

# Ausco LC Brake System

Sealed Wet Braking System for  
Toyota Land Cruisers



- **SAFER**
- **LOWER OWNERSHIP COST**
- **WORRY-FREE PERFORMANCE**



**Spend your time and money on  
mining, not on maintenance.**

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# Ausco LC Brake System

Safer by Design

## Rear Service, Parking, and Emergency Brakes



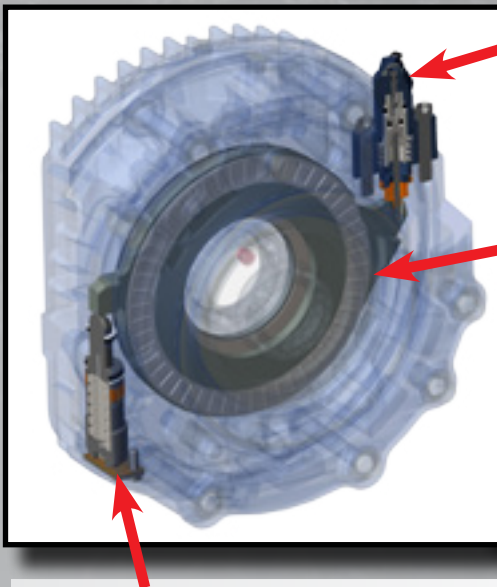
### **Wet Multi-Disc Design**

Similar to heavy-duty mining equipment.

**Minimal wear, smooth  
and safe braking**

## Independent Service and Failsafe Brake Circuits

**Conforms to MDG 39**



### **2 Stage Slave Cylinder (Service Brakes)**

Applies the service brakes from the OEM master cylinder without modification.

**Reliable and safe stops without an intensifier**

### **Ball Ramp Actuator - How it Works**

- Rotating the actuator causes the brake to close.
- Proven design used extensively in Agricultural and Construction applications.
- 95% mechanical efficiency

**Good pedal feel and  
strong braking action**



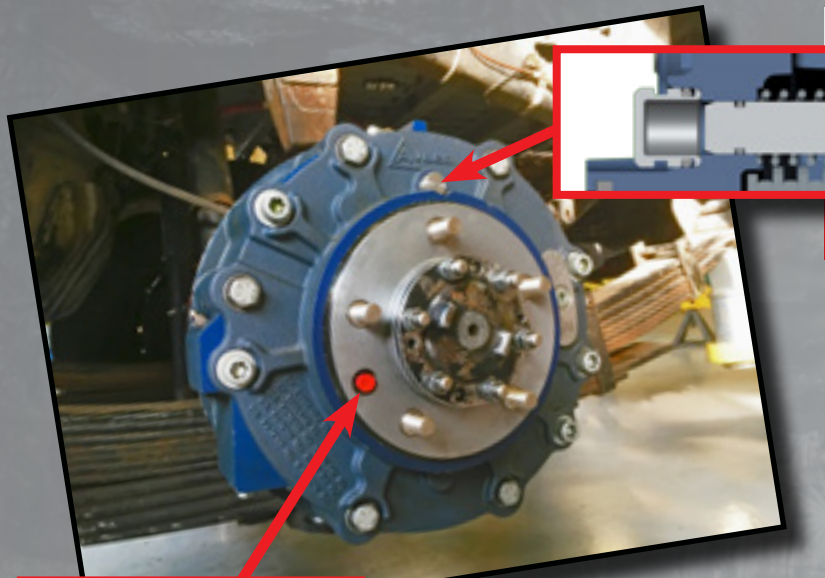
### **Failsafe Cylinder (Parking/Emergency Brakes)**

- Operates with petroleum oil from Premium Pump Pack.
- Released during normal driving, engages automatically when the engine stops running.
- Will safely hold the vehicle on any mining slope.
- Torque-limited to provide controllable emergency stops.

**Holding power on any mine slope, safe and controllable emergency stops**

# Ausco LC Brake System

## More Reliable, Less Maintenance



### Sealed Wear Indicator Pin

Brake wear is easily monitored by measuring the position of the recessed pin. Pin is sealed to keep water out.

**Simple, reliable wear monitoring**

### Minimal Maintenance

Measure the wear pin, check the oil, and grease the seals every 250 hours.

Change the oil every 1000 hours.

**That's it!**

Typical lining life is **3 years**.



### Robust, Low Maintenance Sealing

- Mine-proven grease barrier sealing to protect against contamination.
- Grease zerk is readily accessible at the hub face for easy maintenance.
- The seals can be serviced from the outside without removing the brake from the vehicle.

