ELECTRICAL
Wiring Diagram For Typical 4-Way Connector
6-Way Round Pin Connector Wiring Diagram
4-Way Round Pin / Flat Connector Wiring Diagram
5-Way Flat Connector Wiring Diagram
7-Way Rv Blade Connector Wiring Diagram
7-Way Molded Trailer Connectors

BRAKE CONTROLS
Wiring Instructions For Electronic Brake Controls
Brake Control Wiring Harness Chart
Trailer Emulator Reference Guide

JACKS / COUPLERS / WINCHES
Weld-On Bracket Mounting Positions, F2® Jack
Adjusting the Swivel Mount Height, F2® Jack
Jack Replacement Quick-Reference Guide
Assembly Quick-Reference Guide

LIGHTING
Standard Ag Implement Enhanced Lighting Scheme
Ag Lighting Wiring Diagram With Brake

TRAILER ACCESSORIES
Breakaway Switch Installation Instructions
ABCD/Tow Charger/12 Volt Lead-Acid Battery Instructions and Installation
Trailer Brake Troubleshooting
Trailer Brake Adjustment
Electric Trailer Brake Part Identification

TOOLS & TESTERS
Instructions for the Bench Tester
Instructions for the Current Monitor
Instructions for Trailer Tester
WIRING DIAGRAM FOR TYPICAL 4-WAY CONNECTOR
(5-WAY CONNECTOR WOULD INCLUDE BLUE WIRE FOR AUXILIARY)

Right/Stop & Turn (Green Wire)

Left/Stop & Turn (Yellow Wire)

Tail, License, Side Marker (Brown Wire)

Ground to Trailer (White Wire)

Side Marker (Amber) located as far forward as practical exclusive of tongue (60,000 GVW 106)

Right Rear

(GREEN WIRE) (BROWN WIRE)

3 Rear Markers (Red) needed for trailers over 80" Wide

Left Rear (With License Plate Bracket)
6-WAY ROUND PIN CONNECTOR WIRING DIAGRAM

6-WAY MOLDED TRAILER/SEALED CAR CONNECTOR & CABLE

TRAILER END
As viewed from core back side where wires are attached with screws.

CAR END
As viewed from front face of 6-way connector with molded on cable.

6-WAY ZINC DIE-CAST CONNECTOR

TRAILER END
As viewed from core back side where wires are attached with screws.

CAR END
As viewed from front face of 6-way connector with sealed cable.

6 - W A Y W I R I N G I N D E X

<table>
<thead>
<tr>
<th>Wire Color &amp; Gauge</th>
<th>Molded Trailer/Sealed Car Connector Terminal</th>
<th>Zinc Die-Cast Connector Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>White / 10/14 gauge</td>
<td>Common Ground</td>
<td>GD - Common Ground</td>
</tr>
<tr>
<td>Blue / 10/14 gauge</td>
<td>Electric Brake</td>
<td>S - Electric Brake</td>
</tr>
<tr>
<td>Green / 14 gauge</td>
<td>Right Stop &amp; Turn</td>
<td>TM - Tail &amp; License</td>
</tr>
<tr>
<td>Red / 10/14 gauge</td>
<td>Auxiliary</td>
<td>LT - Left Stop &amp; Turn</td>
</tr>
<tr>
<td>Brown / 14 gauge</td>
<td>Tail &amp; License</td>
<td>RT - Right Stop &amp; Turn</td>
</tr>
<tr>
<td>Yellow / 14 gauge</td>
<td>Left Stop &amp; Turn</td>
<td>A - Auxiliary</td>
</tr>
</tbody>
</table>

4-WAY ROUND PIN / FLAT CONNECTOR WIRING DIAGRAM

4-WAY ROUND PIN CONNECTOR

TRAILER END
As viewed from core back side where wires are attached with screws.

CAR END
As viewed from front face of 6-way connector with sealed cable.

