



*Installation Manual*

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**Frameworkx**  
**Ball Rack & Hood**

May 2011 / 53-900277-000

**Brunswick<sup>®</sup>**   
CUSTOMER SERVICE  
A tradition in excellence.

## **Frameworkx Ball Rack and Hood Installation Manual**

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Reorder Part No. 53-900277-000.

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## SAFETY

Throughout this publication, “Warnings”, and “Cautions” (accompanied by one of the International HAZARD Symbols) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. They are defined below. **OBSERVE AND READ THEM CAREFULLY!**

These “Safety Alerts” alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus training and “Common Sense” operation are major accident prevention measures.



**NOTE or IMPORTANT!:**

*Will designate significant informational notes.*



**WARNING!**

*Will designate a mechanical or nonelectrical alert which could potentially cause personal injury or death.*



**WARNING!**

*Will designate electrical alerts which could potentially cause personal injury or death.*



**CAUTION!**

*Will designate an alert which could potentially cause product damage.*



*Will designate grounding alerts.*

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## **SAFETY NOTICE TO USERS OF THIS MANUAL**

This manual has been written and published by the Service Department of Brunswick Bowling and Billiards to aid the reader when servicing or installing the products described.

It is assumed that these personnel are familiar with, and have been trained in, the servicing or installation procedures of these products, which includes the use of common mechanic's hand tools and any special Brunswick or recommended tools from other suppliers.

We could not possibly know of and advise the reader of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not attempted any such wide evaluation. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by Brunswick, must first completely satisfy himself that neither his nor the products safety will be endangered by the service procedure selected.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

It should be kept in mind, while working on the product, that the electrical system is capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the power to the product should be disconnected prior to servicing and remain disconnected until servicing is complete.

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# Ball Lift Safety Sheet

## Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Install in accordance with the manufacturer's instructions.
7. Only use attachments/accessories specified by the manufacturer.
8. Indoor use only.
9. Electrical equipment can be hazardous if misused.
10. Keep this equipment away from sources of liquids.
11. During periodical maintenance or cleaning, and before replacing the hood assembly, make sure there are no obstructions in the ball path or drive belt.
12. Disconnect the power before servicing this equipment

## Symbols



Do not place hand in ball throat.



Do not place hand around the ball being ejected from the ball throat.



Do not place more the 12 balls on the ball rack.



**Warning!**

- Dangerous moving parts
- Machine is remotely controlled. Disconnect power before servicing.
- Do not operate machine without hood assembly in place



**Warning!**

These servicing instructions are for use by qualified service personnel only. To reduce the risk of electrical shock, do not perform any servicing other than that contained in the Installation Instructions.

# Packaging

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## 53-861040-000 Ball Rack and Installation Hardware (without Hand Dryer)

Qty.	Part Number	Description
1	53-400018-000	Weldment, Leg
1	53-400024-000	Bracket, Mounting, Fan
1	53-400036-000	Mount, Blower, Upper
4	53-400038-000	Spacer
1	53-400039-000	Mount, Blower, Lower
1	53-520706-000	Cable, Ball Rack, Reset to Lane Cable
1	53-400049-000	Assy., Ball Rack
1	53-400062-000	Assy., Exit Track, Right-hand
1	53-400063-000	Assy., Exit Track, Left-hand
1	53-400443-000	Flange, Hood Retention

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## 53-861060-001 Ball Rack Installation Hardware

Qty.	Part Number	Description
4	11-001263-001	Screw, Hex Hd. Cap, 5/16-18 x 7/8"
12	11-010808-000	Screw, F.H. Tapping, #10-24 x 1/2"
2	11-010809-000	Screw, Washer Type, 1/4-20 x 3/4"
1	11-690544-000	Screw, Captive, Knurled
1	11-690545-000	Retainer, Captive Screw
4	11-081201-000	Screw, Robertson, #10 x 1-1/2"
4	11-082683-001	Screw, Type "B" P.H., 10-16 x 3/8"
2	11-190006-001	Washer, Flat, #10
2	11-082687-001	Screw, Type "B" P.H., 10-16 x 5/8"
2	11-095011-000	Anchor, Floor, Leg to Approach
4	11-195015-001	Lockwasher, 5/16"
2	11-603106-000	Tie, Wire
2	53-400301-001	Bolt, Mounting, Leg to Approach

---

**53-860937-000 Ball Rack Hood**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
1	53-400008-002	Throat
1	53-400091-002	Hood Assembly
1	53-860937-001	Hardware Package

---

**53-860937-001 Ball Rack Hardware**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
4	11-001999-001	Screw, Hex Hd. Mach., 1/4-20 x 1", with nylon patch
4	11-091010-001	Flat washer, 1/4"
4	11-095014-001	Lockwasher, 1/4"

---

**53-860938-XXX Ball Return Color Kit**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
1	53-400009-XXX	Insert, Decorative Throat
1	53-400043-XXX	Decal, Vent
2	53-400054-XXX	Extrusion, Ball Rail
2	53-400057-XXX	Wear Strip
1	53-860938-001	Hardware Package

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**53-861059-115 Hand Dryer Fan, 115V**

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**53-861059-230 Hand Dryer Fan, 230V**

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**53-861098230 Ball Rack Safety Switch**

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## Material for Existing Centers Replacing Brunswick Ball Racks

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### **53-860689-000 Adapter Cable for Existing Lane Cable**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
6	11-612451-000	Splice, Butt
1	53-520591-000	Cable, Adapter

---

### **53-860938-001 Ball Return Color Kit Hardware**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
12	11-008106-000	Screw, Flat Hd. Hex Socket (w/Nylok), 10-32 x 5/8"
8	11-082683-001	Screw, Tapping, Type "B", P.H., C.R., 10-16 x 3/8"
4	11-082685-001	Screw, Tapping, Type "B", P.H., C.R., 10-16 x 1/2"

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### **\*L2-400041-230 Mod. Hand Dryer Fan and Adapter Cable**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
1	53-861059-230	Fan, Hand Dryer 230 Volts
1	53-861062-000	Pkg., Adapter Cable, Fan Harness

\* L2-400041-115 has same contents, except hand dryer is 115 Volts. Use -115 when ordering a 115V Fan package.

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### **53-861059-230 Hand Dryer Fan (230 Volts)**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
1	53-520708-230	Fan, Hand Dryer - 230 Volts

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**53-861077-000 Fan , Safety Sw. Reset Modernization**

<b>Qty.</b>	<b>Part Number</b>	<b>Description</b>
1	53-520710-000	Assembly, Harness
1	11-611009-000	Bushing, Strain Relief
3	11-609551-000	Connector, In-line Splice
2	11-603105-000	Cable Tie, 7-1/4"
6	11-612451-000	Electrical Butt Splice
5	11-680302-000	Terminal
5	11-680301-000	Terminal
1	11-680217-000	Connector Receptacle
1	11-680117-000	Connector
1	53-900281-000	Instruction Sheet

# Preparation for Existing Centers with Brunswick Ball Lifts

1. Remove and discard the existing ball lift hood.

## Ball Rack Assembly

1. Align the ball rack leg assembly and two spacers with the four weld nuts in the ball rack frame. Refer to *Figure 1*.

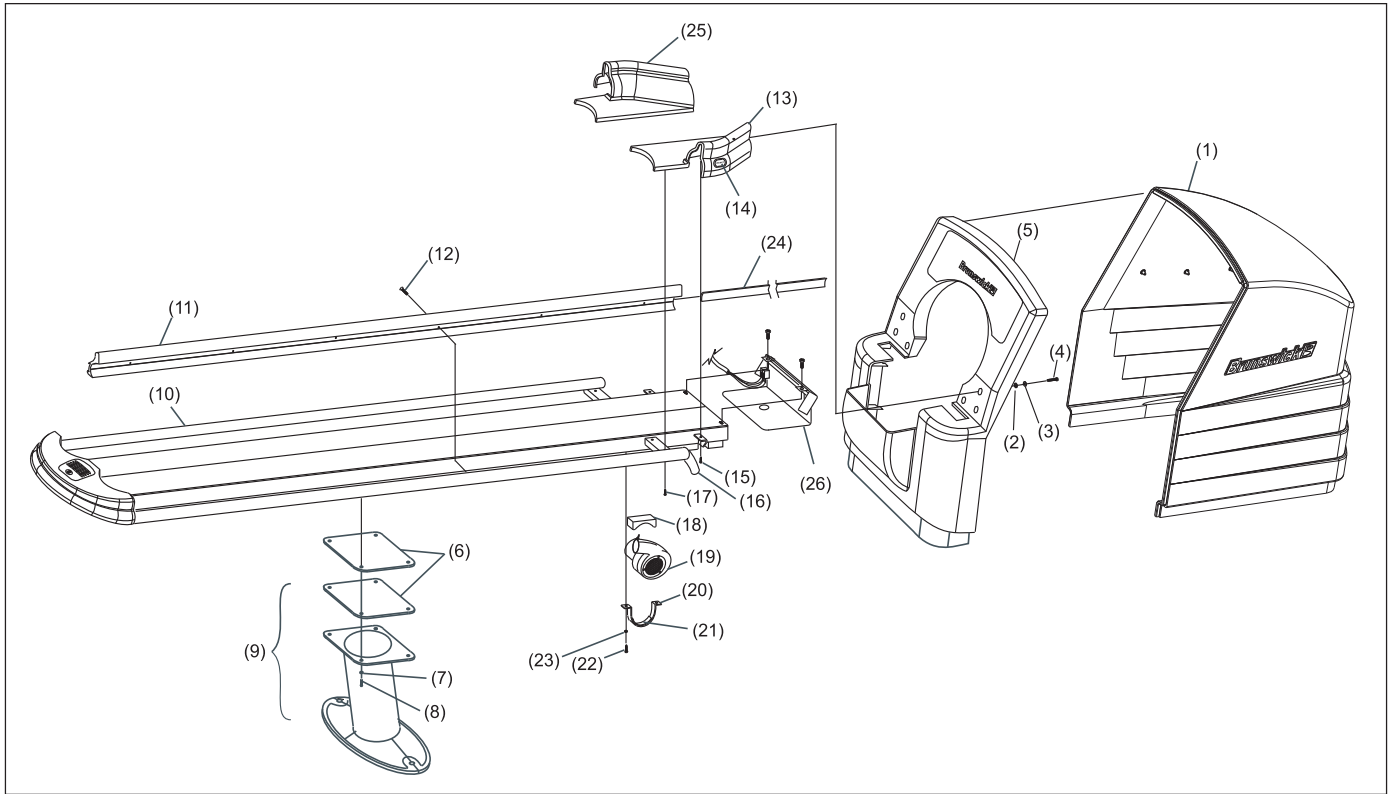


Figure 1. Ball Rack Assembly

- |   |  |  |
|---|--|--|
| (1) BALL RACK HOOD                        | (2) LOCKWASHER (1/4")                        | (3) FLAT WASHER (1/4")                         |
| (4) HEX HEAD NYLOC SCREW (1/4-20 X 1")    | (5) BALL RACK THROAT                         | (6) SPACER PLATES                              |
| (7) (4) LOCKWASHER (5/16")                | (8) (4) HEX HEAD CAP SCREW ((5/16-18 X 7/8") | (9) LEG WELDMENT                               |
| (10) BALL TRACK WELDMENT                  | (11) BALL TRACK EXTRUSION                    | (12) #10-24 X 1/2" FLAT HD. SELF-TAPPING SCREW |
| (13) RIGHT-HAND EXIT TRACK                | (14) RESET SWITCH ASSEMBLY                   | (15) TYPE "B" PAN HD. SCREW (#12-14 X 5/8")    |
| (16) HOSE WITH WIRE TIE                   | (17) TYPE "B" PAN HD. SCREW (#12-14 X 3/8")  | (18) UPPER BLOWER MOUNT                        |
| (19) HAND DRYER FAN                       | (20) LOCKWASHER (1/4")                       | (21) LOWER BLOWER MOUNT                        |
| (22) (2) HEX. HEAD SCREWS (1/4-20 X 3/4") | (23) (2) LOCKWASHER (1/4")                   | (24) WEAR STRIP                                |
| (25) LEFT-HAND EXIT TRACK                 | (26) BALL RACK SAFETY SWITCH                 |  |

2. Secure ball rack leg to the ball frame (as shown in *Figure 1*) with the following hardware:

4 ea.	5/16-18 x 7/8"	hex head cap screws
4 ea.	5/16"	flat washers
4 ea.	5/16"	lockwashers
4 ea.	1/8"	two spacers (as required to level rack)

3. Using the saddle style clamp provided, secure the blower motor assembly to the ball rack:
  - a. Remove the backing paper from the rubber spacer and install it on the inner lower surface of the clamp. Refer to *Figure 2*.
  - b. Install the blower motor hose on the motor and on the air vent at the rear of the ball rack. Secure the hose to the blower motor with a tie-wrap. Refer to *Figure 2*.
  - c. Place the lower and upper sections of the clamp on the blower motor assembly, align the mounting holes of the clamp with those in the ball rack frame. Secure the blower motor assembly to the frame with two 1/4-20 x 3/4" long hex head screws and two 1/4" lockwashers. Refer to *Figure 2*.
4. Position the two ball track extrusions on the ball rack and secure them with twelve #10-24 x 1/2" flat head self-tapping screws. Refer to *Figure 2*.
5. Snap the wear strips into the grooves of the ball tracks. Refer to *Figure 2*.