**Easy to maintain, easy to service**

### Patented Internal Cooling Chamber

Heat resistance vastly outperforms the competition.

- Ausco (**red line**) levels off at acceptable temperature.
- Competitor (**blue line**) overheated less than halfway through the test.
- The Ausco LC brakes have been driven as far as 3700 km on-highway without incident.
- With more than 1400 brakes produced, there has not been a single heat-related failure.

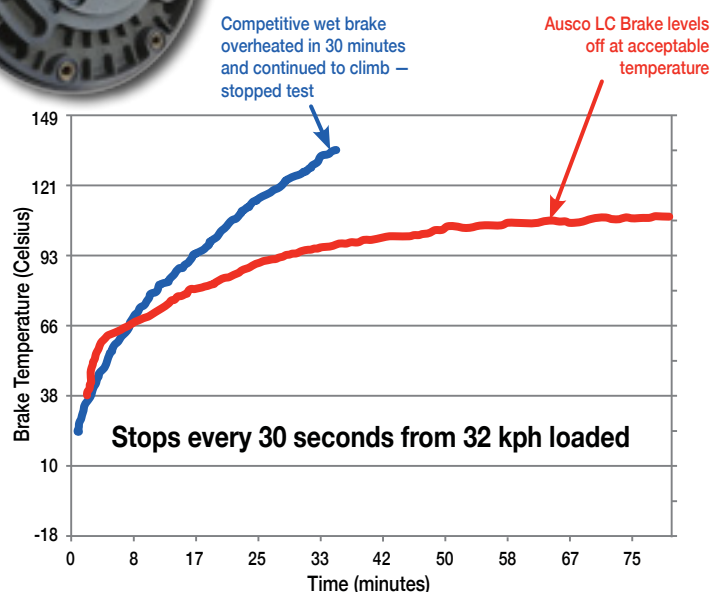
**Runs safer and cooler - no glazing or brake fade**

**Operates at highway speeds without overheating!**

**Longer life - brake lining wear is minimal with lower temperatures**



### Vehicle Torture Test Comparison Competitor vs. Ausco





# Ausco LC Brake System

## Simpler to Install, Easier to Service

### Simple Installation

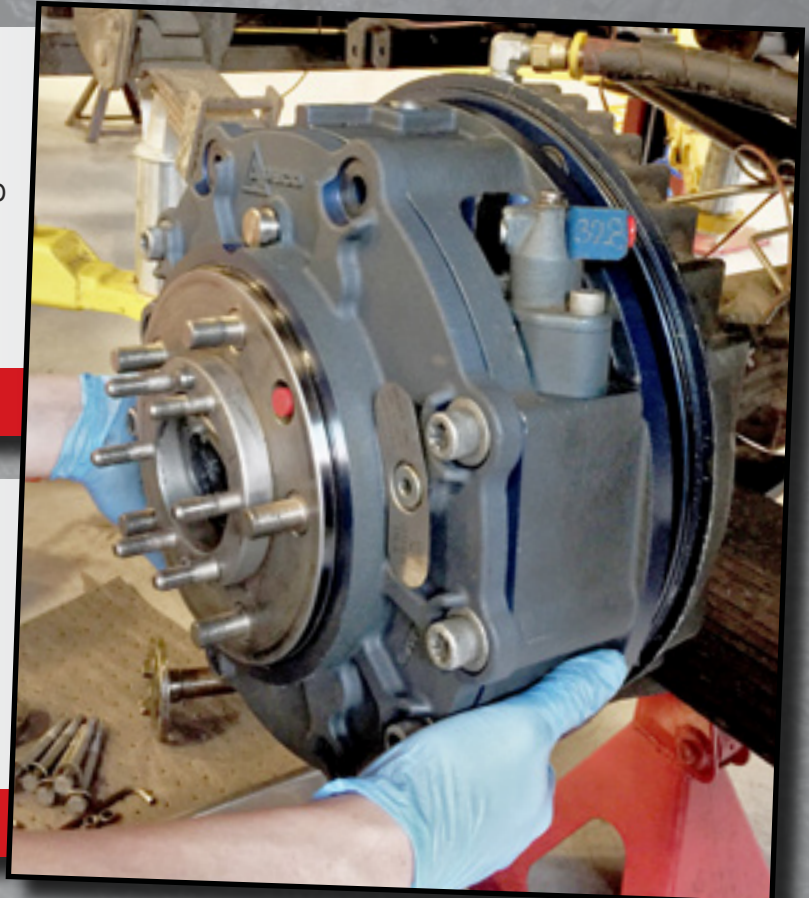
- Adapter plate bolts directly to OEM axle flange on vehicles with rear drum brakes.
- Optional spacer kit available to mount adapter plate to vehicles with rear caliper brakes.
- Brake is pre-assembled and pre-tested.
- Slave cylinder connects to existing OEM master cylinder/vacuum booster.

