



Boot-Lift® Railcar Connector

[Go to Boot-Lift® Railcar Connector web page](#)



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.

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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-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.

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.

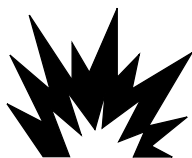
If installing a DBL-18 Double Pocket Railcar Connector and your conveyor opening is a single hole, install a center divider across the hole so both boots have an inside member on which they can be attached.

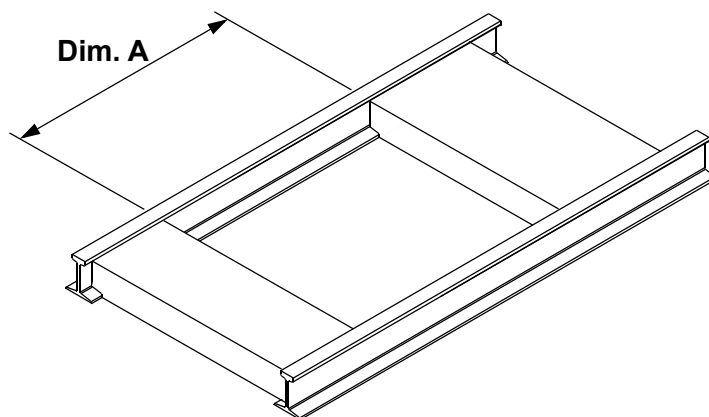
6. Construct pit opening for Railcar Connector as shown in Figure 1.

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-13	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	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.

NOTE

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

4. For SBL-13, 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).

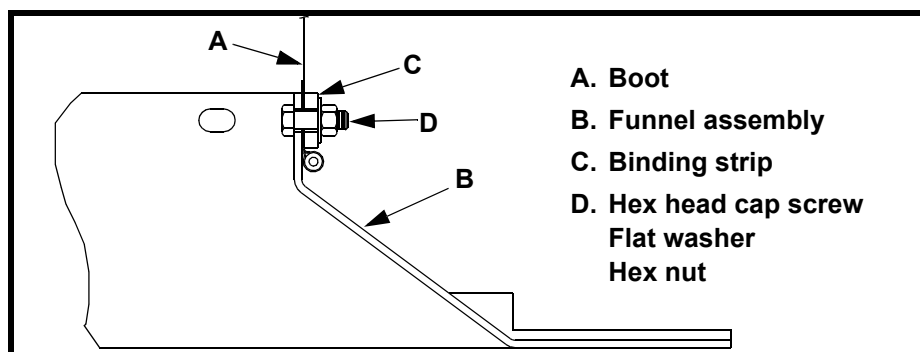


Figure 2. Attaching Boot to Funnel Assembly

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-13, SBL-24, SBL-30, SBL-35, SBL-48, 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.

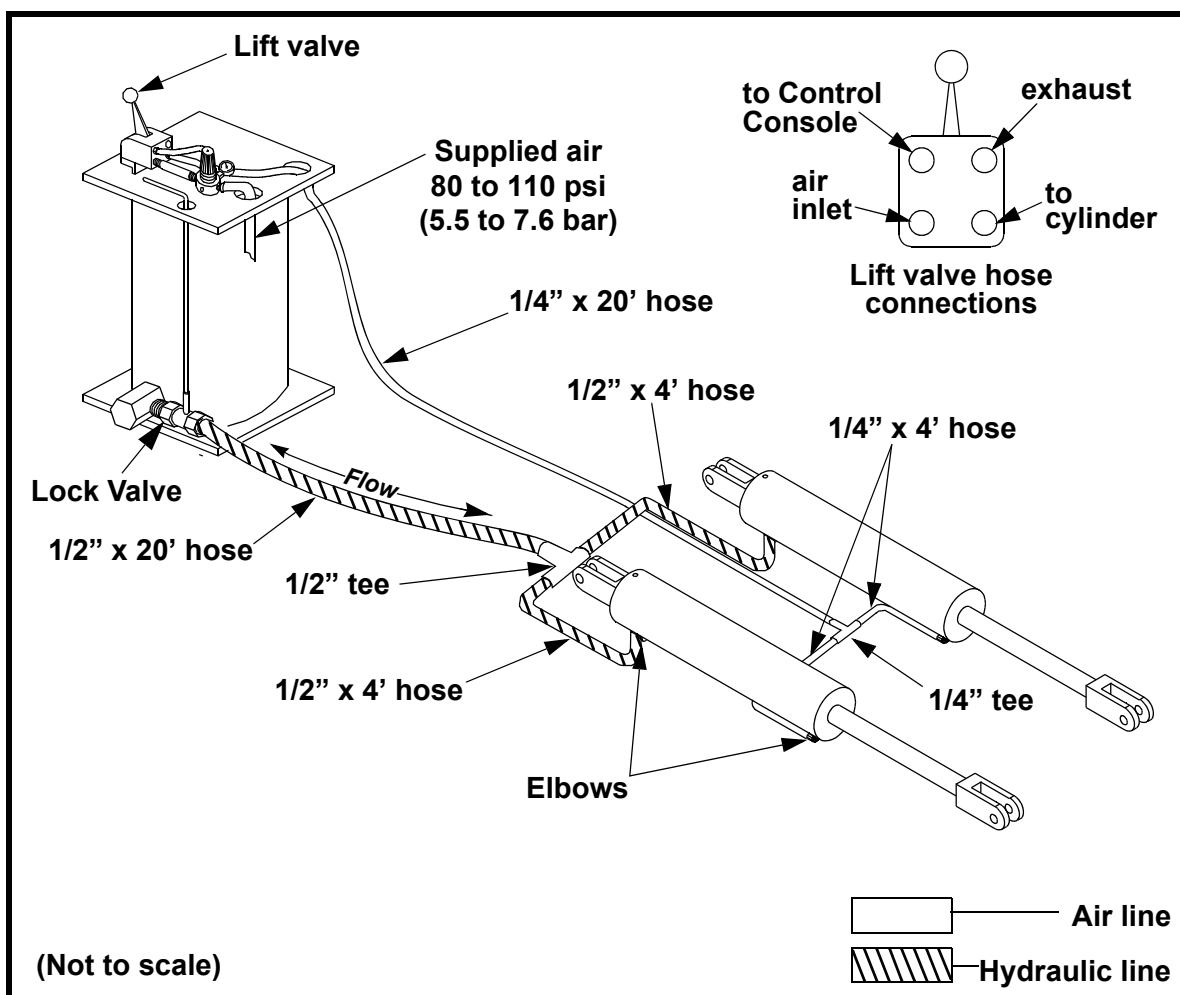


Figure 3. Hose Connections for Models SBL-13, SBL-24, SBL-30, SBL-35, SBL-48, and SBLR-18

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.