**i** *NOTE: It may be necessary to slide the wear strips into the ball rail extrusions from the exit track end.*

6. Position the right hand and left hand exit tracks on the ball rack and secure each one with one #10-16 x 5/8" and two #10-16 x 3/8" pan head screws. Refer to *Figure 2*.
7. Connect the reset cable to the reset buttons.
8. Connect the blower motor power cable to the blower motor.
9. Align the mounting holes in the ball rack throat with the threaded inserts in the ball rack. Secure the throat to the ball rack with the hardware listed below. Refer to *Figure 2*.

4 ea.	1/4-20 x 1"	hex head nyloc machine screws
4 ea.	1/4"	flat washers
4 ea.	1/4"	lockwashers

## Ball Rack Safety Switch Installation



**WARNING !**

*Disconnect power from ball lift before proceeding with installation.*



**NOTE:**

*Switch is only compatible with Frameworkx hood and rack using a pneumatic, foam or V tire.*

1. Attach the Frameworkx ball rack safety switch to the ball rack with two screws. Refer to *Figure 2*.

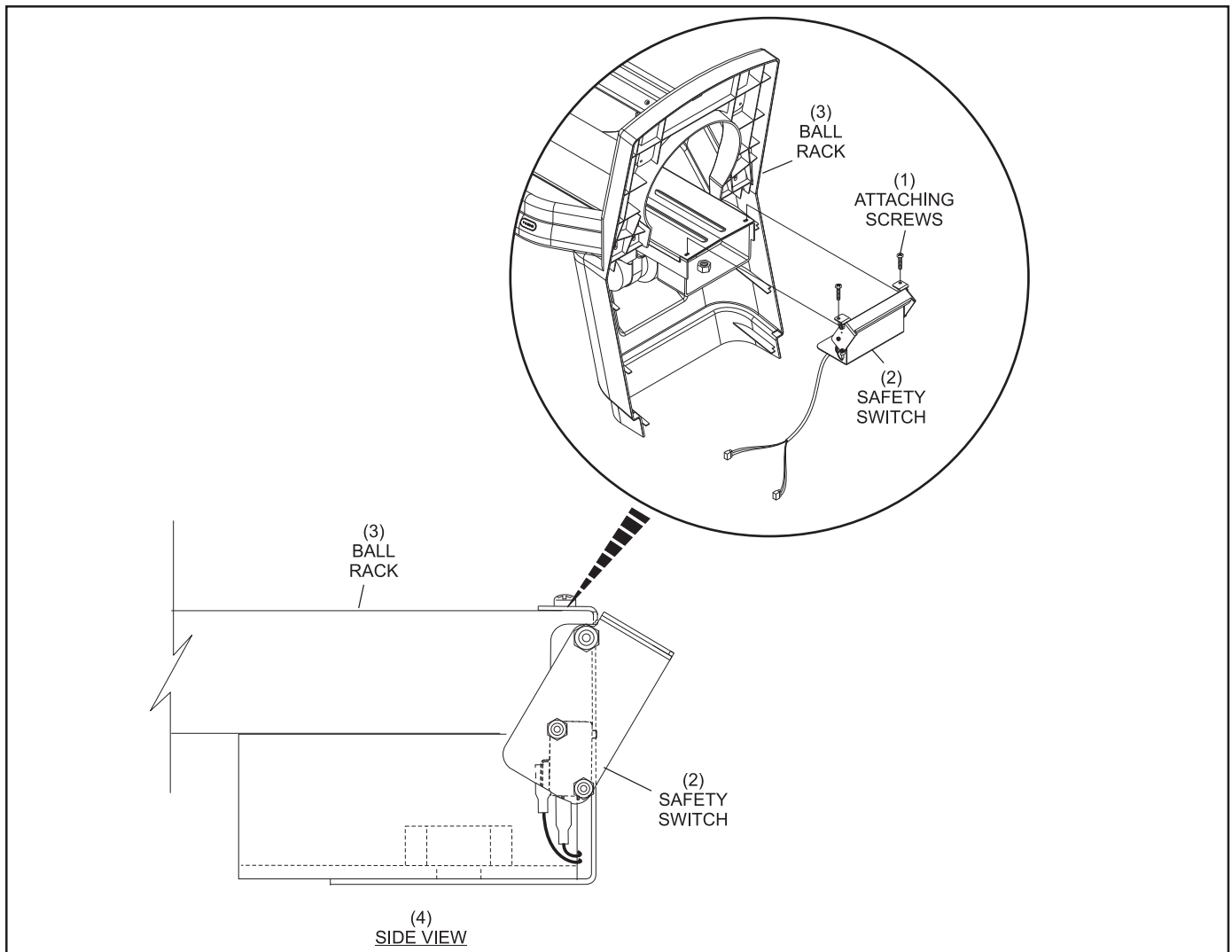


Figure 2. Install Safety Switch

(1) ATTACHING SCREWS  
(4) SIDE VIEW

(2) SAFETY SWITCH

(3) BALL RACK

2. Connect the electrical connections. Refer to *Figure 3*.

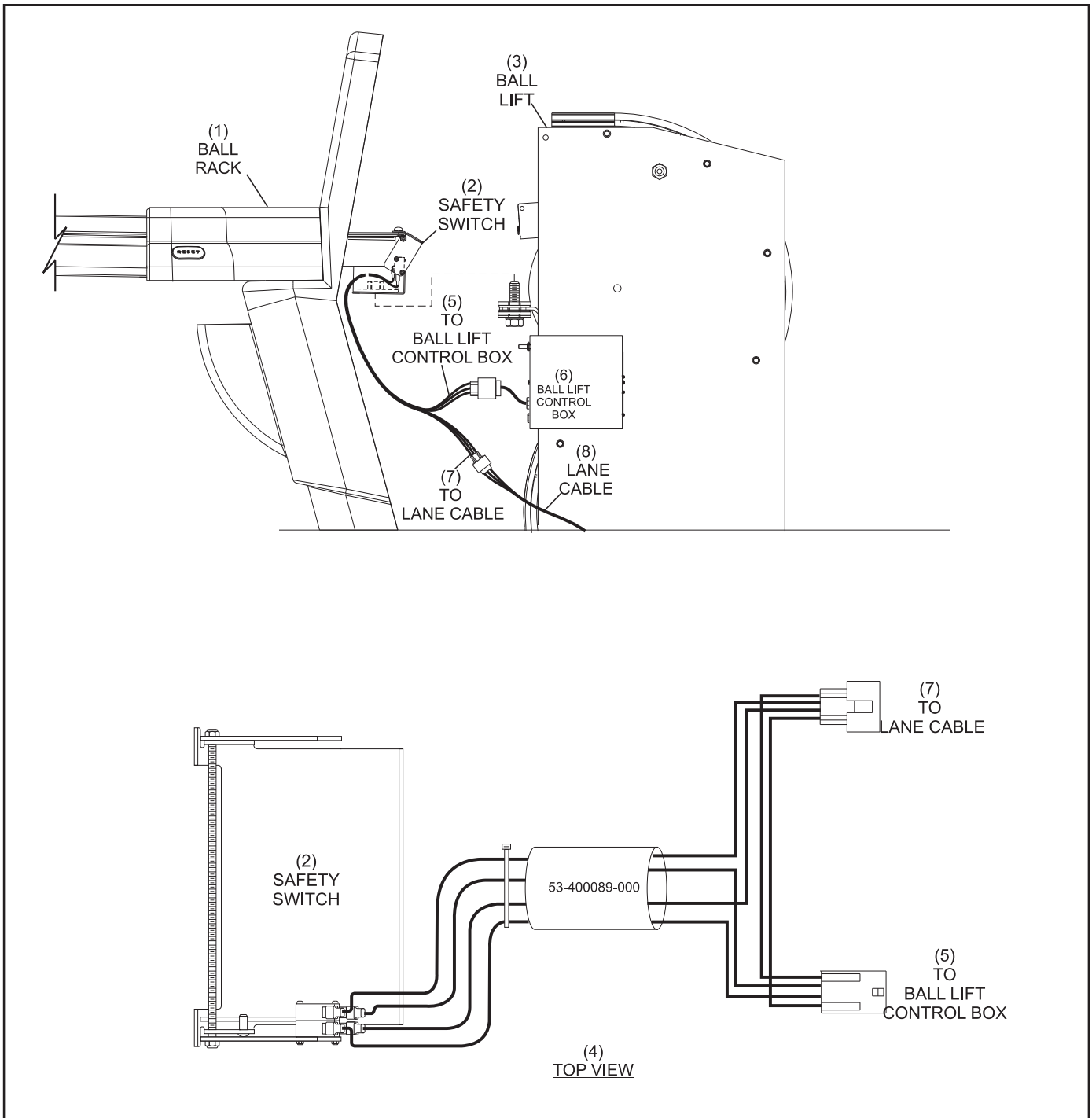


Figure 3. Connect Safety Switch

- (1) BALL RACK
- (4) TOPVIEW
- (7) TO LANE CABLE

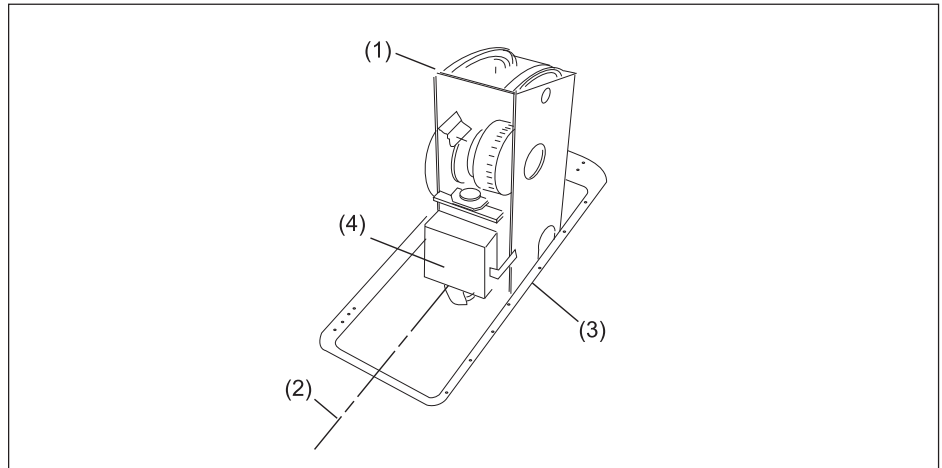
- (2) SAFETY SWITCH
- (5) TO BALL LIFT CONTROL BOX
- (8) LANE CABLE

- (3) BALL LIFT
- (6) BALL LIFT CONTROL BOX

## Secure Ball Rack to Ball Lift

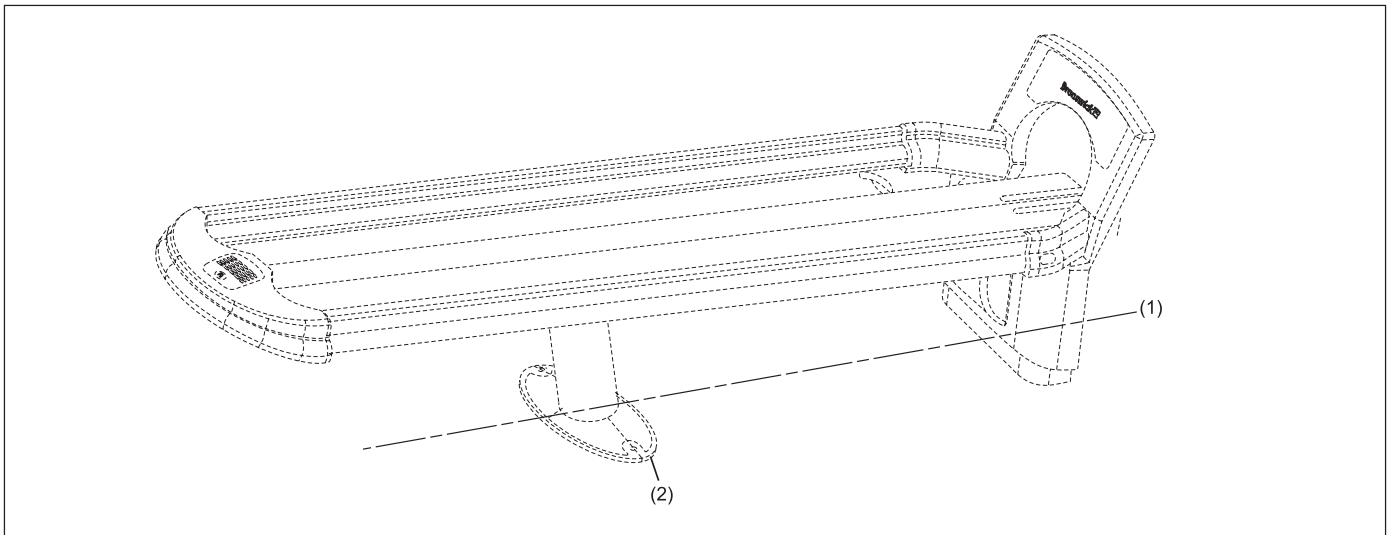
1. Using the center of the ball lift as a reference, draw a center line on the approach where the ball rack leg will be mounted. Refer to *Figures 4 & 5*.

