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ETB-5

Supersedes/Remplace/

Reemplaza a ETB-4

Raybestos®

The best in brakes



ELECTRIC TRAILER BRAKE CATALOG

Catalogue de Freins de Remorque Électriques
Catálogo de Frenos Eléctricos para Remoques

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NEW!

PROPORTIONAL BRAKE CONTROLS



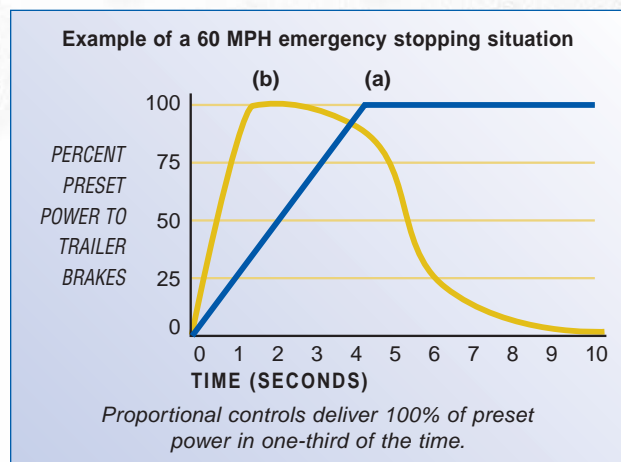
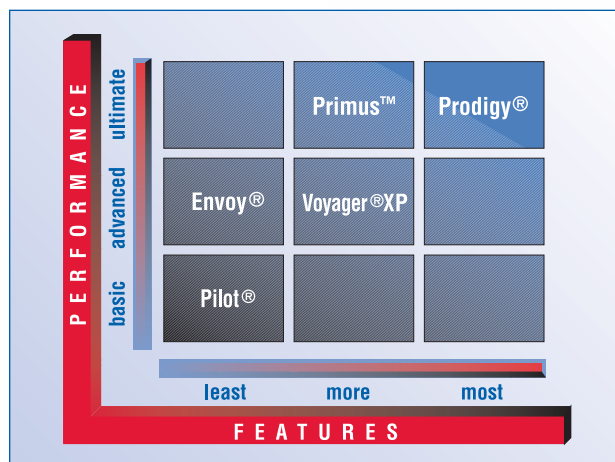
All Electric Trailer Brake Controls Are Not Alike

Here's the difference - in performance, in protection and in peace of mind.

- Less sophisticated timed-control devices just turn brakes on or off. There's no in-between for gradual braking situations. (See (a) in chart)
- Proportional brake controls deliver 100% of their full stopping power up to three times faster than timed controls. (See (b) in chart)
- Timed brake controls don't differentiate between light and full pedal pressure. Brakes can grab when you don't want them to.
- Proportional brake controls apply brakes to match pedal pressure. You get smoother, more gradual, and more controlled stops.
- Setting timed devices too high can cause erratic stops and damage brake shoes or linings.
- Setting timed devices too low may not provide enough stopping power.
- Proportional brake controls maximize brake efficiency and minimize brake wear.

Proportional Electric Trailer Brake Controls

- **Prodigy®** an intelligent, powerful brake control, is Self-Leveling™ and features new motion sensor technology similar to what's used in the aerospace industry. For 1, 2, 3 & 4 axle trailers.
- The **Primus™** utilizes the primary motion sensor of Prodigy® and has a one step "Point and GoSM" set-up. For 1, 2 & 3 axle trailers.
- The **Voyager® XP** incorporates a patented braking sensor for smooth and secure trailer braking. It **NOW** has all the extra power you'll need for trailers with 1, 2, 3, & 4 axle trailers.
- Install the **Envoy®** with the "pivot-mounting" in newer model tow vehicles. Fits different trailer weights for 1 & 2 axle trailers.



PROPORTIONAL BRAKE CONTROLS

NEW!



Self-Leveling™ Proportional Brake Control



One Step "Point and GoSM"
Proportional Brake Control

761-90185 PRODIGY® Brake Control FOR 1, 2, 3 & 4 AXLE TRAILERS

Prodigy is an intelligent brake control that features new motion sensor technology common in the aerospace industry. With Prodigy no inertia sensor adjustment is necessary, it adjusts itself to varying terrains as you drive. Its sensor detects the tow vehicle's rate of deceleration, applies proportional braking to the trailer and features an exclusive "BoostSM" feature that gives users the ability to apply more initial trailer braking power (especially when towing heavier trailers). For backing into tough spots this is the only inertia control that works proportionally in reverse. A digital display depicts voltage delivery to the trailer during braking and displays continual diagnostics check for proper connection, shorted magnet condition, open ground and more. A unique pocket mount allows for flexible mounting options (standard mounting bracket also included). Prodigy includes a 3 ft. pigtail connector for ease of connection when using a vehicle's brake control wire harness. A quick and easy disconnect feature allows users to remove the control when not in use and store in a supplied protective pouch. Prodigy meets National Highway Traffic Safety Administration (NHTSA) regulations regarding tow vehicle / trailer light activation. It also offers a limited lifetime warranty (some conditions apply).

Note: Brake Control Not designed for use with electric/hydraulic trailer brake systems.



"INCLUDED"
with Prodigy

761-90155 PRIMUS™ Brake Control FOR 1, 2, & 3 AXLE TRAILERS

Introducing Primus, a totally proportional electric trailer brake control. Primus utilizes the primary sensor technology from Prodigy and features a one step "Point and GoSM" set-up system. Easy-to-set system allows the driver maximum flexibility when determining how the trailer should respond to a braking event. Snap-in dash mounting clip and removable electrical connector allow unit to be quickly stored when not in use. You will appreciate the digital readout depicting a secure electrical connection and the amount of voltage delivery to the trailer brakes. Primus meets National Highway Traffic Safety Administration (NHTSA) regulations regarding tow vehicle / trailer light activation. It also offers a 15 year warranty (some conditions apply).



"INCLUDED"
with Primus

See page 6 for replacement parts

Vehicle specific brake control wire harnesses shown on Page 5. They now include Prodigy/Primus special connectors.

PROPORTIONAL BRAKE CONTROLS



Smooth Proportional Brake Controls

761-9035 VOYAGER® XP Brake Control FOR 1, 2, 3 & 4 AXLE TRAILERS

The Voyager incorporates a patented braking sensor and is the best value you'll find for smooth and secure trailer braking. It's compact size and features, like a bicolored LED brake monitor (to assure a complete connection to trailer brakes and give an indication of relative braking power being applied) make the Voyager extremely versatile. Voyager minimizes interference with tow vehicle electrical systems, uses a four wire hook up, has a broad setting range and is compatible with most any vehicle. The Voyager is covered by a 5 year limited warranty from the date of consumer purchase.

761-9040 ENVOY® Brake Control FOR 1 & 2 AXLE TRAILERS

The Envoy is built with simplicity and reliability in mind. It's easy to install and easier to set and use. Easily adjustable to accommodate different trailer weights. Envoy is equipped with our patented inertia activated sensor that detects the tow vehicle's rate of deceleration and applies proportional braking to the trailer. New "pivot-mount" is ideal for installation in newer model tow vehicles. Ergonomic styling enhances functionality. Green LED monitors a secure connection with trailer and changes to red to indicate increase of power to the trailer brakes. Meets National Highway Traffic Safety Administration (NHTSA) regulations regarding tow vehicle/ trailer light activation. A 5 year limited manufacturers warranty is in effect from the date of consumer purchase. Simple four-wire hookup.



TIMED BRAKE CONTROL

Basic Brake Control



761-80550 PILOT® **FOR 1, 2 & 3 AXLE TRAILERS**

The Pilot has just made owning and operating a digital brake control easier than ever. The dark, smoke lens is ideal for direct light applications, creating optimum visibility to read the large, two-digit display. Because of the flexible mounting options, you are able to mount the Pilot in any direction. Our microprocessor allows you the ability to read the display even when the Pilot is mounted upside down. The Pilot's digital display shows voltage output to the brakes with additional protection against short circuit or loss of ground. Capable for handling up to 3 axle trailers.

- Large easy to read dual digital display shows:
 - Properly wired control
 - Voltage output to brakes (vs. a percentage output)
 - Connection to trailer
- Dark smoke lens ideal for direct light applications; performs better than red lens
- Microprocessor allows control to be mounted upside down and still have a readable display
- Protection against short circuit and loss of ground
- Standard mounting bracket included with optional ball mount available
- For use on any 12 volt negative ground system
- Technical support hotline 800 number
- Limited lifetime warranty

Brake Control O.E.M. Wiring Harness

O.E.M. Style Wire Harness for models equipped with trailer tow package. Includes OEM connector, Prodigy®/ Primus™ connector and 3 ft. leads. For use with other brake controls remove connector.

A. 761-3015 **GM** Brake Control
Wiring Harness 2003-2005 -
Clam Shell

761-3025 **GM** Brake Control
Wiring Harness 1999-2002 -
Clam Shell

B. 761-3035 **Ford** Brake Control
Wiring Harness 1994-2005 -
Clam Shell

(Excludes 2005 Super Duty)

C. 761-3065 **Ford Super Duty**
Brake Control
Wiring Harness 2005-
Clam Shell

D. 761-3020 **Dodge** Brake Control
Wiring Harness 1996-2005 -
Clam Shell

E. 761-3040 **Toyota** Brake Control
Wiring Harness 2002-2005 -
Clam Shell

F. 761-3050 **Nissan** Brake Control
Wiring Harness 2004-2005 -
Clam Shell

G. 761-3070 **Honda Ridgeline**
Brake Control
Wiring Harness 2006 -
Clam Shell (Not Pictured)



BRAKE CONTROL ACCESSORIES

A



A. Prodigy® Bracket Mount Kit

Replacement mounting bracket kit for Prodigy® 761-90185 brake control.

761-7685 Prodigy® 761-90185
Mounting Bracket Kit-
Clam Shell

B



B. Prodigy® Pocket Mount Kit

Replacement pocket mounting kit for Prodigy® 761-90185 brake control.

761-7686 Prodigy® 761-90185
Mounting Pocket Kit-Boxed

C



C. Primus™ Dash Mounting Clip

Replacement dash mounting clip for Primus™ 761-90155 brake control.

761-6927 Primus™ 761-90155
Dash Mounting Clip

D



D. 3 ft. Pigtail Harness Kit

Replacement wiring harness kit for Prodigy® 761-90185 and Primus™ 761-90155 brake controls.

761-7894 3 ft. Pigtail Harness Kit-
Clam Shell

E



E. Brake Control Mounting Brackets

Replacement mounting brackets for brake controls.

761-5280 Primus™ 761-90155,
Envoy® 761-9040 and
Pilot® 761-80550
Mounting Bracket

F



F. Pulse Preventer

Prevents actuation of electronic brake control by 4-way flasher circuit.

761-2180S Pulse Preventer-
Clam Shell

A. 6-Way Metal Connector

American made featuring heavy duty die cast corrosion resistant housing. Car end offers spring loaded cover to keep dirt and moisture out when not in use. Coded terminals allow for easy wiring. Interchangeable with other standard 6-way connectors.

761-62 Car End Only-USA-Boxed
761-63 Trailer End Only-USA-Boxed

A



B. ElectroTek® Non-Conductive Dielectric Silicone Compound

ElectroTek® is to be used for all electrical connections, where a dielectric compound is required to prevent voltage loss from arcing and to protect contacts from corrosion. Suppresses radio frequency interference, dissipates heat, insulates trailer wiring connectors and seals out moisture. Effective for automotive, RV and marine electrical applications. Non-water soluble. 3 1/2 oz. tube.

761-7200 ElectroTek®-Clam Shell

B



C. Battery Switch

Battery switch is cadmium plated isolator with terminal nuts and lock-washers. Isolates starting battery, provides secondary battery current for auxiliary power and full time charging of both batteries. 3 terminal switch is for metal frame grounded systems.

761-7000S Battery Switch -
 3 terminal-Boxed

C



SHUR SET III BREAKAWAY® SYSTEMS & ACCESSORIES

For optimal performance, replacement of breakaway electrical components is recommended every 3 to 5 years.

A B



761-2026 / 761-2028 Systems & 761-2018 Case

A B



761-20005 / 761-20015 Systems & 761-2051 Case

A B



761-20010 / 761-20020 Systems & 761-20000 Case



Battery Terminals Included in systems

A. Breakaway Systems

For use on single, tandem, tri- and/or four axle trailers equipped with electric brakes. These complete systems incorporate the highest quality components in trailer breakaway systems. Meet or exceed Department of Transportation (DOT) specifications regarding trailer breakaway and holding requirements. If a breakaway occurs between your tow vehicle and your trailer, the breakaway systems will automatically apply consistent braking power to your trailer brakes. Quick and easy to install, the systems comes with a weather/corrosion resistant, heavy-duty polymer case to protect the battery and charger.

Note: Refer to the Guide on the page 46 for Breakaway Applications, Specifications and Wiring Diagram.

For use on single, tandem, tri- and four axle trailers equipped with electric brakes. (Tri- and four axle trailers require minimum 5 Amp-hr battery).

761-2026: Includes 761-2018 Polymer Battery Case with A-Frame or Post Mounting Bracket; 761-2023 Rechargeable Sealed 12v 5 Amp-hr Lead Acid Battery and Terminals; 761-2010 Nylon Breakaway Switch.

761-20005: Includes 761-2051 Lockable All Polymer Battery Case with Flat Surface Mounting; 761-2023 Rechargeable Sealed 12v 5 Amp-hr Lead Acid Battery and Terminals; 761-2010 Nylon Breakaway Switch.

761-20010: Includes 761-20000 Lockable Polymer Battery Case with Weldable Flat Surface Mounting; 761-2023 Rechargeable Sealed 12v 5 Amp-hr Lead Acid Battery and Terminals; 761-2010 Nylon Breakaway Switch.

761-2028: Includes 761-2018 Polymer Battery Case with A-Frame or Post Mounting Bracket; 761-2023 Rechargeable Sealed 12v 5 Amp-hr Lead Acid Battery and Terminals; 761-2024 DC-to-DC Heavy Duty Quick/Maintenance (Two Stage) Battery Charger; 761-2010 Nylon Breakaway Switch.

761-20015: Includes 761-2051 Lockable All Polymer Battery Case with Flat Surface Mounting; 761-2023 Rechargeable Sealed 12v 5 Amp-hr Lead Acid Battery and Terminals; 761-2024 DC-to-DC Heavy Duty Quick/Maintenance (Two Stage) Battery Charger; 761-2010 Nylon Breakaway Switch.

761-20020: Includes 761-20000 Lockable Polymer Battery Case with Weldable Flat Surface Mounting; 761-2023 Rechargeable Sealed 12v 5 Amp-hr Lead Acid Battery and Terminals; 761-2024 DC-to-DC Heavy Duty Quick/Maintenance (Two Stage) Battery Charger; 761-2010 Nylon Breakaway Switch.

B. Battery Cases

Rust-proof heavy duty polymer cases protects battery and charger from elements and corrosion.

Quick, easy one-bolt installation on jackpost or A-frame – no need for cutting or drilling. U-shaped clamp style fastener mounts over most trailer tongues.

761-2018 Battery Case

Quick, easy four-bolt installation on any flat surface. For use with self tapping screws or similar fasteners. Lockable case.

761-2051 Battery Case

Quick, easy two-bolt or weldable installation on any flat surface. Galvanized metal mounting bracket and locking bar provide secure battery protection.

761-20000 Battery Case

C. Breakaway Switches

Sets trailer brakes in case of accidental trailer breakaway. Trailer brakes are applied automatically. Reinforced nylon case, Weldable metal tab, Nylon pull tab, and is Rust and Corrosion free.

Note: Refer to page 46 for Breakaway Switch Wiring Diagram.

- 761-2010** Breakaway Switch
w/ 48" wires-Clam Shell
- 761-2010-A** 48" Replacement Cable
& Nylon Pin Assembly
Clam Shell

C



761-2010 Switch

D



761-2023 Battery

D. Sealed Lead Acid Batteries

12v, sealed lead acid battery for use with Breakaway Systems on single, tandem and tri-axle trailers equipped with electric brakes (Tri-Axle trailers require 5 Amp-hr battery). Battery requires periodic recharging to maintain optimum performance.

- 761-2023** 5 Amp-hr Sealed
Battery-Boxed

E



761-2024 Charger

E. Battery Chargers

Designed to fit securely into the Breakaway Battery Cases. Patented temperature compensated design provides continuous recharge for all 12v battery systems with 4 Amp-hr minimum output. Provides maintenance-free assurance that breakaway batteries are always full charged. *Automatic shut-off feature will not permit overcharge.*

- 761-2024** DC-to-DC Heavy DutyQuick/
Maintenance (Two Stage)
Charger-Clam Shell

E



761-2025 Charger

For all 12v battery systems with a 4 Amp-hr minimum output. Automatic shut-off feature that prevents overcharging. Ideal for seasonal storage and maintenance of recreational vehicles, motorcycles, snowmobiles, lawn tractors and more.

- 761-2025** AC-to-DC Two Stage/
Maintenance Charger

MAGNETS/BEARING SETS/WHEEL HARDWARE

761-5101HA - White Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
Hayes 10 x 1 5/8
10 x 2 1/4
12 x 2
(All - Replaces
in pairs)
(All - After
Late 1994)



761-5105 - Red Wires

Length 3 1/4
Width 2 3/8
Thickness 7/8
Fits or Replaces
Hayes 10 x 2 1/4
(Prior to Mid 1987)
Hayes 10 x 1 5/8
(Prior to Mid 1987)
Trailer Pac 100
Tow Craft 1103-100-001



761-5106 - Green Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
Dexter 10 x 2 1/4
Hayes 10 x 2 1/4
(After Mid 1987)
Hayes 10 x 1 5/8
(After Mid 1987)
Trailer Pac 102
Tow Craft 1103-100-017



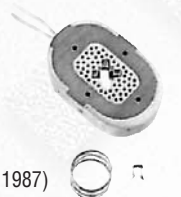
761-5108 - Red Wires

Length 3 9/16
Width 2 11/16
Thickness 7/8
Fits or Replaces
Hayes 12 x 2
(Prior to late 1987)
Trailer Pac 101
Tow Craft 1103-100-006



761-5109 - White Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
Dexter 12 x 2
Hayes 12 x 2
(After Late 1987)
Trailer Pac 103
Tow Craft 1103-100-018



761-5113 - White Wires

Length 2 1/16
Width 1 15/16
Thickness 3/4
Fits or Replaces
Dexter 10 x 1 1/2
(Prior to Mid 1988)
Dexter 7 x 1 1/4
(After April 1990)



761-5114 - Black Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
Dexter 12 x 2 - 7K Axles



761-5118 - Yellow Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
Dexter 10 x 1 1/2
(After Mid 1988)



761-6106 - Light Green Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
AL-KO Kober 10 x 2 1/4



761-6109 - White Wires

Length 3 1/8
Width 2
Thickness 15/16
Fits or Replaces
AL-KO Kober 12 x 2 6K & 7K



Bearing Sets

Cup/Cone	Part No.
BR14276-BR14125A	761-5508
BR15245-BR15123	761-5509
BR25580-BR25520	761-5503
L44610-L44649	761-5502
LM67010-LM67048	761-5507
L68149-L68111	761-5505

Rim Clamps

Rim clamps are used with demountable hub and drums on mobile home type rims. Note: Rim clamp bolt and rim clamp nut also required.



761-5790 Rim Clamps-
Set of 5-Clam Shell

Rim Clamp Bolts

Rim clamp bolts are used with demountable hub and drums on mobile home type rims. Note: Rim clamp and rim clampnut also required.



761-5791 Rim Clamp Bolts-
(1/2 - 20 x 1 7/8")-
Set of 5-Clam Shell

761-5792 Rim Clamp Bolts-
(1/2 - 13 x 1 5/8")-
Set of 5-Clam Shell

761-5793 Rim Clamp Bolts-
(1/2 - 13 x 2 1/4")-
Set of 5-Clam Shell

Rim Clamp Nuts

Rim clamp nuts are used with demountable hub and drums on mobile home type rims. Note: Rim clamp and rim clamp bolt also required.



761-5794 Rim Clamp Nuts-
(1/2 - 13)-Set of 5-
Clam Shell

761-5795 Rim Clamp Nuts-
(1/2 - 20)-Set of 5-
Clam Shell

Spindle Nut Kits - Standard Washer

Secures brake hardware on spindle axles.



761-5774 Spindle Nut Kit-
Standard Washer-
(1" - 14 Spindle)-
Clam Shell

Spindle Nut Kits - D Type Washer

Secures brake hardware on spindle axles.



761-5775 Spindle Nut Kit-
D Type Washer-
(1" - 14 Spindle)-
Clam Shell

Wheel Nuts

Secures wheel to brake drum.



