



Boot-Lift[®] ***Railcar Connector***



Serial Number _____

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) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements* 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: Immediate hazards that will result in severe personal injury or death.



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



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



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



Note: General statements to assist the reader.

Table of Contents

Section	Page
List of Figures	ii
Introduction	1
General	1
Boot materials	1
References	1
Safety	2
Materials required	2
Before Installing Boot-Lift® Railcar Connector	3
Installing Boot-Lift® Railcar Connector	5
Installing boot onto Railcar Connector funnel	5
Installing control console and hoses	6
Positioning Railcar Connector on rails	8
Connecting air lines	8
Filling console tank	8
Installing boot onto conveyor chute	9
Installing optional manual aligner	9
Installing optional pneumatic aligner	10
Positioning seals	11
Operating Boot-Lift® Railcar Connector	12
Operating SBL Railcar Connectors	12
Operating DBL Railcar Connectors	12
Maintenance	13
Monthly maintenance	13
Replacing cables	13
Part Numbers	16
Appendix A. Boot-Lift® Railcar Connector Labels	A-1
Appendix B. Boot-Lift® Railcar Connector Dimensions	B-1
Application Data Sheets	

List of Figures

Figure	Title	Page
1	Pit Opening Sizes for Boot-Lift [®] Railcar Connectors	4
2	Attaching Boot to Funnel Assembly	5
3	Hose Connections for Models SBL-24, SBL-30, and SBLR-18	6
4	Hose Connections for Models DBL-18 and DBLG-18 GATX	7
5	Positioning Railcar Connector on Rails	8
6	Installing Manual Aligner	10
7	Installing Pneumatic Aligner	10
8	Pneumatic Aligner Schematic	11
9	Replacing Cable Assembly	14
10	Boot-Lift [®] SBL Assembly, P/N SBL-XXXXXX	18
11	Boot-Lift [®] SBLR-18 Assembly, P/N SBLR-18XXX	19
12	Boot-Lift [®] DBL-18 Assembly, P/N DBL-18XXXXXX	20
13	Boot-Lift [®] DBLG-18 Assembly, P/N DBLG-18XXXXXX	21
14	Boot-Lift [®] DBL-18 Control Console, P/N 38340X-DBL	22
15	Boot-Lift [®] Control Console Assembly, P/N 38340X-SBL	24
16	Pneumatic Aligner Assembly, P/N 34140-XX	26
17	Boot-Lift [®] Frame Rebuild Kit, P/N 38338S-FRK	28

List of Tables

Table	Title	Page
I	Boot-Lift [®] SBL Assembly Part Numbers	18
II	Boot-Lift [®] SBLR-18 Assembly Part Numbers	19
III	Boot-Lift [®] DBL-18 Assembly Part Numbers	20
IV	Boot-Lift [®] DBLG-18 Assembly Part Numbers	21

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-24 or SBL-30 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.

All boots are custom-made for your application. See the Application Data Sheet on the last page of this manual.

References

The following documents are referenced in this manual:

- American National Standards Institute (ANSI) z244.1-1982, *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 CFR 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 Safety 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 Connector

IMPORTANT

The delivery service is responsible for damage occurring in transit. Martin Engineering CANNOT enter claims for 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 from shipping container.
3. If anything is missing, contact Martin Engineering or representative.

WARNING

Before installing equipment, turn off and lock out/tag out energy source to pit conveyor and/or material loader.

4. Turn off and lock out/tag out energy source to pit conveyor and/or material loader according to ANSI standards (see "References").

WARNING

If equipment will be installed in an enclosed area, gas level or dust content must be tested before using a cutting torch or welding. Using a cutting torch or welding in an area with gas or dust may cause an explosion.

5. If using a cutting torch or welding, test atmosphere for gas level or dust content.

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.

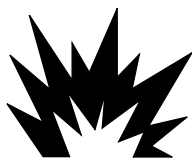
If installing a DBL-18 Double Pocket Railcar Connector and your conveyor opening is a single hole, install a center divider across the hole so both boots have an inside member on which they can be attached.

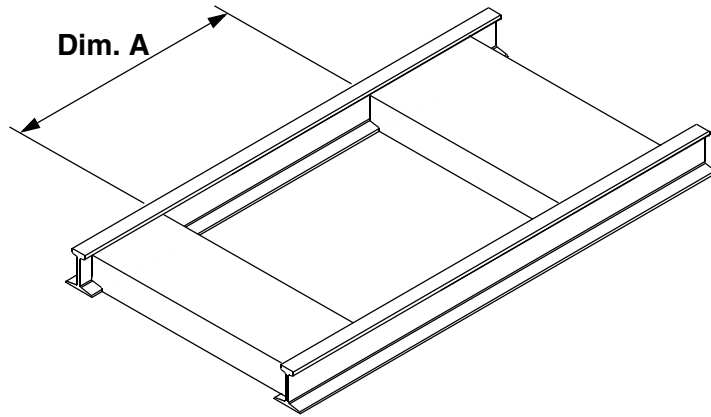
6. Construct pit opening for Railcar Connector as shown in Figure 1.

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*
	A	A	A
DBL-18	38 (965)	59 (1499)	66 (1676)
DBL-18 GATX	38 (965)	59 (1499)	66 (1676)
SBL-24	42 (1067)	63 (1600)	70 (1778)
SBL-30	50 (1270)	71 (1803)	78 (1981)
SBLR-18	38 (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 Connectors

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 binding strip (C), and attach boot to outside edge of funnel.
4. For SBL-24, SBL-30, 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).

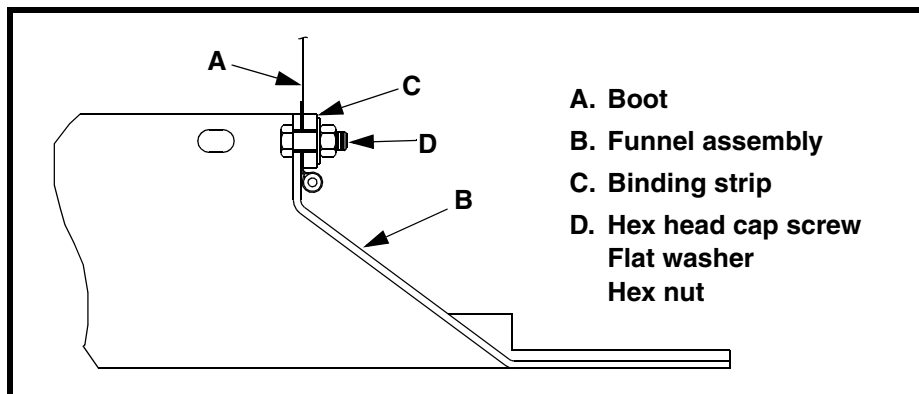


Figure 2. Attaching Boot to Funnel Assembly

Installing control console and hoses

IMPORTANT

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

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 two 90° street elbows into each SBL-24, SBL-30, and SBLR-18 lift cylinder (see Figure 3).
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.

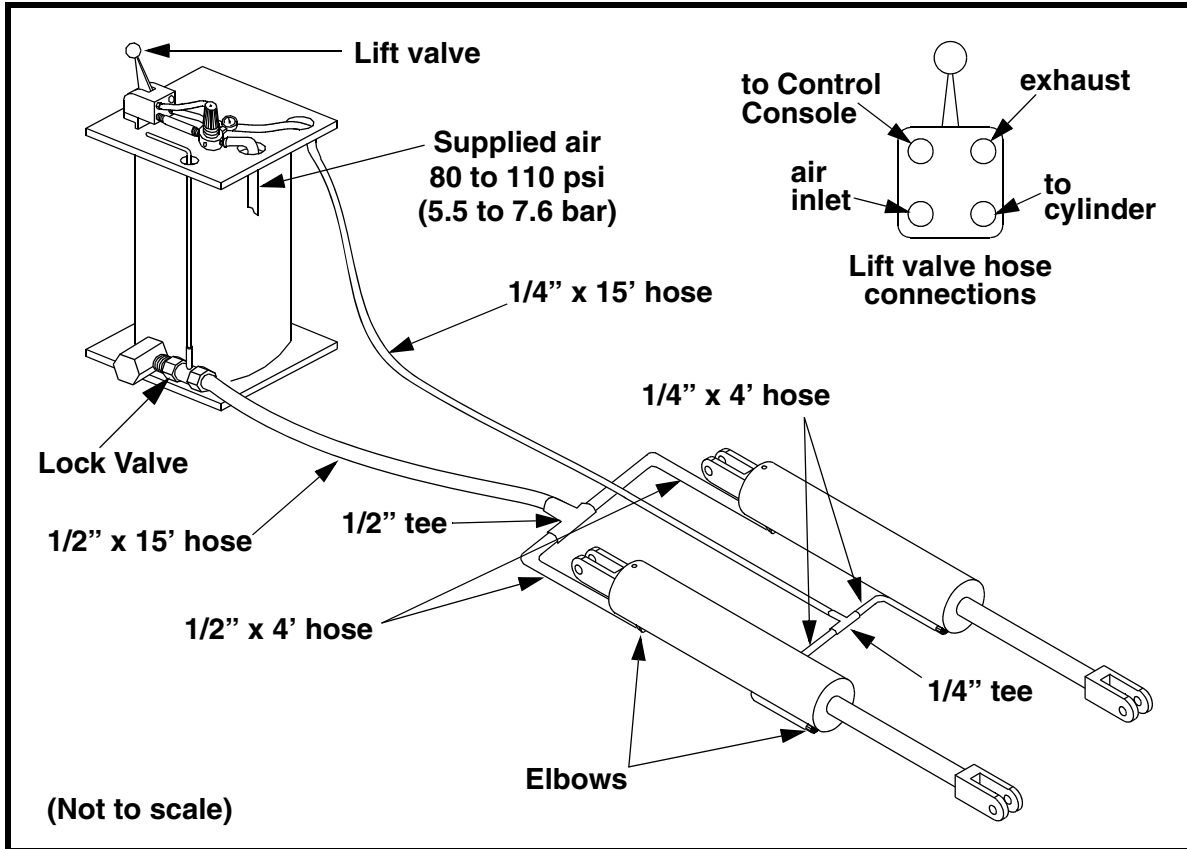


Figure 3. Hose Connections for Models SBL-24, SBL-30, and SBLR-18

- 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.

