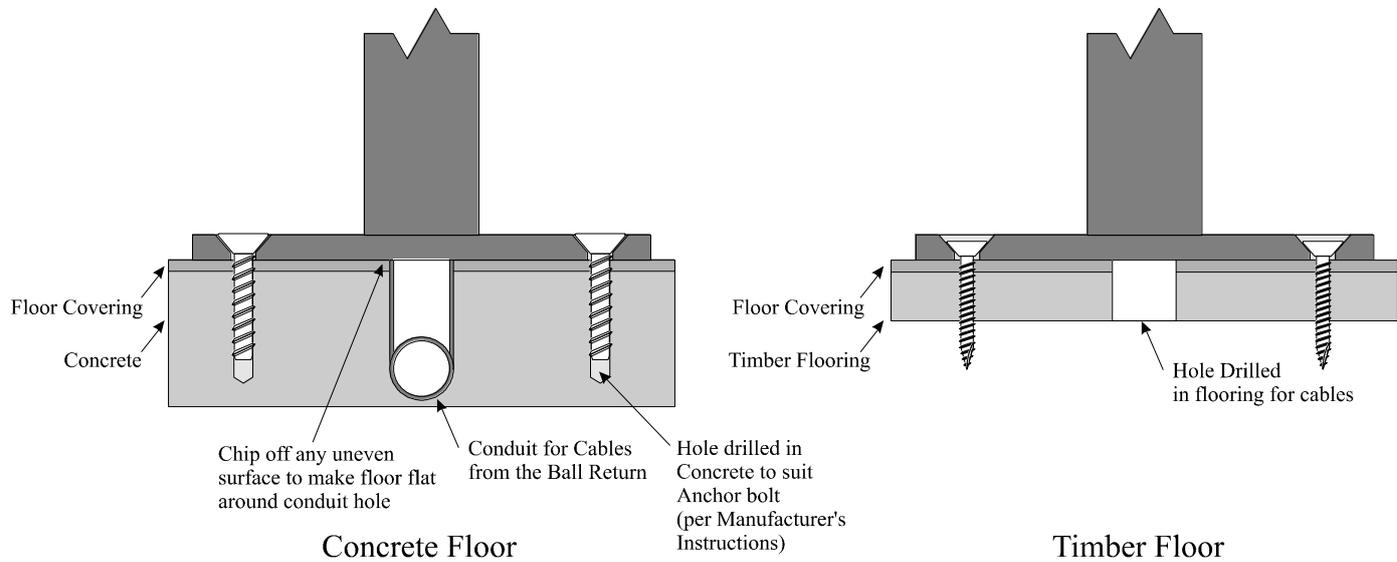
### Concrete Floors

For concrete floors, make sure that the floor is level and there is no extra concrete around the conduit. The Bowler's console should be able to sit flat on the floor without rocking.

Drill the correct size hole in the concrete and use a concrete anchor bolt, or Tiger Bolt, to secure the console to the floor.

### Wooden Floors

For wooden floors use a hex drive self-drilling screw to secure the Bowler's Console to the floor. Make sure you use fresh holes to ensure that the screws bite into the timber flooring well.



**Warning:** *Eye Protection, Ear Protection and a Dust Mask must be worn.*



**Note:** *Take care to ensure the SKC cable is not pinched or damaged when securing the keypad console.*

## Step 4: Secure the capping

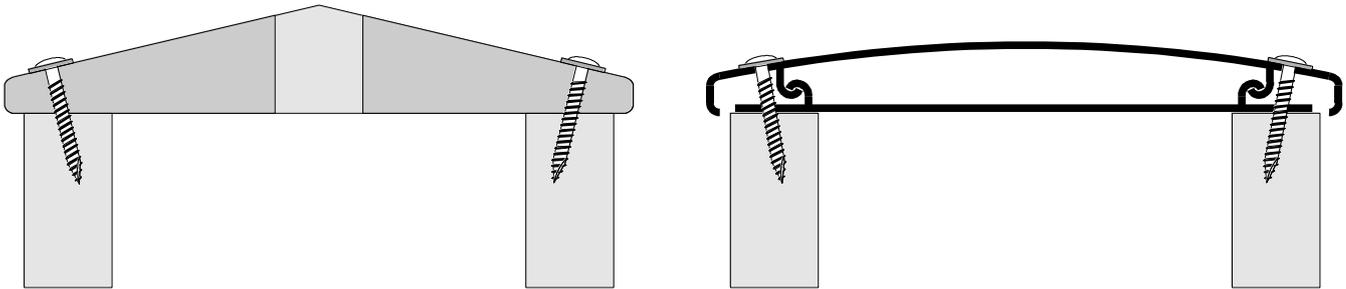
In order for the Solo system to consistently take accurate scores, the Hardware Module MUST be securely attached to the lanes with no movement. For installation simplicity, the Solo Hardware Module is designed to be screwed directly to the capping. Therefore, this length of the capping itself must also be securely fastened to the sub timbers to avoid mis-scoring due to movement of the entire capping and Solo unit. You do not need to secure the capping along the entire lane, only the length that will hold the Solo Unit.

Capping has, in the past, been made from three different materials: Timber, Metal and Plastic. All these types must be securely fastened.

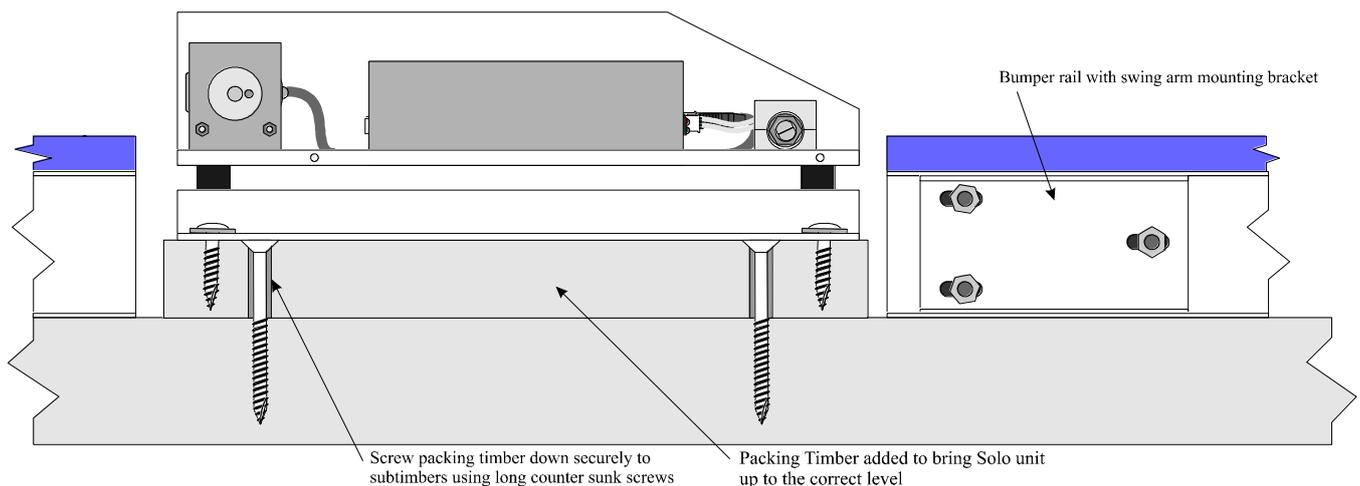
### Wooden and Plastic Capping

The procedure for all Wooden and Plastic Capping is the same.

1. Drill a hole in the center of the capping of 35mm diameter (Approx 1 1/2") measured 4010mm (13'2") from the edge of the Tailplank.
2. Pull all the cables previously run in Step 2 through the hole.
3. Screw the capping securely to the sub timbers.



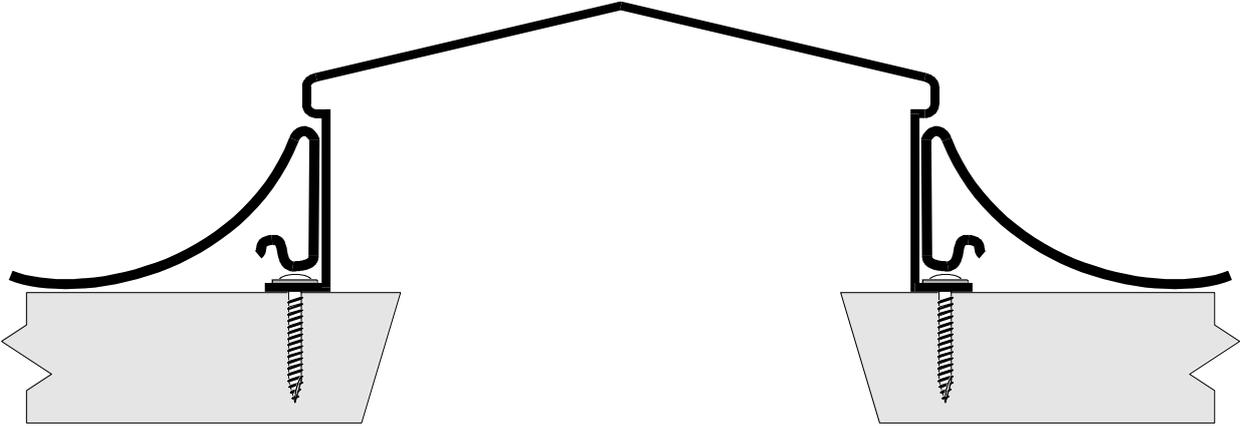
**Note:** Horizontal Bumpers. The only exception to the above steps is in the situation where swing out type bumpers has been installed. In this case, there is usually a gap between the existing bumper rails. A section of capping must be removed and packing timber must be secured to the sub timbers to allow the Solo unit to be mounted at the correct height. See Step 5 for more information on mounting to solo unit to account for bumpers.



## ***Metal Capping***

Metal capping is most often used in Brunswick centers. This method does not use any sub timbers and the capping is screwed directly to the trusses underneath the lane. In this case:

1. Drill a pilot hole in the center of the capping and then use a metal saw of 35mm diameter (Approx 1 1/2") measured 4010mm (13'2") from the edge of the Tailplank. Make sure you use a hole saw designed for cutting through steel.
2. Remove any sharp edges from the hole with a half round steel file. If you wish, you could use a rubber grommet to cover the edge for safety reasons.
3. Pull all the cables previously run in Step 2 through the hole.
4. Make sure that all screws that secure the capping to the trusses are tight and there is no movement in the capping.

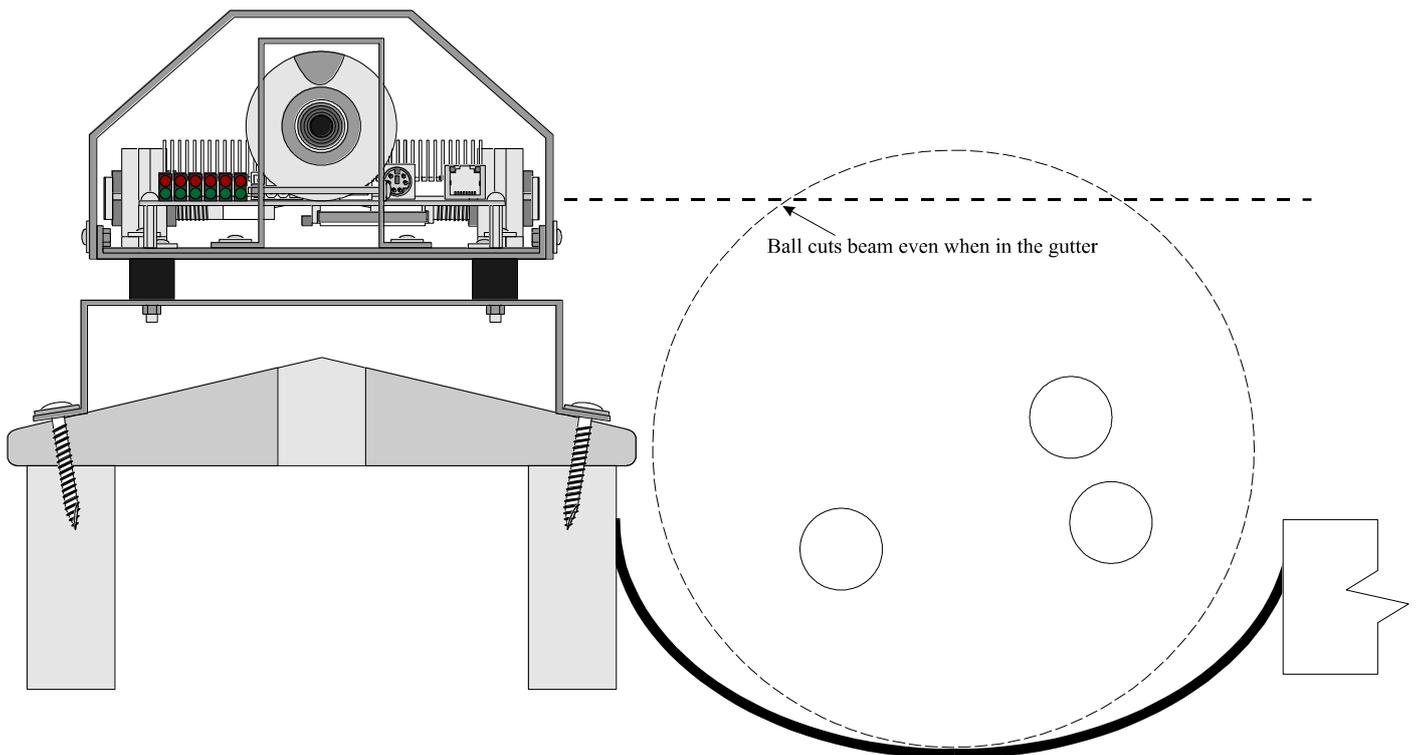


## Step 5: Accounting for Bumper Rails

The Solo system relies on the ability to detect that a ball has gone past in order to start the scoring software routine. However, bumper rails can interfere with this because, if the Solo unit is positioned incorrectly, the rail can cut the beam when it is raised or extended. No matter how the Solo is mounted, the Ball Detector must be below the top of the ball when it is in the gutter. Otherwise a gutter ball will not result in a miss score.

### **No Bumpers**

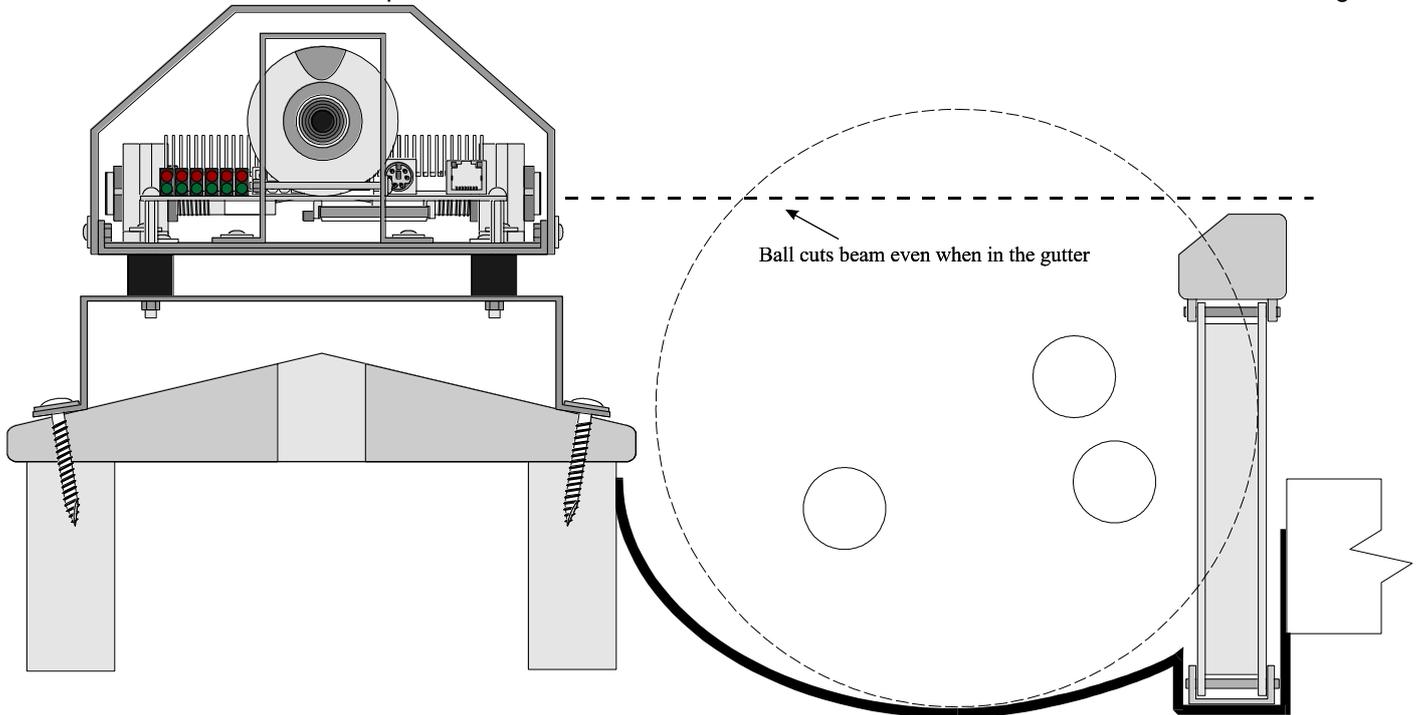
Where no bumpers have been installed on the lanes, securely attach the Solo Unit directly to the capping, which has been secured in Step 4 above. Make sure that a ball will cut the ball detector beam when it is in the gutter.



### **Vertical Bumpers and Ball Wall**

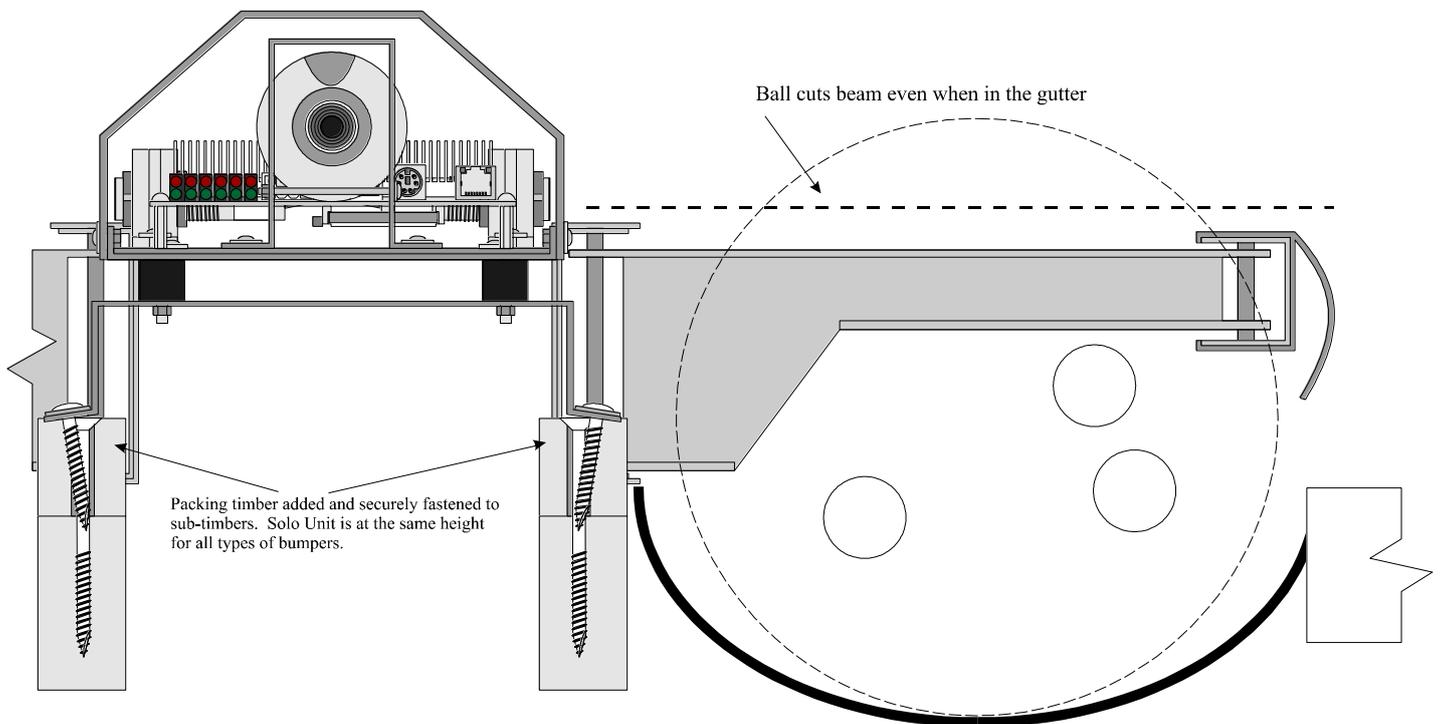
Bumper systems such as Brunswick's Ball Wall & Pinball Wizard and AMF's Duralane raise the bumper rail up from the gutter (or tilt the whole gutter in the case of Ball Wall). Therefore it is important that the Solo Unit be high enough so that the raised bumper rail does not cut the beam from the Ball Detector.

Where Vertical bumpers have been installed on the lanes, securely attach the Solo Unit directly to the capping, which has been secured in Step 4 above. Make sure that a ball will cut the ball detector beam when it is in the gutter.



### **AMF Horizontal swing out type**

Horizontal Bumpers. The only exception to the above steps is in the situation where swing out type bumpers in installed. In this case, there is usually a gap between the existing bumper rails, which are used as an area for older scoring scanners. A section of capping must be removed and packing timber must be secured to the sub timbers in order for the Solo unit to be mounted at the correct height. Make sure that a ball will cut the ball detector beam when it is in the gutter. See Step 4 for more information on the packing timber needed and removing a section of capping.

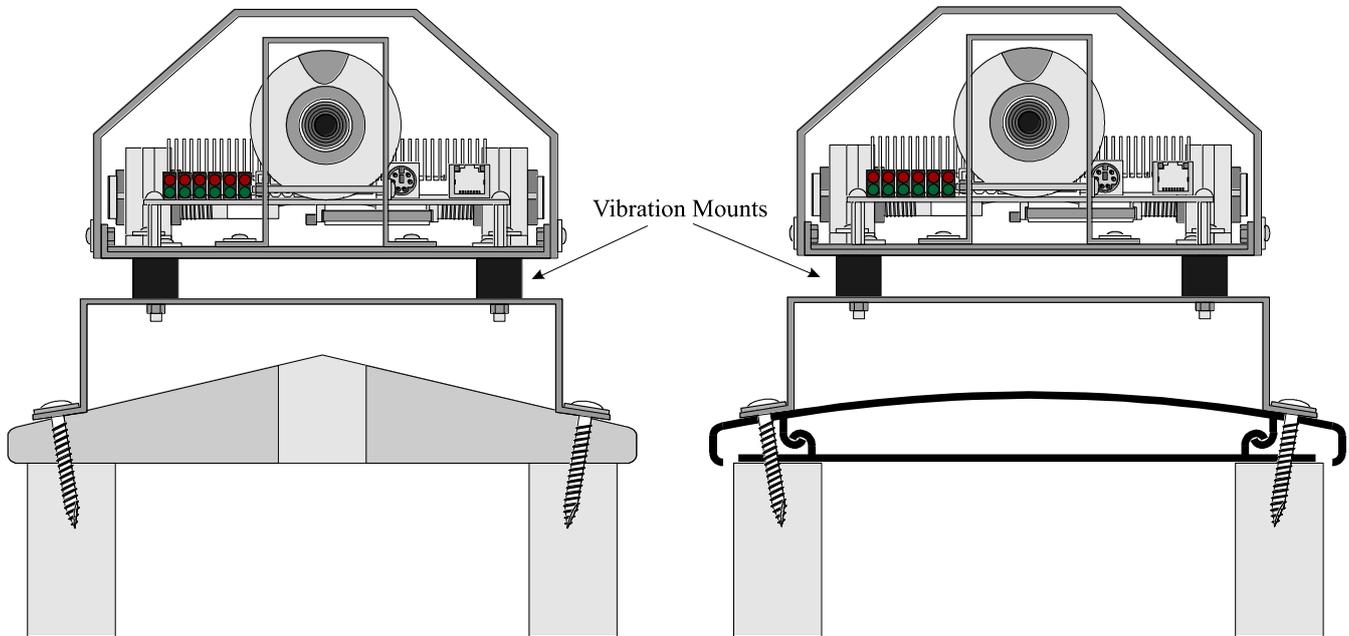


## Step 6: Install the Solo Units

### *Secure to the Capping*

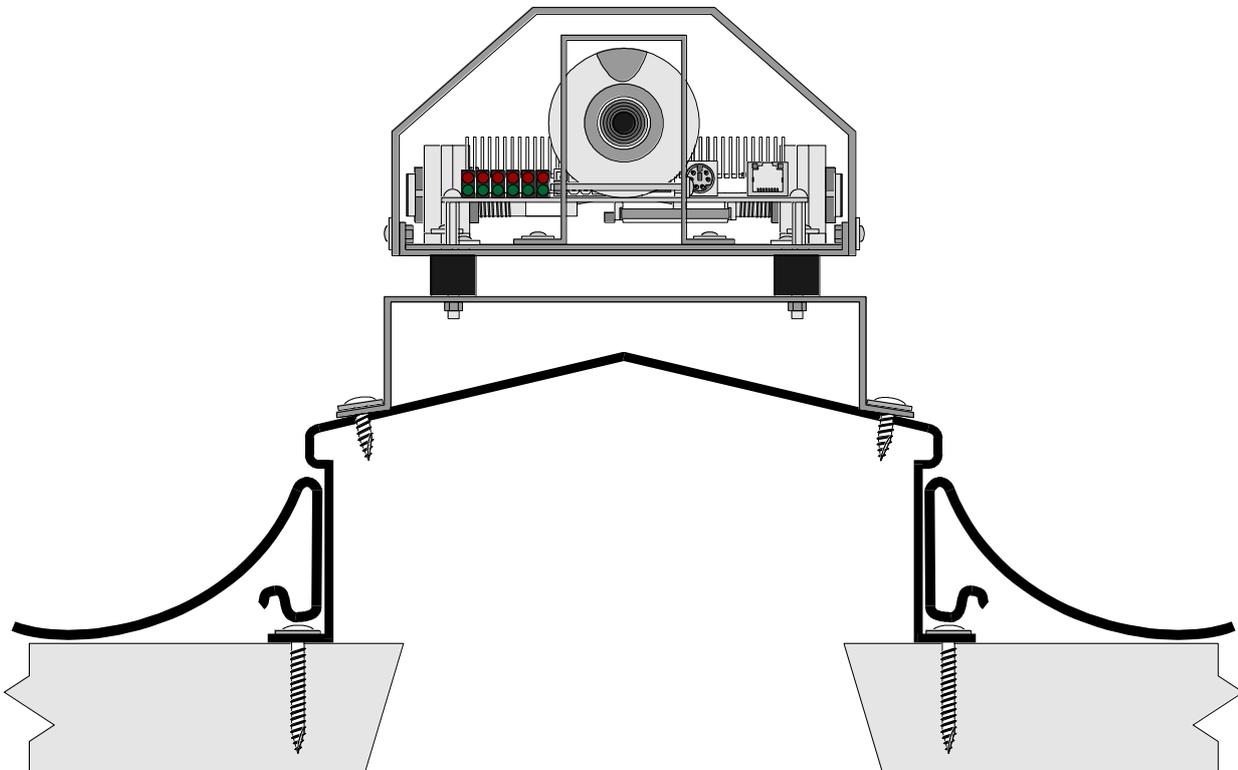
#### **AMF and Brunswick Wooden and Plastic Capping**

Make sure that the Solo Unit is straight on the capping and in the middle. Then mount the Solo Units directly to the capping, using long screws to go right through the capping and bite into the sub timbers as well.



