Boot-Lift®
Railcar Connector

Go to Boot-Lift® Railcar Connector web page.

Model _____

Boot Pattern Number _____

Operator's Manual
M3198

Important

MARTIN ENGINEERING HEREBY DISCLAIMS ANY LIABILITY FOR: DAMAGE DUE TO CONTAMINATION OF THE MATERIAL; USER'S FAILURE TO INSPECT, MAINTAIN AND TAKE REASONABLE CARE OF THE EQUIPMENT; INJURIES OR DAMAGE RESULTING FROM USE OR APPLICATION OF THIS PRODUCT CONTRARY TO INSTRUCTIONS AND SPECIFICATIONS CONTAINED HEREIN. MARTIN ENGINEERING'S LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF EQUIPMENT SHOWN TO BE DEFECTIVE.

Observe all safety rules given herein along with owner and government standards and regulations. Know and understand lockout/tagout procedures as defined by American National Standards Institute (ANSI) ANSI/ASSP z244.1-2016 (R2020), *The Control of Hazardous Energy Lockout, Tagout And Alternative Methods* and Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout);* Final Rule.

The following symbols may be used in this manual:

⚠ DANGER

Danger: Immediate hazards that will result in severe personal injury or death.

⚠ WARNING

Warning: Hazards or unsafe practices that could result in personal injury.

⚠ CAUTION

Caution: Hazards or unsafe practices that could result in product or property damages.

IMPORTANT

Important: Instructions that must be followed to ensure proper installation/operation of equipment.

NOTE

Note: General statements to assist the reader.

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Introduction

General

The Boot-Lift® Railcar Connector is designed to provide a tight fit for clean transfer of material from hopper car to conveying system.

The Boot-Lift® Railcar Connector is available in four models:

- Model DBL-18 for double-pocket cars.
- Model SBL-13, SBL-18, SBL-24, SBL-30, SBL-35, or SBL-48 for single-pocket cars.
- Model SBLR-18 for round-opening cars.
- Model DBLG-18 for GATX air slide cars.

Accessories available include manual or pneumatic aligners to position the unit precisely, manual or electronic control consoles for remote control of the unit, and a warning light kit to warn when the Boot-Lift® Railcar Connector is in use.

This manual provides installation and maintenance instructions and part numbers for all models.

Boot materials

Martin Engineering makes boots in four different materials:

- Standard boot material: 22-oz black vinyl-covered cloth with a tensile strength of 340 lb.
- Food grade material: 9-oz white woven polypropylene with a 1-mil inside liner and tensile strength of 400 lb. This material complies with Food and Drug Administration (FDA) 21 CFR parts 177.1520 and 178.2010 for direct food contact.
- For chemicals and grain not under FDA specification: 17-oz white hypalon coated fabric with a tensile strength of 300 lb.
- Flame retardant material: 16-oz orange cloth coated polyester/nylon that can withstand a maximum temperature of 250°F (121°C) for 2 hours.

References

The following documents are referenced in this manual:

- American National Standards Institute ANSI/ASSP z244.1-2016 (R2020), *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements*, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.
- Federal Register, Volume 54, Number 169, Part IV, 29 Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*, Department of Labor, Occupational Safety and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.
- Federal Register, Volume 54, Number 169, Part IV, 29 CFR Part 1910.23, *Floor and Wall Openings*, Department of Labor, Occupational Safey and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.

Safety All safety rules defined in the above documents and all owner/employer safety rules must be strictly followed when working on this equipment.

Materials required Only standard hand tools are required to install and service this equipment.

Before Installing Boot-Lift® Railcar Connection

IMPORTANT

The delivery service is responsible for damage occurring in transit. Martin Engineering CANNOT enter claims from damages. Contact your transportation agent for more information

1. Inspect shipping container for damage. Report damage to delivery service immediately and fill out delivery service's claim form. Keep any damaged goods subject to examination.
2. Remove Railcar Connector assembly from shipping container.
3. If anything is missing contact Martin Engineering or a representative.

⚠WARNING

Before installing, servicing, or adjusting equipment, turn off and lockout/tagout energy sources to pit conveyor and/or material loader and accessories according to ANSI standards or country specific safety standards (DIN, ISO, etc.). Failure to do so could result in serious injury or death.

4. Turn off and lockout / tagout / blockout / testout energy source to pit conveyor and/or material loader according to ANSI standards (see "References") or country specific safety standards (DIN, ISO, etc.)

⚠ DANGER

If this equipment will be installed in an enclosed area, test the gas level or dust content before using a cutting torch or welding. Using a torch or welding in an area with gas or dust may cause an explosion resulting in serious injury or death. Follow local confined space procedures.

5. If using a cutting torch or welding, test atmosphere for gas level or dust content. Follow local fire watch procedures.

IMPORTANT

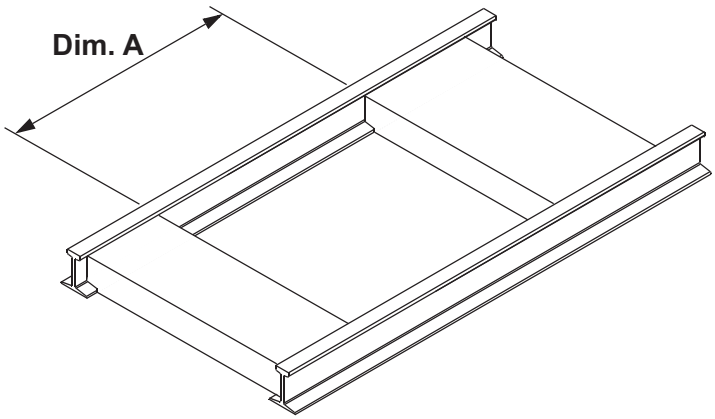
A minimum of 3 in. (76 mm) is needed between lower flange of rail and top of conveyor opening to allow Railcar Connector to completely collapse when lowered.
If installing a DBL-18 Double Pocket Railcar Connector and your conveyor opening is a single hole, install a center divider across the hole so both boots have an inside member on which they can be attached.

6. Construct pit opening for Railcar Connector as shown in Figure 1.

IMPORTANT

Minimum area 1-in. (25-mm) deep by 5-in. (127-mm) long is required beneath rails to fasten aligner brackets to rails.

7. If using an aligner, make sure area beneath rail has minimum clearance of 1 in. (25 mm) in depth by 5 in. (127 mm) in length to connect aligner.



Pit Opening Sizes in. (mm)

Boot-Lift® Model	Boot-Lift® Only	With Manual Aligner	With Pneumatic Aligner
	Dim. "A"	Dim. "A"	Dim. "A"
DBL-18	38 (965)	59 (1499)	66 (1676)
DBL-18 GATX	38 (965)	59 (1499)	66 (1676)
SBL-13	38 (965)	59 (1499)	66 (1676)
SBL-18	38 (965)	59 (1499)	66 (1676)
SBL-24	42 (1067)	63 (1600)	70 (1778)
SBL-30	50 (1270)	71 (1803)	78 (1981)
SBL-35	55 (1397)	76 (1930)	83 (2108)
SBL-48	68 (1727)	89 (2260)	96 (2438)
SBLR-18	28 (965)	59 (1499)	66 (1676)

*Aligners can be attached to either side of Boot-Lift® Railcar Connector.

Figure 1. Pit Opening Sizes for Boot-Lift® Railcar Connector

Installing Boot-Lift® Railcar Connector

IMPORTANT

Read entire section before beginning work.

1. To install the Boot-Lift® Railcar Connector, follow the procedures corresponding to the following steps:
   a. Install boot onto Railcar Connector funnel.
   b. Install control console and connect hoses.
   c. Position Railcar Connector on rails.
   d. Connect air lines.
   e. Fill console tank.
   f. Install boot onto conveyor chute.
   g. Install manual or pneumatic aligner, if using.
   h. Position sponge seals on Railcar Connector, if using.
2. To operate the Boot-Lift® Railcar Connector, see the "Operating Boot-Lift® Railcar Connector" section.

⚠WARNING

Be careful not to pinch your fingers in the Railcar Connector assembly.

Installing boot onto Railcar Connector funnel

1. After uncrating Railcar Connector, remove four screws in top of funnel assembly.
2. Remove funnel assembly and place upside down.
3. Match holes in top end of boot (A, Figure 2) with holes in funnel assembly (B) and and binding strip (C), and attach boot to outside edge of funnel.

NOTE

Refer to drawing SBL-X-G-XX-X for assembly instructions if installing Boot-Lift® Funnel Grizzly.

4. For SBL-13, SBL-18, SBL-24, SBL-30, SBL-35, SBL-48, and SBLR-18 units, position boot seam in center of one end of funnel. For DBL-18 and DBLG-18 GATX units, position boots so seams face out on both ends.
5. Secure in place with binding strip and hex head cap screws, flat washers, and hex nuts (D).

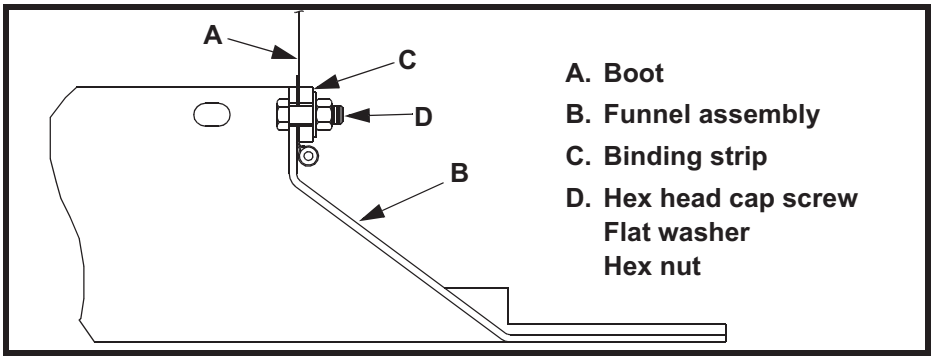


Figure 2. Attaching Boot to Funnel Assembly

IMPORTANT

Mount control console so operator has a clear line of sight to Boot-Lift® Railcar Connector.

Installing control console and hoses

1. Mount control console using best available field resources. Ensure console operator has a clear line of sight to Boot-Lift® Railcar Connector.
2. Install fittings into each lift cylinder (see Figure 3).

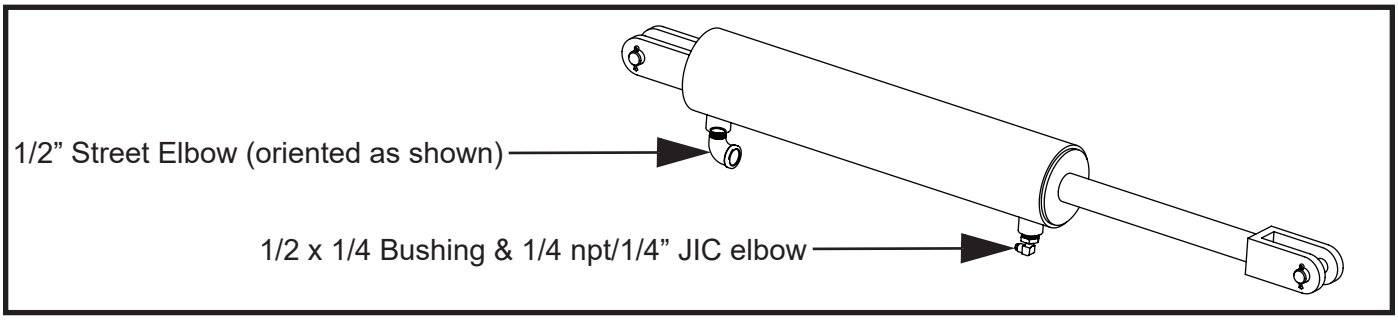


Figure 3. Lift Cylinder Fittings

3. Connect hoses to lift cylinders and control console as shown in Figure 3. Route hoses under tracks. Make sure hoses are not pinched or kinked.