4-WAY FLAT CONNECTOR

TRAILER END

WHITE (Ground)
BROWN (Tail, License, Sidemarker, Clearance & I.D. Lamps)
YELLOW (Left Turn & Stop)
GREEN (Right Turn & Stop)

CAR END

WHITE (Ground)
BROWN (Tail, License, Sidemarker, Clearance & I.D. Lamps)
YELLOW (Left Turn & Stop)
GREEN (Right Turn & Stop)
BLUE (Auxiliary)

5-WAY FLAT CONNECTOR WIRING DIAGRAM

5-WAY FLAT CONNECTOR

TRAILER END

WHITE (Ground)
BROWN (Tail, License, Sidemarker, Clearance & I.D. Lamps)
YELLOW (Left Turn & Stop)
GREEN (Right Turn & Stop)
BLUE (Auxiliary)

CAR END

WHITE (Ground)
BROWN (Tail, License, Sidemarker, Clearance & I.D. Lamps)
YELLOW (Left Turn & Stop)
GREEN (Right Turn & Stop)
BLUE (Auxiliary)

TECHNICAL INFORMATION IS CURRENT AS OF THE PRINTING OF THIS CATALOG. CONTACT TECHNICAL SERVICE FOR PERIODIC UPDATES.
ELECTRICAL - TECHNICAL

7-WAY RV BLADE CONNECTOR WIRING DIAGRAM

7-WAY MOLDED TRAILER/SEALED CAR CONNECTOR & CABLE

- As viewed from front face of 7-way connector with molded on cable.

7-WAY THERMO-PLASTIC/METAL CONNECTOR

- As viewed from core back side where wires are attached with screws.

7-WAY WIRING INDEX

<table>
<thead>
<tr>
<th>Wire Color &amp; Gauge</th>
<th>Molded Trailer/Sealed Car Connector Terminal</th>
<th>Thermo-Plastic/Metal Connector Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>White / 10 gauge</td>
<td>Common Ground</td>
<td>#1 Common Ground</td>
</tr>
<tr>
<td>Blue / 12 gauge</td>
<td>Electric Brake</td>
<td>#2 Electric Brake</td>
</tr>
<tr>
<td>Green / 14 gauge</td>
<td>Tail &amp; License</td>
<td>#3 Tail &amp; License</td>
</tr>
<tr>
<td>Black / 10 gauge</td>
<td>Battery Charge</td>
<td>#4 Battery Charge</td>
</tr>
<tr>
<td>Red / 14 gauge</td>
<td>Left Stop &amp; Turn</td>
<td>#5 Left Stop &amp; Turn</td>
</tr>
<tr>
<td>Brown / 14 gauge</td>
<td>Right Stop &amp; Turn</td>
<td>#6 Right Stop &amp; Turn</td>
</tr>
<tr>
<td>Yellow / 14 gauge</td>
<td>Center Auxiliary</td>
<td>#7 Center Auxiliary</td>
</tr>
</tbody>
</table>

7-WAY MOLDED TRAILER CONNECTORS

PIN CLOCKING

- RV - Gauge 2/10, 1/12, 4/14
- Heavy Duty Trailer - Gauge 2/10, 1/12, 4/14
- Cold Weather - Gauge 3/10, 4/14

WIRE COLOR, GAUGE & FUNCTION

- White / 10 gauge / Common Ground
- Blue / 12 gauge / Electric Brake
- Green / 14 gauge / Tail & License
- Black / 10 gauge / Battery Charge
- Red / 14 gauge / Left Stop & Turn
- Brown / 14 gauge / Right Stop & Turn
- Yellow / 14 gauge / Center Auxiliary

NOTE: 7-Way Heavy Duty and Cold Weather trailer wiring diagrams represent wire location and color but are NOT supplied to represent any wire or color functions. Please contact your trailer manufacturer for further details.
WIRING INSTRUCTIONS FOR ELECTRONIC BRAKE CONTROLS

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.