- (1) BALL LIFT
  - (2) CENTER LINE
  - (3) FLANGE
  - (4) OLD BALL LIFT AT EXISTING CENTER
- NOTE: WHEN INSTALLING THE FRAMEWORX BALL RACK USING EXISTING POWER LIFT, THE CONTROL BOX MUST BE PLACED ON THE FLOOR UNDER THE APPROACH.



*Figure 4. Mark Ball Lift Center Line*

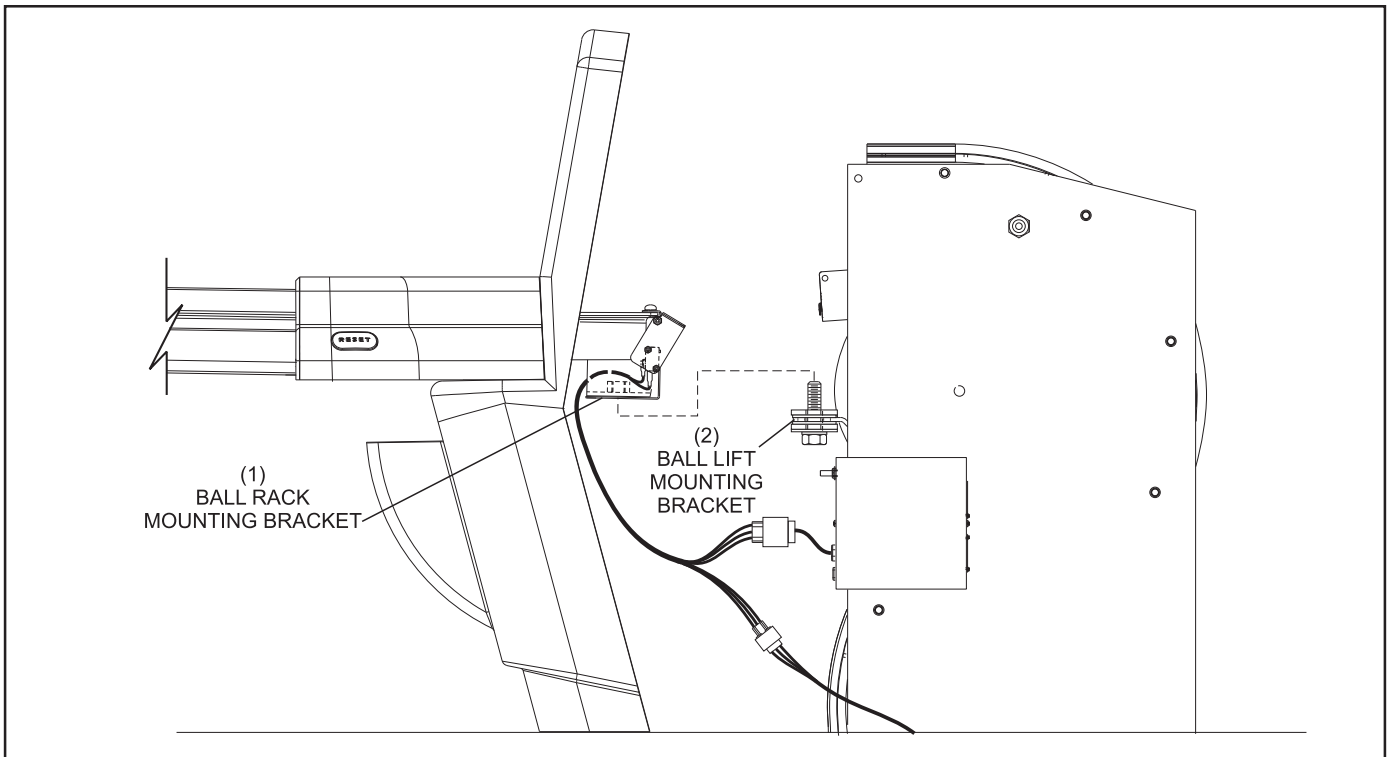
2. Slide the ball lift hood flange over the ball lift and center it on the ball lift opening in the approach. Refer to *Figure 4*.



*Figure 5. Ball Rack Installation*

- (1) BALL LIFT CENTER LINE
- (2) BALL RACK LEG

3. Position the ball rack at the ball lift and align its mounting bracket with the mounting bracket on the ball lift. Refer to *Figure 6*.



*Figure 6. Align Ball Rack and Ball Lift*

(1) BALL RACK MOUNTING BRACKET

(2) BALL LIFT MOUNTING BRACKET

4. Align the ball rack with the ball lift center line marked on the approach and using the holes in the foot as a template, mark its attaching holes on the approach. .

- The ball rack must have a slope of  $1^\circ$  down from the ball lift. This slope can be measured using a 24" level placed parallel to the sides of the ball rack with a .42" shim placed under the end opposite the ball lift. Add or remove the leg spacers as required to obtain the proper slope. Each leg spacer increases or decreases slope by approximately  $1/2^\circ$ . Refer to *Figure 7*.

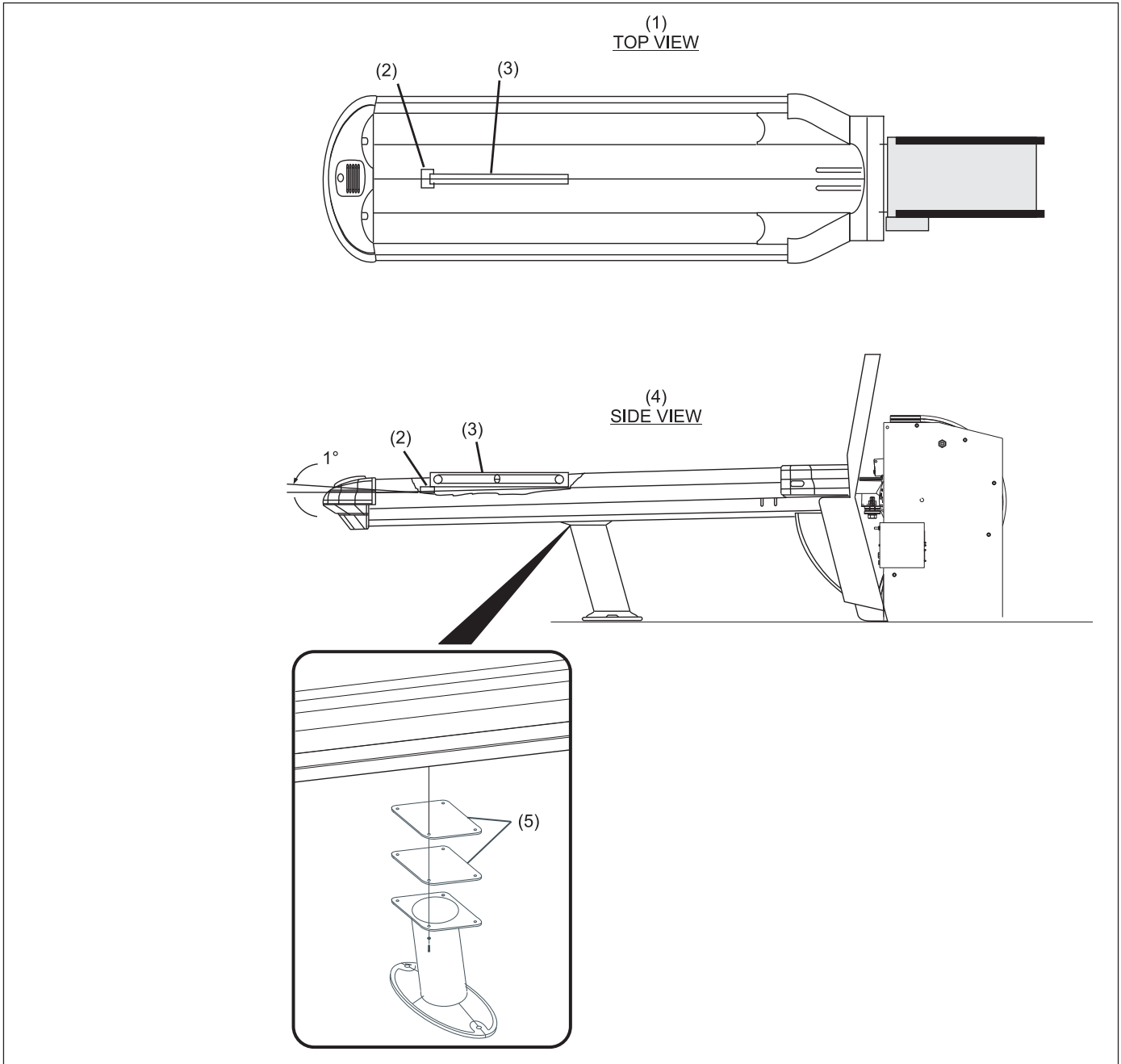


Figure 7. Ball Rack Slope

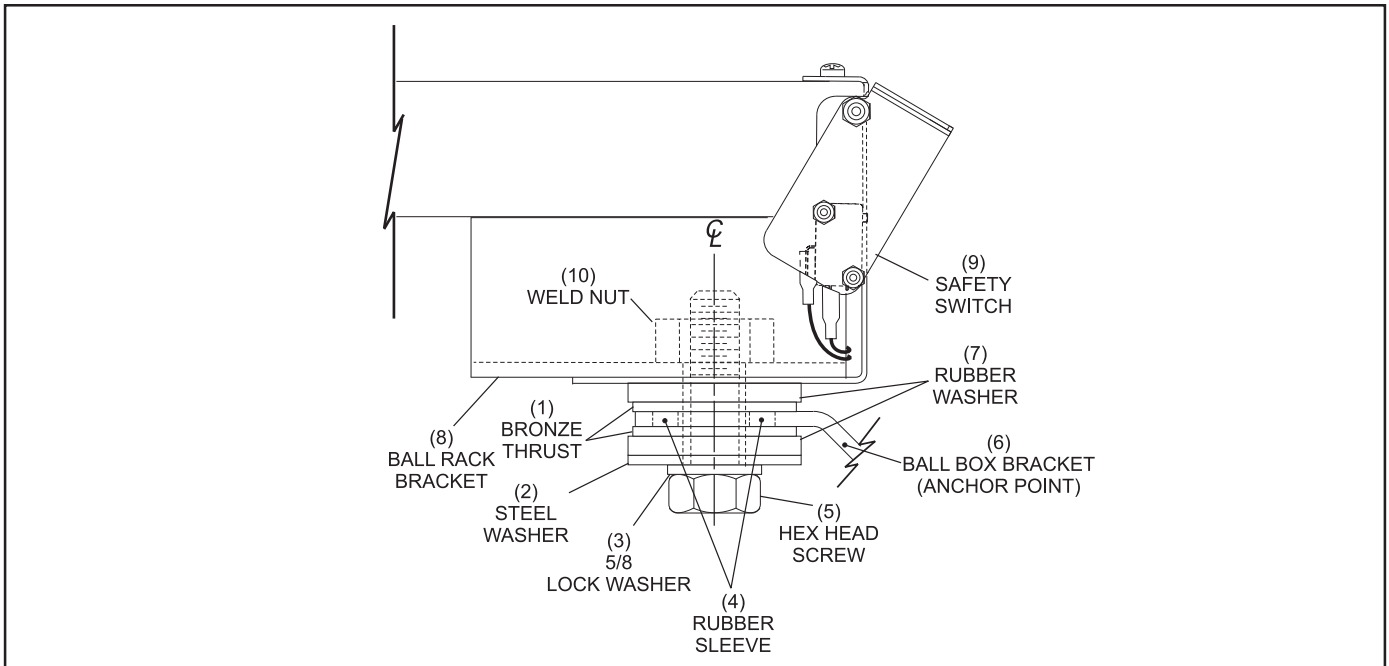
- (1) SIDE VIEW
- (4) TOP VIEW

- (2) .42" SHIM
- (5) LEG SPACER

- (3) LEVEL (24" LONG)

6. Secure the ball rack to the ball lift as detailed in *Figures 8 & 9*, using original hardware as listed below:

- 1 ea. 5/8-11 x 2-1/2" hex head bolt
- 1 ea. 5/8" lockwasher
- 1 ea. 5/8" flat washer
- 2 ea. rubber washer
- 2 ea. thrust bearing
- 1 ea. steel bushing
- 1 ea. rubber sleeve



*Figure 8. Ball Rack Hardware*

- |                           |                                      |                        |
|---------------------------|--------------------------------------|------------------------|
| (1) BRONZE THRUST BEARING | (2) STEEL WASHER (5/8")              | (3) LOCK WASHER (5/8") |
| (4) RUBBER SLEEVE         | (5) HEX HEAD SCREW (5/8-11 X 2-1/2") | (6) BRACKET (BALL BOX) |
| (7) RUBBER WASHER         | (8) BRACKET (BALL RACK)              | (9) SAFETY SWITCH      |
| (10) WELD NUT             |                                      |                        |

# Secure Ball Rack Leg to Floor

## Wood Lanes

1. At the locations marked on the approach for the foot attaching hardware drill 1-3/8" deep 5/8" diameter holes. Refer to *Figure 9*.

