

Brake Installation, Maintenance and Troubleshooting

Using the HydraSafe Brake Easy and HydraSafe Brake Plus Manual as an example

by Kevin Cunningham and Kyle Toan

Overview

The HydraSafe Brake is engineered to meet or exceed the safety standards outlined in the Unintended/Ascending Elevator Code A17.1 2.19, ensuring optimal safety as a critical component in any traction elevator system. Moreover, its versatile design allows for seamless adaptation to meet the requirements of A17.1 3.17 for hydraulic elevators utilizing a “T” rail configuration.

Examinations and testing procedures for the HydraSafe Brake adhere strictly, but are not restricted, to ASME A17.1 8.6.4.19.11 specifications concerning Ascending Car Overspeed Protection, Unintended Car Movement Devices and

Emergency Brake protocols. Maintenance procedures are standardized across both traction and hydraulic elevator systems to guarantee uniform safety standards.

While HydraSafe Brake recommends monthly maintenance checks for optimal performance, such frequency is not mandatory and should instead be determined based on contractual agreements or guidelines set forth by the AHJ in conjunction with ASME code compliance regulations. We advise incorporating these maintenance procedures into your scheduled visits to ensure the continued reliability and safety of our product line:

- ◆ Conduct a visual inspection of the unit on a monthly basis or during the next scheduled maintenance visit. Check for any signs of damage, such as cracks or dents, and inspect for oil leaks around seals. Ensure all components are securely fastened and there are proper clearances between the brake pad and guide rail. Wipe clean any oil residue to maintain optimal performance.
- ◆ Annually, the HydraSafe Brake unit must undergo testing to verify proper operation in accordance with A17.1 8.6.4.19.11 standards for code compliance.
- ◆ Every five years or 60 months, the HydraSafe Brake unit should undergo a comprehensive test per ASME A17.1 8.6.4.19.11 code. This test includes conducting assessments at full load capacity, as determined individually for each elevator being tested and at 125% capacity to ensure adherence to Unintended/Ascending capabilities, as specified by the AHJ and ASME Code.

Brake Unit

The HydraSafe Brake comprises two main components: the Brake Unit and the Power Unit, which is enclosed within the Brake Unit.

Brake Unit Components:

- ◆ Safety switch (two per device)
- ◆ Brake pads (two per device)
- ◆ Retracting springs for each brake pad (four total per device)
- ◆ Stainless pistons (two per device)
- ◆ Wiper seal (two per device)
- ◆ Pressure seal (two per device)
- ◆ Back plate seal (two per device)
- ◆ Bleeder valve/fitting (two per device)
- ◆ SS-400-1-4 fittings male (two per device)
- ◆ SS-400-3 Fitting Union Tee (one per device)
- ◆ Brake pad wear sensors if applicable (two per device)

Learning Objectives

After reading this article, you should be able to:

- ◆ Install the HydraSafe Brake Easy and Plus models
- ◆ Run the code-compliance testing procedures on these units
- ◆ Perform maintenance on these units
- ◆ Troubleshoot HydraSafe Brake issues
- ◆ Fill out the Maintenance Log