Technical Information is current as of the printing of this catalog. Contact technical service for periodic updates.
# 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.

<table>
<thead>
<tr>
<th>OE HARNESS</th>
<th>BRAKE CONTROL WIRE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHEVROLET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>LIGHT BLUE</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>BLACK</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>DARK BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>BROWN</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>GM 2007 AND NEWER (NEW BODY STYLE)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED / BLACK TRACER</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>LIGHT BLUE / WHITE TRACER</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>WHITE</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>DARK BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>ORANGE</td>
<td>N/A</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td><strong>DODGE (GREEN WIRE)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHITE W/ RED TRACER</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>BLUE W/ WHITE TRACER</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>GREEN W/ BLACK TRACER</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>DODGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED W/ BLACK TRACER</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>WHITE W/ TAN TRACER</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>BLACK</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>2010 &amp; NEWER DODGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW W/ GREEN TRACER</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>WHITE</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>BLACK W/ GREEN TRACER</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>GREEN</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>2010 &amp; NEWER DODGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW W/ RED TRACER</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>WHITE</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>BLACK W/ GREEN TRACER</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>GREEN</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>FORD (PINK WIRE)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PINK</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>RED</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>WHITE</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>BROWN</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>FORD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>LIGHT GREEN</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>WHITE</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>DARK BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>BROWN</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>FORD (PURPLE WIRE)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>PURPLE W/ WHITE TRACER</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>BLACK W/ WHITE TRACER</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>BROWN</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>FORD 2008 SUPER DUTY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>BLACK</td>
<td>12 VOLT</td>
</tr>
<tr>
<td>YELLOW W/ GREEN TRACER</td>
<td>RED</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>BLACK W/ GRAY TRACER</td>
<td>WHITE</td>
<td>GROUND</td>
</tr>
<tr>
<td>BLUE</td>
<td>BLUE</td>
<td>TRAILER BRAKES</td>
</tr>
</tbody>
</table>
# Brake Control Wiring Harness Chart (Continued)

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

<table>
<thead>
<tr>
<th>OE Harness</th>
<th>Brake Control Wire</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ford</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Green</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>White</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>Ford</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown W/ Red Tracer</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Blue W/ Orange Tracer</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Gray W/ Black Tracer</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>Toyota</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black W/ Red Tracer</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Green</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td>Green W/ White Tracer</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Brown</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Red</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>Toyota / Lexus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Green W/ Yellow Tracer</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>White W/ Black Tracer</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Yellow</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>Green</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>Nissan / Infiniti</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Red W/ Green Tracer</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Brown W/ White Tracer</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>Red W/ Blue Tracer</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>Volkswagen / Porsche</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cavity #2 (Red W/ Yellow Tracer)</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Cavity #3 (Black W/ Red Tracer)</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Cavity #1 (Brown)</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Cavity #4 (Blue)</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>Honda</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>White W/ Black Tracer</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Brown W/ White Tracer</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>Honda</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Light Blue</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Brown W/ White Tracer</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td><strong>Freightliner</strong></td>
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<tr>
<td>Red</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>Small Red W/ White Tracer</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Large Red W/ White Tracer</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>Brown</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
<tr>
<td><strong>Acadia / Enclave / Outlook</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red W/ Black Tracer</td>
<td>Black</td>
<td>12 Volt</td>
</tr>
<tr>
<td>White</td>
<td>Red</td>
<td>STOPLIGHT</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
<td>GROUND</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
<td>TRAILER BRAKES</td>
</tr>
<tr>
<td>Grey</td>
<td>N/A</td>
<td>ILLUMINATION</td>
</tr>
</tbody>
</table>

Technical information is current as of the printing of this catalog. Contact technical service for periodic updates.
TRAILER EMULATOR REFERENCE GUIDE

Trailer Emulator

LT – Left turn signal, Red Light
TL – Tail / running lights, Red Light
RT – Right turn signal, Red Light
12V – 12 volt battery supply line, Red Light
BK – Electric trailer brakes, Red Light
BU – Backup lights, Red Light

User’s Guide

The Trailer Emulator requires the ground and 12 volt battery line to be properly connected in order to check the electric brake circuit.