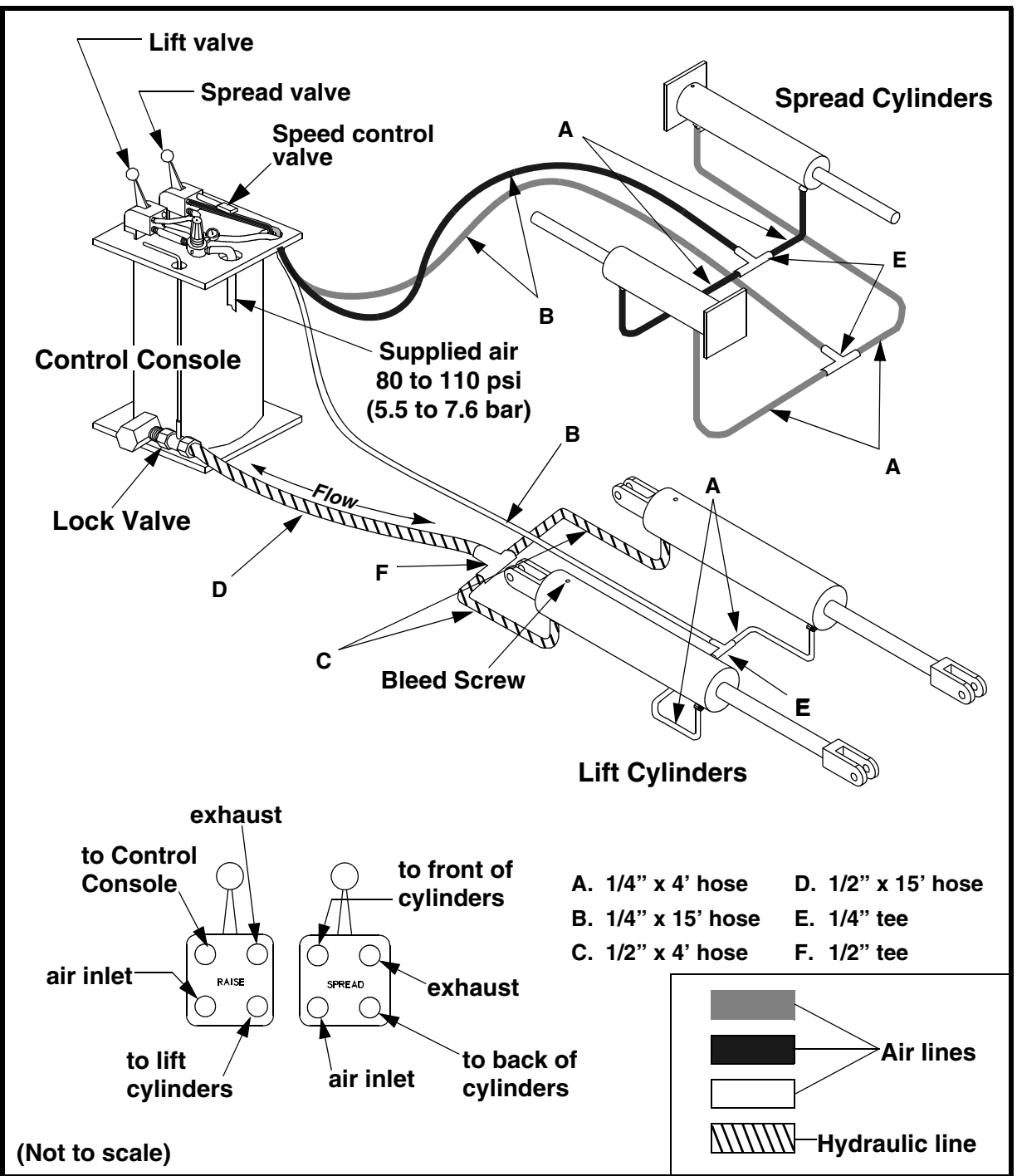


Figure 4. Hose Connections for Models DBL-18 and DBLG-18 GATX

***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.

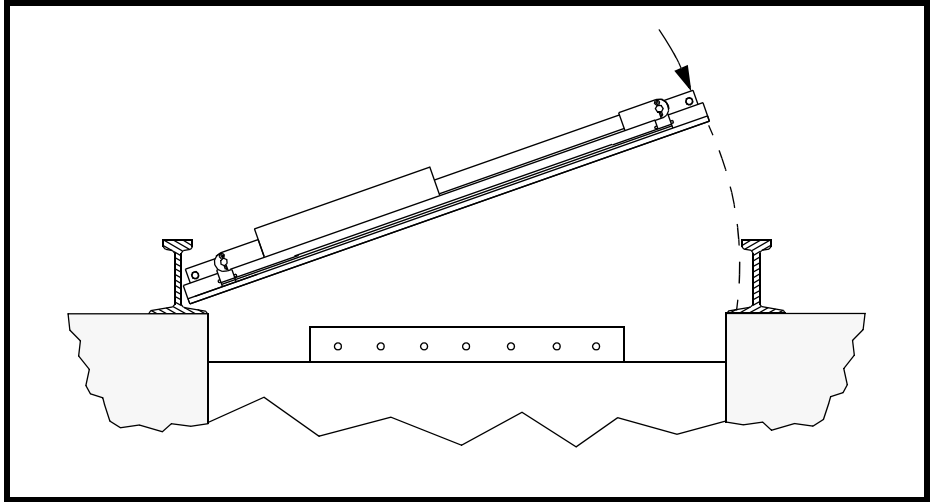


Figure 5. Positioning Railcar Connector on Rails

IMPORTANT

***Connecting air
lines***

One cfm (0.4 L/sec.) and 90 psi (6.21 bar) is required 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.)
7. Drain moisture from bottom of console once a month.
8. Return regulator to 80-110 psi for normal operation.

Installing boot onto conveyor chute

IMPORTANT

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

1. See Figure 4. With all fittings and hoses in place, open lock valve and move lift 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).
5. If necessary, use an adapter frame to make boot fit. (Martin Engineering can manufacture adapter frame from customer-supplied dimensions.)

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® Railcar Connector”).

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.

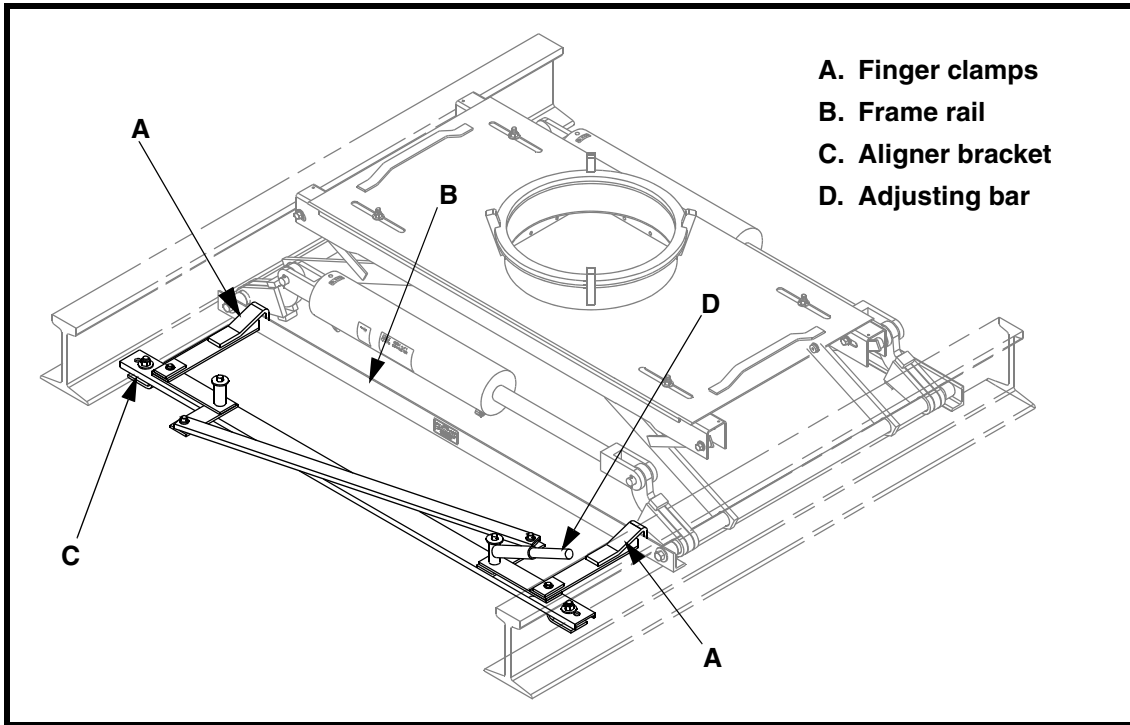


Figure 6. Installing Manual Aligner

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

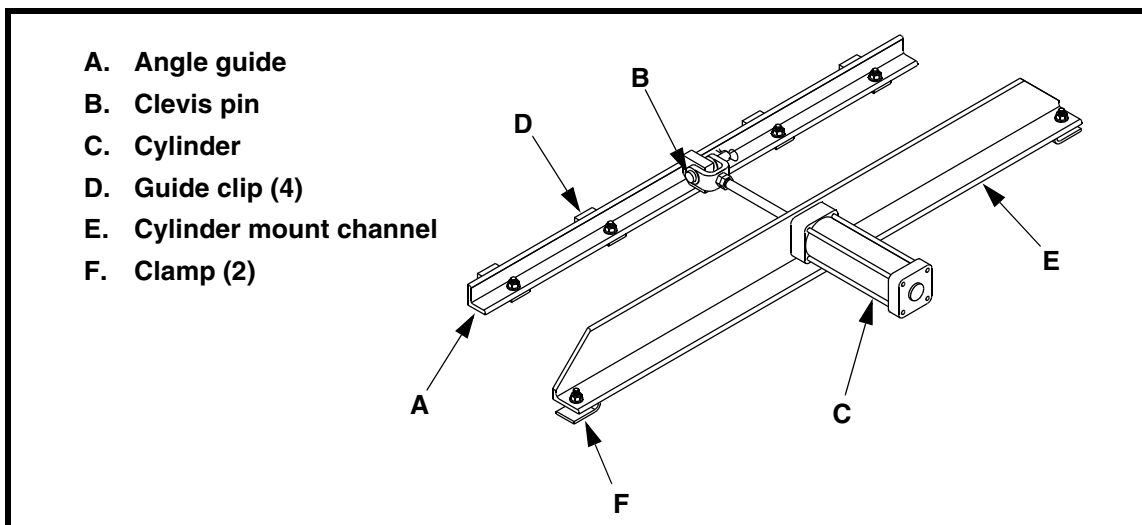


Figure 7. Installing Pneumatic Aligner

1. See Figure 7. Place pneumatic aligner between rail tracks with aligner angle guide (A) next to Railcar Connector.
2. Remove clevis pin (B) to separate angle guide from cylinder (C).
3. Slip angle guide clips (D) under frame rail on Railcar Connector.
4. 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.
5. Pull out cylinder rod and secure to angle guide with clevis pin.
6. Make air line connections to valve assembly as shown in the schematic in Figure 8.

