



## Safety Bulletin

# Park/Emergency Brake Retrofit Kit and Test Procedure for Battery Powered Machines

*Unless otherwise specified, Sandvik accepts no responsibility for changes, labour or replacements incurred from this bulletin.*

<b>NUMBER:</b>	307
<b>TYPE:</b>	<b>SAFETY BULLETIN CONCERNING PARK/EMERGENCY BRAKES</b>
<b>RELEASE DATE:</b>	March 11, 2008
<b>AFFECTS:</b>	<ul style="list-style-type: none"> <li>• All 508CS, 518CS, and 580CS battery powered machines; and</li> <li>• All MICO park brakes supplied under part number 3210166 by EIMCO, EJC or Sandvik (MICO model number 13-547-420).</li> </ul>
<b>REQUIRED ACTIONS:</b>	Install the park/emergency brake test valve contained in field retrofit kit (P/N 64596113); add the approved mineral oil to park/emergency brake sump; and perform the park/emergency brake test described below.

## WARNING

### CRUSH HAZARD



To prevent a park/emergency brake failure which could result in death or serious injury, the following procedures and tests described in this bulletin **MUST** be performed **IMMEDIATELY**:

- A park/emergency brake test valve **MUST** be installed on the machines;
- An approved mineral oil **MUST** be added to the park/emergency brake sump to make sure there is no brake failure; and
- The park/emergency brake **MUST** be tested to make sure it is working properly.

## GENERAL INFORMATION

A field retrofit kit has been developed to install a park/emergency brake test valve on all Sandvik battery powered machines listed in the [Affects](#) field above. The park/emergency brake test valve has been added to the standard design of all future battery powered machines with hydraulic braking systems.

The park/emergency brake test valve allows a qualified personnel to test the park/emergency brake to make sure it is working properly.

You **MUST** order the field retrofit kit and install the park/emergency test valve **IMMEDIATELY** to make sure the park/emergency brake is working properly.

## WARNING

All MICO park/emergency brakes supplied under part number 3210166 by EIMCO, EJC, or Sandvik (MICO model number 13-547-420) and which are being used on any machine listed in the [Affects](#) field above **MUST ONLY** be used with an approved mineral oil added to the brake sump and **MUST** be tested by following the instructions below.



## **SAFETY BULLETIN:** Park/Emergency Brake Retrofit Kit and Test Procedure for Battery Powered Machines

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### **WARNING**

All maintenance, tests, and repairs described in this bulletin **MUST ONLY** be performed by authorized and trained personnel.

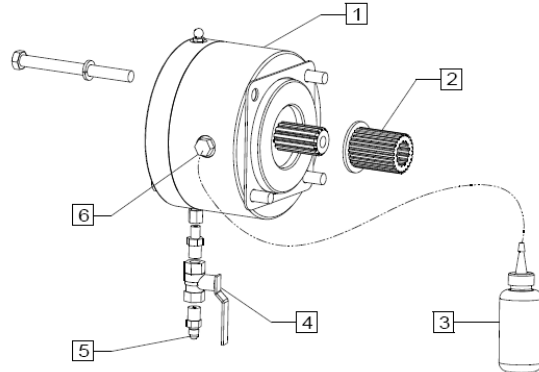


This entire bulletin **MUST** be read and understood before performing the installation and test procedures described below.

Parts and their corresponding part numbers can be found in the relevant parts books. Always make sure the correct and approved parts are used.

Please contact your local Sandvik Mining and Construction regional office for ordering information. When speaking with a Sandvik representative, please reference kit number **64596113**.

Figure 1: Park Brake Field Retrofit Kit (Sandvik P/N 64596113)



- |  |  |
|--|--|
| 1 Park/Emergency Brake Actuator<br>(Sandvik P/N 3210166) | 4 Park Brake Test Valve -Lockable Ball<br>Valve (Sandvik P/N 04910151) |
| 2 Spline Adapter w/collar<br>(Sandvik P/N 0807172)       | 5 Brake Pressure Line In   |
| 3 4 oz. Hydraulic Oil<br>(Sandvik P/N 64593580)          | 6 Hydraulic Oil Fill Port  |

## **PROCEDURE FOR INSTALLING THE PARK/EMERGENCY BRAKE TEST VALVE AND ADDING OIL TO THE PARK/EMERGENCY BRAKE SUMP.**

Upon receiving the field retrofit kit (P/N 64596113), all procedures and tests **MUST** be followed in the order presented below.