- 12 volt light on the emulator will be lit as soon as the emulator is connected to the tow vehicle’s plug. If this does not happen see Troubleshooting Chart.
- The RT, LT, TL and BU lights will light on the emulator as those functions are activated on the tow vehicle. If this does not happen see Troubleshooting Chart.
- The BK light on the emulator should be off until the brake control is activated. NOTE: The trailer emulator is not an exact trailer load so the light displays on various brake controls will respond differently.

The following can be expected with Tekonsha Brake Controls:

90195 – P3™

Brake Control’s display should show:

- With trailer emulator connected and no manual slide activation.
- Varying voltage displayed from 0-13 as manual is activated with the power knob full on.

90250 – Prodigy® RF

Brake Control’s display should show:

- GREEN - with trailer emulator connected with no manual slide activation.
- GREEN to varying colors of RED - trailer emulator connected and manual slide activated.

90185 – Prodigy® 90885 – Prodigy® P2

90160 – Primus™ IQ, 90155 – Primus™
90155-CLR – Primus™

80750 – DigiTrac® II, 80550 – Pilot®

80510 – AccuTrac®
80500 – POD®

8030 – Voyager®, 9035 – Voyager XP®

9040 – Envoy®, 9045 – Envoy® SX

Brake Control’s display should show:

- Level LED is GREEN - with trailer emulator connected with no manual slide activation.
- Level light changes color from GREEN to RED and the other FOUR RED lights should light in progression - trailer emulator connected and manual slide activated.

9055 – Sentinel®

Brake Control’s display should show:

- GREEN - with trailer emulator connected with no manual slide activation.
- GREEN to varying colors of RED - trailer emulator connected and manual slide activated.

9030 – Voyager®, 9035 – Voyager XP®

9030 – Voyager®, 9035 – Voyager XP®

9040 – Envoy®, 9045 – Envoy® SX

Brake Control’s display should show:

- GREEN - with trailer emulator connected with no manual slide activation.
- GREEN to varying colors of RED - trailer emulator connected and manual slide activated.
### Troubleshooting Chart

<table>
<thead>
<tr>
<th>Condition</th>
<th>Probable Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trailer Emulator connected to tow vehicle:</strong></td>
<td></td>
</tr>
<tr>
<td>- 12V LED is <em>NOT</em> lit on Trailer Emulator.</td>
<td>1) Bad ground or incorrect wiring in tow vehicle connector.</td>
</tr>
<tr>
<td></td>
<td>2) No 12 volt battery power supplied to connector.</td>
</tr>
<tr>
<td>- LT LED is <em>NOT</em> lit on Trailer Emulator</td>
<td>1) Bad ground or incorrect wiring in tow vehicle connector.</td>
</tr>
<tr>
<td><strong>NOTE:</strong> Applies for LT, RT, TL, and BU LEDs.</td>
<td>2) Loose or poor connection in circuit under test.</td>
</tr>
<tr>
<td>- BK is <em>NOT</em> lit on Trailer Emulator when</td>
<td>1) Bad ground or incorrect wiring in tow vehicle connector.</td>
</tr>
<tr>
<td>manual slide / touch pad is activated, but</td>
<td>2) Poor ground on Brake Control. Brake Control goes into a limit mode.</td>
</tr>
<tr>
<td>12V LED is lit.</td>
<td>3) Gain adjustment on Brake Control is set to minimum, adjust gain to maximum</td>
</tr>
<tr>
<td></td>
<td>and retest using manual.</td>
</tr>
<tr>
<td>- BK is <em>NOT</em> lit on Trailer Emulator when</td>
<td>1) If using brake pedal, Tekonsha’s inertia activated controls require vehicle</td>
</tr>
<tr>
<td>Brake Pedal is depressed, but 12V LED is lit.</td>
<td>movement to activate sensor. Apply the manual switch and see if BK LED lights.</td>
</tr>
<tr>
<td></td>
<td>(SEE NOTE)</td>
</tr>
</tbody>
</table>

**Note:**

The following two methods are available to test the **Automatic response** of the Tekonsha brake control with the Trailer Emulator.