#### **Brunswick Metal Capping**

Make sure that the Solo Unit is straight on the capping and in the middle. Then mount the Solo Units directly to the capping, using Self-Drilling Roofing Screws.



### *Mounting the Power Supply*

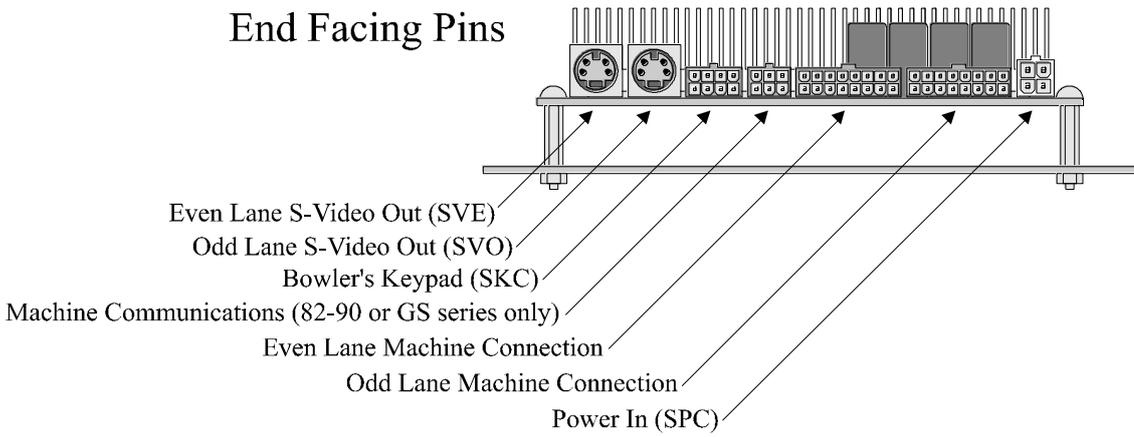
Screw the Power Supply unit to the curtain wall or other suitable place in reach of both the Power Supply Cable (SPC) as well as mains power. This mains power may need to be pre-installed by a licensed electrician, as described in the introduction.

Step 6: Install the Solo Units

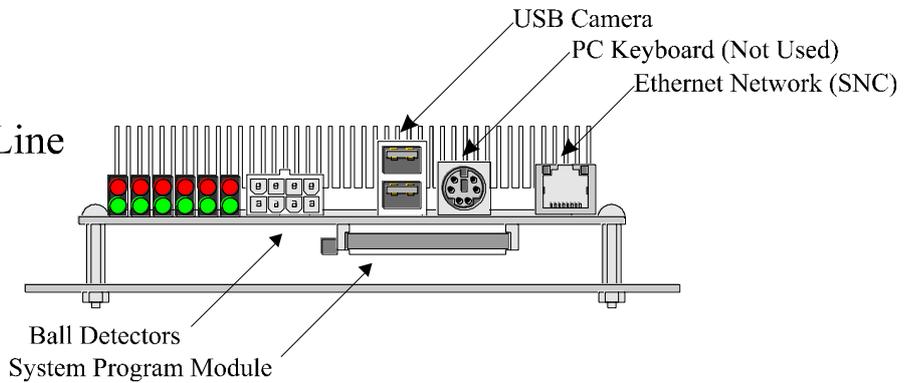
## Plug in all the Cables At the Solo Unit

Install the various cables at both ends of the line as shown below.

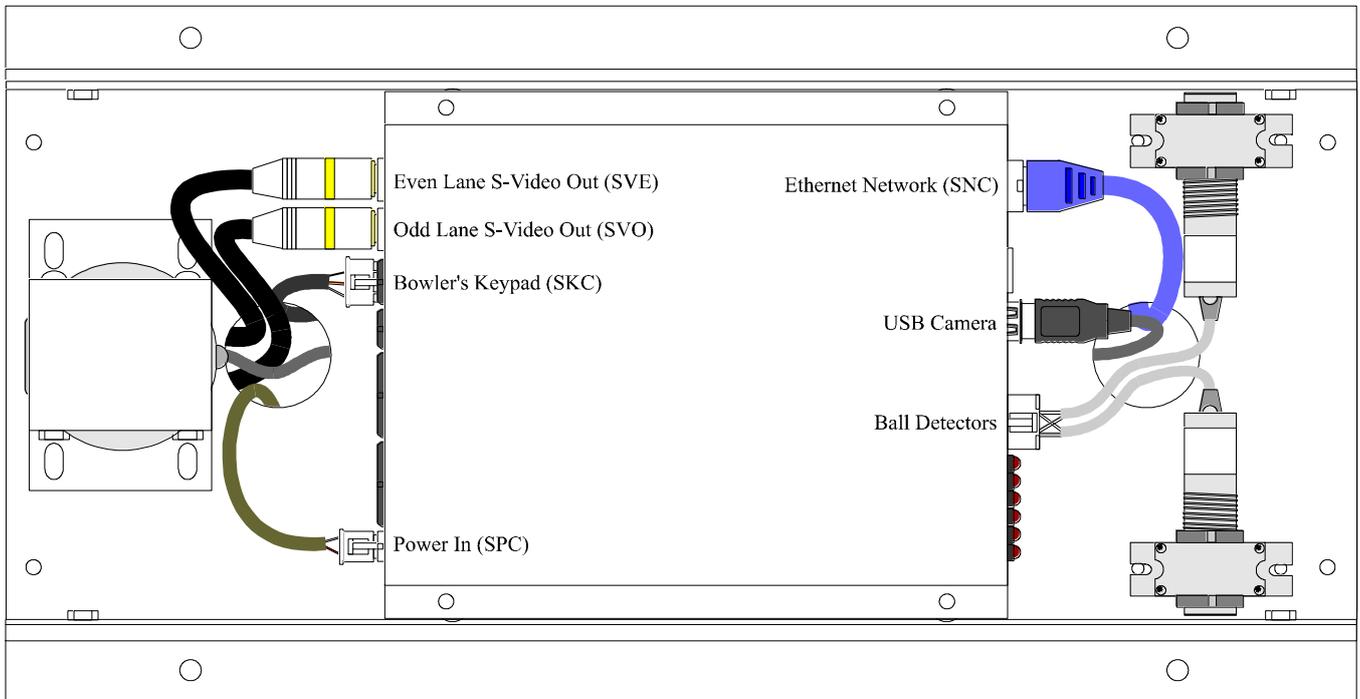
### End Facing Pins



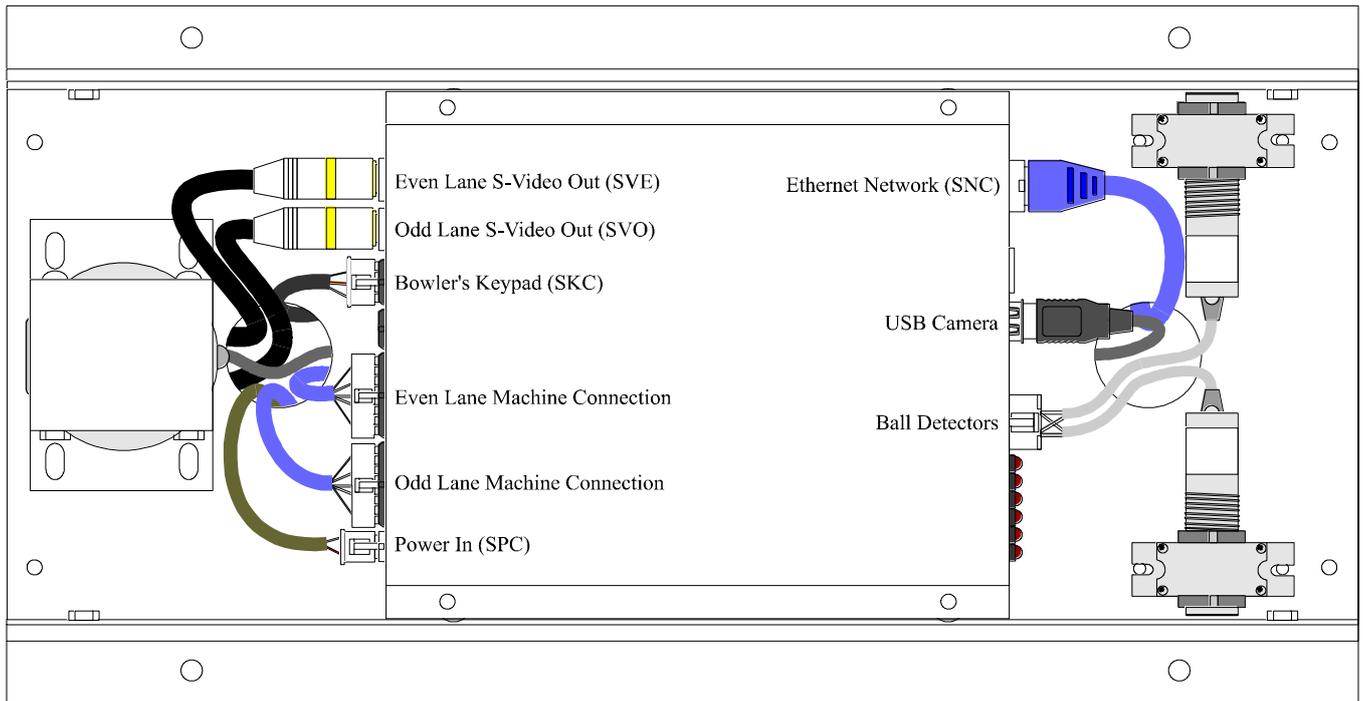
### End Facing Foul Line



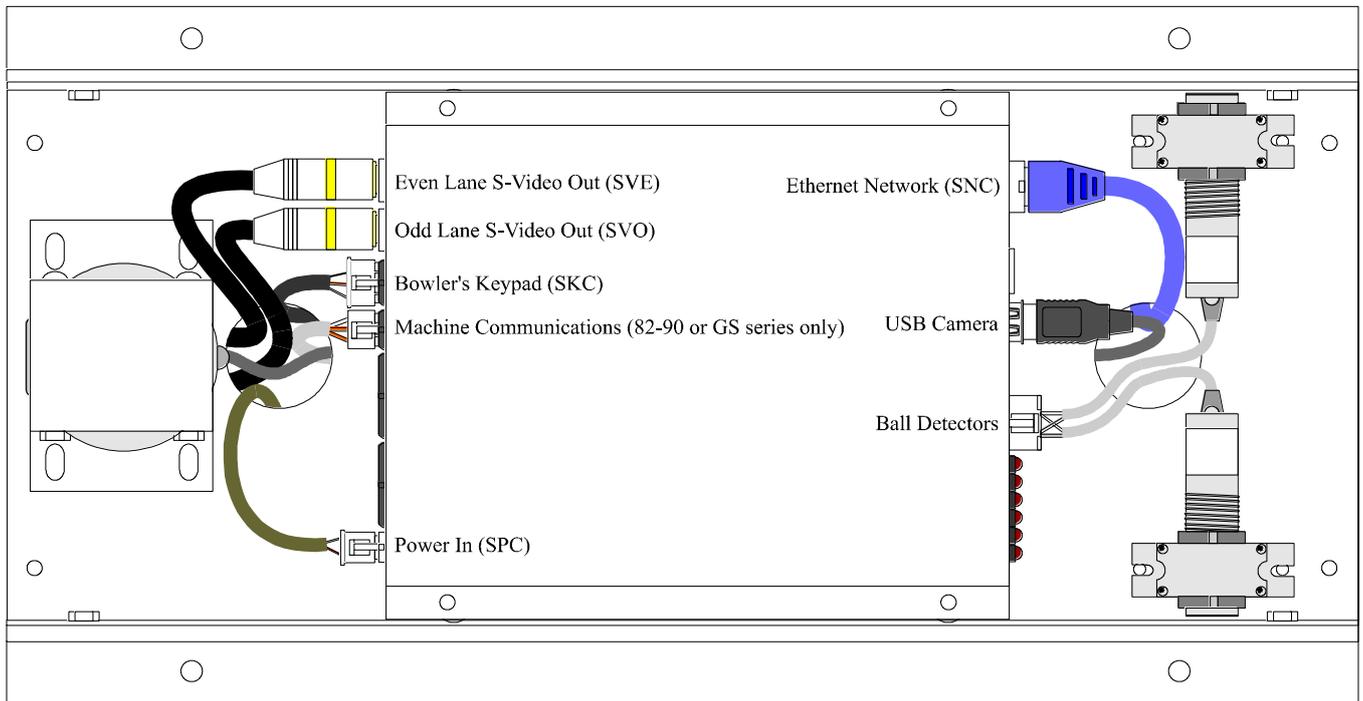
### Solo Cable Connections (No Connection to Pinsetters)



### Solo Cable Connections (Pinsetters connected via Machine Connection Port)

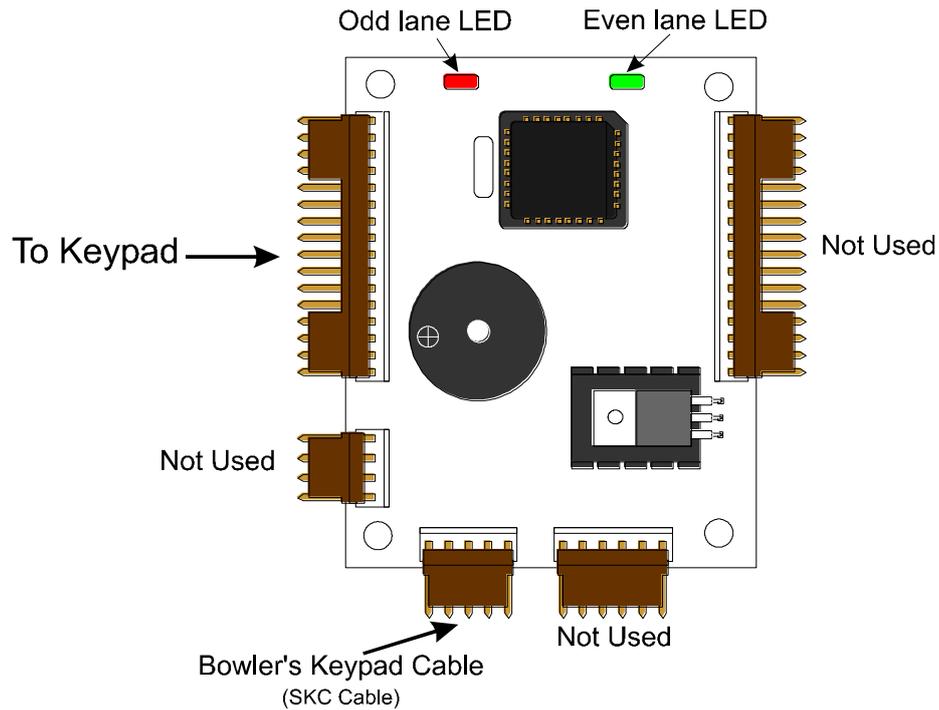


### Solo Cable Connections (Pinsetters connected via Machine Communications Port)



## At the Bowler's Keypad

Plug in the SKC cable into the J3 connector on the Keyboard PCB (Printed Circuit Board). This is the only 5-pin connector on the board.



Once you have verified that all the cables are correctly plugged in, you are ready to turn the system on. When the power is first supplied to the system, the keypad will beep three times to indicate that it has performed its self test ok.

- If it does not beep at all, check that the cables are correctly plugged in and there are no breaks in the cable.
- If it beeps a fourth time, this indicates that a key is being held down, either by the keypad surround being too tight, or by damage to the keypad switch.

## Mount the Reflectors

Screw down the reflectors of the ball detectors on the intermediate (Thin) capping. Make sure that the reflectors are all in line and level with the ball detectors on the Solo Units.

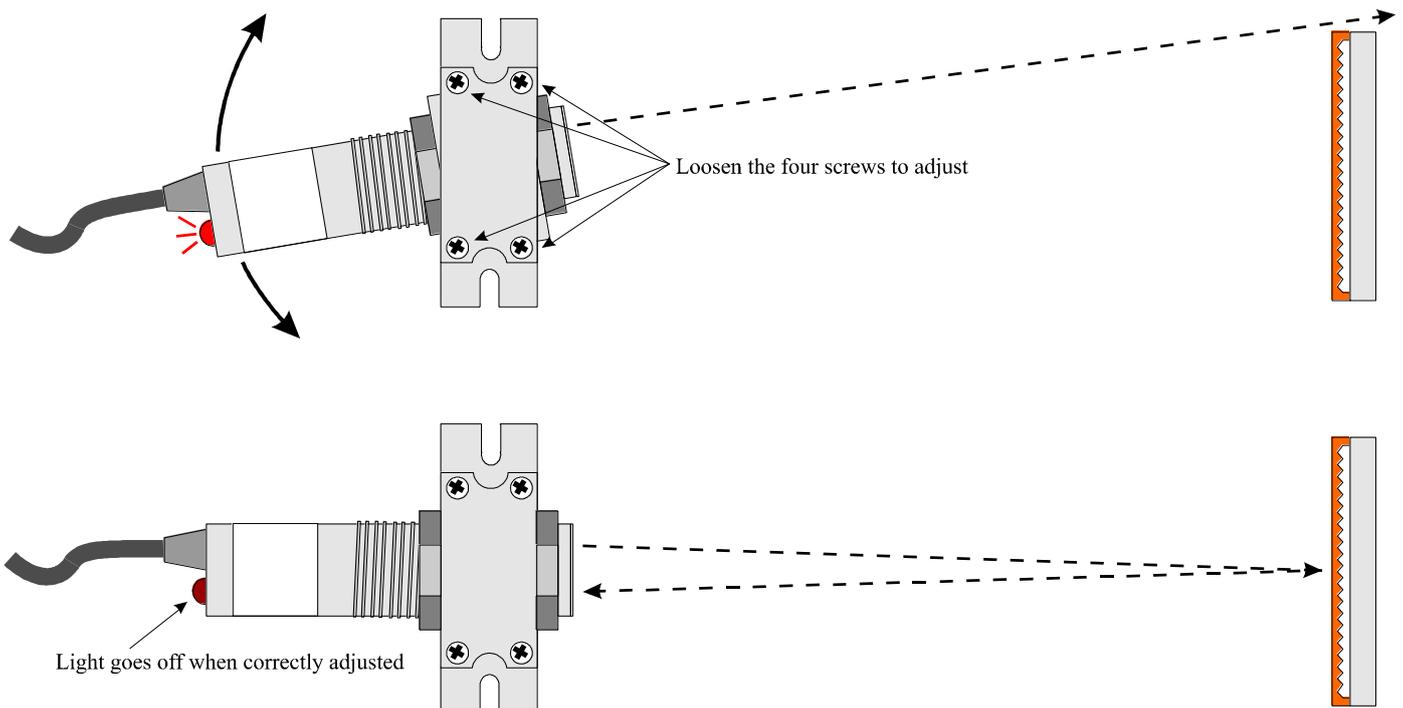
## Adjusting the Ball Detectors

The ball detectors within the Solo Hardware Module are designed to validate the score so that a score is reported to the monitors only when a ball is actually bowled. Therefore, if a pinsetter is cycled from the cycle button at the ball return without bowling, no false scores will be displayed.

In order to function, the ball detectors must first be adjusted so that the beam of light from the detector hits the reflector mounted on the thin capping and bounces back to the detector.

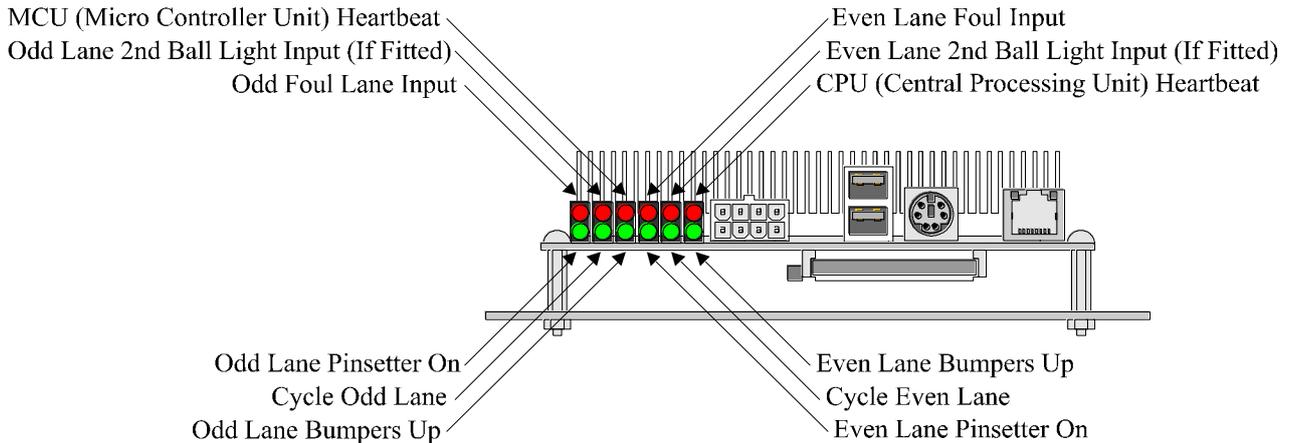
- When the unit is properly adjusted, then LED indicator on the end of the detector will be off. Whenever a ball goes past, the LED indicator will flash on and then off again.
- If the detector is not adjusted properly, then the LED indicator will remain on. This will result in no scoring being displayed at all.
- If the detector is adjusted poorly, you may notice that the response of the LED is sluggish, so that the LED goes off only some time after the ball has gone past.

To adjust the ball detectors, loosen off the four screws at the top of the eyeball bracket and rotate the ball detector up and down, side to side until you can see the angles from which the LED will go off. Then centre the detector into the middle of this detection envelope and re-tighten the four screws.



## Solo LED Indicators

The LED indicators show the various inputs and outputs that are currently active and affecting the Solo Hardware.



- **Pinsetter On** This output LED signifies when the Solo Hardware has activated the pinsetting machine. Whenever this LED is on the Pinsetter should also be on, unless the switches at the rear of the Pinsetter or at the Managers Control Desk have manually turned it off.
- **Cycle Pinsetter** This Output LED will light every time the Solo Hardware sends a cycle command to the pinsetting machine.
- **Bumpers Up** This Output LED will be lit whenever the Automatic Bumper system should be raised.
- **Foul Input** This Input LED indicates that the Solo Unit is receiving a Foul signal either from the Foul Unit (If connected) or from the machine itself with high level pinsetters such as the 82-90Xli and GS series.
- **2<sup>nd</sup> Ball Light** This Input LED indicates that the Solo Unit is being told that the machine is on second ball via an optional connection to the 2<sup>nd</sup> Ball Light on the Masking Unit. This is only done with AMF 82-70s with MP chassis, 82-70s with MK expander and 82-90 Pinsetters and overcomes problems with the short cycle in these particular Pinsetters.
- **MCU Heartbeat** This indicator shows that the Micro Controller Unit of the Solo Hardware Module is functioning at a hardware level. This LED is used for system diagnosis purposes only.
- **CPU Heartbeat** This indicator shows that the Central Processing Unit of the Solo Hardware Module is functioning at a hardware level. This LED is used for system diagnosis purposes only.



**Note:** The MCU and CPU Heartbeat LEDs will not flash at the same time or at the same rate. This is not a concern, you should only be concerned if these indicators don't flash constantly and at a consistent rate.

## Step 7: Using the Setup Wizard

### Starting the Wizard

In order to configure the Solo Hardware Module to start scoring, it must first be configured so that it knows what lane number it is, what type of Pinsetting machine is in the center, and the Ball Detectors must be calibrated.

To enter the configuration screen, do the following steps:

1. Start a game by typing the number of players present (Say 1 or 2) and pressing the **Play** button.
2. Accept the default player numbers by pressing **Play** again.
3. Now press the **Help** button and the letter **C** (Standing for Configure) and the following screen should be shown. This screen is shown so that if a member of the public were to accidentally find their way to this screen, they are instructed to just press Play to continue bowling.



4. Now while this screen is displayed, type the default password of **1507** to enter the setup wizard.



**Note:** Once the system installation has been completed, you can specify your own PIN number. This is done from the **Center Setup** tab of the **Control Setup** Screen, which can be found in the **System Management** menu of the Center Command software. It is **HIGHLY RECOMMENDED** that you then use this new PIN and leave 1507 for use **ONLY** when the system is not connected to the computers.