All part numbers referenced in these procedures are included in the field retrofit kit (P/N 64596113) and are listed on drawing 64596113 contained with this bulletin.

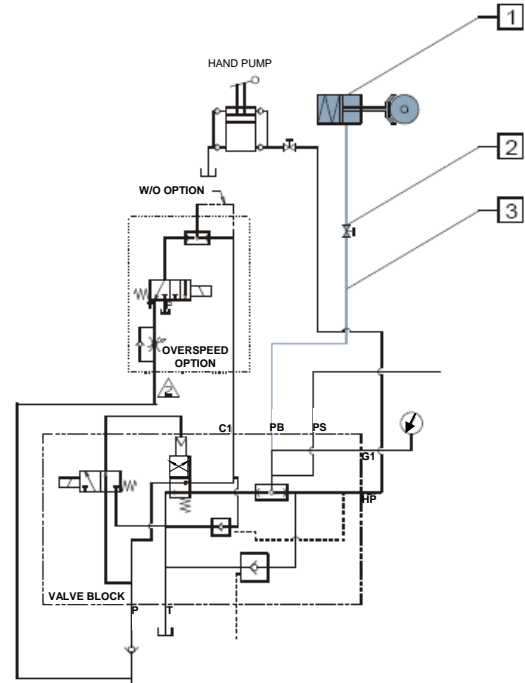
### **HYDRAULIC SYSTEM MODIFICATIONS**

The park/emergency brake test valve contained with the field retrofit kit allows an authorized personnel to test the park/emergency brake by preventing the hydraulic release of the park/emergency brake mechanism. The procedures below describe how to install the hydraulic components included in the field retrofit kit.

- 1) Park the machine in a safe area clear of traffic and pedestrian flow, preferably on flat ground.
- 2) Make sure the bucket is resting fully on the ground and that the lift arms are resting against the stop blocks.

- 3) Install wheel chocks at the front and rear of the machine.
- 4) Install the frame lock.
- 5) Exhaust all hydraulic pressure in the brake hydraulic circuit.
- 6) Locate the pressure line between the brake solenoid valve and the park/emergency brake actuator.

Figure 2: Park Brake Test Valve Location



- 1 Park/Emergency Brake Actuator
- 2 Park Brake Test Valve (Lockable Ball Valve)
- 3 Pressure Line

- 8) Using an appropriate tube cutting tool, cut the brake pressure line at the location you have selected.
- 9) Collect all excess hydraulic oil in a suitable reservoir. Oil is a contaminant and should be disposed of properly according to local, federal, and state/provincial regulations.
- 10) Install the park/emergency brake test valve retrofit kit (P/N 64596113) in the pressure line, using the supplied hardware.

	<b>WARNING</b>
	<ul style="list-style-type: none"> <li>Make sure there is no hydraulic pressure in the system before cutting or opening any connections in the hydraulic system.</li> <li>Failure to make sure there is no hydraulic pressure in the system before cutting or opening any connections could create a hazard, which could result in death or serious injury from explosion or release of severely hot hydraulic fluid.</li> <li>Refer to attached bulletin 279, <a href="#">Servicing Stored-Energy Hydraulic Circuits</a>, before working with hydraulic systems and/or components.</li> </ul>

- 7) Determine an accessible location for the park/emergency brake test valve to be installed in the pressure line between the brake solenoid valve and the park/emergency brake actuator. **See** Figure 2.

	<b>WARNING</b>
<p>Make sure the park/emergency brake test valve is securely mounted so when the handle is turned it does strain or twist the brake pressure line.</p>	



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- 11) Add the 4 ounces of oil (Sandvik P/N 64593580) to the brake sump.

 **WARNING**

All MICO park/emergency brakes supplied under part number 3210166 by EIMCO, EJC, or Sandvik (MICO model number 13-547-420) **MUST** be used with an approved mineral oil (Sandvik P/N 64593580) added to the brake sump (4 oz. of oil) to make sure there is no brake failure.

If an approved mineral oil has not been added to the brake sump, you **MUST** add the approved mineral oil to the park/emergency brake sump.