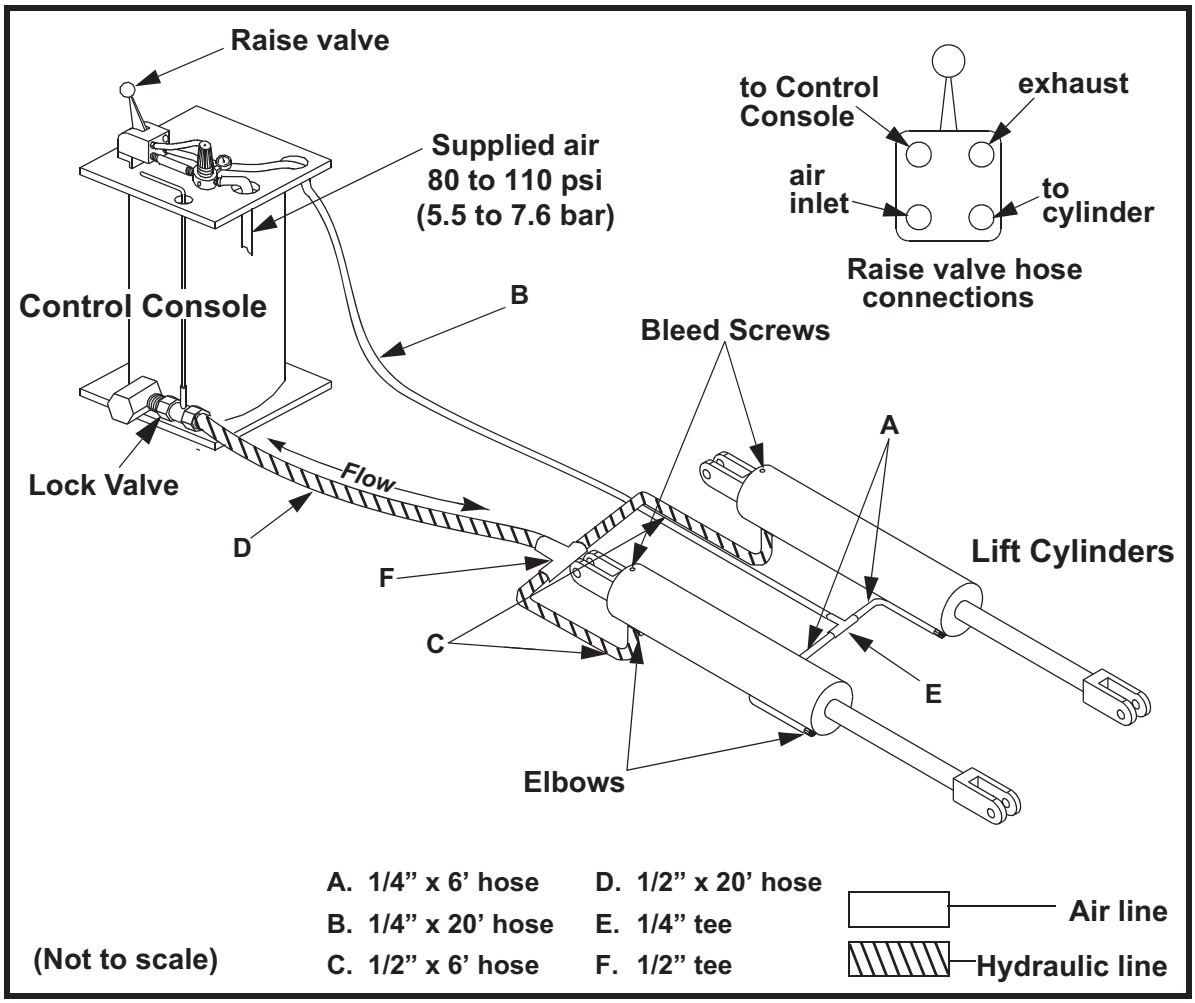


Figure 4. Hose Connections for Models SBL-13, SBL-18, SBL-24, SBL-30, SBL-35, SBL-48, and SBLR-18

4. Connect hoses to DBL-18 and DBLG-18 GATX spread cylinders, lift cylinders, and control console as shown in Figure 4. Route hoses *under* tracks. Make sure hoses are not pinched or kinked.

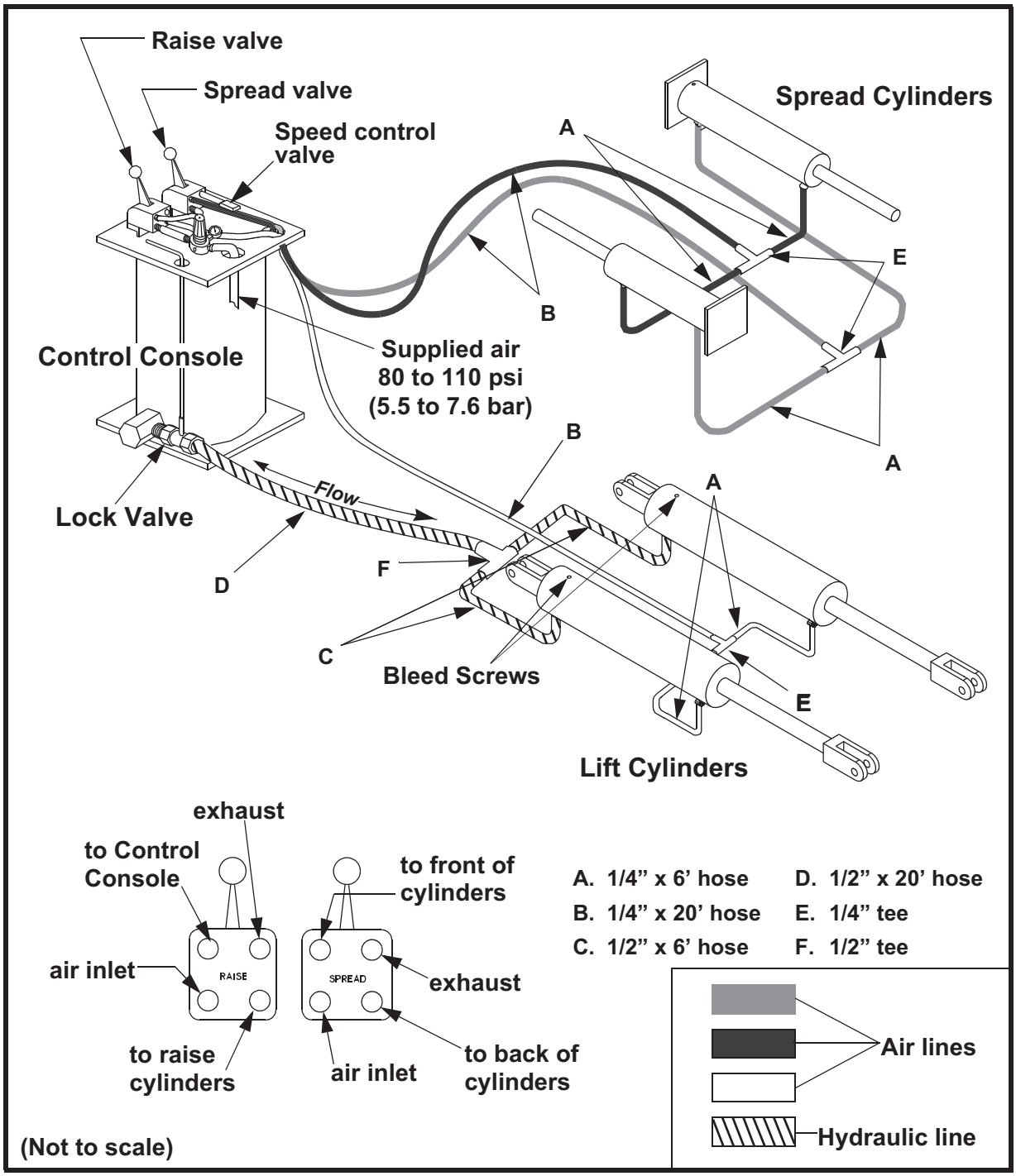


Figure 5. Hose connections for Models DBL-18 and DBLG-18 GATX

Installation

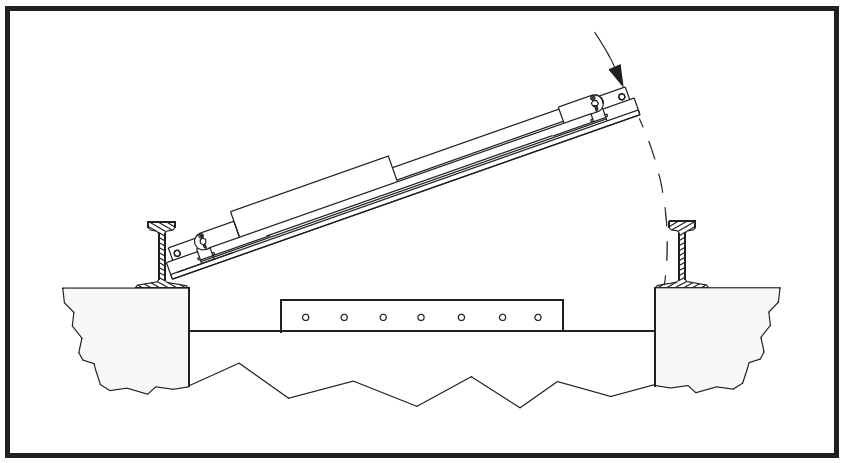


Figure 6. Positioning Railcar Connector on Rails

Positioning Railcar Connector on rails

1. See Figure 5. With the hydraulic street elbow fitting toward operator's side of track, slip one end of Railcar Connector against rail web.
2. Drop other end in place so that Railcar Connector rests on top of rail flanges between the two rails.

IMPORTANT

Connecting air lines

One cfm (0.4 L/sec.) and 80-110 psi (5.5-7.6 bar) is recommended to operate the Railcar Connector. Martin Engineering recommends using an air filter on the air line (available from Martin Engineering).

See Figures 3 and 4. Run a filtered, 1/4-in. air line (supplied by the customer) from the air supply to the regulator on the control console.

NOTE

Filling console tank

Automatic transmission fluid can be replaced with BP (British Petroleum) Enerpar M for food grade applications, or BP Bartran HV for cold-temperature applications. (32°F [0°C] and below).

1. See Figure 4. Fill console tank with automatic transmission fluid through the 1/2-in. filler plug in top of tank. Replace plug.
2. With lock valve in UP position and air regulator set at approximately 10 psi (0.7 bar), open bleed screw one half turn on one of the cylinders.
3. Slowly open lock valve and bleed all air out of system.
4. Tighten bleed screw when oil begins to seep out around it.
5. Repeat procedure for other cylinder.
6. With unit in DOWN position, refill tank to 5 in. (127 mm) from top. Use dipstick to measure. Replace plug. (Approximately 10 quarts [9.5 liters] of oil are required.)

IMPORTANT

Make sure bleed screw is completely closed before operating control console. If bleed screw is not completley closed, fluid will leak out and control console will not operate.

7. Drain moisture from bottom of console once a month.
8. Return regulator to 80-110 psi (5.5-7.6 bar) for normal operation.

Installing boot onto conveyor chute

1. See Figure 4. With all fittings and hoses in place, open lock valve and move raise valve to the UP position (Unit will rise.)
2. Close lock valve to lock unit in UP position and ensure enough room to install boot to conveyor system.

IMPORTANT

A minimum of 3 in. (76 mm) is required between the lower flange of the track and the top of your conveyor opening for the boot to collapse without damage.

3. Install boots inside conveyor opening.
4. If necessary, bolt boot to conveyor with retaining straps (supplied by customer).