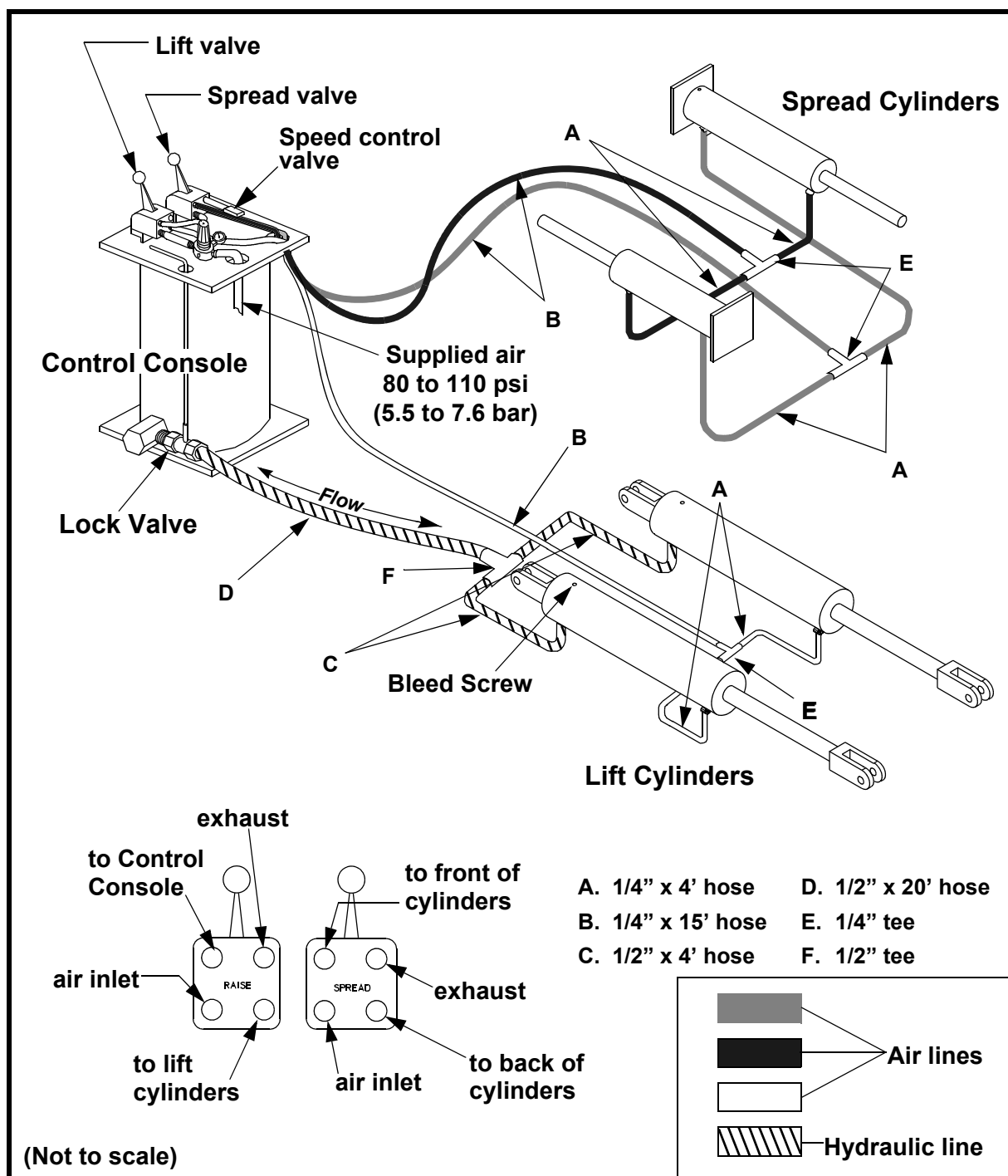


Figure 4. Hose Connections for Models DBL-18 and DBLG-18 GATX

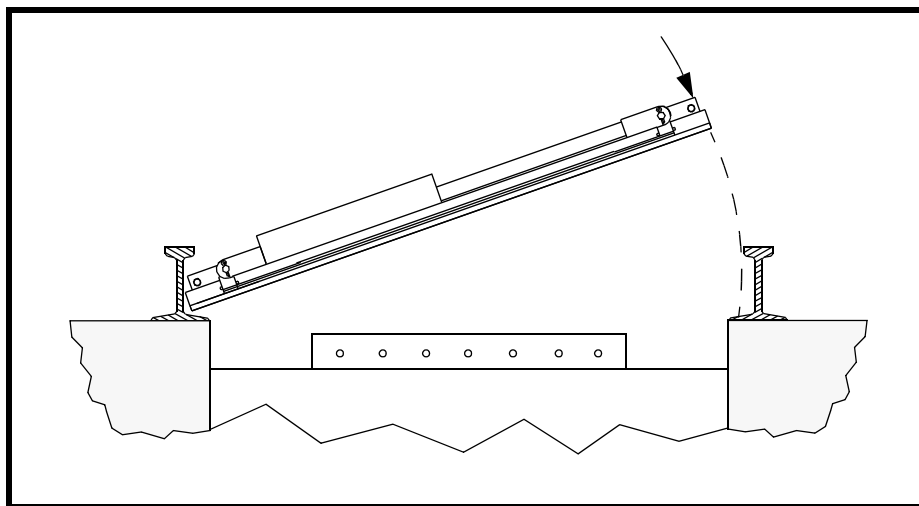


Figure 5. Positioning Railcar Connector on Rails

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

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).

Connecting air lines

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.