- 12) Start the machine and cycle the park/emergency brake button to bleed any air from the system.
- 13) Shut down the machine and check the park/emergency brake test valve installation for leaks.
- 14) If the installation is leaking, repair the leak(s) as necessary then repeat the procedure from step 11.
- 15) Re check the brake fluid level.
- 16) The park/emergency brake **MUST** be tested following the procedure described below.
- 17) The machine **CANNOT** be used unless the park/emergency brake passes the test procedure described below!

 **WARNING**


The park/emergency brake **MUST** be tested after installing the park/emergency brake test valve (P/N 64596113) and adding the approved mineral oil to the park/emergency brake sump. Failure to test the park/emergency brake could result in death or serious injury due to unexpected movement of the machine.

 **WARNING**

To make sure the park/emergency brake is working correctly, this test **MUST** be used for operational testing of the park/ emergency brake for battery powered machines as described in the machines' operator and service manuals.

## TESTING THE PARK/EMERGENCY BRAKE

- 1) Park the machine in a safe area to conduct this test, ensuring no one can be struck by the machine if it moves.
- 2) Make sure the park/emergency brake is applied and the machine is turned towards the roadway side.
- 3) The authorized personnel must unlock and close the park/emergency brake test valve to make sure no hydraulic pressure will be allowed to the brake and prevent its release.
- 4) Remove the wheel chocks.
- 5) Enter the operator's compartment and start the machine.
- 6) Press the service brake pedal and release the park/emergency brake.
- 7) Shift the directional control lever on the transmission shifter to a safe direction of travel.
- 8) Release the service brake pedal and be prepared to press the pedal to stop the machine from travelling if the park/emergency brake does not hold.
- 9) Depress the accelerator pedal fully while observing the current drawn by the motor on the display. The machine should not move with the displayed tram motor current below 800 Amps. **IF THE MACHINE MOVED, THE BRAKE FAILED THE TEST.**

 Do not hold the accelerator pedal down for longer than one second. If you do so, the overloads will trip and damage to the drive system may occur.

- 10) If no movement is seen, then the park/emergency brake is functioning correctly and will hold the machine when parked.

**NOTICE**

The machine will move if the tram motor current is above 800 Amps. The park/emergency brake is working effectively if the machine does not move when the displayed tram motor current is less than 800 Amps.



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 **WARNING**

If the machine fails the park/emergency brake test, **IMMEDIATELY** do the following:

- 1) Turn off the machine.
- 2) Install wheel chocks at the front and rear of the machine.
- 3) Review the kit installation.
- 4) Test the park/emergency brake again by following the test procedures above.
- 5) If the park /emergency brake fails the test again, follow the safe parking procedures and replace the park/emergency brake.
- 6) After installing a new park/emergency brake, test the park/emergency brake by following the test procedures above.
- 7) If the park/emergency brake fails the test again, and the source of the problem cannot be identified, lock out the machine according to your mine site procedure and contact your local Sandvik Mining and Construction regional office for assistance.

- 11) Shift the directional control lever on the transmission shifter to neutral.
- 12) Apply the park/emergency brake, and stop the pump.
- 13) Switch off the machine.
- 14) Open the park/emergency brake test valve and lock it.
- 15) The machine is now ready to go into service.

 **WARNING**

To make sure the park/emergency brake is working correctly, this test **MUST** be used for operational testing of the park/ emergency brake for battery powered machines as described in the machine’s operator and service manuals.