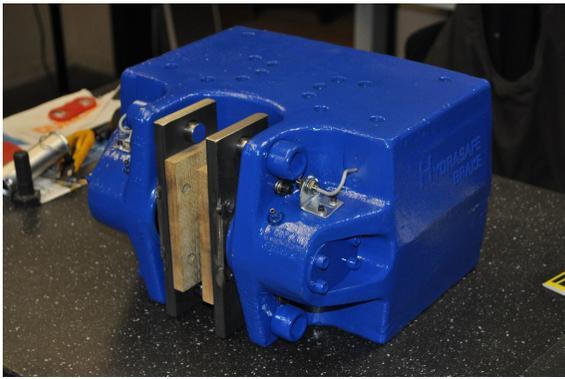


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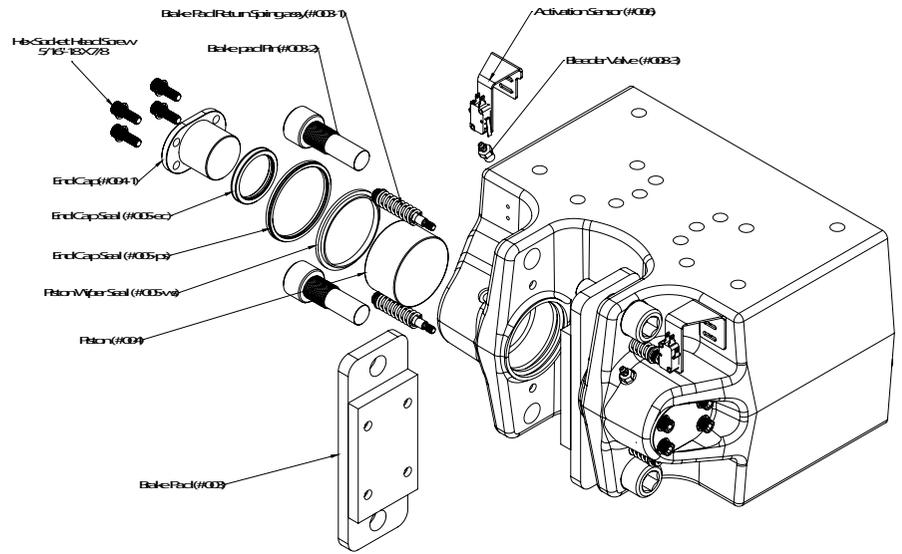
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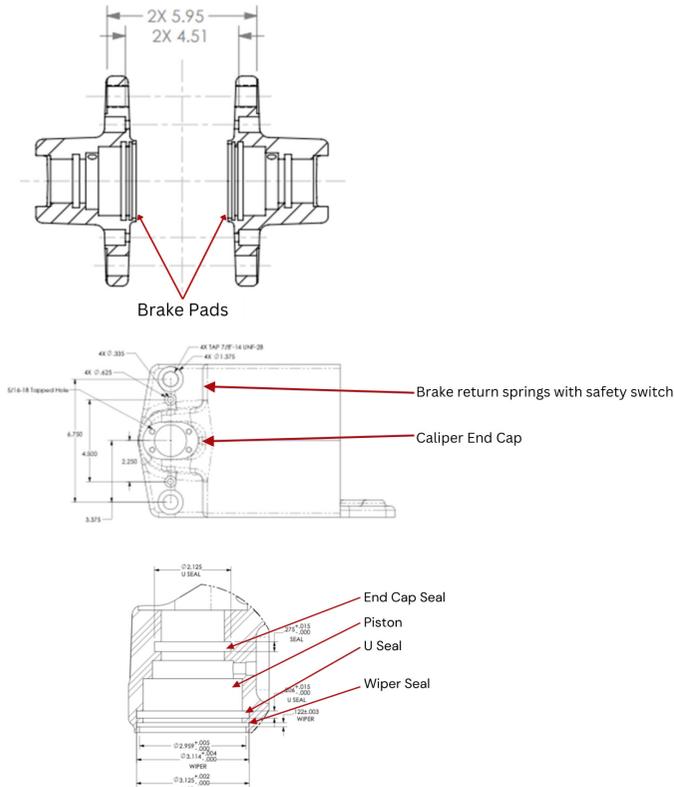
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Brake Unit – Caliper Diagram



Brake Unit – Diagrams

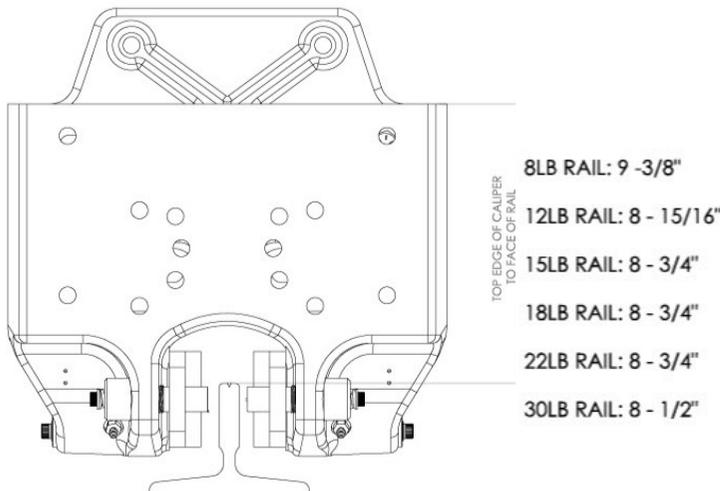


Submersible Power Unit

Power Unit Components:

- ◆ Submersible Power unit with internal motor 120-V (One Per Device).
- ◆ On-board diagnostics module.
- ◆ Built-in oil reservoir with filler cap and level sensor.
- ◆ Two 120-V relays with normally open and closed contacts.
- ◆ One fuse block and 20 A Fuse.
- ◆ Encloser is a UL-approved electrical box that houses all components.
- ◆ Accumulator Valve type HPS
- ◆ Hydraulic 3/8-in. hose (5800 PSI) with quick connect from valve to caliper.