5. The next screen is a Welcome screen, which allows you to select either the Setup Wizard or the Troubleshooting screens. Ignore the Troubleshoot option for now, as this will be covered in the next section. This screen also displays the current version date of the Solo Software for diagnostic purposes. Select your desired language by pressing the **L** key repeatedly. To start the wizard, press the **Move Cursor Left** button.



**Note:** On any step of the Setup Wizard, pressing the **Move Cursor Left** button will skip it, without modifying any of the information already entered on the screen.

## Step1: Set Lane Numbers

The first step of the Setup Wizard allows you to set what lane the Solo unit is on. The Solo Hardware Module must know which lane it is on in order to function in conjunction with the other lanes. There can only be one Solo unit set to any lane pair. If there are two units with the same lane numbers, then both of these units will not network to the host computers (If installed) until the lane numbers are correctly specified. To do this, type the lane number of the Odd lane of the pair. Make sure you use two numbers.

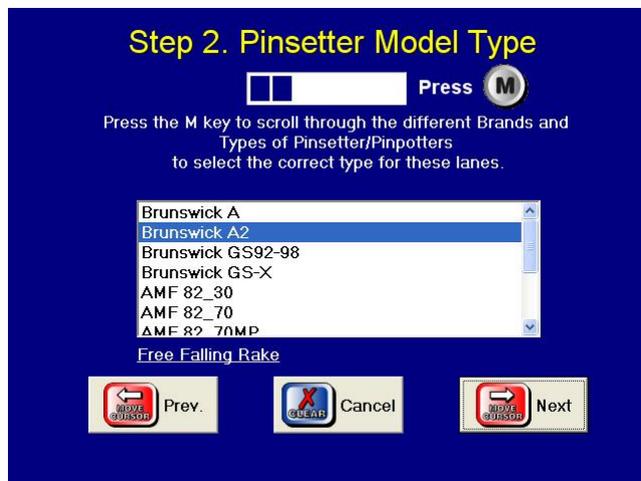
**For Example:** If you are configuring lanes 5 & 6, type **05** as the Odd Lane Number and press the **Move Cursor Right** button to go to the next step.



## Step 2: Pinsetter Model Type

Step 2 of the Setup Wizard will allow you to specify what type of pinsetter is being used for that lane pair. The Solo unit needs to be told which type of Pinsetter Machine is installed at your center because the different types of machine behave differently from each other and so the Solo unit must alter its scoring behaviour appropriately.

Each machine type also includes extra information to provide clues as to the unique behaviour of each type of



machine. This is displayed just below the machine list.

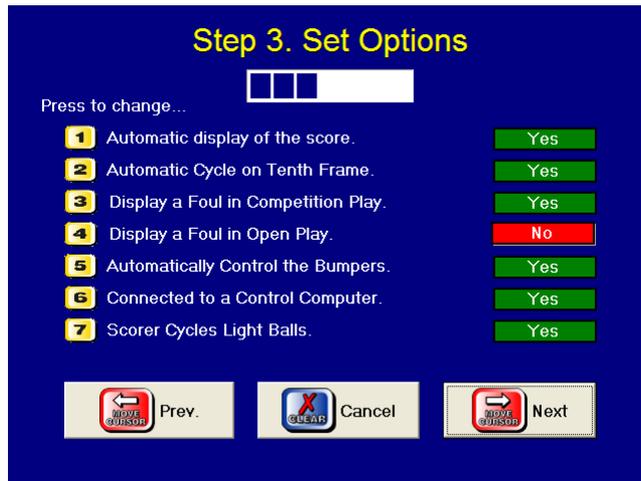
Press the **M** key until the correct machine type is highlighted, and then press the **Move Cursor Right** button to go to the next step.



**Note:** If your pinsetter is an AMF 82-70 with the MK Expander, make sure that the Pinsetter Model Type in the Setup Wizard is set to **AMF 82\_70MP**. The MP Chassis and the MK Expander behave in the same way, so the one Pinsetter Model Type will operate both types of chassis.6

### Step 3: Set Options

The third step of the Setup Wizard is the Set Options screen. The Set Options screen controls all aspects of how the Solo Unit behaves and what additional equipment is connected to the Solo unit. Each option can be toggled on and off by pressing the appropriate button for the desired option.



These options include:

#### Automatic Scoring On / Off

Disabling the Automatic Scoring will cause the Solo Hardware to ignore all scores and only allow score entry from the keyboard. Automatic scoring is usually left enabled, but occasionally the need might arise to disable it for coaching purposes or in a faulty scoring situation.

#### Tenth Frame Cycle On / Off

If a spare is bowled in the Tenth frame, the bowler can bowl the bonus third ball for this frame. The Tenth Frame Cycle setting sets the Solo's behaviour in this situation.

If you have your cycles connected to the Solo Hardware via the Machine Interface Port or the Machine Communications Port, then the Tenth Frame Cycle should be enabled. In this situation, the Solo will cycle the Pinspotter a second time for Brunswick A, A2, AMF 82-30 and 82-70 machines. For all other advanced machines, the Solo will perform a Short Cycle directly to first ball.



**Note:** *If you do not have any cycle cables connected, then the Tenth Frame Cycle option should be disabled. In this case the Solo will display a sign on the monitors asking the bowler to either bowl another ball (The Score from which is ignored) or press the cycle button at the ball return.*

#### Show Fouls in Competition Play On / Off

This option defines the Solo's behaviour when a Foul is detected during Competition Play. The majority of Pinsetters will automatically perform a foul cycle when the Pinsetter detects that a foul has been bowled. In this case the Display Foul option should be enabled so that an F will be shown on the scoregrid for that bowler. The Foul Units can then be turned on and off at the managers control desk as desired.

It is only Brunswick A and A2 machines that do not have a foul cycle. In this case, you have the option to show the F on the scoregrid or ignore it by disabling this setting. It is most common to Enable the setting for Competition Play.

#### Show Fouls in Open Play On / Off

This option defines the Solo's behaviour when a Foul is detected during Open Play. As mentioned above, the majority of Pinsetters will automatically perform a foul cycle when the Pinsetter detects that a foul has been bowled. In this case the Display Foul option should be enabled so that an F will be shown on the scoregrid for that bowler. The Foul Units can then be turned on and off at the managers control desk as desired.

It is only Brunswick A and A2 machines that do not have a foul cycle. In this case, you have the option to show the F on the scoregrid or ignore it by disabling this setting. It is most common to Disable this setting for Open Play so that the Foul Units can be left on to try to stop members of the public over stepping the foul line and slipping on the lanes.

## Automatic Bumpers On / Off

This option tells the Solo software whether there are any automatic bumper systems being controlled by the system. Automatic bumpers are either controlled via a relay switch closure across pins 4 and 12 in the Machine Interface Port (Usually AMF Bumpers systems) or by a central controller connected to the host computer (Usually Brunswick Bumper systems). For more information on centrally controlling bumper systems such as Brunswick Ball Wall, see Appendix B.

If this option is enabled, then the system will display a Bumper Icon for any bowler who has bumpers specified from the Control Computer.

## Computer Networking On / Off

Aside from their Stand Alone functionality, the Solo hardware is able to connect to optional computers on the front desk to allow you to control all aspects of the lanes from the front counter, as well as the other optional software modules such as Point Of Sale and League Secretary. In order to use these features the Solo hardware must be told to look for the presence of the front end computers.

If control computers are present, enable this setting. If the Solo units have no computers attached and are operating in Stand Alone mode, disable this setting.

## Light Ball Triggering On / Off

The desire for Light Ball Triggering comes from the situation where a light children's ball is sometimes not thrown with enough force to activate the Pinsetter's cycle. Most newer Pinsetters such as the GS series already include an electronic sensor to detect the ball and perform a cycle automatically. In this case, disable Light Ball Triggering in the Set Options screen. However, older Pinsetter models may not include this feature.

Although the Solo system does not need to have light ball triggering in order to report the score, it does have the ability to cycle the machine on a time delay after the ball passes the ball detectors built into the Solo Hardware Module.

### Light Ball Triggering Safety

Once you enable this feature you are presented with a Warning screen regarding the safety of any light ball triggering system. You must read this message in full by pressing on the **M** for **Read More** button.



Once this is done, the **I Accept** option becomes enabled.

The full text of this warning is as follows:

Light Ball Triggering is NOT required by this Scoring System.

Enabling this feature will result in the Pinsetter/Pinspotter being cycled a time delay period after the Ball Detection beam at the Score Camera has been cut.

The manufacturer of this equipment does NOT require Light Ball triggering in order to determine and report the score.

If Light Ball Triggering is enabled it is the sole responsibility of the proprietor of this center to initiate and maintain all necessary safety systems to protect the safety of all persons within this center. Such safety systems include, but are not limited to,

1. Appropriate Warning Signs.
2. Written and enforced procedures in regards the safe operation of the Pinsetters/Pinspotters.
3. Training of all staff in safe operating procedures.
4. Device(s) capable of monitoring unauthorised personnel approaching the pinsetters/pinspotters.

The manufacturer does not accept any liability whatsoever for the operation of Light Ball Triggering and merely provides this feature upon the discretion of the proprietor of this center. He/she must make themselves aware of all possible consequences of this method of triggering the pinsetter/pinspotter, BEFORE enabling this feature.

This feature is to be enabled by an authorized representative of the proprietor of this center only.

The proprietor of this center is advised to seek advice from his/her attorney prior to enabling this feature.

By choosing to accept these conditions the proprietor of this center is agreeing to them.

As with any light ball triggering system, moving machinery will be automatically activated whenever the ball detector beam is cut. It HIGHLY RECOMMENDED that you DO NOT use Light Ball Triggering UNLESS you have properly thought out, acted and accepted all its implications.



**Note:** If Light Ball Triggering is enabled, a cycle signal will NOT be sent to the Pinsetter in the following situations:

1. If the Ball Detector beam is cut twice.
2. If the Ball Detector beam is cut for a long time. (Approx 2 seconds)

### Step 4: Calibrate Odd Lane Ball Speed

The fourth step of the Setup Wizard allows you to calibrate the Ball Detectors on the odd lane so that an accurate ball speed can be determined whenever a ball goes past the Solo Hardware Module.

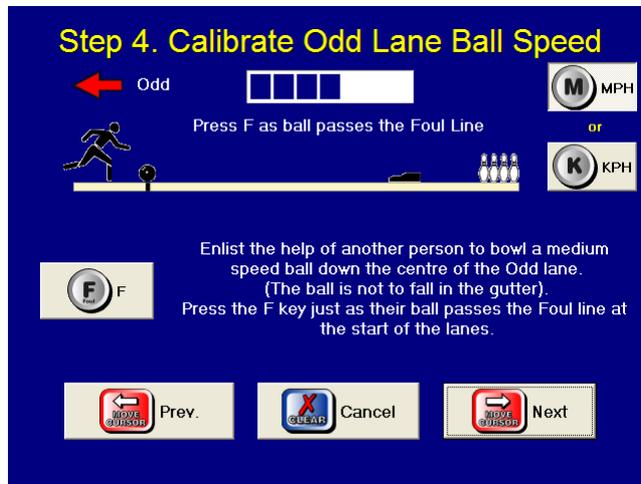
It is necessary to accurately calibrate the Ball Detectors, because the scoring software adjusts its score capture timings based upon the speed of the ball.

Press the **M** key to display the ball speed in Miles per Hour or press the **K** key to display the ball speed in Kilometres per Hour.

In order to perform this step you will need the help of another person who will need to bowl a medium paced ball down the center of the Odd lane, while you time its travel by pressing the **F** key when the ball passes the Foul Line.

To set the Odd Lane Ball Speed:

1. Get ready to press the F key
2. Tell the bowler to bowl
3. Press **F** at the moment the ball passes the foul line
4. The screen will then count the seconds as the ball is travelling down the lane
5. When the ball passes the Ball Detectors, the speed is determined



**Note:** If this procedure has already been done previously, and you are satisfied with the Ball Speed's accuracy, you can skip this step pressing the **Move Cursor Left** button, without pressing **F**.

### Step 5: Calibrate Even Lane Ball Speed

The fifth step of the Setup Wizard allows you to calibrate the Ball Detectors on the even lane so that an accurate ball speed can be determined whenever a ball goes past the Solo Hardware Module.

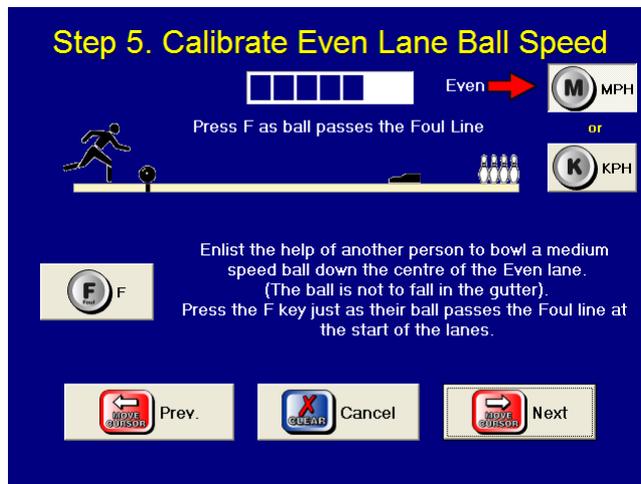
It is necessary to accurately calibrate the Ball Detectors, because the scoring software adjusts its score capture timings based upon the speed of the ball.

Press the **M** key to display the ball speed in Miles per Hour or press the **K** key to display the ball speed in Kilometres per Hour.

In order to perform this step you will the help of another person who will need to bowl a medium paced ball down the centre of the Even lane, while you time its travel by pressing the **F** key when the ball passes the Foul Line.

To set the Even Lane Ball Speed:

1. Get ready to press the F key
2. Tell the bowler to bowl
3. Press F at the moment the ball passes the foul line
4. The screen will then count the seconds as the ball is travelling down the lane
5. When the ball passes the Ball Detectors, the speed is determined

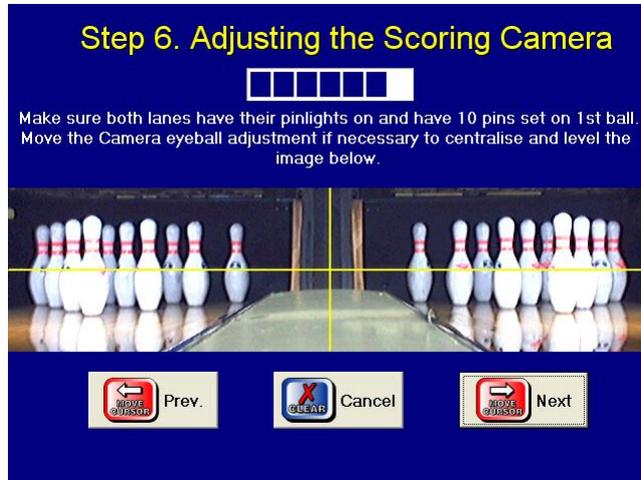


**Note:** If this procedure has already been done previously, and you are satisfied with the Ball Speed's accuracy, you can skip this step pressing the **Move Cursor Left** button, without pressing **F**.

### Step 6: Adjusting the Scoring Camera

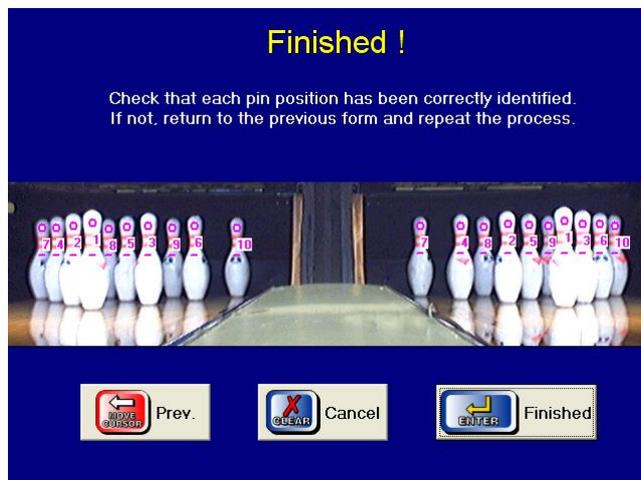
The sixth step in the Setup Wizard shows the current real time image from the camera and allows you to verify that the camera is positioned straight and level to the pins. The image has a cross hair superimposed over the pins. Adjust the position of the camera by loosening the two screws that hold the camera tight in its frame and then move the camera until the image of the pins is in the center of the screen and level. The desired images should look similar to the image below.

When you are happy with the image, tighten the screws again and press the **Move Cursor Left** button to continue.



### Finished !

The final screen in the Setup Wizard shows the results of the camera configuration process. Verify that there is a Pin Position Marker dot on the head of every pin. The Solo software looks at this dot to see if the pin is present or has been knocked over.



If the Pin Position Markers are not correctly positioned, press the **Move Cursor Left** button to go back to the previous screen and try again. If you continue to have poor results from the automatic pin detection process, you set these pin positions manually using the Adjust Camera section of the Troubleshooting screen.

## Step 8: Setup the Optional Computers and Printers

The remaining Steps in this manual are only required if you have purchased the Center Command system management software suite. If you have not purchased Center Command, then your job should now be finished and you are ready to bowl!

### What Computer Equipment do I need to purchase?

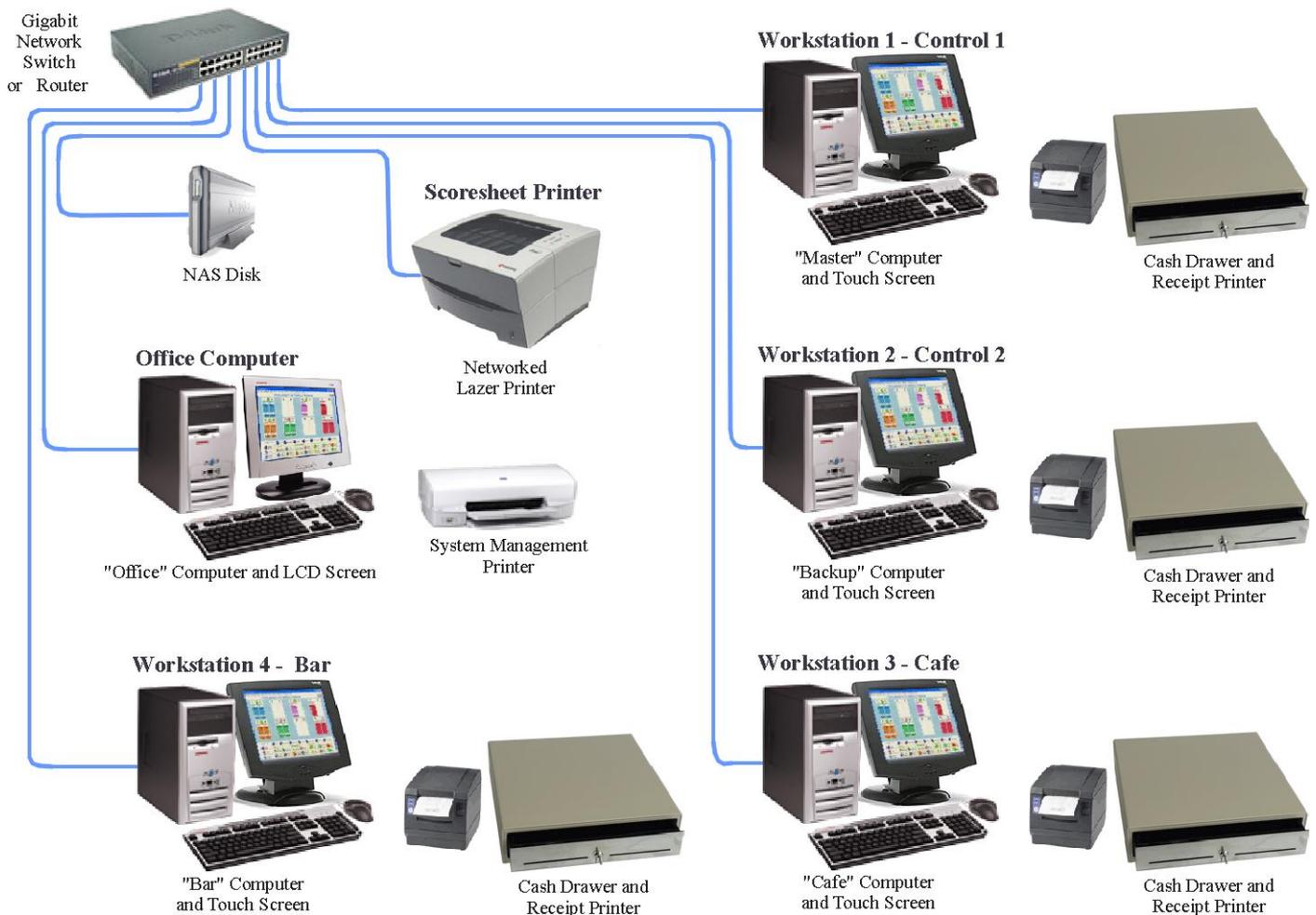
Equipment needed for each Point of Sale Workstation

- New computer running Windows XP Professional or later.
- Touch Screen LCD Monitor (Optional) or Regular LCD Monitor
- Keyboard & Mouse
- Point Of Sale Receipt Printer (If Point of Sale Module is installed)
- Cash Drawer to match the Receipt Printer (If Point of Sale Module is installed)

Equipment needed for overall system management

- Lazer Printer for Scoresheets
- Network Switches
- Network Cables
- Office Computer and LCD Monitor (Optional)
- Printer for system management reports. (Optional, you could use the Scoresheet Lazer for all reports)

An example of a large bowling centre with Point of Sale, two Control Counter Terminals, Café, Bar and an office computer:



## Comments on purchasing Computers

Again, like the purchasing of overhead monitors, price can have a large bearing on the decision for which computer to purchase to use with the system, but the following factors should also be taken into account when purchasing computers and other hardware:

- Quality: The cheapest computer is not necessarily the best. Consider that the usual life of a scoring system is at least 10 years and that any computer that will be reliable for that length of time must be well built (and well maintained.) Beware of Cheap Systems. A computer that is for sale at a low price often contains low-end components and a flimsy case.
- Presence: Go with a supplier who is reputable and present in the local community. Although name brand computers have the advantage of being generally very well built, a reputable local supplier should be in a position to offer continuing technical support if you experience any hardware troubles.
- Speed: Obviously the quicker the better, but basically any NEW computer that will run the current version of Windows comfortably will easily run the software. There is a tendency for computer manufacturers to only supply the minimum amount of RAM to run Windows, which can lead to the computer running slower than it need be. It is recommended that each computer include at least the amount of RAM recommended for the current version of Windows.
- Operating System: The Solo system software is designed to be run on a home or small business PC running the current version of Microsoft Windows. It is recommended to use XP Professional or later, however the system will still operate using XP Home. Windows 98 or earlier is NOT recommended.

## Comments on purchasing Touch Screens

Touch Screens are special LCD monitors that have driver software that you load onto your computer. They include sensors on the screen that detects your finger touching it and then act like a mouse click on your computer via a USB or Serial cable.

Touch Screens are not essential equipment for the system to function, it will work quite fine using a mouse instead. However, a Touch Screen is very professional looking and will impress your customers.

There are two basic types of Touch Screen, Capacitive and Resistive:

- Capacitive Touch Screens use your finger as an earth point to detect the location of a touch on the screen. The advantage is that the screen is very clear and easy to read. The disadvantage is that only a skin touch will work, you cannot use a fingernail, pencil or gloves.
- Resistive Touch Screens use two thin layers of plastic separated by tiny plastic beads. When you touch the screen, contact is made between the two layers to determine the touch position. The advantage is that any pressure of the screen will be detected as a touch. The disadvantage is that the layers of plastic and the beads make the screen slightly less clear than a capacitive screen.

Either type of screen will work with the system. The decision between the two types is a personal preference.

## Comments on purchasing Receipt Printers and Cash Drawers

Receipt Printers are required only when the Point of Sale software module has been activated. They are used to print out sales receipts to your customers, either on every transaction or on demand. They also send a signal to open the Cash Drawer, which is usually plugged in to the back of the Receipt Printer.

There are two types of receipt printer, Dot Matrix Impact and Thermal. Although the Thermal Printers are slightly more expensive, they are much quicker and more reliable than the Dot Matrix printers and therefore are definitely recommended.

The system software is ESC POS (Pronounced Escape POS) compliant, so when purchasing your Receipt Printer, make sure that it is compatible to the ESC POS protocol. This protocol is a multi model, multi manufacturer standard of communicating the additional commands that Point of Sale printers need, such as "Cut the Paper" and "Open the Cash Drawer". Most new Receipt Printers are now ESC POS compatible.

## **Comments on purchasing a Scoresheet Printer**

A Laser printer is required in order to print customer's scoresheets. A Black and White Laser is most commonly used, although if you use a color laser printer, any header or footer image you create for the scoresheets will be printed in color. Although this looks very good, the running costs of a color laser are higher than that of a mono laser.

When purchasing a laser printer, you should also inquire as to whether the printer driver software has a reputation for being solid, simple and reliable. Unfortunately, some manufacturers have been guilty of producing software that is overly complex and can be a draw on your computer's system resources. You should consult your computer specialist for his opinion of a simple and reliable printer.

You should also take into account the expected duty cycle of the printer. You might print more pages per month than what some cheaper printers might be designed to print. Therefore there is a higher risk that your rate of usage may wear the printer out prematurely.

The laser printer will often be connected to the main computer at the front counter via the Parallel Port or via a USB port. However, as shown in the diagram at the beginning of this chapter, you are also able to use a networked printer. The advantage of this is that it makes sure that all the Workstations contain exactly the same peripherals, which help with the simplicity of setting up and sharing printers. The other advantage is that the Scoresheet Printer no longer needs to be close to the computer. Because it is connected via Cat5 cable to the switch or router, it can be placed wherever you would like it.

Whichever connection method you use is up to your personal preference. Consult your computer specialist for more information on networked printers.

## Overview of the Setup sequence

Installing the software should be the LAST thing that is done when setting your system management computers. The majority of problems encountered when setting up new system management computers involve issues with Windows networking and printers. You should ONLY install the software once you have tested and verified that ALL printers will operate from ALL computers..