## LIST OF ATTACHMENTS

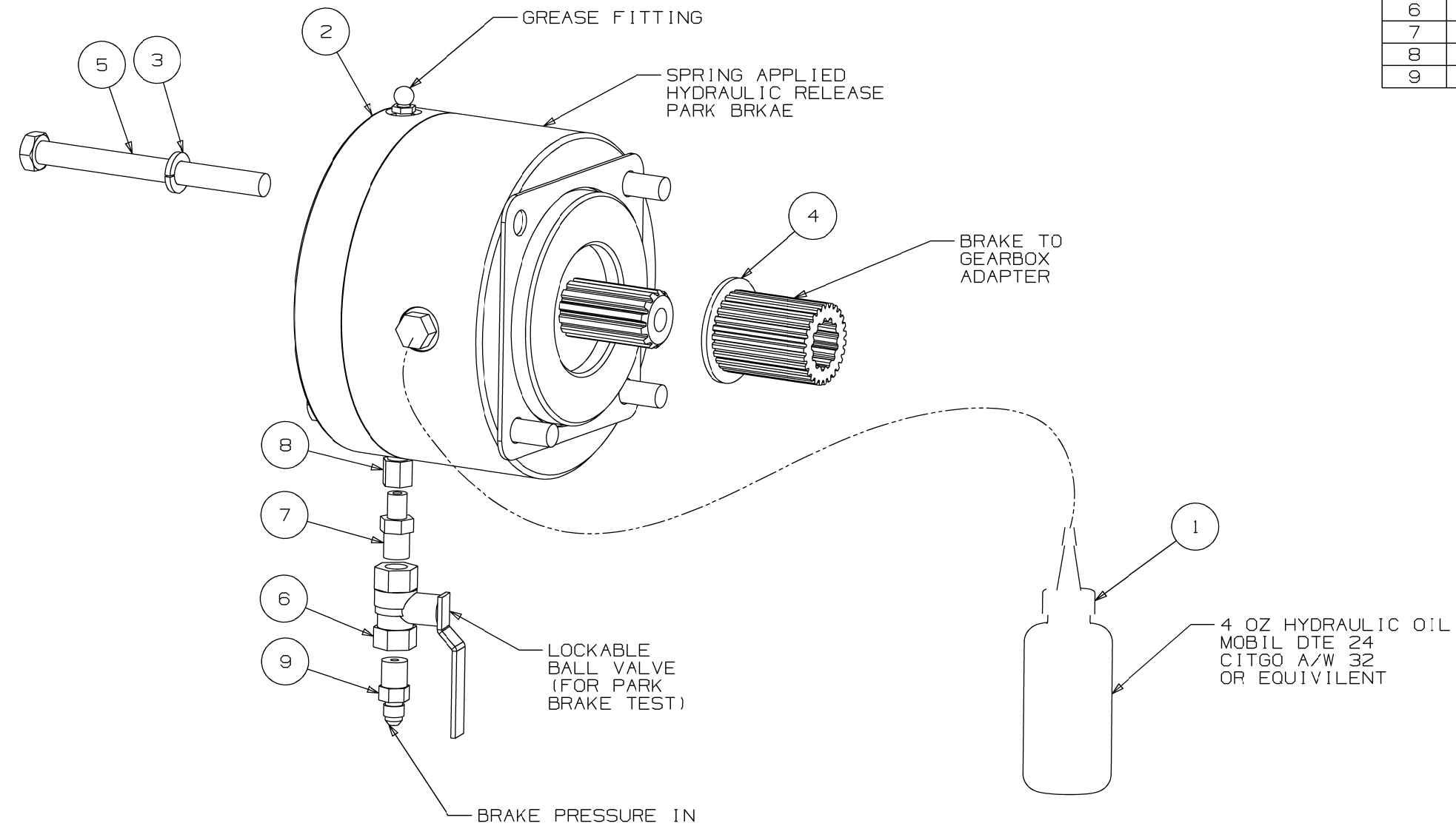
The following is a list of all documents originally attached to this bulletin. These may include drawings, schematics, supplier documentation, etc.

Type	Title
Drawing	64596113 Park Brake Field Kit
Bulletin 279	Servicing Stored-Energy Hydraulic Circuits

## NOTICE

Please contact your local Sandvik Mining and Construction regional office if you did not receive all of the files listed above.

ITEM	PART NO.	QTY	DESCRIPTION
1	64593580	1	PARK BRAKE OIL 4 OZ
2	3210166	1	MICO PARK BRAKE 8000 IN/LB W
3	64404379	4	1/2" LOCKWASHER
4	0807172	1	SPLINE ADAPETER W/COLLA
5	64403836	4	HHCS 1/2 X 5 1/2
6	04910151	1	COCK
7	64100867	1	ADAPTER AQ# 2083T-4-2
8	64402764	1	ADAPTER A/Q 2016-2-4
9	64100696	1	ADAPTER AQ #2021-4-4S