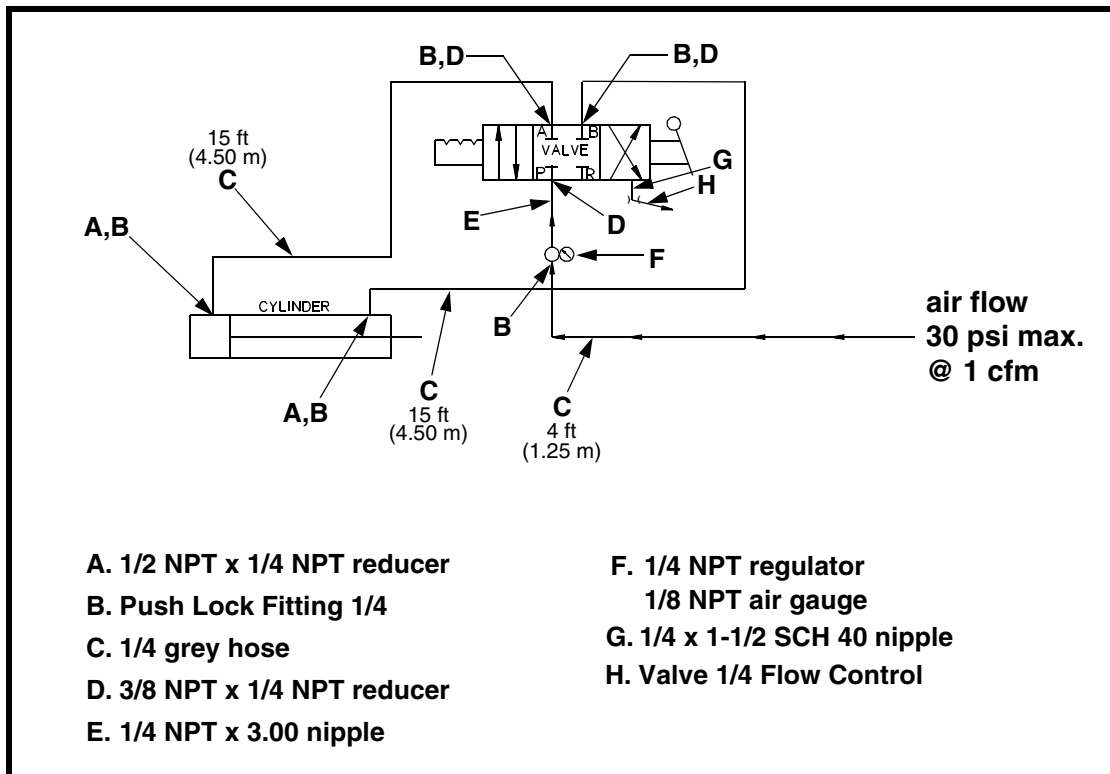


Figure 8. Pneumatic Aligner Schematic

7. Test operation of pneumatic aligner by applying 10 psi (0.7 bar). If necessary, adjust air pressure up until a safe operating pressure is reached.

Positioning seals

1. Lay sponge seals on Railcar Connector funnel assembly or on adapter sheet.
2. After railcar is in place over unit, adjust air regulating valve so that sponge seals are compressed by 50 percent.

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 90 psi (6.21 bar) is required to operate the Railcar Connector.

Operating SBL Railcar Connectors

1. To raise unit, do the following:
 - a. Place lift 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 lift 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 lift 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.

2. 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.

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. 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, drain all oil from console and lift cylinders.
5. Replace oil with ATF automatic transmission fluid, and repeat the procedure described in “Filling console tank.”

IMPORTANT

Replacing cables

Cable assembly contains many small pieces that could fall into pit opening when screws are removed. Be careful when removing hardware.

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 9) 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. Push stabilizing bars down out of the way and remove wheels (H).
10. Lift the channel track (J) so it will clear edge of pit and slide off frame.
11. Remove wheels and bushings on inside lift arms.
12. Remove old cable assembly and clean any rust or dirt accumulating on parts. Make sure all wheels spin freely and there is no wear on the bushings or wheels.
13. Install new cable assembly (K), making sure it hangs like a figure eight over the wheels.

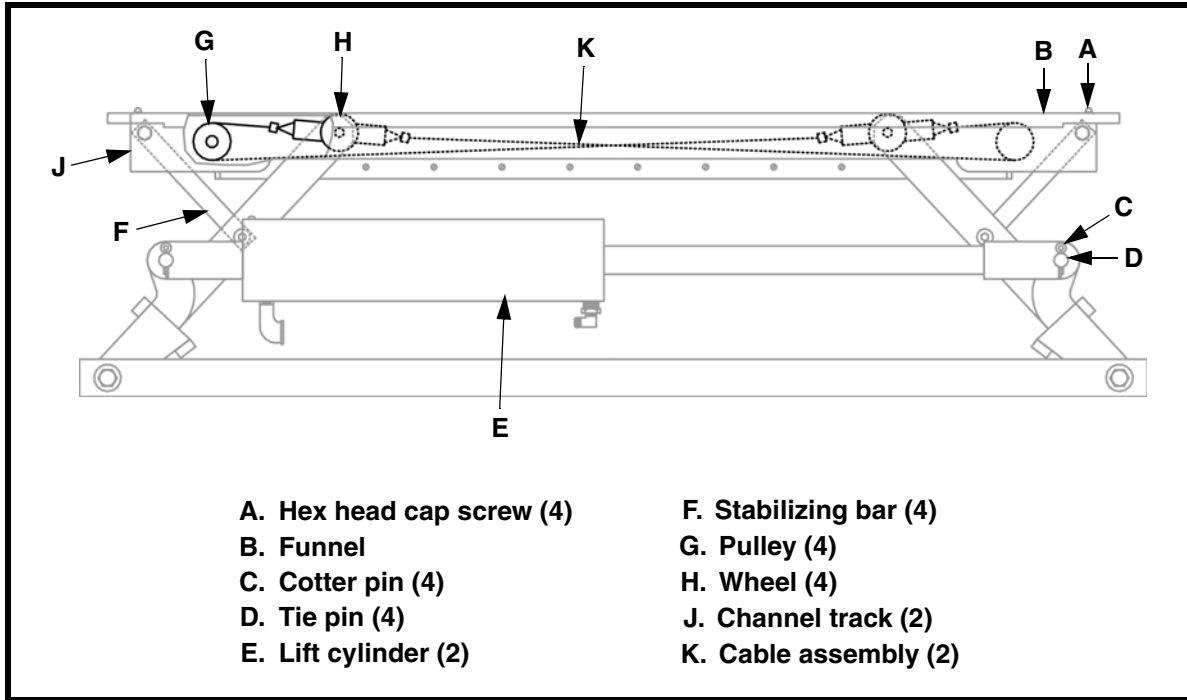


Figure 9. Replacing Cable Assembly

14. Install wheels and bushings.
15. Pull the lift arms up one at a time and slide channel track back on, making sure slots are toward the inside.
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. Re-attach stabilizing bars and secure with removed hardware.
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.

Notes

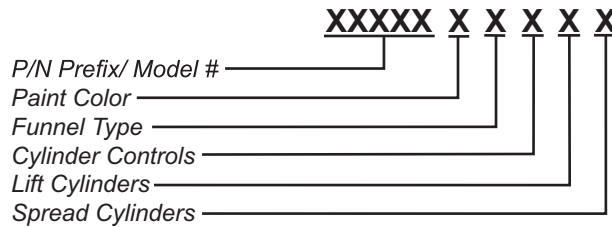
Part Numbers

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



MODEL #

- SBL-24
- SBL-30
- SBLR-18
- DBL-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 Cylinders
- 1: Hydraulic Lift Cylinders

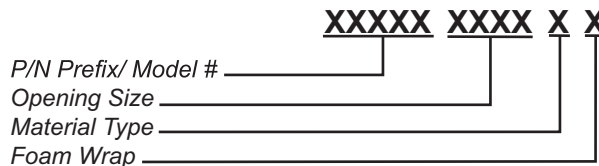
SPREAD CYLINDERS

- (DBL-18 only)*
- Ø: No Spread Cylinders
 - 1: Standard Hardware
 - 2: Stainless Hardware

P/N Example: SBL-30S111

Model SBL-30 with orange paint, painted funnel, air-over-hydraulic controls, and hydraulic lift cylinders

Boot-Lift® Adapter Sheets



MODEL #

- SBL-24AS
- SBL-30AS
- DBL-18AS

MATERIAL TYPE

- W: Wood
- H: High Density Polyethylene

FOAM SEAL

- Ø: No Wrap
- W: White Hypalon Wrapped

P/N Example: SBL-30AS2430W0

Fits Boot-Lift® model SBL-30, 24 x 30 opening, wood with no wrap on the foam seal.

Boot-Lift® Control Consoles

Boot-Lift® DBL-18 Control Console: P/N 16953. See Figure 14.
Boot-Lift® Control Console Assembly: P/N 17256. See Figure 15.

Boot-Lift® Aligners

Manual Aligner: P/N 17326.
Pneumatic Aligner: P/N 34140. See Figure 16.