- (1) WOOD SURFACE OF APPROACH
- (2) STAFAST FASTENER

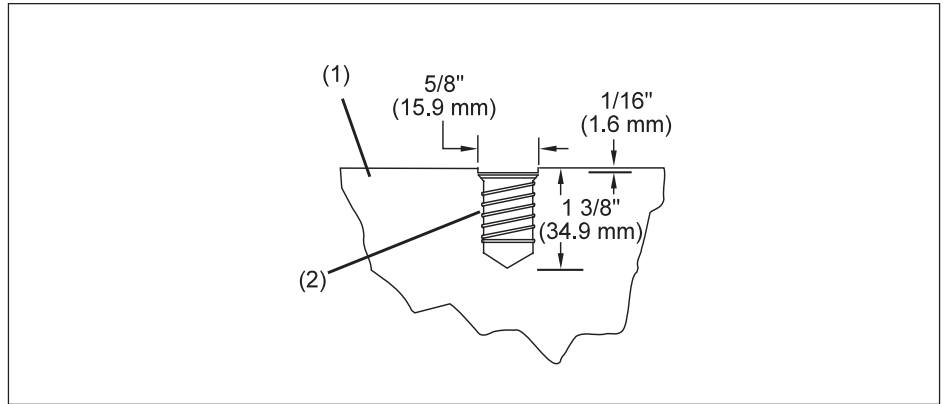


Figure 9. Wood Lane Hardware

## Laminate Lane Surfaces

1. At the locations marked on the floor for the foot attaching hardware drill 3/4" diameter holes through the laminate surface of the lane. Refer to *Figure 10*.



### NOTE:

Screwing the fastener into the laminate or the glue bond between the laminate and its wood base will cause delamination.

- (1) LAMINATE LANE SURFACE
- (2) STAFAST FASTENER

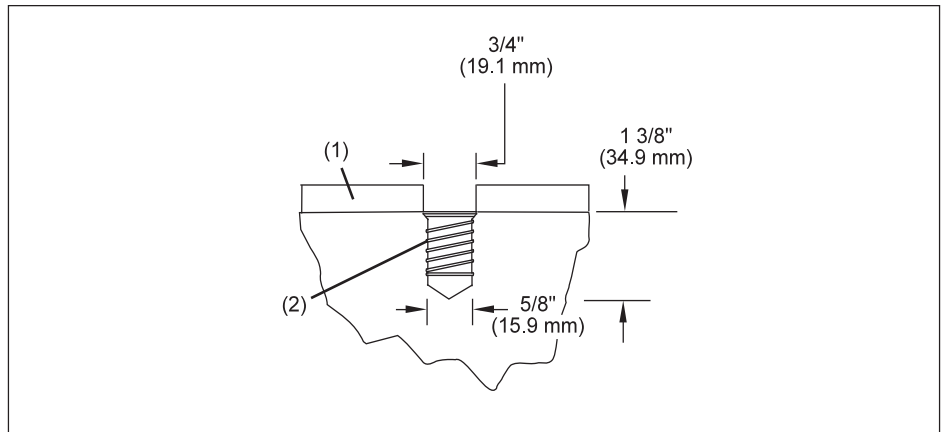


Figure 10. Laminate Lane Hardware

2. Centered in the 3/4" holes in the laminate, drill 5/8" diameter holes for the stafast fasteners. The distance from the bottom of the laminate to the bottom of the 5/8" diameter holes is to be 1-3/8". Refer to Figure 8.
3. Align the ball rack mounting bracket with the mounting bracket on the ball lift and secure the ball rack to the ball lift.
4. Reinstall the upper ball lift tire.
5. Align the attaching holes in the ball rack foot with the stafast fasteners installed in the approach.
6. Secure the ball rack foot to the approach with the following hardware:

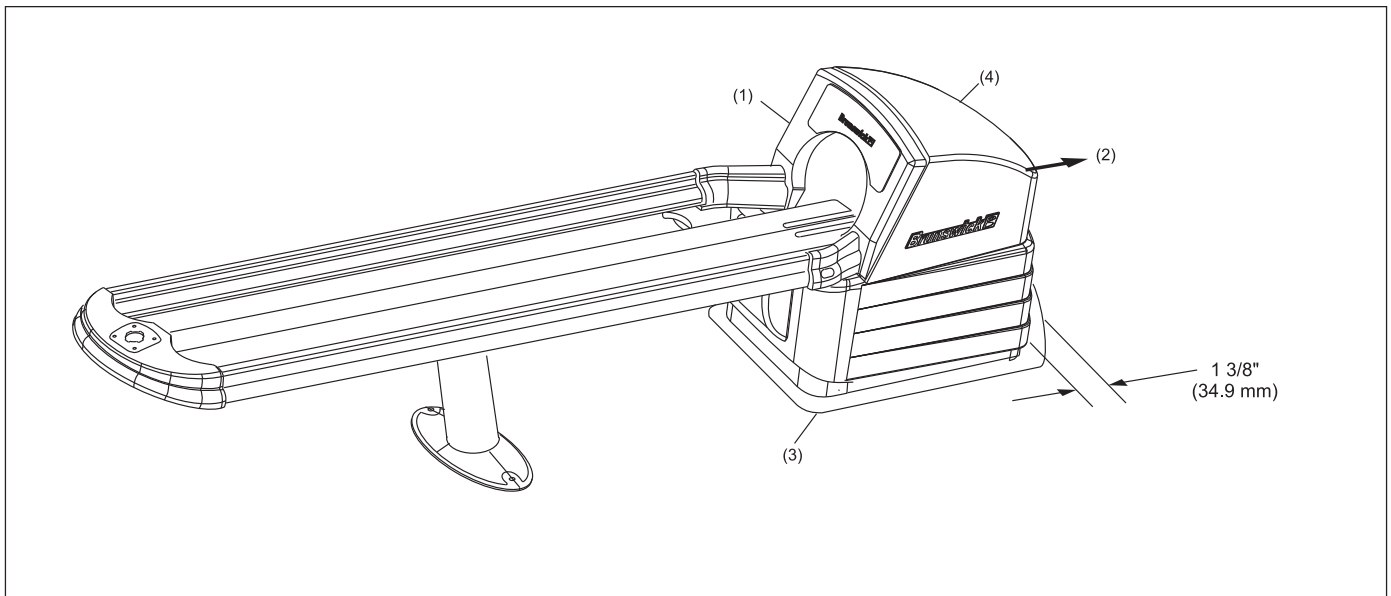
2 ea.            3/8 -16 x 2-1/4"            button head cap screw

## Ball Lift Hood

1. With the ball lift hood placed over the ball lift and properly aligned with the throat, position the mounting flange so that its foul line edge extends 1-3/8" past the foul line end of the ball lift hood and there is equal flange exposure at the sides. Refer to *Figure 11*.

**i** **NOTE:**

*There is a hole at the lower front of the hood. Make sure it is aligned with the threaded insert on the flange tab. Do not secure the hood to the flange at this time.*



*Figure 11. Ball Lift Hood Install*

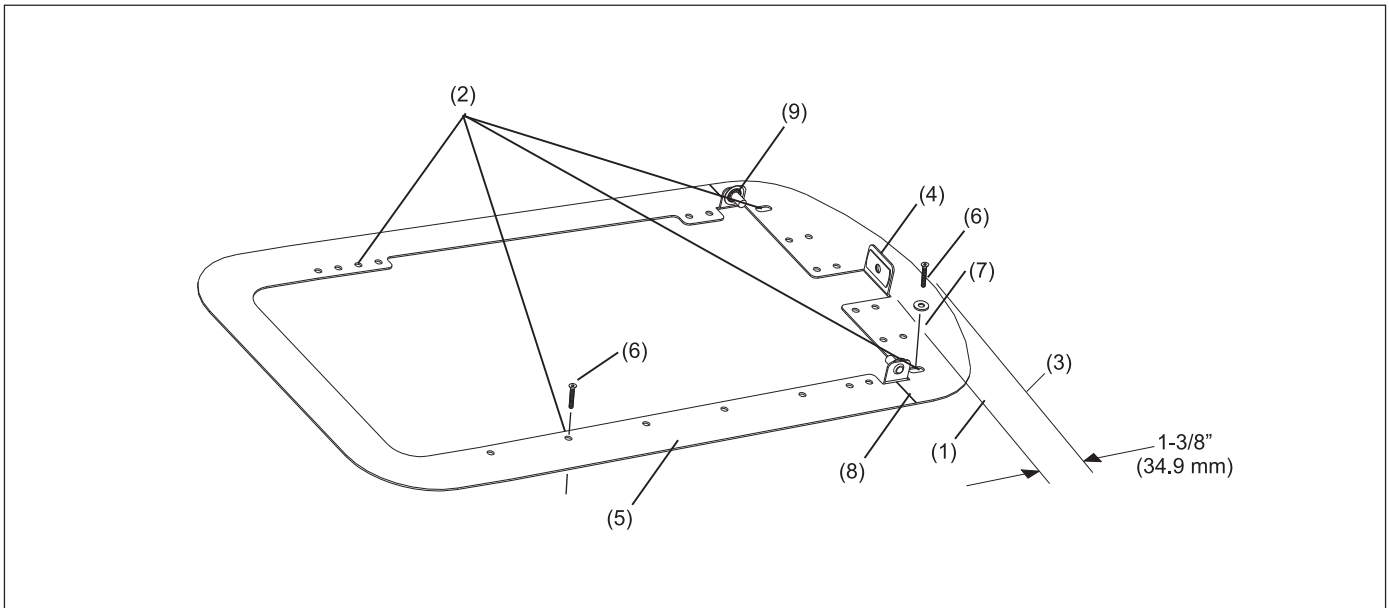
(1) THROAT  
(4) BALL LIFT HOOD

(2) FOUL LINE

(3) MOUNTING FLANGE

2. Mark the location of the front and sides of the flange on the approach.

- Remove the ball lift hood from the ball lift and align the flange with the alignment marks made on the approach. Using the flange as a template, drill two  $5/32$ " pilot holes centered in the slotted openings at the rear of the flange. Refer to *Figure 12*.

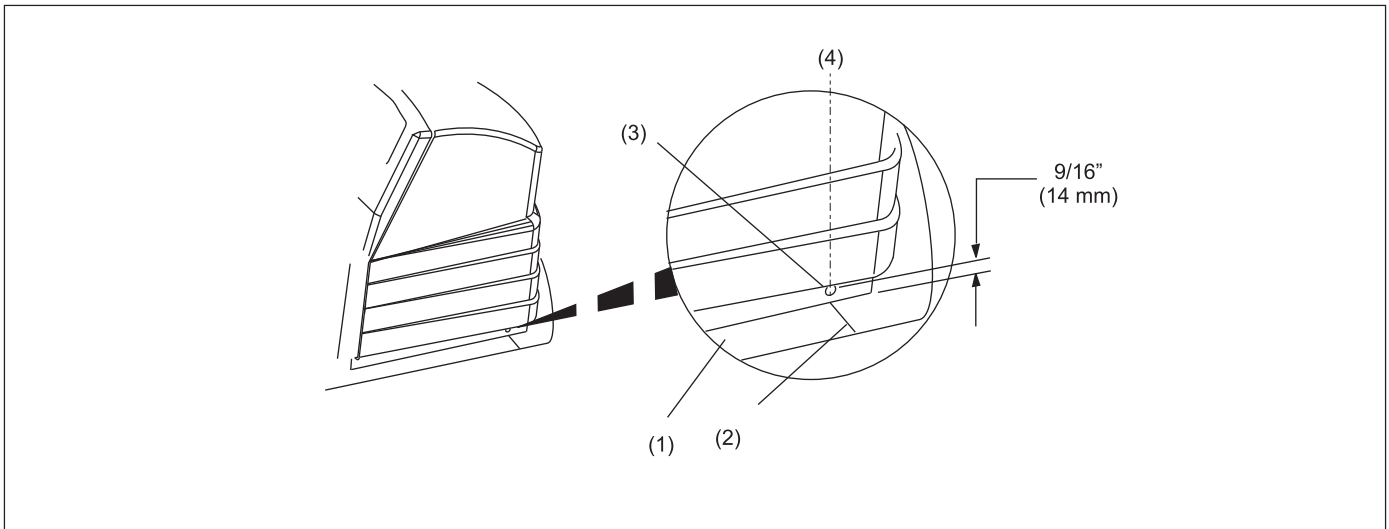


*Figure 12. Flange Installation*

- |                           |                               |  |
|---------------------------|-------------------------------|--|
| (1) END OF BALL LIFT HOOD | (2) ATTACHING SCREW LOCATIONS | (3) END OF FLANGE                            |
| (4) FLANGE MOUNTING TAB   | (5) HOOD MOUNTING FLANGE      | (6) #10 X 1-1/2" ROBERTSON<br>FLAT HD. SCREW |
| (7) #10 FLAT WASHER       | (8) SCRIBE MARK               | (9) SPRING-LOADED PLUNGER                    |

- Temporarily secure the flange to the approach with two #10-1 $\frac{1}{2}$  Robertson flat head screws with flat washers. Refer to *Figure 12*.
- Slide the hood forward into the throat. Position the hood and throat so the gap along the sides of the two is as uniform as possible. The scribe marks near the rear of the flange mark the center of the spring-loaded plungers. Transfer this line onto the hood to establish the horizontal location.