761-5780 13/16 Wheel Nut -
(1/2 - 20)-Set of 5-
Clam Shell

Wheel Bolts

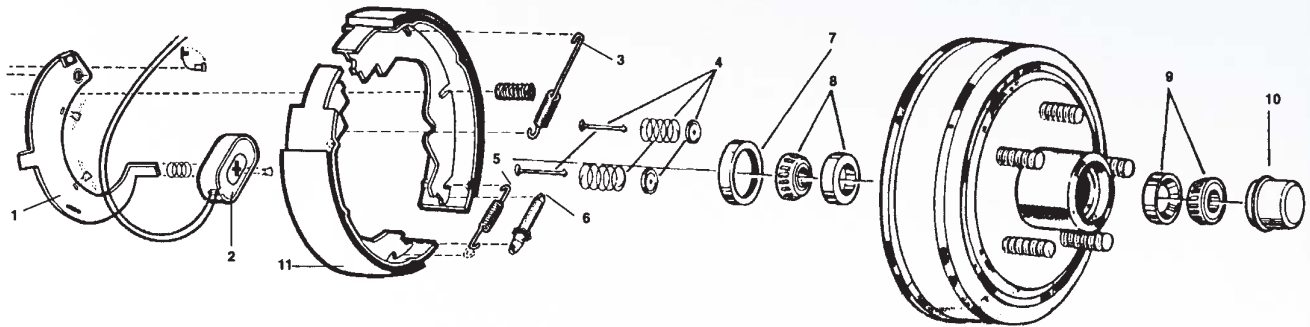
Secures wheel to brake drum.



761-5787 Wheel Bolt-
(1/2 - 20)-Set of 5-
Clam Shell

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

ALKO 10" x 2 1/4"



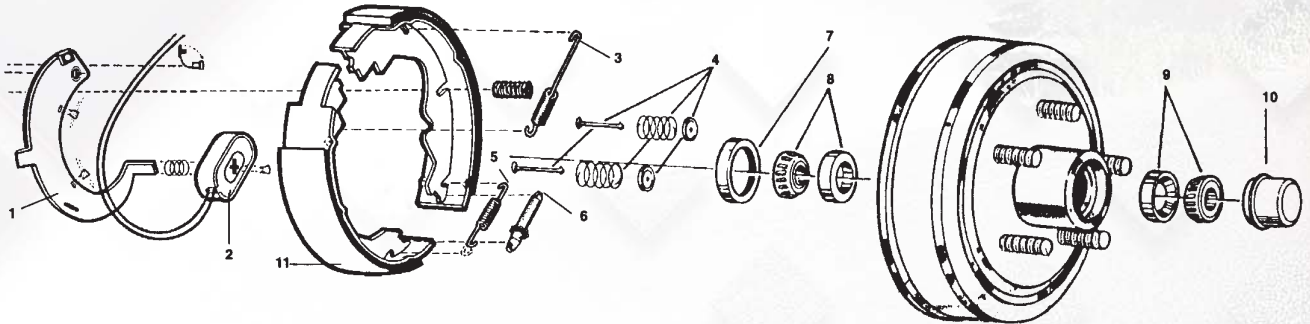
Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-6205	1	Actuating Lever — R.H.
761-6206	1	Actuating Lever — L.H.
761-6106	2	Magnet Kit
761-5304	3	Return Spring Set (Axle Set)
761-5353	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5604/761-6604	7	Seal (Axle Set)
761-5651	10	Grease Cap (Axle Set)
Bearing Sets		
761-5505	8	Bearing Set - Inner
761-5502	9	Bearing Set - Outer
Brake Shoes		
761-6004	11	Shoe and Lining Kit (Wheel Set)
Brake Assembly		
761-6709		Complete Assembly — L.H.
761-6710		Complete Assembly — R.H.

ALKO 12" x 2"



Tekonsha

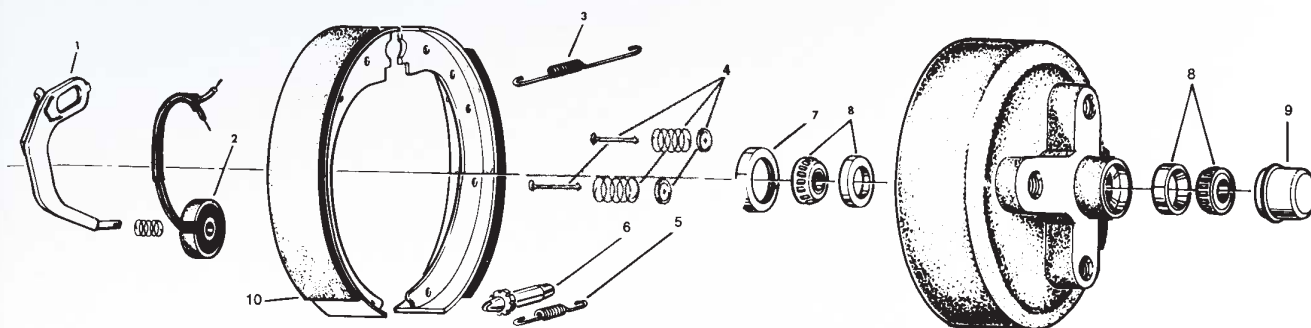
Part No.	Illustration No.	Part Name
Hardware		
761-6211	1	Actuating Lever - R.H.
761-6212	1	Actuating Lever - L.H.
761-6109	2	Magnet Kit 6 & 7K
761-5307	3	Return Spring Set (Axle Set)
761-5353	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5605/761-6605	7	Seal (Axle Set)
761-6658	10	Grease Cap (Axle Set) for 5508
761-5652	10	Grease Cap (Axle Set) for 5509
Bearing Sets		
761-5503	8	Bearing Set - Inner
761-5508	9	Bearing Set - Outer - 865 Large Bore
761-5509	9	Bearing Set - Outer - Small Bore
Brake Shoes		
761-6005	11	Shoe and Lining Kit (Wheel Set)
Brake Assembly		
761-6713		Complete Assembly — L.H.
761-6714		Complete Assembly — R.H.

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

Dexter 7" x 1 1/4"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5203	1	Actuating Lever - R.H.
761-5204	1	Actuating Lever - L.H.
761-5113**	2	Magnet Kit
Hardware Kit (Axle Set)		
761-5320*	3	Return Spring
761-5320*	4	Hold Down Clips
761-5320*	5	Adjusting Screw Spring
761-5320*	6	Adjusting Screw Assembly

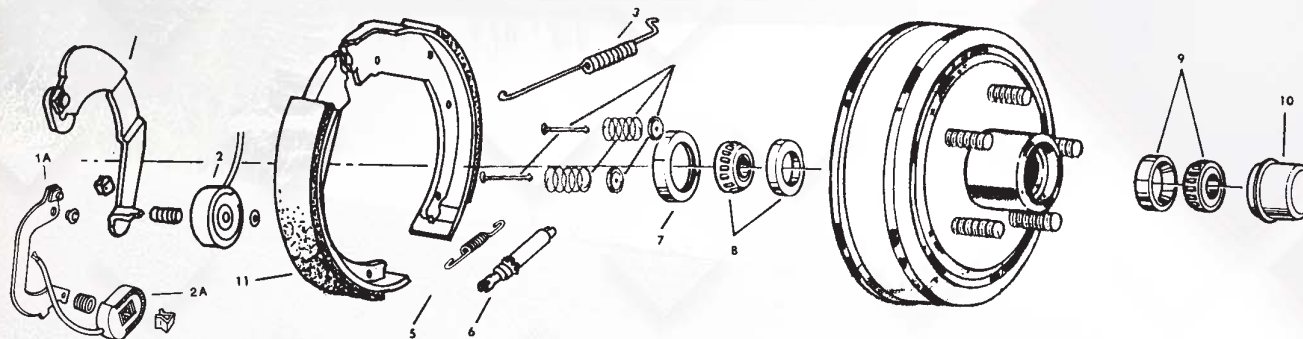
Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5603	7	Seal - BTR (Axle Set)
761-5651	9	Grease Cap (Axle Set)
Bearing Sets		
761-5502	8	Bearing Set - Inner & Outer
Brake Shoes		
761-5002	10	Shoe and Lining Kit (Wheel Set)

*Contained in Hardware Kit (Axle Kit)

**761-5113 After 4-1990 to accommodate lever revision

Dexter 10" x 1 1/2"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5231**	1A	Actuating Lever - R.H.
761-5232**	1A	Actuating Lever - L.H.
761-5113*	2	Magnet Kit
761-5118**	2A	Magnet Kit
761-5306	3	Return Spring Set (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

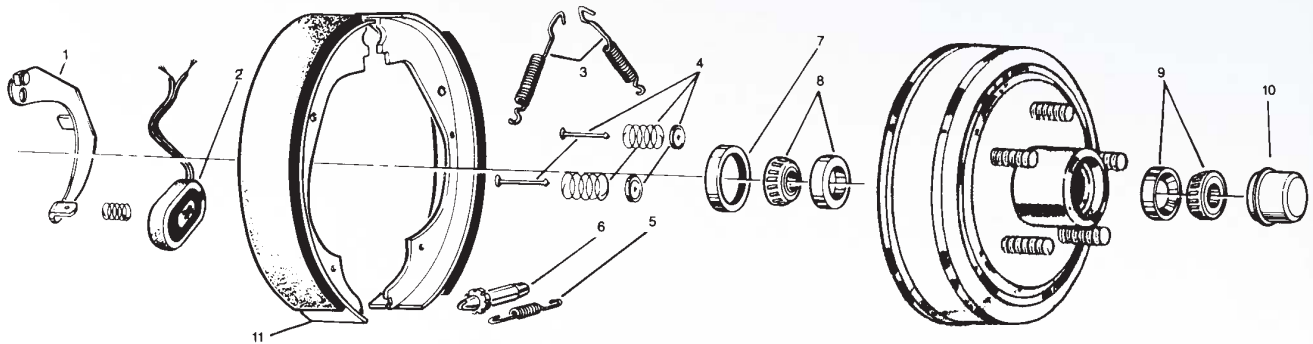
Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5607	7	Seal (Axle Set)
761-5651	10	Grease Cap (Axle Set)
Bearing Sets		
761-5507	8	Bearing Set - Inner
761-5502	9	Bearing Set - Outer
Brake Shoes		
761-5009	11	Shoe and Lining Kit (Wheel Set)

*Prior to Mid 1988

**After Mid 1988

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

Dexter 10" x 2 1/4"



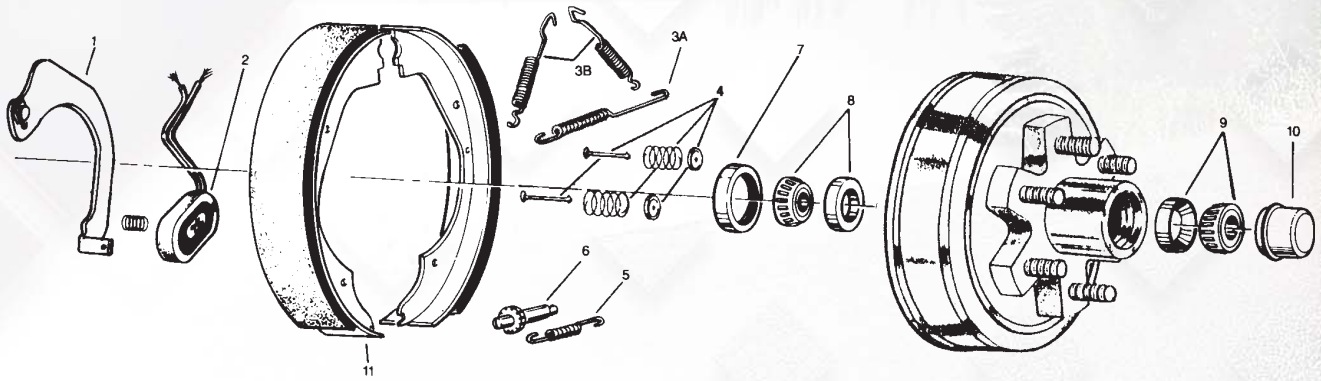
Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5209	1	Actuating Lever - R.H.
761-5210	1	Actuating Lever - L.H.
761-5106	2	Magnet Kit
761-5305	3	Return Spring Set (Axle Set)
761-5353	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5604	7	Seal (Axle Set)
761-5651	10	Grease Cap (Axle Set)
Bearing Sets		
761-5505	8	Bearing Set - Inner (After Dec. 1983)
761-5502	9	Bearing Set - Outer
Brake Shoes		
761-5003	11	Shoe and Lining Kit (Wheel Set)
Brake Assembly		
761-5707		Complete Assembly — L.H.
761-5708		Complete Assembly — R.H.

Dexter 12" x 2"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5215	1	Actuating Lever - R.H.
761-5216	1	Actuating Lever - L.H.
761-5109	2	Magnet Kit
Return Spring Set (Axle Set)		
761-5307	3A	Single Retractor
761-5305	3B	Dual Retractor
761-5353*	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

*Replacement Kit Uses Coil Springs

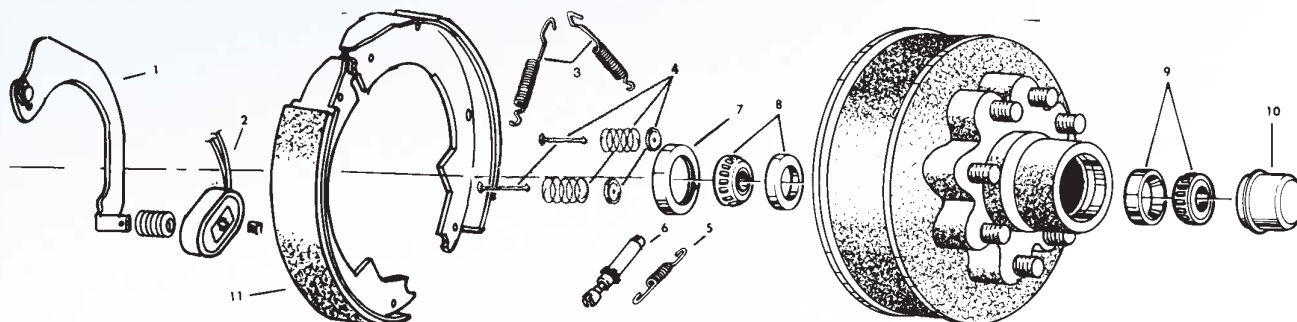
**Prior to 1997

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5606**	7	Seal (Axle Set)
761-5652	10	Grease Cap (Axle Set)
Bearing Sets		
761-5503	8	Bearing Set - Inner
761-5507	9	Bearing Set - Outer
Brake Shoes		
761-5000DX	11	Shoe and Lining Kit (Wheel Set)
Brake Assembly		
761-5711		Complete Assembly — L.H.
761-5712		Complete Assembly — R.H.

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

Dexter 12" x 2" 7K



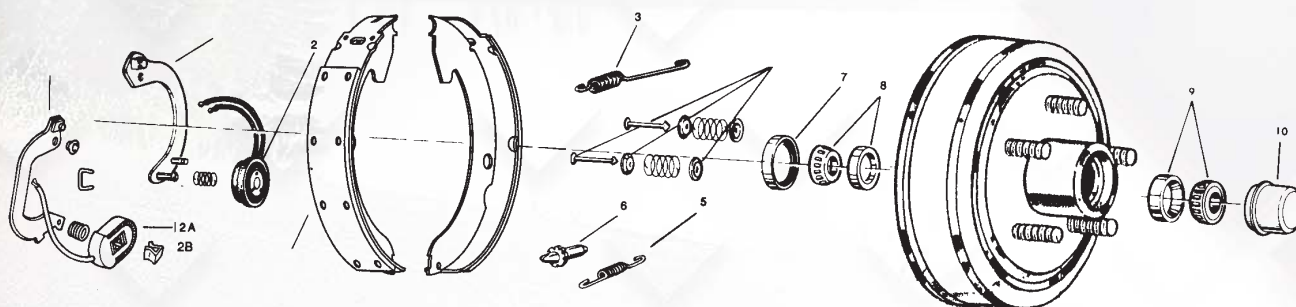
Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5215	1	Actuating Lever - R.H.
761-5216	1	Actuating Lever - L.H.
761-5114	2	Magnet Kit
761-5305	3	Return Spring Set (Axle Set)
761-5353	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5606	7	Seal (Axle Set)
761-5652	10	Grease Cap (Axle Set)
Bearing Sets		
761-5503	8	Bearing Set - Inner
761-5508	9	Bearing Set - Outer (865 HUB)
761-5509	9	Bearing Set - Outer (UTG Hub)
Brake Shoes		
761-5010	11	Shoe and Lining Kit (Wheel Set)

Hayes 10" x 1 5/8"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5105*	2	Magnet Kit (4.5K Axles)
761-5106**	2A	Magnet Kit (6K & 7K Axles)
761-5101HA***	2B	Magnet Kit - White Wire
761-5304	3	Return Spring Set (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5604	7	Seal (Axle Set)
761-5651	10	Grease Cap (Axle Set)
Bearing Sets		
761-5507	8	Bearing Set - Inner
761-5502	9	Bearing Set - Outer

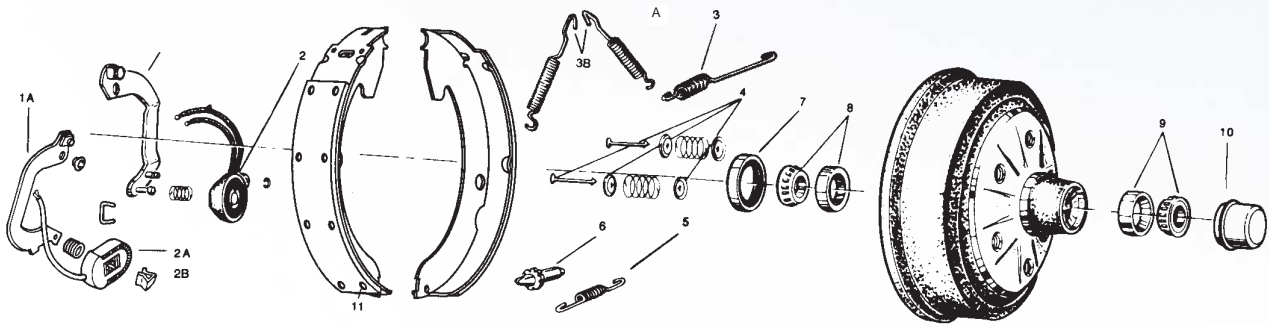
*Replace Lever And Use 761-5106 Magnet

**After Mid 1987

***After Late 1994

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

Hayes 10" x 2 1/4"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5205**	1A	Actuating Lever - R.H.
761-5206**	1A	Actuating Lever - L.H.
761-5105*	2	Magnet Kit
761-5106**	2A	Magnet Kit
761-5101HA	2B	Magnet Kit-White Wire Late 1994
Return Spring Set (Axle Set)		
761-5304	3A	Single Retractor
761-5305****	3B	Dual Retractor
761-5353	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5604	7	Seal (Axle Set)
761-5651	10	Grease Cap (Axle Set)
Bearing Sets		
761-5505***	8	Bearing Set - Inner
761-5502	9	Bearing Set - Outer
Brake Shoes		
761-6004	11	Shoe and Lining Kit (Wheel Set)
Brake Assembly		
761-5709-HA		Complete Assembly — L.H.
761-5710-HA		Complete Assembly — R.H.