**No vehicle modifications required**

### Lightweight Hard Coat Anodized Aluminum Construction

- Allows brake to be handled without lifting assistance.
- Corrosion resistant - easier to disassemble for service.
- Selected aluminum grade meets permissible requirements.

**Easy to handle, easy to service**



### Removable Slave Cylinder

The slave cylinder can be disconnected from the brake for service without disconnecting the brake line.

**Changing brakes does not require re-bleeding!**

### 30 Minute Brake Changes

The LC brake is designed so that brakes can be changed quickly when service is needed.

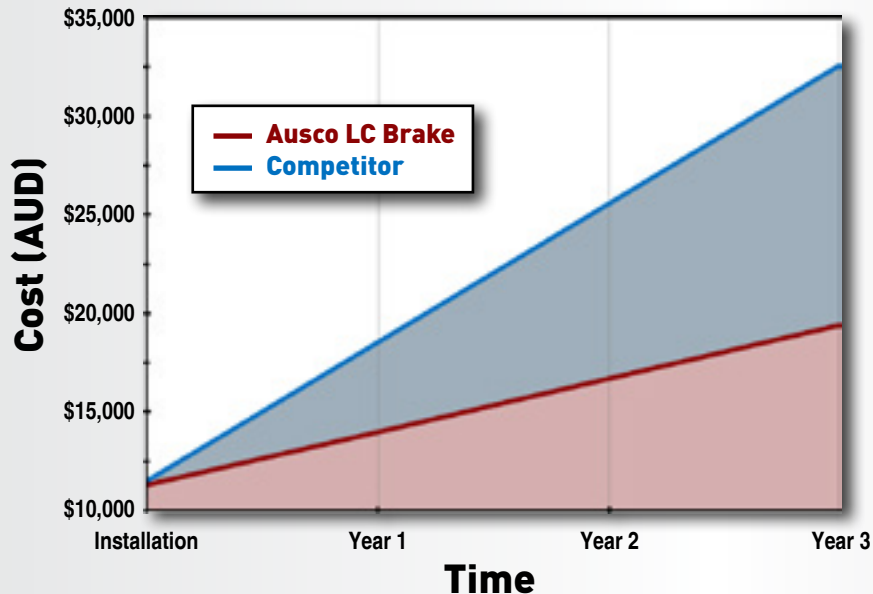
**Minimizes downtime to get your vehicle back running quickly!**

# Ausco LC Brake System

## Longer Life, Lower Cost

### Total Ownership Cost Comparison - Ausco LC Brake vs. Competition

Data from Real Life Customer Testing



#### Competitor

- Frequent oil changes using expensive special oil
- Brakes have to be periodically "deglazed"
- Doesn't offer service parts for older models, requires that the brake be replaced
- Vulnerable to overheating, which can degrade brake performance and fail axle seals

**High maintenance cost, poor support**

#### Ausco LC Brake

After initial install, regular maintenance is very low.

**Maintenance rate is 2.6 times lower than the competition. Typical brake life is 3 years!**

	Ausco LC Brake	Competition	Advantage
Downtime for Brake Changes	30 minute brake changes, no need to re-bleed, lightweight aluminum construction	Must disassemble and re-bleed to change brakes, heavy iron construction	<b>Ausco</b> Gets you back up and running within the hour, no lifting assist
Oil Change Interval	Every 1000 hours using low cost Ausco LC Oil	Every 400 hours using expensive specialized fluid	<b>Ausco</b> Less frequent, far less expensive oil changes
Heat Resistance	Excellent - cooling chamber eliminates glazing and fade, even at highway speeds.	Poor - iron housing retains heat. Glazing is common enough that a "deglazing" procedure is needed.	<b>Ausco</b> Safer and more reliable - Ausco has had zero heat related failures.
Axle Protection	Fully protects the axle from water intrusion	Outer axle seal failures common - results in costly bearing failures and axle repairs	<b>Ausco</b> Axle failures due to water contamination become a thing of the past.
Towing	Tow mode - can release brakes with no extra tools and with driver in the vehicle	Requires an operator outside of the vehicle to release the brakes with a hand pump	<b>Ausco</b> Safer and far more convenient
Emergency Stops	Torque-limited by design to provide strong, yet controllable stops without wheel skid	Overly aggressive - uses electrically operated valve to limit torque. Brakes will lock up if power is lost or valve fails.	<b>Ausco</b> Safer - lower risk of operator injury and costly vehicle damage