6. Measure  $9/16"$  (14 mm) up from the top of the hood flange and mark the vertical location. The intersection of these two marks is the center of the spring-loaded plunger. See *Figure 13*. Repeat for other side.



*Figure 13. Drill Holes for Plunger*

(1) FLANGE

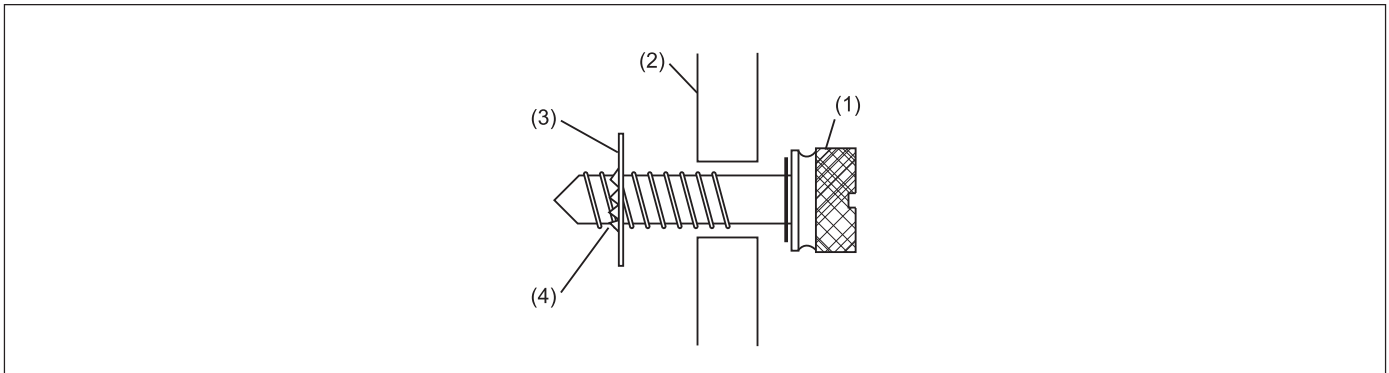
(2) SCRIBE MARK

(3) DRILL  $19/64"$  (8 mm) HOLE AND DEBURR  
INSIDE AND OUT

(4) CENTER LINE OF SCRIBE MARK

7. Drill a  $19/64"$  diameter (8 mm) hole at each marked location and deburr inside and out.
8. Slide the hood back into position and visually inspect for registration of the balls with the drilled hole. The spring-loaded plunger should drop into the hole when it is slid into position.
9. If necessary, remove the hood and loosen the two screws and reposition the flange using the clearance in the slotted holes. When there is good registration, drill two additional pilot holes and secure the flange. Refer to *Figure 12*.

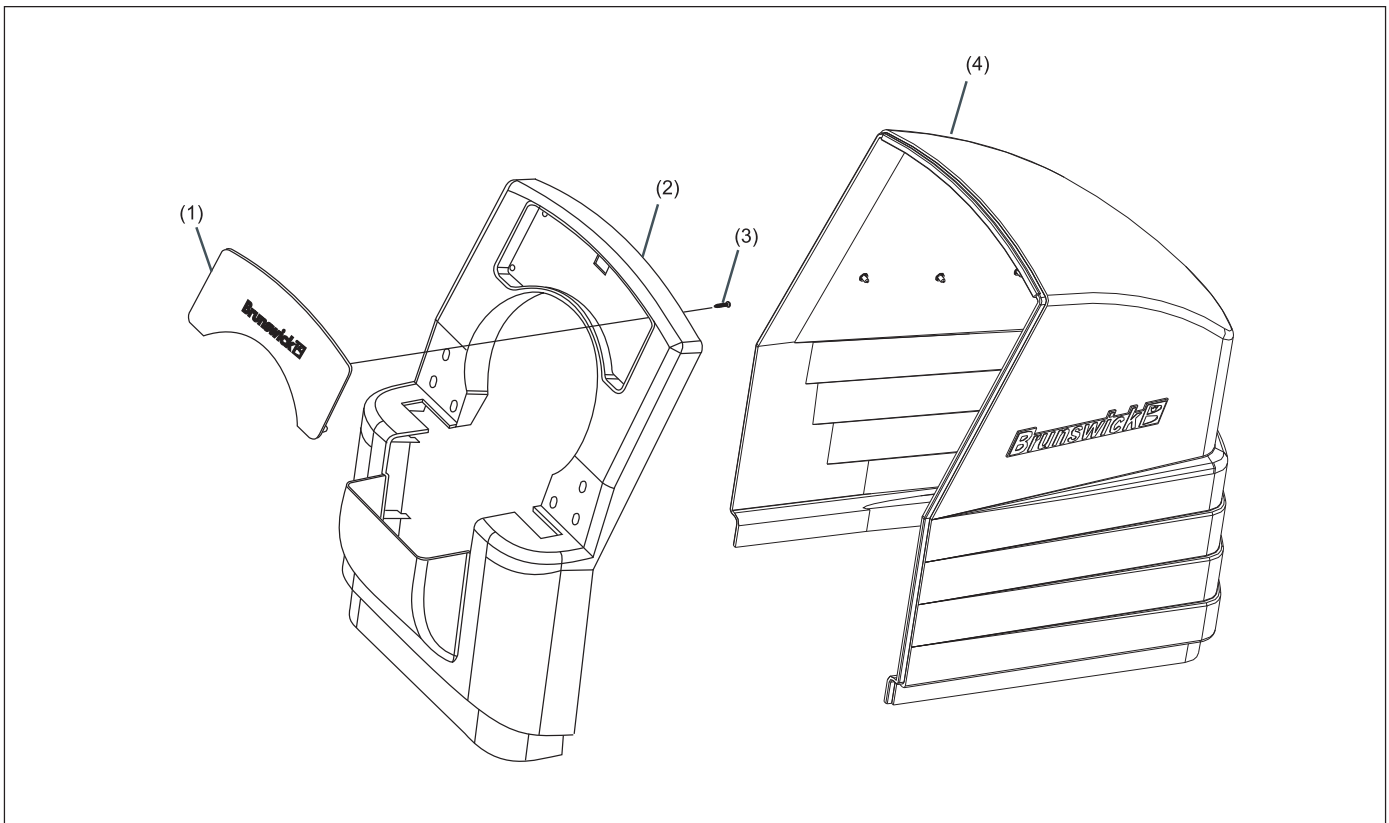
10. Assemble the provided captive screw into the hole in the rear of the hood. Push the retainer no more than two threads onto the end to allow the screw to float axially. Refer to *Figure 14*. (If you push too far, unscrew the retainer to the stated position.)



*Figure 14. Knurled Captive Screw - Top View*

- |  |                    |              |
|--|--------------------|--------------|
| (1) KNURLED CAPTIVE SCREW                                | (2) BALL LIFT HOOD | (3) RETAINER |
| (4) PUSH RETAINER NO MORE THAN TWO<br>THREADS ONTO SCREW |                    |              |

11. Align holes in the right and left hood logos with the attaching holes in the hood assembly. Secure each logo to the hood with four self tapping #10-16 x 3/8" pan head cross recessed screws. Refer to *Figure 15*.



*Figure 15. Hood Logo Securing*

- |                              |            |   |
|------------------------------|------------|---|
| (1) DECORATIVE THROAT INSERT | (2) THROAT | (3) (4) #10-16 X 3/8" PAN HEAD<br>CROSS-RECESSED SCREWS |
| (4) HOOD                     |            |   |

12. Align the attaching holes in the throat insert with the attaching holes in the ball lift throat. Secure the insert to the hood with four self tapping #12-14 x 1/2" pan head cross recessed screws. The throat insert installed will depend on the type of pinsetter and if the center has purchased a pinfinder. Refer to the list below for insert requirements.

- |  |                                   |
|--|-----------------------------------|
| 1. Brunswick GS Series Pinsetters            | Requires a Player Control Station |
| 2. AMF or Brunswick <i>without</i> pinfinder | Standard decorative insert        |
| 3. AMF or Brunswick <i>with</i> pinfinder    | Decorative insert with pinfinder  |

13. Reposition the ball lift hood over the ball lift. Secure the hood to the flange tab with the knurled captive screw.

**NOTE:** Tighten the knurled captive screw *ONLY* until it has pulled the bottom of the hood against the throat. Any additional tightening will only be putting pressure on the hood and the floor attaching hardware.

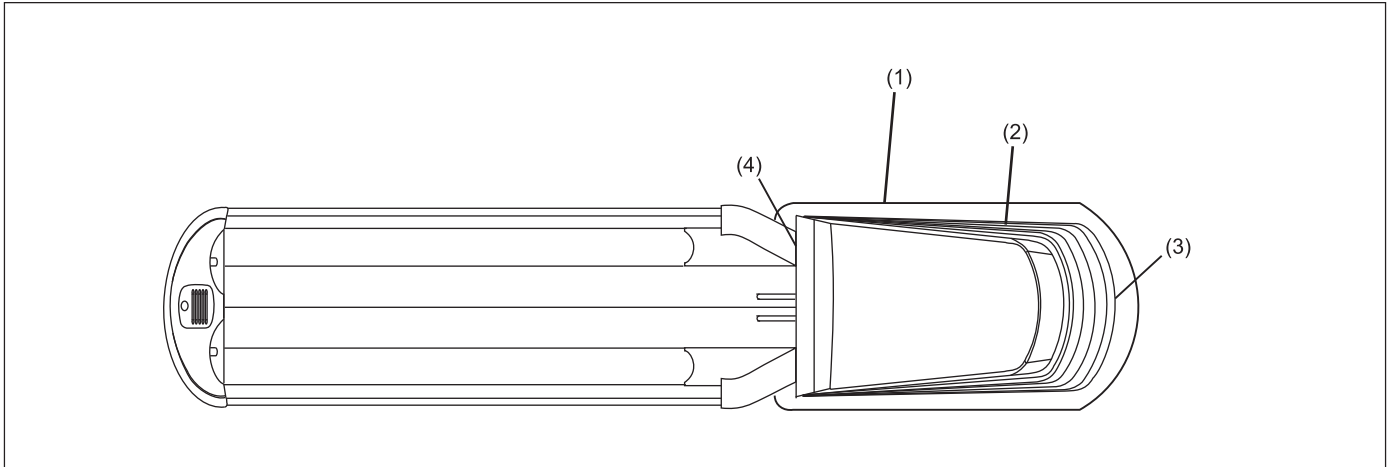


Figure 14. Securing Hood to Flange

(1) FLANGE  
(4) THROAT

(2) HOOD

(3) KNURLED CAPTIVE SCREW

# Existing Ball Lift Installation

## Fan Installation Procedure



**Warning!**  
Remove power from the ball lift control box and pinsetter before installation.

1. Drill a 21/32" (18mm) in the ball lift control box on the side with the most open area. Remove all metal debris left from the drilled hole. Refer to *Figure 15*.