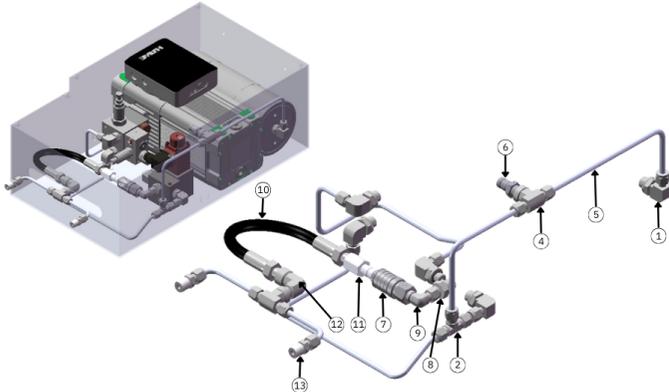
Brake Unit – Caliper to Rail Diagram



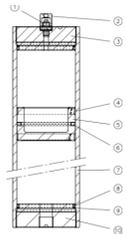
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Power Unit Diagram

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	HB-SS-400-2-4PR	Positionable Male Elbow, ISO Parallel Thread	5
2	HB-SS-400-3	1/4" Union Tee	1
3	HB-SS-401-PC	1/4" Port Connector	1
4	HB-SS400-3-4TTF	Female Branch Tree	2
5	HB-SS-T4-S-065-20	316SS 1/4" 0.065" Wall Tubing	5 FT
6	HB-OS-PD343	QC Stem, 1/4" MNPT	1
7	HB-OS-PD242	QC Body, 1/4" FNPT	1
8	HB-SS-TA-1-4RS	Male Adapter (ISO Parallel Thread)	1
9	HB-SS-400-2-4	Male Elbow	1
10	HB-OS-PKR-HS	Parker Hose, 1/4" MNPT Ends, 12.5"	1
11	HB-OS-PD342	QC Stem, 1/4" FNPT	1
12	HB-SS-4-SE	Street Elbow	1
13	HB-SS-400-1-4	Male Connector	2
14	HB-SS-4-RS-2V	ISO Parallel Thread Gasket	1



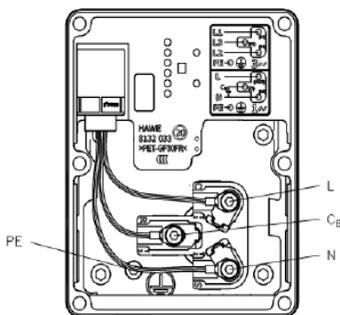
Power Unit – Accumulator



1. Gas valve
2. Valve Protection
3. Gas flange
4. Guide ring
5. Piston
6. Piston seal
7. Cylinder tube
8. Flange seal
9. Back up ring

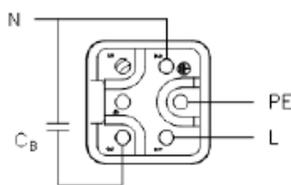
Power Unit – Electrical Diagram

Alternating current



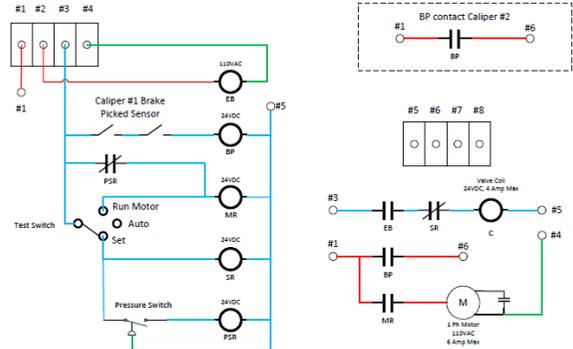
- L U1/Z2
- N U2
- C_B Z2
- PE Ⓢ

Alternating current



System Logic:
 1. Each power unit will run the motor to maintain pressure automatically based on the pressure settings of the pressure switch.
 2 = Valve coil voltage is high, and drops on demand from the controller (loss of EB signal) when unintended or ascending car input goes high. Valve coil will also drop with loss of power per code.
 3 = Valve coil drops and releases the hydraulic flow to the calipers and sets the device.
 4 = When the EB signal is restored per code, the coil picks and opens the brakes: in the event of a power loss, when power is restored the coil will pick and open the brakes.
 5 = Brake picked input signals the controller that the brakes are reset and the elevator is ready to run.