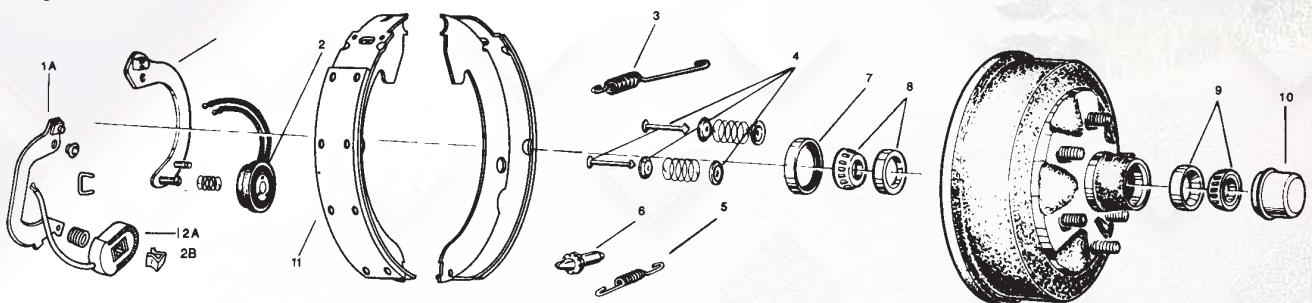
*Prior to Mid 1987

**After Mid 1987

***After 1972

****Prior to May 1977

Hayes 12" x 2"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5211**	1A	Actuating Lever - R.H.
761-5212**	1A	Actuating Lever - L.H.
761-5108*	2	Magnet Kit
761-5109**	2A	Magnet Kit
761-5101HA	2B	Magnet Kit-White Wire Late 1994
761-5307	3	Return Spring Set (Axle Set)
761-5353	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

Tekonsha

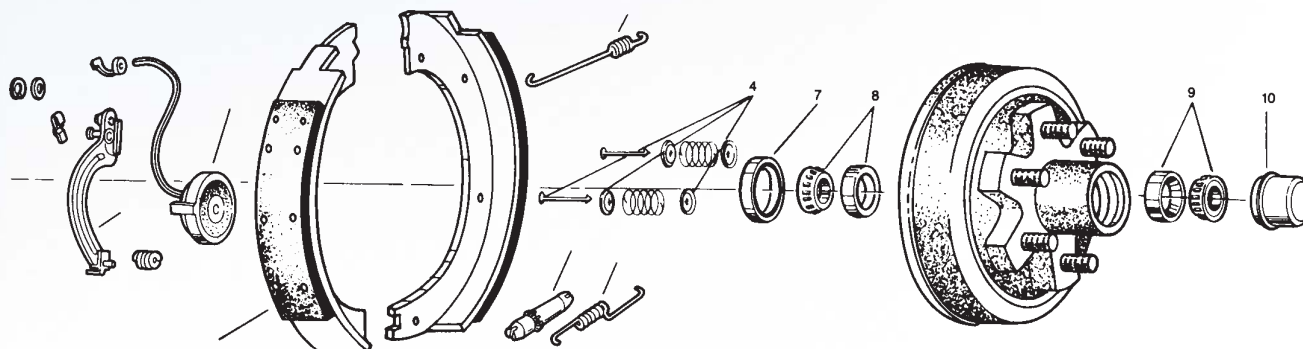
Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5605	7	Seal (Axle Set)
761-5652	10	Grease Cap (Axle Set)
Bearing Sets		
761-5503	8	Bearing Set - Inner
761-5507	9	Bearing Set - Outer
Brake Shoes		
761-5000HA	11	Shoe and Lining Kit (Wheel Set)
Brake Assembly		
761-5713HA		Complete Assembly — L.H.
761-5714HA		Complete Assembly — R.H.

*Prior to Late 1987

**After Late 1987

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

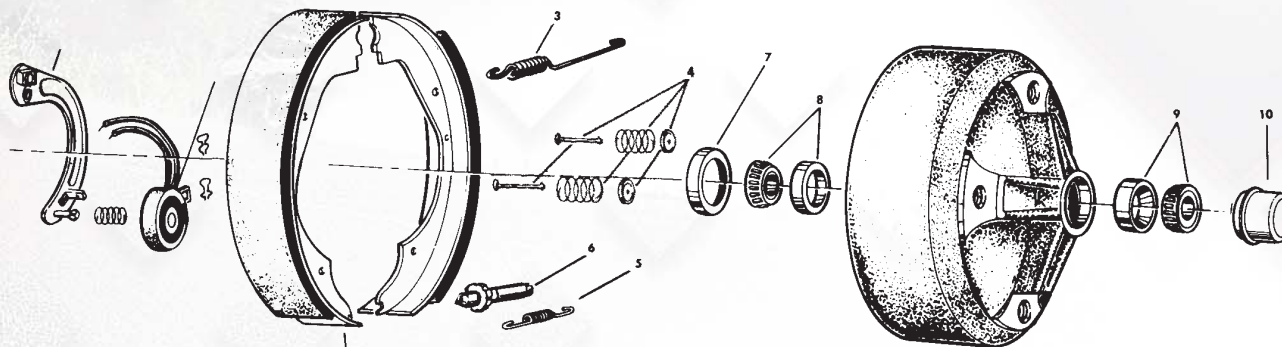
Hayes 12" x 2" Centerline



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5353	4	Hold Down Kit (Axle Set)
Grease Seal & Cap		
761-5605	7	Seal (Axle Set)
761-5652	10	Grease Cap (Axle Set)
Bearing Sets		
761-5503	8	Bearing Set - Inner
761-5507	9	Bearing Set - Outer

Fayette 10" x 2 1/4"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5304	3	Return Spring Set (Axle Set)
761-5353*	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

*Contained in Hardware Kit (Axle Kit)

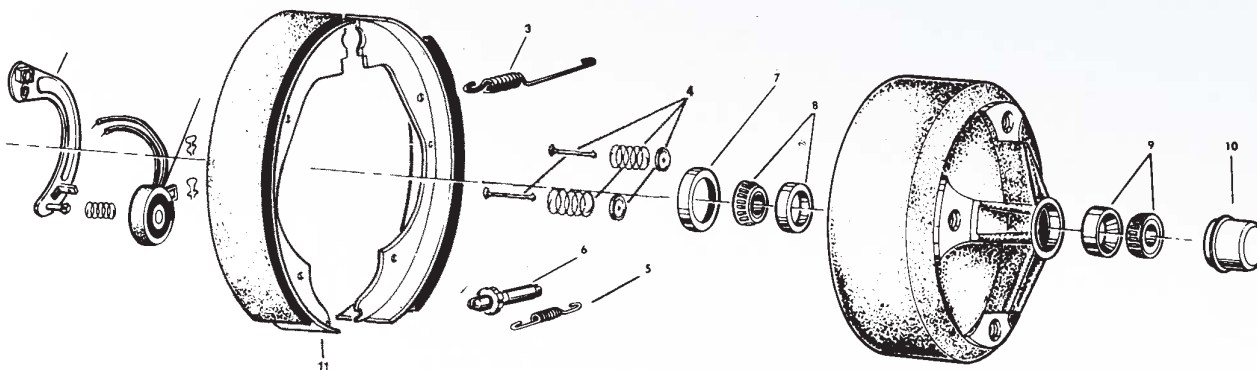
**After 1972

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5604	7	Seal (Axle Set)
761-5651	10	Grease Cap (Axle Set)
Bearing Sets		
761-5505**	8	Bearing Set - Inner
761-5502	9	Bearing Set - Outer

ELECTRIC TRAILER BRAKE REPLACEMENT PARTS

Fayette 12" x 2"



Tekonsha

Part No.	Illustration No.	Part Name
Hardware		
761-5307	3	Return Spring Set (Axle Set)
761-5353*	4	Hold Down Kit (Axle Set)
761-5404	5,6	Adjusting Screw Kit (Spring & Screw Assembly)

*Replacement Kit Uses Coil Springs

**Bonded Shoes

Tekonsha

Part No.	Illustration No.	Part Name
Grease Seal & Cap		
761-5605	7	Seal (Axle Set)
761-5652	10	Grease Cap (Axle Set)
Bearing Sets		
761-5503	8	Bearing Set - Inner
761-5507	9	Bearing Set - Outer
Brake Shoes		
761-5000DX**	11	Shoe and Lining Kit (Wheel Set)

Electric Brake Assemblies

761-5707	10" x 2 1/4" L.H. Dexter Assembly
761-5708	10" x 2 1/4" R.H. Dexter Assembly
761-5709HA	10" x 2 1/4" L.H. Hayes Assembly Replace in Pairs
761-5710HA	10" x 2 1/4" R.H. Hayes Assembly Replace in Pairs
761-5711	12" x 2" L.H. Dexter Assembly
761-5712	12" x 2" R.H. Dexter Assembly
761-5713HA	12" x 2" L.H. Hayes Assembly Replace in Pairs
761-5714HA	12" x 2" R.H. Hayes Assembly Replace in Pairs
761-6709	10" x 2 1/4" L.H. AL-KO Assembly
761-6710	10" x 2 1/4" R.H. AL-KO Assembly
761-6713	12" x 2" L.H. AL-KO Assembly
761-6714	12" x 2" R.H. AL-KO Assembly

Assemblies include: Backing Plate, Shoe and Linings, Magnets, Actuating Lever, Adjusting Screw and Spring Hardware. (Units are assembled)

Brake Assembly Mounting Bolts

761-5720	3/8" Brake Assembly Mounting Bolt (Used on 5 bolt mounting patterns)
761-5721	7/16" Brake Assembly Mounting Bolt (Used on 4 bolt mounting patterns)



BRAKE PARTS REFERENCE GUIDE

Shoe and Lining Kit

761-5000DX 12 x 2 Dexter
12 x 2 Fayette
12 x 2 Aimco
12 x 2 Foreman

Shoe and Lining Kit

761-5000HA 12 x 2 Hayes

Shoe and Lining Kit

761-5002 7 x 1 1/4 Dexter

Shoe and Lining Kit

761-5003 10 x 2 1/4 Dexter

Shoe and Lining Kit

761-5009 10 x 1 1/2 Dexter Wheel Set

Shoe and Lining Kit

761-5010 12 x 2 Dexter 7K

Shoe and Lining Kit

761-6004 10 x 2 1/4 AL-KO
10 x 2 1/4 Hayes

Shoe and Lining Kit

761-6005 12 x 2 AL-KO

Magnet Kit

761-5101HA 10 x 1 5/8 Hayes
10 x 2 1/4 Hayes
12 x 2 Hayes
(All - Replaces in pairs)
(All - After late 1994)

Magnet Kit

761-5105 10 x 2 1/4 Hayes
(Prior to Mid 1987)
10 x 1 5/8 Hayes
(Prior to Mid 1987)

Magnet Kit

761-5106 10 x 2 1/4 Dexter
10 x 2 1/4 Hayes
(After Mid 1987)
10 x 1 5/8 Hayes
(After Mid 1987)

Magnet Kit

761-5108 12 x 2 Hayes
(Prior to Late 1987)

Magnet Kit

761-5109 12 x 2 Dexter
12 x 2 Hayes
(After Late 1987)

Magnet Kit

761-5113 10 x 1 1/2 Dexter
(Prior to Mid 1988)
7 x 1 1/4 Dexter
(After April 1990)

Magnet Kit

761-5114 12 x 2-7K Dexter

Magnet Kit

761-5118 10 x 1 1/2 Dexter
(After Mid 1988)

Magnet Kit

761-6106 10 x 2 1/4 AL-KO

Magnet Kit

761-6109 12 x 2 AL-KO
6K & 7K

Magnet Retaining Ring

761-5120 10 x 1 5/8 Hayes
10 x 2 1/4 Hayes
(Old Style)
12 x 2 Hayes
(Old Style)

Magnet Retaining Clip

761-5121 10 x 2 1/4 Dexter
12 x 2 Dexter
12 x 2-7K Dexter
10 x 2 1/4 Hayes
(New Style)
12 x 2 Hayes
(New Style)

Wire Clip

761-5122 10 x 1 1/2 Dexter
10 x 2 1/4 Dexter
12 x 2 Dexter

Lever - R.H.

761-5203 7 x 1 1/4 Dexter

Lever - L.H.

761-5204 7 x 1 1/4 Dexter

Lever - R.H.

761-5205 10 x 2 1/4 Hayes
(After Mid 1987)

Lever - L.H.

761-5206 10 x 2 1/4 Hayes
(After Mid 1987)

Lever - R.H.

761-5209 10 x 2 1/4 Dexter

Lever - L.H.

761-5210 10 x 2 1/4 Dexter

Lever - R.H.

761-5211 12 x 2 Hayes
(After Late 1987)

Lever - L.H.

761-5212 12 x 2 Hayes
(After Late 1987)

Lever - R.H.

761-5215 12 x 2 Dexter

Lever - L.H.

761-5216 12 x 2 Dexter

Lever - R.H.

761-5231 10 x 1 1/2 Dexter
(After Mid 1988)

Lever - L.H.

761-5232 10 x 1 1/2 Dexter
(After Mid 1988)

Lever - R.H.

761-6205 10 x 2 1/4 AL-KO

Lever - L.H.

761-6206 10 x 2 1/4 AL-KO

Lever - R.H.

761-6211 12 x 2 AL-KO

Lever - L.H.

761-6212 12 x 2 AL-KO

Return Spring Set (Axle Set)

761-5304 10 x 2 1/4 AL-KO
10 x 1 5/8 Hayes
10 x 2 1/4 Hayes
(Single Ret.)
10 x 2 1/4 Fayette

Return Spring Set (Axle Set)

761-5305 10 x 2 1/4 Hayes
(Dual Ret.-Prior to May 1977)
10 x 2 1/4 Dexter
10 x 2 1/4 Aimco
10 x 2 1/4 Foreman
12 x 2 Aimco
12 x 2 Dexter
(Dual Ret.)
12 x 2 Foreman

Return Spring Set (Axle Set)

761-5306 10 x 1 1/2 Dexter

Return Spring Set (Axle Set)

761-5307 12 x 2 AL-KO
12 x 2 Hayes
12 x 2 Dexter
(Single Ret.)
12 x 2 Fayette

Hardware Kit (Axle Set)

761-5320 7 x 1 1/4 Dexter

BRAKE PARTS REFERENCE GUIDE

Hold Down Kit (Axle Set)

761-5353	10 x 2 1/4 AL-KO
	10 x 2 1/4 Hayes
	10 x 2 1/4 Dexter
	10 x 2 1/4 Fayette
	10 x 2 1/4 Aimco
	12 x 2 AL-KO
	12 x 2 Hayes
	12 x 2 Hayes Centerline
	12 x 2 Dexter
	12 x 2 Fayette

Adjusting Screw Kit

761-5404	10 x 2 1/4 AL-KO
	10 x 1 5/8 Hayes
	10 x 1 1/2 Dexter
	10 x 2 1/4 Hayes
	10 x 2 1/4 Dexter
	10 x 2 1/4 Fayette
	10 x 2 1/4 Aimco
	12 x 2 AL-KO
	12 x 2 Hayes
	12 x 2 Dexter
	12 x 2 Fayette
	12 x 2 Aimco
	12 x 2 Foreman

Adjusting Screw Spring Set

761-5407	10 x 1 5/8 Hayes
	10 x 1 1/2 Dexter
	10 x 2 1/4 Hayes
	10 x 2 1/4 Dexter
	10 x 2 1/4 Fayette
	10 x 2 1/4 Aimco
	12 x 2 Hayes
	12 x 2 Dexter
	12 x 2 Fayette

Bearing Set (L44610 Cup, L44649 Cone)

761-5502	7 1/4 x 1 1/4 Hayes (In & Out)
	7 1/4 x 1 1/4 Foreman (In & Out)
	7 x 1 1/4 Dexter BTL (In & Out)
	10 x 2 1/4 AL-KO (Out)
	7 x 1 1/4 Dexter BTR (In & Out)
	7 1/4 x 1 1/4 Fayette (In & Out)
	7 1/4 x 1 1/4 Foreman (In & Out)
	10 x 1 5/8 Hayes (Out)
	10 x 1 1/2 Dexter (Out)
	10 x 2 1/4 Hayes (Out)
	10 x 2 1/4 Dexter (Out)
	10 x 2 1/4 Fayette (Out)
	10 x 2 1/4 Foreman (Out)

Bearing Set (BR25520 Cup, BR25580 Cone)

761-5503	12 x 2 AL-KO (In)
	12 x 2 Hayes (In)
	12 x 2 Dexter (In)
	12 x 2 Fayette (In)
	12 x 2 Foreman (In)
	12 x 2 AL-KO (In)
	6 & 8 Hole

Bearing Set (L68111 Cup, L68149 Cone)

761-5505	10 x 2 1/4 AL-KO (In)
	10 x 2 1/4 Fayette (In)
	(After 1972)
	10 x 2 1/4 Hayes (In)
	(After 1972)
	10 x 2 1/4 Dexter (In)
	(After Dec. 1983)

Bearing Set (LM67010 Cup, LM67048 Cone)

761-5507	10 x 1 5/8 Hayes (In)
	10 x 1 1/2 Dexter (In)
	12 x 2 Hayes (Out)
	12 x 2 Dexter (Out)
	12 x 2 Fayette (Out)
	12 x 2 Foreman (Out)

Bearing Set (BR14276 Cup, BR14125A Cone)

761-5508	12 x 2 Dexter
	6K & 7K
	865 Hub (Out)
	12 x 2 AL-KO
	8 Hole
	865 Hub (Out)

Bearing Set (BR15245 Cup, BR15123 Cone)

761-5509	12 x 2 Dexter
	6 K & 7K
	UTG Hub (Out)
	12 x 2 AL-KO
	6 & 8 Hole (865 Small)

Seal

761-5602	7 1/4 x 1 1/4 Hayes
761-5603	7 x 1 1/4 (BTR)
761-5604	10 x 1 5/8 Hayes
	10 x 2 1/4 Hayes
	10 x 2 1/4 Dexter
	10 x 2 1/4 Fayette
761-5605	12 x 2 Hayes
	12 x 2 Fayette
761-5606	12 x 2 AL-KO
	12 x 2 Dexter (Prior 1997)
761-5607	10 x 1 1/2 Dexter
761-6604/ 761-5604	10 x 2 1/4 AL-KO
761-6605/ 761-5605	12 x 2 AL-KO*

Grease Cap

761-5651	10 x 2 1/4 AL-KO
	10 x 1 5/8 Hayes
	10 x 1 1/2 Dexter
	10 x 2 1/4 Hayes
	10 x 2 1/4 Dexter
	10 x 2 1/4 Fayette
	10 x 2 1/4 Foreman

Grease Cap

761-5652	12 x 2 AL-KO
	12 x 2 Hayes
	12 x 2 Dexter
	12 x 2 Fayette
	12 x 2 Foreman

Grease Cap

761-6658	12 x 2 AL-KO (Large Bore)
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Brake Assembly - L.H.

761-5707	10 x 2 1/4 Dexter
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Brake Assembly - R.H.

761-5708	10 x 2 1/4 Dexter
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Brake Assembly - L.H.

*761-5709HA	10 x 2 1/4 Hayes
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Brake Assembly - R.H.

*761-5710HA	10 x 2 1/4 Hayes
--------------------	------------------

Brake Assembly - L.H.

761-5711	12 x 2 Dexter
-----------------	---------------

Brake Assembly - R.H.

761-5712	12 x 2 Dexter
-----------------	---------------

Brake Assembly - L.H.

*761-5713HA	12 x 2 Hayes
--------------------	--------------

Brake Assembly- R.H.

*761-5714HA	12 x 2 Hayes
--------------------	--------------

Brake Assembly - L.H.

761-6709	10 x 2 1/4 AL-KO
-----------------	------------------

Brake Assembly - R.H.

761-6710	10 x 2 1/4 AL-KO
-----------------	------------------

Brake Assembly - L.H.

761-6713	12 x 2 AL-KO
-----------------	--------------

Brake Assembly - R.H.

761-6714	12 x 2 AL-KO
-----------------	--------------

Brake Assembly Mounting Bolts

761-5720	3/8" 5 Bolt Mounting Pattern
761-5721	7/16" 4 Bolt Mounting Pattern

*(Replace in pairs)

Brake Lock Product Line



User Interface



Control Module



Power Unit



Single Actuator



Dual Actuator



Main Wire Harness

691 Brake Lock System

MODELS:

- 68170** - Single Brake Lock System - (BF) *
- 68171** - Single Brake Lock System - (BF) **
- 68172** - Dual Brake Lock System - (BF) *
- 68173** - Dual Brake Lock System - (BF) **
- 68175** - 3 - Channel Anti-Lock Brake Lock System - (BF) **
- 68176** - 4 - Channel Anti-Lock Brake Lock System - (BF) *

(BF) = Brake Fluid * Over 19,000 GVW ** 19,000 GVW and under

NOTE: 691 System uses silicone fluid.



Duallock

Duallocks are designed to supplement your standard parking brake by utilizing the hydraulic service brakes of a vehicle equipped with a dual or split braking system. Duallocks can provide 4-wheel lockup for hydraulic dual brake systems or rear wheel ABS, as well as, 2-wheel lockup for hydraulic 3 and 4 channel ABS. All Duallocks include two low pressure warning switches.

MODELS:

66606 - Cable operated - 3/16" & 1/4" fittings - in line mount - includes 10 ft. cable - (BF)

(BF) = Brake Fluid



Lever Lock

Lever Locks are designed to supplement your standard parking brake by utilizing the hydraulic service brakes. They are manually operated one-way check valves which lock fluid under pressure in the selected brakes. Hand operation leaves the operator's feet free for clutch and gas pedal operation. All Lever Locks include a low pressure warning switch.

MODELS:

66605 - Lever Lock - 3/16" & 1/4" fittings - (BF)

(BF) = Brake Fluid

Different Brake Systems

The typical hydraulic braking systems in use today vary depending on manufacturer and size of vehicle. For instance, a vehicle equipped with a single system may have a firewall mounted booster or possibly a frame mounted remote booster. The same holds true for the dual and split systems. The rear wheel anti-lock system is a dual brake system with an anti-lock valve installed. All-wheel anti-lock systems are defined as 3-channel or

4-channel systems (Check the number of outlet lines from the anti-lock control valve). To be absolutely sure which braking system your vehicle is equipped with, check it. Look for identifying features such as dual flex lines at rear axle or front wheels, number of master cylinder lines, anti-lock valve(s), etc. Then, compare with circuits shown here.