IMPORTANT

Installing optional manual aligner

An area 1-in. (25-mm) deep by 5-in. (127-mm) long is required beneath rails to fasten aligner brackets to rails (see "Before installing Boot-Lift®

1. See Figure 6. Install manual aligner on the most accessible side of the Railcar Connector.
2. Slip finger clamps (A) over frame rail (B) on Railcar Connector.
3. Adjust aligner frame so it is in center of its travel, then clamp aligner brackets (C) to rails.

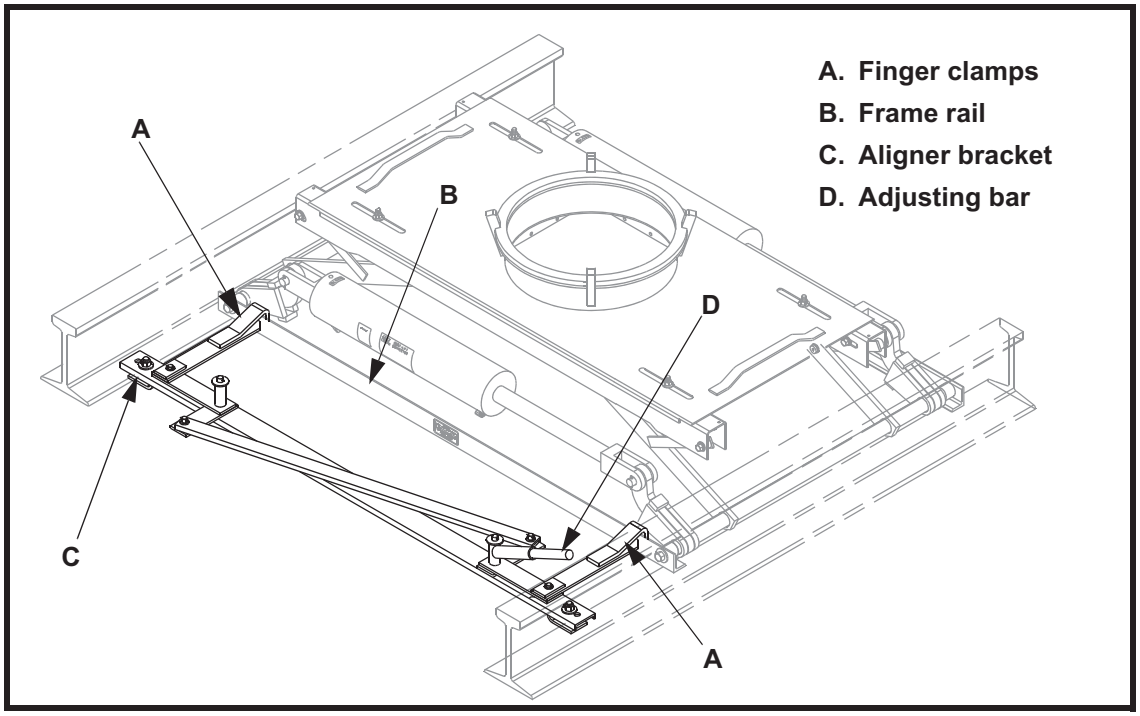


Figure 7. Installing Manual Aligner

⚠CAUTION

Do not move railcar when adjusting handle is in aligner socket. If railcar is allowed to run over it, handle may be thrown from unit.

4. To operate aligner, slip adjusting bar (D) into socket on aligner and move adjusting bar parallel to tracks.

Installing optional pneumatic aligner

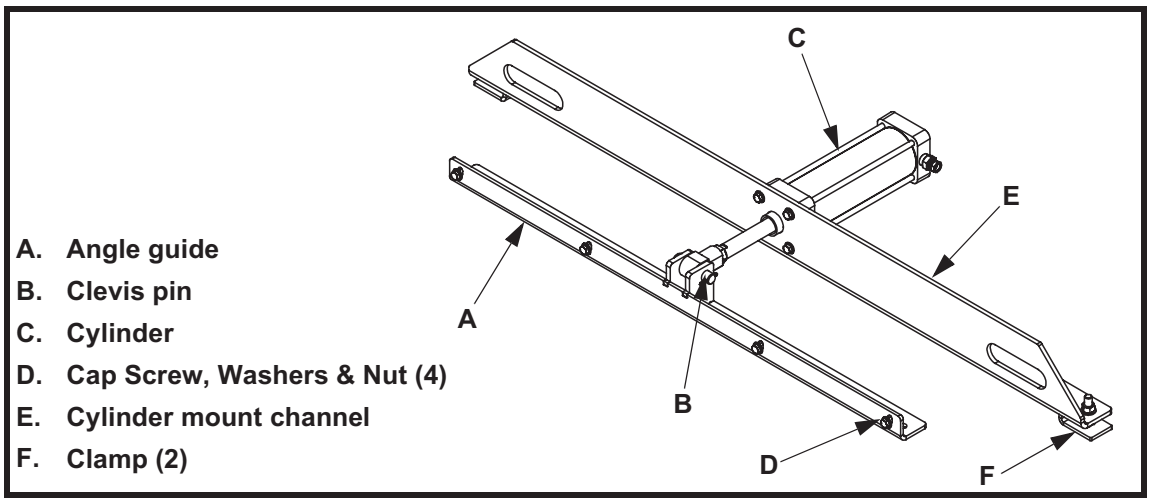
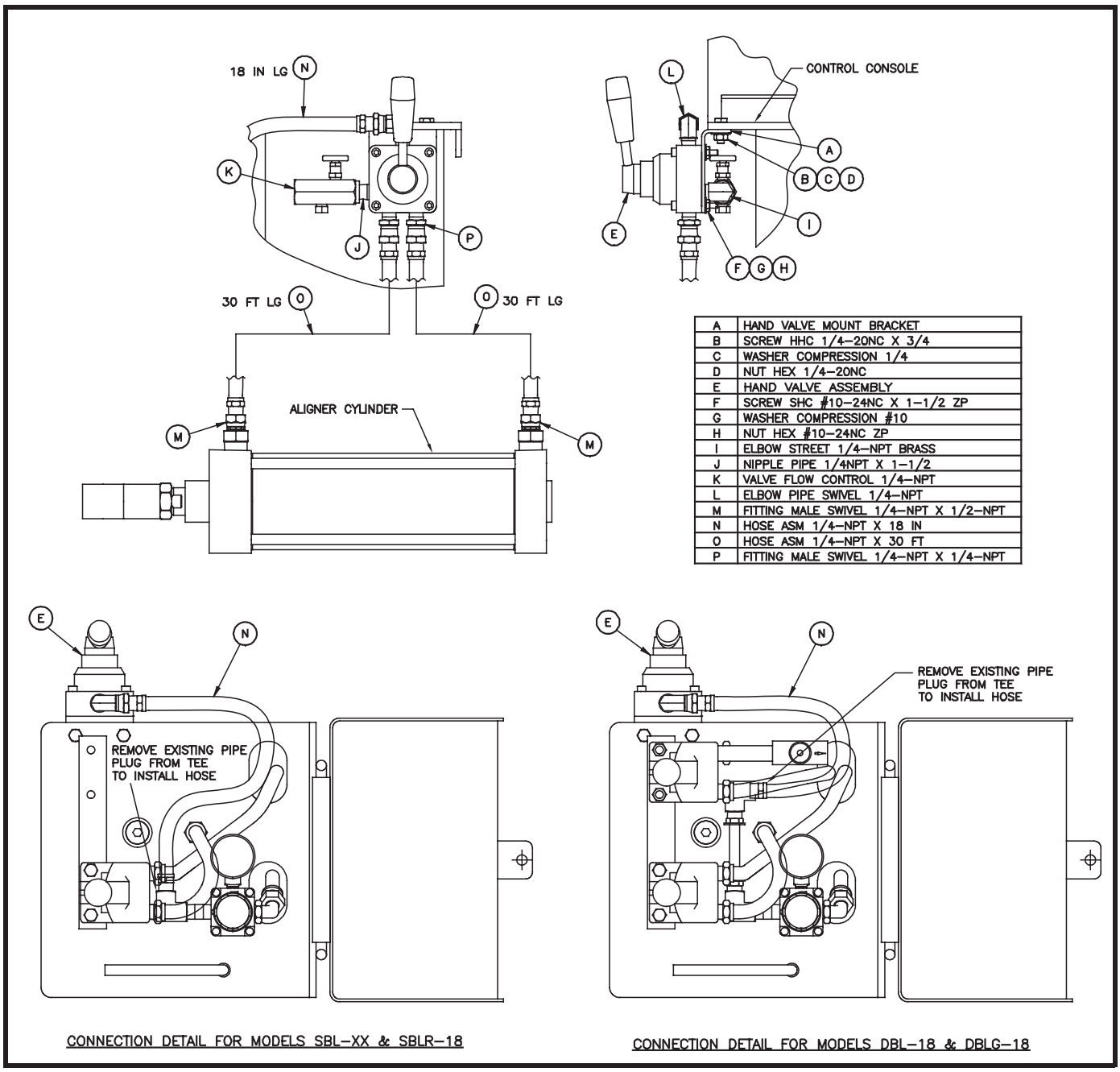


Figure 8. Installing Pneumatic Aligner

1. Center Railcar Connector over receiving hopper opening.
2. See Figure 7. Place pneumatic aligner between rail tracks with aligner angle guide (A) next to Railcar Connector.
3. Remove clevis pin (B) to separate angle guide from cylinder (C).
4. Fasten angle guide to frame rail on Railcar Connector using cap screws, washers and nuts (D).
5. Locate cylinder mount channel (E, Figure 7) so its face is 4-7/8 in. (124 mm) from face of angle guide. Slip clamp (F) on each end of cylinder mount channel under rail track.
6. Pull out cylinder rod and secure to angle guide with clevis pin.
7. Make air line connections to valve assembly as shown in the schematic in Figure 8.



A	HAND VALVE MOUNT BRACKET
B	SCREW HHC 1/4-20NC X 3/4
C	WASHER COMPRESSION 1/4
D	NUT HEX 1/4-20NC
E	HAND VALVE ASSEMBLY
F	SCREW SHC #10-24NC X 1-1/2 ZP
G	WASHER COMPRESSION #10
H	NUT HEX #10-24NC ZP
I	ELBOW STREET 1/4-NPT BRASS
J	NIPPLE PIPE 1/4NPT X 1-1/2
K	VALVE FLOW CONTROL 1/4-NPT
L	ELBOW PIPE SWIVEL 1/4-NPT
M	FITTING MALE SWIVEL 1/4-NPT X 1/2-NPT
N	HOSE ASM 1/4-NPT X 18 IN
O	HOSE ASM 1/4-NPT X 30 FT
P	FITTING MALE SWIVEL 1/4-NPT X 1/4-NPT