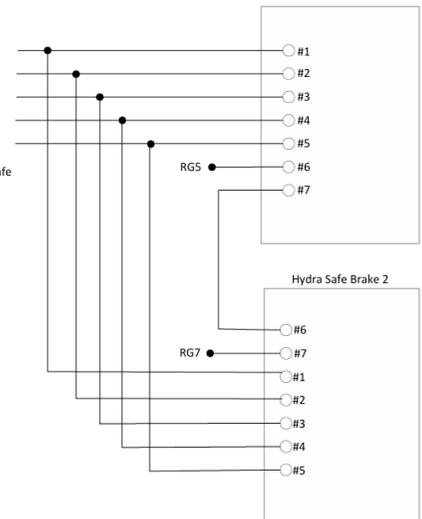
Wire List:
 #1 – 110 VAC from controller
 #2 = EB from controller (RG1)
 #3 = +24 VDC from controller
 #4 = Common/Neutral (RG2)
 #5 = 24VDC Return
 #6, #7 N.O. contact opens when HydraSafe brake is engaged



RED 110VAC
 BLUE 24VDC
 GREEN Common/Neutral

Power Unit – Electrical Diagram

- #1 110 VAC @ 5Amps
- #2 RG1(110VAC)
- #3 +24VDC
- #4 110VAC Return(RG2)
- #5 24VDC Common
- #6, #7 N.O. contact and opens when HydraSafe brake is engaged



Brake Unit – Maintenance

- ◆ Maintenance tasks should only be undertaken by qualified personnel.
- ◆ Perform monthly inspections or during scheduled maintenance visits to monitor brake pad clearance from the guide rail and brake pad surface.
- ◆ Clean brake components regularly to remove dirt, dust and debris.
- ◆ Biannually, check all bolt connections between the caliper body and the car structure to ensure they meet manufacturer specifications.
- ◆ Biannually, inspect caliper assemblies for oil leaks around pistons and end caps. Seals have an undefined life expectancy – if leakage occurs, replace the seals.
- ◆ Biannually, inspect brake pads for any type of wear.
- ◆ Annually, verify equal setting for each brake pad on each side of the guide rail to ensure proper settings and clearances.
- ◆ Replace brake pads once they reach 1/8-in. thickness (pad material only). New brake pads vary in sizing/thickness depending on rail size. Sizing/thickness can range from 1/4

Continued

- in. to 5/8 in. thick. Brake pads should be replaced when wear indicator indicates wear. If wear indicator is not available on that model, verification of the 1/8-in. thickness shall be followed.
- ◆ Typical brake pad life expectancy ranges between five and 15 years depending on usage. Replace brake pads once they reach 1/8-in. thickness.
- ◆ Verify proper operation of the two retracting springs on each side of each brake pad at least once a month. Replace both springs if they do not operate correctly.
- ◆ Verify proper operation of both safety micro switches (one per brake pad) as per code requirements. Replace any faulty switches.
- ◆ Check for oil leakage around the piston area or back plate on each caliper side. Light oil residue around the wiper seal on each piston is normal. Replace seals if any other leakage occurs.
- ◆ Check for oil leakage around pressure fittings and bleeder valve to verify proper operation.

Power Unit – Maintenance

- ◆ Maintenance tasks must be performed by qualified personnel only.
- ◆ In case of faults or damage, immediately switch off the hydraulic system.
- ◆ Document all maintenance activities in a maintenance log.
- ◆ Monthly inspections are recommended but not mandatory. Wipe down the unit to remove any oil residue.
- ◆ Biannually, check all electrical connections.
- ◆ Biannually, check for any leakage.
- ◆ Biannually, check oil levels and fitting connections.
- ◆ Annually, check full operation of the power unit.
- ◆ The power unit is a self-contained sealed unit. Do not attempt to repair it, as this will void warranties. Identify and rectify issues such as improper voltage, mechanical binding around pistons, debris or rust. If necessary, install a new power unit.

- ◆ Check the power unit and associated fittings for any leakage and replace fittings as required.
- ◆ Verify proper operation of relays and replace defective ones.
- ◆ Monthly or during scheduled maintenance visits, verify proper operation of the accumulator unit. HydraSafe Brake recommends replacement of accumulators every three to five years for optimal performance.
- ◆ Check wiring for corrosion, loose connections or hazards.