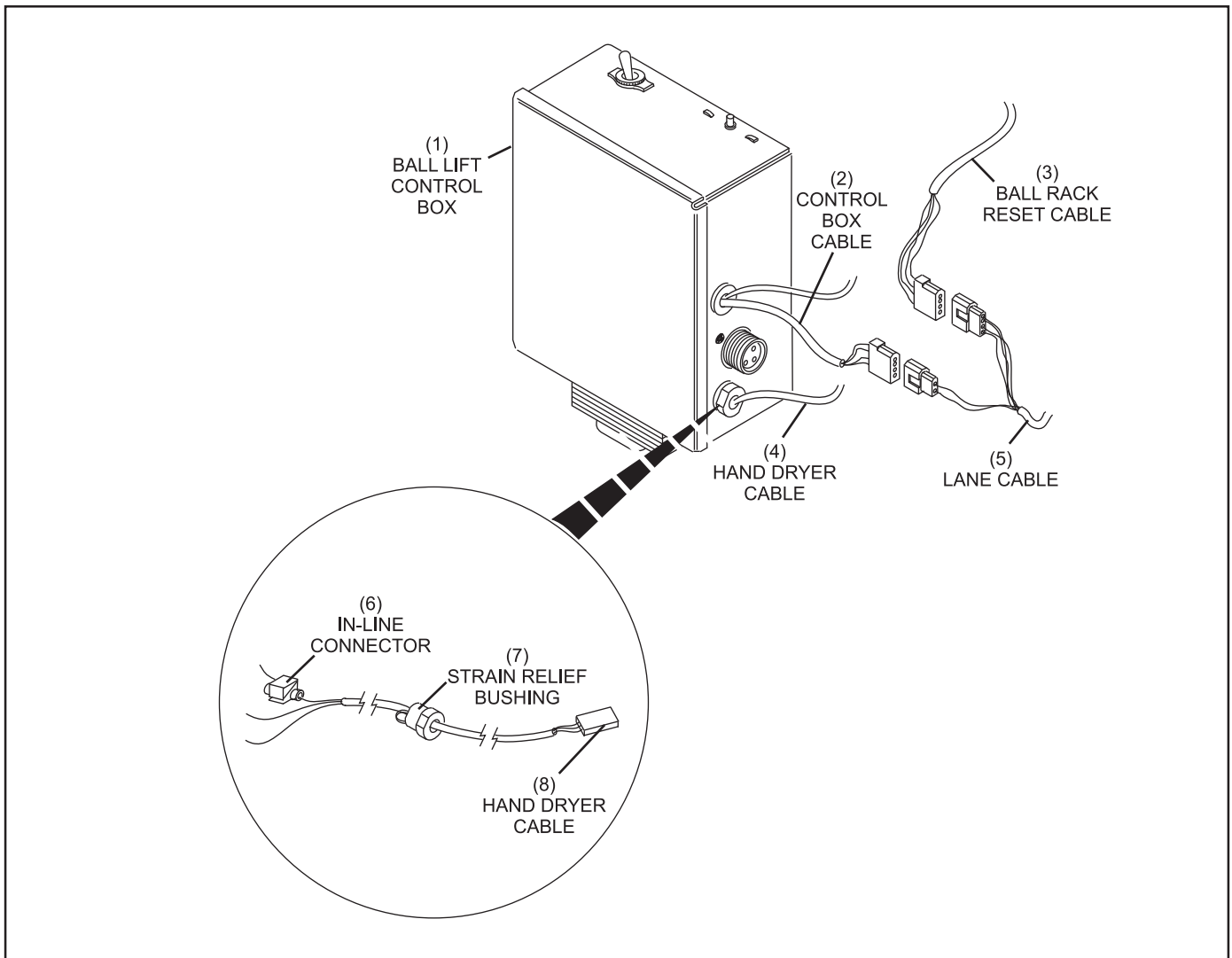


Figure 15. Drill Hole in Control Box

- |                           |                       |                           |
|---------------------------|-----------------------|---------------------------|
| (1) BALL LIFT CONTROL BOX | (2) CONTROL BOX CABLE | (3) BALL RACK RESET CABLE |
| (4) HAND DRYER CABLE      | (5) LANE CABLE        | (6) IN-LINE CONNECTOR     |
| (7) STRAIN RELIEF BUSHING | (8) HAND DRYER CABLE  |                           |

2. Slide the strain relief bushing onto the hand dryer cable assembly with the white red and black wires. Six to eight inches (152mm to 203mm) of the wire should extend beyond the bushing. Refer to *Figure 15*.

3. Run the end of the cable with the strain relief bushing through the hole previously drilled in the control box until the bushing snaps into place. Refer back to *Figure 16*.
4. Using the three in-line connectors, splice the three fan cable wires into the three wires of the ball lift motor connector: Refer to *Figure 16*.

- green to green
- white to white
- black to remaining wire (violet or black)

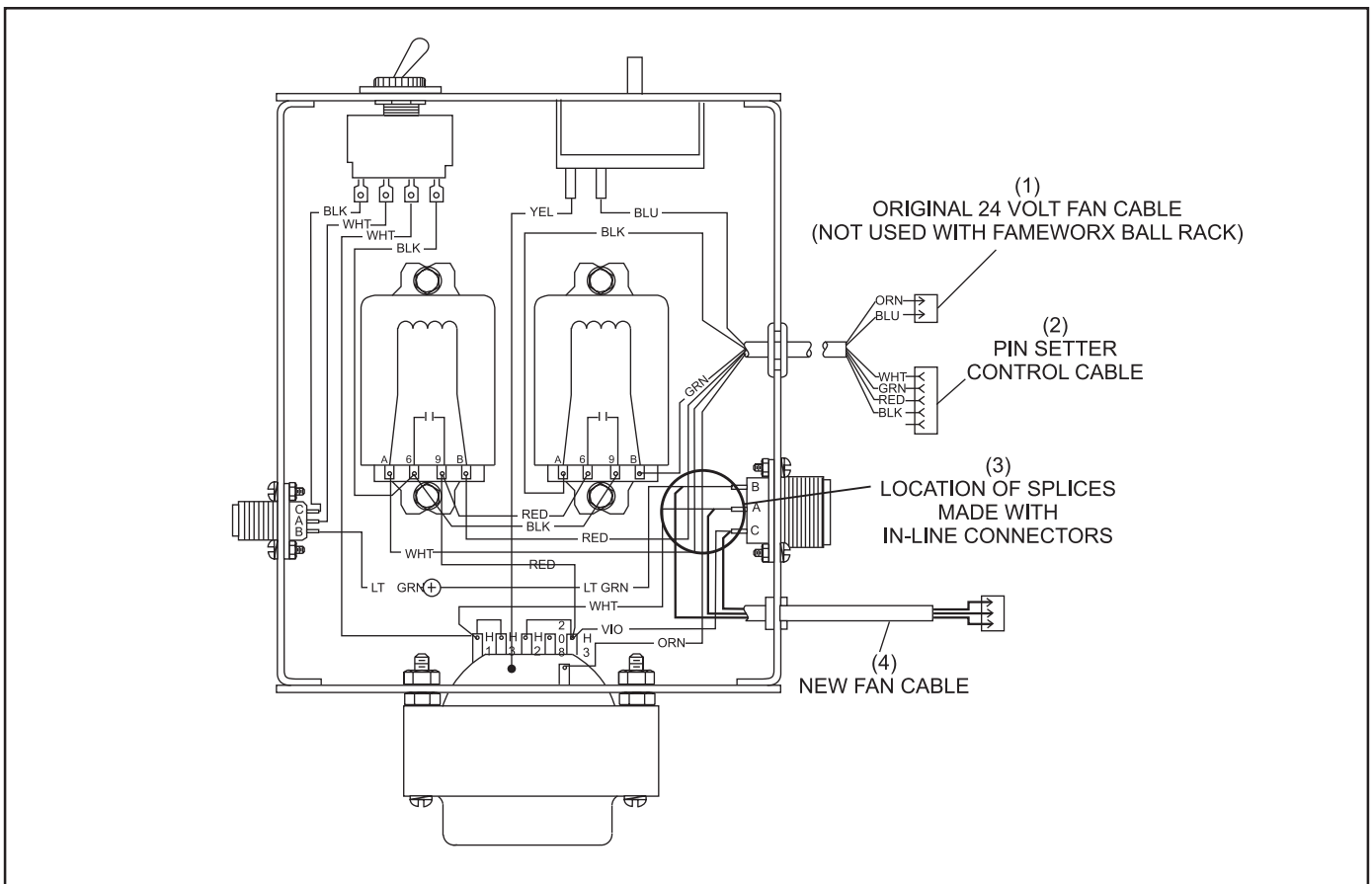


Figure 16. Connect Fan Cable

- |  |                             |  |
|--|-----------------------------|--|
| (1) ORIGINAL 24 VOLT FAN CABLE (NOT USED WITH FRAMEWORX BALL RACK) | (2) PINSETTER CONTROL CABLE | (3) LOCATION OF SPLICES MADE WITH IN-LINE CONNECTORS |
| (4) NEW FAN CABLE  |                             |  |

5. Connect the four position Molex connector to the Molex connector on the hand dryer motor.
6. Using the cable ties, secure the fan harness to the ball lift and ball rack.

## Safety Switch Installation with Astroline and Gold Crown Ball Lifts



**Warning!**  
Remove power from the ball lift control box and pinsetter before installation.

1. Locate the two 24 volt pinsetter cables coming out of the ball lift control box. Refer to *Figure 17*.

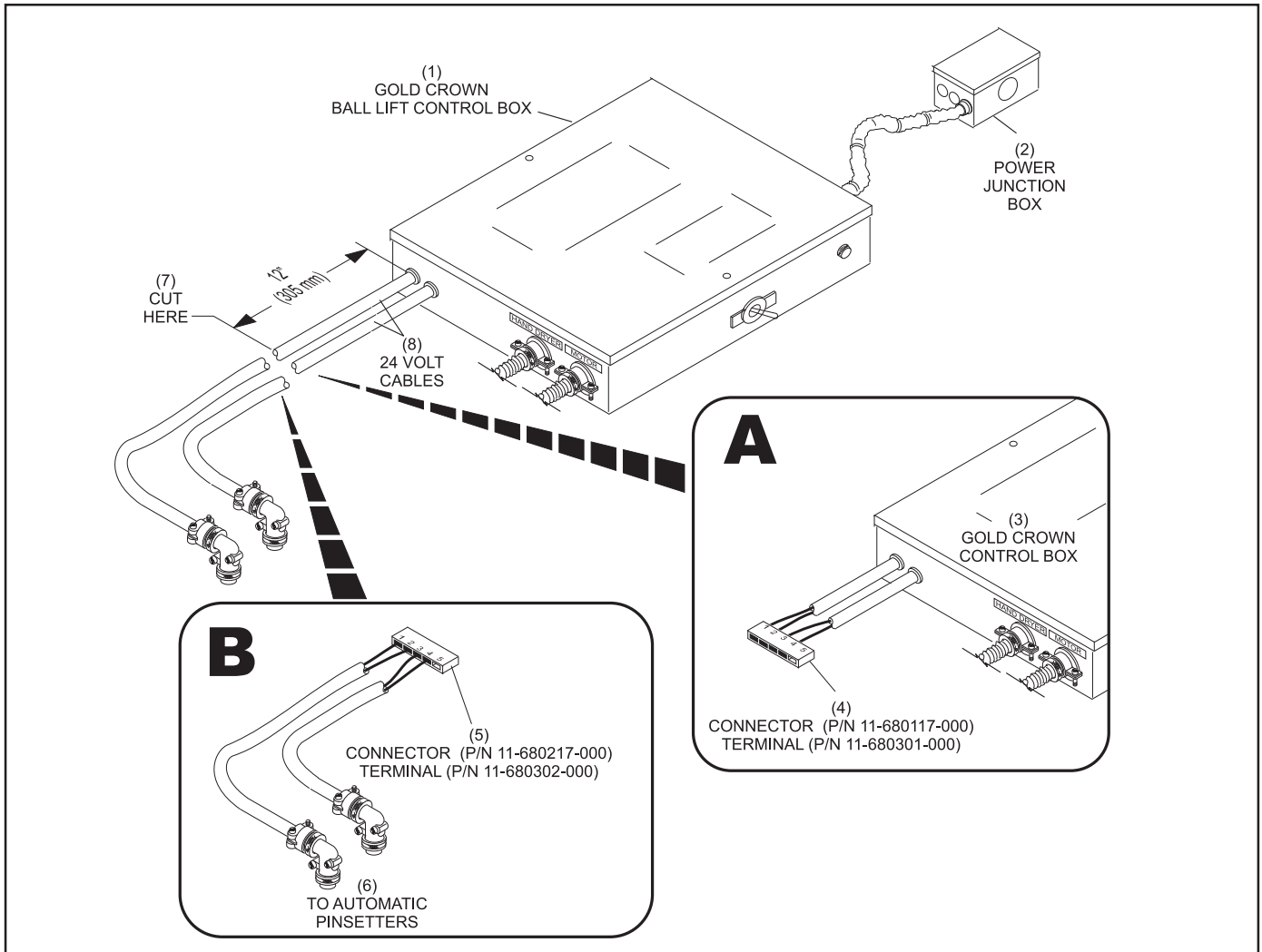


Figure 17. Locate 24 Volt Cables

- |   |   |                             |
|---|---|-----------------------------|
| (1) GOLD CROWN BALL LIFT CONTROL BOX                              | (2) POWER JUNCTION BOX  | (3) GOLD CROWN CONTROL BOX  |
| (4) CONNECTOR (P/N 11-680117-000)<br>TERMINAL (P/N 11-680301-000) | (5) CONNECTOR (P/N 11-680217-000)<br>TERMINAL (P/N 11-680302-000) | (6) TO AUTOMATIC PINSETTERS |
| (7) CUT HERE  | (8) 24 VOLT CABLES  |                             |

2. Cut the 24 volt cables approximately 12" (305 mm) from where they enter the ball lift control box. Refer to *Figure 17*.
3. Strip all four wire ends to accept the new terminals.
4. Install terminals (P/N 11-680301-000), on the two 24 volt cables going into the ball lift control box. Refer to *Figure 17 Inset A*.