The basic sequence of events is as follows:

1. Run all the Network Cable and Install the Switch or Router.
2. Install the NAS Disk
3. Network the Computers
4. Install and Share the Printers
5. Install and Configure the Software

### 1. Run all Cables and Install the Switch or Router

Wired computer networking currently supports two speeds: Fast Ethernet (100mbit) and the faster Gigabit Ethernet (1000mbit.)

CAT5e cable is used for Fast Ethernet and also for shorter runs of Gigabit. Alternatively, CAT6 cable, although more expensive, is designed specifically for Gigabit networking. Both CAT5e and CAT6 support a maximum cable run of 100m (328 feet)

Gigabit networking is recommended, purely because it is faster than Fast Ethernet. However, Fast Ethernet will also work quite satisfactorily. If using Gigabit, then make sure all Switches, Routers and Network Interface Cards (NICs) in the computers support Gigabit.

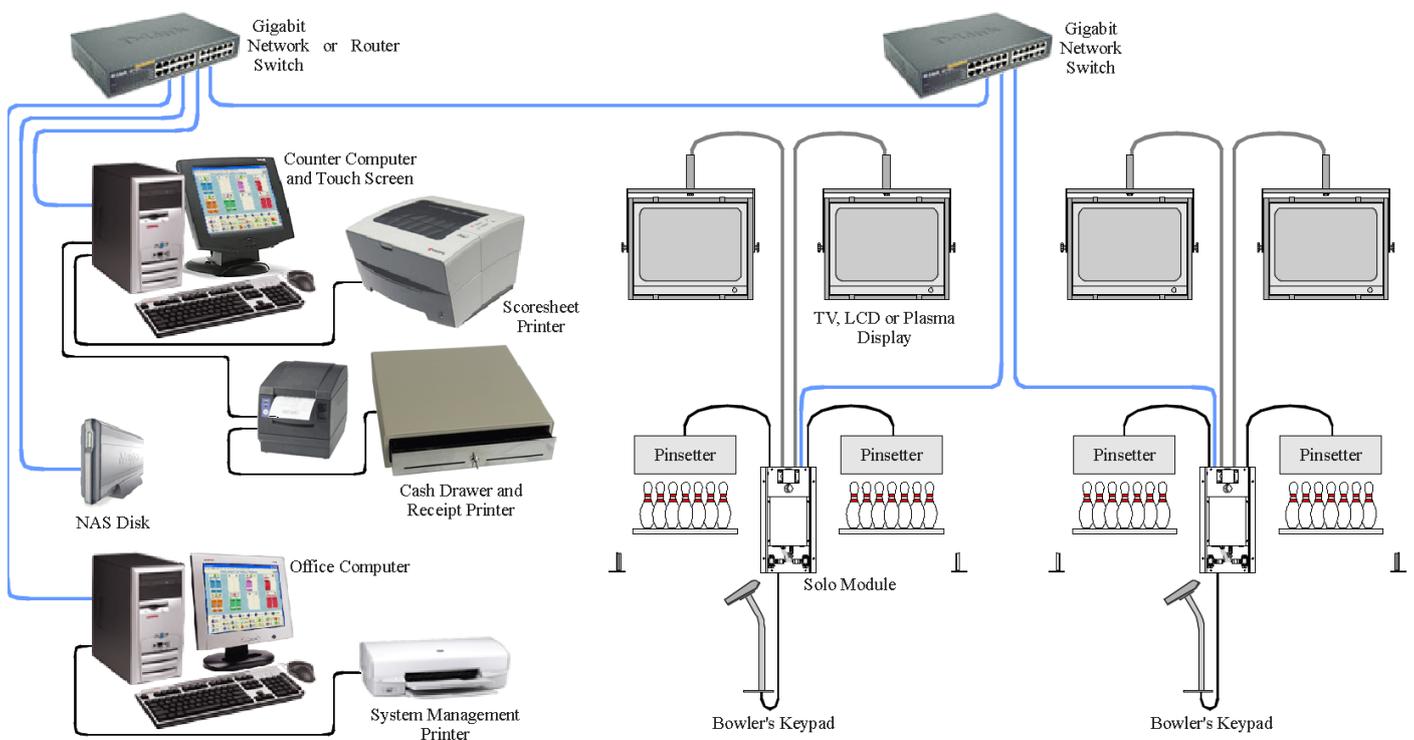
Use a qualified Data Cable contractor, who would be able to run the cables into difficult locations as well as properly install wall plate connectors and crimp connectors.

### Running Cables

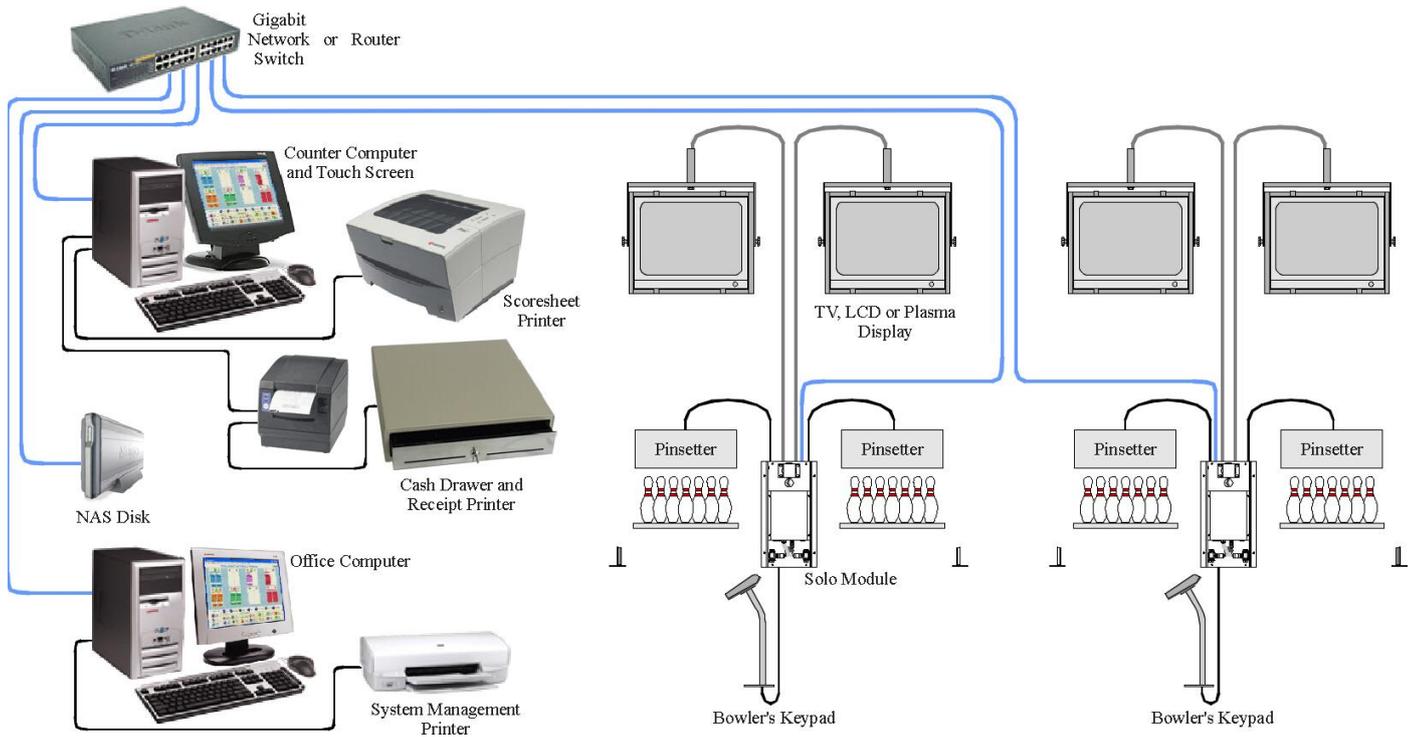
Run a length of cable from the switch at the curtain wall to a convenient place to locate the second switch or router. Then, run an additional cable for each computer from this position to where each computer will be placed. At this time you should consider whether you might like to add additional computers in the future and run the cables while you are at it.

Finally, run another cable to where the NAS Disk will be located.

### Dual Switch cabling



## Single Switch Cabling



### **What is a Switch?**

A network Switch has multiple connectors which allow you to plug in all the CAT5e cable from each computer, the NAS Disk and the other switch at the curtain wall (if used).

This device then acts like a telephone exchange that allows data to flow from the sending to the receiving computer directly, without all other computers having to "listen in" as well.

### **What is a Router?**

A Router performs all the same functions as a switch but in addition, a Router will also tell every computer what IP address it should be. This function is known as DHCP (Dynamic Host Configuration Protocol) Serving. A computer's IP address is its unique identifying code for networking data. A Router can also perform other functions such as sharing broadband Internet (if connected.)

By default, most computers are set to obtain their IP address automatically. Basically, this means that all the computers on the network must work out their IP address amongst themselves. This process can take up to one minute before a computer is then able to connect to the network and communicate to others.

The function of a Router (Amongst other things) is to streamline this process by telling each computer (Including the Solo Hardware Units) what its IP address will be. This means that all computers will then be able to communicate immediately on reboot.



**Note:** There can only be one Router on any network.

## 2. Installing the NAS Disk

### What is a NAS Disk?

NAS stands for Network Attached Storage and a NAS Disk is essentially a Hard Disk Drive that is connected to the network so that all computers can communicate with it to access the software and data files.

The NAS Disk should be located in a secure position where there is no vibration and it is not in danger of being jostled or bumped. Often the NAS Disk is placed in an office or near an administration workstation, however make sure that it is not put in an office that is locked during the night shift. Otherwise the night staff won't be able to gain access to it if a reboot is needed for whatever reason.

To install the supplied NAS Disk, simply plug in the Network cable and power.

### Why do I need a NAS?

Windows has a restriction called the "Inbound Connection Limit" which means that only a limited number of computers can connect or talk to a computer at one time. For Windows XP Professional, this limit is 10 and for Windows XP Home, this limit is 5.

For example, a 16 lane center will have 8 solo units, so if you also have two computers, you have reached the 10 user limit in Windows XP Professional.

A NAS does not have this limit, so if you use a NAS drive you can connect to Computer Score from as many lanes and other computers as you would like.

### Sourcing your own NAS disk

A NAS disk should be supplied with the Solo hardware, however you may wish to purchase your own NAS drive. Any NAS (Network Attached Storage) device should be able to be used. It should set up with the following settings:

1. The network name of the device must be **COMSCORE**
2. The Workgroup for the device must be called **WORKGROUP** (All Capital Letters)
3. There must be a share created called **COMSCORE** with Read / Write access to all users.
4. There must be a user account called **Solo** with a password of **Solo**. (**Note:** The username and password must have a Capital S and the rest in lower case.)

Once this is done, you can continue to follow these instructions and then finally install the software as described in Step 10.

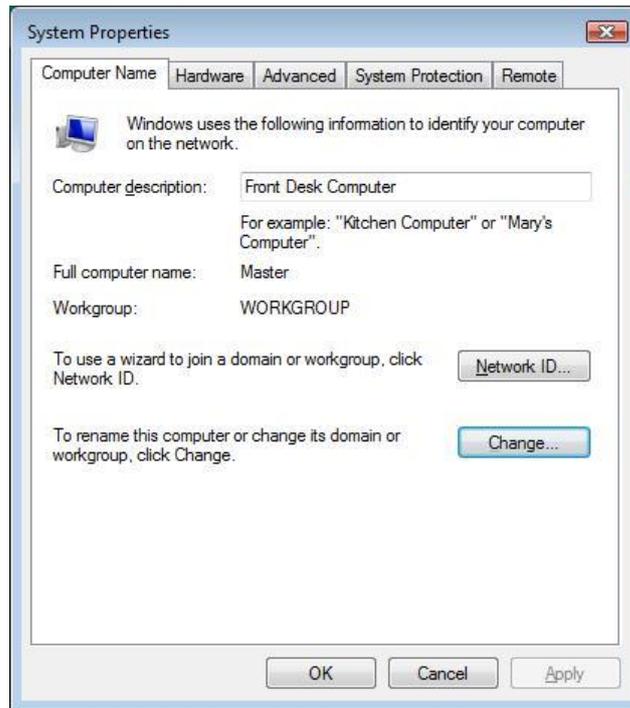
### 3. Networking Computers

Assuming that all your computers are set up and have windows installed and running, the next thing to do is setup networking so that the computers can share data.

In order to network computers together, obviously, every computer must have a network adaptor installed. The vast majority of new computers will include this as standard.

#### Naming Conventions

Each computer must have a unique name so that you can easily identify it on the network. The name and description for each computer can be entered from the System icon in the Control Panel of Windows. Enter a Computer Description in the space provided. Then click on the **Change** button and enter a computer name. Also make sure that the Workgroup name is WORKGROUP.



The Center Command software uses several pre-defined names to specify particular roles that each computer will take.

These include:

Name	Description
Comscore	The NAS Disk is always called COMSCORE. This is where all data is kept.
Master	If a computer is called MASTER, then it will automatically compress a copy of all the data on the Comscore NAS Disk whenever the Center Command is run. This is kept in a separate folder for each day's backup. It is highly recommended that a computer on the network be called MASTER. Aside from the NAS Disk, this computer could be considered to be the main computer of the system. Most often it is located on the front counter.
Backup	If a computer is called BACKUP, then when the Center Command software is run, it will take the compressed data already done by the MASTER computer and uncompress it onto its own hard disk drive. This way your data is constantly being backed up. It is highly recommended that a computer on the network is called BACKUP. However you MUST still perform regular backups to Floppy, CD, or other removable media to make sure that you do not lose any league data in the event of computer breakdown.
Cafe	If a computer is called CAFÉ or any variation, (Such as CAFE1, CAFE2 etc) then the League Secretary and Control Lanes functions are hidden from the Center Command menu. This is so that staff using the Cafe module (If Installed) are not able to accidentally ring up anything in the Bowling Point of Sale and contaminate their Cash Drawer with bowling monies.
Bar	If a computer is called BAR or any variation, (Such as BAR1, BAR2 etc) then the League Secretary and Control Lanes functions are hidden from the Center Command menu. This is so that staff using the Bar module (If Installed) are not able to accidentally ring up anything in the Bowling Point of Sale and contaminate their Cash Drawer with bowling monies.

### Setting IP Addresses

In order to change the default setting for your computer's IP address, you need to go the Network Connections area in Window's Control Panel and then select Properties for the Local Area Network and then select Properties for the Internet Protocol (TCP/IP)

As already discussed, if you use a Router in your network, you should leave it set to **Obtain an IP Address Automatically**. You are also able to leave this setting alone if you are using a Switch instead of a Router, just bear in mind that your computers will only network after about one minute after re-booting.

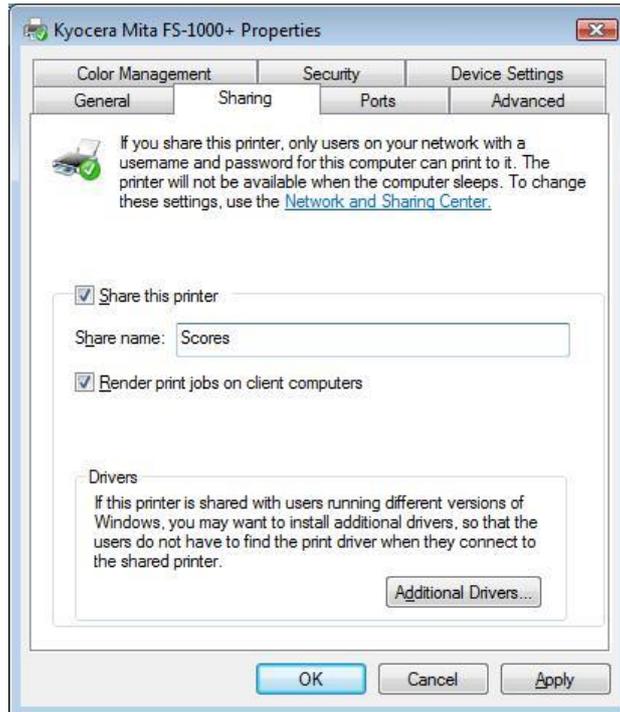
If this is not acceptable, then you also have the option to specify set IP addresses for every computer on the network. (Including the Solo Hardware units.)

For more information on setting IP Addresses or if you are unsure in any way, contact your local computer technician.

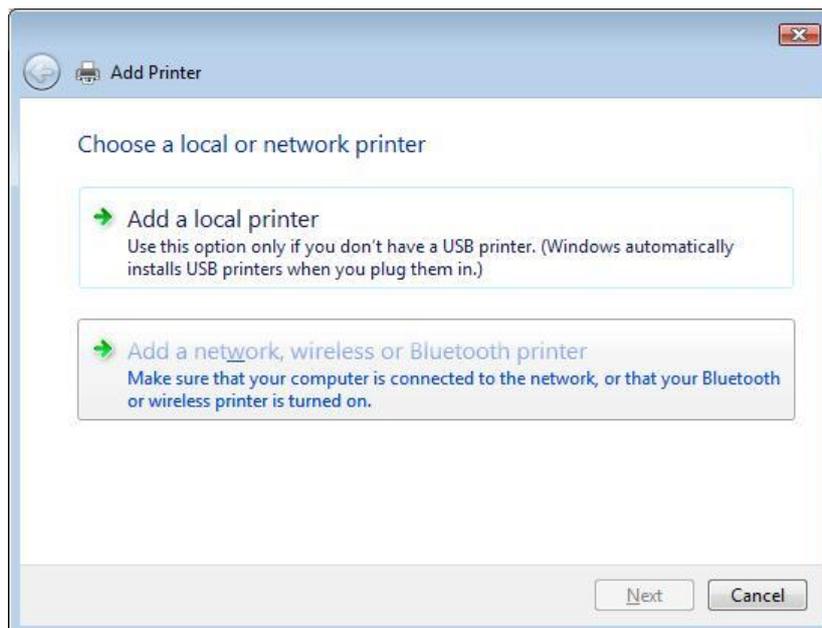
## 4. Installing and Sharing Printers

Installing and Networking Printers can be a challenging aspect to setting up computers. The following example assumes a printer is plugged in to a computer called MASTER and is to be installed on other computers on the network. Other printer situations may alter the installation process from this example. For more information on installing networked printers, consult your computer technician.

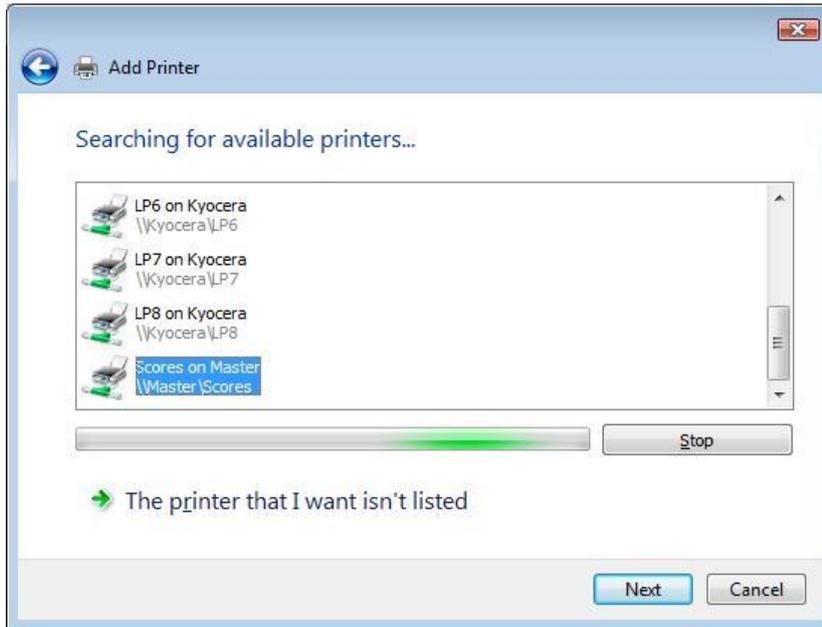
1. Install the Printer on the Local computer. You should be able to install your printers on the computer it is connected to by following the manufacturer's instructions. Most of the issues occur when you want to print to this printer from other computers.
2. Share the Printer. Go to the properties of the printer you wish to share and click on the Sharing Tab. Enable printer sharing and give the printer a Share Name that you will be able to remember. In this example, this printer is a Laser printer, which will be used to print out bowler's scoresheets. Therefore I have shared the printer with the share name of SCORES. In the situation where it is connected to a computer called MASTER, the full network path of this printer is \\MASTER\SCORES



3. Install the printer driver on other computers. Use the Add Printer wizard in the Printers and Faxes section of Windows. Select the Network printer option.



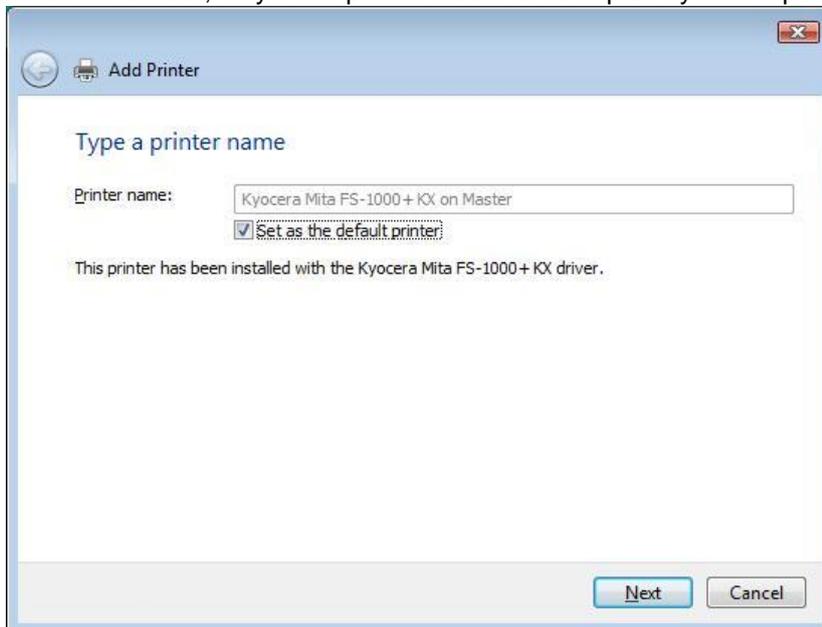
- Then, select the desired printer from the list on detected network printers.



- Windows should then automatically install the printer driver.



- Set the printer as the default, only if this printer will be used to print system reports.



- Perform a Test Print from Windows for each printer on every computer.
- Repeat this until all computers have all shared printers installed.

## 6. Install the Software

Only once all the above steps have been performed and tested as working, you are then able to continue on to install the Center Command software.

This last step is discussed in the next chapter.

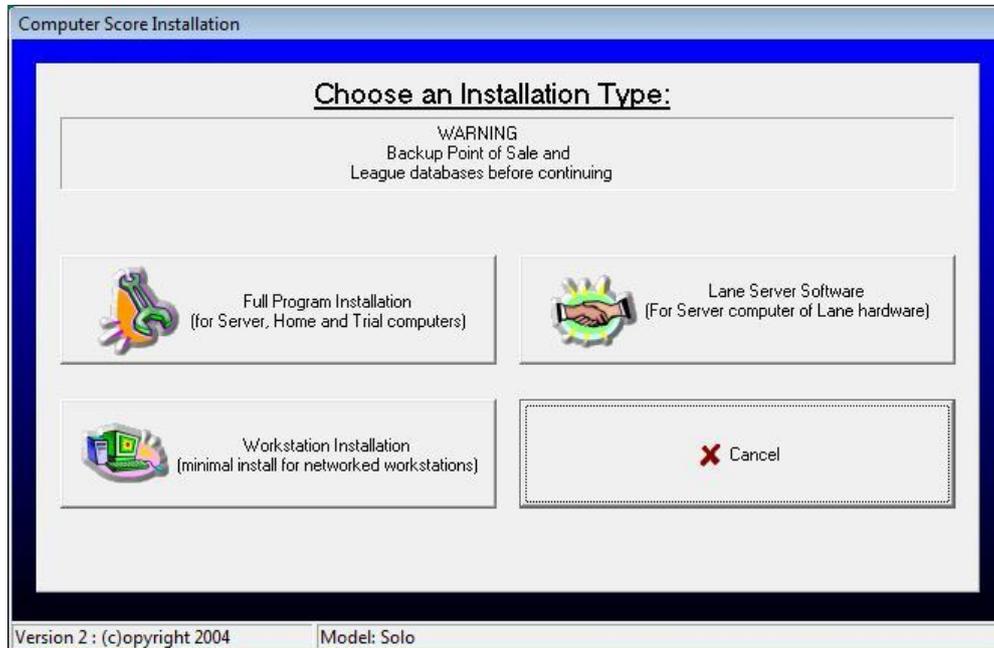
## Step 9: Install and configure the Software

Once all printers have been installed and tested and the networking connections have been tested on all computers, you can proceed to installing the Center Command software suite.

### 1. Install the Software on the Master Computer

Insert the installation CD into the MASTER computer and you will be presented with the following screen.

Click on the **Full Program Installation** button and follow the prompts to install the initial program files. Once this is done there will be a Computer Score icon on the desktop of your computer. Double click on this icon to start the software.

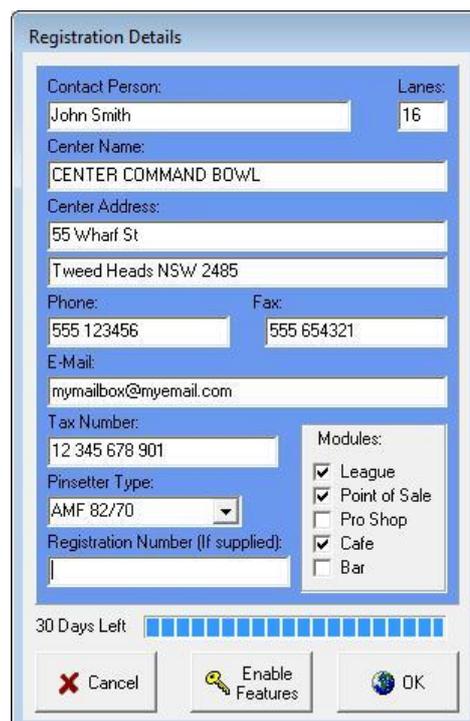


### 2. Register the Software

Once the software is running, you must then tell the computer what the name and address of the center is. To do this, click on the **System Management** menu button and then select **F4 Register Software**.