MAINTENANCE LOG												
Traction & Hydraulic Maintenance Requirements												
Month/Year: _____		Job Name: _____			Job Location: _____			Unit #: _____				
HydraSafe® Brake recommends monthly maintenance but is not required and should be based on contractual visits or AHJ guidelines along with ASME code <u>compliance</u> . HydraSafe® Brake recommends these maintenance procedures take place on your next scheduled visit in order to achieve optimum performance from our product lines.												
Monthly Maintenance (Recommended but not required)							Twelve Times / Year					
Brake Unit	J	F	M	A	M	J	J	A	S	O	N	D
Check for any type of damage, oil around seals, or loose parts. A17.1.8.6.5.5												
Monitor brake pad clearance from guide rail and brake pad surface. A17.1.8.6.4.6.1(a)(b)												
Clean brake components to remove dirt, dust, and debris. A17.1.8.6.4.5.1												
Verify proper operation of the two retracting springs on each side of each brake pad. Replace both springs if they do not operate correctly. A17.1.8.6.4.6.1(d)												
Verify proper operation of both safety micro switches (one per pad) as per code requirements. Replace any faulty switches. A17.1.8.6.4.19.11 (a)												
Check for oil leakage around the piston or back plate on each caliper side. Light oil residue around the wiper seal on each piston is normal. Replace seals if any other leakage occurs. A17.1.8.6.5.5.1												
Check for oil leakage around pressure fittings and bleeder valve. A17.1.8.6.5.9												
Power Unit	J	F	M	A	M	J	J	A	S	O	N	D
Wipe down the unit to remove any oil residue. A17.1.8.6.5.1.1												
Check the power unit for leakage around the unit itself and its associated fittings. Replace any fittings as required. A17.1.8.6.5.5.1												
Verify proper operation of accumulator unit. HydraSafe Brake recommends replacement every 3 to 5 years for optimal longevity. A17.1.8.6.4.19.11 (a)												
Check all wiring for corrosion, loose connections, or any type of individual job hazards. If any malfunctions are detected a new wiring harness shall be installed. A17.1.8.6.4.20.10												
Inspect UL approved electrical box housing for any deterioration and if any is detected replace as required. NFPA 70-NEC 620												
Verify all relays are operating to manufacture specifications. NFPA 70-NEC 620												
Semi-Annual Maintenance							Two Times / Year					
Brake Unit	J	F	M	A	M	J	J	A	S	O	N	D
Check all bolt connections on the caliper body to the car structure and verify they are within manufactures specifications. A17.1.2.8.6												
Inspect the caliper assemblies for any oil leaks around the pistons and end caps. If leakage occurs, replace the seals. A17.1.8.6.5.5.1												
Inspect the brake pads for any type of wear. A17.1.8.6.4.6.1(a)(b)												
Power Unit	J	F	M	A	M	J	J	A	S	O	N	D
Check all electrical connections. NFPA 70-NEC 620												
Check oil levels. A17.1.8.6.5.5.1												
Check fitting connections. A17.1.8.6.5.5.1												
Annual Maintenance							One Time / Year					
Test for proper operation as per A17.1.8.6.4.19.11 for Code <u>compliance</u> .												
Verify equal setting for each brake pad on each side of guide rail to ensure proper settings and clearances. A17.1.8.6.4.6.1(a)(b)												

- ◆ Replace wiring harness if malfunctions are detected.
- ◆ Inspect UL-approved electrical box/housing for any deterioration and replace as required.
- ◆ HydraSafe Brake recommends replacing brake pads, seals, oil, safety switches, springs and the accumulator every 10 years to ensure maximum unintended/ascending operation or sooner depending on hoistway conditions and wear and tear. Monitor job site conditions monthly to determine component longevity.

Code-Compliant Testing Procedures

8.6.4.19.11 Ascending Car Overspeed Protection and Unintended Car Movement Devices, and Emergency Brake:

(a) Examinations. All working parts of ascending car overspeed protection and unintended car movement devices shall be examined to determine that they are in satisfactory operating condition and that they conform to the applicable requirements of 2.19.1.2(a) and 2.19.2.2(a).

(b) Tests. Ascending car overspeed protection shall be subjected to tests with no load in the car at the slowest operating (inspection) speed in the up direction.

(c) Tests. Unintended car movement shall be subjected to tests with no load in the car at the slowest operating (inspection) speed in the up direction.