Figure 9. Pneumatic Aligner Schematic

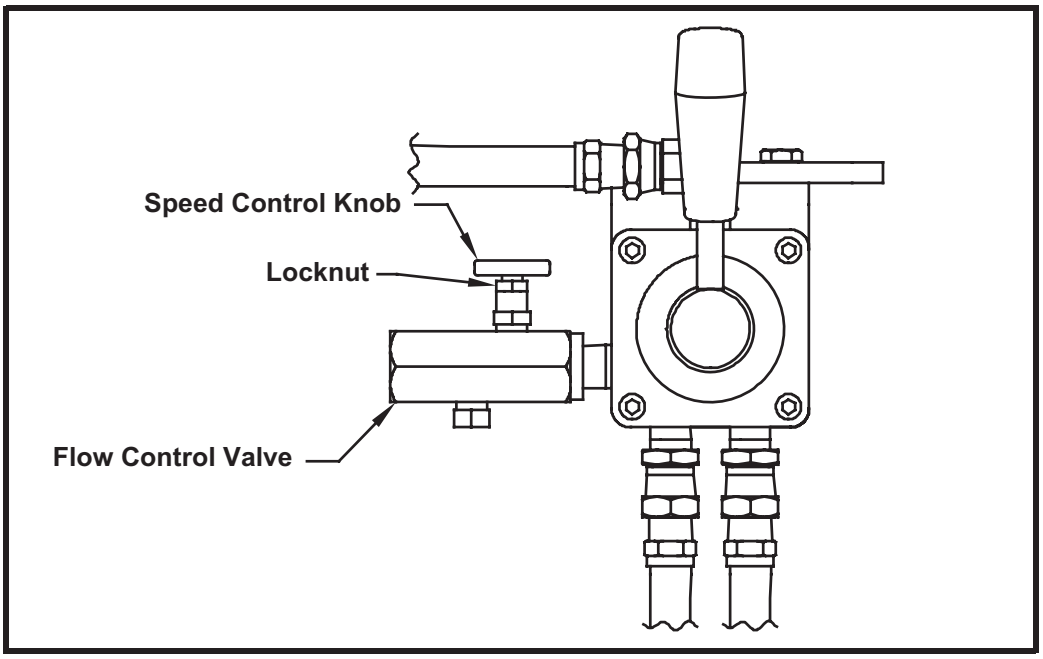


Figure 10. Pneumatic Aligner Flow Control Valve

Operating Pneumatic Aligner

1. The pneumatic aligner is equipped with a flow control valve that is installed on the aligner directional control valve. The flow control valve controls the speed that aligner cylinder extends and retracts. The directional valve controls the direction the aligner moves the Boot-Lift® Railcar Connector parallel to the track. To adjust the flow control valve, loosen the locknut under the control knob on the valve. Turning the control knob clockwise will DECREASE the speed that the aligner cylinder moves the Boot-Lift® Railcar Connector. Turning the control knob counter-clockwise will INCREASE the speed that the aligner cylinder moves the Boot-Lift® Railcar Connector. Once the desired speed is obtained, lightly tighten the lock nut under the control knob.

Positioning seals

1. If adapter sheet is required, position the correct size adapter sheet on funnel assembly making sure the adapter sheet is centered on funnel assembly.

Operating Boot-Lift® Railcar Connector

⚠WARNING

Hoses contain hydraulic fluid under pressure. If punctured, oil can penetrate skin and cause injection poisoning. If oil penetrates skin, see a doctor trained in fluid injection poisoning immediately.

IMPORTANT

One cfm (0.4 L/sec.) and 80-110 psi (5.5-7.6 bar) is required to operate the Railcar Connector.

Operating SBL Railcar Connectors

1. To raise unit, do the following:
   a. Place raise valve in UP position and control upward speed by using control handle on lock valve.
   b. Keep lock valve partially open at all times while unloading to allow unit to raise with the car as the weight of its contents decreases.
2. To lower unit, place raise valve in DOWN position with lock valve open.
3. Padlock control console when not in use to prevent tampering.

Operating DBL Railcar Connectors

1. See Figure 4. To raise unit, do the following:
   a. Place raise valve in UP position. Control upward movements with lock valve.
   b. Raise funnels only enough to clear rails. Hold in this position by closing lock valve.
   c. Place handle of spread valve in UP position spreading funnels outward to stops. (Stops should be set to allow funnels to move outward approximately 5 in. [127 mm] each to match width of car pockets.)
   d. Keep lock valve partially open while unloading to allow Railcar Connector to raise with car as the weight of its contents decreases.(With lock valve partially open, it will serve as a hydraulic shock retarder to hold unit sealed against a sudden surge of material causing pressure on the unit.)

⚠CAUTION

Do not move railcar with Railcar Connector in the UP position. Unit will be severely damaged.

1. See Figure 4. To lower unit, do the following:
   a. Open lock valve enough to begin lowering unit.
   b. When funnels clear car, place spread valve in DOWN position to retract funnels, then continue lowering unit slowly to prevent damage to the boots.
   c. Allow Railcar Connector to settle completely down between rails before attempting to move car.

Maintenance

Monthly maintenance

1. Drain condensation out of control console by opening valve on bottom of console.

⚠CAUTION

Do not lubricate Railcar Connector with grease or oil. These will collect dirt and dust and may cause unit to malfunction

2. 2. For DBL units, lubricate all sliding parts with a dry lubricant like graphite. ***Do not use grease or oil.***

⚠CAUTION

Do not over-tension cables. Over-tensioning will cause excessive wear on cables and pulleys.

3. Check tension on cables and adjust if necessary. Make sure there is no slack in cable, but do not over-tension. Adjust as follows:
   a. Raise unit and lock it into position with the lock valve.
   b. Loosen pulley bolt on one cable and slide pulley assembly out (toward the rails).
   c. Tighten pulley bolt and continue on to the next cable. Repeat until all cables have been tightened.
4. If unit raises too slowly in cold weather, heat trace (supplied by others) may be required.

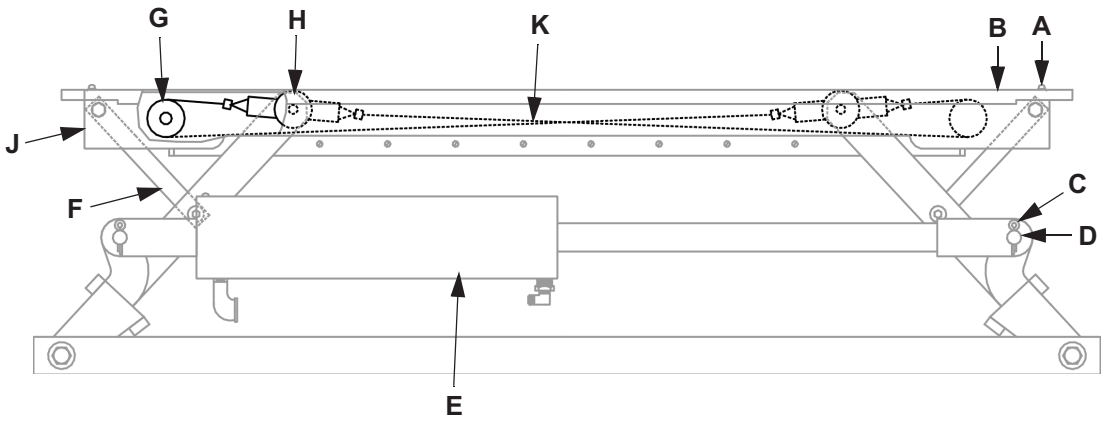
IMPORTANT

Small pieces could fall into pit opening when screws are removed. Be careful when removing hardware.

Replacing cables

1. Raise Boot-Lift® Railcar Connector, lock control, and lock out/tag out energy source according to ANSI standards (see “References”).
2. If using DBL Railcar Connector, remove spread cylinders and locking bar.
3. Remove boot from funnel.
4. Remove four screws (A, Figure 10) holding funnel (B) to channel track.
5. Remove funnel from Boot-Lift® Railcar Connector.
6. Open lock valve and lower Boot-Lift® Railcar Connector.
7. Pull out cotter pin (C) and tie pin (D) from yoke side of cylinder (E) to release any upward pressure on the Boot-Lift® Railcar Connector.
8. Remove eight cap screws and washers from each channel track holding stabilizing bars (F) and pulleys (G).

9. Remove four screws (A, Figure 10) holding funnel (B) to channel track.
10. Remove funnel from Boot-Lift® Railcar Connector.
11. Open lock valve and lower Boot-Lift® Railcar Connector.
12. Pull out cotter pin (C) and tie pin (D) from yoke side of cylinder (E) to release any upward pressure on the Boot-Lift® Railcar Connector.
13. Install new cable assembly (K), making sure it hangs like a figure eight over the wheels.



A. Hex head cap screw (4)
B. Funnel
C. Cotter pin (4)
D. Tie pin (4)
E. Lift cylinder (2)
F. Stabilizing bar (4)
G. Pulley (4)
H. Wheel (4)
J. Channel track (2)
K. Cable assembly (2)

Figure 11. Replacing Cable Assembly

14. Install wheels.
15. Remove four screws (A, Figure 10) holding funnel (B) to channel track.
16. Loop each side of cable around pulley and insert into channel track. Make sure flat parts of cable slides fit into slots on inside of channel track. Secure with hex head cap screws and washers. DO NOT tighten until second cable assembly has been installed.
17. Remove four screws (A, Figure 10) holding funnel (B) to channel track.
18. Repeat steps 7 through 17 for opposite side cable assembly.
19. Slide cable hardware toward outside of slot and tighten. Tap wrench with mallet while tightening to stretch cable tightly.
20. Repeat steps 18 and 19 for remaining cable slides.
21. Re-assemble remaining components in the opposite order they were removed.

Part Numbers

This section provides product names and corresponding part numbers for Boot-Lift® Railcar Connectors and related equipment. Please reference part numbers when ordering parts.

NOTE

All boots are custom-made for your application. To order, complete the Application Data Sheet on the last two pages of this manual. Call Martin Engineering or a representative for more information.

Boot-Lift® Railcar Connectors Assemblies/Subassemblies (Replacement)

P/N Example: SBL-30S101

Model SBL-30 with orange paint, painted funnel, and hydraulic lift cylinders.

X X X X X

Model #
Paint Color
Funnel Type
Control Console
Lift Cylinders
Spread Cylinders (DBL only)

MODEL #
SBL-13
SBL-18
SBL-24
SBL-30
SBL-35
SBL-48
SBLR-18
DBL-18
DBLG-18

PAINT COLOR
S: Orange (Standard)
F: White (Food Grade)
C: Gray (Corrosion Resistant)

FUNNEL TYPE
Ø: No Funnel
1: Painted Funnel
2: Stainless Funnel

CONTROL CONSOLE
Ø: No Controls
1: Air-Over-Hydraulic Controls

LIFT CYLINDERS
Ø: No Lift Cyliners
1: Lift Cylinders
2: Lift Cylinders with Rod Covers
3: Lift Cylinders with Side Ports
4: Lift Cylinders with Side Ports & Rod Covers

SPREAD CYLINDERS
(DBL only)
Ø: No Spread Cylinders
1: Standard Hardware
2: Stainless Hardware

Boot-Lift® Funnel Grizzly

P/N Example: SBL-30G20C

Fits Boot-Lift® model SBL-30, approximately 2 inch square openings, and made of 304 Stainless Steel

NOMENCLATURE **SBL - XX G XX X**

P/N Prefix
Funnel Size
Retrofit Kit
Opening Size
Material

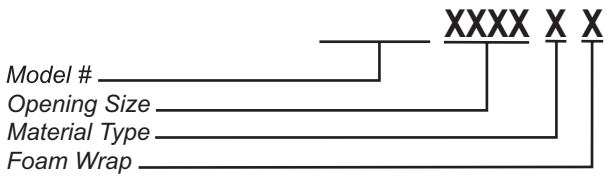
FUNNEL SIZE
13: For a SBL13 Boot-Lift® Funnel
18: For a SBL18 Boot-Lift® Funnel
24: For a SBL24 Boot-Lift® Funnel
30: For a SBL30 Boot-Lift® Funnel
35: For a SBL35 Boot-Lift® Funnel
48: For a SBL48 Boot-Lift® Funnel

OPENING SIZE
20: Approximately 2 in. [51 mm]Square
30: Approximately 3 in. [76 mm] Square
40: Approximately 4 in. [101 mm] Square
60: Approximately 6 in. [152 mm] Square

MATERIAL
A: AR500
C: 304 Stainless Steel

Boot-Lift® Adapter Sheets

P/N Example: SBL-30AS2430W0
Fits Boot-Lift® model SBL-30, 24 x 30 opening, wood with no wrap on the foam seal.