Miscellaneous

Boot-Lift® Assembly Part Numbers					
Accessories	SBL-24	SBL-30	DBL-18	DBLG-18	SBLR-18
Sponge Seal	17203	17203	16681 16681-W (wrapped) 18311 (box of six)	19816 19816-W (wrapped) 20518 (box of six)	Urethane Seal 36732-15
Lift Cylinder Cover	18335	18335	18335	18335	18335
Lift Cylinder Repair Kit	27960	27960	27960	27960	27960
Funnel Cover	19544	34884-CA	18420	18420	—
Transition Funnel	—	—	17272*	17272*	—
Spread Cylinder Cover	—	—	18331	18331	—
Spread Cylinder Repair Kit	—	—	20714	20714	—

*Use with transition adapter sheet, P/N 20264-XX.

Boot-Lift® Assembly Replacement/ Repair Part Numbers				
	SBL-24	SBL-30	DBL-18	DBLG-18
Funnel - Standard	17024	34884-F	17029/17100	19739/18301
Funnel - Stainless Steel	17024-SS	34884-FSS	17029-SS/17100-SS	SP02565-L/SP02565-R
Binding Straps	17260-04/ 17260-03	17260-12/ 17260-03	17260-01/17260-02	—
Foam Seal	17203	17203	16681	19816
Cable Assembly	16974	16974	16974	16974
Pulley	17022	17022	17022	17022
Pulley Slide/ Bushing	17023	17023	17023	17023
Lift Cylinder	16963	16963	16963	16963
Lift Cylinder Rebuild Kit	27960	27960	27960	27960
Spread Cylinder	—	—	17033	38342S-DBLG
Frame Rebuild Kit	38338S-FRK	38338S-FRK	38338S-FRK	38338S-FRK

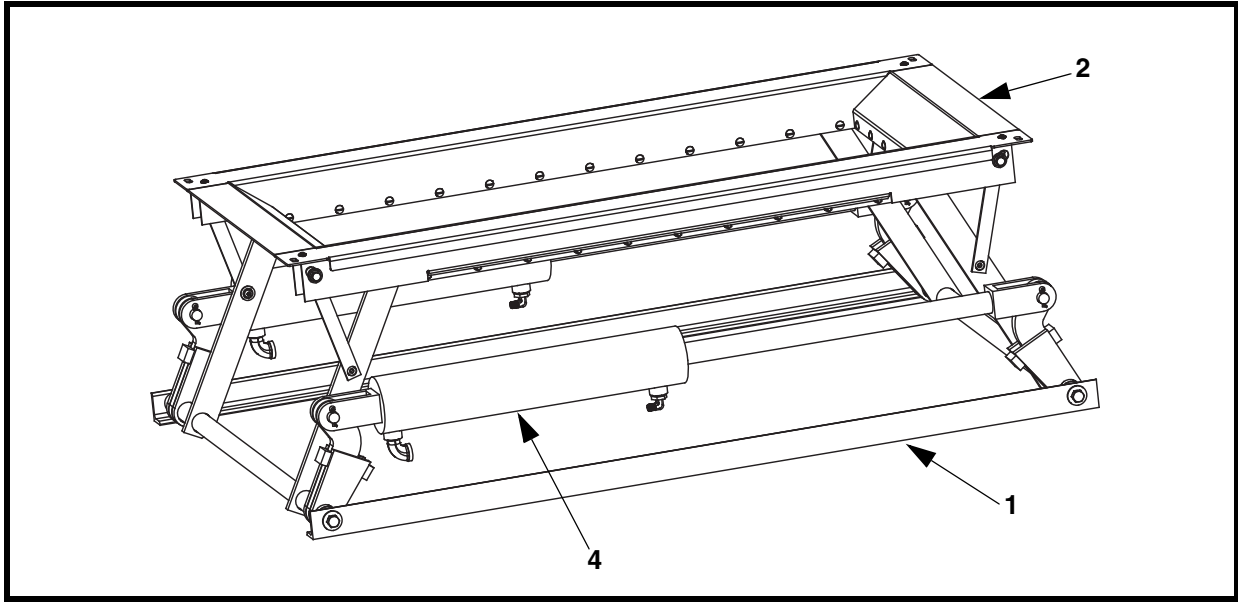


Figure 10. Boot-Lift® SBL Assembly, P/N SBL-XXXXX

Item	Description	Part No.	Qty
1	Adjustable Frame Assembly	Table I	1
2	Funnel Assembly	Table I	1
3 (NS)	Control Assembly	Table I	1
4	Hydraulic Lift Cylinder Assembly	Table I	1

*Order boot separately. Complete an Application Data Sheet, Form No. L3729 (included at the end of this manual), and send to Martin Engineering or a representative.

Table I. Boot-Lift® SBL Assembly Part Numbers

Assembly P/N	Item 1 P/N	Components Paint Color
SBL-24SXXX	SBL-24S000	Martin® Orange
SBL-30SXXX	SBL-30S000	Martin® Orange
SBL-24FXXX	SBL-24F000	Epoxy White
SBL-30FXXX	SBL-30F000	Epoxy White
SBL-24CXXX	SBL-24C000	Steel-It Gray
SBL-30CXXX	SBL-24C000	Steel-It Gray

Assembly P/N	Item 2 P/N	Funnel Type
SBL-24S1XX	38339S-SBL24	Painted
SBL-24F2XX	38339X-SBL24	Stainless Steel
SBL-24C2XX	38339X-SBL24	Stainless Steel
SBL-30S1XX	38339S-SBL30	Painted
SBL-30F2XX	38339X-SBL30	Stainless Steel
SBL-30C2XX	38339X-SBL30	Stainless Steel

Assembly P/N	Item 3 P/N	Item 4 P/N	Components Paint Color
SBL-XXSX11	38340S-SBL	38341S-1	Martin® Orange
SBL-XXFX11	38340X-SBL	38341X-1	Epoxy White
SBL-XXCX11	38340X-SBL	38341X-1	Steel-It Gray

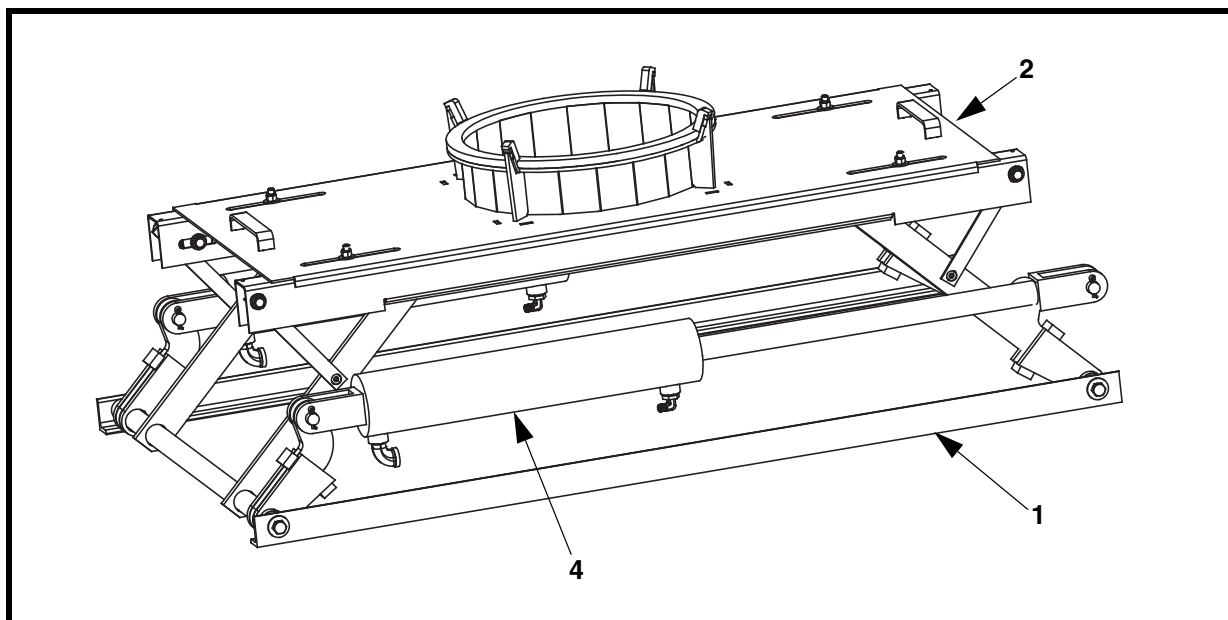


Figure 11. Boot-Lift® SBLR-18 Assembly, P/N SBLR-18XXX

Item	Description	Part No.	Qty
1	Adjustable Frame Assembly	Table II	1
2	Funnel Assembly	Table II	1
3 (NS)	Control Assembly	Table II	1
4	Hydraulic Lift Cylinder Assembly	Table II	1

*Order boot separately. Complete an Application Data Sheet, Form No. L3729 (included at the end of this manual), and send to Martin Engineering or a representative.

Table II. Boot-Lift® SBLR-18 Assembly Part Numbers

Assembly P/N	Item 1 P/N	Components Paint Color
SBLR-18SXXX	SBLR-18S000	Martin® Orange
SBLR-18FXXX	SBLR-18F000	Epoxy White
SBLR-18CXXX	SBLR-18C000	Steel-It Gray

Assembly P/N	Item 2 P/N	Funnel Type
SBLR-18S1XX	38339S-SBLR18	Painted
SBLR-18F2XX	38339X-SBLR18	Stainless Steel
SBLR-18C2XX	38339X-SBLR18	Stainless Steel

Assembly P/N	Item 3 P/N	Item 4 P/N	Components Paint Color
SBLR-18SX11	38340S-SBL	38341S-1	Martin® Orange
SBLR-18FX11	38340X-SBL	38341X-1	Epoxy White
SBLR-18CX11	38340X-SBL	38341X-1	Steel-It Gray