Troubleshooting

HydraSafe Brake has tested and set the proper pressures and voltage based on an order form received from the contractor. This is job specific information and has been verified by the contractor and manufacturer before each unit is released for installation. If problems occur, have your order form information and HydraSafe Brake serial number available when you call HydraSafe Brake for further troubleshooting.

HydraSafe Brake will not power up:

- ◆ Verify wiring is correct per wiring diagram in installation manual.
- ◆ Check for power at stud location at the fuse block with the HydraSafe power unit on both units.
- ◆ Verify fuse(s) within controller are not blown.
- ◆ Verify dedicated 110-V feed has power and has not been tripped.
- ◆ Verify micro switch is in the open position and that the HydraSafe Brake has not been set.

The power unit has power, but the pump will not start:

- ◆ Check for power at stud location at the fuse block with the HydraSafe power unit on both units.
- ◆ Verify relays within power unit have voltage and are energized.
- ◆ Verify relays are in good working condition.
- ◆ Verify coil on valve is working and has power.
- ◆ Verify micro switch on HydraSafe Brake has not been set.
- ◆ Replace the run start capacitor.
- ◆ If the pump will not start after verification above, call HydraSafe Brake at 773-823-7439. Do not take apart the power unit as this will void the warranty.

The power unit has power, but pistons will not energize:

- ◆ Verify/bleed hydraulic lines to remove excess air.
- ◆ Verify pistons are not binding and seals are seated correctly.
- ◆ Verify no oil leakage is present.
- ◆ Verify brake pad is not binding and is seated properly on guide bolts.
- ◆ Verify power unit has oil in reservoir.
- ◆ Verify micro switch on HydraSafe Brake has not been set.

The power unit has power, and the unit starts, and pistons engage, but does not stop the elevator:

- ◆ Verify HydraSafe Brake is installed correctly post wise on guide rail with proper pad clearance to the guide rails.
- ◆ Verify pads are not worn.
- ◆ Verify HydraSafe brake is plumb, level and square per installation manual.
- ◆ Using the quick connect pressure gauge port on the power unit, verify pressure within the system based on the speed

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Safety Instructions

Upon receiving your individually packaged units, please check for any shipping damage – if found, report immediately. Using any other non-factory HydraSafe Brake parts will void warranty and could cause risk of injury. The HydraSafe Brake is intended for unintended/ascending movement ONLY and is not intended to replace any other elevator safety device.

- ◆ Notify proper building personnel elevator will be out of service.
- ◆ Before installation, secure a safe area to install HydraSafe Brake.
- ◆ Take necessary precautions and safety measures to secure elevator(s) for installation which should include – but are not limited to – proper barricades, lighting, safety apparel, PPE, Lockout/Tagout (LOTO) procedures and proper tooling.
- ◆ HydraSafe Brake recommends two people and proper equipment when handling/installing this product. Each box may weigh anywhere from 85 lb to 135 lb.
- ◆ Review order form to confirm accurate data was entered and therefore you have received the correct product for your alteration/repair/modernization or new install.
- ◆ When working with any electrical or live circuits, follow the proper protocol and remove any power from the circuit with which you are working and verify with an approved electrical meter that power has been removed and LOTO procedures have been followed.
- ◆ The HydraSafe Brake power unit is a high-pressure system. If any hydraulic fittings need to be adjusted or tightened, this system MUST be de-energized before any adjustments can be made.

and capacity of the elevator. (Check the order form information to confirm.)

- ◆ Verify proper signal from controller is energized for unintended/ascending movement.
- ◆ Call HydraSafe Brake at (219) 381-1664 for pressure valve adjustment.

All the errors listed below require a manual reset by a qualified elevator technician.

The elevator stopped floor level at a floor and will not run:

- ◆ Verify brake pad switches are properly set up and not in the set position.
- ◆ Verify the brake pads are not worn. This signal is monitored by the controller and should show an error.
- ◆ Verify oil level in the power unit. This signal is monitored by the controller and should show an error.
- ◆ HydraSafe Plus model: Verify door lock jumpers have not been left on the controller.
- ◆ HydraSafe Plus model: Verify pit encroachment device has not been activated.

The elevator stopped within the door zone, not floor level at a floor and will not run:

- ◆ Verify machine brake is in working order. This signal is monitored by the controller and should show an error.
- ◆ HydraSafe Plus model: Verify pit encroachment device has not been activated.
- ◆ HydraSafe Plus model: Verify first responder input has not been activated. (Was there a prior entrapment where first responders released passengers?)
- ◆ Verify door lock signals for car and hoistway door locks.