THIS DRAWING NOT TO BE  
CHANGED WITHOUT SANDVIK  
ENGINEERING  
APPROVAL

PRODUCT LINE: COAL	TOLERANCES UNLESS OTHERWISE SPECIFIED		DIMENSIONS IN MILLIMETERS
	FRACTIONAL	DECIMAL	
MATERIAL:	±1.5	.X ±1.5	 <b>EJC MINING EQUIPMENT</b> NOTICE: THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF EJC MINING EQUIPMENT INC AND IT MUST BE RETURNED ON REQUEST. THIS DOCUMENT MUST NOT BE COPIED, REPRODUCED, DISCLOSED TO ANY THIRD PARTY OR USED IN MANUFACTURE OF SUBJECT MATTER THEREOF WITHOUT THE PRIOR WRITTEN CONSENT OF EJC MINING EQUIPMENT INC.
(null)	ANGLES ±1.0	.XX ±1.8 .XXX ±1.3	
	PARK BRAKE FIELD KIT		
HEAT TREATMENT:			DRAWN BY: AJG DATE: 16/08/07
			CHECKED BY: SF DATE: 16/08/07
WELD STANDARDS: ALL WELDS TO COMPLY TO CSA W47.1/W59			APPROVED BY: SF DATE: 16/08/07
SURFACE TREATMENT:	HIGHER LEVEL: -	WEIGHT -	SHT 1 OF 1
	SIMILAR TO: -		DWG. NO. 64596113

REV.	BY	DATE	ECN No.	PREVIOUS TO REVISION	No OF CHGS
0	AJG	16/08/07	10170	SEE SANDVIK BULLETIN #307	



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# EJC Bulletin

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## Bulletin Information

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<b>BULLETIN:</b>	279
<b>TYPE:</b>	GENERAL INFORMATION
<b>DATE:</b>	MARCH 28, 2006
<b>SUBJECT:</b>	SERVICING STORED-ENERGY HYDRAULIC CIRCUITS
<b>AFFECTS:</b>	ALL EJC TRUCKS, LOADERS, AND HAULERS (HARD ROCK AND COAL)
<b>ACTION:</b>	VERIFY/RELIEVE STORED HYDRAULIC PRESSURE BEFORE MAINTENANCE

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## Summary

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This bulletin is a reminder to maintenance personnel servicing EJC trucks, loaders, and haulers that hydraulic pressure must be fully exhausted in all stored-energy hydraulic circuits *before* any service is conducted on related components.

Performing maintenance on components connected to an energized hydraulic circuit or “cracking” hydraulic lines to relieve pressure in an energized hydraulic circuit is strongly discouraged by Sandvik Mining and Construction.

The following describes how to verify and/or relieve pressure in common EJC hydraulic circuits and equipment types. Including these steps in your regular maintenance procedures will help support safe work practices in the work place.

### **Brake Circuits for Equipment and Vehicles with Spring-Applied Brakes**

All EJC equipment and vehicles that use spring-applied, hydraulically-released brakes are equipped with an automatic bleed-down valve that allows hydraulic oil in the brake circuit to drain to the hydraulic tank once the engine and electrical system have been turned off.

There are currently two methods for verifying that the hydraulic brake pressure has been drained:

1. If the truck, loader, or hauler is equipped with a manual bleed-down valve, turn the rotary dial counter-clockwise (left) to open a path between the hydraulic brake circuit and the hydraulic tank.
2. If the truck, loader, or hauler is *not* equipped with a manual bleed-down valve, verify the hydraulic brake pressure at the brake (or accumulator) test port. The test port is typically located on the central hydraulic test port manifold. To measure the brake pressure, attach a hand-held pressure gauge to the test port using a mini-check coupling connector and monitor the gauge. The pressure reading should be zero.

***CAUTION: If the accumulator pressure reading is higher than zero, it is possible that the automatic bleed down valve is functioning incorrectly. If this is the case, attempt to manually activate the spool (if equipped) or remove the accumulator pre-charge gas in an attempt to remove pressure from the circuit. Proceed to repair or replace the automatic bleed down valve only after pressure in the circuit has been removed.***

### **Service Brake Circuits for Equipment and Vehicles with Hydraulically-Applied Brakes**

Stored pressure in service brake circuits for coal equipment and vehicles that use hydraulically-applied, spring-released brakes can be relieved by fully pressing the service brake pedal approximately 10 times.

### **Battery Lift Circuits for Electric Equipment and Vehicles**

Electric haulers for coal applications require hydraulic pressure from accumulators to support the battery lift arms when the machine is inactive. Pressure in the accumulators can be exhausted by lowering the battery lift arms before maintenance is conducted on the battery lift circuit.