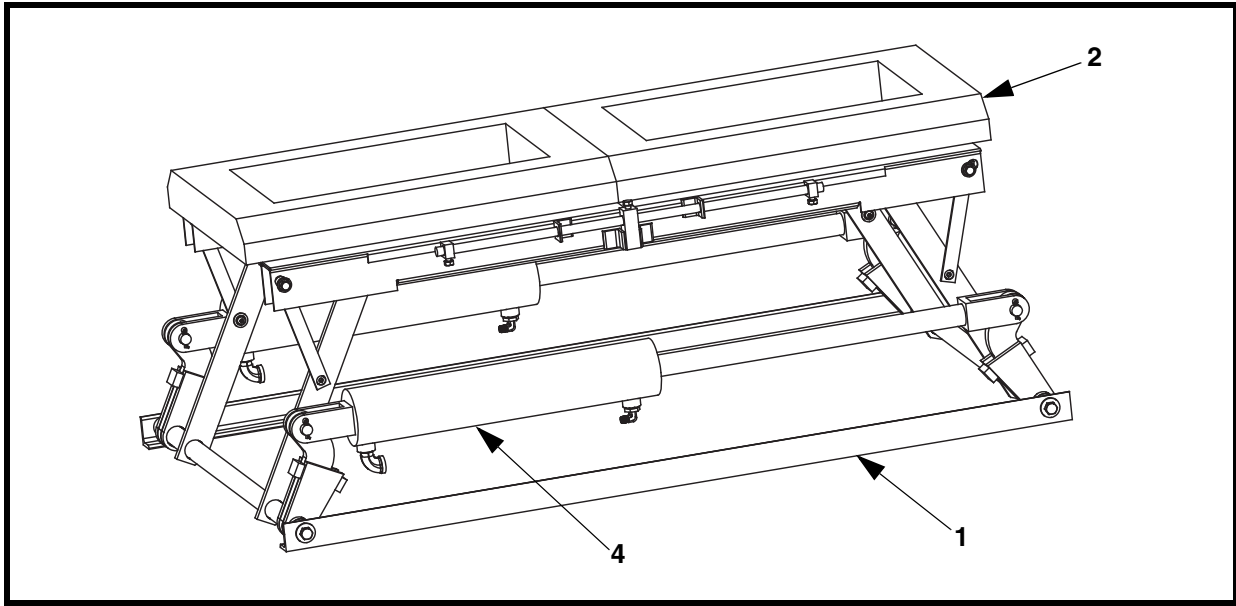


Figure 12. Boot-Lift® DBL-18 Assembly, P/N DBL-18XXXXX

Item	Description	Part No.	Qty
1	Adjustable Frame Assembly	Table III	1
2	Funnel Assembly	Table III	1
3 (NS)	Control Assembly	Table III	1
4	Hydraulic Lift Cylinder Assembly	Table III	1
5 (NS)	Spread Cylinder Assembly	Table III	1

*Order boot separately. Complete an Application Data Sheet, Form No. L3729 (included at the end of this manual), and send to Martin Engineering or a representative.

Table III. Boot-Lift® DBL-18 Assembly Part Numbers

Assembly P/N	Item 1 P/N	Components Paint Color
DBL-18SXXXX	DBL-18S0000	Martin® Orange
DBL-18FXXXX	DBL-18F0000	Epoxy White
DBL-18CXXXX	DBL-18C0000	Steel-It Gray

Assembly P/N	Item 2 P/N	Funnel Type
DBL-18S1XXX	38339S-DBL	Painted
DBL-18F2XXX	38339X-DBL	Stainless Steel
DBL-18C2XXX	38339X-DBL	Stainless Steel

Assembly P/N	Item 3 P/N	Item 4 P/N	Components Paint Color
DBL-18SX11X	38340S-DBL	38341S-1	Martin® Orange
DBL-18FX11X	38340X-DBL	38341X-1	Epoxy White
DBL-18CX11X	38340X-DBL	38341X-1	Steel-It Gray

Assembly P/N	Item 5 P/N	Hardware Type
DBL-18SXXX1	38342S-DBL	ZP
DBL-18FXXX2	38342X-DBL	SS
DBL-18CXXX2	38342X-DBL	SS

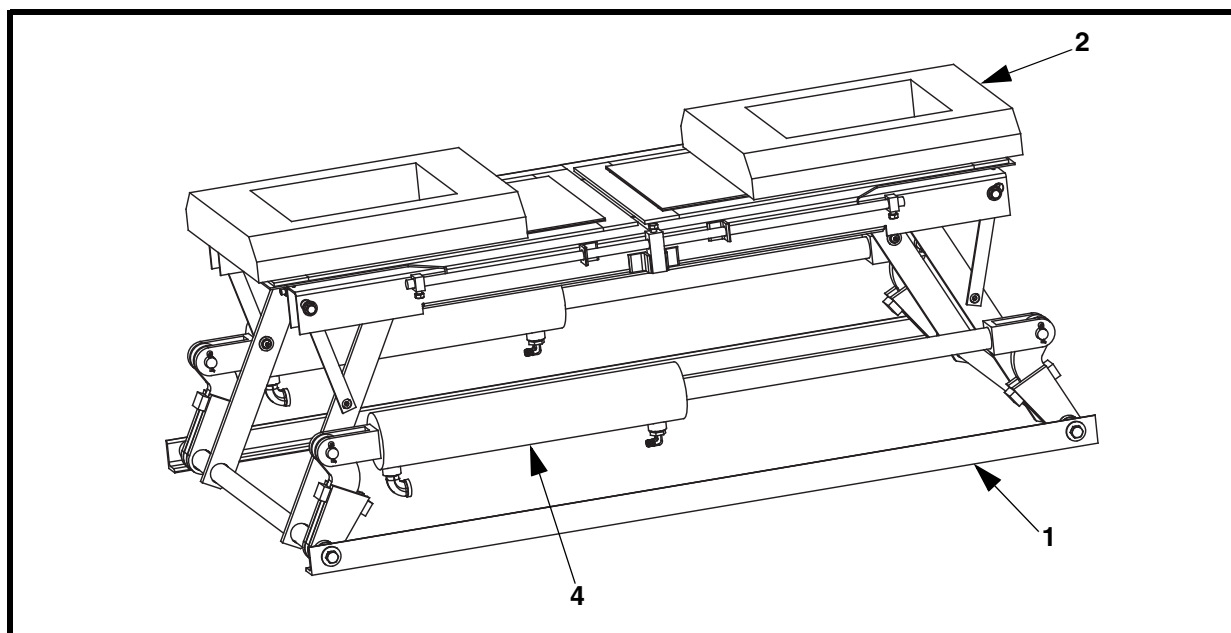


Figure 13. Boot-Lift® DBLG-18 Assembly, P/N DBLG-18XXXXX

Item	Description	Part No.	Qty
1	Adjustable Frame Assembly	Table IV	1
2	Funnel Assembly	Table IV	1
3 (NS)	Control Assembly	Table IV	1
4	Hydraulic Lift Cylinder Assembly	Table IV	1
5 (NS)	Spread Cylinder Assembly	Table IV	1

*Order boot separately. Complete an Application Data Sheet, Form No. L3729 (included at the end of this manual), and send to Martin Engineering or a representative.

Table IV. Boot-Lift® DBLG-18 Assembly Part Numbers

Assembly P/N	Item 1 P/N	Components Paint Color
DBLG-18SXXXX	DBLG-18S0000	Martin® Orange
DBLG-18FXXXX	DBLG-18F0000	Epoxy White
DBLG-18CXXXX	DBLG-18C0000	Steel-It Gray

Assembly P/N	Item 2 P/N	Funnel Type
DBLG-18S1XXX	38339S-DBLG18	Painted
DBLG-18F2XXX	38339X-DBLG18	Stainless Steel
DBLG-18C2XXX	38339X-DBLG18	Stainless Steel

Assembly P/N	Item 3 P/N	Item 4 P/N	Components Paint Color
DBLG-18SX11X	38340S-DBL	38341S-1	Martin® Orange
DBLG-18FX11X	38340X-DBL	38341X-1	Epoxy White
DBLG-18CX11X	38340X-DBL	38341X-1	Steel-It Gray

Assembly P/N	Item 5 P/N	Hardware Type
DBLG-18SXXX1	38342S-DBLG	ZP
DBLG-18FXXX2	38342X-DBLG	SS
DBLG-18CXXX2	38342X-DBLG	SS

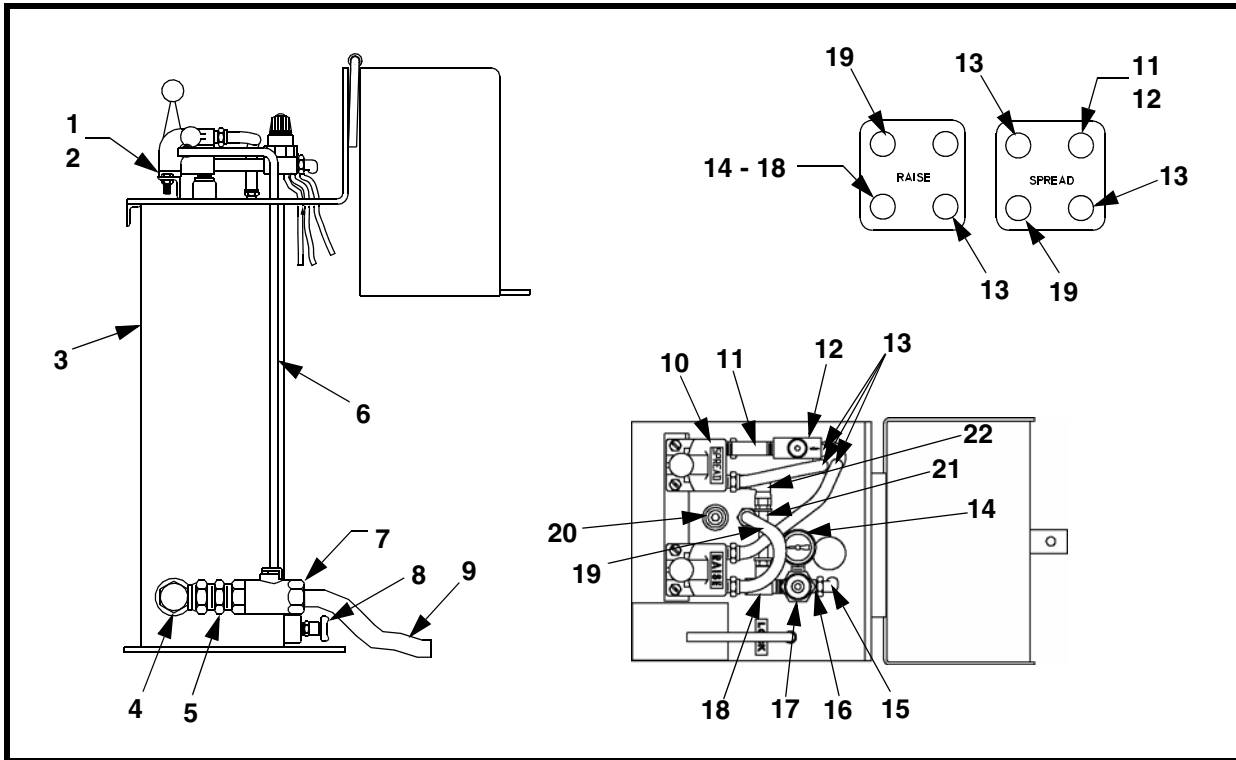


Figure 14. Boot-Lift® DBL-18 Control Console, P/N 38340X-DBL**

Item	Description	Part No.	Qty
1	Screw RHM 1/4-20NC x .75	17325	4
2	Nut Hex 1/4-20NC	11769	4
3	Control Tank Weldment	23897	1
4	Elbow 90°	15875	1
5	Bushing Shoulder	18308	1
6	Handle Valve	16989	1
7	Valve Ball w/o Handle	26027	1
8	Drain Cock	17217	1
9	Hose Lift \varnothing 1/2 x 15 ft	17234	1
10	Valve Control	17218	2
11	Pipe Nipple	17219	2
12	Valve Flow Control	20547	1
13	Hose \varnothing Raise 1/4 x 15 ft	17223	3
14	Air Gauge AG2	14725	1
15	Elbow 90°	17238	1
16	Bushing Reducing	13259	1