The elevator stopped, in an unknown location with doors closed and will not run:

- ◆ Verify machine brake is in working order. This signal is monitored by the controller and should show an error.
- ◆ Verify normal power is present. This signal is monitored by the controller and should show an error.
- ◆ HydraSafe Plus model: Verify pit encroachment device has not been activated.
- ◆ HydraSafe Plus model: Verify first responder input has not been activated. (Was there a prior entrapment where first responders released passengers?)
- ◆ Verify door lock signals for car and hoistway door locks.

Always verify the condition of the elevator brake before resetting the HydraSafe Brake.

Installation Guidelines

1. Check your project/job number to be sure you have received the correct units.
- ◆ Units are preset for rail size, roller guide type, speed and capacity.
2. Secure the elevator with proper LOTO procedures.
3. Verify elevator car sling is plumb, level and square per manufactures specifications.
4. Using jack bolts, secure the top of the styles and center the car sling on the rails. Front to back and side to side.
5. Remove the elevator car guides.

6. Place the caliper and/or mounting plate on top of crosshead or safety plank for proper alignment and follow manufacturers settings below per guide rail application.

7. Using a Mag drill with an 11/16th drill bit, drill the adapter plate mounting holes three per side for each mounting plate.

8. Use the bag labeled adapter plate bolts – six sets of 5/8-in. flathead bolts, lock washers and flat washers. Depending on mounting plate, two rear bolts may be through bolted.

9. Secure the mounting plate to the crosshead. Torque to 212 ft/lb each.

10. Remove the power supply from the caliper body, if attached, by releasing the quick connect fitting in the power unit box. This will separate the caliper body and the power unit. Power unit may be packaged separately.

11. Place the HydraSafe caliper body on the mounting plate and secure.

12. Slide the HydraSafe Brake into the rail making sure the pads are 1/8 in. to 1/4 in. back from the inside blade of the rail face.

13. Center the pads on the rail leaving 3/16 in. to 1/4 in. air gap between the pad and the rail.

14. Install the caliper body to the mounting plate using the bag of hardware labeled “Caliper Body Hardware.” Torque to 212 ft/lb each.

15. Slide the power unit into the caliper body, connect the oil line(s) via the quick connect fittings. Verify power unit is not under pressure by using a 4mm Allen wrench to release pressure. (see step 22).

16. Secure the power unit box to the caliper body and add angle brace with the hardware labeled “Power Unit Hardware.”

17. Wire in a dedicated 110/120VAC feed to the Power Unit box as per the drawings provided.

18. Connect the opposite side power unit using the HydraSafe Brake wiring harness. (A code-compliant electrical conduit should be used and/or installed by the elevator contractor per NEC section 620 regulations)

19. Using the test switch mounted in each power unit box, set the devices and check operation.

20. Bleed the air out of the lines of each unit with the bleeder hose and bottle included.

- ◆ Bleed procedure:
 - Place the plastic hose over the bleeder valve.
 - Using the test switch, run the power unit for two seconds.
 - Using a 1/4-in. wrench, open the bleeder valve 1/4 turn allowing fluid to eject into the bottle provided. Do this process on each unit. Bleed until there are no air bubbles in the plastic tube.
 - Pour the discharged oil back into the oil tank and secure

Continued





the cap.

21. Verification of spare wiring within traveling cable should be identified. A new traveling cable may be needed if no spare wiring is included.

22. To remove power unit once charged, disconnect power supply. This will automatically set the device(s) and may have up to 5,000 PSI charged within the system. Use a 4-mm Allen wrench on the valve that is attached to the pump to bleed down the pressure. You can now disconnect the hose(s) and remove the power unit.

23. There is a pressure port on each unit to verify pressures if required.

HydraSafe Brake Plus Model

24. Open the box labeled “Car Top Box” (if required). Using 1-in. Unistrut and hardware, mount the box in a convenient spot between the HydraSafe units. Use 1/2-in. flexible EMT to connect the units and pull the wires supplied into each unit. Control unit can also be mounted in machine room (preferred method).

25. Plug each cable into the control box and wire into the power unit as per the wiring diagrams.

26. Install the car top encoder and wire into the HydraSafe car top controller.

27. Install the door position monitor and wire into the HydraSafe car top controller.

◆ Any additional features just need to be wired into the terminals provided on the HydraSafe car top controller.