Click on the **Register** button and enter your center's details including the exact name of the center as given to your supplier for registration purposes.

Then enter the registration number as given by your sales representative and click on the **OK** button.



### 3. Install and Update the Lane Software

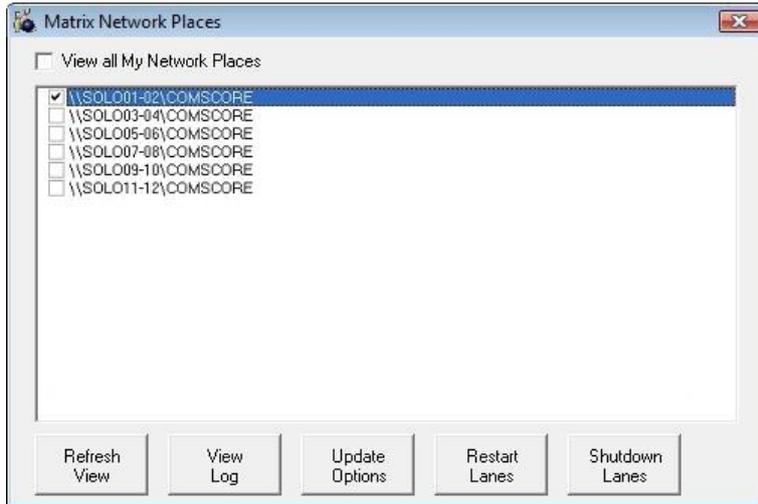
Exit the software back to the Windows Desktop, then Re-insert the installation CD into the MASTER computer and select the **Lane Server Software** option. Follow the on screen prompts and complete the installation.

### 4. Update the Solo Hardware Modules

The Solo Hardware units should be pre-installed with the latest Solo operating software, however it is a good policy to update the Solo units to ensure that this is the case. The Solo units are updated by using the following procedure.

Click on the **Go Control Lanes** button from any main menu screen. Then click on the **Management** menu from the top of the screen and select **Network**.

The following screen is then displayed showing each Solo unit that is currently connected to the network. If you cannot see all the Solo units, then click on the **Refresh View** button.



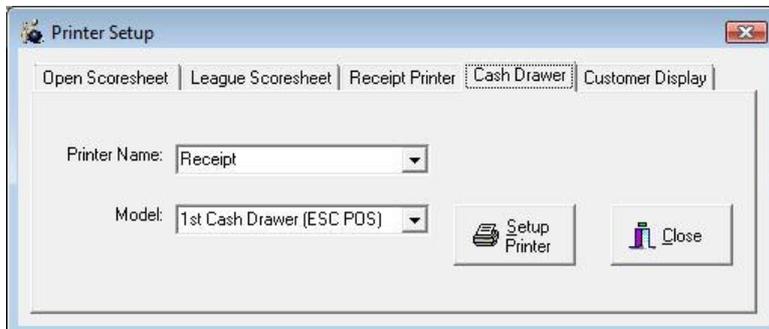
Select one Solo unit only from the list and click on the **Update Options** button. Select the **Include dll's** option. Then click on the **Update Now** button and select the option to re-boot the unit when completed. The Solo unit will now be updated and the log below will show the files being transferred.



**Note:** You must wait until this process is completed before continuing. Once completed, quit back to the Control Lanes screen and repeat the process for the next Solo unit.

### 5. Assign Printer Functions

By default, most printing for the standard reports are merely printed to the Default Printer for that computer. However, it is possible to set specific printing roles to other printers that might also be installed. For example, you may have a laser printer that should be used to always print scoresheets, or you may have a custom receipt printer that also includes a Cash Drawer. It will be necessary to perform the following steps on every computer connected on the network.



From the main menu, click on **File** then **Printer Setup**. The following screen is displayed. Click on the Tab for the desired function, such as the cash drawer and select the correct device from the drop down list. (In the case of a Cash Drawer, it is often connected to a receipt printer). Then select the correct model to specify the command set that the device responds to.

If you do not have the optional Point of Sale module installed, you will probably not have a Receipt Printer, Cash Drawer or Customer Display installed. If this is the case, select **Not Installed** from the printer list.

A summary table of the meaning of the various printer models is as follows:

## Open & League Scoresheet.

Model	Description
0 Draft / Generic	This setting will print the scoresheets by printing directly to the printer port, without any formatting. This is used mainly for older Dot Matrix printers.
1 Standard Windows	The Standard Windows setting is the one that is most commonly used by all Laser printers and is the recommended setting. It uses the Windows printer driver and print spooler to handle all aspects of the print job.
13 LX300+	The remaining settings use the Draft / Generic method of printing directly to the printer port, the difference being the number of lines left before the first scores are printed. These are designed to be used with pre-printed, continuous paper scoresheets. The different number of lines suits the various models of Epson Dot Matrix printers described.
14 LX300	
15 LX100	
16 LX850	

## Receipt Printer.

Model	Description
Draft / Generic	This setting will print the receipts by printing directly to the printer port, without any formatting. This is used mainly for older Dot Matrix receipt printers.
Standard Windows	This setting uses the Windows printer driver and print spooler to handle all aspects of the print job. However, receipt printers often have specific functions, such as paper cut and cash drawer open, that are not handled by windows. Therefore this setting is not commonly used for specialised receipt printers. It is most often used for normal printers, like Laser or Bubble Jet printers.
Epson B&W Printer	This setting is used of older Epson Dot Matrix receipt printers. It includes paper cut, but not commands for red text from a dual color ribbon.
Epson Color Printer	This setting is used of older Epson Dot Matrix receipt printers. It includes paper cut, as well as commands for red text from a dual color ribbon.
Star POS Printer	By selecting this option, the software will use the command set used for the Star Receipt printer emulation. Some older Dot Matrix receipt printers support this command set.
Citizen IDP 3210	This citizen Thermal Printer does not quite support the ESC POS command set. It uses a custom command to cut the paper and pop the cash drawer. Select this option only if you have this printer.
Citizen IDP 3530	These settings use the various Citizen command sets used by the different Citizen brand Dot Matrix receipt printers. As you can probably tell, in the past, receipt printers suffered from a lack of coordination of command sets amongst the various manufacturers.
Citizen IDP 3541	
Citizen IDP 3551	
ESC POS	ESC POS (Pronounced Escape POS) is a unified command set that most manufacturers support in their current range of printers, especially thermal receipt printers. It is highly recommended to use a thermal printer that supports ESC POS emulation and the ESC POS setting is the most commonly used setting.

## Cash Drawer.

Model	Description
Serial Cash Drawer	It is possible to buy stand alone Cash Drawers that do not require a connection to a receipt printer in order to function. Most are serial, but parallel interface versions also exist. Use this setting if you have this type of cash drawer. You will have to create a printer in the windows printer list to represent the Cash Drawer, but if this is done, the software will "Print" a string of characters to the selected printer port which will then make a stand alone Cash Drawer open.
1 <sup>st</sup> Cash Drawer	Use these settings to use the open command for Drawer #1 or Drawer #2 when connected to Citizen Dot Matrix receipt printers. (Most receipt printers support the connection of up to 2 different cash drawers at one time.)
2 <sup>nd</sup> Cash Drawer	
1 <sup>st</sup> Cash Drawer (ESC POS)	Use these settings to use the open command for Drawer #1 or Drawer #2 when connected to ESC POS compliant receipt printers. (Most receipt printers support the connection of up to 2 different cash drawers at one time.)
2 <sup>nd</sup> Cash Drawer (ESC POS)	

## Customer Display.

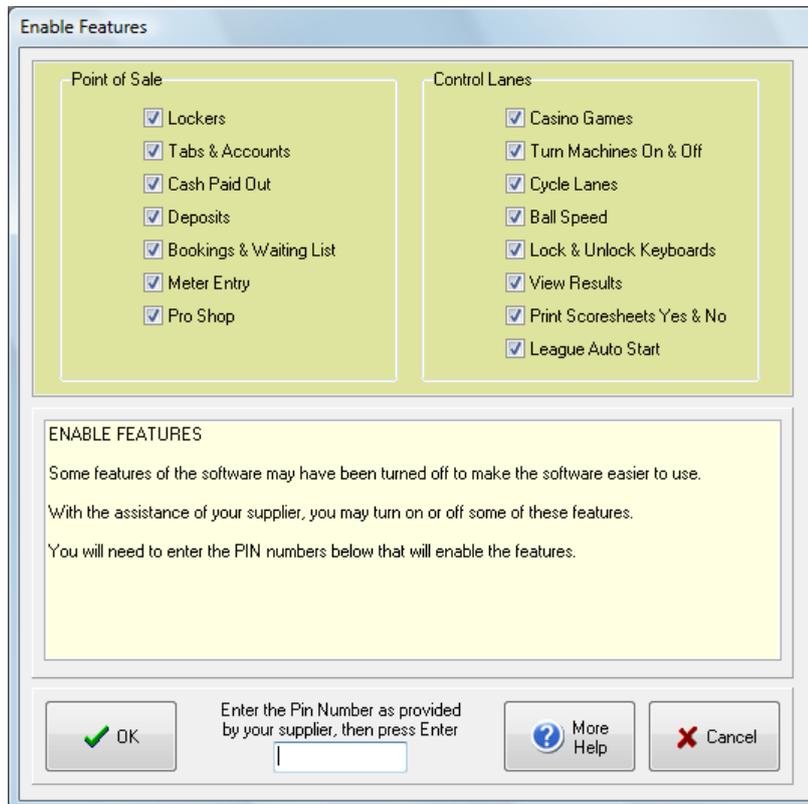
Model	Description
Standard Customer Display	This setting will support the display commands for a Citizen brand serial pass through Vacuum Fluorescent display.

## 6. Enabling or Disabling Software Modules

It is possible to add or remove menu options if a section of the software is not going to be used.

Click on the **System Management** menu and click on the **Register Software** button. Click on the **Enable Features** button to show a screen with a number of check boxes for individual software features that can be enabled or disabled. By default all extra software features are disabled so that you can learn to use the essential aspects of the software, without being confused by additional buttons by software features that you may not use.

Each check box is password protected to stop staff members from enabling modules unnecessarily. Contact your sales representative for the number to enable any of these options.



## 7. Install the Software on all other computers

All other computers, aside from the MASTER computer should be installed with the **Workstation Installation** button. This will install the minimum amount of software on each computer so that it can network to the COMSCORE NAS Disk to retrieve data.

## Step 10: Setup Center Command to suit your needs

Once you have successfully installed, updated and tested Center Command on all your computers, then you should think about what can be done to make Center Command operate the way you would like it. For more information on the day to day operation of the system, refer to the Operations Manual. The following section is intended to act as a setup guide for the center in general.



**Note:** Center Command was designed around a touch screen interface. Therefore, on most screens where you can change settings, there is an **Edit** button. Before pressing this button, all the fields on the screen are locked so that touching the screen cannot accidentally change them. To make a change to a setting, click on the **Edit** button, the screen will then turn blue, indicating that changes can now be made.

### Control Setup

When registering the software, you have already entered the Name and contact details of your center. However, now you may wish to further customise the general software setup to suit your operations.

The main area for General System setup is from the Control Setup screen. Click on the **System Management** menu and select **F2 Control Setup**.



**Note:** For more information on the Center Setup options, see the Computer Score Online Help System.

### Center Setup Tab

Once in the System Setup program, click on the **Center Setup** Tab. This is the general setup area and is probably the most important section to setup correctly.

Computer Score Configuration

Open Play | League Play | Printers | Lane Options | Lane Messages | **Center Setup** | Menu Security

Contact Person: My Name	Lanes: 16	Split: 6,10
Center Name: COMPUTER SCORE BOWL	Number: 0	
Center Address: 145 YOUR STREET YOUR HOME TOWN		
Phone: 555 123456	Fax: 555 654321	
E-Mail: mymail@mysp.com		
Tax Number: 12 345 6789	Certification Number: 123456	
Point of Sale <input checked="" type="checkbox"/> Enable		
Accounting Software: QuickBooks + Invoicing		
Rounding cents: 10	<input checked="" type="checkbox"/> Q'books 20 char export	
<input type="checkbox"/> Sunday to Saturday Financial Reporting		

Country: USA	Version: 2.00
Model: Solo	
Bumpers: Brunswick Bumpers	
Pinsetter: AMF 82/70	
Lane Configuration Password: 1234	
Average Mins Per Game: 10	Buffer Time: 5
<input checked="" type="checkbox"/> Show option for multiple languages on lanes	
<input checked="" type="checkbox"/> Display Booking Icons on Control Lanes	
<input checked="" type="checkbox"/> Name Entry required after Start Open Play	
<input type="checkbox"/> Zip Code required after Start Open Play	
<input type="checkbox"/> Pin Awards - Only Highest Applicable	
<input type="checkbox"/> Display League Roster on Info Terminal	
CDE Folder:	
HTML Folder: p:\website	
Info Terminal Home Filename: p:\website\index.htm	

Staff: Administrator Access

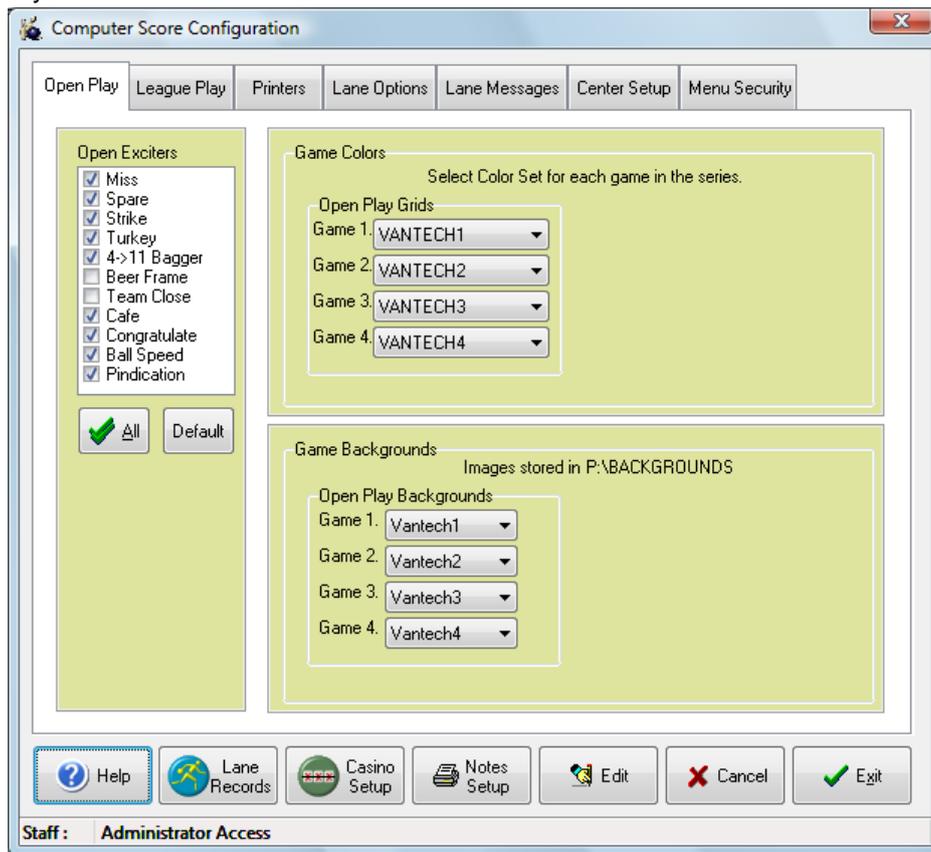
Buttons: Help, Lane Records, Casino Setup, Notes Setup, Edit, Cancel, Exit

Aside from your Contact and Address details, make sure that the following fields are set correctly:

Field	Default Setting	Comment
Split	0	This is the maximum number of lanes on each row in the Control Lanes screen. There can be up to three rows of lanes. Leave Blank or 0 for Auto Split. Alternatively, enter 1, 2 or 3 digits separated by a comma for the number of lanes per row. For Example: (Assuming 16 Lanes total, as above): 6,10 will result in two rows of icons, the first with 6 lanes and the second with 10. 4,10,6 will result in three rows of icons, the first with 4 lanes, the second with 10 lanes and the third with 6 lanes.
Number	0	Not Used
Language	USA	This sets things such as the date format dd/mm/yy or mm/dd/yy
Model	Solo	Choose the type of lane hardware in your center
Bumpers	Not Available	Choose Brunswick bumpers for Centrally controlled Pinball Wizard Auto Bumpers, Choose AMF Bumpers for all others.
Pinsetter	AMF 82/70	Select the Pinsetter type for your center from the list.
Lane Configuration Password	1234	You should choose a 4 digit password for your center. This password is used to gain entry to the Configuration Wizard on the Lanes, when they are on-line.
Average Mins per Game	10	This is the assumed rate of play as used by the Booking Sheet to estimate the finishing time for bookings. (The finishing time for lanes in use is calculated from their actual rate of play.)
Buffer Time	5	The average time that a booking group will take to get to the lanes, put on shoes, etc and start playing.
Display Booking Icons on Control Lanes	Checked	Shows an icon on each lane when there is a League or Booking due to start soon.
Name Entry required after Start Open Play	Checked	When a Social lane is started, automatically shows the Name Entry screen for the operator to pre-enter bowler's names.
Zip Code required after Open Play	Unchecked	Allows the polling of your Social Bowlers to find out what Zip Codes are visiting the center. Can be turned on or off at any time.
Pin Awards – Only Highest Applicable	Unchecked	If checked, the system will only give out the highest Pin Award that a bowler achieves. Lower award levels are ignored until another, lower score is bowled.
Display League Roster on Info Terminal	Unchecked	If checked, the Bowler's Info Terminal software will default to the Lane Draw Roster for the next league.
CDE Folder	Blank	Type the location where data should be saved when exporting to CDE League Secretary (Optional)
HTML Folder	P:\HTML	This is where any league Standing Sheets are saved before uploading to your Website.
Info Terminal Home Filename	Blank	Enter the location of a HTML file to use as a local website to welcome patrons, highlight the facilities and advertise your center. This will be the default page shown on the Bowlers Info Terminal. (If the Display League Roster on Info Terminal option is Checked)
Enable Point of Sale	Checked	Use this option to temporarily disable Point Of Sale, even when the POS module is registered. This is useful if you wish to start using the system straight away, before setting up Point of Sale Items and accounts.
Rounding Cents	0	This field is used if your country has a smallest coin that is not 1 cent. For example, New Zealand's smallest coin is 10 cents. Therefore all prices must be rounded to the nearest 10 cent value. In this situation, enter 10 in this field. Leave blank or 0 for no rounding.
Sunday to Saturday Financial Reporting	Unchecked	Tick this field to have the weekly reporting period to be from the Sunday to the Saturday of any week. Leave the field unchecked for the reporting period to be from Monday to Sunday.
Accounting Software	Quickbooks	This option displays or hides the Menu button to produce a Quickbooks export .iif file. If you do not use Quickbooks, select Not Installed and the button will not appear in the Point of Sale Menu. Select Quickbooks + Invoicing to separate account transactions as Invoices and Payments in Quickbooks.

## Open Play Tab

The Open Play tab is used to define the graphics modules and the score grid color schemes to use when the lanes are in Open Play Mode.



### Open Exciters

Select which categories of exciter graphic you would like to be played to your Open Play bowlers. By default Beer Frame (All bowlers except one close their frame) and Team Close (All bowlers bowl a closed frame) are not selected because they are not very relevant to Open Play.

### Game Colors

Select the desired score grid colors for the first four games in the series. Each time you select a different grid color, an image for the score grid is shown to allow you to get an idea of the score grid color. This pattern of colors is repeated from game five onwards.

### Game Backgrounds

In a similar manner to the Game Colors, select the desired background image for the first four games in the series. The combination of the Game Color and the Game Background will determine what the score grid will actually look like.

You are also able to make your own score grid background images by creating a 640 x 480 PCX image as defined below, and saving it into the P:\backgrounds directory. Once this is done, the image will be included in the drop down list.

- Graphic Name:** any name up to 20 characters
- Description:** Score grid background image
- Graphic Type:** PC Paintbrush (PCX)
- File Location:** p:\backgrounds
- Dimensions:** 640 pixels (W) x 480 pixels (H)
- Color Depth:** 24 bit (RGB True Color)

## League Play Tab

The League Play tab has the same items as the Open Play Tab, the only difference is that these controls will determine how a League Play score grid will look. Select the desired exciter graphics categories, as well as the score grid colors and background images for the first four games in the series. After the first four games, these color combinations will be repeated.

## Printers Tab

The printers tab allows you to define up to nine customised messages for different situations.

To make a customised message, click on one of the 9 different buttons in the Available Messages section and enter your message on the three message lines provided. Also type a short description in the description field above.

The screenshot shows the 'Computer Score Configuration' window with the 'Printers' tab selected. The window has a title bar with a close button (X) and a menu bar with options: Open Play, League Play, Printers, Lane Options, Lane Messages, Center Setup, and Menu Security. The main content area is divided into two sections. The top section, on a light green background, contains three dropdown menus: 'Printer Scoresheet Message' (set to 'GENERAL MESSAGE'), 'End of Series Lane Message' (set to 'No Message'), and 'Receipt Printer Message' (set to 'GENERAL MESSAGE'). Below these is a checked checkbox labeled 'Print Scoresheets for all Open Play Games'. The bottom section, also on a light green background, is titled 'Available Messages' and contains a row of nine numbered buttons (1-9). Below the buttons are three text input fields containing the following messages: 'GENERAL MESSAGE', 'WE HOPE YOU ENJOYED YOUR GAMES AT OUR CENTER', and 'ASK OUR FRIENDLY STAFF FOR DETAILS ON PARTIES AND MIXED SOCIAL LEAGUES'. The third field is partially obscured by the text 'WE HAVE FUN AND EXCITEMENT FOR EVERYONE !!!!'. At the bottom of the window is a toolbar with buttons for Help, Lane Records, Casino Setup, Notes Setup, Edit, Cancel, and Exit. The status bar at the very bottom reads 'Staff : Administrator Access'.

To use a message for any of the three situations, simply select the desired message from the relevant drop down list.



### Note:

When creating a message for the Receipt Printer, please bear in mind the most receipt printers are only capable of printing text of 40 characters wide across the page, rather than the usual 80 characters. If this is the case with your receipt printer, then only use a maximum of 40 characters in each message line.

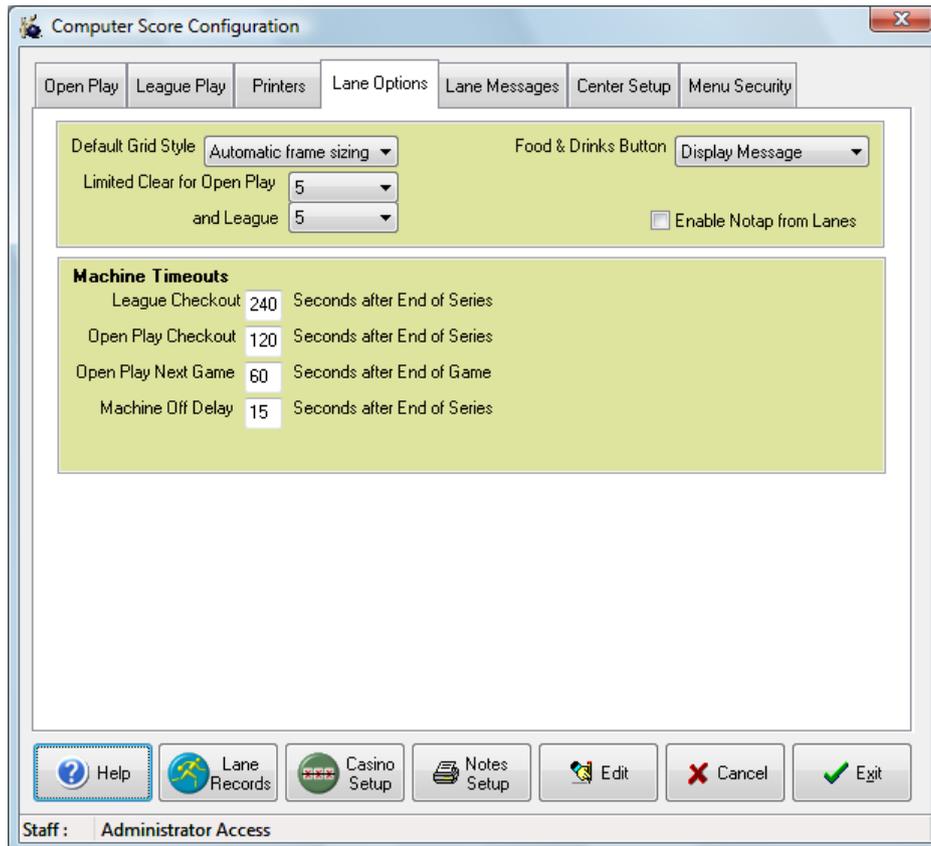
### Print Scoresheets for all Open Play Games

This check box determines whether a scoresheet will be printed every time a social group finishes their bowling. If you remove this check box, no scoresheets will be printed unless the operator specifically requests one from the Start Tab of the Control Lanes screen. It is a common desire to save money by turning off Open Play scoresheets, but this is not recommended from a pure customer relations point of view. The scoresheet is often the only thing that your bowlers will take away from the lanes, and it is a good opportunity to try to encourage them to visit your center again, by printing a discount offer at the bottom of the scoresheet. For more information, see [Creating pictures to customise the system](#), below.

Scoresheets for League play are turned on or off on a league by league basis from the Auto Scoring Tab of the League Setup screen. By default scoresheets are turned off for a new league.

## Lane Options Tab

The Lane Options tab determines the timing of the pinsetter's operation as well as some miscellaneous settings for the operation of the scoregrids.