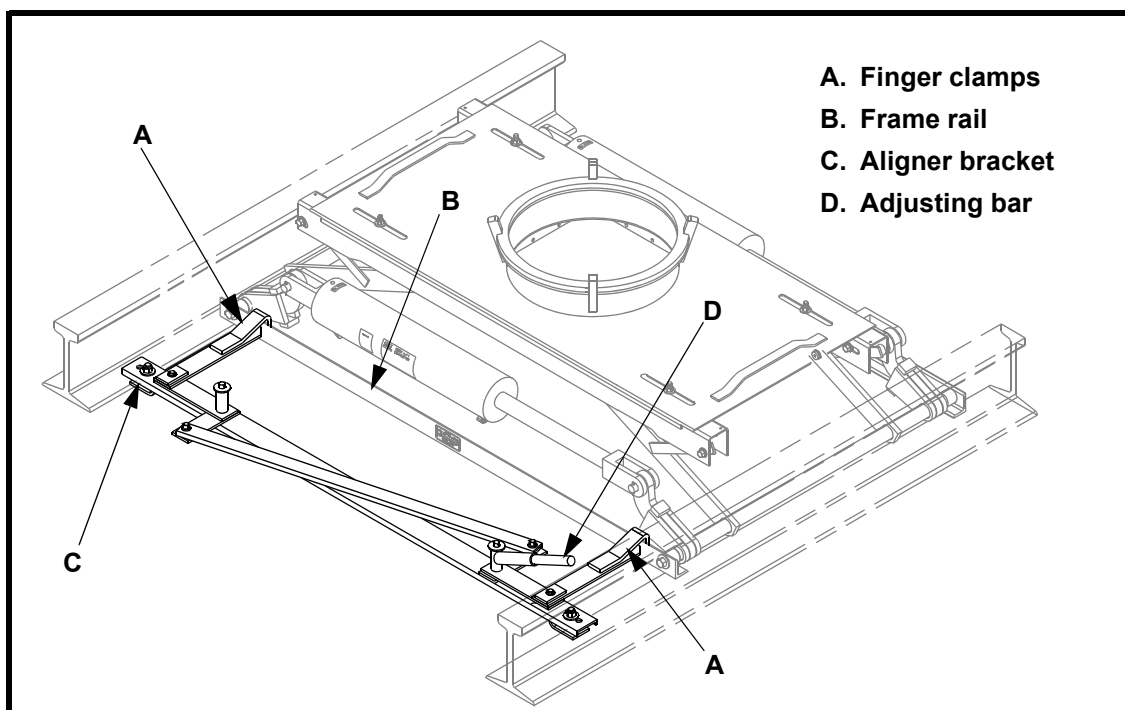


Figure 6. Installing Manual Aligner

⚠ 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

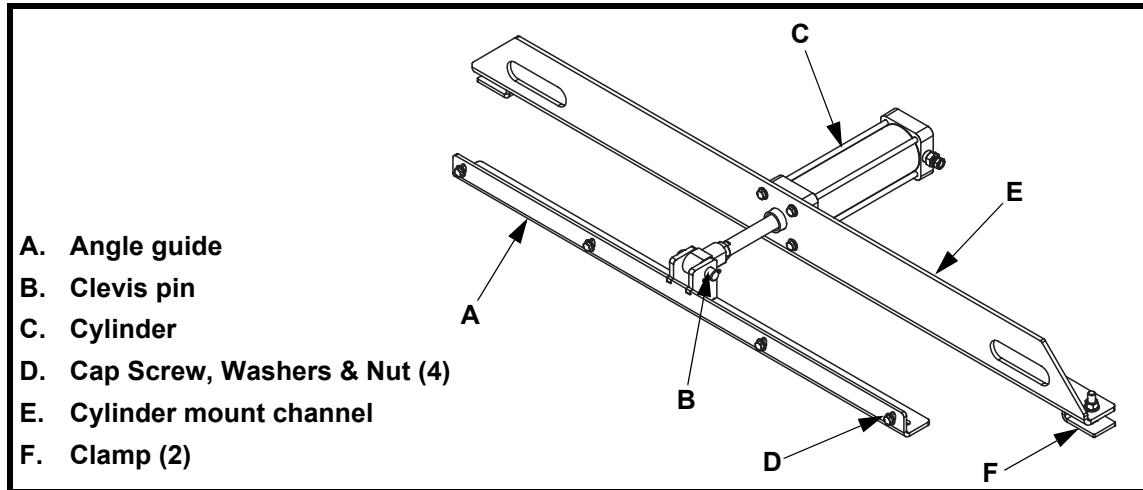


Figure 7. Installing Pneumatic Aligner

1. 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.

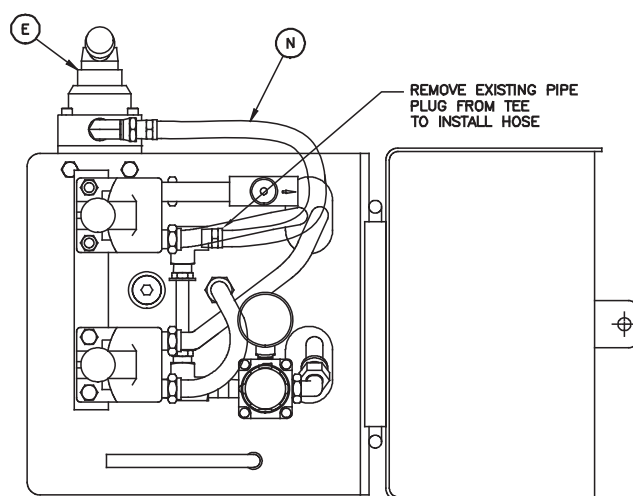
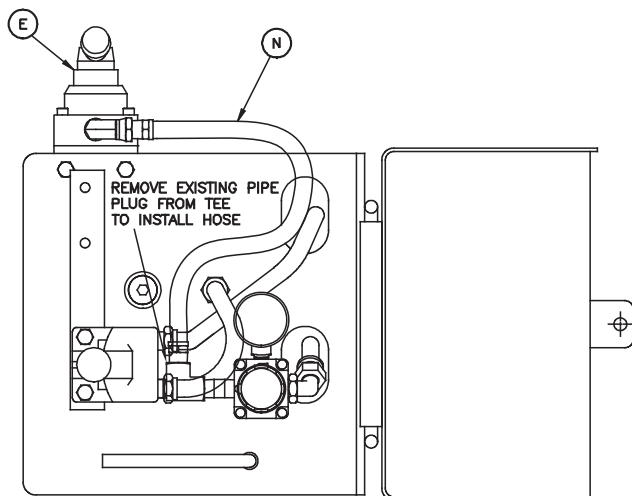
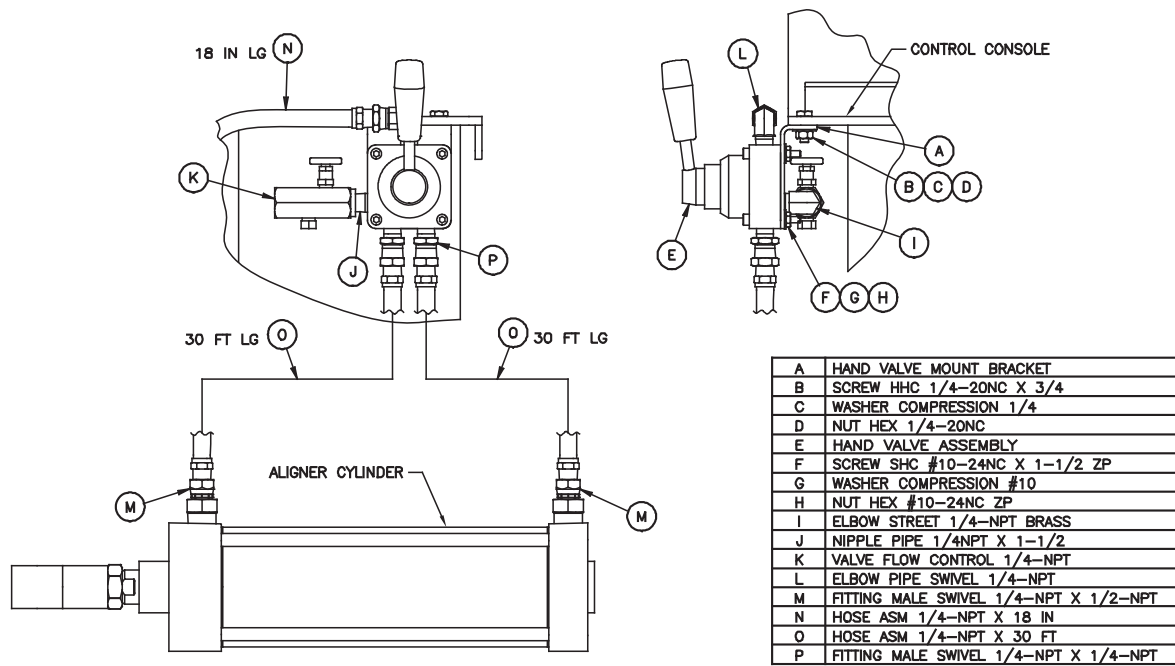