1. **Vehicle in Motion Method**
   - Connect Trailer Emulator to vehicle.
   - Properly adjust the Level of the brake control.
   - Drive vehicle and apply brake pedal, the brake control’s light should indicate a braking event.

2. **Aggressive Level Method**
   - Connect Trailer Emulator to vehicle.
   - Properly adjust the Level of the brake control.
   - Adjust Level setting toward Aggressive.
   - The brake control’s light should indicate a braking event.
   - When finished with test remember to adjust the brake control’s level back to desired tow setting.

For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com
## Weld-On Bracket Mounting Positions, F2® Jack

### 3x3 Tube With 3x4 Plate

<table>
<thead>
<tr>
<th>P/N</th>
<th>F2 MARINE AND RECREATIONAL JACKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1413060334</td>
<td>F2 Twin Track Model 3&quot;x 4&quot; Pivot Housing. Includes Handle Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware.</td>
</tr>
<tr>
<td>1413050334</td>
<td>F2 Wide Track Model 3&quot;x 4&quot; Pivot Housing. Includes Handle Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware.</td>
</tr>
<tr>
<td>500277</td>
<td>Pivot Housing.</td>
</tr>
</tbody>
</table>

### 3x4 Tube With 3x4 Plate

<table>
<thead>
<tr>
<th>P/N</th>
<th>F2 MARINE AND RECREATIONAL JACKS</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>500277</td>
<td>Pivot Housing.</td>
</tr>
</tbody>
</table>

### 3x5 Tube With 4x5 Plate

<table>
<thead>
<tr>
<th>P/N</th>
<th>F2 MARINE AND RECREATIONAL JACKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1413110334</td>
<td>F2 Wide Track Model 4&quot;x 5&quot; Pivot Housing. Includes Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware.</td>
</tr>
<tr>
<td>1413120334</td>
<td>F2 Twin Track Model 4&quot;x 5&quot; Pivot Housing. Includes Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware.</td>
</tr>
<tr>
<td>1413200334</td>
<td>Adjustable Swivel w/ Footplate Includes Handle Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware for up to 5&quot; Frames.</td>
</tr>
<tr>
<td>500276</td>
<td>Pivot Housing.</td>
</tr>
</tbody>
</table>

### 3x5 Tube With 3x4 Plate

<table>
<thead>
<tr>
<th>P/N</th>
<th>F2 MARINE AND RECREATIONAL JACKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1413060334</td>
<td>F2 Twin Track Model 3&quot;x 4&quot; Pivot Housing. Includes Handle Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware.</td>
</tr>
<tr>
<td>1413050334</td>
<td>F2 Wide Track Model 3&quot;x 4&quot; Pivot Housing. Includes Handle Hold-up Feature &amp; Weld-on Mounting Bracket &amp; Hardware.</td>
</tr>
<tr>
<td>500277</td>
<td>Pivot Housing.</td>
</tr>
</tbody>
</table>
Adjusting the Swivel Mount Height, F2® Jack

Loosening factory torqued nuts and bolts on your swivel mount:
1. Cover your work area with a piece of cardboard or a towel to protect the finish on your jack.
2. Position the jack firmly on a bench at waist level.
3. Turn mounting bracket so that the pull pin is toward the caster(s).
4. Brace the gearbox against your hip and firmly grip the caster.
5. Loosen the half inch nut inside the swivel mount by pulling toward your body.