Item	Description	Part No.	Qty
17	Regulator BR4	14728	1
18	Street Tee	17220	1
19	Hose Raise $\varnothing 1/4$ x 7.00	17227	1
20	Plug Pipe	12204	1
21	Hose Assembly Spread	36412	1
22	Elbow Male NPSM Swivel 1/4-18 NPT	36413	1
*NS	Hose Lift $\varnothing 1/2$ x 4 ft	27802-48	2
*NS	Tee 1/2	17241	1
*NS	Hose Cylinder $\varnothing 1/4$ x 4 ft	17226	6
*NS	Tee Female 1/4	17240	3
Appendix A	Label Boot-Lift [®] Connector Air Pressure	22213	1
Appendix A	Label Boot-Lift [®] Connector Warning	33378	1

Figure 14. Boot-Lift[®] DBL-18 Control Console, P/N 38340X-DBL**

NS = Not Shown

* Refer to Figure 4.

** X indicates: standard components (S) or corrosion resistant components (X).

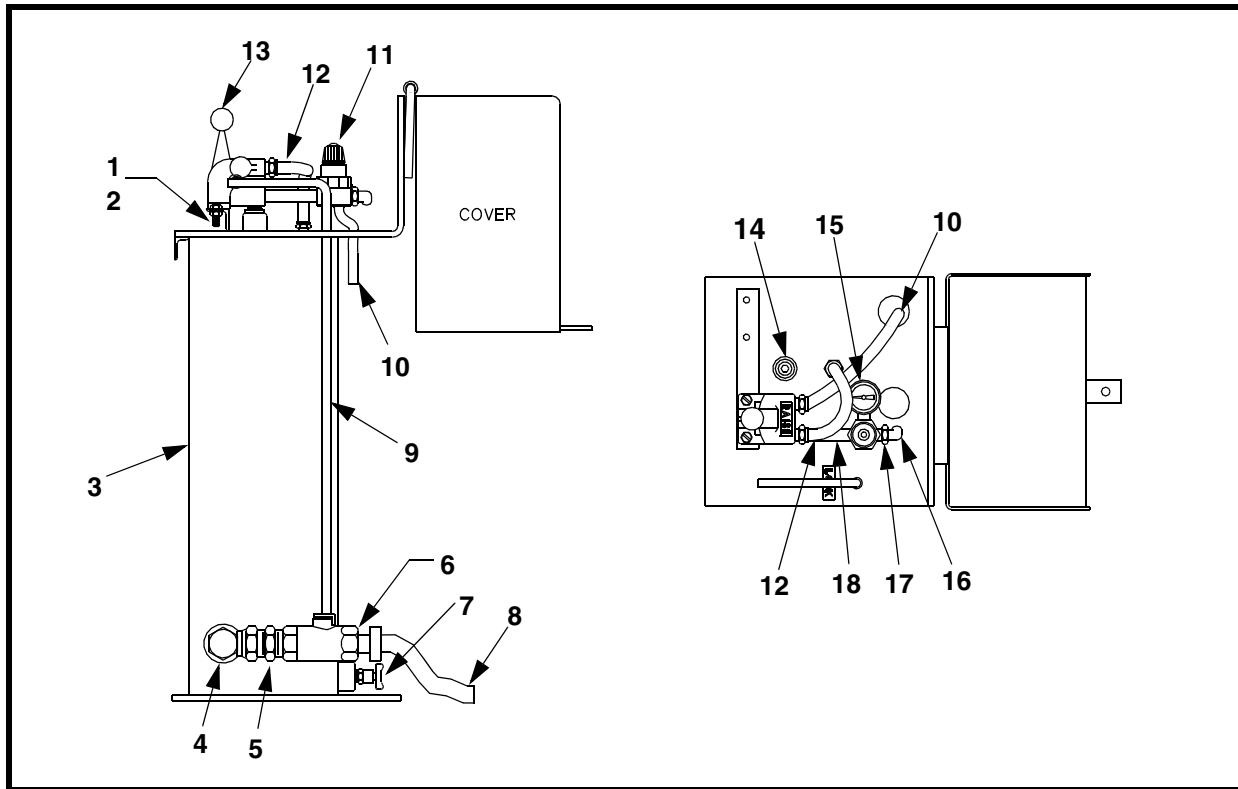


Figure 15. Boot-Lift® Control Console Assembly, P/N 38340X-SBL

Item	Description	Part No.	Qty
1	Screw HHC 1/4-20NC x .75	11852	2
2	Nut Hex 1/4-20NC	11769	2
3	Control Tank Weldment	23897	1
4	Adapter Union 90° 3/4NPT	15875	1
5	Nipple Hex Close 3/4NPT	18308	1
6	Valve Ball w/o Handle 3/4NPT	26027	1
7	Drain Cock 1/4NPT	17217	1
8	Hose Lift Ø1/2 x 15 ft	17234	1
9	Valve Handle	16989	1
10	Hose ØRaise 1/4 x 15 ft	17223	1
11	Regulator 1/4NPT	14728	1
12	Hose Raise Ø1/4 x 7 ft	17227	1
13	4-Way Control Valve	17218	1
14	Plug Pipe HHS 1/2NPT	12204	1
15	Air Gauge AG2 1/8NPT	14725	1

Item	Description	Part No.	Qty
16	Elbow JIC 90° 1/8NPT x 7/16	17238	1
17	Bushing Reducing 1/8NPT x 1/4NPT	13259	1
18	Nipple Pipe 1/4NPT x 3.00	17255	1
*NS	Hose Lift Ø1/2 x 4 ft	27802-48	2
*NS	Tee 1/2	17241	2
*NS	Hose Cylinder Ø1/4 x 4 ft	17226	2
*NS	Tee Female 1/4	17240	2
Appendix A	Label Boot-Lift® Connector Air Pressure	22213	1
Appendix A	Label Boot-Lift® Connector Warning	33378	1

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

NS = Not Shown

* Refer to Figure 3.

** X indicates: standard components (S) or corrosion resistant components (X).

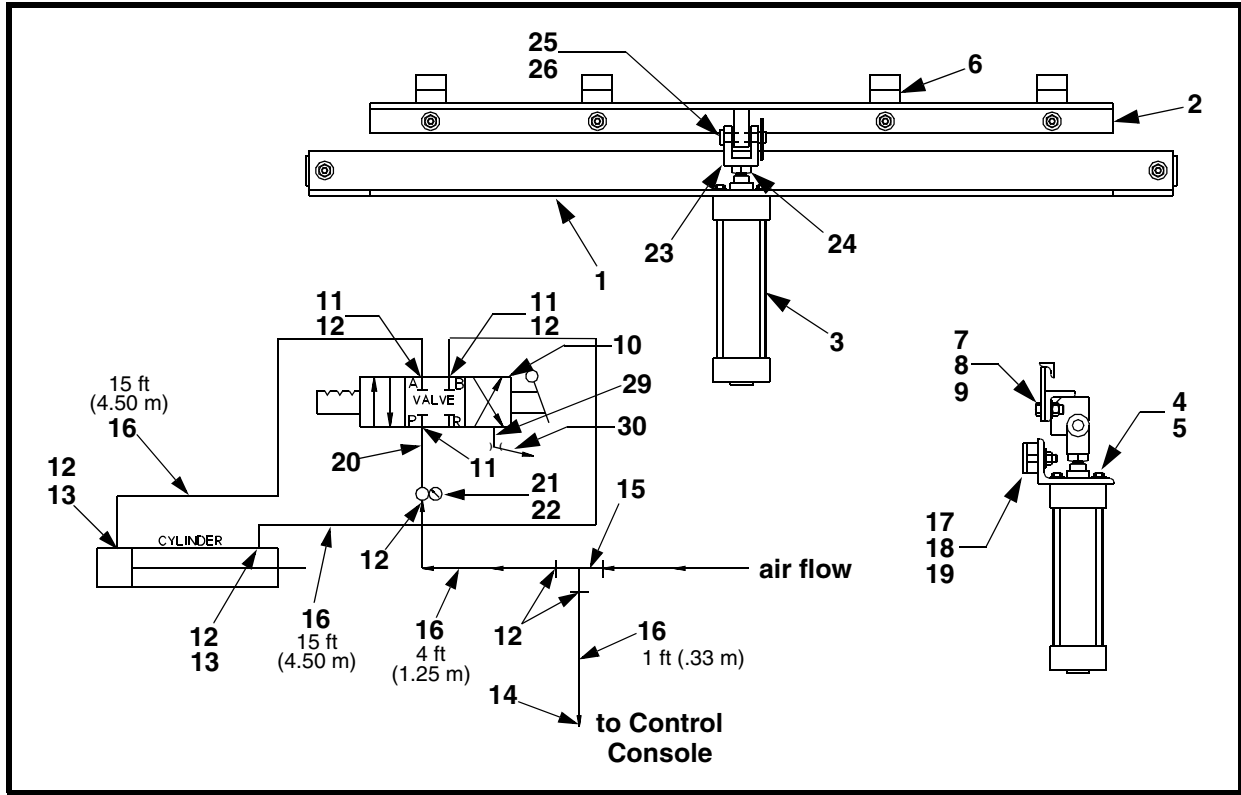


Figure 16. Pneumatic Aligner Assembly, P/N 34140-XX

Item	Description	Part No.	Qty
1	Channel Cylinder Mount	34141	1
2	Angle Guide Weldment	34142	1
3	Cylinder Pneumatic 8.00 Stroke	34161	1
4	Screw HHC 3/8-24NF x 1	34157	4
5	Washer Compression 3/8	28565	4
6	Guide Clip Weldment	34158	4
7	Screw HHC 1/2-13NC x 1-1/2	11763	4
8	Nut Hex 1/2-13NC	11771	4
9	Washer Compression 1/2	11750	4
10	Valve Hand Assembly	M900	1
11	Reducer Bushing 3/8NPT x 1/4NPT	SPO2781-04	3
12	Fitting Push Lock 1/4 hose x 1/4	17224	7
13	Reducer Bushing 1/2NPT x 1/4NPT	22465	2
14	Fitting Push Lock 1/4 hose x 7/16	17222	1
15	Tee Union 1/4NPT	17240	1