Figure 8. Pneumatic Aligner Schematic

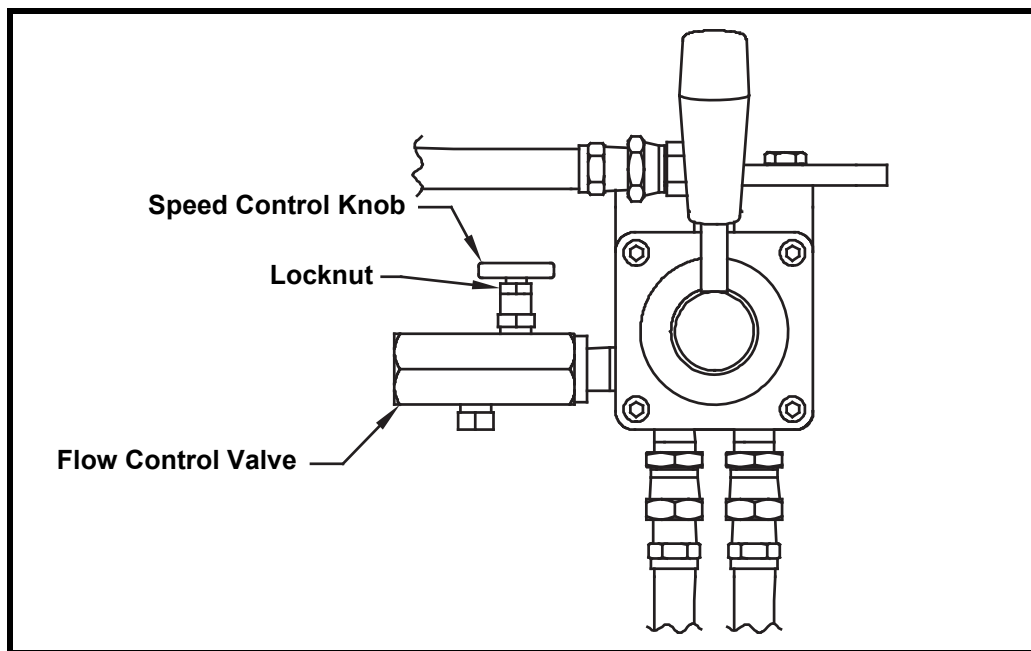


Figure 9. Pneumatic Aligner Flow Control Valve

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. 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.

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.

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. 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 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. 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.

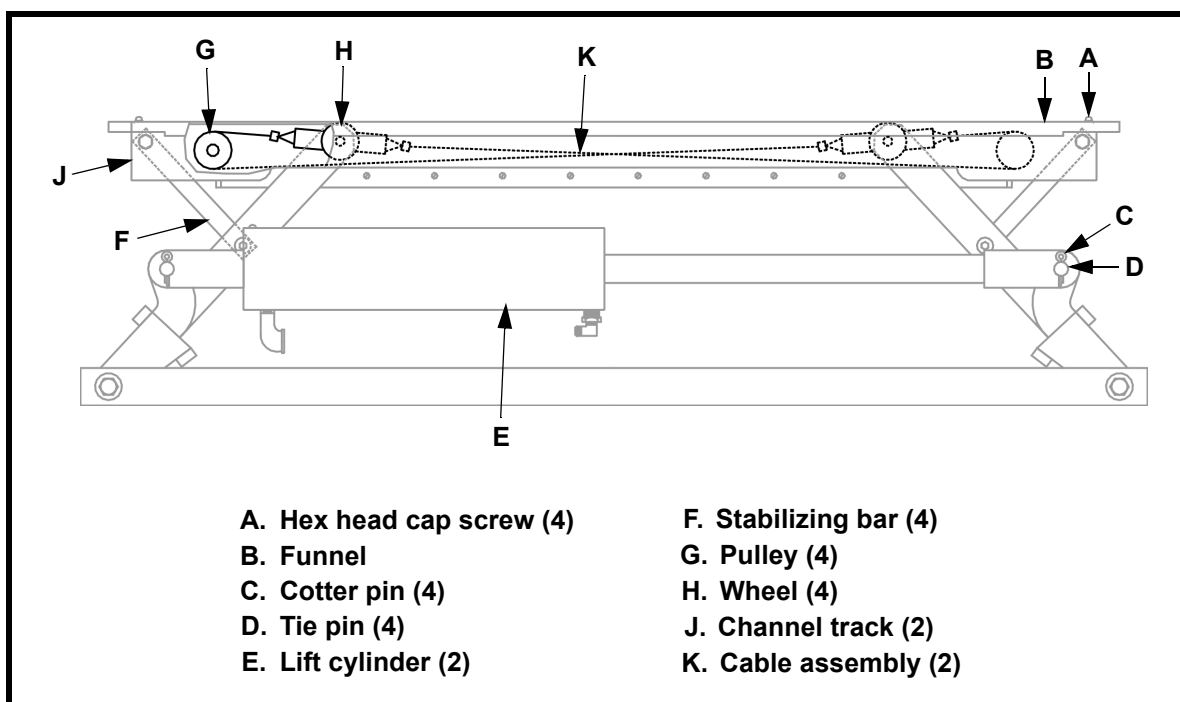


Figure 10. Replacing Cable Assembly

14. Install wheels.
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.

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.

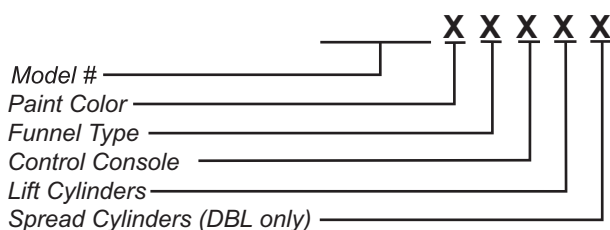
NOTE

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.



MODEL

SBL-13

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 Cylinders

1: Hydraulic Lift Cylinders

2: Hydraulic Lift Cylinders with Cover Kits

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

P/N Prefix

Funnel Size

Retrofit Kit

Opening Size

Material

SBL - XX G XX X

FUNNEL SIZE

13: For a SBL13 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 inch Square

30: Approximately 3 inch Square

40: Approximately 4 inch Square

MATERIAL

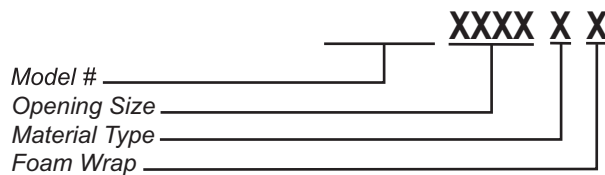
A: AR500

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-24AS

SBL-30AS

SBL-35AS

SBL-48AS

MATERIAL TYPE

W: Wood

H: High Density Polyethylene

FOAM SEAL

Ø: No Wrap

W: White Hypalon Wrapped
(available only with
high density poly sheet)

Boot-Lift® Control Consoles

Boot-Lift® DBL-18 Control Console: P/N 16953.

Boot-Lift® Control Console Assembly: P/N 17256.

Boot-Lift® Aligners

Manual Aligner: P/N 17326.

Pneumatic Aligner: P/N 34140.

Miscellaneous

	Boot-Lift® Accessories Part Numbers							
Accessories	SBL-13	SBL-24	SBL-30	SBL-35	SBL-48	DBL-18	DBLG-18	SBLR-18
Lift Cylinder Cover	18335							
Funnel Cover	39532-CA	19544	34884-CA	Contact Martin Engineering		18420		39555-C 39555-CC
Transition Funnel	NA					17272*		NA
Spread Cylinder Cover						18331		

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

Part Numbers

Boot-Lift® Assembly Replacement/ Repair Part Numbers								
	SBL-13	SBL-24	SBL-30	SBL-35	SBL-48	DBL-18	DBLG-18	SBLR-18
Funnel - Standard	17024-13	17024	34884-F	17024-35	17024-48	17029 17100	19739 18301	Contact Martin Engineering
Funnel - Stainless Steel	17024-13SS	17024-SS	34884-FSS	17024-35SS	17024-48SS	17029-SS 17100-SS	SP02565-L SP02565-R	
Binding Straps (add "SS" for stainless steel)	17260-20 17260-03	17260-04 17260-03	17260-12 17260-03	17260-06 17260-03	17260-21 17260-03	17260-01 17260-02	17260-01 17260-02	
Foam Seal (not wrapped)	17203					16681	19816	21053 (std) 36732-15 (urethane)
Foam Seal (wrapped)	Contact Martin Engineering					16681-W		Contact Martin Engineering
Lift Cylinder	16963							
Lift Cylinder Rebuild Kit	27960							
Spread Cylinder	NA			38338S-FRK		17033	38342S-DBLG	NA
Spread Cylinder Repair Kit						20714		
Frame Rebuild Kit								