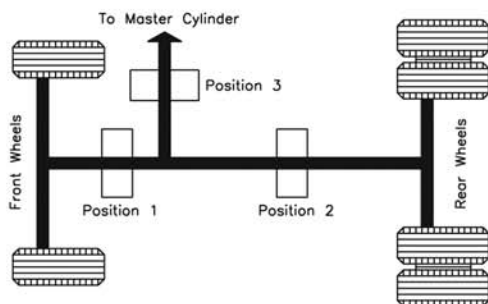


FIGURE 1

TYPICAL SINGLE SYSTEM

One single hydraulic system serving both front and rear brakes.

Identifying Feature:

1. One line from master cylinder.

Lock Position:

- (1) Front axle
- (2) Rear axle
- (3) 4-wheel

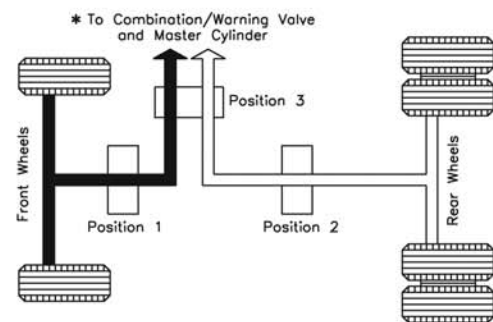


FIGURE 2

TYPICAL DUAL SYSTEM (Vertical Split)

Two independent braking systems. One system leads to the front brakes and the other system to the rear brakes.

Identifying Features:

1. Two lines from master cylinder.
2. Combination valve (used on some models).

Lock Position:

- (1) Front axle
- (2) Rear axle*
- (3) 4-wheel

* Some imported vehicles use two separate air boosted master cylinders.

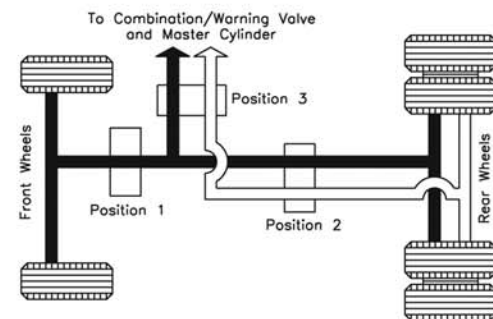


FIGURE 3

TYPICAL SPLIT SYSTEM (1 1/2 x 1/2)

Two independent braking systems. One system leads to the front and the rear brakes and the other system leads only to the rear brakes.

Identifying Features:

1. Two lines from master cylinder.
2. Single hose to each front wheel.
3. Two hoses to rear axle.

Lock Position:

- (1) Front axle
- (2) Rear axle
- (3) 4-wheel

CAUTION: If position 2 or 3 is used, both halves of system must be locked.

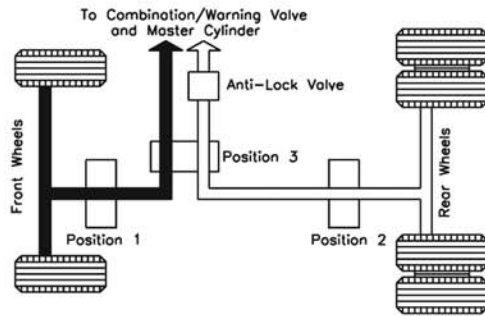


FIGURE 4

TYPICAL REAR WHEEL ANTI-LOCK SYSTEM (Dual Vertical Split)

Two independent braking systems. One system leads to the front brakes and the other system to the rear brakes.

Identifying Features:

1. Two lines from master cylinder.
2. Anti-lock control valve between master cylinder and rear wheels.

Lock Position:

- (1) Front axle (2) Rear axle (3) 4-wheel

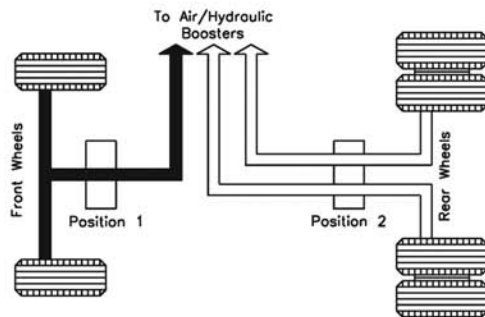


FIGURE 5

IMPORTED TRUCK 3-CHANNEL ALL-WHEEL ANTI-LOCK SYSTEM

Provides braking control by way of independent anti-lock channels for each rear wheel and a third channel for the front wheels.

Identifying Features:

1. Three separate air/hydraulic brake boosters.
2. One line to front brakes.
3. Separate lines to each rear wheel.

Lock Position:

- (1) Front axle (2) Rear axle (1 & 2) 4-wheel

NOTE: The anti-lock functions on air booster system, not the hydraulic side.

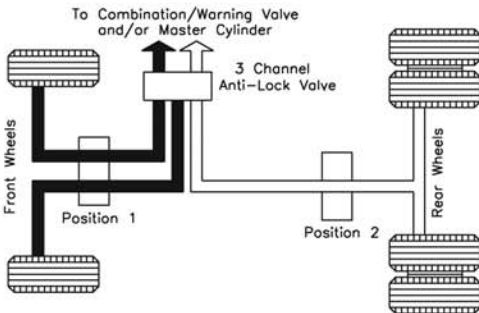


FIGURE 6

TYPICAL 3-CHANNEL ALL-WHEEL ANTI-LOCK SYSTEM

Provides braking control by way of independent anti-lock channels for each front wheel and a third channel for both rear wheels.

Identifying Features:

1. Two lines from master cylinder to anti-lock valve(s).
2. One line from anti-lock valve to rear brakes.
3. Separate lines from anti-lock valve to each front wheel.

Lock Position:

- (1) Front axle (2) Rear axle (1 & 2) 4-wheel

NOTE: Some 3-channel anti-lock brake systems use two separate anti-lock valves.

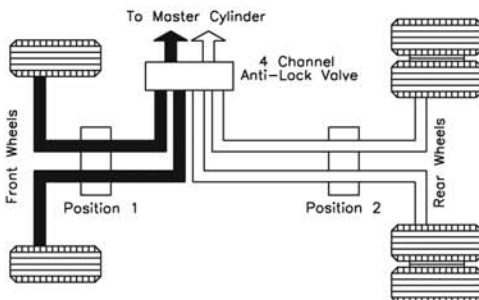


FIGURE 7

TYPICAL 4-CHANNEL ALL-WHEEL ANTI-LOCK SYSTEM

Provides braking control by way of an independent channel for each front wheel and each rear wheel.

Identifying Features:

1. Two lines from master cylinder to anti-lock valve.
2. Separate lines from anti-lock valve to each of the front and rear wheels.

Lock Position:

- (1) Front axle (2) Rear axle (1 & 2) 4-wheel

NOTE: Some 4-channel anti-lock brake systems use two separate anti-lock valves.

BRAKE LOCK SYSTEMS

Domestic Truck Brake System Types (hydraulic)

Chevrolet - GMC

				Vehicle Application			
Light Duty (C/K10-30, C/K1500-3500)				Interlock Applications / Aerial Lift Bucket		Other Applications	
Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1967-1987	Dual (Figure 2)	F-disc/R-drum	Early models had 4 wheel drums.	68173	68171	68173 66606	68171 66605
1988-1994	Rear ABS (Figure 4)	F-disc/R-drum		68173	68171	68173 66606	68171 66605
1995-2005	3-channel ABS (Figure 6)	F-disc/R-drum		68175	68171 *	68175	68171 * 66605 *
3500HD (All models have Hydraulic Boost M/C's)				4 Wheel	2 Wheel	4 Wheel	2 Wheel
1990-1992	Dual (Figure 2)	4 wheel disc	Load sensing valve at rear axle.	68173	68171	68173	68171 66605
1993-1994	Rear ABS (Figure 4)	4 wheel disc	Load sensing valve at rear axle.	68173	68171	68173	68171 66605
1995-2002	3-channel ABS (Figure 6)	4 wheel disc	No load sensing valve at rear axle.	68175	68171 *	68175	68171 * 66605 *
Medium Duty (C50-C65, Kodiak & TopKick, C4500-C8500 Conventional Cab, T5500-T8500 Tilt Cab)				4 Wheel	2 Wheel	4 Wheel	2 Wheel
1970-mid 1980s	Single (Figure 1)	Drum	Hydrovac	68170	68170	68170 66605	68170 66605
1970-mid 1980s	Dual (Figure 2)	Drum	Hydrovac(s)	68172	68170	68172 66605	68170 66605
1970-mid 1980s	1 1/2 x 1/2 split • (Figure 3)	Drum	• A dual brake lock is required for either rear or 4 wheel lockup.	68172	68172	68172	68172 66605 ♦
mid '80s-1996	Dual (Figure 2)	4 wheel disc	Hydraulic Boost Master Cylinder.	68172	68170	68172 66606	68170 66605
1997-2005	4-channel ABS (Figure 7)	4 wheel disc	4-channel ABS Standard. Option to delete was available prior to 3-1-99. +	68176	68172	68176	68172 66606

Dodge

Light Duty (D100-D350, Ram 1500-3500)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
mid 70's-1988	Dual (Figure 2)	F-disc/R-drum		68173	68171	68173 66606	68171 66605
1989-1993	Rear ABS (Figure 4)	F-disc/R-drum	Anti-lock valve location at rear axle makes it difficult to install lock downstream from anti-lock valve. Single locks should go on front axle.	68173	68171	68173 66606	68171 66605
1994-1998	Rear ABS (Figure 4)	F-disc/R-drum	3-channel ABS Optional. (Figure 6)	68173 ▲	68171 *	68173 ▲ 66606 ▲	68171 * 66605 *
1999-2005	3-channel ABS (Figure 6)	F-disc/R-drum 4 wheel disc on D2500-D3500 in 2001-2005 MY	3-channel ABS Standard on 3500; optional on 1500-2500.	68175	68171 *	68175	68171 * 66605 *

+ With 4-channel ABS deleted, brake system type is Dual (Figure 2)

NOTE: Hydrovac = Frame mount vacuum booster

Hydraulic Boost M/C = Master cylinder driven by hydraulic booster powered by steering pump

■ Best Choice ♦ Front wheel lockup only ▲ On 3-channel ABS systems use 68175 *Rear wheel lockup only on 3-channel ABS

Domestic Truck Brake System Types (hydraulic)

Ford

Vehicle Application

Light Duty (E150-E250, F150-F250) below 8600 lb GVW

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	Interlock Applications / Aerial Lift Bucket		Other Applications	
				4 Wheel	2 Wheel	4 Wheel	2 Wheel
1967-1986	Dual (Figure 2)	F-disc/R-drum	Early models had 4 wheel drums.	68173	68171	68173 66606	68171 66605
1987-1996	Rear ABS (Figure 4)	F-disc/R-drum		68173	68171	68173 66606	68171 66605
1997-2003	Rear ABS (Figure 4)	F-disc/R-drum	3-channel ABS optional. (Figure 6)	68173 ▲	68171 *	68173 ▲	68171 *
2004-2005	3-channel ABS (Figure 6)	4 wheel disc		68175	68171 *	68175 66606	68171 * 66605 *

(E250-E350, F250-F350) 8600 lb and above GVW

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1967-1986	Dual (Figure 2)	F-disc/R-drum	Early models had 4 wheel drum.	68173	68171	68173 66606	68171 66605
1987-1998	Rear ABS (Figure 4)	F-disc/R-drum		68173 ▲	68171 *	68173 ▲ 66606 ▲	68171 * 66605 *

"Super Duty"

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1988-1998	Dual (Figure 2)	4 wheel disc		68173	68171	68173 66606	68171 66605

(Super Duty E250-E350, F250-F350) Below 10,000 lb GVW

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1999-2000	Rear ABS (Figure 4)	4 wheel disc	3-channel ABS optional. (Figure 6)	68173 ▲	68171 *	68173 ▲ 66606 ▲	68171 * 66605 *
2001-2005	3-channel ABS (Figure 6)	4 wheel disc		68175	68171 *	68175	68171 * 66605 *

(Super Duty E350-E450, F350-F550) 10,000 lb and above GVW

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1999-2005	3-channel ABS (Figure 6)	4 wheel disc		68175	68171 *	68175	68171 * 66605 *

(Medium "Super Duty" F650-F750) 23,000 lb GVW and over

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2005	4-channel ABS (Figure 7)	4 wheel disc		68176	68173	68176	68173 66606

Medium Duty (F500-F800)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1984-1999	Dual (Figure 2)	Drum or disc/drum	OEM spring apply rear parking brake standard. Use MICO Locks on front brakes only.	NA	68170 ◆	NA NA	68170 ◆ 66605 ◆

Medium Duty (LCF) Cab Forward 16,000-19,500 lb GVW

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2005	3-channel ABS (Figure 4)	4 wheel disc		68175	68171 □	68175	68171 □ 66605 □

NOTE: Hydrovac = Frame mount vacuum booster

Hydraulic Boost M/C = Master cylinder driven by hydraulic booster powered by steering pump

■ Best Choice ◆ Front wheel lockup only ▲ On 3-channel ABS systems use 68175 NA Not applicable

* Rear wheel lockup only on 3-channel ABS, for front wheel only lockup use 68177. □ Rear wheel lockup only

BRAKE LOCK SYSTEMS

Domestic Truck Brake System Types (hydraulic)

Freightliner

				Vehicle Application			
Medium Duty (Business Class F50-F80, Business Class M2, MT35-MT55)				Interlock Applications / Aerial Lift Bucket		Other Applications	
Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1991-1996	Dual (Figure 2)	4 wheel disc	Hydraulic Boost M/C.	68172	68170	68172 66606	68170 66605
1997-2005	4-channel ABS (Figure 7)	4 wheel disc	4-channel ABS standard with option to delete until 3-1-99. +	68176	68172	68176	68172 66606

International - Navistar

Medium Duty (S1600-S1800 "Loadstar")

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1970-1987	Single (Figure 1)	Drum	Vacuum/hydraulic.	68170	68170	68170 66605	68170 66605
1970-1987	1 1/2 x 1/2 • (Figure 3)	Drum	• A dual brake lock is required for either rear or 4 wheel lockup.	68172	68172	68172	68172 66605 ♦
1970-1987	Dual (Figure 2)	Drum	Hydrovac	68172	68170	68172 66606	68170 66605

Medium Duty (Series 4600-4900's)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1988-1998	Dual (Figure 2)	4 wheel disc	Hydraulic Boost M/C.	68172	68170	68172 66606	68170 66605
1999-2001	4-channel ABS (Figure 7)	4 wheel disc	4-channel ABS standard with option to delete until 3-1-99. +	68176	68172	68176	68172 66606

Medium Duty ("Next Generation Vehicle" 4200-4400)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2002-2005	4-channel ABS (Figure 7)	4 wheel disc		68176	68173	68176	68173 66606

Medium Duty (CF500-CF600) Cab Forward 16,000-19,500 lb GVW

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2005	3-channel ABS (Figure 4)	4 wheel disc		68175	68171	68175	68171 □ 66605 □

Kenworth

Medium Duty (T-300)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2005	4-channel ABS (Figure 7)	4 wheel disc		68176	68173	68176	68173 66606

Peterbilt

Medium Duty (Model 330)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2005	4-channel ABS (Figure 7)	4 wheel disc		68176	68173	68176	68173 66606

Sterling

Medium Duty ("Actera" 5500-8500)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2005	4-channel ABS (Figure 7)	4 wheel disc		68176	68173	68176	68173 66606

+ With 4-channel ABS deleted, brake system type is Dual (Figure 2)

NOTE: Hydrovac = frame mount vacuum booster

Hydraulic Boost M/C = Master cylinder driven by hydraulic booster powered by steering pump

■ Best Choice ♦ Front wheel lockup only □ Rear wheel lockup only

Imported Truck Brake System Types (hydraulic)

Dodge - Freightliner Sprinter

				Vehicle Application			
Light Duty (Van & Cab-chassis)				Aerial Lift Bucket		Other Applications	
Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2002-2005	4-channel ABS (Figure 7)	4 wheel disc		68176	68173	68176	68173 66606

General Motors "W" Series Chev Tiltmaster - GMC Forward

				Vehicle Application			
Light Duty (W3500-4500) also W5500 through 1998 model year				Interlock Applications / Aerial Lift Bucket		Other Applications	
Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1986-1998	Dual (Figure 2)	Disc/Drum-Drum	Vacuum/Hydraulic booster.	68173	68171	68173 66606	68171 66605
2000-2005	4-channel ABS (Figure 7)	F-disc R-drum	Vacuum/Hydraulic booster.	68176	68173	68176	68173 66606

Medium Duty (W5500-W5500HD)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2000	3-channel ABS (Figure 5)	Disc/Drum-Drum	Air/Hydraulic boost with ABS on the air side.	NA	68173 □	NA	68173 □ 66606 □
2001-2005	4-channel ABS (Figure 7)	4 wheel disc	4-channel ABS Vac/Hyd booster. '05 HD is Hyd/Hyd	68176	68173	68176	68173 66606

Medium Duty (WT5500)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2000-2004	3-channel ABS (Figure 5)	Disc/Drum-Drum	Air/Hydraulic boost with ABS on the air side.	NA	68173 □	NA	68173 □ 66606 □

Hino (For recommendations on new HINO conventional cab models, contact MICO, Inc.)

				Vehicle Application			
Light Duty (FA)				Aerial Lift Bucket		Other Applications	
Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2004	3-channel ABS (Figure 5)	4 wheel drum	Vacuum/Hydraulic booster.	68175	68173 □	68175	68173 □ 66606 □

Light Duty (FB)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2004	3-channel ABS (Figure 5)	4 wheel drum	Air/Hydraulic boost with ABS on the air side.	NA	68173 □	NA	68173 □ 66606 □

Medium Duty (FD-FF)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2001-2004	3-channel ABS (Figure 5)	4 wheel drum	Air/Hydraulic boost with ABS on the air side.	NA	68173 □	NA	68173 □ 66606 □

Conventional Cab (145-268)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
2005	4-channel ABS (Figure 7)	4 wheel disc	Hydraulic Booster	68176	68173	68176	68173 66606

Isuzu

				Vehicle Application			
Light Duty ("N" Series)				Aerial Lift Bucket		Other Applications	
Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1986-1998	Dual (Figure 2)	Disc/Drum-Drum	Vacuum/Hydraulic.	68173	68171	68173 66606	68171 66605
2000-2005	4-channel ABS (Figure 7)	F-disc/R-drum	Vacuum/Hydraulic.	68176	68173	68176	68173 66606

Medium Duty (Isuzu "FRR")

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1988-1998	Dual (Figure 2)	Drum	Air/Hydraulic.	68173	68171	68173 66606	68171 66605
2000-2004	3-channel ABS (Figure 5)	4 wheel drum	Air/Hydraulic boost with ABS on the air side.	NA	68173 □	NA	68173 □ 66606 □

■ Best Choice □ Rear wheel lockup only

BRAKE LOCK SYSTEMS

Imported Truck Brake System Types (hydraulic)

Medium Duty (Isuzu "FSR", "FTR", "FVR")

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	Aerial Lift Bucket		Other Applications	
				4 Wheel	2 Wheel	4 Wheel	2 Wheel
1999-2005	4-channel ABS (Figure 7)	4-wheel disc	Hydraulic booster.	68176	68173	68176	68173 66606

Mitsubishi - Fuso

Vehicle Application

Light Duty (FE - FG)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	Interlock Applications / Aerial Lift Bucket		Other Applications	
				4 Wheel	2 Wheel	4 Wheel	2 Wheel
1991-1998	Dual (Figure 2)	Drum		68173	68171	68173 66606	68173 66605
2000-2005	4-channel ABS (Figure 7)	F-disc/R-drum, 4-wheel disc, or 4-wheel drum	Vacuum/hydraulic booster	68176	68173	68176	68173 66606

Medium Duty (FH)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1996-1998	Dual (Figure 2)	4-wheel drum	Air/Hydraulic boosters.	68172	68170	68172 66606	68170 66605
2000-2004	4-channel ABS (Figure 7)	4-wheel drum	Hydraulic booster.	68176	68173	68176	68173 66606

Medium Duty (FK, FM-MR, FM-HR)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1991-1998	Dual (Figure 2)	4-wheel drum		68172	68170	68172 66606	68170 66605
1999-2005	3-channel ABS (Figure 5)	4-wheel drum	3-channel ABS Air/hydraulic boost w/ABS on air side.	NA	68173	NA	68173 □ 66606 □

UD

Light Duty (1200-1400)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1990-1998	Dual (Figure 2)	4-wheel drum	Vacuum/hydraulic booster.	68173	68171	68173 66606	68171 66605
2000-2005	4-channel ABS (Figure 7)	F-disc/R-drum, or 4-wheel disc	Vacuum/hydraulic booster.	68176	68173	68176	68173 66606

Medium Duty (1800CS-3000)

Model Year	Brake System Type	Service Brakes	Miscellaneous Notes	4 Wheel	2 Wheel	4 Wheel	2 Wheel
1990-1998	Dual (Figure 2)	4-wheel drum	Air/Hydraulic boosters. On trucks with optional air-rear parking brake, lock front brakes only.	68172	68170	68172 66606	68170 66605
1999-2005	4-channel ABS (Figure 7)	4-wheel drum	Air/Hydraulic boosters. On trucks with optional air-rear parking brake, lock front brakes only.	68176	68173	68176	68173 66606

■ Best Choice □ Rear wheel lockup only.