28. Wire in your travel cables wires from the HydraSafe controller interface to the HydraSafe car top controller.



Kevin Cunningham is the CEO and co-founder of HydraSafe Brake and a veteran of the elevator industry with more than 40 years of hands-on experience in the areas of construction, modernization and consulting. Born from a vision to revolutionize elevator safety, Hydrasafe Brake represents the culmination of Cunningham’s decades of field experience and his commitment to innovation.

Kyle Toan is the director of operations at HydraSafe Brake.

Maintenance Control Program (MCP)

WARNING:

Failure to conduct proper maintenance or negligence in maintenance procedures can lead to accidents and fatal injuries. Omitted or poorly executed maintenance may result in malfunctioning of the hydraulic system, posing a significant risk to personnel. Additionally, improper troubleshooting procedures can further exacerbate the danger.

It is imperative to thoroughly read and adhere to all instructions provided in this section. In addition to the safety guidelines outlined in Section 2 “For Your Safety,” please heed the following precautions:

WARNING:

Working on the hydraulic power pack carries inherent risks of injury from electrical, mechanical or hydraulic hazards, which could lead to serious harm or death. Before commencing any work on the hydraulic power pack, ensure to disconnect the power supply from the drive motor. Likewise, before initiating any maintenance on the hydraulic power pack, relieve the pressure in the hydraulic system to prevent potential accidents.

CAUTION:

During operation, the hydraulic power pack and valves’ solenoids may attain elevated temperatures, posing a risk of minor burns. If surface temperatures exceed 60°C, exercise caution and allow adequate time for the hydraulic power pack and solenoids to cool down before handling them.

Learning-Reinforcement Questions

Use the below learning-reinforcement questions to study for the Continuing Education Assessment Exam available online at elevatorbooks.com or on p. 128 of this issue.

- ◆ What are the installation guidelines for these HydraSafe Brake models?
- ◆ How do you run the code-compliance testing procedures on these units?
- ◆ How do you perform maintenance on these units?
- ◆ How do you troubleshoot these units?
- ◆ What does the maintenance log require?

Accounting of Time for Article

- ◆ Brake Installation
30 Minutes – Pages 95 – 100, 106 - 108
- ◆ Brake Maintenance and Troubleshooting
30 Minutes – Pages 100 – 108



ELEVATOR WORLD Continuing Education Assessment Examination Questions

Read the article “**Brake Installation, Maintenance and Troubleshooting**” (EW, December 2025, p. 95) and study the learning-reinforcement questions at the end of the article.

- ◆ To receive **one hour (0.1 CEU)** of continuing-education credit, answer the assessment examination questions found below online at elevatorbooks.com or fill out the ELEVATOR WORLD Continuing Education reporting form found overleaf and submit by mail with payment.
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1. The HydraSafe Brake is intended only for:

- a. Unintended upward movement
- b. Jerking due to overloading
- c. Unintended decent

2. The HydraSafe Brake is a critical component in any:

- a. Elevator
- b. Hydraulic elevator
- c. Traction elevator

3. The Hydrosafe Brake unit must be tested:

- a. Monthly
- b. Annually
- c. Every three months

4. Brake pads on the unit should be replaced when they read ___-in. thickness:

- a. 1/2-in.
- b. 1/8-in.
- c. 1/4-in.

5. Typical brake pad life expectancy ranges between:

- a. Two to five years
- b. Five to 15 years
- c. Three to 10 years

6. The HydraSafe Brake must be installed:

- a. Plumb
- b. Level
- c. Square
- d. All of the above.

7. Components of the HydraSafe Brake do not include:

- a. Two pistons
- b. Three safety switches
- c. Brake pad wear sensors
- d. Bleeder valve

8. Annually, inspect each brake pad to:

- a. verify equal setting on each side of the guide rail to ensure proper settings and clearances.
- b. check all bolt connections between the caliper body and the car structure to ensure they meet manufacturer specifications
- c. ensure it is clear of dust, dirt and debris

9. The power unit of the HydraSafe Brake should be checked:

- a. Biannually for leakages and oil levels
- b. Annually for the accumulator unit
- c. Biannually for all of the electrical connections.

10. The power unit of the HydraSafe Brake is a self-contained sealed unit such that you cannot:

- a. Identify voltage issues
- b. Check fittings for leakage
- c. Repair the unit



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Article title: "Brake Installation, Maintenance and Troubleshooting" (EW, December 2025, p. 95)
Continuing-education credit: This article will earn you one contact hour (0.1 CEU) of elevator-industry continuing-education credit.

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