# Ausco LC Brake System

## The Safest, Most Reliable Pump Unit

### Premium Pump Pack



### Triple Protection from the Environment

- ① Utilizes a marine-grade PLC controller
  - ② Housed in a sealed stainless steel enclosure
  - ③ Mounted inside the vehicle cab
- This results in **much longer service life than competitive pump units.**

**Fully sealed for worry-free performance**

### Safer to Operate

- **Tow Mode** allows a disabled vehicle to be safely towed with the **operator in the driver's seat** with **all braking functions available**. No jumpers or hand pumps.
- Pump is PLC controlled to provide correct and consistent pressure. There are **no switches to set**, and it is **invulnerable to tampering**. Competitive designs can cause brakes to drag and fail prematurely.
- Can be used with or without door switches to set the park brake when the door is open.
- Adaptable to PDS (Pedestrian Detection Systems).

**Safe, reliable, and tamper-proof**



### Simpler and More Convenient

- Fits conveniently behind seat in vehicle cab.
- Dash Panel fits in radio slot for clean, simple installation. Alternate mounting options are available.
- Compatible with existing OEM vehicle wiring.
- Includes on-board diagnostics.
- Hose kit contains well-labeled hoses, fittings, clips, etc. It is **plug-and-play and ready for the vehicle.**

**Simple installation, clean fitup, easy troubleshooting**

# Ausco LC Brake System

## Better Quality, Better Service

### Technologically Advanced Assembly and Quality Checks

- Bolts installed with equipment that measures torque and position to insure proper assembly.
- Seals and bearings checked for proper installation depth as they are assembled.
- Top-of-the-line test equipment to detect leaks
- Well trained, certified assemblers
- State-of-the-art vision system that uses cameras and a computer to verify each step of the assembly process and stops the assembly, if something is wrong.

**Confidence: Ausco is fully committed to providing a quality product - first time, every time.**



### World-Class Customer Support

- Ausco maintains stock and local support in-country.
- All of our salespeople are technically oriented and hands-on capable.
- Ausco trains and certifies installers and rebuilders worldwide.

**Ausco stands by their product and supports their customers.**



# Ausco LC Brake System

## The Recognized Brake Experts

- Ausco Products, Inc. is a privately-owned US-based brake manufacturer.
- We have been in business since 1908; in the brake business since 1938.
- Our products are 100% manufactured in our US facility with 95% US-sourced materials.
- We produce more than 450 different brake part numbers, 90% of which are custom-engineered products.
- We serve the world leaders in Mining, Construction, Agriculture, and many other markets.

## We Know Who You Know

The Caterpillar logo, featuring the word "CATERPILLAR" in bold black capital letters with a yellow triangle under the "A" and a registered trademark symbol.The John Deere logo, featuring a green leaping deer inside a green square followed by the words "JOHN DEERE" in green capital letters.The Glencore logo, featuring the word "GLENCORE" in a black serif font.The Link-Belt Construction Equipment logo, featuring the words "Link-Belt" in bold red capital letters with a registered trademark symbol, and "CONSTRUCTION EQUIPMENT" in black capital letters below it.The AxleTech International logo, featuring the word "AxleTech" in blue with a trademark symbol and "International" in blue below it.The Case IH Agriculture logo, featuring the words "CASE IH" in bold black capital letters with a red underline, and "AGRICULTURE" in black capital letters below it.The Carraro Group logo, featuring a red circular icon with a white stylized "C" and the words "CARRARO GROUP" in black capital letters.The Terex logo, featuring a red crown icon inside a square followed by the word "TEREX" in bold black capital letters with a registered trademark symbol.The BHP logo, featuring the letters "BHP" in large, bold, orange capital letters.The Bell logo, featuring the word "BELL" in a stylized, italicized, black font with a white outline.The JCB logo, featuring the letters "JCB" in a stylized, bold, black font with a white outline, set against a yellow background.The Agco logo, featuring a red triangle with white diagonal lines and the word "AGCO" in black capital letters below it.The Volvo logo, featuring a silver circular icon with a blue bar across the middle containing the word "VOLVO" in white capital letters.The National Oilwell Varco logo, featuring the word "NOV" in a stylized, bold, black font with a red circle, and "NATIONAL OILWELL VARCO" in black capital letters below it.The Redpath logo, featuring a red stylized "R" with a maple leaf design and the word "REDPATH" in black capital letters below it.The Ausco Products Inc. logo, featuring a large, stylized "A" inside a red triangle, followed by the word "Ausco" in a bold, black font, and "PRODUCTS INC." in a smaller, black font below it.

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