### Default Grid Style

The scoregrids are able to display either the entire 10 frames in the game of a larger 5 frame version which scrolls across as the game progresses. Alternatively and is also the default Automatic Mode which shows the 5 frame mode for the initial part of the game, and then expands out to the 10 frame mode once the fifth frame is reached. Choose the desired display type from the drop down list.

The desired default Scoregrid size can also be set on a League by League basis from the Auto Scoring tab of the League Setup screen.

### Limited Clear for Open Play

This field will set a limited number of times that a score can be cleared from the Bowler's Keypad on the lanes. For example, setting a value of 5 will mean that the clear button can only be pressed 5 times before a message appears saying that for further score corrections, please see the counter staff. This stops Open Play bowlers from over bowling by clearing out large portions of the game.

### Limited Clear for League Play

This field behaves exactly the same as the Limited Clear for Open Play, only for Leagues. It is common to set a slightly larger number of clears for league players, but this is totally optional.

### Food & Drinks Button

This determines the behaviour of the lanes when the Food & Drinks button is pressed on the bowler's keypad.

- If the **Display Message** option is selected, then when the Food & Drinks button is pressed, a full screen message advertising the Café will be displayed for about 15 seconds.
- If the **Waitress Call** option is selected, then when the button is pressed, the background of the scoregrid is changed to the image of a hamburger and an animated message is shown saying that a Waitress has been called. In addition to this a message is displayed on the Café Point of Sale screen (If software module is installed) telling the operator that the lane requires assistance. Press the Food & Drinks button again to cancel the Waitress Call for this lane.

### Enable No-Tap from Lanes

This option will enable or disable the ability to select a No-Tap game directly from the Bowler's Keypad on the lanes. This is done by pressing **Help** then **7 Scoring Options**, then **C Competition Play**, then selecting the desired No Tap option.

No-Tap from the Lanes is usually disabled by default.

Even if this option is disabled here, it is still possible to set a lane into No Tap by clicking on the **Play Mode** tab in the Control Lanes screen and selecting the desired No-Tap game.

### Machine Timeouts

This series of fields determines the behaviour of the scorer at the end of each game or at the end of the entire series, the default values are set as follows:

Field	Default Setting	Comment
League Checkout	240 seconds	In League Play mode, this is the amount of time in seconds before the scoregrids are removed automatically, once the series has been completed. This gives the league bowlers time to fill in their recap sheets.
Open Play Checkout	120 seconds	In Open Play mode, this is the amount of time seconds before the scoregrids are removed automatically, once all games have been bowled.
Open Play Next Game	60 seconds	In Open Play mode, this is the amount of time, before the Scoregrid advances to the next game in the series automatically, once a game has been completed. <b>Note:</b> If a ball is bowled during this period, the Scoregrid will advance to the next game straight away.
Machine Off Delay	15 seconds	Once the last ball is bowled, the scorer will automatically turn off the pinsetter after this period of time, so those bowlers cannot over-bowl.

### **Lane Messages Tab**

The Solo model allows you to create a series of images for display on any vacant lanes as a slide show.

Select one of a number of pre-created images from the drop down lists. Then define how long each message will display, by entering a number of seconds in the field provided. Also place a tick in the enabled field for each message to be used in the slide show.

### Creating your own messages

Each message is an image that you can create using any third party graphics program. The specifications for these images are shown below. If you are unable to create these images, consult a local printer who will be able to produce them for you. Once you have created the message image, save it into the P:\MESSAGES directory and the image will appear in the drop down list, along with the other messages already in the system.

- Graphic Name:** any name up to 20 characters
- Description:** Lane Monitor Message used when lanes are not in use
- Graphic Type:** PC Paintbrush (PCX)
- File Location:** p:\messages
- Dimensions:** 640 pixels (W) x 480 pixels (H)
- Color Depth:** 24 bit (RGB True Color)

## Menu Security Tab

The Menu Security Tab only becomes visible if the Employee security system has been turned on. See: The next topic for more information on how to do this.

In addition to this, if the Point of Sale module is not installed, all items relating to POS functions will be hidden from this screen, so the screen you see may differ from the one shown here.

The screenshot shows the 'Menu Security' tab in the 'Computer Score Configuration' window. The settings are as follows:

- Unattended Mode after: 15 Minutes.  POS Password Required for every Transaction.
- Number of transactions viewable: 10. Password always required if program access is greater than or equal to: Office Attendant.
- Force change of password every: 90 days, with minimum length of 6 characters.  Passwords must be alphanumeric.
- Open Shift: Shift Manager
- Close Shift: Shift Manager
- Enter Banking: Shift Manager
- End of Day Close: Shift Manager
- Previous Shift Report: Shift Manager
- Current Shift Report: General Manager
- Print End of Day Report: Shift Manager
- Edit Transaction Details: Office Attendant
- Abandon Pay After: Shift Manager
- Discount Stock: Console Operator
- Address Book Club: No Password Required
- Phone Bookings: No Password Required
- Open Play Pay After: Console Operator
- Refund Transactions: Shift Manager
- Refund Item: No Password Required
- Void Transactions: Shift Manager
- Cash Paid Out: Shift Manager
- View Transactions: Shift Manager
- Create New Account: Office Attendant
- Recover Old Lanes: Shift Manager
- Turn On Machines: Console Operator
- Cycle Lane: No Password Required
- Games Setup: No Password Required

Buttons at the bottom: Help, Lane Records, Casino Setup, Notes Setup, Edit, Cancel, Exit. Staff: Administrator Access.

Select the desired employee level for each of the actions listed. It is advisable to start off with the default values and then modify them only when you are familiar with the system.

Specific Actions that need an explanation include:

Field	Default Setting	Comment
Unattended Mode after XX Minutes	15 Minutes	After a period of inactivity, the system will log out whoever is currently logged in and then present the password entry screen. A valid password must be entered before any further work can be done. This is so that if the control desk is left unattended, unauthorised persons can not use the system. This is the same process as pressing the Unattended button.
Number of Transactions viewable	10	When viewing a list of transactions rung up for a day, it is unwise to view every single transaction. Otherwise a staff member would be able to count the transaction totals to work out the current balance in the cash drawer. This field allows you to limit the list of transactions to only the last (say 10) rung up.
POS Password Required for Every Transaction	False	This option will force a password to be re-entered every time a Point Of Sale transaction is done. This is so you can accurately track which staff member does each transaction. It is not recommended to use this option unless it is actually needed, otherwise staff will soon tire of entering their password constantly.
Password always required if program access is greater than or equal to	Office Attendant	If a program requires (Say) an Office Attendant level employee, then the system will require an Office Attendant level or higher password to be entered, even if a high level employee is already logged in. This system enables users to log in once and perform low level work without having to re-enter their password all the time. However, if a high level program is required, then a password must be entered, regardless of the level of the employee currently logged in.

Field	Default Setting	Comment
Force change of password every X days	0 or Blank	This optional field allows you to mandate that every staff member's password must be changes after the specified number of days since the last time that it was changed. This help reduce the common situation that staff passwords often become well known over time. To disable this feature, enter 0 days or leave the field blank.
With minimum length of X characters.	0 or Blank	This optional field will mandate that all staff passwords (Whether they will expire after a specified number of days or not) must be at least the entered number of characters long. A common value for this field is which will force all passwords to be at least 4 characters long.
Password must be Alphanumeric.	False	This optional field will mandate that all passwords must contain both letters and numbers. This is done in order to stop staff from using easily guessed passwords.

### **Enable Password Security**

By default, there are no employees entered into the system when it is first installed. Often, in an owner/operator situation, it is desirable that there be no security passwords at all. This is because where the people than own the center, run the center, typing password would only get in the way.

*However, for virtually all other Bowling Centers, security is definitely required.*

To enable the security system, click on the **Employee Details** button in the **System Management** menu. Click on the **Add** button to Add a new employee. A warning screen will pop up telling you that once the security system is activated, it can't be turned off. Click on the OK button to continue. Make sure that the first employee you add is a General Manager. This is because a General Manager is required to enter the Employee Details screen.

Fill in all the contact details and enter a password for the General Manager. Select General Manager from the List of Access Levels.

The description of these Access Levels is as follows:

Access Level	Comment
No Access	This is the lowest level that should be used when an Employee has left the company and should no longer be able to use the computer. The name should be kept in case you wish to look through any historical records of the employee's history. You should also change the employee's password in this situation.
Console Operator	Console Operator is designed to be junior staff members who are permitted to perform basic functions, but who are not trusted to perform end of shift and end of day functions.
Shift Manager	Shift Managers are those main staff who are responsible for the correct counting of the Cash Drawers on a daily basis, but who are not responsible for viewing any Point of Sale figures or performing any Point of Sale setup operations.
Office Attendant	Office Attendants are responsible for the general smooth running of the business including performing any adjustments to the POS figures and creating POS Items and Macros.
General Manager	A General Manager is able to perform all other tasks including Adding Employee passwords, updating the software and Closing Databases.
System Administrator	There should be no need to create any System Administrator level employees. This is only used by Computer Score support staff.

The default Access Level for each main menu item is as follows: Any items missing are controlled separately from the Menu Security screen.

Menu	Item	Default Access Level
Control Lanes	Audit Report	Shift Manager
League Secretary	League Setup	Shift Manager
League Secretary	Team Details	No Security Required
League Secretary	League Bowlers	No Security Required
League Secretary	League Schedule	Shift Manager
League Secretary	Edit Game Scores	Shift Manager
League Secretary	List Leagues Print	No Security Required
League Secretary	Bowlers Record Print	No Security Required
League Secretary	Team Record Print	No Security Required
League Secretary	League Record Print	No Security Required
League Secretary	Standing Sheet Print	No Security Required
League Secretary	League Bowlers Print	No Security Required
League Secretary	Recap Sheets Print	No Security Required
League Secretary	League Schedule Print	No Security Required
Address Book & Brackets	Edit Address Book	No Security Required
Address Book & Brackets	Add / Edit Mailing File	No Security Required
Address Book & Brackets	Brackets & Sweepers	No Security Required
Address Book & Brackets	Address Book Print	No Security Required
Address Book & Brackets	Mailing File Print	No Security Required
Address Book & Brackets	Absent Bowlers Print	No Security Required
Address Book & Brackets	Bowler Notes Print	No Security Required
Address Book & Brackets	Print Brackets	No Security Required
Point Of Sale	POS Item Setup	Office Attendant
Point Of Sale	Display POS Transactions	Office Attendant
Point Of Sale	Edit Daily Totals	Office Attendant
Point Of Sale	Quickbooks Export	Office Attendant
Point Of Sale	Database Close	General Manager
Point Of Sale	Locker Rental	Office Attendant
Point Of Sale	Add / Edit Deposit	Office Attendant
Point Of Sale	Edit Pro Shop Stock	Office Attendant
Point Of Sale	Financial Reports Print	Office Attendant
Point Of Sale	Transaction Report Print	Office Attendant
Point Of Sale	List Lockers Report Print	Shift Manager
Point Of Sale	Deposit List Print	Shift Manager
Point Of Sale	Pro Shop Stock Print	Shift Manager
Point Of Sale	Macro Report Print	Office Attendant
Café & Bar	POS Item Setup	Office Attendant
Café & Bar	Display POS Transactions	Office Attendant
Café & Bar	Edit Daily Totals	Office Attendant
Café & Bar	Database Close	General Manager
Café & Bar	Quickbooks Export	Office Attendant
Café & Bar	Financial Reports Print	Office Attendant
Café & Bar	Transaction Report Print	Office Attendant
Café & Bar	Macro Report Print	Office Attendant
System Management	Employee Details	General Manager
System Management	Control Setup	Office Attendant
System Management	Awards Setup	Shift Manager
System Management	Update System	General Manager
System Management	Staff Menu Log Print	General Manager
System Management	League Statistics	Console Operator
System Management	Zip Code Analysis	No Security Required
System Management	Congress Awards	No Security Required

## Enable Tabs and Accounts

Center Command allows you to ring up transaction (Most commonly for regular School and Corporate Groups) and place them on an account, instead of paying Cash. This account can then be paid off on another day. For more information on Tabs and Accounts, see either the Online Help system or the Operations manual.

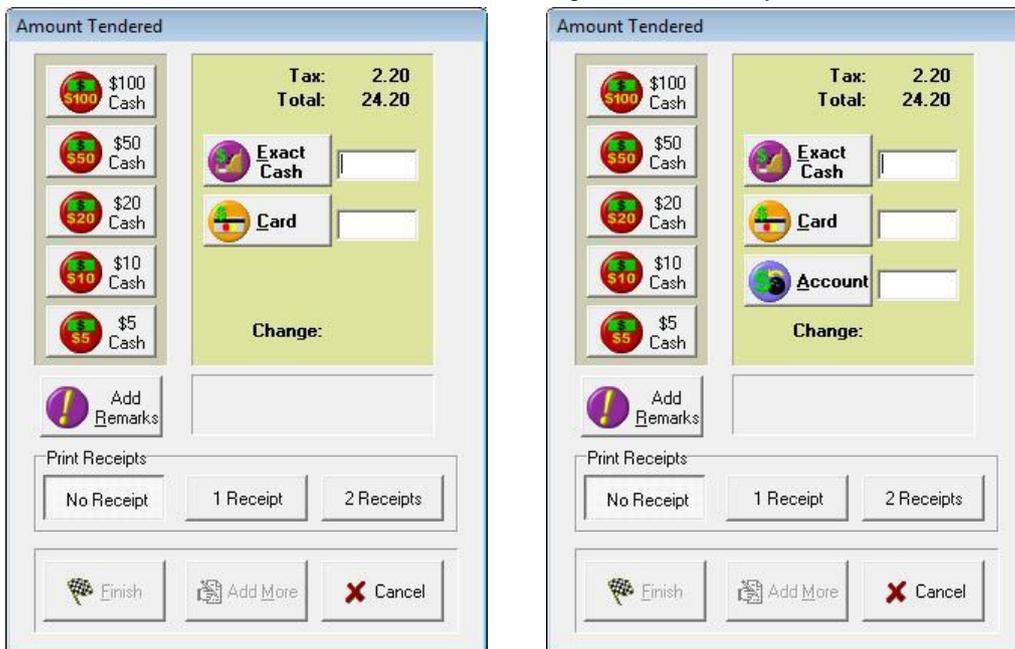
By default, the Tabs and Accounts system is disabled. To turn it on, first you must enable this section of the software from the **Enable Features** button in the **Register Software** screen in the **System Management** menu.

See your Computer Score representative for the code to turn this feature on.

## Creating Accounts

It is a good idea to create accounts for some of your customers who you know will want this feature. To do this, follow these steps: (It is assumed at this point that a Point Of Sale Shift has been opened and you are trading normally)

1. From the Control Lanes Screen, select the **F6 POS** tab and click on the **Pay Account** Button. This button will be hidden unless the Tabs and Accounts Feature is turned on from the Enable Features screen.
2. Click on the **New Account** button. Select **New Account**. For more information on the difference between a Tab and an Account, see the Online Help system.
3. Enter all the Accounts details including Address and Phone number.
4. Enter a unique Account Code to identify this account.
5. Click **OK** and finish adding the Account.
6. Click on the **Close** button to back out without making an Account Payment.



Once this has been done, an **Account** button will appear on the Amount Tendered screen at the end of every transaction. Click on this button to select which account to assign to the transaction. For more information on Transactions on account, see the Online Help system.

## Create some POS Items

Although Center Command comes installed with a basic set of pre-installed Point of Sale items and Macros, you will want to customise these to suit your own situation. See the Operations Manual or the Online Help system for more information on creating your own POS Items and Macros.

Pay particular attention to the function of the various Unit Type and Report Types available for each POS Item. Some functions require the existence of particular POS Items in order to function.

## ***Creating pictures to customise the system.***

There are a number of images that can be created in order to customise the software to your center. Most of these images must be a specific size and format and must also be saved as a specific file name in a specific location. The following images are not required if the Solo Units are not connected to the optional system management computers.

### **Scoresheets**

If no images exist for the scoresheets, then the system will automatically use a set of default images with a standard Logo.

Otherwise, create the following images as below:

**Graphic Name:** header.bmp  
**Description:** Scoresheet Heading  
**Graphic Type:** Windows Bitmap (BMP)  
**File Location:** p:\programs\reports\scoresheet  
**Dimensions:** 674 pixels (W) x 144 pixels (H)  
**Color Depth:** 24 bit (RGB True Color)

**Graphic Name:** footer.bmp  
**Description:** Scoresheet Footer  
**Graphic Type:** Windows Bitmap (BMP)  
**File Location:** p:\programs\reports\scoresheet  
**Dimensions:** 674 pixels (W) x 144 pixels (H)  
**Color Depth:** 24 bit (RGB True Color)

### **Internet League List**

The Internet League List is a special report in the List Leagues screen which lists only those leagues for which HTML standing sheets are required for a Bowlers Info Terminal or FTP upload to a web site. A graphic is required to place your logo on the top of this report. This image is only used if the optional League Secretary software module is installed.

**Graphic Name:** logo.gif  
**Description:** Company Logo on the top of Bowlers Info Terminal List of Leagues  
**Graphic Type:** Compu Serve (GIF)  
**File Location:** p:\html\pictures (You may need to create this directory)  
**Dimensions:** unlimited, but usually 674 pixels (W) x 144 pixels (H)  
**Color Depth:** 8 Bit (256 Colors, optimised palette)

### **Invoices**

The system will give you the option to print a plain paper invoice for any account transaction. Two graphics are required to place your logo and remittance details on the top and bottom of this invoice. The following images are only required if the optional Point of Sale software module is installed and the Tabs / Accounts feature is enabled.

**Graphic Name:** invoiceheader.gif  
**Description:** Logo on top of Letter size Invoice for account transactions  
**Graphic Type:** Compu Serve (GIF)  
**File Location:** p:\programs\reports\invoice  
**Dimensions:** 674 pixels (W) x 144 pixels (H)  
**Color Depth:** 8 Bit (256 Colors, optimised palette)

**Graphic Name:** invoicefooter.gif  
**Description:** Remittance advice on bottom of Letter size Invoice for account transactions  
**Graphic Type:** Compu Serve (GIF)  
**File Location:** p:\programs\reports\invoice  
**Dimensions:** 674 pixels (W) x 144 pixels (H)  
**Color Depth:** 8 Bit (256 Colors, optimised palette)

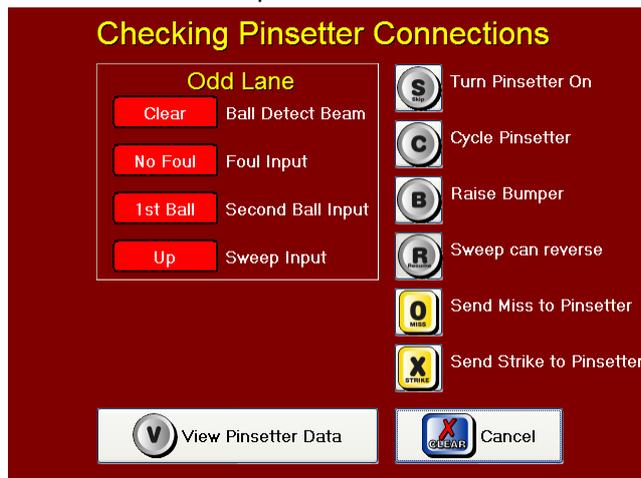
## Appendix A - Using the Troubleshooting Screens

Because the Setup Wizard is designed to be a simple step by step process to enable the Solo module to start scoring quickly, there are several advanced features and diagnostic tools that are contained in the Troubleshooting screens. These tools will allow you to set and review all aspects of the Solo hardware's behaviour.



### Checking the Machine Connections

Options 1 and 2 of the Troubleshooting screen allow you to review and test the Pinsetter connection Inputs and Outputs that are used by the Solo Hardware Module to control the Pinsetter. This screen will change depending on the Pinsetter Model Type selected in the Setup Wizard.



### Outputs

Turn Pinsetter On / Off	This command will turn the Pinsetter on and off when pressing the <b>S</b> button on the keypad.
Cycle Pinsetter	This command tests the cycle connection to the Pinsetter. Press the <b>C</b> button to cycle the machine. The Pinsetter must first be on to test this.
Raise / Lower Bumpers	This command tests the connection to Automatic Bumpers that are directly connected to the Solo units. It does not test bumpers centrally controlled from the computers, such as Brunswick Ball Wall. Press <b>B</b> to raise the bumpers on this lane. Press <b>B</b> again to lower them.
Sweep can Reverse	This command is only available on certain Pinsetter Model types, such as the AMF 82_90 MP chassis. It specifies where the Pinsetter is able to accept a sweep reverse command from the Solo unit. Not all MP chassis or MK Extender 82_70 pinsetters have sweep motors wired to accept these commands. You are able to alter the behaviour of the Solo Unit to match the capabilities of your pinsetter.
Send Miss to Pinsetter	This command is only available on certain Pinsetter Model types, that are able to perform a short cycle on a first ball miss. If available, press <b>O</b> to make the Pinsetter perform a Miss cycle, without bowling a ball.
Send Strike to Pinsetter	This command is only available on certain Pinsetter Model types, which are able to perform a strike cycle on command from an external source. If available, press <b>X</b> to make the Pinsetter perform a Strike cycle, without bowling a ball.

## Inputs

Ball Detect Beam	Every time the Ball Detector beam is cut, the indicator will go green to let you know that a ball has gone past. If this light is green all the time or flashing green, then you need to readjust the Ball Detector eyeball mount.
Foul Input	If your Foul Units are connected to the Solo unit (Optional) then this indicator will go green every time the Foul signal is received by the Solo unit.
Second Ball Input	Depending on your Pinsetter type, the second ball light may be connected to the Solo unit. (Most commonly done with 82-70MP chassis, 82-90 and 82-90XL) If this is the case then this indicator will go green every time the second ball light signal is received by the Solo unit. GS series Pinsetters will also use this second ball Input, but the signal is received directly from the Pinsetter via the communications port. Again, this indicator will go green whenever this signal is received.
Sweep Input	This is only available from the AMF 82-90XL and XLi pinspotters and is received by the Solo via the serial communications plug. When the sweep drops, this light should turn green. When the sweep is up, the light should be red.

## Reviewing the Last Score Bowled

The options **3** and **4** of the Troubleshooting screen allow you to review the last ball that was scored on either the Odd or Even Lane. In this example, we will use the Even Lane on an AMF 82-70 equipped center.

At any time, you are able to save an animation of the score to an AVI file. This will allow you to e-mail an example of a recurring scoring problem to your sales representative so that the problem can be quickly diagnosed and corrected. Press the **S** button to save the animation to the Solo's hard drive as c:\comscore\savedscoreXX.avi where XX is the lane number of the score saved.

The overwhelming source of scoring problems occurs from the incorrect behaviour, timing or lighting of Pinsetting machines. However, it can be very difficult to diagnose these problems without seeing a replay frame by frame. The Review Last Score screens allow you to do this.

Press the **Move Cursor Right** and **Move Cursor Left** buttons to scroll forward and back through the four stages that are captured for every score.

### Stage 1. Scoring Cycle Started

This first stage represents the image taken at the time when the Solo software first becomes aware of a change circumstance, which will result in a score being taken.

For most Pinsetters, this is when the Ball cuts the Ball Detector beam at the Solo Hardware Module. However for Pinsetters using the Pinsetter Communications Port (For example, AMF 82-90XL and GS series Pinsetters) this Stage is triggered via a signal from the Pinsetter itself.

**Review the Last Ball Bowled**

**Even Lane**

Stage 1. Scoring Cycle Started

**Software Flags**

AMF 82\_70  
Time = 14.0 Seconds  
Scoring State = Cycle Started  
Pins Down = 0  
Ball Speed = 14.9 MPH/23.9 KPH  
Ball Delay = 0.4 Seconds  
In Open Play Mode

Next Event in 4.9 Seconds

**Hardware Flags**

7 4 2 1 8 5 3 9 6 10  
Brightness of Pins

Back Save Cancel Fwd

### Things to Check

If you are having scoring issues, check the following areas:

1. Make sure the correct Pinsetter type is displayed in the Software Flags area.
2. Check that the number of pins down reported in the Software Flags area, is correct compared to the number of green bars in the brightness section.
3. Check for any Hardware flags being reported directly for the Pinsetter (Depending on Machine Type), such as Second Ball light or Sweep Down.
4. Make sure that the Ball Speed report is approximately correct. A badly wrong Ball Speed can affect the timing of the scoring software because it uses the ball's speed to compensate for slow balls. In this example, the default **Take Data Delay** for 82-70 Pinsetters is 4.5 seconds, the Ball Speed Delay is calculated at 0.4 seconds, therefore the score will be taken in 4.9 seconds from this time.

## Stage 2. Score Determined

The second stage represents the expiration of the **Take Data Delay**. This delay can be set from the **Fine Tune the Scoring Setup** screen and is preset for each type of Pinsetter. You should not ever need to change this Take Data Delay, but if it is set too long you could see an image of the Table on first ball and if it is set too short, you could see an image of the pins still falling.

At this point the number of pins the Solo sees will be the score reported.

A pin is determined to be present whenever the level of brightness at the Pin Position Indicator is higher than the threshold level. The Pin brightness is indicated by the height of the bar in the bottom left of the screen and the two horizontal lines on each side of the brightness bars represent the threshold level.



This threshold level is calculated by the brightness of the pit area between the 6 & 10 pins on the Odd lanes and between the 7 & 4 pins on the Even lanes. This level will automatically change as general lighting conditions change. This means that the Solo scoring software is just as effective during disco and glow conditions as normal bowling. No adjustments are needed to be made when changing from one condition to the other.

In this example, the default **Delay from Score Taken to Pins Set** is 6.0 seconds. Therefore, the next stage (Event) will occur at that time.