NOTE

1999 was a transition year to ABS systems on most imported trucks. If a 1999 model does not have ABS, use the 1998 recommendations. Use the 2000 recommendations for trucks having ABS.

⚠ WARNING

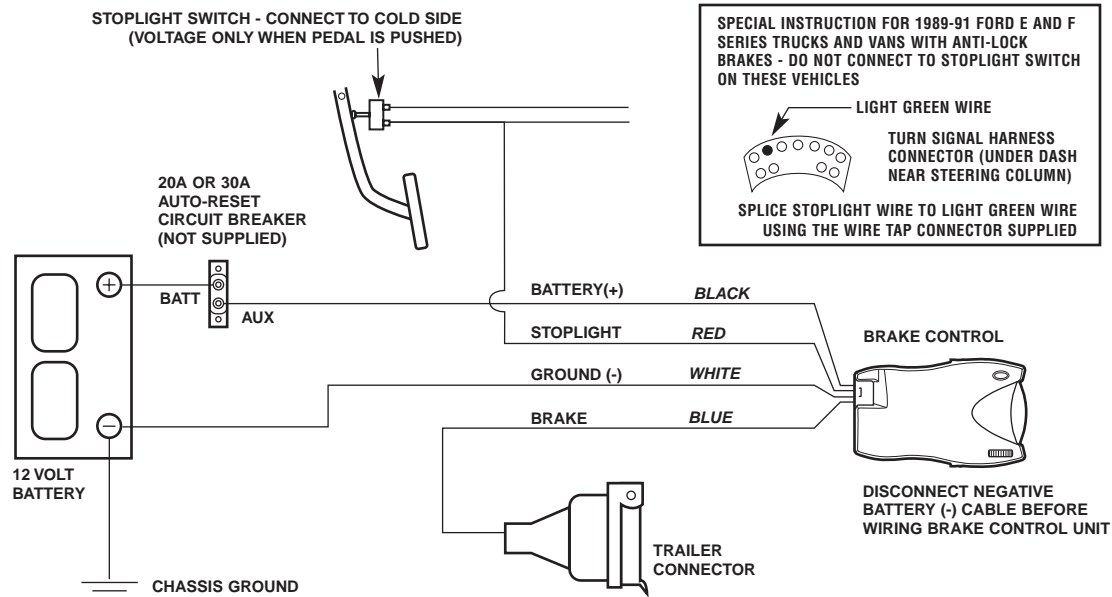
1. All Raybestos locking devices are **supplemental** safety equipment which provide additional brake holding action **when used with existing vehicle parking brake**.
2. The Low Pressure Warning Switch must be used in combination with an audible or visual alarm to signal any loss of system pressure. The Low Pressure Warning Switch is explained in the Operating Instructions. **Do not disconnect Low Pressure Warning Switch.** (Does not apply for 691 Brake Lock System).
3. The 691 System must be used in combination with an audible or visual alarm to signal any loss of brake system pressure. **Do not disconnect vehicle horn/visual alarm or Control Module alarm.**
4. All lines, fittings and adjacent areas must be cleaned of dirt or road residue before any lines or fittings are disconnected. Special care should be taken that dirt and road residue are not allowed to enter hydraulic brake system. This could contaminate the system and interfere with proper operation of brakes and Raybestos locking devices.
5. Follow procedures outlined in Vehicle Manufacturer's Service Manual or SAE Standards when making new connections or adding to existing brake systems. Use only steel brake tubing conforming to SAE specifications.
6. Use only proper system fluid conforming to latest SAE or DOT Standards. Improper or contaminated fluid may cause gummy deposits and softening and swelling of other rubber seals in the entire brake system. Such a condition must be corrected immediately.
7. Do not use sealants, tapes, teflon or cement compounds on any connections or fittings. The sealants or compounds can contaminate the hydraulic brake system and interfere with the operation of brake components or Raybestos locking device.
8. All fittings and connections must be in good condition and tightened to proper torque values as specified in the Installation and Service Instructions.
9. Separate models of Raybestos locking device, brake components, cylinders, and all fittings must be routinely inspected for leaks, damage or wear. Adequate fluid levels must be maintained. In the event of any loss of fluid, brake system must be carefully inspected for leaks.
10. Brake hoses, brake lines, Raybestos locking device, brake components, cylinders, and all fittings must be routinely inspected for leaks, damage or wear. Adequate fluid levels must be maintained. In the event of any loss of fluid, brake system must be carefully inspected for leaks.
11. After installation, bleed system according to vehicle manufacturer's recommendations.
12. Follow INSPECTIONS and TESTS section as outlined in the Operating Instructions.
13. The self-adhesive warning(s) accompanying each Raybestos locking device must be affixed in cab in view of operator.
14. The Operating Instructions must be placed in cab of vehicle in a place available to operator.

Raybestos could not possibly know of and give advice with respect to all conceivable applications in which these products might be used and the possible hazards and/or results of each application. Raybestos has not undertaken any such wide evaluation. Therefore, anyone who uses an application which is not recommended by the manufacturer, first must completely satisfy himself that a danger will not be created by the application selected, or by the particular model of our product that is selected for the application.

Raybestos has made every attempt to present accurate information in catalogs, brochures and other printed material. Raybestos can accept no responsibility for errors from unintentional oversights that may exist. Due to a continuous program of product improvement, materials, specifications, and product documentation are subject to change without notice or obligation.

Wiring Instructions For Electronic Brake Controls

Generic Wiring Diagram



READ THIS FIRST:

Read and follow all instructions carefully before wiring brake control. Keep these instructions with the brake control for future reference.

Important Facts to Remember

1. The brake control must be installed with a 12 volt negative ground system. (To install with a positive ground system use Tekonsha® P/N 3191.)
2. **WARNING** Reversing BLACK and WHITE wires or improper wiring will damage or destroy brake control.
3. **WARNING** Be sure to solidly connect all four wires or brake control will not function properly.
4. Soldering is recommended or crimp-on butt connectors are a suitable substitution.
5. Route all wires as far from the radio antenna as possible to reduce AM interference.

6. **CAUTION** Use of proper gauge wire when installing the brake control is CRITICAL; smaller gauge wire may result in less than efficient braking. **Minimum** wire gauges are as follows:
 - 1-2 axle applications – 14 GA.
 - 3-4 axle applications – 12 GA.
7. Collection of water inside the trailer connector mounted on the tow vehicle will reduce the life of the connector.
8. Technical Assistance Call Toll-Free: 1-888-785-5832 or www.tekonsha.com

Wiring Legend

- + BLACK Wire (Positive Battery)
- WHITE Wire (Negative Battery)
- ⊗ RED Wire (cold side of stoplight switch)
- 🚚 BLUE Wire (brake output to trailer)

1. The WHITE (-) wire must be connected to a known ground.
2. **CAUTION** Inadequate grounding may cause intermittent braking or lack of sufficient voltage to trailer brakes. The WHITE wire must be connected to a suitable ground location. The negative terminal of the battery is a suitable ground location in the absence of a Trailer Tow Package connection.
3. Connect BLACK (+) wire through an automatic reset circuit breaker (20 amp for 1-2 axles, 30 amp for 3-4 axles) to the POSITIVE (+) terminal of the battery. The BLACK wire is the power supply line to the brake control.
4. The RED (stoplight) wire must be connected to the cold side of the brake pedal stoplight switch. Splice down line from the switch; DO NOT disturb the position of the switch.
5. The BLUE (brake output) wire must be connected to the trailer connector's brake wire.

Brake Control Wiring Harness Chart

⚠ WARNING When using a wiring harness supplied by your vehicle's Manufacturer (OE Harness), DO NOT MATCH COLORS. Please follow wiring chart below.

OE HARNESS	BRAKE CONTROL WIRE	
Chevrolet		
Red	Black	+12 Volts
Light Blue	Red	Stoplight
Black	White	Ground
Dark Blue	Blue	Trailer Brakes
Brown	N/A	
New Dodge (Green Wire)		
White w/ Red Tracer	Black	+12 Volts
Blue w/ White Tracer	Red	Stoplight
Green w/ Black Tracer	White	Ground
Blue	Blue	Trailer Brakes
Dodge		
Red w/ Black Tracer	Black	+12 Volts
White w/ Tan Tracer	Red	Stoplight
Black	White	Ground
Blue	Blue	Trailer Brakes
New Ford (Pink Wire)		
Pink	Black	+12 Volts
Red	Red	Stoplight
White	White	Ground
Blue	Blue	Trailer Brakes
Brown	N/A	
Ford		
Red	Black	+12 Volts
Lt Green	Red	Stoplight
White	White	Ground
Dark Blue	Blue	Trailer Brakes
Brown	N/A	
Toyota		
Black w/ Red Tracer	Black	+12 Volts
Green	N/A	
Green w/ White Tracer	Red	Stoplight
Brown	White	Ground
Red	Blue	Trailer Brakes
Toyota (2003)		
Black w/ Red Tracer	Black	+ 12 Volts
Green w/ Yellow Tracer	Red	Stoplight
White w/ Black Tracer	White	Ground
Red	Blue	Trailer Brakes
Green	N/A	
Nissan		
Red	Black	+ 12 Volts
Red w/ Green Tracer	Red	Stoplight
Black	White	Ground
Brown w/ White Tracer	Blue	Trailer Brakes
Red w/ Blue Tracer	N/A	
Volkswagen/Porsche		
Cavity # 2 (Red w/ Yellow Tracer)	Black	+ 12 Volts
Cavity # 3 (Black w/ Red Tracer)	Red	Stoplight
Cavity # 1(Brown)	White	Ground
Cavity # 4 (Blue)	Blue	Trailer Brakes

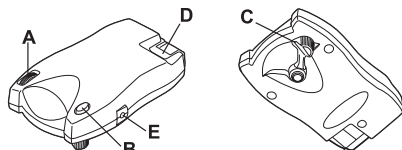
Instructions for Prodigy® Brake Control

For 2, 4, 6 and 8 brake applications

READ THIS FIRST:

Read and follow all instructions carefully before installing or operating the Prodigy. Keep these instructions with the Brake Control for future reference.

Components of the Brake Control



- A. Power Knob
- B. Boost Button
- C. Manual Knob
- D. Connector (For Wiring Harness)
- E. Mounting Hole (1 per side)

Important Facts to Remember

1. Do not mount or activate RF generating items (cell phones, two way radios) near (less than 12") the brake control.
2. **CAUTION** Reversing the connection to a breakaway battery on the trailer will destroy the Prodigy.
3. **CAUTION** Disconnect trailer plug from the tow vehicle prior to testing a breakaway switch or you may destroy the Prodigy.
4. The Prodigy employs an inertial sensor. It senses deceleration and generates an output that is based on deceleration, thus the term "Proportional Braking".
5. The Prodigy will "HOLD" your trailer with 25% of power setting while you are at a standstill with brake pedal applied for longer than 5 seconds.
6. The Prodigy will brake proportionally in reverse. It will apply the appropriate brake voltage based on deceleration.
7. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com.
8. **WARNING** The Gross Combined Weight Rating (GCWR) must never exceed the vehicle manufacturers recommendation.
9. **CAUTION** This control is not designed for use with electric-hydraulic trailer brake systems.

Installation Guide

WARNING The Prodigy must be mounted from 0 degrees to 70 degrees nose up. (See Below).

In hilly terrain it is advisable to leave a margin at either extent to keep bars from coming on when going up and down hills. When mounted near level the lower bars may come on during heavy acceleration (see Trouble-shooting Chart). This will not affect the performance during braking.

Failure to install the Prodigy within these constraints may cause impaired performance.

Wiring Brake Control

Your Prodigy brake control has a new and unique connector located at the back of the control. This connector allows you two options to wire your brake control.

Option 1:








Use Pigtail Wiring Harness included. This harness can be installed by following the Generic Wiring Guide.

Option 2:

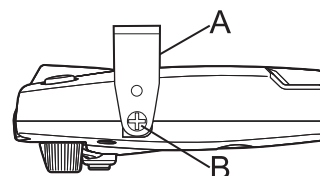
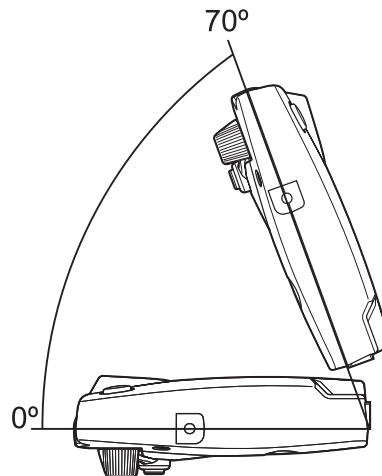
Use a Ford, Dodge or GM specific wiring harness. If your vehicle came with a factory tow package that included a 7-way connector, you can purchase a Tekonsha OEM wiring harness with the Prodigy connector on one end and your specific vehicle's connector on the other. See Generic Wiring Guide, for location of your vehicle's connector.

Display Readings after Wiring the Prodigy

After successfully wiring your Prodigy you should see the following on the two-digit display:

- Power to Prodigy without trailer connected.
 Displays for 15 seconds then changes to: 
- Power to Prodigy with trailer connected and
 Boost feature not engaged.  Boost feature engaged. 
- Manual Knob Activated without trailer

- Manual knob activated (with trailer), 5.4 denotes a hypothetical power output. This value is set using the power knob. Range is 0.0 to 13 volts. This is an indication of voltage output to electric brakes.

- Power to Prodigy but display is in power saving mode (no motion or activity for at least fifteen minutes).


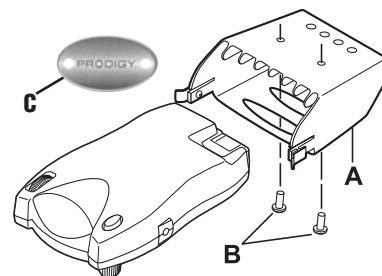
Mounting the Prodigy



Traditional Bracket Mount

- A. Mounting Bracket
- B. #8 X 3/8" Machine Screw with Internal Tooth Washer

1. **CAUTION** Drilling or use of longer screws may damage unit.
2. Securely mount bracket to a solid surface.
3. Insert supplied #8 x 3/8" machine screws on each side into the mounting holes.
4. Adjust control to desired position and tighten screws until snug.



Under Dash Pocket Mount

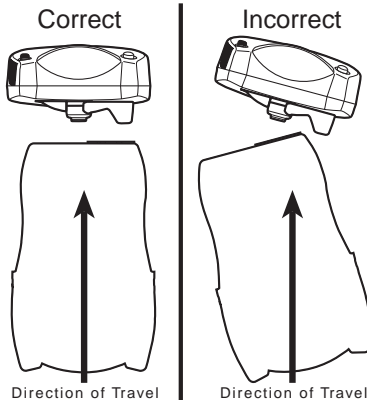
- A. Pocket Mount
 - B. #6 X 1/2" Self Tapping Screws
 - C. Pocket Mount Template
1. Securely mount Pocket Mount to a solid surface using supplied #6 X 1/2" Self Tapping Screws.
 2. Insert Prodigy Brake control.
 3. Plug in connector.

Continued On Next Page

Instructions for Prodigy® Brake Control (continued)

NOTE:

1. Front of the Prodigy must be horizontal, *see below*.
2. The Prodigy must be parallel to direction of travel, *see below*.



Automatic Leveling of the Sensor

The Prodigy will automatically acquire the proper level setting. It will also automatically adjust as you travel up or down hills.

Adjusting the Power to the Trailer Brakes (Prior to setting Boost)

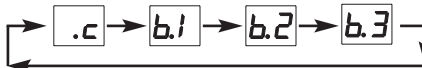
Once the control has been securely mounted within the 0 to 70-degree range, it is necessary to set the power needed to stop the trailer during a braking event.

1. Connect trailer to tow vehicle.
2. With engine running hold manual full left and set Power Knob to indicate 6.0
3. Drive tow vehicle and trailer on a dry level paved surface at 25 mph and fully apply manual knob.
 - ☒ If trailer brakes lock up:
 - ☐ Turn power down using power knob.
 - ☒ If braking was not sufficient:
 - ☐ Turn power up using power knob.
4. Repeat Step (3) until power has been set to a point just below wheel lock up or at a sufficient force as to achieve maximum braking power.
5. Using the brake pedal, make a few low speed stops to check the power setting. Trailer braking is initiated and terminated via the stoplight switch. When the brake pedal is released, trailer braking will cease.

Boost Setting

The boost button was designed to allow a more aggressive setting for your trailer brakes and is available in three levels - [*b.1*], [*b.2*], [*b.3*]. Each incremental boost setting increases the sensitivity of the Prodigy's inertial sensor, enhancing the participation of the trailer brakes during a braking event.

The first press on the boost button displays the current setting. Boost is advanced to the next level by continuing to press the boost button.



Five seconds after setting the boost level, the display will show



indicating **Boost On** by the right most decimal.

For example: With the boost off, [*.c*], during a braking event, the power to the brakes starts out at zero and increases with deceleration.

With the boost on level 1,

(Boost Setting continued)

[*b.1*], during a braking event, the power automatically starts out at approximately 13% of the power setting and increases with deceleration. **With the boost on level 2, [*b.2*], or with the boost on level 3, [*b.3*],** during a braking event, the power automatically starts out at approximately 25% of the power setting and increases with deceleration.

Some cases where you might want to use the boost button:

- You like the trailer braking to 'LEAD' the tow vehicle's braking
- Towing a full vs. empty trailer
- Degraded brake performance (most electric brakes require manual adjustment - see Appendix A or a dealer for adjustment or repair)

NOTE: Boost not intended to be used to take place of trailer brake adjustment or repair.

See the chart below for recommended "Boost" settings (indicated with **X**) for typical Trailer to Vehicle weight relationships.

Select your boost setting based on your towing situation, driving preference and condition of your trailer brakes.

Typical Boost Settings For Optimal Performance (with properly adjusted trailer brakes*)

TRAILER WEIGHT compared to VEHICLE WEIGHT	<i>.c</i>	<i>b.1</i>	<i>b.2</i>	<i>b.3</i>
	BOOST "OFF"	INCREASING BOOST LEVEL		
Trailer weighs LESS than Vehicle	X	X		
Trailer weighs APPROXIMATELY SAME as Vehicle	X	X	X	
Trailer weighs UP TO 25% MORE than Vehicle		X	X	X
Trailer weighs UP TO 40% MORE than Vehicle			X	X
Trailer weighs OVER 40% MORE than Vehicle	WARNING Do not exceed Gross Combined Weight Rating (GCWR)			X

* Increased Boost setting may be needed if trailer brakes are worn, see Appendix A or a dealer for brake adjustment or repair.

NOTE:

1. Always warm the trailer's brakes before setting the power. Warm trailer brakes tend to be more responsive than cold brakes. To warm trailer brakes, drive a short distance (1/4 mile) at 45 MPH with manual lever engaged enough to cause trailer braking at a low level.
2. **WARNING** The power should never be set high enough to cause trailer brakes to lock up. Skidding trailer wheels can cause loss of directional stability of trailer and tow vehicle.
3. The power may need to be adjusted for different load weights and road conditions.
4. Not all trailer brakes will lock up due to various conditions. However, inability to lock up the brakes generally indicates the need for an inspection to determine the cause.
5. When the power is set correctly you should feel unified braking between the trailer and tow vehicle.
6. **WARNING** Boost setting will be cleared under abnormally low battery conditions. Check boost setting after starting vehicle.

Continued On Next Page

Instructions for Prodigy® Brake Control (continued)

Reverse

When backing a trailer you can cancel “BOOST” and “HOLD” for a period of three minutes. This can be accomplished by pressing the boost button continuously for five seconds with the brake pedal depressed. The display will indicate:



(Reverse continued)

(If “boost” was active, the right hand decimal point will also be on.) After three minutes the “BOOST” and “HOLD” features will automatically return to your previous settings.

NOTE:

Returning to your previous settings prior to three minutes can be accomplished by pressing the boost button.