Item	Description	Part No.	Qty
16	Hose Grey 1/4	21241	35 or 52 ft*
17	Clamp Aligner	17307	2
18	Nut Hex 1/2-13NC SST	17151	2
19	Washer Compression 1/2 SST	24310	2
20	Nipple Pipe 1/4-18NPT x 3	17255	1
21	Regulator 1/4NPT	14728	1
22	Gauge Air 1/8NPT	14725	1
23	Clevis Piston Rod	32131	1
24	Nut Jam 3/4-16NF	32242	1
25	Pin Clevis	32180-01	1
26	Hairpin Cotter	32327	1
Appendix A	Label Pinch Point Warning	30528	1
28 (NS)	Operator's Manual	M3198	1
29	Nipple 1/4 x 1-1/2 SCH40	17219	1
30	Valve 1/4 Flow Control	20547	1

*Use part number 34140 to order aligner with 35 ft (11 m) of hose.

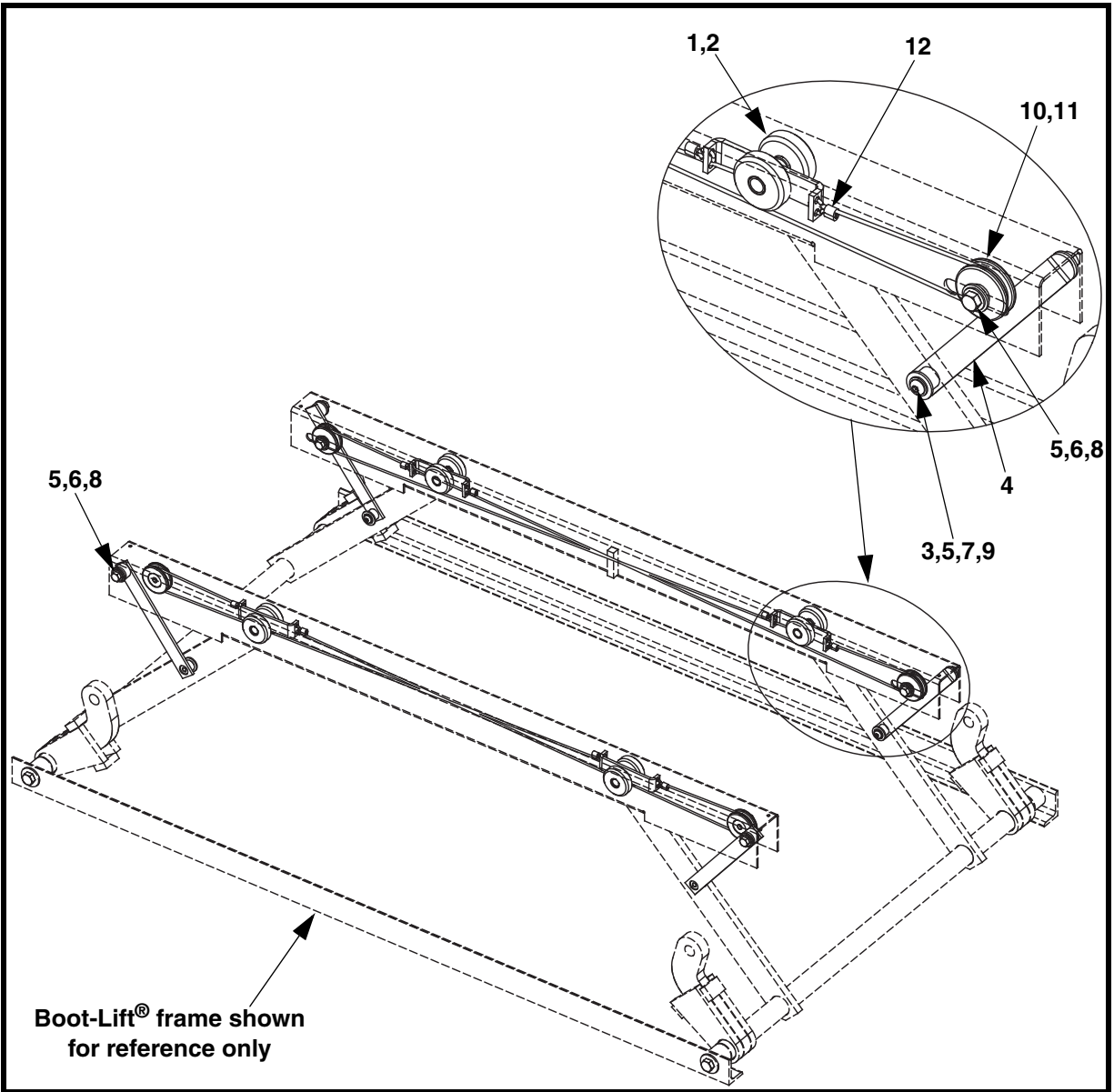


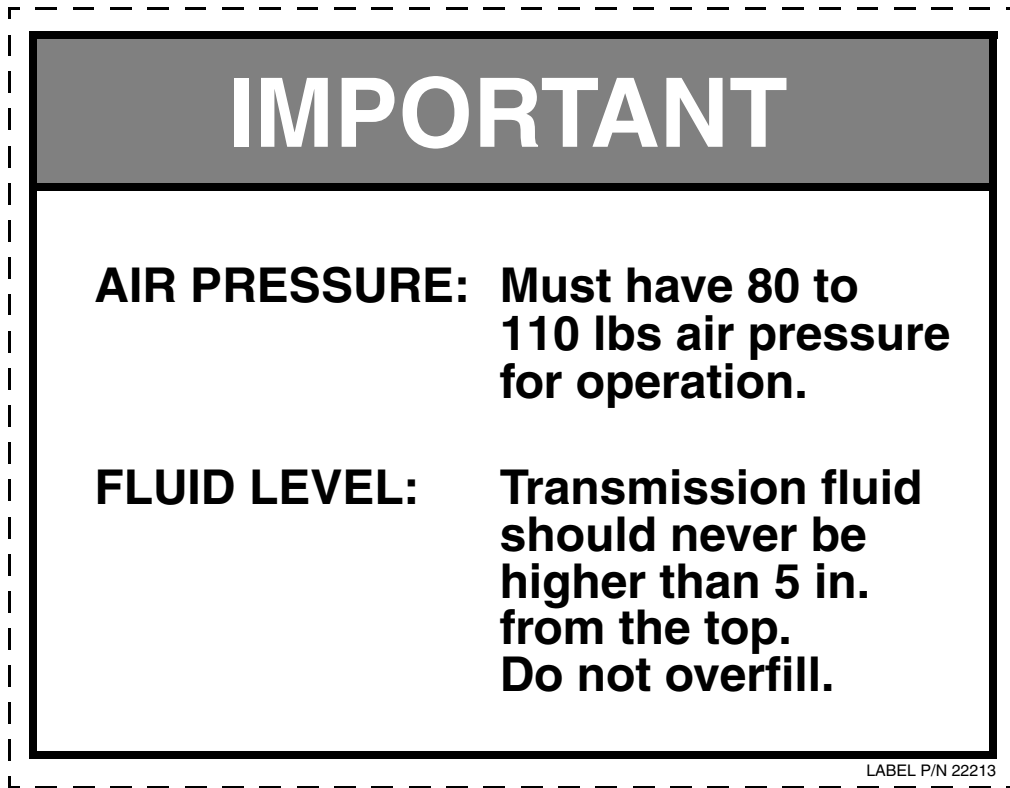
Figure 17. Boot-Lift® Frame Rebuild Kit, P/N 38338S-FRK

Item	Description	Part No.	Qty
1	Nylon Bushing	17021	8
2	Wheel	17020	8
3	Nylon Bushing	17097	4
4	Stabilizing Bar Weldment	17019-01	4
5	Washer Flat 3/8 Wide ZP	18007	12
6	Washer Compression 3/8	11747	8
7	Washer Compression 5/16	11452	4
8	Screw HHC 3/8-16NC x 3/4 ZP	12597	8
9	Screw SBHC 5/16-18NC x 1/2 ZP	17164	4
10	Stabilizing Bar Hub	17023	4
11	Cable Pulley	17022	4
12	Boot-Lift® Cable Assembly	16974	2