### Things to Check

If you are having scoring issues, check the following areas:

1. Make sure that the number of pins down equals the number of green bars in the Brightness section and is also correct in the Player's Score section.
2. Make sure that there are no red bars that are close to going over the Pin Brightness threshold. (Thus a pin being considered present.) If any of these red bars are close to the threshold line, then there is a danger that variations in lighting conditions from ball to ball could cause a pin to be falsely detected. Check to see if things such as oil streaks down the curtain are causing the pit to look bright in the relevant area.
3. Check that the Pin Position Indicators are not being blocked by the Sweep / Rake. Usually, the Sweep / Rake should be in the guard position when the **Take Data Delay** expires and the score is determined. Make sure that rake is not blocking the pins and the deck/table should not be moving. This is particularly important with Brunswick A2 pinsetters, because the deck will block the pit light and make the pins (especially the head pin) appear dark, possibly dropping the light level below the threshold and causing the pin to be missed.

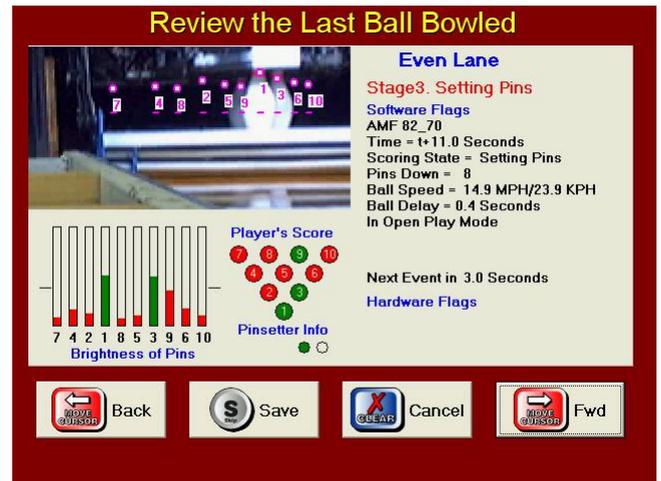
The only exception to this is a Brunswick A machine where the Rake and Deck move together on first ball. In this case, the score is determined before the Rake falls. Make sure that the Rake is not blocking the pins.

### Stage 3. Setting Pins

This stage represents the expiry of the **Score Taken to Pins Set** timer. It is at this point the Solo software will start looking to see when the image has stopped moving and the cycle has completed.

Again, this timer can be adjusted from the **Fine Tune the Scoring Setup** screen, but they have been pre-configured for each type of Pinsetter and should not need to be altered.

In this example, the default **Delay from Pins Set to Pinsetter at Rest** is 3.0 seconds. Therefore, the next stage (Event) will occur at that time.



### Stage 4. Scoring Cycle Ended

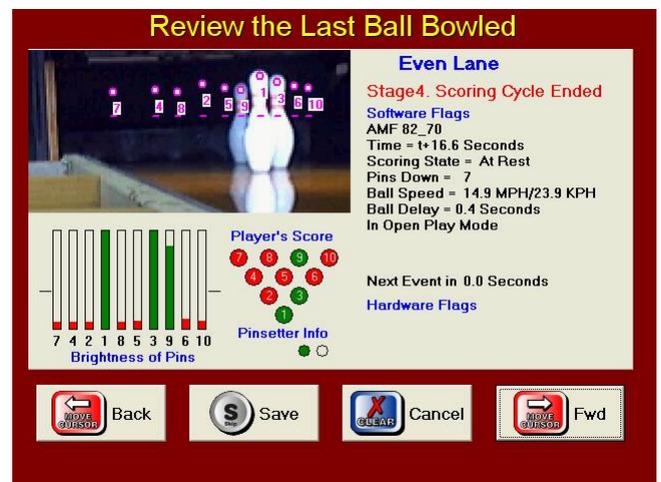
The final stage represents when the Pinsetter has completed its cycle, either by observing that all movement has finished, or by the expiration of the **Pins Set to Pinsetter at Rest timer**, whichever occurs first.

Again, this timer can be adjusted from the **Fine Tune the Scoring Setup** screen, but they have been pre-configured for each type of Pinsetter and should not need to be altered.

#### Things to Check

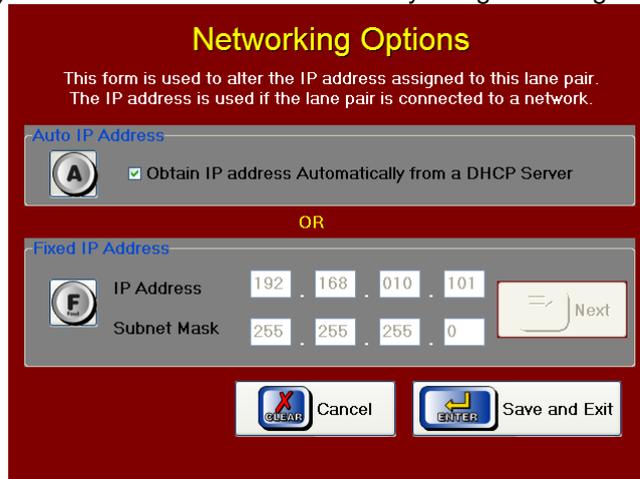
If you are having scoring issues, check the following areas:

1. Check that the Pinsetter has finished its cycle and is stationary in the image. If the machine is still in motion, you can extend **the Delay from Pins Set to Pinsetter at Rest** in the **Advanced Tuning Screen**.



## Network Connection Options

The Network Options screen is accessed by pressing on the **N** button from the Troubleshooting screen and is concerned with how the Solo Hardware Module will communicate with the lane control computers (If installed) The Solo Hardware Module uses the TCP/IP protocol and as such needs an IP address before it can communicate with others. This IP address can either be automatically assigned from a DHCP server (or use an automatic private IP address if no DHCP is found) or the IP address can be manually assigned using a fixed IP address.



The image shows a screenshot of the 'Networking Options' screen. At the top, it says 'Networking Options' in yellow. Below that, a message states: 'This form is used to alter the IP address assigned to this lane pair. The IP address is used if the lane pair is connected to a network.' There are two main sections: 'Auto IP Address' and 'Fixed IP Address'. The 'Auto IP Address' section has a button with the letter 'A' and a checked box labeled 'Obtain IP address Automatically from a DHCP Server'. The 'Fixed IP Address' section has a button with the letter 'F' and input fields for IP Address (192, 168, 010, 101) and Subnet Mask (255, 255, 255, 0). A 'Next' button is to the right of the IP fields. At the bottom, there are 'Cancel' and 'Save and Exit' buttons.

Computer administrators often prefer to fix IP addresses because it gives them more control and allows them to know exactly what the IP address is for every device on a network. However, IP addresses are usually set to Automatic so that each Solo unit will attempt to obtain its own IP address based on what it can see on the network, or ideally be assigned an IP from a Network Router which includes a DHCP function.

### Auto IP Address

At any time the Automatic IP address can be set by pressing the **A** button. This will cause the Solo Hardware Module to look for a DHCP server (Router) and obtain an IP address from it. Even if no DHCP server exists, the Solo unit will still give itself an IP address after one minute. If you are unsure, select Auto IP Addresses.

### Fixed IP Address

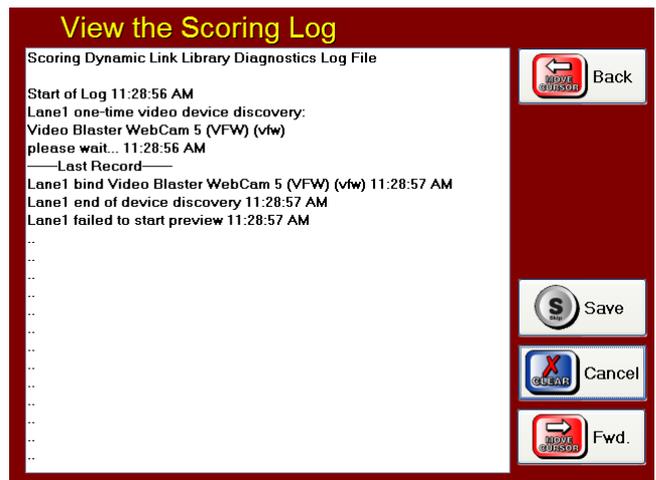
To fix the IP address to a desired value, press the **F** button and then type the desired IP address and Subnet Mask. For more information on IP addresses, see your network administrator.

## Viewing the Scoring Log

The Scoring Log is accessed by pressing the **V** button and shows you a list of every system message that has been generated by the Solo unit. This log is useful in diagnosing system problems and is often requested by Solo support staff to help determine the sequence of events with system issues.

### Saving the System Log

The system log can be saved to a text file by pressing the **S** button. This will save the file onto the Solo Hardware Module's hard drive to C:\comscore\scoreXX-XX.log where XX is the lane pair of the Solo Module. This file can then be e-mailed to your support representative upon their direction.



The image shows a screenshot of the 'View the Scoring Log' screen. The title is 'View the Scoring Log' in yellow. Below it, the text reads: 'Scoring Dynamic Link Library Diagnostics Log File'. The log content includes: 'Start of Log 11:28:56 AM', 'Lane1 one-time video device discovery: Video Blaster WebCam 5 (VFW) (vfw) please wait... 11:28:56 AM', 'Last Record', 'Lane1 bind Video Blaster WebCam 5 (VFW) (vfw) 11:28:57 AM', 'Lane1 end of device discovery 11:28:57 AM', and 'Lane1 failed to start preview 11:28:57 AM'. On the right side, there are four buttons: 'Back', 'Save', 'Cancel', and 'Fwd.'.

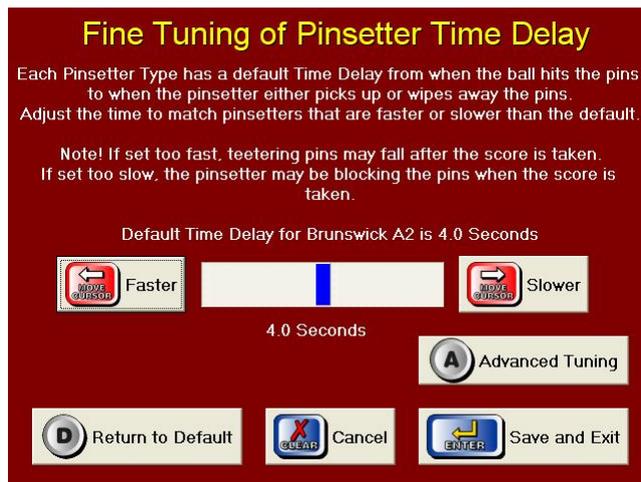
## Fine Tuning the Scoring Setup

The next option in the Troubleshooting Screen allows you to Fine Tune the Scoring Setup by modifying the timing of the scoring software. Press the **F** button to enter this screen.

As already shown in the Reviewing the Last Score section of this manual, the scoring software relies on the expiry of three timers to help determine the correct score at the correct time in the Pinsetter's cycle.

### Take Data Delay

The Take Data Delay is by far the most important timer for scoring reliability. This represents the amount of time from when the Pinsetter's cycle starts to when the score should be determined. This timer is preset for each type of Pinsetter, and should only be changed if your Pinsetter is faster or slower than usual. A good example of this are Brunswick A2 machines modified with a quick drop rake. This would require the delay to be set a little bit faster.

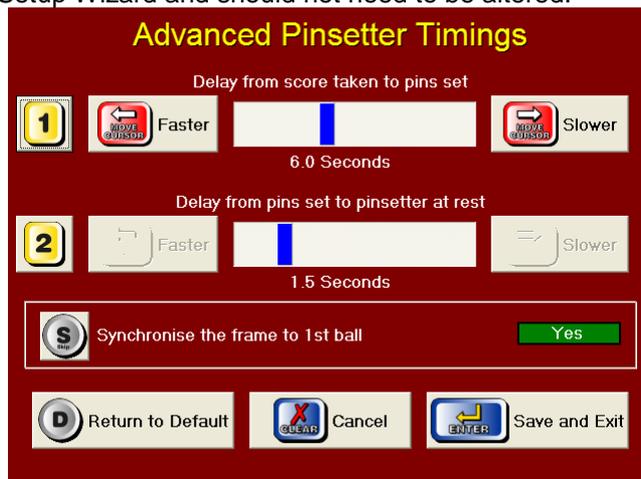


To make the delay shorter press the **Move Cursor Left** button repeatedly, to make the delay longer press the **Move Cursor Right** button repeatedly. To set the delay back to the default amount for the selected Pinsetter, press the **D** button.

To modify the other two timers, press the **A** button to view the Advanced Pinsetter Timings screen.

### Advanced Pinsetter Timings

The Advanced Pinsetter Timings screen allows you to change the other two time delays in the scoring software as already discussed in the Review the Last Score section. These time delays are preset depending on the type of Pinsetter chosen in the Setup Wizard and should not need to be altered.



The only time they would need to be changed is if the images in the Review the Last Score screen show the Pinsetter still in motion in Stage 4.

To change either timer, press 1 or 2 respectively and then press Move Cursor Left or Move Cursor Right buttons repeatedly until the timer is at the desired length. Press **D** to set the delay back to the default time.

## Synchronise the frame to 1<sup>st</sup> Ball

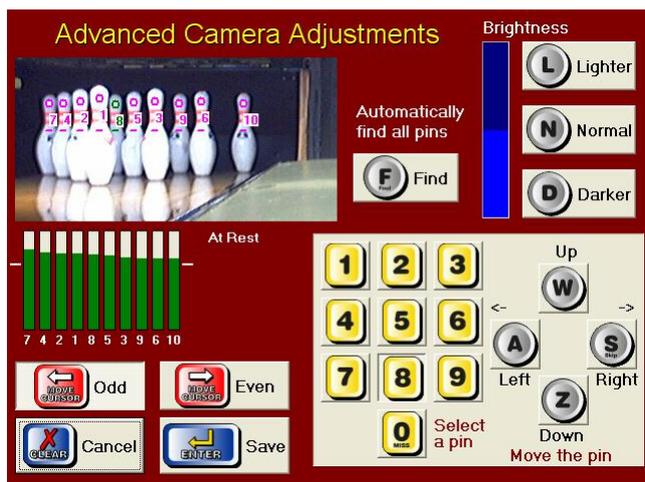
This button will enable or disable the failsafe feature called FrameSync. FrameSync is usually set ON.

FrameSync is a method of making sure that the Pinsetter and the Solo unit are both on first ball or second ball, by looking at the action of the Pinsetter to see if the Pins are picked up (First Ball) or wiped away. (Second Ball) If the Solo is on second ball and a first ball score is detected, then the new score will overwrite the old one, making sure that the Pinsetter and the Solo are both now on second ball.

## **Adjusting the Camera Manually**

The Advanced Camera Adjustments screen is accessed by pressing the **A** button from the Troubleshooting menu and has three functions. All these functions should be correctly set after completing the Setup Wizard. You should only change these settings from the default if you repeatedly encounter scoring problems.

Select which lane to change by pressing the **Move Cursor Left** button for the Odd Lane or **Move Cursor Right** for the Even Lane.



### **Find the Pins**

Press the **F** button to automatically redetect all the pins for the selected lane, the same as during the Wizard. Often, if a Pin is incorrectly detected, then pressing F a second time will then correctly find the pin. It is very rare to have to manually move the Pin Position Indicators.

### **Manually Moving a Pin**

If a pin is repeatedly mis-detected when doing the Automatic procedure, then it may be necessary to manually specify the Pin Position Indicator.

To do this, press the number for the desired pin. (Press **0** for the 10 pin) In this example, the 8 pin is green to show that it has been selected. Once selected, move the Pin Position Indicator by pressing the **W** for Up, **A** for Left, **S** for Right & **Z** for Down until the Indicator Dot is in the middle of the head of the pin.

### **Changing Brightness Levels**

The brightness level indicator is shown in the top right corner of the screen and acts as an electronic iris for the camera. Press the **L** button to make the image lighter and press the **D** button to make the image darker. Press the **N** button to set the brightness back to the default level.

This adjustment is pre-set and should only need to be changed if the image is excessively bright or dark. If the image is too dark, a pin that is standing may not be bright enough to be above the brightness threshold, therefore the Solo will think the pin has been knocked down. If the image is too light, then a pin that has been knocked over could still be detected because the pit is too bright.

## Appendix B – Automatic Bumpers

Some specific hardware configurations require controlling software to be running constantly in order for it to function. The most notable examples of this are the AMF 82-90 Managers Control Unit (MCU) as well as Brunswick Ball Wall bumpers.

### AMF (and others) Automatic Bumpers

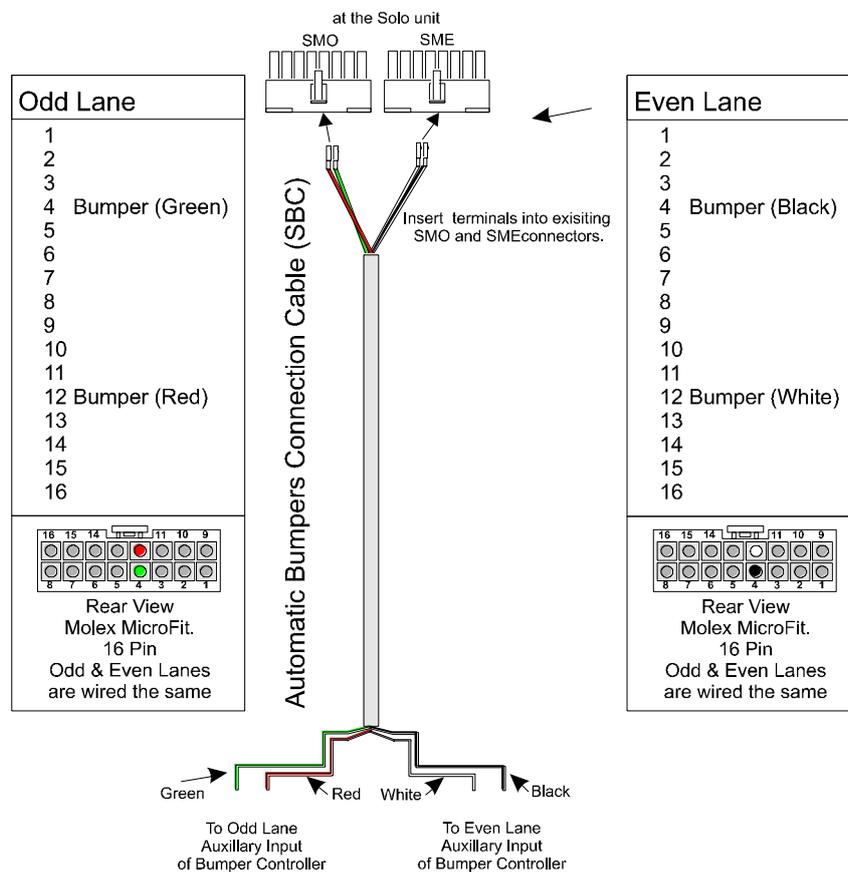
The Majority of Automatic Bumpers can be activated up or down by the closure of a switch. The Solo Units include a relay for this purpose. The contacts for this relay can be found on pins 4 and 12 of the Machine Connection plugs for both the Odd and Even lanes. Run the Automatic Bumper Connection cable (SBC) from the Solo Hardware Unit to the Automatic Bumper Controller for your bumpers.



**Note:** The relay on the Solo Unit will only handle the switching of low voltage (or preferably no voltage) only. DO NOT attempt to place any high voltage across the relay contacts or you WILL DAMAGE the Solo unit. If you are unsure how to connect your Automatic Bumpers, contact the manufacturer of the bumper units.

### Setup the Software

1. Make sure that the Solo units have Automatic Bumpers enabled, as described in Step 3 of the Setup Wizard.



2. Run the Center Command Score software and go to the System Management menu and click on Control Setup.
3. When the Control Setup screen appears, click on the Center Setup tab.
4. Edit and change the Bumpers drop down list to **AMF Bumpers**.
5. Place a Tick in the field **Name entry required after Start Open Play**
6. Save and exit Center Command back to Windows
7. Reboot the Computer.

## Brunswick Automatic Bumpers

Most automatic bumper systems are designed so that they are operated by the closure of a switch contact so that when the switch is closed, the bumpers go up and when the switch is open the bumpers will go back down.

The one exception to this rule is the Brunswick Automatic Bumper system, which is controlled on a communications network via a control box on the front counter. In this case it is necessary to have interface software running so that the scoring system can replace this box with a connection directly to the computer.

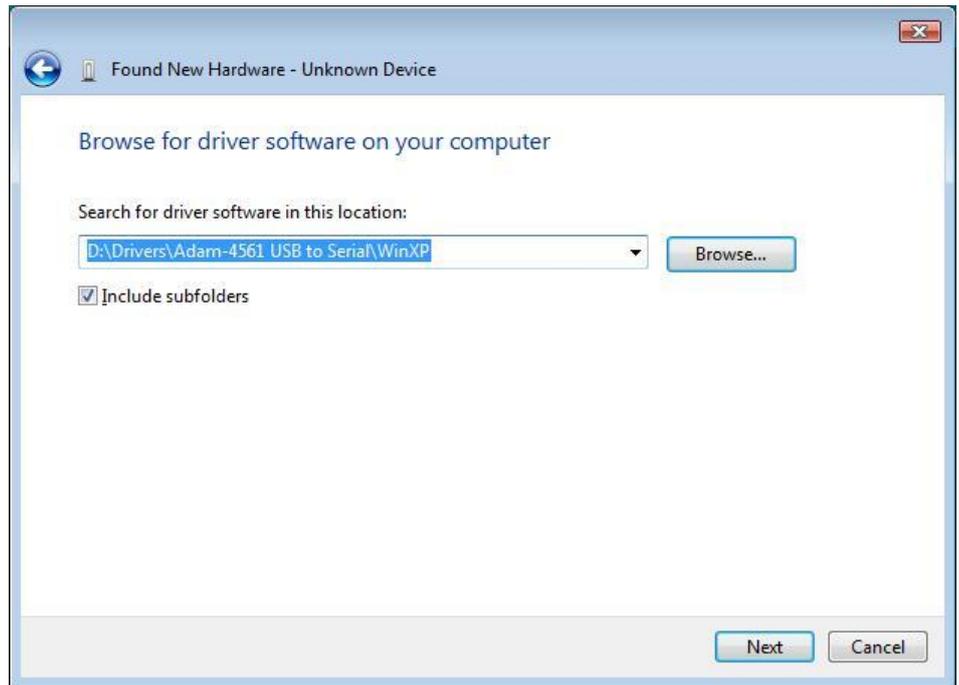
To install the Windows Bumper Interface controller, there are three basic stages:

- A. Install driver for USB to RS232 converter
- B. Create a Startup Shortcut
- C. Setup the Center Command Software

There are several steps in each of these stages, however anyone with a good general knowledge of Windows can perform them.

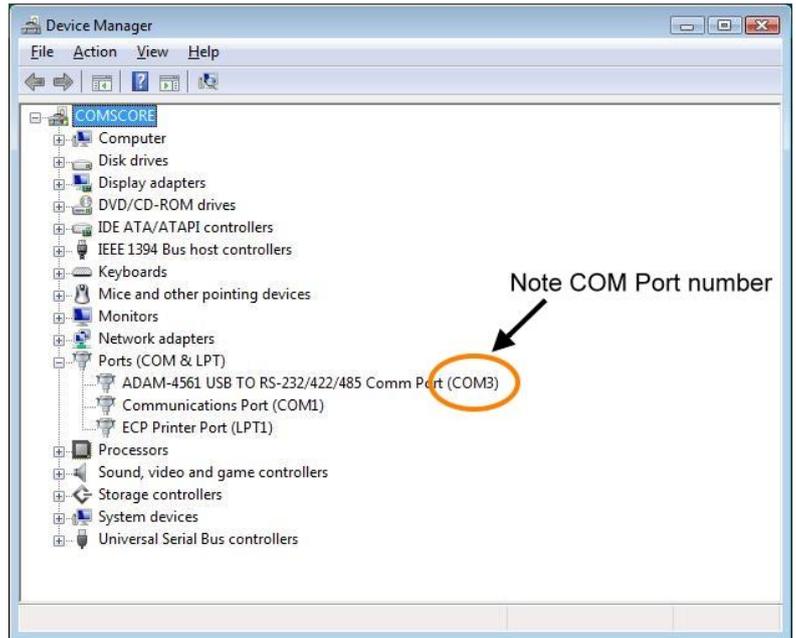
### A. Install driver for USB to RS232 converter

1. Insert USB plug into a free USB socket at the rear of the computer. Wait for the "Found New Hardware" wizard to appear.
2. The computer will automatically search for a software driver, but will probably not find one. If this is so, select the option to browse for the correct driver.
3. Insert the Center Command Installation CD into the CD drive. When the Computer Score Setup program starts, cancel it.
4. In the Found New Hardware Wizard, click on **Browse** and navigate to the **Drivers\ADAM 4561 USB to Serial\WinXP** directory on your CD drive.
5. When the screen stating that "Windows can't verify the publisher of this driver software" appears, click on the **Install this Driver Software Anyway** button.
6. When complete click finish.

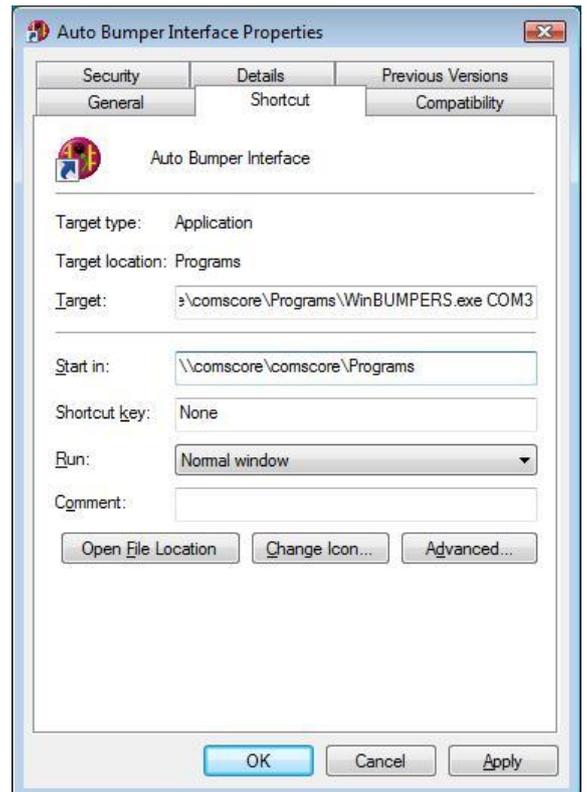


## B. Create Startup Shortcut

1. Right click **My Computer** and select properties.
2. Click on the **Device Manager** task.
3. Click on the Plus sign next to **Ports (COM & LPT)**
4. Note the COM number at the end of ADAM-4561 USB to RS232/422/485 Comm Port (Usually COM3 but it can be different)
5. Exit Device manager and System Properties back to Windows Desktop.