5. Install terminals (P/N 11-680302-000), on the two 24 volt cables that go back to the pinsetter. Refer to *Figure 17 Inset B*.
6. Install connector (P/N 11-689117-000), on the two 24 volt cables coming from the ball lift control box.
  - Pin 1 - L.H. pinsetter 24 AC power
  - Pin 2 - L.H. pinsetter 24 AC power
  - Pin 3 - R.H. pinsetter 24 AC power
  - Pin 4 - R.H. pinsetter 24 AC power
  - Pin 5 - N.C.
 Refer to *Figure 17 Inset A*.
7. Install connector (P/N 11-680217-000), on the two 24 volt cables going to the cannon connectors.
  - Pin 1 - L.H. pinsetter 24 AC power
  - Pin 2 - L.H. pinsetter 24 AC power
  - Pin 3 - R.H. pinsetter 24 AC power
  - Pin 4 - R.H. pinsetter 24 AC power
  - Pin 5 - N.C.
 Refer to *Figure 17 Inset B*.
8. Install safety switch cable (P/N 53-400089-000) by connecting it to the control box and the automatic pinsetters. Refer to *Figure 8*.

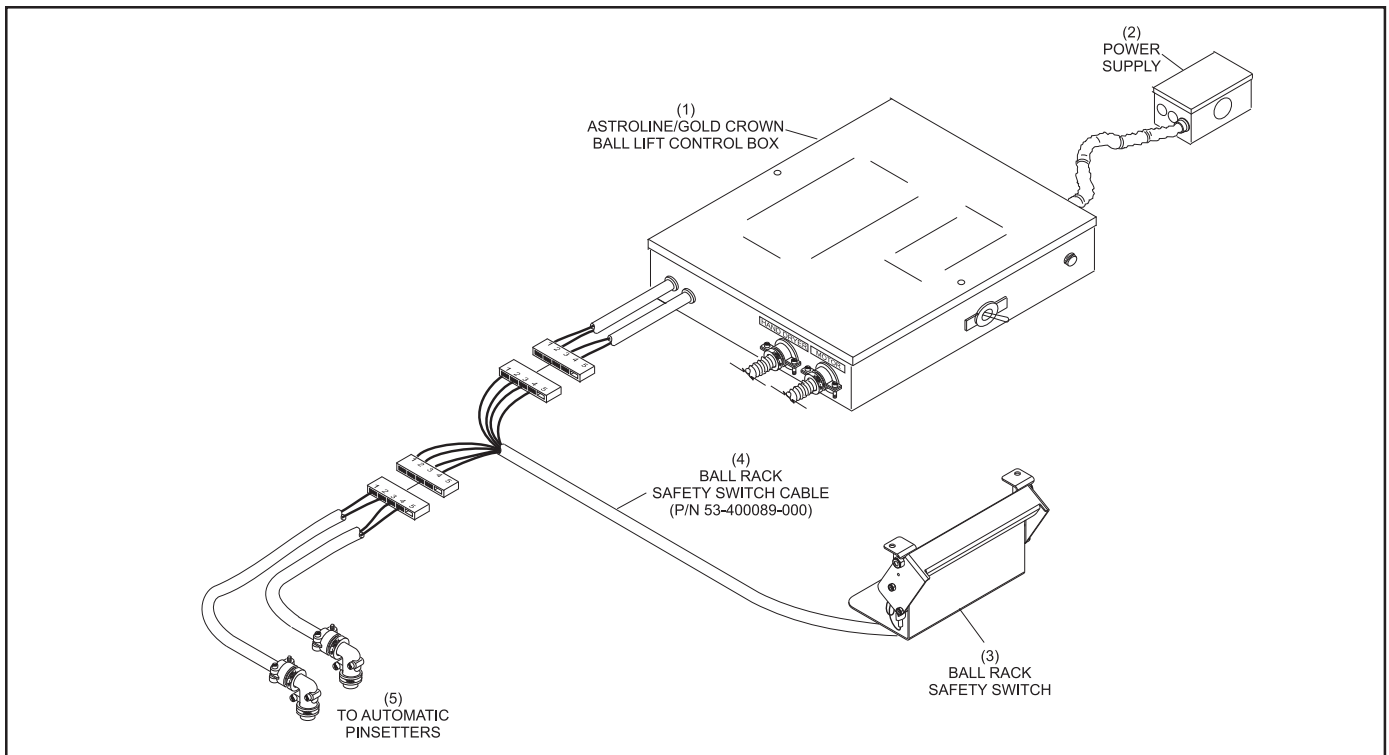


Figure 18. Install Safety Switch

- |   |   |                             |
|---|---|-----------------------------|
| (1) GOLD CROWN BALL LIFT CONTROL BOX                              | (2) POWER JUNCTION BOX  | (3) GOLD CROWN CONTROL BOX  |
| (4) CONNECTOR (P/N 11-680117-000)<br>TERMINAL (P/N 11-680301-000) | (5) CONNECTOR (P/N 11-680217-000)<br>TERMINAL (P/N 11-680302-000) | (6) TO AUTOMATIC PINSETTERS |
| (7) CUTHERE   | (8) 24 VOLT CABLES  |                             |

## Safety Switch Installation with B 2000 Ball Lifts

1. Locate the lane cable, 53-520588-000. Refer to *Figure 19*.

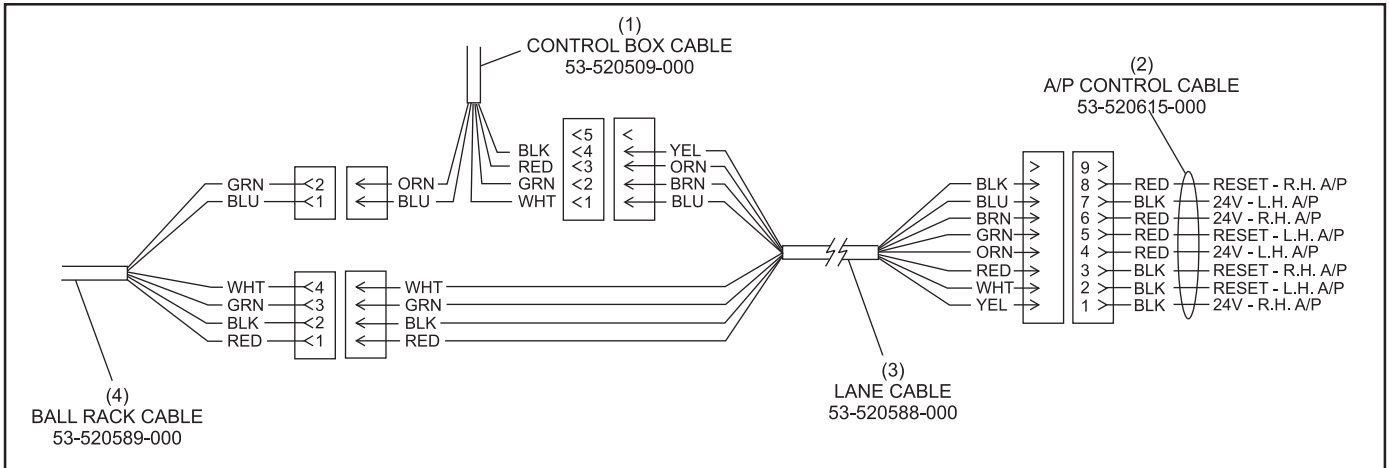


Figure 19. Lane Cable

- (1) CONTROL BOX CABLE 53-520509-000    (2) A/P CONTROL CABLE 53-520615-000    (3) LANE CABLE 53-520588-000  
 (4) BALL RACK CABLE 53-520589-000

2. Locate the 5 pin connector on the ball lift control box. Refer to *Figure 20*.

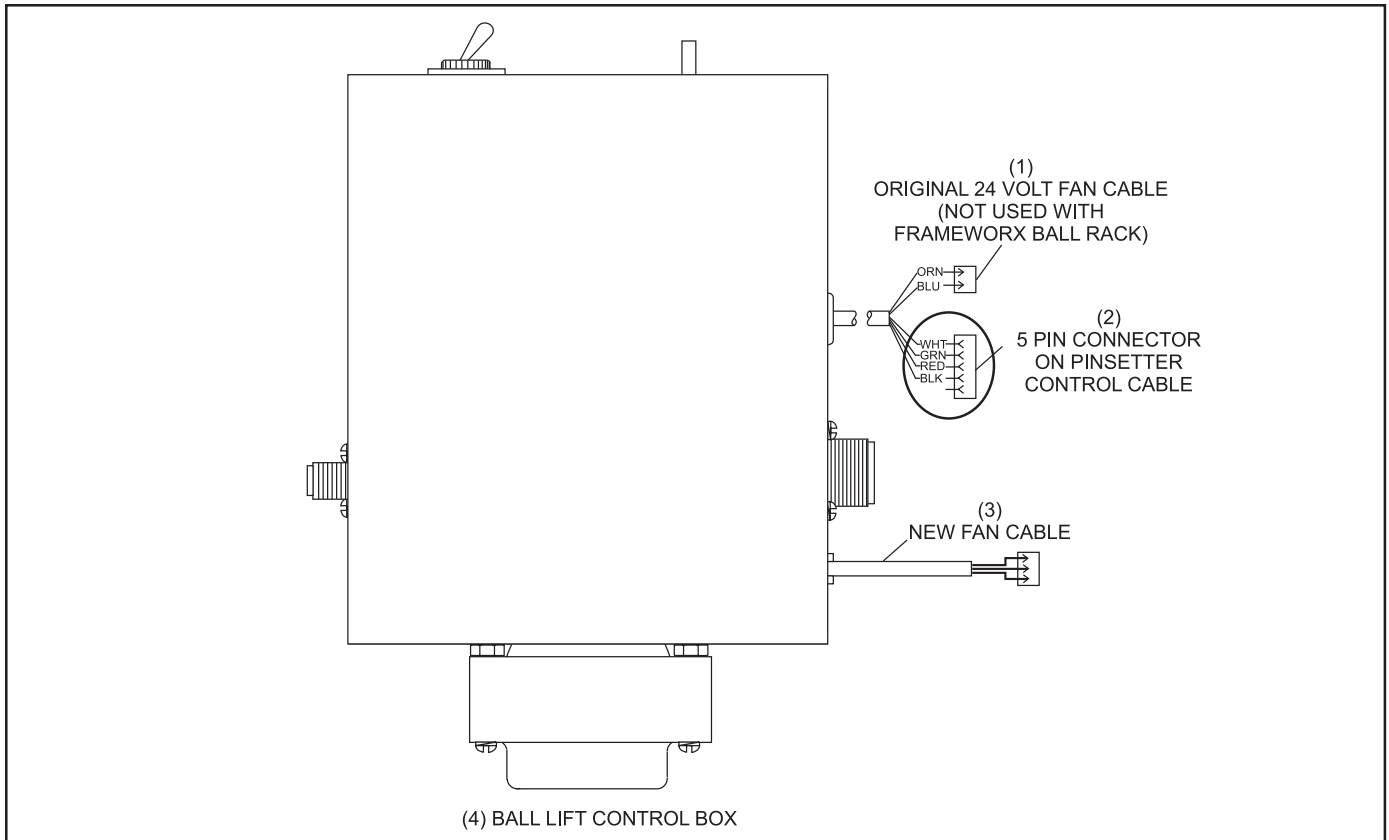


Figure 20. Ball Lift Control Box

- (1) ORIGINAL 24 VOLT FAN CABLE (NOT USED WITH FRAMEWORX BALL RACK)    (2) 5-PIN CONNECTOR ON PINSETTER CONTROL CABLE    (3) NEW FAN CABLE  
 (4) BALL LIFT CONTROL BOX

- Cut off the 5 pin connector on the lane cable and ball lift control box.  
Refer to *Figure 21*.