Notes

Appendix A

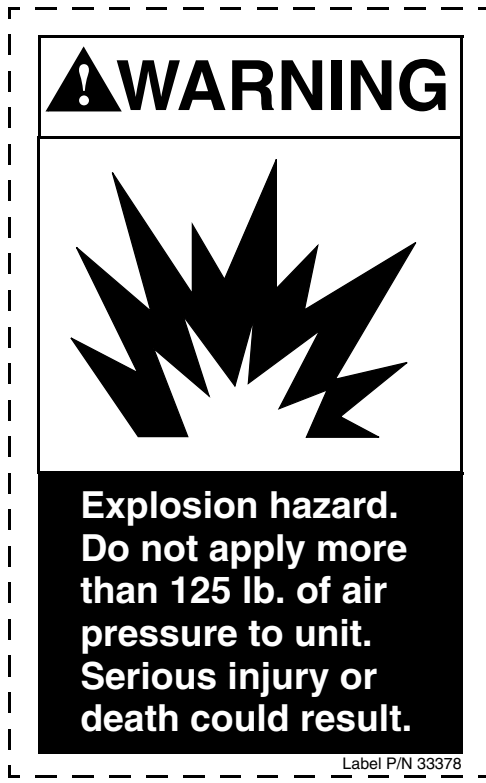
Boot-Lift® Railcar Connector Labels



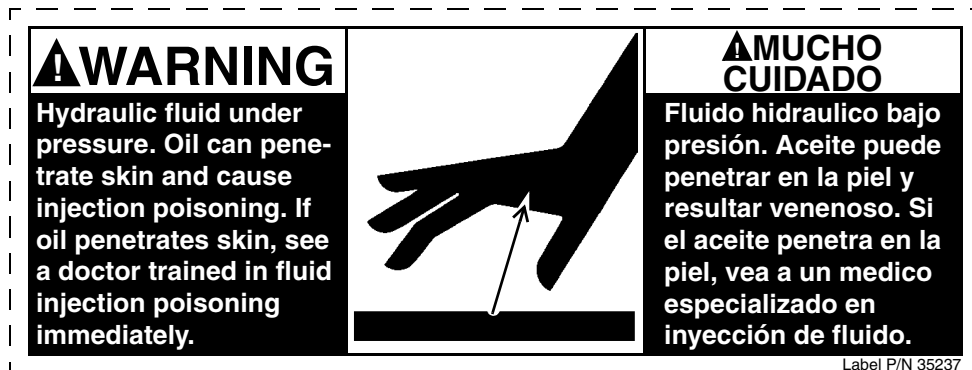
Boot-Lift® Air Pressure Fluid Level Label, P/N 22213



Pinch Point Warning Label, P/N 30528



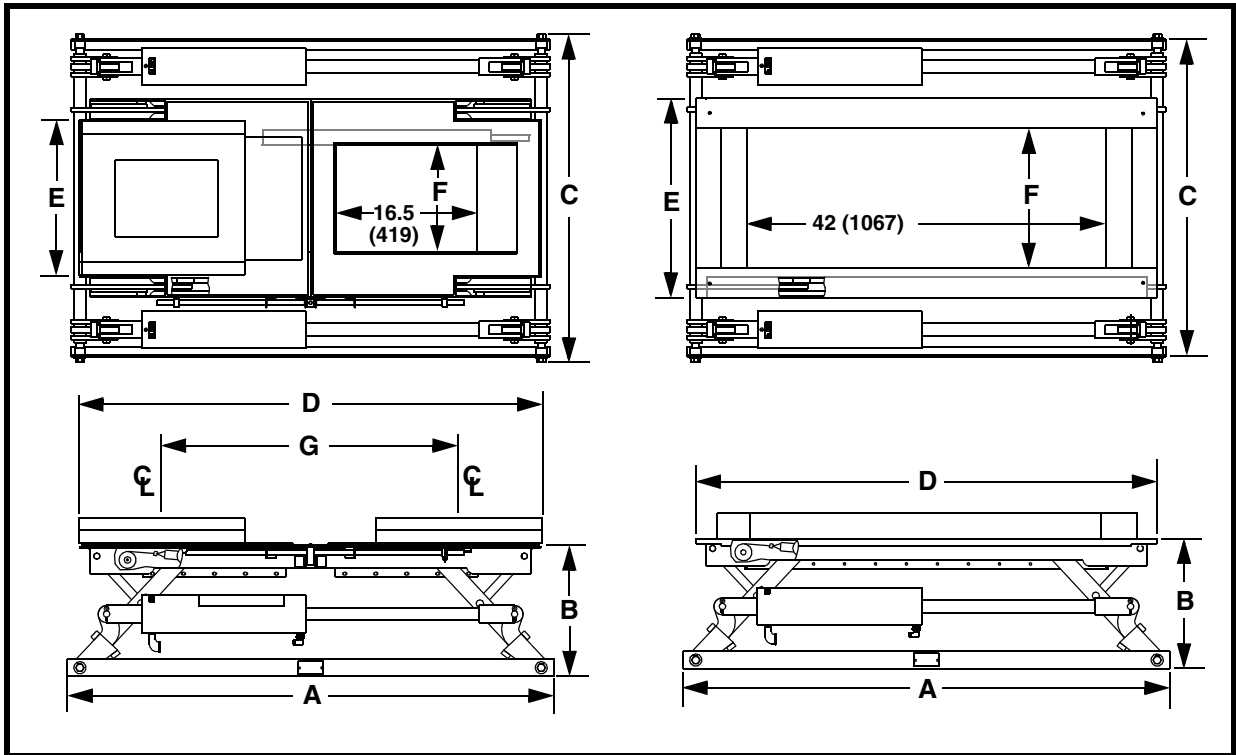
Boot-Lift® Air Pressure Warning Label, P/N 33378



Hydraulic Fluid Warning Label, P/N 35237

Appendix B

Boot-Lift® Railcar Connector Dimensions



Model	A	B		C	D
		Extended	Retracted		
SBL-24	57 (1448)	18.48 (469)	4.48 (114)	40.38 (1026)	54 (1372)
SBL-30	57 (1448)	18.48 (469)	4.48 (114)	48.38 (1229)	54 (1372)
SBLR-18	57 (1448)	18.92 (481)	6.02 (153)	36.38 (924)	51.5 (1308)
DBL-18	57 (1448)	15.17 (385)	5.34 (136)	36.38 (924)	54 (1372) closed 69 (1753) open
DBLG-18 GATX	57 (1448)	15.17 (385)	5.70 (145)	36.38 (924)	54 (1372) closed 78.5 (1994) open

Model	E	F	G
SBL-24	29.2 (742)	22 (559)	—
SBL-30	37.3 (947)	30 (762)	—
SBLR-18	29.2 (742)	Ø15 (381)	—
DBL-18	19.50 (495)	11.25 (286)	27 (686) closed 42 (1067) open
DBL-18 GATX	18.00 (457)	9.00 (229)	36 (914) closed 58.6 (1488) open

Notes

Boot-Lift® Railcar Connector

Plant Name: _____
 Address: _____
 City: _____
 State: _____ Zip Code: _____

Contact Person: _____
 Telephone: _____ Fax: _____
 Email: _____
 Date: _____

Material Conditions

Type of Material: _____

Equipment needs to be Food-Grade: Yes No

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

Vibration needed to aid the flow of material: Yes No

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

Railcar Adapter Sheet—Single Gate

Adapter Sheet: Yes No

Adapter Sheet Material: Plywood HDPE (High Density Polyethylene)

Foam Seal: Standard Cover White Hypalon Wrapped (FDA)

Railcar Information

Type of Railcar: Single Gate Double Gate Round Gate (15 in. I.D. only)

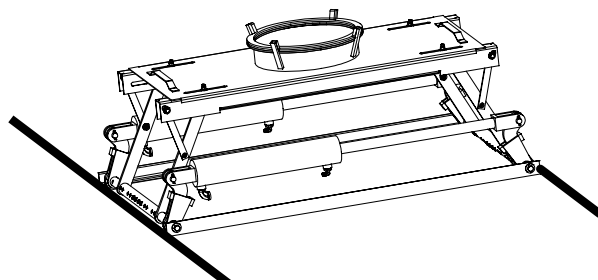
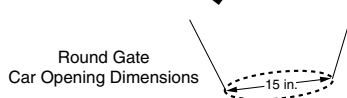
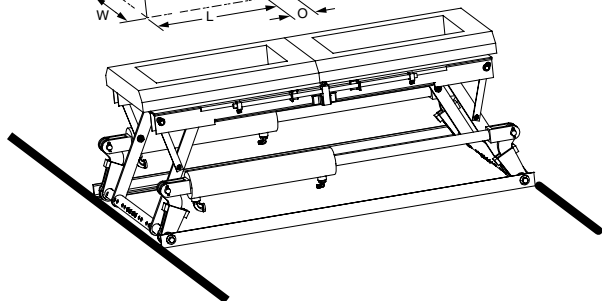
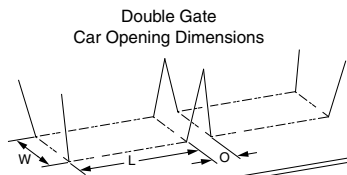
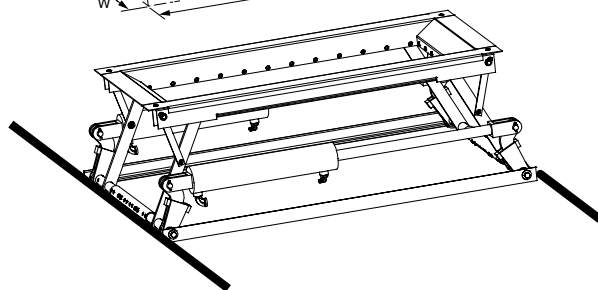
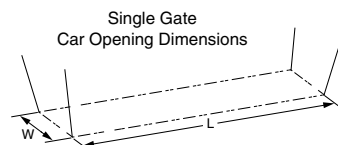
Inner dimensions of gate openings:

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

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

Distance between openings (O) _____

Round Gate: Diameter = 15 in. I.D.



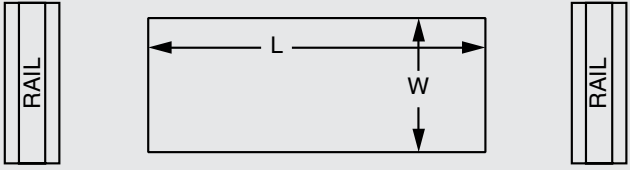
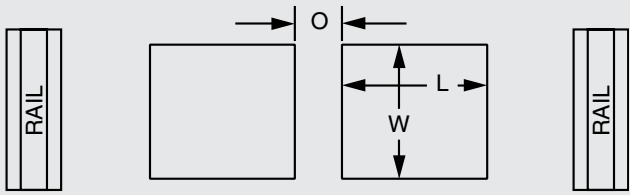
APPLICATION DATA SHEET

Receiving Hopper Information

Boot-Lift® Railcar Connector Model: SBLR-18 (P/N 21055) SBL-24 (P/N 19760)
 SBL-30 (P/N 35038) DBL-18 (P/N 17840)

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) _____	