MODEL #
SBL-13AS
SBL-18AS
SBL-24AS
SBL-30AS
SBL-35AS
SBL-48AS

MATERIAL TYPE
W: Wood
H: High Density Polyethylene
P: Painted Steel
S: 304 Stainless Steel

SEAL WRAP FABRIC MATERIAL
Ø: No Wrap/Exposed Foam
W: White Hypalon
F: White Neoprene/Nylon (FDA Approved)

Boot-Lift® Control Consoles

Boot-Lift® DBL-18 Control Console: P/N 38340X-DBL
(X Indicates component color)

Boot-Lift® SBL Control Console Assembly: P/N 38340X-SBL
(X Indicates component color)

Boot-Lift® Aligners

Manual Aligner: P/N 17326

Pneumatic Aligner: P/N 34140

Miscellaneous

	Boot-Lift® Accessories Part Numbers						
Accessories	**SBL-13**	**SBL-18**	**SBL-24**	**SBL-30**	**SBL-35**	**SBL-48**	**SBLR-18**
Lift Cylinder Covers	18335						
Funnel Cover	RC10047T13	RC10047T13	RC10047T24	R10047T30	RC10047T35	RC10047T48	39555-C 39555-CC

	Boot-Lift® Accessories Part Numbers	
Accessories	**DBL-18**	**DBLG-18**
Lift Cylinder Covers	18335	
Funnel Cover	18420	
Transition Funnel	17272	

	Boot-Lift® Assembly Replacement / Repair Part Numbers						
	SBL-13	**SBL-18**	**SBL-24**	**SBL-30**	**SBL-35**	**SBL-48**	**SBLR-18**
Funnel Components - Standard	38339S-SBL13	38339S-SBL18	38339S-SBL24	38339S-SBL30	38339S-SBL35	38339S-SBL48	Contact Martin Engineering
Funnel Components - Stainless Steel	38339X-SBL13	38339X-SBL18	38339X-SBL24	38339X-SBL30	38339X-SBL35	38339X-SBL48	
Foam Seal (not wrapped)	17203						21053 (std) 36732-15 (urethane)
Foam Seal (wrapped)	Contact Martin Engineering						
Lift Cylinder Components (pair)	38341S-1 (Standard paint) 38341F-1 (FDA white) 38341C-1 (Steel-lt gray)						
Lift Cylinder Rebuild Kit	27960						
Frame Rebuild Kit	38338S-FRK						
Replacement Hose Kit	38340-HK-SBL						38340-HK-SBL

	Boot-Lift® Assembly Replacement / Repair Part Numbers	
	DBL-18	**DBLG-18**
Funnel Components - Standard	38339S-DBL18	38339S-DBLG18
Funnel Components - Stainless Steel	38339X-DBL18	38339X-DBLG18
Foam Seal (not wrapped)	16681	19816
Foam Seal (wrapped)	16681-W	
Lift Cylinder Components (pair)	38341S-1 (Standard paint) 38341F-1 (FDA white) 38341C-1 (Steel-lt gray)	
Spread Cylinder Components (pair)	38342S-DBL	38342S-DBLG
Lift Cylinder Rebuild Kit	27960	
Frame Rebuild Kit	38338S-FRK	
Replacement Hose Kit	38340-HK-DBL	

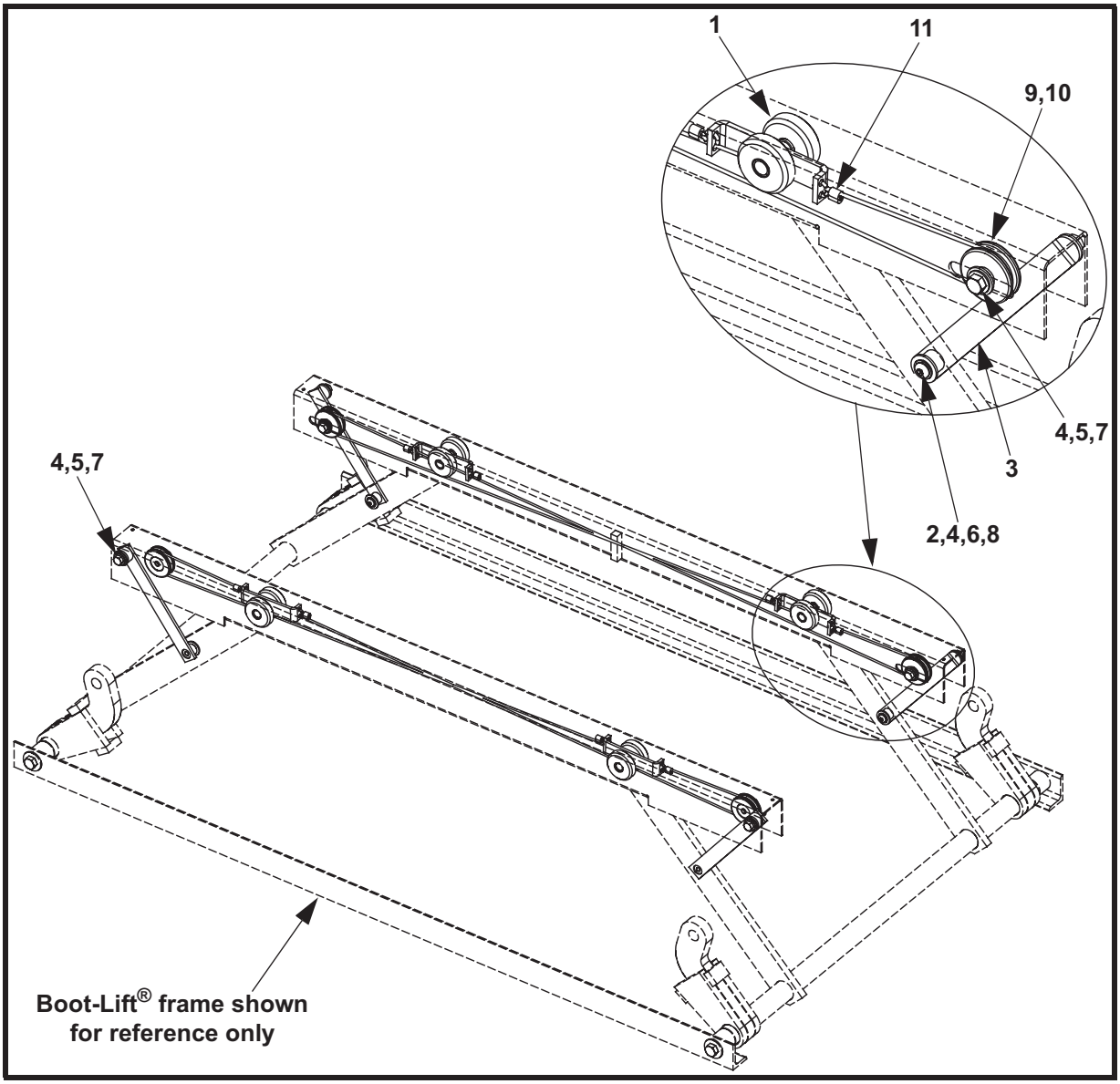


Figure 12. Boot-Lift® Frame Rebuild Kit, P/N 38338S-FRK

Item	Description	Part No.	Qty
1	Wheel	17020	8
2	Nylon Bushing	17097	4
3	Stabilizing Bar Weldment	17019-01	4
4	Washer Flat 3/8 Wide ZP	18007	12
5	Washer Compression 3/8	11747	8
6	Washer Compression 5/16	11452	4
7	Screw HHC 3/8-16NC x 3/4 ZP	12597	8
8	Screw SBHC 5/16-18NC x 1/2 ZP	17164	4
9	Cable Pulley Slide	17023	4
10	Cable Pulley	17022	4
11	Boot-Lift® Cable Assembly Corrosion Resistant	16974-SS	2

Figure 12. Boot-Lift® Frame Rebuild Kit, P/N 38338S-FRK

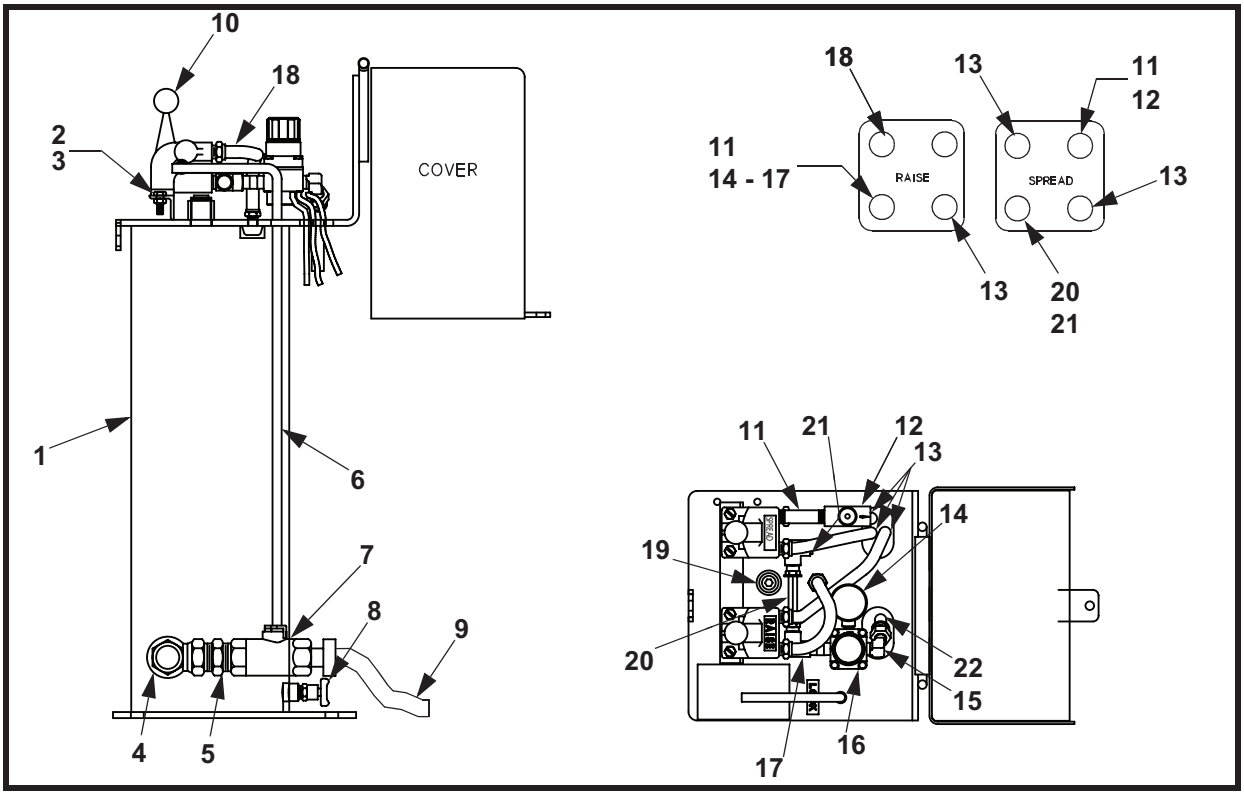


Figure 12. Boot-Lift® DBL-18 Control Console, P/N 38340X-DBL**

Item	Description	Part No.	Qty
1	Control Tank Weldment	23897-X	1
2	Screw RHM 1/4-20NC x 3/4	17325	4
3	Nut Hex 1/4-20NC	11769	4
4	Adapter 90 DEG Swivel 3/4-18 NPTF x 3/4-18 NPSM Swivel ZP	15875	1
5	Nipple Pipe STL Hex 3/4 NPTF X 3/4 NPTF ZP	18308	1
6	Handle Valve	16989-X	1
7	Valve Ball w/o Handle	26027	1
8	Drain Cock	17217	1
9	Lift Hose Assembly 1/2-NPT x 3/4-NPT 20 ft	17234	1
10	Valve Control	17218	2
11	Nipple Pipe 1/4 NPT x 1-1/2 SCH 40 125 PSI BRS	32381	2
12	Valve Flow Control	20547	1
13	Boot-Lift® Hose ASM 1/4-NPT x 1/4-NPT x 20 ft	17223	3
14	Gauge Pressure 1-1/2 Dial 1/8 NPT Bottom Connection Brass	14725	1
15	Elbow 90 DEG Male Pipe 1/4-NPT x 7/16-20 45° Flare Brass	SUS10119	1
16	Regulator W/O Gauge 1/4 NPT	14728	1
17	Tee Pipe Street 1/4-NPT Brass	17220	1
18	Raise Hose Assembly 1/8-NPT x 1/4-NPT	17227	1
19	Plug Pipe Hex Socket Head 1/2-14 NPT	12204	1
20	Hose Assembly Spread	36412	1
21	Plug Pipe Hex SOC 1/4 NPT STL ZP	39402	1
22	Bootlift Hose ASM 1/4-NPT x 7/16-20 JIC x 10 ft	17226-120	1
(NS) 23*	Bootlift 1/2 Lift Hose ASM 6 ft	27802-72	2
(NS) 24*	Tee Pipe Union 1/2 NPT Swivel ZP	17241	1
(NS) 25*	Bootlift Hose ASM 1/4-NPT x 7/16-20 JIC x 6 ft	17226-72	6
(NS) 26*	Tee Pipe Union 1/4 NPT Swivel ZP	17240	3
Appendix A	Label Boot-Lift® Connector Air Pressure	22213	1
Appendix A	Label Boot-Lift® Connector Warning	33378	1

NS = Not Shown

Figure 13. Boot-Lift® DBL-18 Control Console, P/N 38340X-DBL**

* Refer to Figure 4.