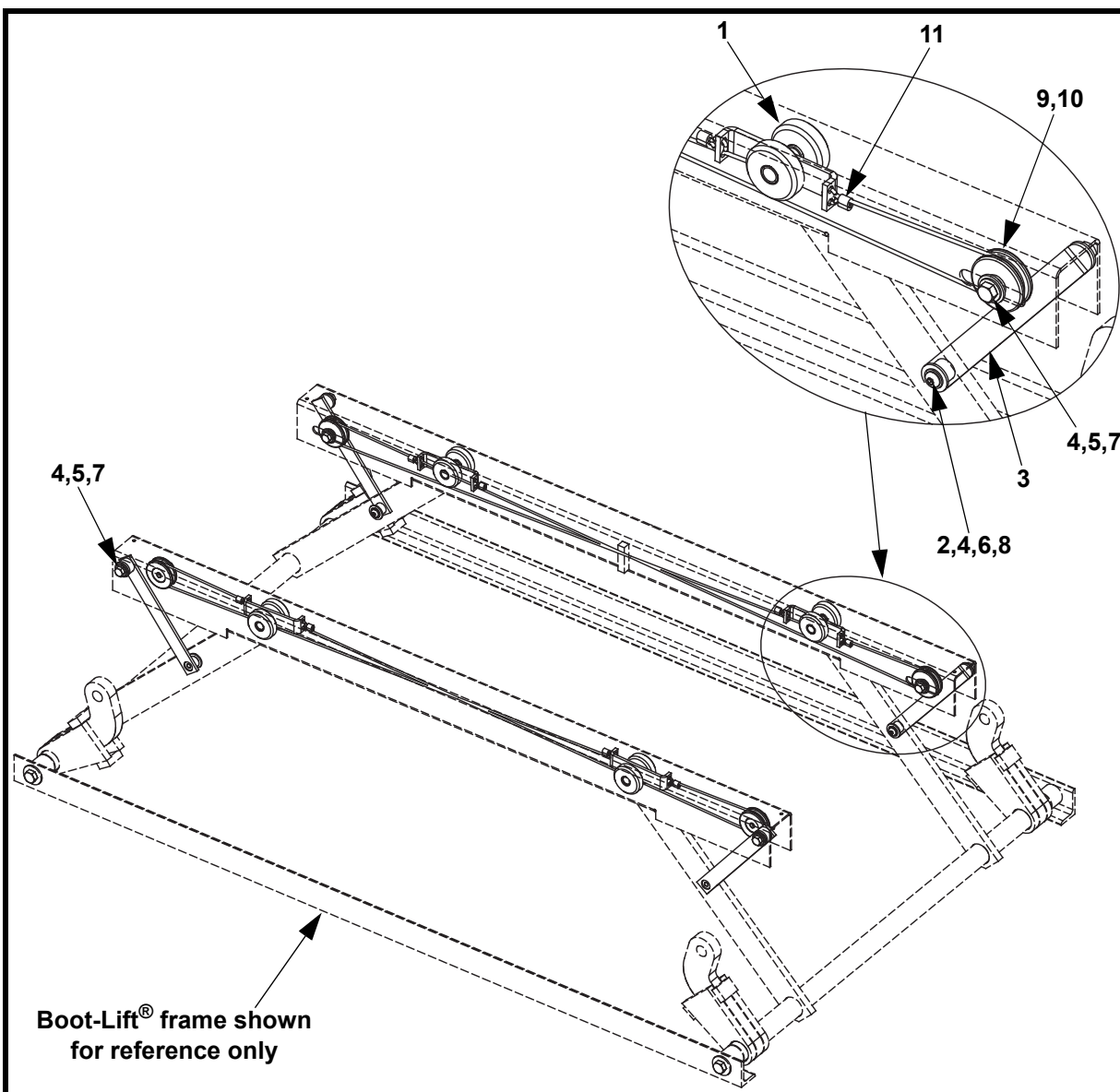


Figure 11. Boot-Lift® Frame Rebuild Kit, P/N 38338S-FRK

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	Stabilizing Bar Hub	17023	4
10	Cable Pulley	17022	4
11	Boot-Lift® Cable Assembly	16974	2

Figure 11. Boot-Lift® Frame Rebuild Kit, P/N 38338S-FRK

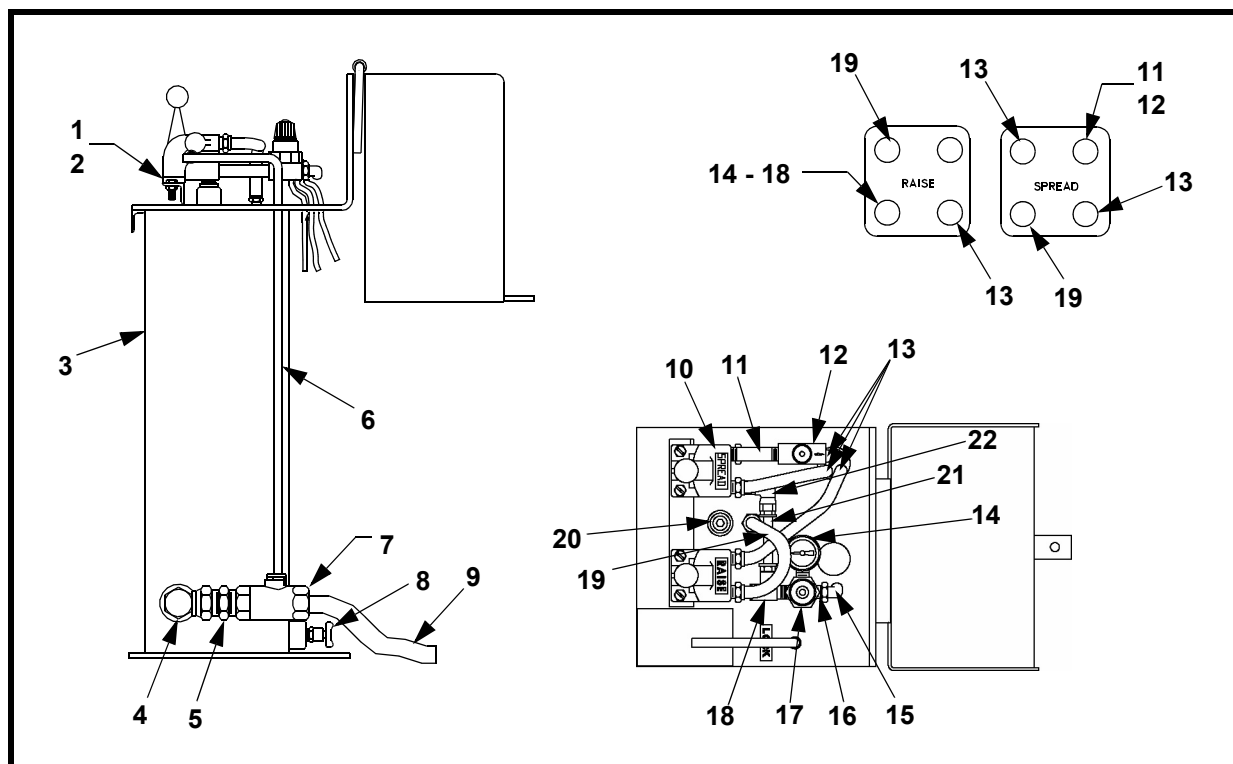


Figure 12. Boot-Lift® DBL-18 Control Console, P/N 38340X-DBL**

Item	Description	Part No.	Qty
1	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 Ø1/2 x 20 ft	17234	1
10	Valve Control	17218	2
11	Pipe Nipple	17219	2
12	Valve Flow Control	20547	1
13	Hose ØRaise 1/4 x 15 ft	17223	3
14	Air Gauge AG2	14725	1
15	Elbow 90°	17238	1
16	Bushing Reducing	13259	1
17	Regulator BR4	14728	1
18	Street Tee	17220	1
19	Hose Raise Ø1/4 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 Ø1/2 x 4 ft	27802-48	2
*NS	Tee 1/2	17241	1
*NS	Hose Cylinder Ø1/4 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

NS = Not Shown

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

* Refer to Figure 4.