6. Right click on the Desktop and select **New → Shortcut**
7. When the create shortcut wizard appears asking you to Type the Location of the Item, type the following: **\\COMSCORE\COMSCORE\PROGRAMS\WINBUMPERS.EXE COM3** in the area provided and click **Next**. (Substitute the correct COM port number if different to COM3. Also note there is a space before COM)
8. Type a name for the shortcut, such as **Auto Bumper Interface** and click Finish.
9. This should create a Shortcut to the Bumper Interface program on the desktop.
10. Drag and Drop the Shortcut into the **Start → All Programs → Startup** folder to make sure that the Interface program is running every time this computer is started.



## C. Setup the Center Commands Software

1. Make sure that the Solo units have Automatic Bumpers enabled, as described in Step 3 of the Setup Wizard.
2. Run the Center Command software and go to the System Management menu and click on Control Setup.
3. When the Control Setup screen appears, click on the Center Setup tab.
4. Click on Edit and change the Bumpers drop down list to **Brunswick Bumpers**.
5. Place a Tick in the field **Name entry required after Start Open Play**
6. Save and exit Center Command back to Windows
7. Reboot the Computer. Once the Computer has been rebooted, you should see a red circular icon down on the bottom right of the taskbar, by the time. This is the bumper software that sends commands to the bumper electronics to raise and lower the bumpers automatically. This software must be running in order for the bumpers to function.

## Using Automatic Bumpers

There are three ways of controlling the bumpers from the Center Command Software. These three methods are the same for both Solo controlled and Centrally controlled bumpers.

### Method 1: Via the Name Entry Screen.

Bumpers can be set up or down on an individual Bowler by bowler basis.

1. Click on an individual Lane (Name entry is not valid if multiple lanes are selected)
2. Click on the **Name Entry** button and then select the bumper icons on the desired bowlers. This will still work even if no names have been entered yet.
3. Click on **OK** and the bumper will raise on Bill, Ness and Hank's turn and automatically lower on Jane, Frank and Tom's.

**Note:** To minimise wear and tear on the bumper mechanism, you should group bowlers with bumpers together.

### Method 2: Via League Setup

Individual bowlers can be specified as bumper bowlers on a league by league basis. This is only available if the League Secretarial package has been enabled in the Register Software screen.

1. Click on the **Bowler Details** button in the **League Secretary** menu.
2. Edit the desired bowler and click on the **Bumper Bowler** check box.
3. When that bowler bowls in that league (In other Leagues he or she can bowl normally) the bumpers will automatically raise during his or her turn.

### Method 3: Via the Override buttons.

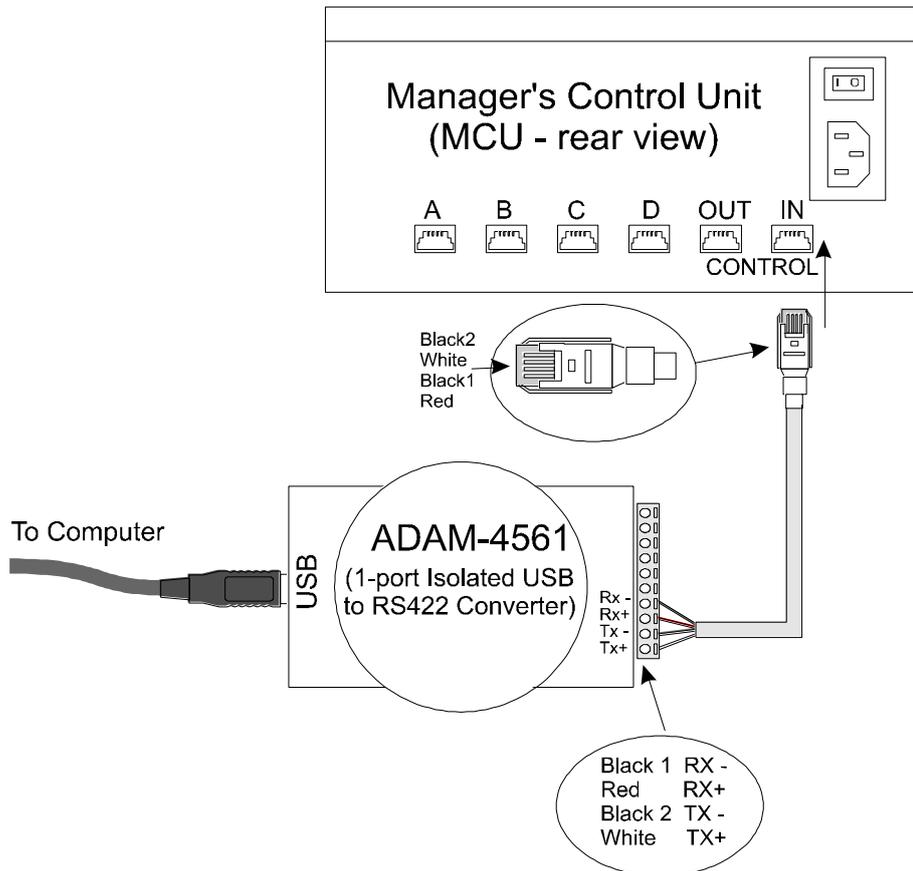
Bumpers can also be raised or lowered for the entire lane, irrespective of what players are bowling.

1. Select the lane or lanes you want to control.
2. Click on the **Overrides Tab** in the Control Lanes screen.
3. Click on the **Raise Bumpers** button to raise the bumpers irrespective of who is on the lanes.
4. Click on the **Lower Bumpers** button to remove bumpers of the selected lane or lanes irrespective of who is bowling.
5. Click on the **Bumpers Auto** button to set the bumpers back to Automatic Computer control.

## Appendix C – AMF 82-90 Managers Control Unit connection

AMF 82-90 Pinsetters do not include a mechanism to turn the machine On or Off by way of direct connection to the pinsetter's electronics. Instead, this model of Pinsetter is controlled via a small interface box on the Control Counter, called the Managers Control Unit (MCU). Center Command includes software to connect a USB to RS-422 serial converter from a computer to the MCU. This software runs on the Windows System Tray (Systray) and sends commands to the MCU to tell it to turn the 82-90 machines on and off at the appropriate time.

### Connection from COMSCORE computer to Manager's Control Unit (MCU)



## Installing the MCU Interface Controller

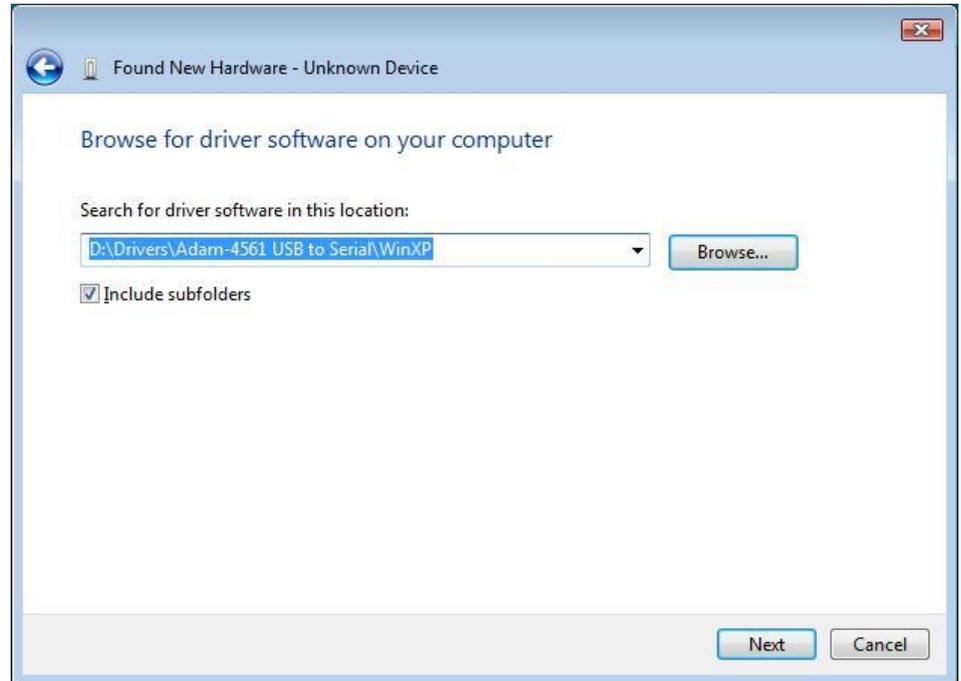
To install the Windows Bumper Interface controller, there are three basic stages:

- A. Install driver for USB to RS232 converter
- B. Create a Startup Shortcut
- C. Setup the Center Command Software

There are several steps in each of these stages, however anyone with a good general knowledge of Windows can perform them.

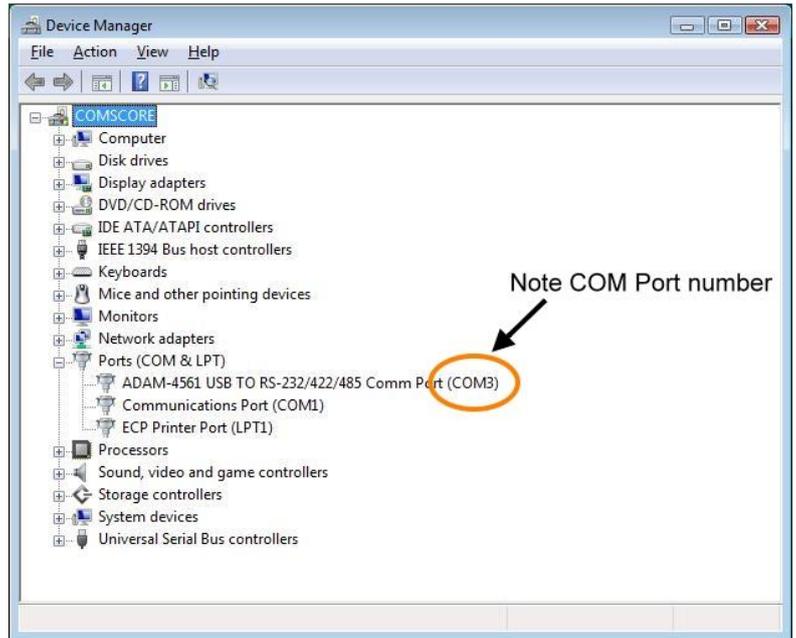
### A. Install driver for USB to RS232 converter

1. Insert USB plug into a free USB socket at the rear of the computer. Wait for the “Found New Hardware” wizard to appear.
2. The computer will automatically search for a software driver, but will probably not find one. If this is so, select the option to browse for the correct driver.
3. Insert the Center Command Installation CD into the CD drive. When the Computer Score Setup program starts, cancel it.
4. In the Found New Hardware Wizard, click on **Browse** and navigate to the **Drivers\ADAM 4561 USB to Serial\WinXP** directory on your CD drive.
5. When the screen stating that “Windows can’t verify the publisher of this driver software” appears, click on the **Install this Driver Software Anyway** button.
6. When complete click finish.

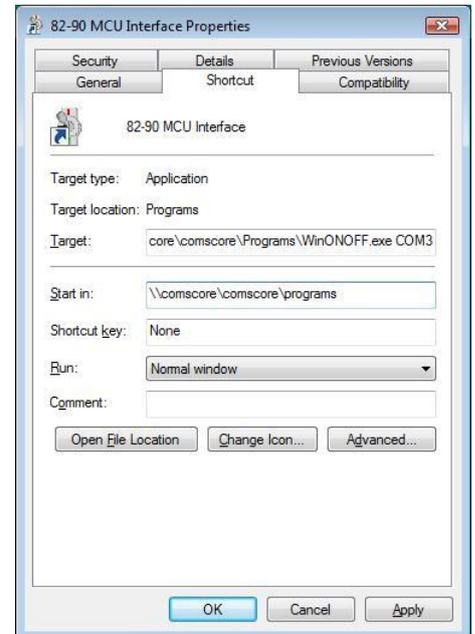


## B. Create Startup Shortcut

1. Right click **My Computer** and select properties.
2. Click on the **Device Manager** task.
3. Click on the Plus sign next to **Ports (COM & LPT)**
4. Note the COM number at the end of ADAM-4561 USB to RS232/422/485 Comm Port (Usually COM3 but it can be different)
5. Exit Device manager and System Properties back to Windows Desktop.



6. Right click on the Desktop and select **New → Shortcut**
7. When the create shortcut wizard appears asking you to Type the Location of the Item, type the following:  
**\\COMSCORE\COMSCORE\PROGRAMS\WINONOFF.EXE COM3** in the area provided and click **Next**. (Substitute the correct COM port number if different to COM3. Also note there is a space before COM)
8. Type a name for the shortcut, such as **82-90 MCU Interface** and click Finish.
9. This should create a Shortcut to the Bumper Interface program on the desktop.
10. Drag and Drop the Shortcut into the **Start → All Programs → Startup** folder to make sure that the Interface program is running every time this computer is started.



## C. Setup the Center Command Software

1. Run the Center Command software and go to the System Management menu and click on Control Setup.
2. When the Control Setup screen appears, click on the Center Setup tab.
3. Make sure that the Pinsetter Type field is set to AMF 82/90 XL
4. Reboot the computer to start the MCU interface.

### Using the MCU Interface

Once the Computer has been rebooted, you should see the WinOnOff icon down on the bottom right of the taskbar, by the time. This is the interface software that sends out MCU commands out to the Pinsetters to turn on the lanes via the MCU. There is nothing that need to be done by the operator in order to achieve this, it will occur automatically whenever the software is running. The interface **MUST** be running in order for the Pinsetters to turn on and off.

## Appendix D – Setting BIOS Entries on the Solo Units

### What is the BIOS?

The Solo Hardware unit is essentially a computer, and like any computer, it has a BIOS. The BIOS is section of battery backed up memory which holds all the settings which determine how a computer should function.

### When would I need to set the BIOS defaults?

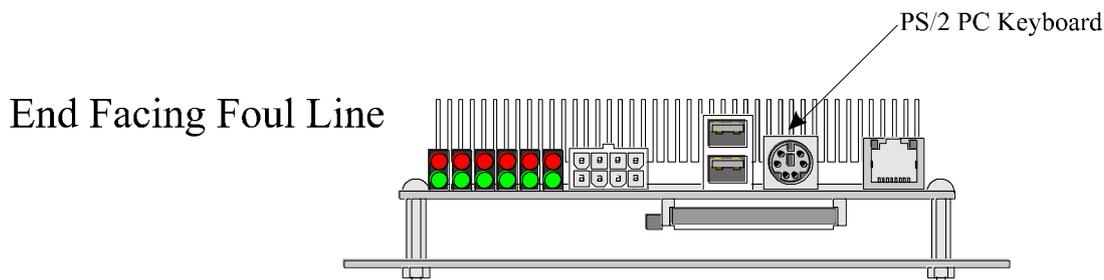
You should not normally have to change any BIOS defaults for normal operation. However, sometimes, after a number of years the small battery that holds this BIOS memory can go flat. If this happens, when a computer is turned on after being off for a period of time, it will no longer know what settings it should use to operate.

If this happens, then first replace the battery with a new one of the same type, and then re-enter the BIOS defaults. The battery model number is CR2032 3Volt Lithium.

### Setting BIOS Defaults in the Solo Hardware Modules

If a Solo Hardware Unit loses battery power, it may be necessary to re-set the BIOS defaults before normal operation can continue. In order to do this perform the following operation:

1. Plug in a keyboard into the PS/2 port of the CPU card.



2. Re-boot the Solo Unit and press the DEL key when the message appears at the beginning of the boot process.
3. This will display the System CMOS Setup screen as shown below.
4. Using the Arrow keys and the Page Up & Page Down keys, change the BIOS settings to be the same as the screens below. The Optimized Defaults should be close to the settings needed, however, take particular care when changing the **Standard CMOS Defaults** screen and also the **Advanced BIOS Features** and the **Integrated Peripherals** screens.

The settings that need to be modified from the Optimized Defaults are as follows:

#### Standard CMOS Defaults

- **DRIVE A :** NONE
- **HALT ON :** ALL, BUT DISK \ KEY

#### Advanced BIOS Features

- **Quick Power On Self Test :** ENABLED

#### Integrated Peripherals

- **USB 2.0 Controller :** DISABLED
- **USB Keyboard Support :** ENABLED
- **USB Mouse Support :** ENABLED
- **AC97 Audio :** DISABLED
- **AC97 Modem :** DISABLED

#### Frequency / Voltage Control

- **Spread Spectrum :** ENABLED

5. Once finished, press the F10 button to save the changes and re-boot the Solo Unit.





## Menu Item 4: Integrated Peripherals

No Changes Needed in this screen, but change needed in On Board Device section

Phoenix – Award BIOS CMOS Setup Utility		
Integrated Peripherals		
		Item Help
On Chip IDE Device	[ Press Enter ]	Menu Level >
On Board Device	[ Press Enter ]	
Super IO Device	[ Press Enter ]	
Onboard Serial Port 3	[ 3E8 ]	
Serial Port 3 Use IRQ	[ IRQ10 ]	
Onboard Serial Port 4	[ 2E8 ]	
Serial Port 4 Use IRQ	[ IRQ 11 ]	
Onboard Parallel Port 2	[ 278 ]	
Parallel Port 2 Use IRQ	[ IRQ7 ]	
←↑→↓ : Move    Enter : Select    +/-/PU/PD : Value    F10 : Save    ESC : Exit    F1 : General Help F5 : Previous Values                                    F6 : Fail – Safe Defaults                                    F7 : Optimized Defaults		

### Menu Item 4 – 1: On Chip IDE Device

No Changes Needed

Phoenix – Award BIOS CMOS Setup Utility		
On Chip IDE Device		
		Item Help
On-Chip Primary PCI IDE	[ Enabled ]	Menu Level >
IDE Primary Master PIO	[ Auto ]	
IDE Primary Slave PIO	[ Auto ]	
IDE Primary Master UDMA	[ Auto ]	
IDE Primary Slave UDMA	[ Auto ]	
On-Chip Secondary PCI IDE	[ Enabled ]	
IDE Secondary Master PIO	[ Auto ]	
IDE Secondary Slave PIO	[ Auto ]	
IDE Secondary Master UDMA	[ Auto ]	
IDE Secondary Slave UDMA	[ Auto ]	
IDE HDD Block Mode	[ Enabled ]	
←↑→↓ : Move    Enter : Select    +/-/PU/PD : Value    F10 : Save    ESC : Exit    F1 : General Help F5 : Previous Values                                    F6 : Fail – Safe Defaults                                    F7 : Optimized Defaults		



## Menu Item 5: Power Management Setup

No Changes Needed

Phoenix – Award BIOS CMOS Setup Utility Power Management Setup		
ACPI Function [ Enabled ] ACPI Suspend Type [ S1(POS) ] <i>Run VGABIOS if S3 Resume</i> Auto Power Management [ User Define ] Video Off Method [ DPMS ] Video Off in Suspend [ Yes ] Suspend Type [ Stop Grant ] MODEM use IRQ [ 3 ] Suspend Mode [ Disabled ] HDD Power Down [ Disabled ] Soft-Off by PWR BTTN [ Instant-Off ] Power On by Ring [ Enabled ] <i>USB KB Wake-Up from S3</i> Disabled Resume by Alarm [ Disabled ] <i>Date (of Month) Alarm</i> 0 <i>Time (hh:mm:ss) Alarm</i> 0 : 0 : 0	Item Help	Menu Level >
←↑→↓ : Move    Enter : Select    +/-/PU/PD : Value    F10 : Save    ESC : Exit    F1 : General Help F5 : Previous Values    F6 : Fail – Safe Defaults    F7 : Optimized Defaults		

## Menu Item 6: PnP / PCI Configuration

No Changes Needed

Phoenix – Award BIOS CMOS Setup Utility PnP / PCI Configuration		
Reset Configuration Data [ Disabled ]  Resources Controlled By [ Auto (ESCD) ] <i>IRQ Resources</i> Press Enter <i>DMA Resources</i> Press Enter  PCI/VGA Palette Snoop [ Disabled ]	Item Help	Menu Level >
←↑→↓ : Move    Enter : Select    +/-/PU/PD : Value    F10 : Save    ESC : Exit    F1 : General Help F5 : Previous Values    F6 : Fail – Safe Defaults    F7 : Optimized Defaults		

### Menu Item 7: PC Health Status

No Changes Needed

Note: Values will be different to the ones shown here

Phoenix – Award BIOS CMOS Setup Utility		
PC Health Status		
(+) Vccp	1.12V	Item Help Menu Level >
(+) Vcore	0.92V	
(+) 3.3V	3.29V	
(+) 5V	4.97V	
(+) 5VSB	4.78V	
Voltage Battery	3.02V	
System Temp	42°C	
CPU Temp	37°C	
CPU Fan Speed	0 RPM	
←↑→↓ : Move    Enter : Select    +/-/PU/PD : Value    F10 : Save    ESC : Exit    F1 : General Help F5 : Previous Values    F6 : Fail – Safe Defaults    F7 : Optimized Defaults		

### Menu Item 8: Frequency / Voltage Control

No Changes Needed

Phoenix – Award BIOS CMOS Setup Utility		
Frequency / Voltage Control		
Auto Detect DIMM / PCI Clk	[ Enabled ]	Item Help Menu Level >
Spread Spectrum	[ Enabled ]	
←↑→↓ : Move    Enter : Select    +/-/PU/PD : Value    F10 : Save    ESC : Exit    F1 : General Help F5 : Previous Values    F6 : Fail – Safe Defaults    F7 : Optimized Defaults		

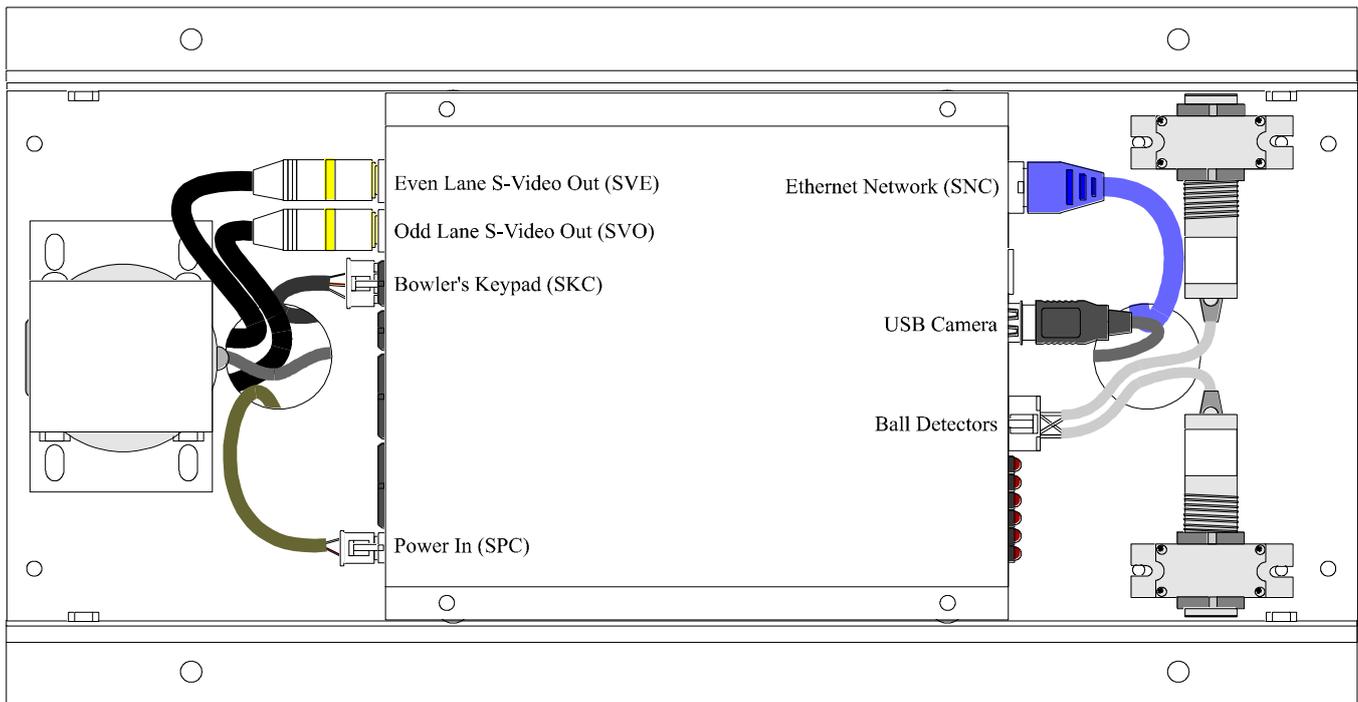
## Appendix E – Preventative Maintenance

The CPU on the Solo Hardware module is designed to throttle down in speed in the event of overheating in order to protect the unit from damage. The main cause of system overheating is either excessive dust build up or failure of the CPU fan.

It is highly recommend that approximately every six months you should perform the following procedure:

1. Remove the top cover. There is no need to remove to entire Solo Unit.
2. Pull out the Power In (SPC) plug to turn the Solo Unit Off.

### Solo Cable Connections (No Connection to Pinsetters)



3. Clean the Solo Unit by blowing out any dust that has accumulated. You can use either an air compressor, or a can of compressed air, which should be available from your local electronics store. DO NOT use any solvents or any other cleaning products on the Solo Unit.
4. Plug in the Power In (SPC) plug and observe that the CPU fan is spinning freely and that there is no harsh noise from the fan's operation. If the CPU fan is not working satisfactorily, then replace the fan with another +12Volt DC fan, which should be available at your local electronics store.
5. Replace the top cover and check that the scoring operation is still OK.