** "X" Indicates: standard components (S) Steel-It gray components (C) or FDA white epoxy components (F).

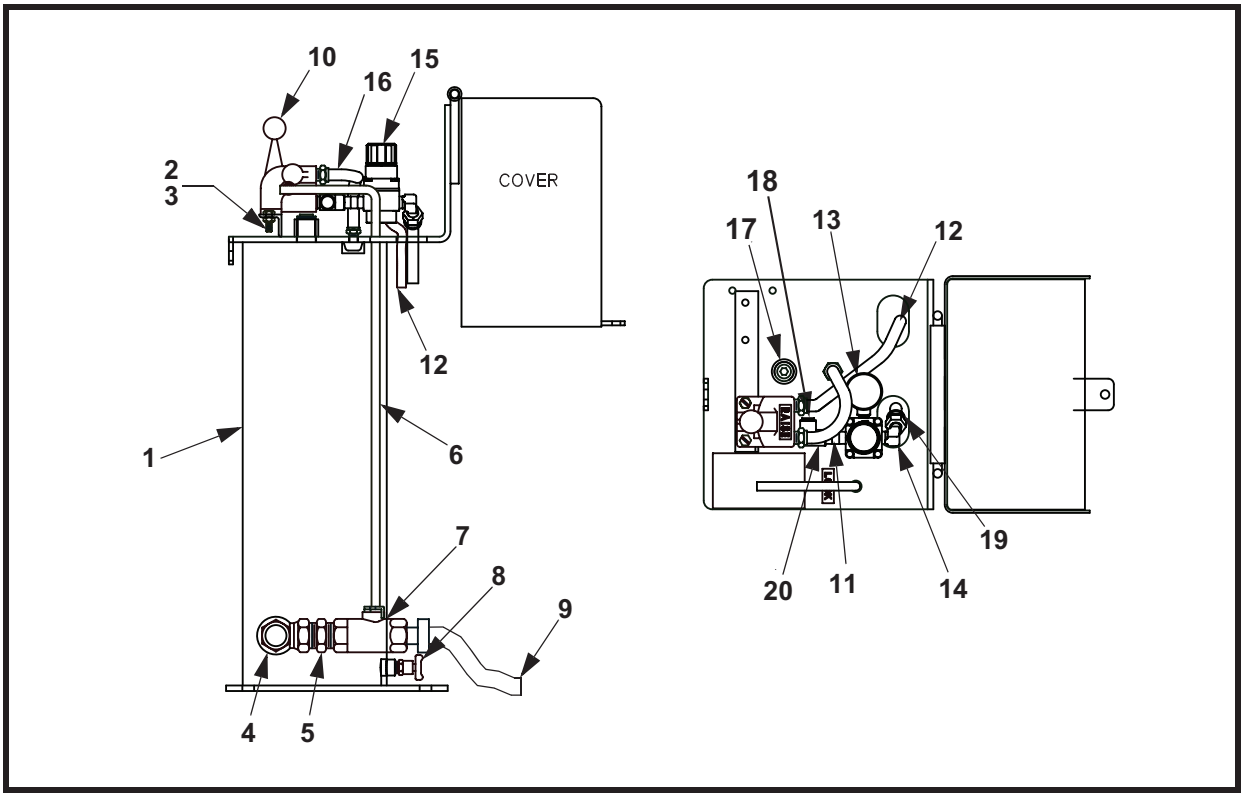


Figure 15. Boot-Lift® Control Console Assembly, P/N 38340X-SBL**

Item	Description	Part No.	Qty
1	Control Tank Weldment	23897-X	1
2	Screw HHC 1/4-20NC x 3/4	11852	2
3	Nut Hex 1/4-20NC	11769	2
4	Adapter 90 DEG Swivel 3/4-18 NPTF x 3/4-18 NPSM Swivel ZP	15875	1
5	Nipple Pipe STL Hex 3/4 NPTF X 3/4 NPTF ZP	18308	1
6	Handle Valve	16989-X	1
7	Valve Ball w/o Handle	26027	1
8	Drain Cock	17217	1
9	Lift Hose Assembly 1/2-NPT x 3/4-NPT 20 ft	17234	1
10	Valve Control	17218	1
11	Nipple Pipe 1/4 NPT x 1-1/2 SCH 40 125 PSI BRS	32381	1
12	Boot-Lift® Hose ASM 1/4-NPT x 1/4-NPT x 20 ft	17223	1
13	Gauge Pressure 1-1/2 Dial 1/8 NPT Bottom Connection Brass	14725	1
14	Elbow 90 Degree Male Pipe 1/4-NPT x 7/16-20 45° Flare Brass	SUS10119	1
15	Regulator W/O Gauge 1/4 NPT	14728	1
16	Raise Hose Assembly 1/8-NPT x 1/4-NPT	17227	1
17	Plug Pipe Hex Socket Head 1/2-14 NPT	12204	1
18	Plug Pipe Hex SOC 1/4 STL NPT STL ZP	39402	1
19	Bootlift Hose ASM 1/4-NPT x 7/16-20 JIC x 10 ft	17226-120	1
20	Tee Pipe Street 1/4-NPT Brass	17220	1
(NS) 21*	Bootlift 1/2 Lift Hose ASM 6 ft	27802-72	2
(NS) 22*	Tee Pipe Union 1/2 NPT Swivel ZP	17241	2
(NS) 23*	Bootlift Hose ASM 1/4-NPT x 7/16-20 JIC x 6 in.	17226-72	2
(NS) 24*	Tee Pipe Union 1/4 NPT Swivel ZP	17240	1
Appendix A	Label Boot-Lift® Connector Air Pressure	22213	1
Appendix A	Label Boot-Lift® Connector Warning	33378	1

NS = Not Shown

Figure 14. Boot-Lift® SB L-18 Control Console, P/N 38340X-SBL**

* Refer to Figure 3.

** "X" Indicates: Standard components (S) ; Steel-It gray components (C) or FDA white epoxy components (F).

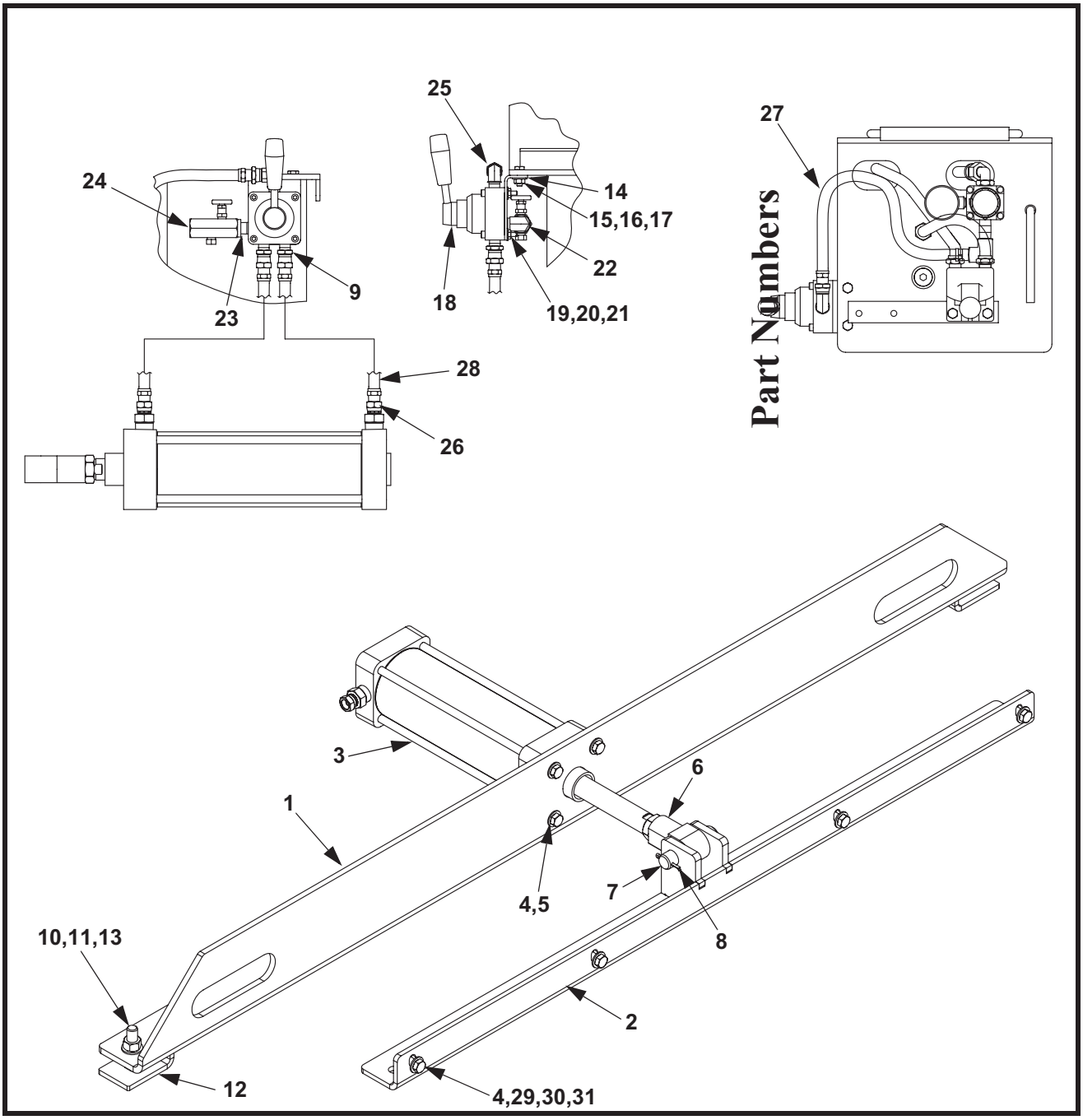


Figure 15. Pneumatic Aligner Assembly, P/N 34140-XXX*

Item	Description	Part No.	Qty
1	Channel Cylinder Mount	34141-XXX	1
2	Angle Guide Weldment	39567-XXX	1
3	Cylinder Pneumatic 8.00 Stroke	34161	1
4	Washer Compression 3/8	11747	8
5	Screw HHC 3/8-24NF x 1	34157	4
6	Air Cylinder Rod Eye 3/4-16NF	32131-2	1
7	Pin Clevis 3/4 x 3 ZP	32180-01	1
8	Pin Cotter 1/8 x 1-1/4 ZP	38633	1
9	Fitting Male Swivel 1/4-NPT x 1/4-NPT	39077	2
10	Washer Compression 1/2 ZP	11750	6
11	Nut Hex 1/2-13NC ZP	11771	6
12	Clamp Plate	39568-XXX	2
13	Bolt Carriage 1/2-13NC x 2-1/2 ZP	35157	2
14	Hand Valve Mounting Bracket	32208-2-CCX	1
15	Screw HHC 1/4-20NC x 3/4	11852	2
16	Washer Compression 1/4	11521	2
17	Nut Hex 1/4-20NC	11769	2
18	Valve Hand Assembly	32208-2	1
19	Screw SHC #10-24NC x 1-1/2 ZP	34076	4
20	Washer Compression for #10 Screw	15177	4
21	Nut Hex #10-24NC ZP	12706	4
22	Elbow Street 1/4-NPT Brass	37191	1
23	Nipple Pipe 1/4-NPT x 1-1/2	32381	1
24	Valve Flow Control 1/4-NPT	20547	1
25	Elbow Pipe Swivel 1/4-NPT	36413	1
26	Fitting Male Swivel 1/4-NPT x 1/2-NPT	SUS10091	2
27	Hose 1/4-NPT x 18 in.	17223-A	1
28	Hose 1/4-NPT x 30 ft	17223-30	2
29	Hose 1/4-NPT x 30 ft	11746-02	4
30	Washer Flat 3/8 Narrow SS	16206	4
31	Nut Hex 3/8-16NC ZP	11770	4