Troubleshooting Chart

Display	Situation	Probable Cause
0.9	Flashes 2 times a second or a steady display.	Trailer is connected and Prodigy loses connection to battery ground.
0.L	Flashes 2 times per second.	Prodigy “sees” an overload condition during operation.
5.H	Flashes 2 times per second.	1. Brake wire sees short during idle condition. 2. Use of some test lights or non-Tekonsha testers can cause this problem.
---	The lower two bars flash	Prodigy is mounted at too low an angle.
---	The upper two bars flash	Prodigy is mounted at too high an angle.
n.c.	Flashes for 15 seconds	1. Trailer not connected to tow vehicle. 2. Trailer connected with open circuit on brake line. 3. Trailer connector disconnected or corroded. 4. Loss of trailer brake magnet ground.
(Blank Display)	No display with manual or pedal activation.	1. Loss of power to Prodigy. 2. Loss of ground to Prodigy.
	No display until activation	Prodigy is in power-saving mode due to no motion for fifteen minutes.
0.0	No braking	Power control set to 0.
P.L.	Power interruption while brake pedal is depressed.	

Appendix A: Trailer Brake Adjustment**

Brakes should be adjusted after the first 200 miles of operation when the brake shoes and drums have “seated” and at 3000 mile intervals, or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.
2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

⚠ WARNING Do not lift or support trailer on any part of the axle or the suspension system.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

4. Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes.

⚠ WARNING Never crawl under your trailer unless it is resting on properly placed jack stands.

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

**Note: Trailer Brake Adjustment procedures courtesy Dexter Axle.

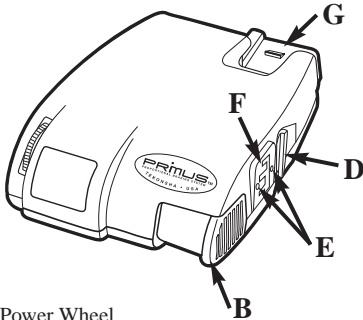
Instructions for Primus™ Brake Control

For 2, 4, and 6 brake applications

READ THIS FIRST:

Read and follow all instructions carefully before installing or operating the Brake Control. Keep these instructions with the Brake Control for future reference.

Components of the Brake Control



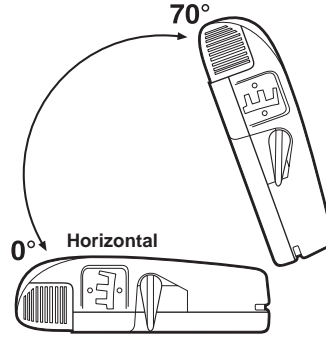
- A. Power Wheel
- B. Manual Slide Knob
- C. Two Digit Power Display
- D. Sensor Positioning Arm
- E. Bracket Mounting Holes
- F. Dash Mounting Clip Attachment Locations
- G. Connector (For Wiring Harness)

Important Facts to Remember

1. Do not mount or activate RF generating items (cell phones, two way radios) near the Brake Control (less than 12").
2. **CAUTION** Reversing the connection to a breakaway battery on the trailer will destroy the Brake Control.
3. **CAUTION** Disconnect trailer plug from the tow vehicle prior to testing a breakaway switch or you may destroy the Brake Control.
4. **WARNING** The sensor adjustment is CRITICAL. The sensor adjustment determines whether automatic braking response is delayed or aggressive.
5. This Brake Control is activated by inertia. It senses deceleration and generates an output that reflects the inertia sensed. In a stationary state, the Brake Control will not apply the trailer brakes unless the Manual Slide Knob is actuated.
6. **WARNING** The Gross Combined Weight Rating (GCWR) must never exceed the vehicle manufacturers recommendation.
7. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

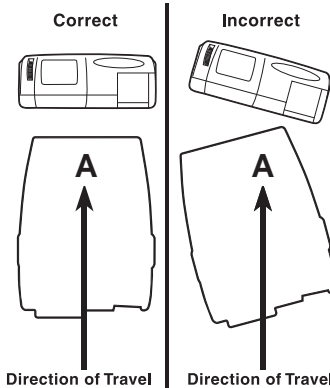
Installation Guide

WARNING The Brake Control must be mounted from horizontal to 70 degrees nose up (see below.) Failure to install Brake Control within these constraints may cause your control to become inoperable.



NOTE:

1. Front of Brake Control must be horizontal, *see below*.
2. The Brake Control must be parallel to direction of travel (A), *see below*.



Wiring Brake Control

Your Brake Control has a unique connector located at the back of the control. This connector allows you two options to wire your Brake Control.

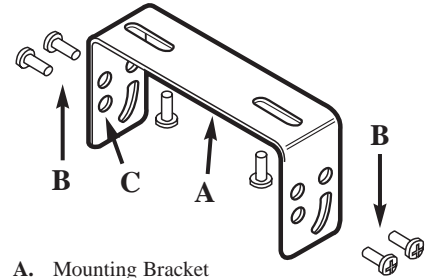
Option 1:

Use Pigtail Wiring Harness included. This harness can be installed by following the Generic Wiring Instructions.

Option 2:

Use a vehicle specific wiring harness. If your vehicle came with a factory tow package that included a 7-way connector, you may be able to purchase an OEM wiring harness with the Brake Control connector on one end and your specific vehicle's connector on the other. See Generic Wiring Instructions, for location of your vehicle's connector.

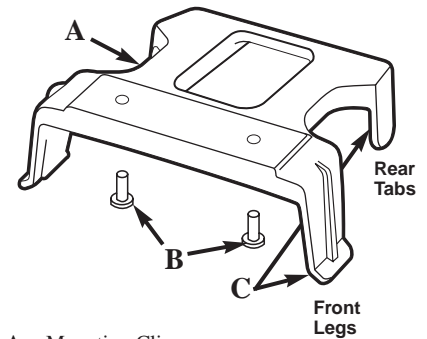
Traditional Bracket Mount



- A. Mounting Bracket
- B. #6 x 3/8" Screws
- C. Brake Control Mounting Holes

1. **CAUTION** Drilling or use of longer screws may damage the unit or your vehicle.
2. Securely mount bracket to a solid surface.
3. Insert supplied #6 x 3/8" screws on each side into the mounting holes.
4. Adjust Brake Control to desired position and tighten screws until snug, obtaining the proper mounting angle (see Installation Guide).

Dash Mounting Clip

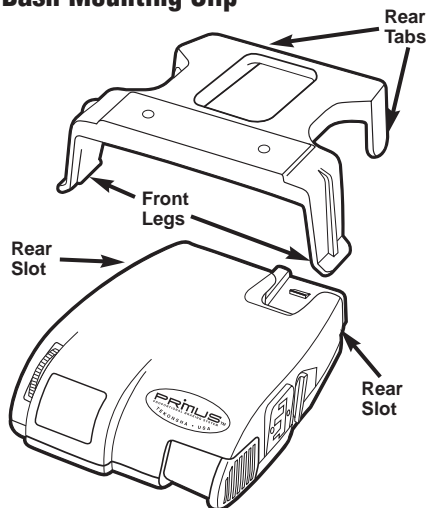


- A. Mounting Clip
- B. #6 x 3/8" Screws
- C. Brake Control Attachment Locations

1. **CAUTION** Drilling or use of longer screws may damage your vehicle.
2. Securely mount dash clip to a solid surface.

Instructions for Primus™ Brake Control (continued)

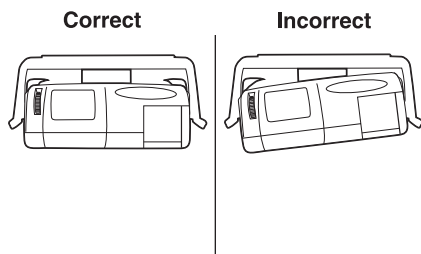
Attaching Brake Control To Dash Mounting Clip



⚠ WARNING Failure to properly secure the Brake Control into the dash mounting clip may result in loss of or improper operation of the Brake Control.

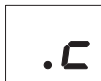
1. After securely mounting the dash clip to a solid surface the Brake Control can be attached.
2. Connect wiring harness connector to the Brake Control.
3. Slide the Brake Control into the dash clip so that the rear slots in the Brake Control engage with the rear tabs of the clip.
4. Spread apart the front legs of the dash clip and raise the front of the Brake Control to engage with the clip.
5. **⚠ WARNING** The dash clip allows for three mounting adjustments on each side of the control. The Brake Control must be mounted correctly. Final mounting position should be in the same adjustment slot on each side of the control (see figure 1).
6. Adjust Brake Control to desired position obtaining the proper mounting angle (see Installation Guide).

Brake Control Attachment to Dash Mounting Clip (Figure 1)



2 Digit Power Display Legend

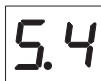
- Trailer connected.



- Without trailer connected.



- Manual Slide Knob or tow vehicle brakes applied and trailer connected, 5.4 denotes a hypothetical power output. This is an indication of voltage output to electric brakes.



- Manual Slide Knob applied without trailer connected.

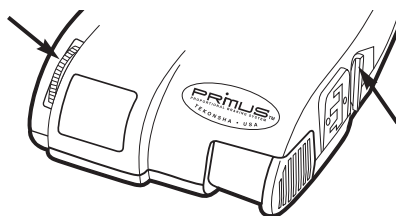


- Trailer disconnection. Flashes n.c for 15 seconds.



NOTE:

Display shows tenths of a volt up to 9.9. After 9.9 the display shows whole digits only.



Setting the Sensor Positioning Arm and Power Wheel

NOTE:

1. **⚠ WARNING** This Brake Control is activated by inertia and requires the sensor to be set properly, or the braking response will be too harsh or ineffective.
2. When the Brake Control sensor is properly set there will be very little current flowing through the brake magnets in a static state with the foot pedal depressed. The brake magnets will hum when there is current flowing through them. Anytime brake output power is displayed there is current flowing through the brake magnets.

Once the Brake Control has been installed, it is necessary to set the sensor and the power needed to stop the trailer during a braking event.

1. Connect trailer to the tow vehicle and park on a level surface.
2. For best results, rotate the Power Wheel toward the front of the vehicle, to full power.
3. With the vehicle stopped, completely rotate the Sensor Positioning Arm toward the rear of the vehicle. Apply the brakes and slowly rotate the Sensor Positioning Arm toward the front of the vehicle to where the display shows between 0.1 to 0.9 (Note: this is the Minimum Aggressive Setting).
4. With the vehicle still stopped, locate the Manual Slide Knob and Power Wheel on the control. While applying the Manual Slide Knob rotate the Power Wheel until display reads between 4.0 to 5.0.

NOTE:

1. Always warm the trailer's brakes before fine tuning the power. Warm trailer brakes tend to be more responsive than cold brakes. To warm trailer brakes, drive a short distance (1/4 mile) at 45 MPH with manual lever engaged enough to cause trailer braking at a low level.
2. **⚠ WARNING** The power should never be set high enough to cause trailer brakes to lock up. Skidding trailer wheels can cause loss of directional stability of trailer and tow vehicle.
3. Not all trailer brakes will lock up due to various conditions. However, inability to lock up the brakes generally indicates the need for an inspection to determine the cause.
4. The power may need to be adjusted for different load weights and road conditions.
5. When the power is set correctly you should feel unified braking between the trailer and tow vehicle.

Continued On Next Page

Instructions for Primus™ Brake Control (continued)

Fine Tuning the Power

Once the Brake Control sensor and power have been given an initial setting it is necessary to fine tune the power setting for the power needed to stop the trailer during a braking event.

1. Drive tow vehicle and trailer on a dry level paved surface at 25 mph and fully apply Manual Slide Knob.

If trailer brakes lock up:
Turn power down using Power Wheel.

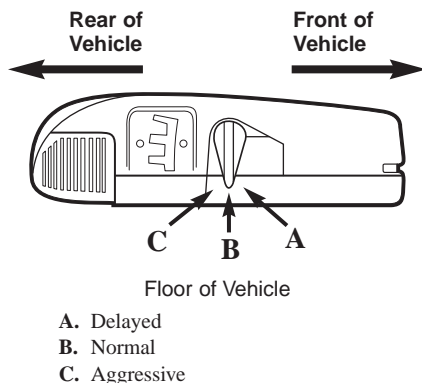
If braking was not sufficient:
Turn power up using Power Wheel.

2. Repeat Step (1) until power has been set to a point just below wheel lock up or at a sufficient force as to achieve maximum braking power.

Fine Tuning the Sensor

Now that the power has been set, it is time to fine tune the sensor setting for the majority of the stopping that you will be doing.

1. Drive tow vehicle and trailer on a dry level paved surface and make several slow (25 MPH) stops as if coming up to a stop sign and take notice of how the trailer brakes respond.
2. **Trailer Tending to Push Tow Vehicle**
 - You have a Delayed Setting:
To correct this condition - apply the brakes with the vehicle stopped and take note of the power display reading. Using the Sensor Positioning Arm, increase the display, about 0.5 at a time, by rotating the Sensor Positioning Arm toward the rear of the vehicle. Repeat steps #1 and #2 until desired trailer braking is achieved.
3. **Brakes Grab Too Much**
 - You have an Aggressive Setting:
To correct this condition - apply the brakes with the vehicle stopped and take note of the power display reading. Using the Sensor Positioning Arm, decrease the display, about 0.5 at a time, by rotating the Sensor Positioning Arm toward the front of the vehicle. Repeat step #1 and #3 until desired trailer braking is achieved.



Troubleshooting Chart

Display	Situation	Probable Cause
	Flashes for 15 seconds	Trailer connector is disconnected or corroded. After 15 seconds display switches to a blank display.
		Manual Slide Knob applied without trailer connected OR applying the Manual Slide Knob after the display has flashed n.c for 15 seconds.
		When stopping, indicates the Power Knob is set all the way to the minimum setting.
		Short circuit detected on brake output with manual applied and maximum power setting.

Appendix A: Trailer Brake Adjustment**

Brakes should be adjusted after the first 200 miles of operation when the brake shoes and drums have "seated" and at 3000 mile intervals, or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.
2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

⚠ WARNING Do not lift or support trailer on any part of the axle or the suspension system.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

4. Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes.

⚠ WARNING Never crawl under your trailer unless it is resting on properly placed jack stands.

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

**Note: Trailer Brake Adjustment procedures courtesy Dexter Axle.

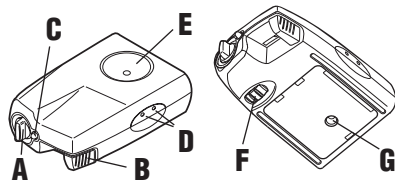
Instructions for Envoy® Brake Control

Electronic Brake Control For 2 and 4 brake applications

READ THIS FIRST:

Read and follow all instructions carefully before installing or operating the Brake Control. Keep these instructions with the Brake Control for future reference.

Components of the Brake Control



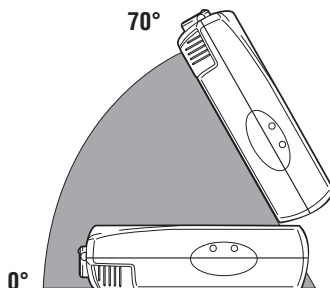
- A. Power Knob
- B. Manual Slide Knob
- C. Bi-Colored Light
- D. Bracket Mounting Holes
- E. Ball Mount Interface
- F. Level Knob
- G. Mounting Screw Hole

Important Facts to Remember

1. Do not mount or activate RF generating items (cell phones, two way radios) near (less than 12") the Brake Control.
2. **CAUTION** Reversing the connection to a breakaway battery on the trailer will destroy the Brake Control.
3. **CAUTION** Disconnect trailer plug from the tow vehicle prior to testing a breakaway switch or you may destroy the Brake Control.
4. The light is:
 - GREEN when trailer is connected.
 - RED when brake pedal or manual is activated and trailer is connected.
5. The GREEN light draws 5 milliamperes of current from tow vehicle. It would take over 10,000 hours to drain the tow vehicle battery.
6. **WARNING** The level adjustment is CRITICAL. The level adjustment determines whether automatic braking response is delayed or aggressive.
7. This brake control is activated by inertia. It senses deceleration and generates an output that reflects the inertia sensed. In a stationary state, the brake control will not apply the trailer brakes unless the Manual Slide Knob is actuated.
8. **WARNING** The Gross Combined Weight Rating (GCWR) must never exceed the vehicle manufacturers recommendation.
9. This control specifically designed for use with electric trailer brakes.
10. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

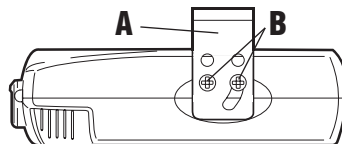
Installation Guide

WARNING The Brake Control must be mounted from 0 degrees to 70 degrees nose up, *see below*. Failure to install Brake Control within these constraints may cause your control to become inoperable.



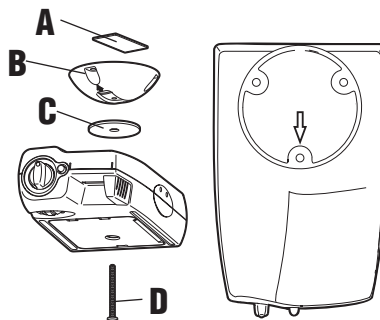
Traditional Bracket Mount

- A. Mounting Bracket
 - B. #6 x 3/8" Screws
1. **CAUTION** Drilling or use of longer screws may damage unit.
 2. Securely mount bracket to a solid surface.
 3. Insert supplied #6 x 3/8" screws on each side into the mounting holes.
 4. Adjust Brake Control to desired position and tighten screws until snug.



Under Dash Mounting Ball

- A. Double Sided Tape
- B. Mounting Ball
- C. Foam Gasket
- D. Mounting Screw



NOTE:

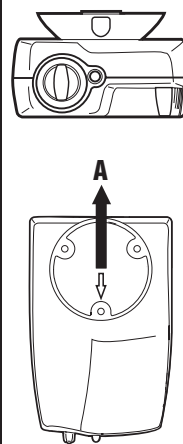
1. Arrow on top of Mounting Ball must point toward rear of tow vehicle, *as shown above*.
2. Prior to mounting, clean dash with all-purpose cleaner or 50/50 water alcohol mixture.

1. Attach double sided tape (A) to top of Mounting Ball (B).
2. **Temporarily** attach Mounting Ball (B) to dash using other side of double sided tape.
3. Using Mounting Ball (B) as a template, drill (3) 1/16" holes for a #6 screw size.
4. Secure Mounting Ball (B) to dash using (3) #6 x 3/8" screws supplied.
5. Insert Mounting Screw (D) through bottom of brake control.
6. Place Foam Gasket (C) on top of brake control inserting Mounting Screw (D) through small hole.
7. Attach brake control to Mounting Ball.
8. Rotate brake control to desired position and tighten until snug.

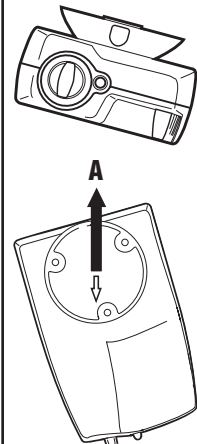
NOTE:

1. Front of the Brake Control must be horizontal, *see below*.
2. The Brake Control must be parallel to direction of travel (A), *see below*.

Correct



Incorrect



NOTE:

1. Due to the fine tuning capability of the inertia level adjustment, the level knob can be **fully rotated** 8-9 times from stop to stop. This equals roughly 45 partial turns across the finger indent on the bottom of the control.
2. **WARNING** This brake control is activated by inertia and requires the level to be set properly, or the braking response will be too harsh or ineffective.
3. To properly level the sensor, the trailer and tow vehicle must be parked on a level surface and trailer must be connected to tow vehicle.
4. The brake control has been shipped from the factory with the level knob adjusted to the maximum counter-clockwise position. Therefore, the level knob will only rotate clockwise from the factory shipped position.

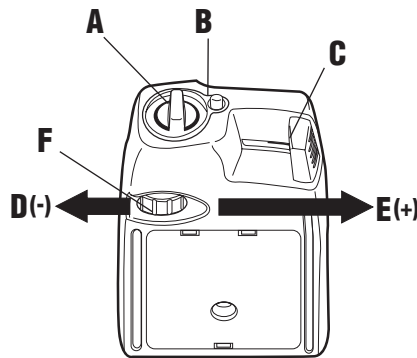
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Instructions for Envoy® Brake Control (continued)

Leveling the Sensor

After the brake control has been securely mounted the level adjustment must be set.

- A. Power Knob
- B. Bi-Colored Light
- C. Manual Slide Knob
- D. DELAYED (Clockwise)
- E. AGGRESSIVE (Counter-Clockwise)
- F. Level Knob



1. Connect trailer to tow vehicle, Bi-Colored Light (B) should glow GREEN.
2. Set Power Knob (A) to maximum. (Rotated fully clockwise.)
3. Depress tow vehicle's brake pedal and hold. (Bi-Colored Light (B) should glow bright RED.)
4. Rotate the Level Knob (F) to the left (clockwise-Delayed) until the Bi-Colored Light (B) starts to change colors from RED to GREEN.
5. **Carefully** rotate the Level Knob (F) to the right (Counter-Clockwise – Aggressive) until a shade of ORANGE is visible.
Bi-Colored Light should show:
 - DIM ORANGE for a typical setting.
 - BRIGHT ORANGE for an aggressive setting.
 - DIM RED for a more aggressive setting.
6. Release brake pedal.