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

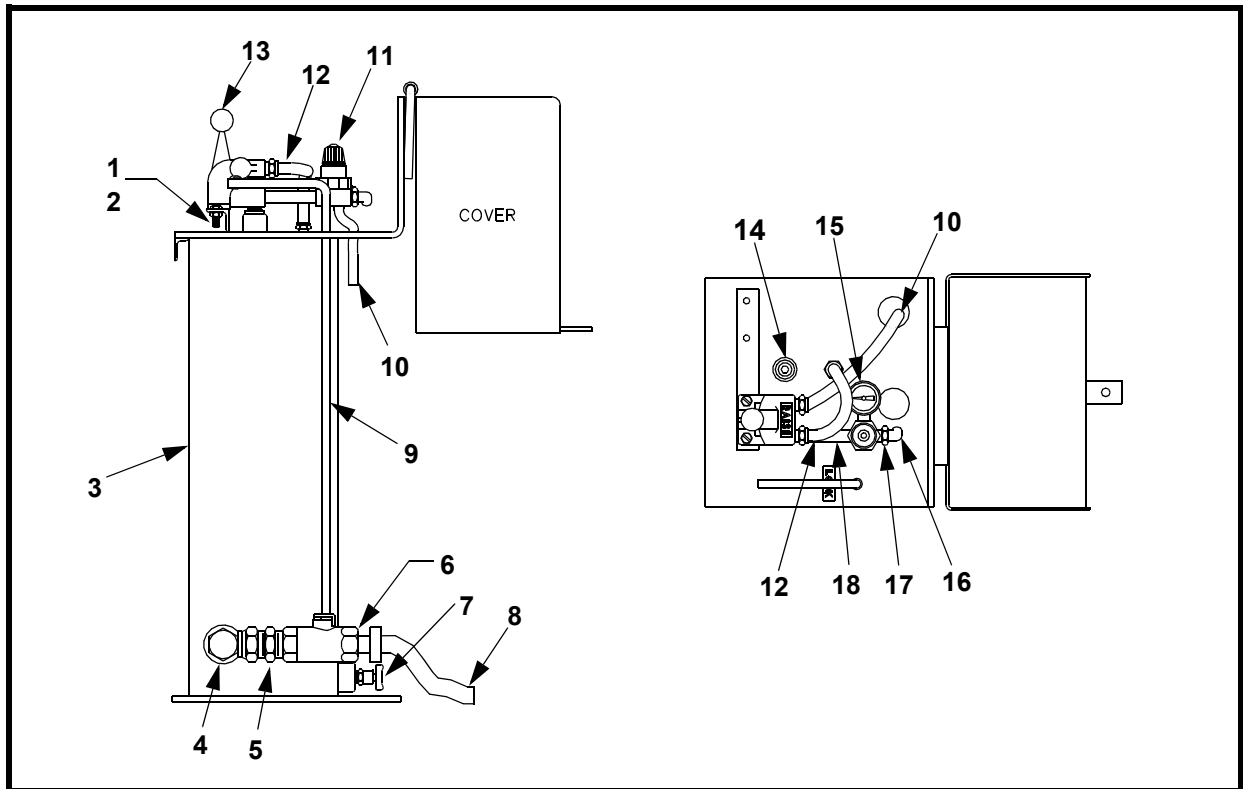


Figure 13. Boot-Lift® Control Console Assembly, P/N 38340X-SBL

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 20 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
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

NS = Not Shown

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

* Refer to Figure 3.