NS = Not Shown

Figure 15. Pneumatic Aligner Assembly, P/N 34140-XXX*

*XXX Indicates paint color: Orange (Blank) ; Steel-It Gray (C) or White (FDA)

*Use part number 34140 to order aligner with 30 ft (9 m) of hose.

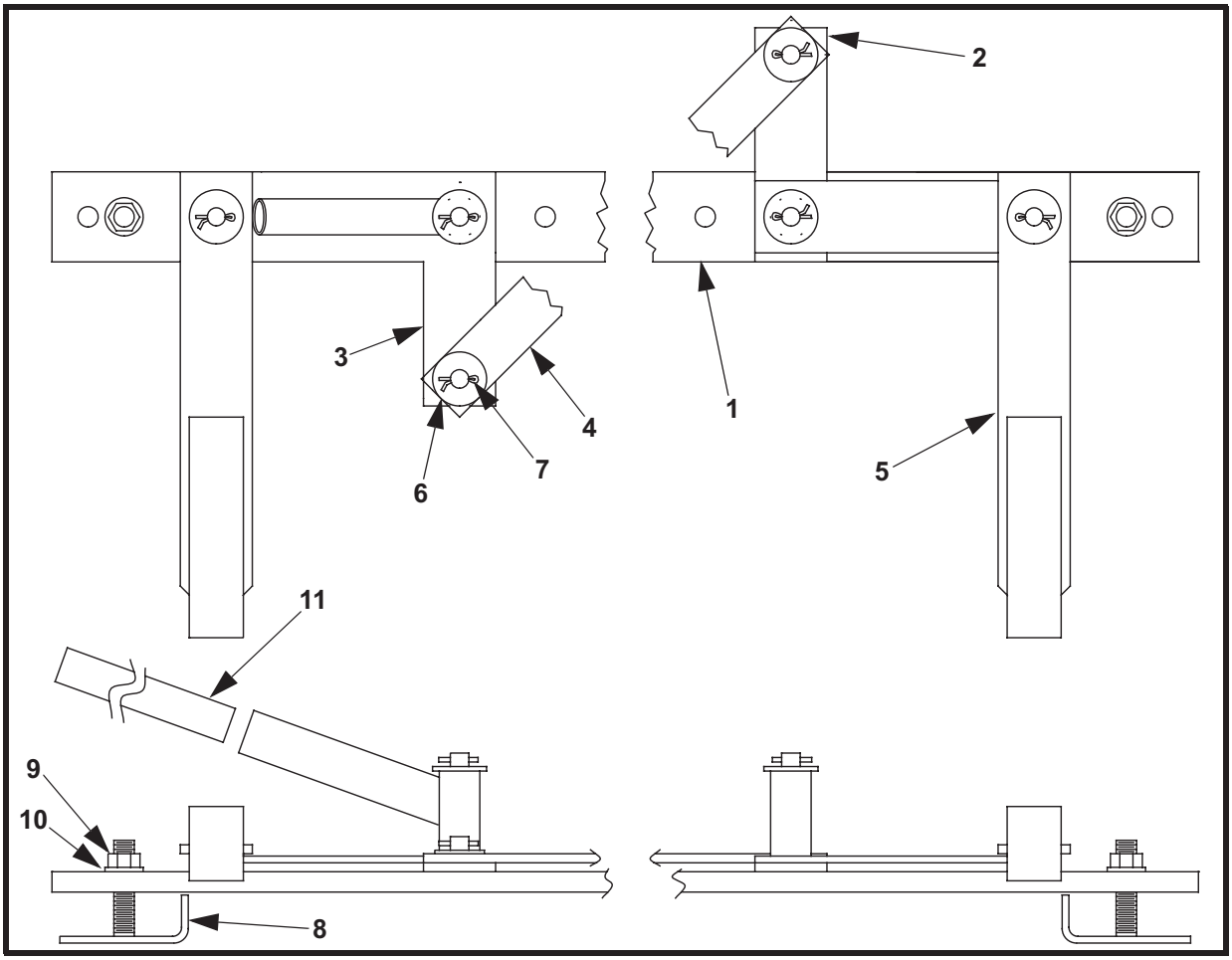


Figure 16. Manual Aligner Assembly, P/N 17326-X*

Item	Description	Part No.	Qty
1	Cross Bar	17305	1
2	Aligner Arm	17308	1
3	Pivot Arm Aligner	16749	1
4	Tie Bar Aligner	17306	1
5	Clip Finger Aligner	16748	2
6	Washer Flat 1/2 ZP	17328	6
7	Pin Cotter	16578	6
8	Clamp Aligner	17307	2
9	Nut Hex 1/2-13	11771	2
10	Washer Split Lock 1/2	17329	2
11	Handle Aligner	17327	1

* "X" Indicates: Standard Martin Orange components (Blank) or Steel-It gray components (C).

Notes

Appendix A
Boot-Lift® Railcar Connector Labels

IMPORTANT

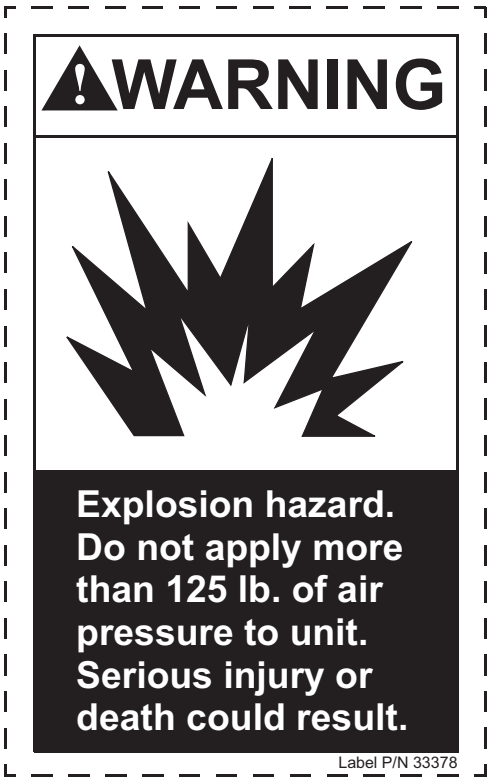
AIR PRESSURE: Must have 80 to 110 lbs air pressure for operation.

FLUID LEVEL: Transmission fluid should never be higher than 5 in. from the top. Do not overfill.