NOTE: You may need to partially rotate level knob as many as 45 times depending upon your mounting angle.

Adjusting the Power to the Trailer Brakes

Once the control has been installed and properly leveled, it is necessary to set the power needed to stop the trailer during a braking event.

1. Connect trailer to tow vehicle.
 2. Set Power Knob to the 12 o'clock position.
 3. Drive tow vehicle and trailer on a dry level paved surface at 25 mph and apply *manual slide knob*.
- ✓ If trailer brakes lock up:
 - ☐ Turn power down using *power knob*.
 - ✓ If braking was not sufficient:
 - ☐ Turn power up using *power knob*.

NOTE: When the brake control is leveled properly there will be very little current flowing through the brake magnets in a static state with the foot pedal depressed. The brake magnets will hum when there is current flowing through them. Anytime the Bi-Colored Light shows any color other than GREEN, there is current flowing through the brake magnets.

4. Repeat Step (3) until power has been set to a point just below wheel lock up or at a sufficient force as to achieve maximum braking power.
5. Using the brake pedal, make a few low speed stops to check the Power and Level adjustments. The automatic response (brake pedal) is initiated and terminated via the stoplight switch. When the brake pedal is released, trailer braking will cease.

Fine Tuning

Now that the Power has been set, it is time to fine tune the level setting for the majority of the stopping that you will be doing.

1. Make several slow (25 MPH) stops as if coming up to a stop sign and take notice of how the trailer brakes respond:

✓ Brakes Grab Too Much

- ☐ You have an Aggressive Setting:
To correct this condition rotate level knob to the LEFT (clockwise – more Delayed).

✓ Trailer Tending to Push Tow Vehicle

- ☐ You have a Delayed Setting:
To correct this condition rotate level knob to the RIGHT (counter-clockwise – more Aggressive).

2. Repeat until desired trailer braking is achieved.

NOTE:

1. Always warm the trailer's brakes before setting the power. Warm trailer brakes tend to be more responsive than cold brakes. To warm trailer brakes, drive a short distance (1/4 mile) at 45 MPH with manual lever engaged enough to cause trailer braking at a low level.
2. **⚠ WARNING** The power should never be set high enough to cause trailer brakes to lock up. Skidding trailer wheels can cause loss of directional stability of trailer and tow vehicle.
3. The power may need to be adjusted for different load weights and road conditions.
4. Not all trailer brakes will lock up due to various conditions. However, inability to lock up the brakes generally indicates the need for an inspection to determine the cause.
5. When the power is set correctly you should feel unified braking between the trailer and tow vehicle.
6. When in doubt of the proper setting procedures review the above steps starting at LEVELING THE SENSOR through FINE TUNING or consult your tow card included with your brake control.

Instructions for Envoy® Brake Control (continued)

Troubleshooting Chart

Situation	Probable Cause
Tow vehicle connected to trailer, NO GREEN light.	<ol style="list-style-type: none"> 1. Corrosion on trailer plug contact. 2. Loose POWER or GROUND connection.
Tow vehicle connected to trailer, light is GREEN. When Manual Slide Knob is activated: A. No RED light. B. Light is dim RED or flashing RED. C. Light glows dim RED and gets brighter as POWER Knob is decreased.	<ol style="list-style-type: none"> 1. POWER set at or near minimum. 2. Short on BRAKE line (BLUE wire). 3. BLACK & WHITE wires reversed, control destroyed. 4. 12 volts from external source on BRAKE line (BLUE wire). 1. Open on GROUND line (WHITE wire). 2. Short on BRAKE line (BLUE wire). 1. Short on BRAKE line (BLUE wire). 2. Defective brake magnets.
Braking with foot pedal is too aggressive.	<ol style="list-style-type: none"> 1. Sensor set too aggressive, see LEVELING SENSOR. 2. Power set too high.
Braking is delayed for extended period.	<ol style="list-style-type: none"> 1. Sensor set improperly, see LEVELING SENSOR. 2. Power set too low.
Tow vehicle connected to trailer, brake pedal depressed: A. No RED light.	<ol style="list-style-type: none"> 1. Vehicle not moving, need to be moving for brakes to apply. 2. No signal from brake light, test voltage on RED wire. 3. Sensor set improperly, see LEVELING SENSOR. 4. Bad connection on RED wire. 5. Blown stoplight fuse.

Appendix A: Trailer Brake Adjustment**

Brakes should be adjusted after the first 200 miles of operation when the brake shoes and drums have "seated" and at 3000 mile intervals, or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.

⚠ WARNING Do not lift or support trailer on any part of the axle or the suspension system.

2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

4. Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.

5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes.

⚠ WARNING Never crawl under your trailer unless it is resting on properly placed jack stands.

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

**Note: Trailer Brake Adjustment procedures courtesy Dexter Axle.

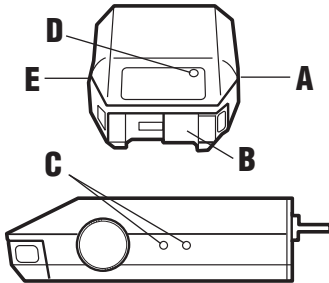
Instructions for Voyager® Brake Control

For 2, 4, 6 and 8 brake applications

READ THIS FIRST:

Read and follow all instructions carefully before installing or operating the Brake Control. Keep these instructions with the Brake Control for future reference.

Components of the Brake Control



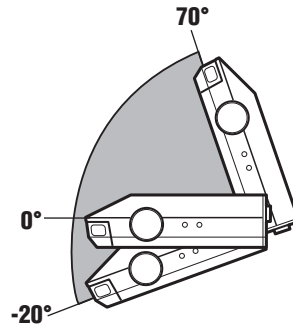
- A. Power Knob
- B. Manual Slide Knob
- C. Bracket Mounting Holes
- D. Bi-Colored Light
- E. Level Knob

Important Facts to Remember

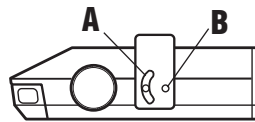
1. Do not mount or activate RF generating items (cell phones, two way radios) near (less than 12") the Brake Control.
2. **CAUTION** Reversing the connection to a breakaway battery on the trailer will destroy the Brake Control.
3. **CAUTION** Disconnect trailer plug from the tow vehicle prior to testing a breakaway switch or you may destroy the Brake Control.
4. The light is:
 - GREEN when trailer is connected.
 - RED when brake pedal or manual is activated and trailer is connected.
5. The GREEN light draws 5 milliamperes of current from tow vehicle. It would take over 10,000 hours to drain the tow vehicle battery.
6. **WARNING** The level adjustment is CRITICAL. The level adjustment determines whether automatic braking response is delayed or aggressive.
7. This brake control is activated by inertia. It senses deceleration and generates an output that reflects the inertia sensed. In a stationary state, the brake control will not apply the trailer brakes unless the Manual Slide Knob is actuated.
8. **WARNING** The Gross Combined Weight Rating (GCWR) must never exceed the vehicle manufacturers recommendation.
9. This control specifically designed for use with electric trailer brakes.
10. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

Installation Guide

WARNING The Brake Control must be mounted from -20 degrees nose down to 70 degrees nose up. (See Below.) Failure to install brake control within these constraints may cause your control to become inoperable.



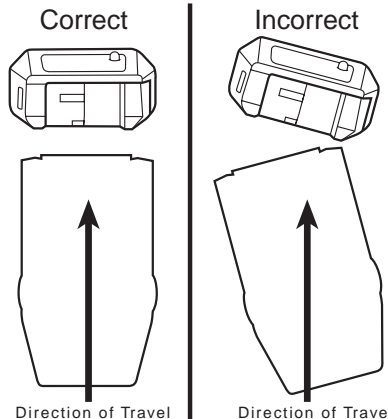
Traditional Bracket Mount



- A. Mounting Bracket
 - B. #6 x 3/8" Screws
1. **CAUTION** Drilling or use of longer screws may damage unit.
 2. Securely mount bracket to a solid surface.
 3. Insert supplied #6 x 3/8" screws on each side into the mounting holes.
 4. Adjust control to desired position and tighten screws until snug.

NOTE:

1. Front of the Voyager must be horizontal, *see below*.
2. The Voyager must be parallel to direction of travel, *see below*.



Leveling the Sensor

After the brake control has been securely mounted the level adjustment must be set.

NOTE:

1. **WARNING** This brake control is activated by inertia and requires the level to be set properly, or the braking response will be too harsh or ineffective.
2. To properly level the sensor, the trailer and tow vehicle must be parked on a level surface and trailer must be connected to tow vehicle.

1. Connect trailer to tow vehicle, Bi-Colored Light should glow GREEN.
2. Set power knob to maximum by fully rotating clockwise.
3. Depress tow vehicle's brake pedal and hold.
4. Rotate the Level Knob counter-clockwise (towards the back of the control) until the Bi-Colored Light starts to change colors from GREEN to RED.
5. Carefully rotate the Level Knob clockwise (towards the front of the control) until a shade of ORANGE is visible. Bi-Colored Light should show:
 - DIM ORANGE for a typical setting.
 - BRIGHT ORANGE for an aggressive setting.
 - DIM RED for a more aggressive setting.

NOTE: Range of adjustment for the level knob from DIM ORANGE to DIM RED is 20 degrees of rotation.

6. Release brake pedal.

NOTE: When the brake control is leveled properly there will be very little current flowing through the brake magnets in a static state with the foot pedal depressed. The brake magnets will hum when there is current flowing through them. Anytime the Bi-Colored Light shows any color other than GREEN, there is current flowing through the brake magnets.

Adjusting the Power to the Trailer Brakes

Once the control has been installed and properly leveled, it is necessary to set the power needed to stop the trailer during a braking event.

1. Connect trailer to tow vehicle.
2. Set Power Knob to the 12 o'clock position.
3. Drive tow vehicle and trailer on a dry level paved surface at 25 mph and apply manual slide knob.
 - ✓ If trailer brakes lock up:
 - ☐ Turn power down using power knob. (Rotate power knob toward the 8 o'clock position, counter-clockwise.)
 - ✓ If braking was not sufficient:
 - ☐ Turn power up using power knob. (Rotate power knob toward the 5 o'clock position, clockwise.)

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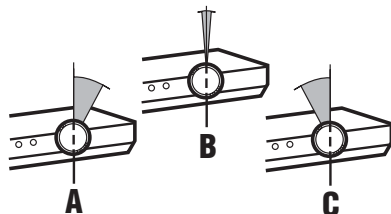
Instructions for Voyager® Brake Control (continued)

- Repeat Step (3) until power has been set to a point just below wheel lock up or at a sufficient force as to achieve maximum braking power.
- Using the brake pedal, make a few low speed stops to check the Power and Level adjustments. The automatic response (brake pedal) is initiated and terminated via the stoplight switch. When the brake pedal is released, trailer braking will cease.

Fine Tuning

Now that the Power has been set, it is time to fine tune the level setting for the majority of the stopping that you will be doing.

- Make several slow (25 MPH) stops as if coming up to a stop sign and take notice of how the trailer brakes respond:
 - ✓ Brakes Grab Too Much
 - ☐ You have an Aggressive Setting: To correct this condition rotate level knob clockwise, toward you, see below.
 - ✓ Trailer Tending to Push Tow Vehicle
 - ☐ You have a Delayed Setting: To correct this condition rotate level knob counter-clockwise, away from you, see below.
- Repeat until desired trailer braking is achieved.



- A. Delayed
- B. Normal
- C. Aggressive

NOTE:

- Always warm the trailer's brakes before setting the power. Warm trailer brakes tend to be more responsive than cold brakes. To warm trailer brakes, drive a short distance (1/4 mile) at 45 MPH with manual lever engaged enough to cause trailer braking at a low level.
- WARNING** The power should never be set high enough to cause trailer brakes to lock up. Skidding trailer wheels can cause loss of directional stability of trailer and tow vehicle.
- The power may need to be adjusted for different load weights and road conditions.
- Not all trailer brakes will lock up due to various conditions. However, inability to lock up the brakes generally indicates the need for an inspection to determine the cause.
- When the power is set correctly you should feel unified braking between the trailer and tow vehicle.
- When in doubt of the proper setting procedures review the above steps starting at LEVELING THE SENSOR through FINE TUNING or consult your tow card included with your brake control.

Troubleshooting Chart

Situation	Probable Cause
Tow vehicle connected to trailer, NO GREEN light.	<ol style="list-style-type: none"> Corrosion on trailer plug contact. Loose POWER or GROUND connection.
Tow vehicle connected to trailer, light is GREEN. When Manual Slide Knob is activated: <ul style="list-style-type: none"> A. No RED light. B. Light is dim RED or flashing RED. C. Light glows dim RED and gets brighter as POWER Knob is decreased. 	<ol style="list-style-type: none"> POWER set at or near minimum. Short on BRAKE line (BLUE wire). BLACK & WHITE wires reversed, control destroyed. 12 volts from external source on BRAKE line (BLUE wire). Open on GROUND line (WHITE wire). Short on BRAKE line (BLUE wire). Short on BRAKE line (BLUE wire). Defective brake magnets.
Braking with foot pedal is too aggressive.	<ol style="list-style-type: none"> Sensor set too aggressive, see LEVELING SENSOR. Power set too high.
Braking is delayed for extended period.	<ol style="list-style-type: none"> Sensor set improperly, see LEVELING SENSOR. Power set too low.
Tow vehicle connected to trailer, brake pedal depressed: <ul style="list-style-type: none"> A. No RED light. 	<ol style="list-style-type: none"> Vehicle not moving, need to be moving for brakes to apply. No signal from brake light, test voltage on RED wire. Sensor set improperly, see LEVELING SENSOR. Bad connection on RED wire. Blown stoplight fuse.

Appendix A: Trailer Brake Adjustment**

Brakes should be adjusted after the first 200 miles of operation when the brake shoes and drums have "seated" and at 3000 mile intervals, or as use and performance requires. The brakes should be adjusted in the following manner:

- Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.
 - ⚠ WARNING** Do not lift or support trailer on any part of the axle or the suspension system.
- Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
- With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the

brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

- Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
- Replace the adjusting hole cover and lower the wheel to the ground.
- Repeat the above procedure on all brakes.
- ⚠ WARNING** Never crawl under your trailer unless it is resting on properly placed jack stands.

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

**Note: Trailer Brake Adjustment procedures courtesy Dexter Axle.

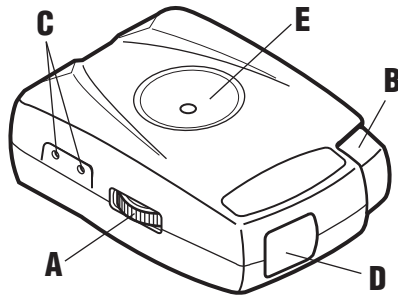
Instructions for Pilot® Brake Control

For 2 to 6 brake applications

READ THIS FIRST:

Read and follow all instructions carefully before installing or operating the Brake Control. Keep these instructions with the Brake Control for future reference.

Components of the Brake Control (Shown "Right Side Up")



- A. Power Knob
- B. Manual Slide Knob
- C. Anchor and Pivot Holes
- D. Two Digit Power Display
- E. Optional Ball Mount Interface

Important Facts to Remember

1. Do not mount or activate RF generating items (cell phones, two way radios) near (less than 12") the Brake Control.
2. **CAUTION** Reversing the connection to a breakaway battery on the trailer will destroy the Brake Control.
3. **CAUTION** Disconnect trailer plug from the tow vehicle prior to testing a breakaway switch or you may destroy the Brake Control.
4. **WARNING** The Gross Combined Weight Rating (GCWR) must never exceed the vehicle manufacturers recommendation.
5. This control specifically designed for use with electric trailer brakes.
6. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

2 Digit Power Display Legend

Right Side Up



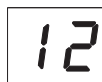
- Manual Slide or Tow Vehicle Brakes applied, unit is wired properly and trailer NOT Connected.



- Unit has power and is Connected to a trailer load.



- Manual Slide or Tow Vehicle Brakes applied and trailer Connected, typical ones and tenths voltage display.



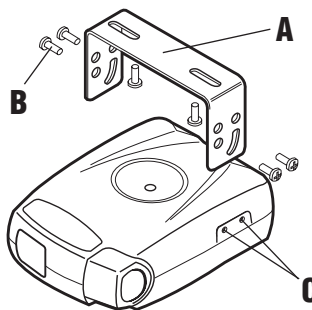
- Manual Slide or Tow Vehicle Brakes applied and trailer Connected, typical tens and ones voltage display.

Upside Down



NOTE: Display shows tenths of a volt up to 9.9. After 9.9 the display shows whole digits only.

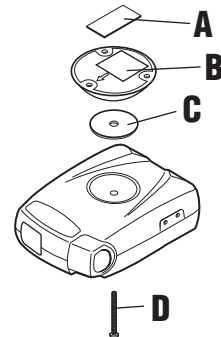
Installation Guide



- A. Mounting Bracket
- B. #6 x 3/8" Screws
- C. Mounting Holes

1. **CAUTION** Drilling or use of longer screws may damage unit.
2. Securely mount *bracket* to a solid surface.
3. Insert supplied #6 x 3/8" screws on each side into the mounting holes.
4. Adjust Brake Control to desired position and tighten *screws* until snug.

Optional Mounting Ball (Purchased Separately)



- A. Double Sided Tape
- B. Mounting Ball
- C. Foam Gasket
- D. Mounting Screw

1. Using *mounting ball*, find a desired location.
2. Attach *double sided tape* to back of *mounting ball*.
3. With the other side of the *double-sided tape*, temporarily attach *mounting ball* to desired location.
4. **CAUTION** Check behind dash for wires, etc. before drilling.
5. Using *mounting ball* as a template drill (3) 1/16" holes for a #6 screw size.
6. Permanently secure *mounting ball* using (3) #6 x 3/8" screws supplied.
7. Insert *mounting screw* through bottom of the control.
8. Place *foam gasket* on top of the control inserting *mounting screw* through hole in gasket.
9. Attach control to *mounting ball*.
10. Rotate control to desired position and tighten *mounting screw* until snug.

Changing the Display Orientation

Right Side Up



Upside Down



To change the display orientation from *right side up* to *upside down*:

1. Connect white, red and blue wire to tow vehicle.
2. While applying the brake pedal or *manual slide knob*, connect Black Wire (Battery) to the tow vehicle.
3. Display should now be upside down.

Continued On Next Page

Instructions for Pilot® Brake Control (continued)

NOTE: If using a wiring harness, apply brake pedal or manual slide knob while snapping connector to tow vehicle.

Upside Down

Right Side Up



To change the display orientation from **upside down** to **right side up**:

1. Disconnect Black Wire (Battery) from tow vehicle.
2. Wait 5 seconds.
3. Reconnect Black Wire (Battery) **DO NOT** apply brake pedal or *manual slide knob* while connecting wire.

Adjusting the Power to the Trailer Brakes

Once the control has been installed, it is necessary to set the power needed to stop the trailer during a braking event.

1. Connect trailer to tow vehicle.
2. Locate the *manual slide knob* and *power knob* on the control.
3. While applying the *manual slide knob* turn *power knob* until display reads 4.0.
4. Drive tow vehicle and trailer on a dry level paved surface at 25 mph and apply *manual slide knob*.
 - ✓ If trailer brakes lock up:
 - Turn power down using *power knob*.
 - ✓ If braking was not sufficient:
 - Turn power up using *power knob*.
5. Repeat Step (4) until power has been set to a point just below wheel lock up or at a sufficient force as to achieve maximum braking power.

NOTE:

1. Always warm the trailer's brakes before setting the power. Warm trailer brakes tend to be more responsive than cold brakes. To warm trailer brakes, drive a short distance (1/4 mile) at 45 MPH with manual lever engaged enough to cause trailer braking at a low level.
2. **WARNING** The power should never be set high enough to cause trailer brakes to lock up. Skidding trailer wheels can cause loss of directional stability of trailer and tow vehicle.
3. The power may need to be adjusted for different load weights and road conditions.
4. Not all trailer brakes will lock up due to various conditions. However, inability to lock up the brakes generally indicates the need for an inspection to determine the cause.
5. When the power is set correctly you should feel unified braking between the trailer and tow vehicle.