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

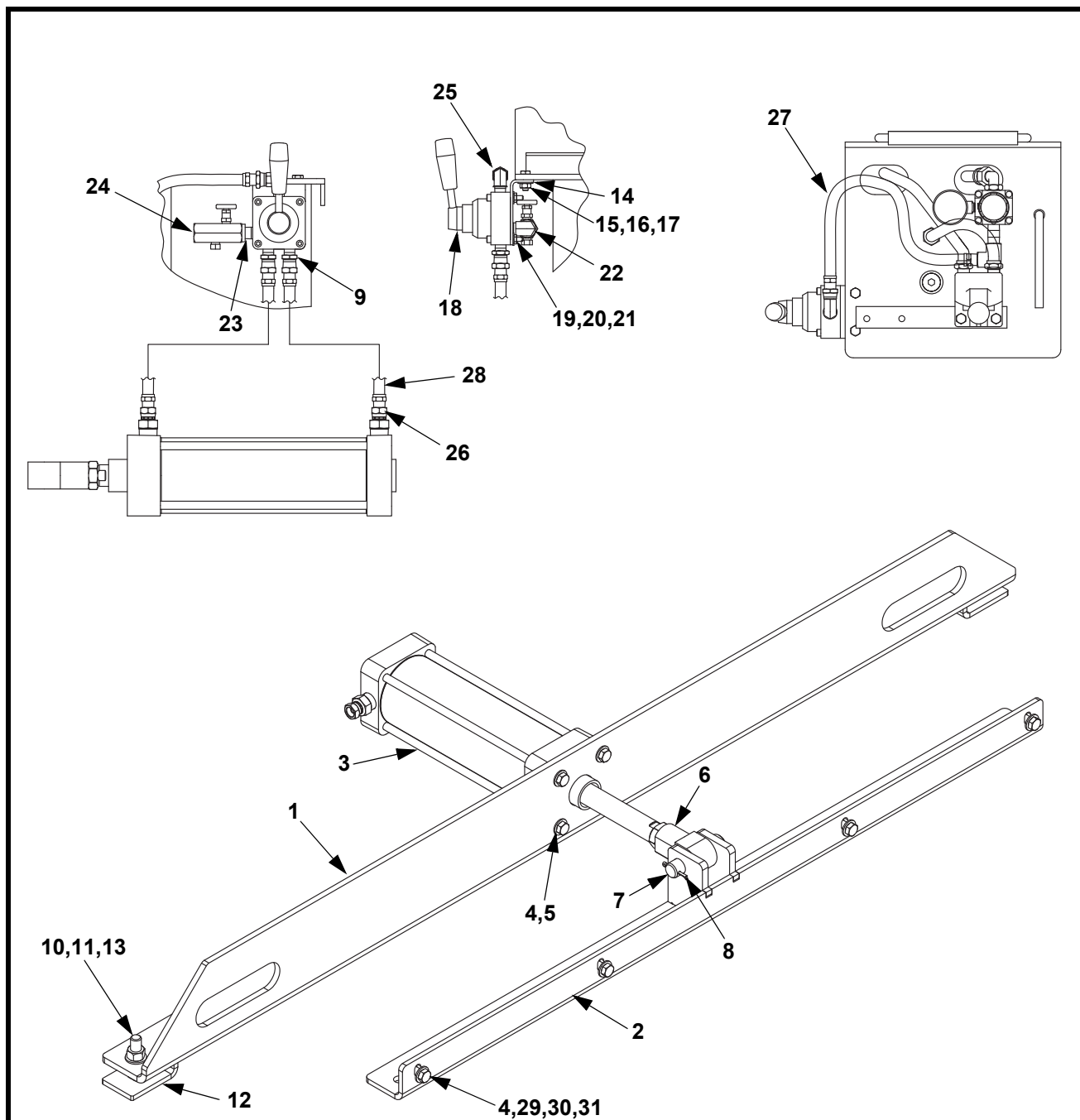


Figure 14. Pneumatic Aligner Assembly, P/N 34140-XX

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	Screw 3/8-16NC x 1 ZP	11746-02	4
30	Washer Flat 3/8 Narrow SS	16206	4
31	Nut Hex 3/8-16NC ZP	11770	4
32 (NS)	Label Pinch Point Warning	30528	1

NS = Not Shown

Figure 14. Pneumatic Aligner Assembly, P/N 34140-XXX

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

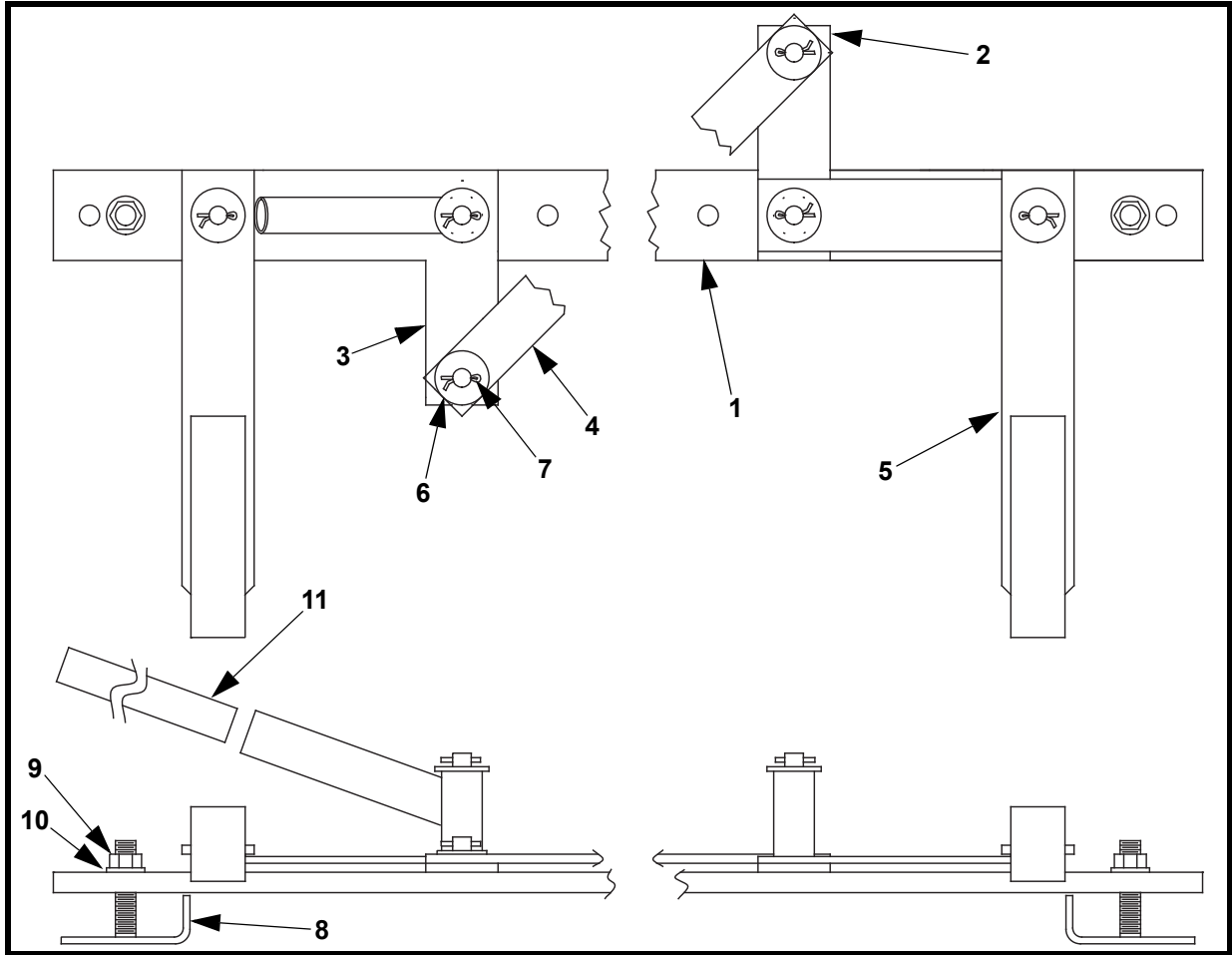


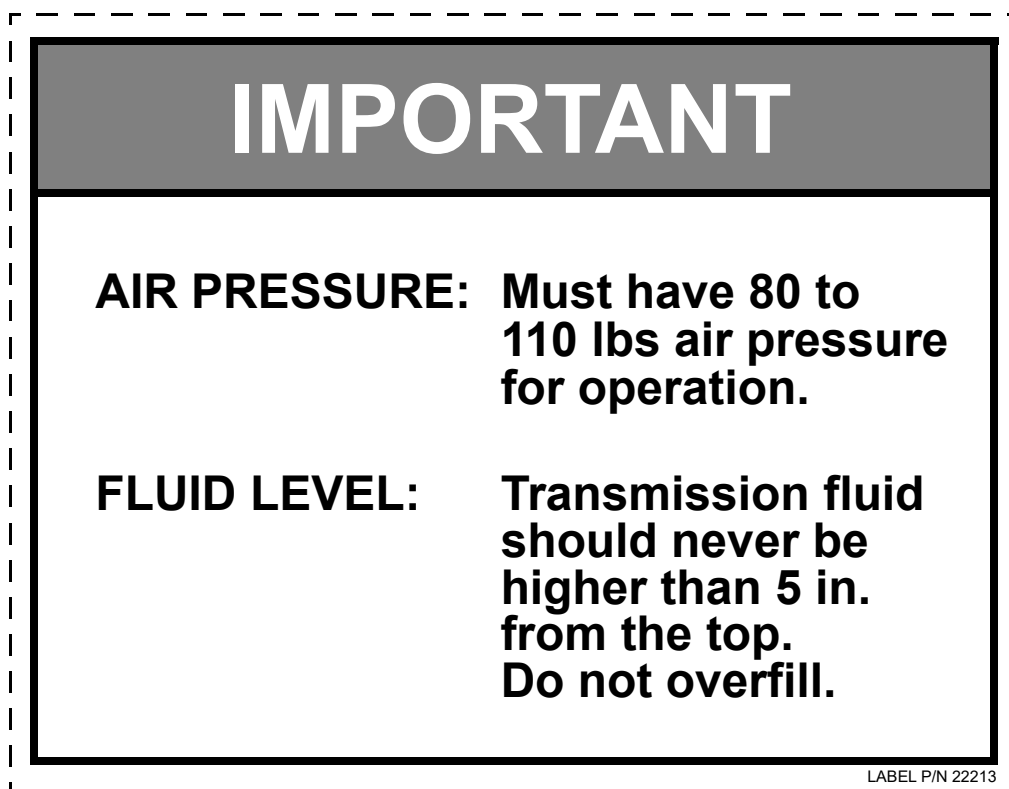
Figure 15. Manual Aligner Assembly, P/N 17326-X