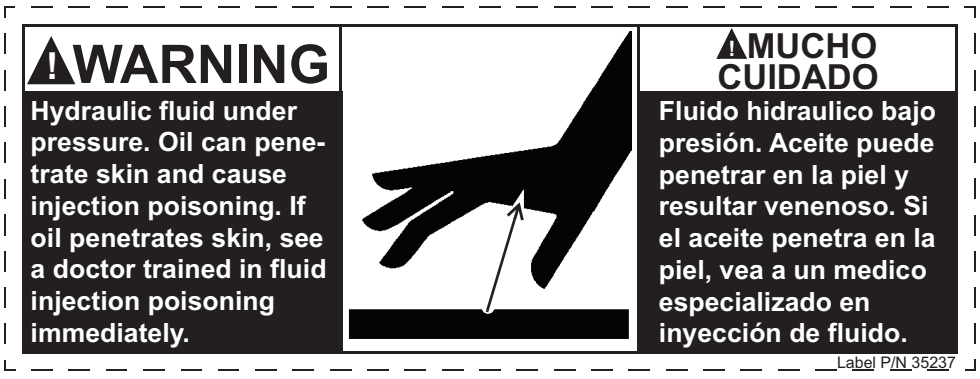
LABEL P/N 22213

Boot-Lift® Air Pressure Fluid Level Label, P/N 22213

Pinch Point Warning Label, P/N 30528

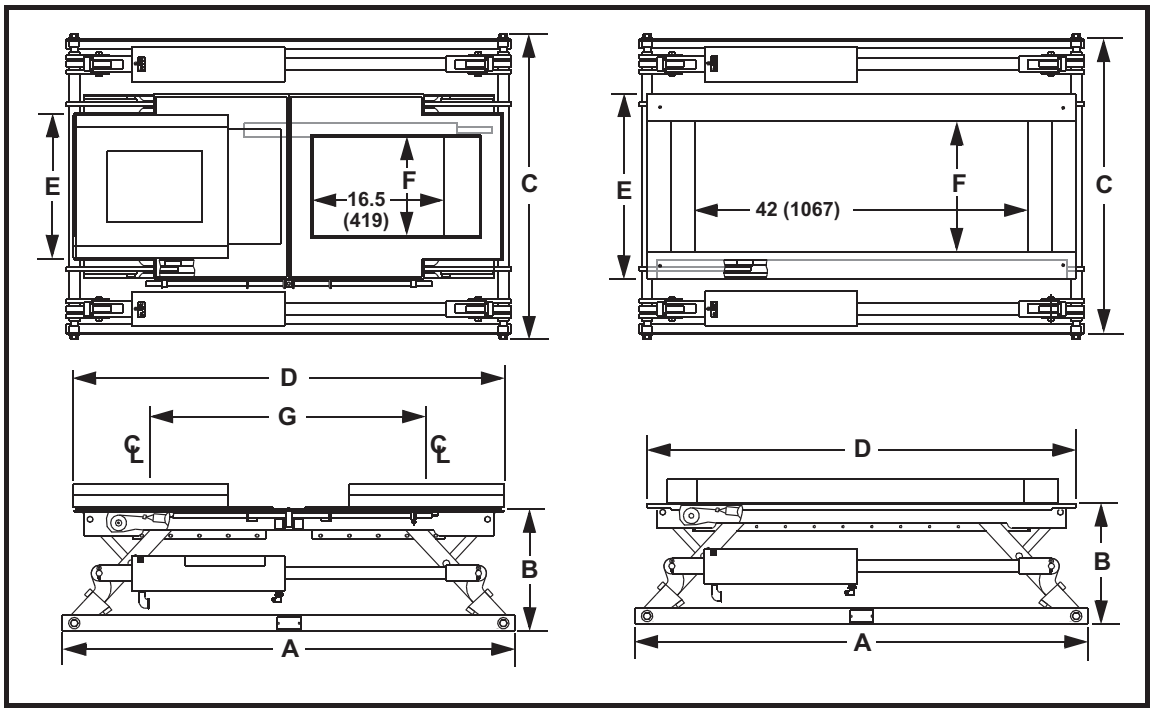


Boot-Lift® Air Pressure Warning Label, P/N 33378



Hydraulic Fluid Warning Label, P/N 35237

Appendix B
Boot-Lift® Railcar Connector Dimensions



Model	Dim. "A"	Dim. "B'		Dim. "C"	Dim. "D"	Dim. "E"	Dim. "F"	Dim. "G"
		Extended	Retracted					
SBL-13	57 (1448)	18.62 (473)	2.53 (64)	36.38 (924)	54 (1372)	23.1 (588)	13 (330)	—
SBL-18	57 (1448)	18.48 (469)	4.48 (114)	40.38 (1026)	54 (1372)	23.14 (588)	22 (559)	—
SBL-24	57 (1448)	18.62 (473)	2.53 (64)	40.38 (1026)	54 (1372)	29.1 (740)	22 (559)	—
SBL-30	57 (1448)	18.62 (473)	2.53 (64)	48.38 (1229)	54 (1372)	37.1 (943)	30 (762)	—
SBL-35	57 (1448)	18.62 (473)	2.53 (64)	53.38 (1356)	54 (1372)	42.1 (1070)	35 (889)	—
SBL-48	57 (1448)	18.62 (473)	2.53 (64)	66.38 (1686)	54 (1372)	55.1 (1401)	48 (1219)	—
SBLR-18	57 (1448)	18.62 (473)	2.53 (64)	36.38 (924)	51.5 (1308)	23.00 (584)	Ø15 (381)	—
DBL-18	57 (1448)	18.62 (473)	2.53 (64)	36.38 (924)	54 (1372) closed 69 (1753) open	22.94 (583)	11.25 (286)	27 (686) closed 42 (1067) open
DBLG-18 GATX	57 (1448)	18.62 (473)	2.53 (64)	36.38 (924)	55 (1404) closed 78 (1975) open	22.94 (583)	10.50 (267)	36 (914) closed 58.6 (1488) open

Boot-Lift® Railcar Connector

Plant Name: _____ Contact Person: _____

Address: _____ Telephone: _____ Fax: _____

City: _____ Email: _____

State: _____ Zip Code: _____ Date: _____

Material Conditions

Type of Material: _____

Equipment needs to be Food-Grade: ◯ Yes ◯ No

Optional Accessories

Aligner (moves Boot-Lift® 3-4" either direction parallel to rails): ◯ Pneumatic ◯ Manual ◯ None

Funnel Grizzly: ◯ AR500 ◯ 304SS **Opening:** ◯ 2" ◯ 3" ◯ 4"

Adapter Sheet: ◯ Yes ◯ No

Adapter Sheet Material ◯ Plywood ◯ Mild Steel ◯ Stainless Steel ◯ HDPE (High Density Polyethylene)

Foam Seal: ◯ Standard ◯ Cover White Hypalon Wrapped ◯ White FDA Neoprene

Funnel Cover: ◯ Mild Steel ◯ Stainless Steel ◯ Aluminum

Vibration needed to aid the flow of material: ◯ Yes ◯ No

Railcar Gate Opener needed to assist with gate opening: ◯ Yes ◯ No

Railcar Information

Type of Railcar: Single Gate Double Gate Round Gate

Inner dimensions of railcar discharge gate:

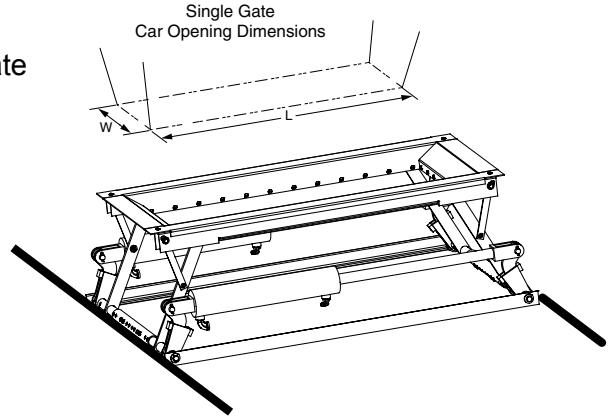
Single Gate: Width (W) _____ x Length (L) _____

Double Gate: Width (W) _____ x Length (L) _____

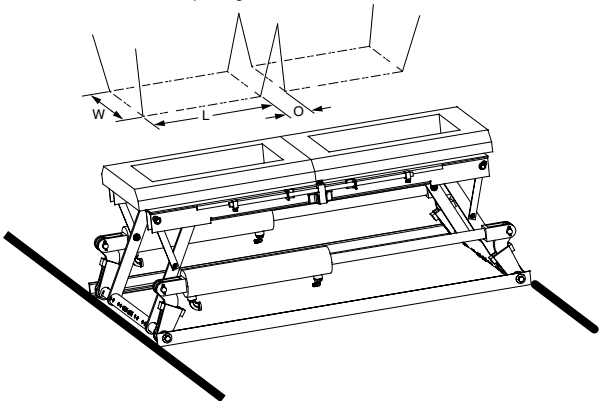
Distance between openings (O) _____

Round Gate: Diameter = _____ I.D.

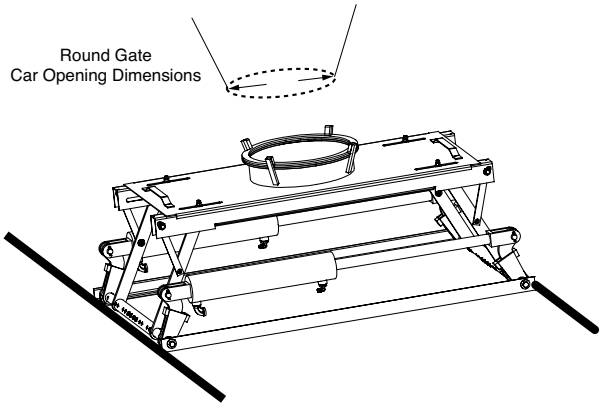
Single Gate
Car Opening Dimensions



Double Gate
Car Opening Dimensions



Round Gate
Car Opening Dimensions



Form No. L3729-08/23

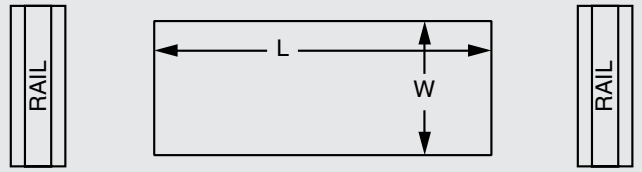
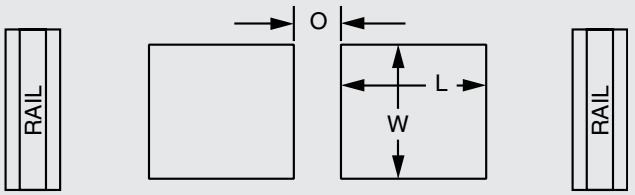
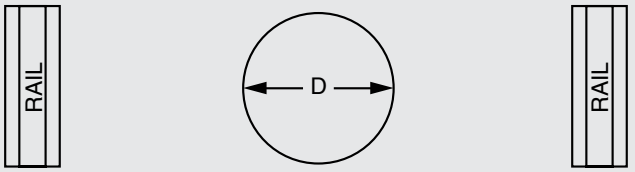
APPLICATION DATA SHEET

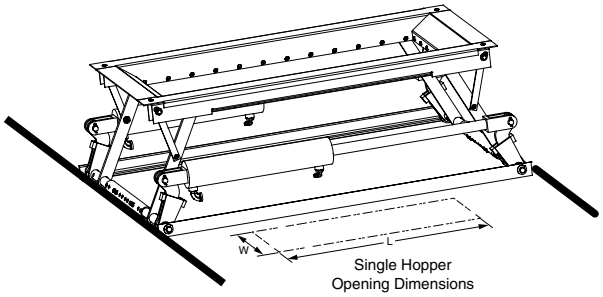
Receiving Hopper Information

Boot-Lift® Railcar Connector Model: ◯ SBL-13 (P/N 39589) ◯ SBL-18 (P/N RC10042) ◯ DBL-18 (P/N 17840)
◯ SBL-24 (P/N 19760) ◯ SBL-30 (P/N 35038) ◯ SBL-35 (P/N 39594) ◯ SBL-48 (P/N 39595)
◯ SBLR-18 (P/N 21055) ◯ SBLW-30 (P/N RC10005) ◯ SBLW-48 (P/N RC10006)

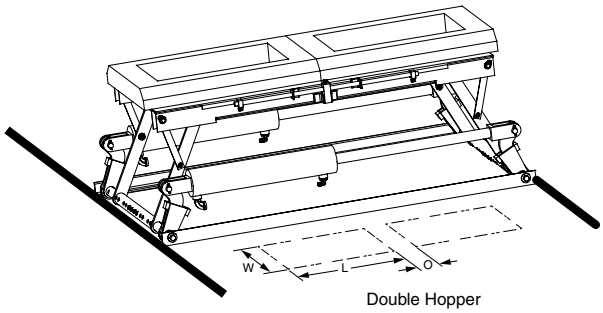
Boot Material: ◯ Black Vinyl ◯ Food Grade ◯ Flame Retardant

For new installations or modifications, Martin Engineering strongly recommends dimension H be a 3 in. minimum.

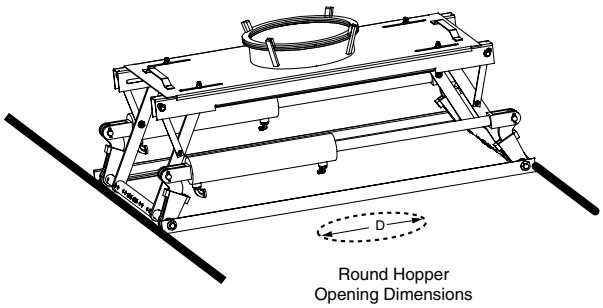
Single openings	Length (**L**) _____ x Width (**W**) _____ Bottom of rail to top of hopper (**H**) _____	
Double openings	Length (**L**) _____ x Width (**W**) _____ Distance between openings (**O**) _____ Bottom of rail to top of hopper (**H**) _____	
Round openings	Diameter (**D**) _____ Bottom of rail to top of hopper (**H**) _____	



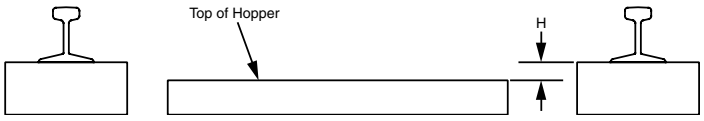
Single Hopper Opening Dimensions



Double Hopper Opening Dimensions



Round Hopper Opening Dimensions



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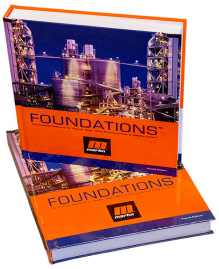
One Martin Place
Neponset, IL 61345-9766 USA
800 544 2947 or 309 852 2384
Fax 800 814 1553
www.martin-eng.com

To submit the completed form please fax to 309-594-2432
Attention: Flow-Aids Technical Support
or click here to email
railcar@martin-eng.com

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

Form No. L3729-08/23

Problem Solved™ GUARANTEED!



For nearly 30 years, Martin Engineering's Foundations™ Books have taught industry personnel to operate and maintain clean and safe belt conveyors. The Foundations™ Book, fourth edition, focuses on improving belt conveyors by controlling fugitive material. "The Practical Resource for Total Dust and Material Control," is a 576-page hard cover volume that provides information of value to industries where the efficient handling of bulk materials is a key to productivity and profitability.

Expanding upon the book, our Foundations™ Training Program addresses the design and development of more productive belt conveyors, and is offered in three customizable seminars. Attendees gain a better understanding of conveyor safety and performance, helping to justify upgrade investments and increase profitability.

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