Troubleshooting Chart

Situation	Probable Cause
No Trailer connected, Manual Slide Knob or Brake Pedal is activated: No "." on two digit display.	1. Poor connection on POWER (BLACK wire) or GROUND (WHITE wire).
Tow Vehicle connected to trailer, Manual Slide Knob or Brake Pedal NOT ACTIVATED: No ".C" on two digit display.	1. Corrosion on trailer plug contact. 2. Poor connection on POWER (BLACK wire) or GROUND (WHITE wire). 3. Poor connection on BRAKE line (BLUE wire). 4. 12 volts from external source on BRAKE line (BLUE wire).
Tow Vehicle connected to trailer, Manual Slide Knob or Brake Pedal is activated: A. Only "." on two digit display. B. 0.0 or less than 1.0 on two digit display. C. 5.0 - 6.0 on two digit display. (Power set to MAX)	1. Poor connection on BRAKE line (BLUE wire). 1. Power set too low. 2. Poor connection on BRAKE line (BLUE wire). 3. BLACK & WHITE wires reversed, control destroyed. 1. Open on GROUND line (WHITE wire).
Braking with foot pedal is too aggressive.	1. Power set too high.
Braking with foot pedal is too light.	1. Power set too low.

Appendix A: Trailer Brake Adjustment**

Brakes should be adjusted after the first 200 miles of operation when the brake shoes and drums have "seated" and at 3000 mile intervals, or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.

WARNING Do not lift or support trailer on any part of the axle or the suspension system.

2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

4. Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes.

WARNING Never crawl under your trailer unless it is resting on properly placed jack stands.

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

**Note: Trailer Brake Adjustment procedures courtesy Dexter Axle.

Instructions for Pulse Preventer

Application:

Prevents brakes from pulsing when 4-way flashers are in use.

Important Facts to Remember

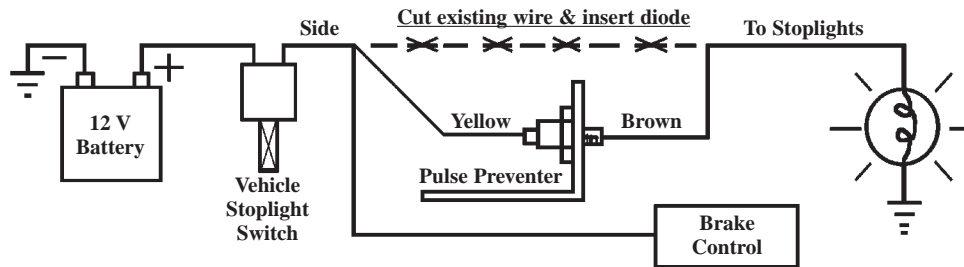
1. Diode & L-Bracket will get warm with long brake times, keep clear and do not cover with tape or other materials.
2. Make certain when splicing into the wire from the cold side of the stoplight switch, the position of the switch is not disturbed.

Installation Guide

1. Mount Pulse Preventer in close proximity to brake light switch.
2. Cut brake wire from cold side of stoplight switch, making sure to leave it long enough to splice it.
3. Connect YELLOW wire from pulse preventer and RED wire from brake control to wire coming out of cold side of stoplight switch.
4. Connect remaining wire (from step 2 that was cut) coming from brake lights to BROWN wire of pulse preventer.
5. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

NOTE:

FORD 1989-1991: Per Ford instructions: electric brake controls must splice into the stoplight line via the turn signal connector harness and not directly to the stoplight switch. The turn signal harness is located near the steering column. The harness has a crescent shaped connector which has 4 positions in the inner row and 7 positions in the outer row. The wire which is the cold side of the stoplight switch should be located in the second position in the outer row of 7. The color of the wire is light green for all F100-350s.

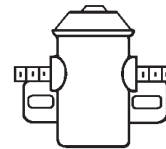


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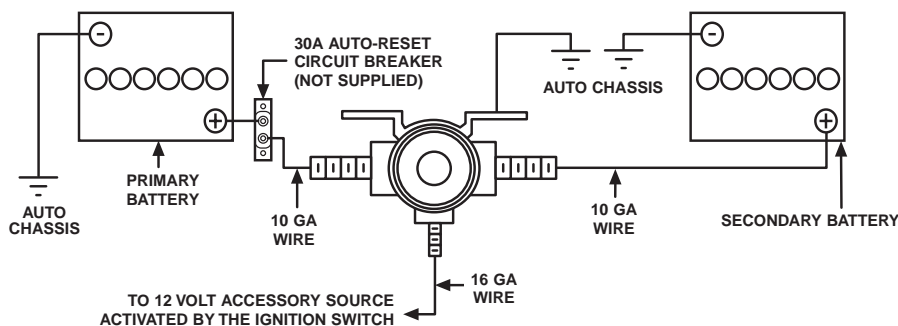
Instructions for Battery Switch

Installation Guide

1. Mount with cap end (crimped end) up.
2. Mount unit in an area that is not subjected to water rain or salt spray.
3. **CAUTION** Under normal operating conditions the switch will become hot. Mounting location should be selected to allow for the heat to dissipate.
4. **CAUTION** To minimize the possibility of accidental damage due to circuit overload, use an appropriate circuit breaker inline when wiring to the POSITIVE (+) terminal of the battery.
5. The wire size indicated below for battery connection is a minimum requirement. To improve the secondary battery charge rate, increase this wire size.
6. The three terminal switch housing provides the ground return. This eliminates the need for a ground return wire when mounted on the auto chassis.
7. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com



3 Terminal Switch



P/N 871 REV E

BREAKAWAY SYSTEMS APPLICATIONS / SPECIFICATIONS GUIDE

APPLICATIONS	BREAKAWAY SYSTEM MODEL #					
	761-2026	761-20005	761-20010	761-2028	761-20015	761-20020
For Electric Trailer Brake Systems						
Single Axle	X	X	X	X	X	X
Tandem Axle	X	X	X	X	X	X
Tri-Axle*	X	X	X	X	X	X
*Requires a minimum 5 Amp-Hr Battery						
Four Axles*	X	X	X	X	X	X
*Requires a minimum 5 Amp-Hr Battery						
SPECIFICATIONS	BREAKAWAY SYSTEM MODEL #					
	761-2026	761-20005	761-20010	761-2028	761-20015	761-20020
A-Frame or Post Mount System	X			X		
U-Shaped Clamp Style Fastener Mounts Over Most Trailer Tongues						
Flat Surface Mount System (Screws or Bolts)		X			X	
For Use With Self Tapping Screws Or Similar Fasteners						
Weldable Flat Surface Mount System			X			X
Weldable Metal Mounting Bracket Or for use w/Self Tapping Screws						
Lockable Box Feature		X	X		X	X
Heavy Duty Nylon Breakaway Switch	X	X	X	X	X	X
Reinforced Nylon Case With Weldable Tab & 48" Coated Lanyard						
Full Capacity and Temperature Compensated DC to DC						
4 Amp-Hr Heavy Duty Quick/Maintenance (Two Stage) Charger				X	X	X
Maximum Charging Capacity Even If Battery Is Almost Fully Depleted ...						
Effective With Batteries Down To 1 Volt Remaining Charge						
5 Amp-Hr Sealed Lead Acid Battery	X	X	X	X	X	X
Batteries Require Periodic Recharging To Maintain Optimum Performance						

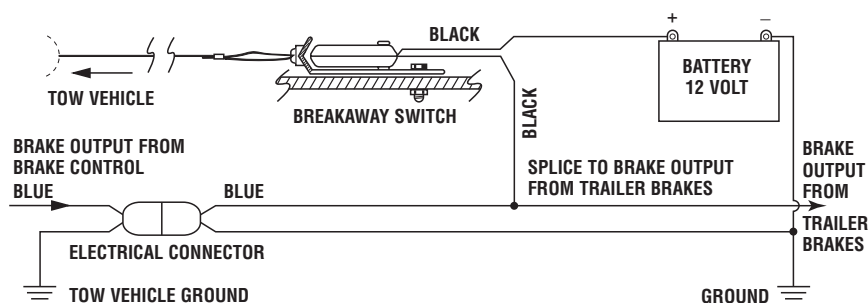
Breakaway Switch Installation Instructions

READ THIS FIRST:

Read and follow all instructions carefully before installing or operating the breakaway Switch. Keep these instructions for future reference.

Important Facts to Remember

1. **ATTENTION INSTALLER:** Please give this sheet to consumer upon completion of installation.
2. **SAFETY ITEM:** Solder all wire connections.
3. Check condition of battery prior to each trip.
4. **WARNING** Disconnect trailer plug before testing breakaway unit. Failure to do so will result in severe damage to electronic brake control.
5. **WARNING** Check your breakaway system periodically to insure that wiring and connections are secure. A short or an open circuit can result in a no-brake condition.
6. For optimal performance, it is recommended that breakaway devices be replaced every 3-5 years.
7. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com



Installation Guide

1. Mount Battery Case securely to frame, jack post or other suitable location on trailer with Breakaway Switch Cable towards tow vehicle.
2. **WARNING** Switch location should be selected to ensure unobstructed line of pull in event of vehicle separation.
3. Bolt breakaway switch bracket to frame of trailer or battery case bracket using 1/4" bolt and lock nut or (2) 1/4" jam nuts. (Bolt and nuts not included in kit.)
4. **WARNING** Do not over tighten bolt. Switch must be able to pivot.
5. Check and install battery.
6. Wire per schematic. Properly insulate all connections.
7. Attaching to tow vehicle: Attach Breakaway Switch Cable to tow vehicle frame being certain the cable does not drag on the ground and no strain or restriction is placed on the cable.
8. **WARNING** Do not hook cable to safety chain loop or hitch ball.

Tow Charger/12 Volt Lead-Acid Battery Instructions and Installation

READ THIS FIRST:

Check condition of battery prior to installation and prior to each trip.

1. Remove Charger and Battery from the battery case.
2. Mount battery case securely to frame, jack post or other suitable location on trailer.
3. Bolt Breakaway Switch* to frame of trailer or battery case bracket.
4. Install battery and charger into the battery case. Feed wires out the back, then close the top.
5. Wire per schematic diagram. Properly insulate all connections.
6. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

Important Facts to Remember

1. **CAUTION** Improper installation of the breakaway battery will destroy the brake control. The negative (-) terminal must attach to ground and positive (+) terminal must attach to the breakaway switch.
2. **WARNING** Check your Breakaway System* periodically to insure that wiring and connections are secure. A short or an open circuit can result in a no-brake condition.
3. If excessive discharging of the breakaway battery occurs, check battery and recharge using a Heavy Duty Two Stage /Maintenance Charger. If using a commercial (AC to DC) make certain the 12 volt charge is limited to 1.2 amps or less.
4. If the secondary battery needs charging, current will be drawn from the tow vehicle's battery at anytime the tow vehicle is connected to the trailer. The most current which will be drawn is 1.2 amps.
5. To only charge the breakaway battery when vehicle is running, a battery isolator may be installed in the 12 volt supply line (BLACK wire for tow charger).

12 Volt Sealed Lead-Acid Battery

To maximize the life of the battery the following conditions should be met:

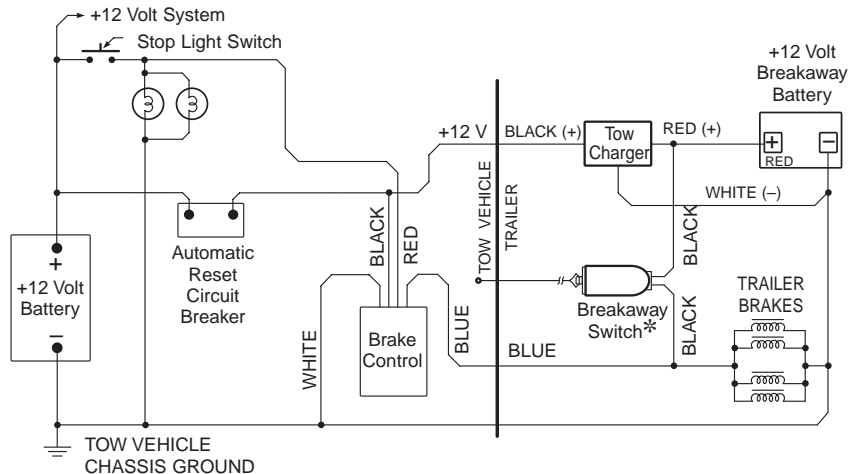
1. Avoid over or undercharge. This is the single worst enemy of lead-acid batteries.
2. Batteries should not be stored in a discharged state or at elevated ambient temperatures.
3. Avoid exposing batteries to heat! Service life is shortened considerably at ambient above 30°C (86°F).
4. Due to the characteristics of this battery, after six to nine months of storage, the battery should be recharged.
5. Charge the battery at the proper rate. Current should be limited to 1.2 amps or less.
6. Provide adequate air circulation when charging battery. Do not charge battery in any other container besides the supplied battery box.
7. **⚠ CAUTION** Do not place batteries in close proximity to objects which can produce sparks or flames.
8. Do not expose battery case to organic solvents or adhesives.

9. **⚠ CAUTION** Do not attempt to disassemble batteries. Contact with sulfuric acid may cause harm.
10. **⚠ CAUTION** Fasten batteries tightly and make provisions for shock absorption if exposure to shock or vibration is likely.
11. **⚠ WARNING** Do not throw batteries into fire; batteries so disposed may rupture or explode.

Battery Data Chart

- 12 VOLT
- 5 Amp-hr – max discharge current
20 hr. rate = 250 mA
- Maximum Discharge Current = 40 amps
- Maximum charge current must be limited to 1.2 amps
- Length = 3.54" Width = 2.76"
Height = 4.13"
Weight = 3.8 lbs
Terminals: Fasten Tab .187" x .032"
- **Service Life:**
Under normal operating conditions, 4-5 years in standby applications or 200-1000 charge/discharge cycles depending upon depth of discharge and rate of charge.

HEAVY DUTY QUICK/MAINTENANCE TWO STAGE CHARGER



* Refer to Breakaway Switch Installation Instructions for complete operating instructions and cautionary statements.

Trailer Brake Troubleshooting

NO BRAKES

- Check for defective circuit breaker.
- Check for open or shorted circuit.
- Check for properly wired system, including a good ground between towing vehicle and trailer, not through trailer hitch.
- Check for defective controller or loose wiring at controller.
- Check brake adjustment.
- (Hydraulic units only) Check for defective resistor or loose wiring at resistor.
- Check for worn or defective magnet(s).
- Check for damaged or worn connector between towing vehicle and trailer.
- Check for a burned out resistor.
- Ensure correct controller is installed.

INTERMITTENT OR SURGING BRAKES

- Check for out-of-round brake drums.
- Check for properly wired system, including a good ground between towing vehicle and trailer, not through trailer hitch.
- Check for defective magnet or magnet wiring.
- Check for loose or worn wheel bearings.

INEFFECTIVE OR WEAK BRAKES

- Insure trailer is not overloaded.
- Check for loose or corroded connections.
- Check for properly wired system, including a good ground between towing vehicle and trailer, not through trailer hitch.
- Check for a shorted circuit.
- Check for proper variable resistor resistance (external resistor or controller) to trailer. (Hydraulic units only)
- Worn or defective magnet.
- Check brake adjustment.
- Check for bent backing plate flange.
- Check for contaminated brake linings (grease on linings).
- Check brake system wiring to ensure proper gauge wiring is used. Ensure wiring is not connected through the stoplight circuit.
- Check for worn, damaged or improper brake linings.
- Check for weak or broken brake shoe return spring.
- Check for defective or worn brake drums.
- Check for loose axle.
- Check that correct controller is installed.
- Improper controller installed or improper settings (level or gain).

GRABBING OR LOCKING BRAKES

- Check for improperly installed flanges.
- Check for contaminated brake linings.
- Check for weak or broken brake shoe return spring.
- Check for out-of-round brake drums.

GRABBING OR LOCKING BRAKES(continued)

- Check variable resistor for proper resistance (Hydraulic units only)
- Ensure a variable resistor is installed (if necessary). (Hydraulic units only)
- Check that correct controller is installed.
- Rust on armature plate or brake drum.
- Check for loose or worn wheel bearings.
- Improper controller installed position.
- Check for improper gain setting.
- Check for improper boost setting.

DRAGGING BRAKES

- Check brake adjustment.
- Check for defective controller.
- Check for improperly installed flange.
- Check for corroded brake assembly.
- Check for weak or broken brake shoe return spring.
- Check for worn or damaged lever arm between magnet and brake shoe.
- Improper controller installed position.

NOISY BRAKES

- Check brake adjustment.
- Check for worn brake shoes.
- Check for contaminated brake linings.
- Check for weak or broken brake shoe return springs.
- Check for bent backing plate.
- Check for improperly installed flange.
- Check wheel bearing adjustment.
- Check for worn or damaged wheel bearings.
- Check for worn or damaged magnets.

BRAKES LOCKED, BRAKE PEDAL NOT DEPRESSED

- Check stoplight switch adjustment.
- Check for short between stoplight switch circuit and power supply circuit.
- If brakes are locked when 4-way flashers are operated, check for pulse preventer installed in circuit.
- Check breakaway switch (pulled).

UNEVEN TIRE WEAR

On tandem axle trailers, check voltage at front axle and rear axle with brakes applied. At times, the front axle will "lift" allowing front wheel to lock and slide. Correction can be made by installing a resistor in front brake circuit or combination of axle resistor and an adjusted controller.

INOPERATIVE BREAKAWAY SWITCH

- Check for dead or weak 12-volt battery, on trailer.
- Check all wiring and connections.
- Check breakaway switch.
- If only one brake is operating, check other magnets.

Trailer Brake Adjustment**

Brakes should be adjusted after the first 200 miles of operation when the brake shoes and drums have "seated" and at 3000 mile intervals, or as use and performance requires. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Follow trailer manufacturers recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.

⚠ WARNING Do not lift or support trailer on any part of the axle or the suspension system.

2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

4. Then rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.

5. Replace the adjusting hole cover and lower the wheel to the ground.
6. Repeat the above procedure on all brakes.

⚠ WARNING Never crawl under your trailer unless it is resting on properly placed jack stands.

Follow the trailer manufacturers recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

**Note: Trailer Brake Adjustment procedures courtesy Dexter Axle.

Electric Trailer Brake Part Identification

Manufacturer Identification

AL-KO	AL-KO levers are very flat. The brake shoes do not have anything unusual about them. AL-KO uses only one return spring at the top on both 10 and 12-inch units. With the drum off, you can tell what size the system is if the magnets have never been replaced. The 10-inch brake will have a magnet with light green wires and the 12-inch brake will have white wires.
Dexter	Dexter uses a stamp on the back of the backing plate that identifies the size of the brake. Looking on the back side you will see a triangle. Around the triangle you will see Dexter and the size (i.e. 10" X 2 1/2" or 12" X 2"). Dexter uses 2 return springs on all late model brakes; some early 12-inch brakes used a single return spring.
Hayes	Hayes brake shoe webs have a tooth that hangs down at the top and use a single return spring. Early 12-inch brakes used a dual return spring. Hayes axle is owned by AL-KO. AL-KO backing plates have been seen on some of the new Hayes axles. It looks as if they are still using the Hayes name and are starting to use AL-KO parts.
Fayette	Fayette axles are obsolete. If you find a Fayette axle tag and the trailer is worth keeping you should consider changing the axles to AL-KO or Dexter. At that time it is recommended that the spring hangers and bushings also be replaced.

Brake Size Identification

Axle Identification	Axles generally have an ID tag located on the axle crossbar that gives you the axle capacity. Check there first. This would give you a starting reference point.
Brake Drum / Shoe Size	Measuring is the same for all brands. Using a tape measure you can do a random measurement as to the diameter by measuring across the drum. If it is a 10-inch drum you will measure approximately 11 inches across for an outside measurement. The 12-inch brake will measure approximately 13 inches for an outside measurement. The drum would need to be removed to get the correct diameter and width.

Magnet Identification

Magnets can be identified by the color of the wire used

Dexter 7" X 1 1/4"	The magnets are round. Prior to April 1990 they had yellow wires, after 1990 the magnet has white wires. Replacement of magnets will need to be done in pairs and updated to the new magnet along with the lever. The early levers are weak and will bend and hang up as they wear.
Dexter 10" X 1 1/2"	The magnet wires for the early model round magnets are white and the late model oval magnets are yellow.
Hayes 10" X 1 5/8"	The magnet wires for the early model round magnets are red and the late model oval magnets are green.
AL-KO 10" X 2 1/4"	It will have light green wires.
Hayes 10" X 2 1/4"	The early model round will have red wires and the late model will have oval green wires.
Dexter 10" X 2 1/4"	It uses green wires.
Fayette 10" X 2 1/4"	The round magnets will have white wires (obsolete).
AL-KO 12" X 2"	It will have white wires.
Hayes 12" X 2"	The early model round magnet will have red wires, the late model will be an oval magnet with white wires.
Dexter 12" X 2"	It will have white wires.
Dexter Centerline 12" X 2"	The 4.5K axles will have red orange wires, the 6/7K axles will have red wires (obsolete for both sizes).

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