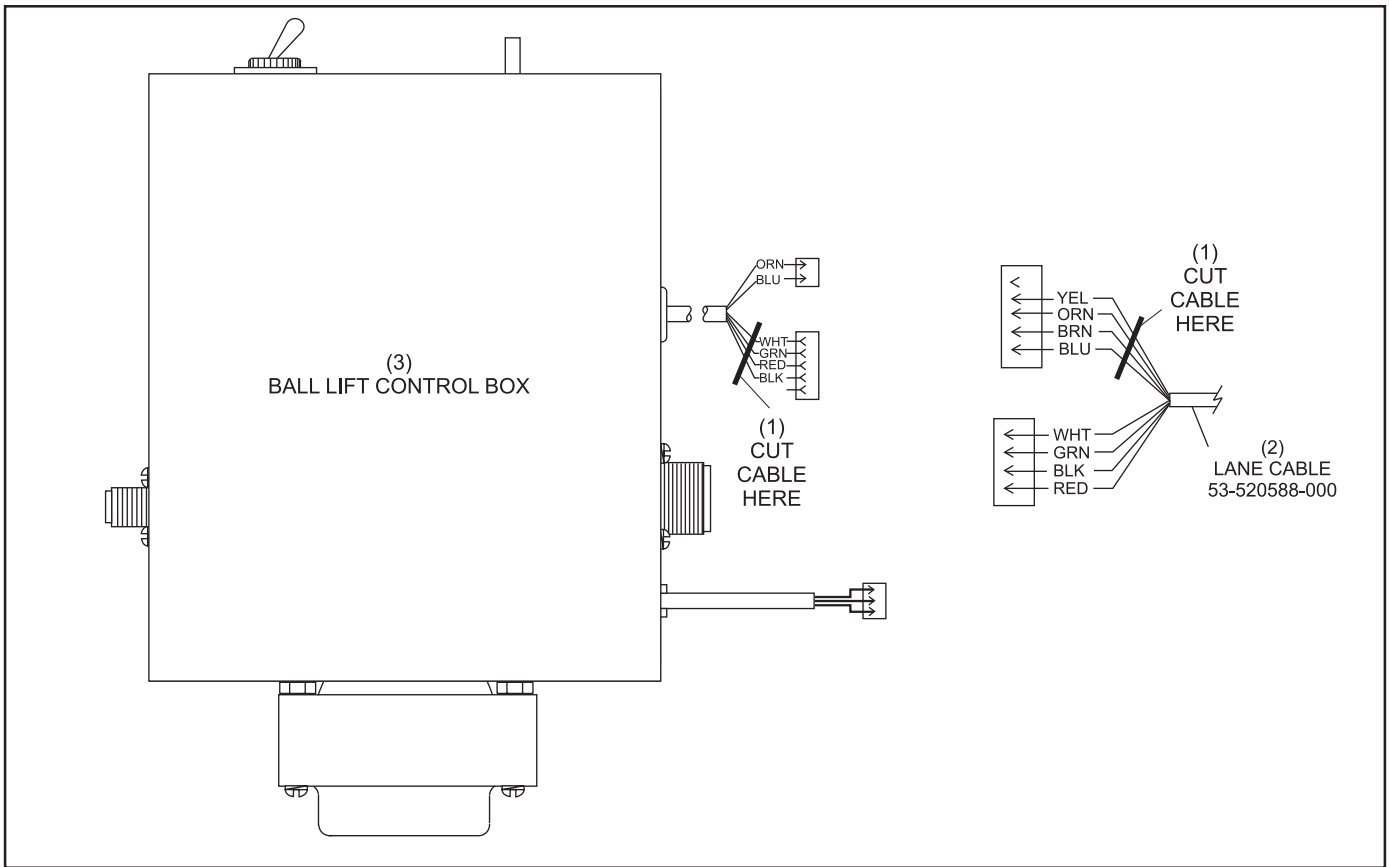


Figure 21. Remove Connectors

(1) CUT CABLE HERE

(2) LANE CABLE 53-520588-000

(3) BALL LIFT CONTROL BOX

- Install terminals, (P/N 11-680301-000) on the cable from the ball lift control box. Refer to *Figure 22, Inset A*.

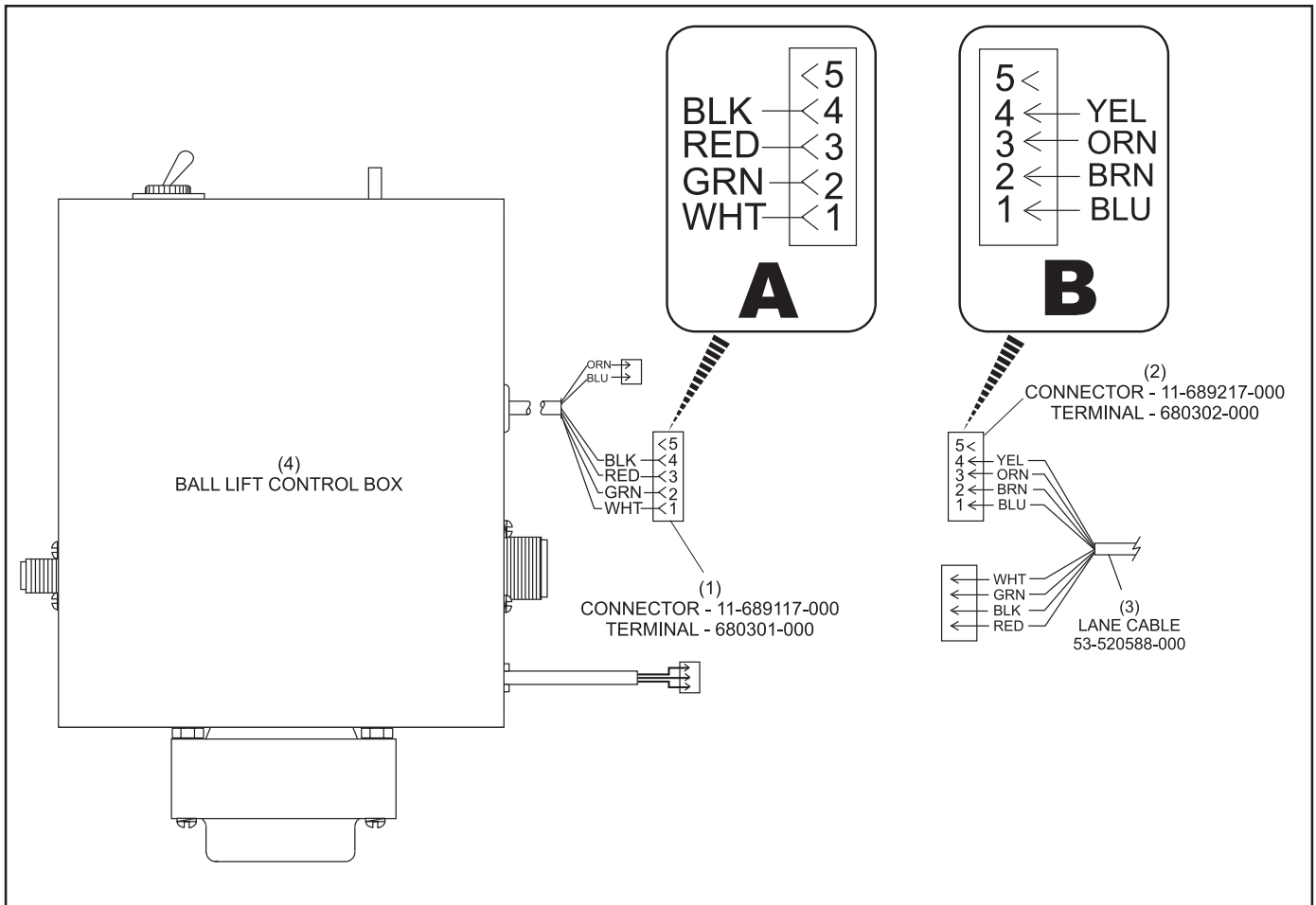


Figure 22. Install Terminals

- CONNECTOR (P/N 11-680117-000)  
TERMINAL (P/N 11-680301-000)
- BALL LIFT CONTROL BOX

- CONNECTOR (P/N 11-680217-000)  
TERMINAL (P/N 11-680302-000)

- LANE CABLE 53-520588-000

- Install terminals, (P/N 11-680302-000) on the lane cable, 53-520588-000. Refer to *Figure 22, Inset B*.

- Install the connector (P/N 11-689117-000), on the cable from the ball lift control box. Refer to *Figure 22, Inset A*. Pin the connector as follows:

- Pin 1 – White
- Pin 2 – Green
- Pin 3 – Red
- Pin 4 – Black
- Pin 5 - NC

- Install the connector (P/N 11-689217-000), on the cable from the ball lift control box. Refer to *Figure 22, Inset B*. Pin the connector as follows:

- Pin 1 – Blue
- Pin 2 – Brown
- Pin 3 – Orange
- Pin 4 – Yellow
- Pin 5 - NC

- Install the safety switch, (P/N 53-400089-000) by connecting it to the control box and the automatic pinsetter. Refer to *Figure 23*.

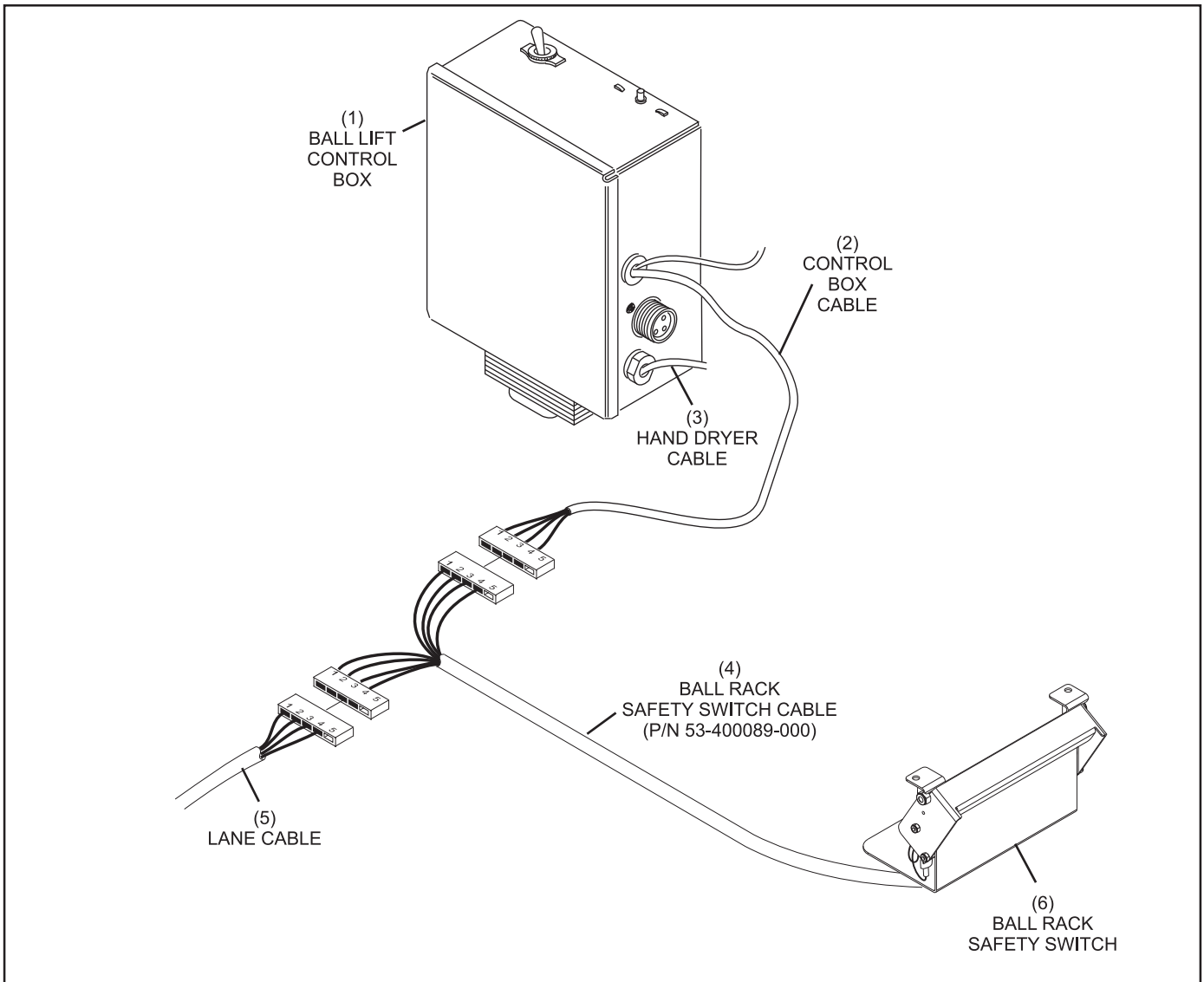


Figure 23. Connect Safety Switch

- |  |                       |                             |
|--|-----------------------|-----------------------------|
| (1) BALL LIFT CONTROL BOX                                | (2) CONTROL BOX CABLE | (3) HAND DRYER CABLE        |
| (4) BALL RACK SAFETY SWITCH CABLE<br>(P/N 53-400089-000) | (5) LANE CABLE        | (6) BALL RACK SAFETY SWITCH |

## Reset Switches

- Locate the existing reset switches on the existing ball rack.
- Use the electrical butt splices, part number 11-612451-000, provided to connect the new Frameworkx reset switches to the existing reset switch wiring.