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

Notes

Appendix A

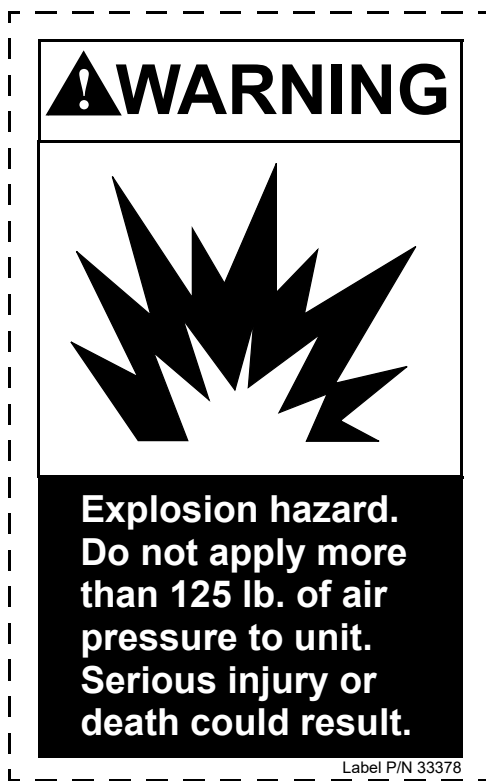
Boot-Lift® Railcar Connector Labels



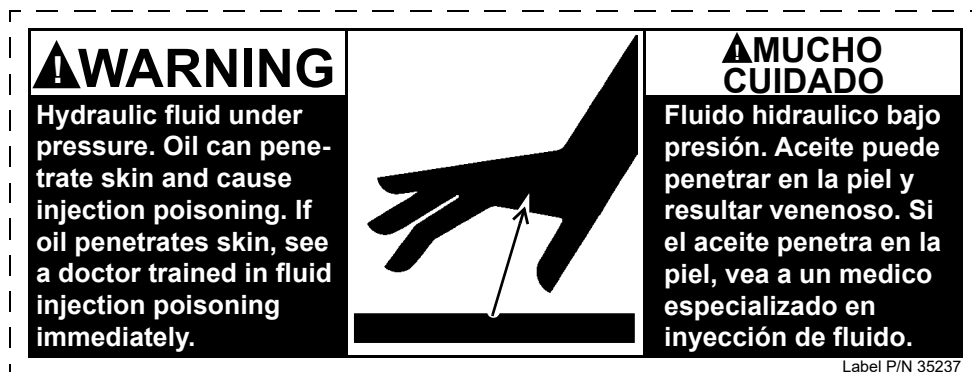
Boot-Lift® Air Pressure Fluid Level Label, P/N 22213



Pinch Point Warning Label, P/N 30528



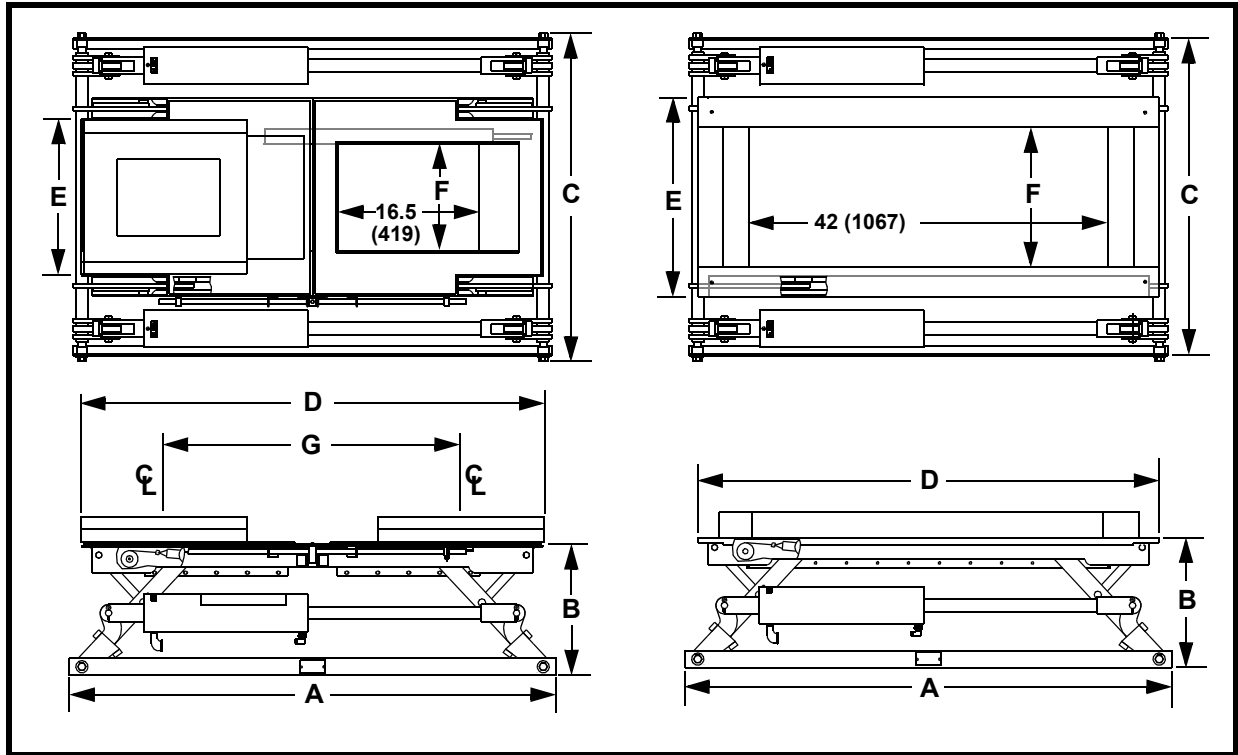
Boot-Lift® Air Pressure Warning Label, P/N 33378



Hydraulic Fluid Warning Label, P/N 35237

Appendix B

Boot-Lift® Railcar Connector Dimensions



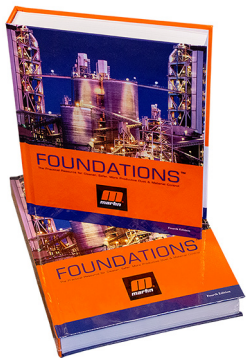
Model	A	B		C	D
		Extended	Retracted		
SBL-13	57 (1448)	18.62 (473)	3.94 (100)	36.38 (924)	54 (1372)
SBL-24	57 (1448)	18.62 (473)	3.94 (100)	40.38 (1026)	54 (1372)
SBL-30	57 (1448)	18.62 (473)	3.94 (100)	48.38 (1229)	54 (1372)
SBL-35	57 (1448)	18.62 (473)	3.94 (100)	53.38 (1356)	54 (1372)
SBL-48	57 (1448)	18.62 (473)	3.94 (100)	66.38 (1686)	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-13	23.1 (588)	13 (330)	—
SBL-24	29.1 (740)	22 (559)	—
SBL-30	37.1 (943)	30 (762)	—
SBL-35	42.1 (1070)	35 (889)	—
SBL-48	55.1 (1401)	48 (1219)	—
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

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