Adjusting Swivel Mount Height (If Necessary):
With jack removed from trailer, loosen the two swivel fasteners until the slide block moves freely along outer tube. To access the upper bolt be sure the swivel bracket is rotated in the horizontal (3” mounting) position as shown. Adjust swivel mount to desired location and re-torque to 60-70 ft-lbs. After adjustment, check for proper swivel and pin engagement.

Required Tools:
3/4 Socket, Ratchet Wrench, Torque wrench.

6. Remove the nut from the back of the swivel mount.
7. Pull the pull pin and remove the swivel mount.
8. Loosen the socket head cap screw with the 5/16 hex wrench.
9. Adjust the mount height.
10. Re-torque the nut on the slide block to 60 ft-lbs.

Final Steps:
11. Replace the swivel mount making sure that the washer is still in place.
12. Replace the nut on the back of the swivel mount.
13. Re-torque the nut on the back of the swivel mount to 60 ft-lbs.
14. You are now ready to enjoy your Fulton F2 Jack.
Jack Replacement Quick-Reference Guide

NOTES: This Quick Reference Guide is not intended to supplement your original jack instruction sheet. This guide is only intended to help identify your jack for purposes of service and part replacement.

While servicing your jack, make sure it is not under load.

Replacement parts are intended for worn jack parts. If your jack has been damaged, replace it to prevent unsafe conditions.

Help us help you!
To ensure you receive the most accurate, prompt service possible, collect as much of the following information as possible before calling. If more than one item in a group seems to fit your jack, note all that apply and what about your jack that makes it fit that category. Some helpful pictures are shown at the bottom of the next page.

Jack Series and Capacity (Available on product label or in stamped marking)

Handle Style (Available by inspection)

Plunger Pin Size (Available by inspection, not a feature on all jack models)

Mount Type (Available by inspection. Note if your mount is welded or bolted to your trailer tongue.)
Foot/Wheel Type (Available by inspection)

Removable Wheel (Wheels may also be fixed to the jack)

Removable Foot (Feet may also be fixed to the jack)

No Foot

Drop Leg

Some Examples of whole jacks are below

Top-Wind, Eagle Claw Knob, 1/2” Plunger Pin, Snap-Ring Mount, Fixed Regular Foot

Top-Wind, Eagle Claw Knob, A-Plate, Removable Wheel

Side-Wind, Teardrop Knob, Internal Gearbox, 1/2” Plunger Pin, Bolt-Thru I Mount, No Foot

Side-Wind, Teardrop Knob, External Gearbox, Tube Mount, Fixed Large Foot

Rack Jack, Teardrop Knob, Bolt-on

2 of 3
Assembly Quick-Reference Guide

**Side-Wind Jack Assembly:**
1) Carefully remove all parts from the gearbox. The grooved pin is very secure in place and you may need to rotate the jack handle to reveal and remove it.
2) Place the flat washer over stem at the bottom of the gearbox.
3) Place the solid pin through the hole in the stem and place the gear over the solid pin so that the solid pin rests in the slot on the gear that does NOT go across the entire gear. The lower gear should be the larger of the two gears if the gears are a different size.
4) If you have an internal gearbox, install the bushing from inside the jack tube.
5) Insert the handle through the bushing and the second gear. Be sure the gear teeth are fully engaged and the handle is sticking out the far side of the jack after this step.
6) The grooved pin must now by inserted through the second gear and the handle. It may be necessary to rotate the handle 1/4 turn to expose the hole in the handle. The groove pin will fit very tightly and should be installed carefully to avoid damage to the jack body. Make sure the pin is centered in the handle to ensure smooth cranking.
7) Re-install the cap with even pressure, or with the bolts and nuts as it was removed.
8) Be sure the jack is assembled properly and functions as new before using it to support a load.

**Bolt-Thru Assembly:**
Place the jack bracket into the recessed opening of the mount. Place the small end of the bushing into the jack bracket and onto the bolt. Tighten until there is little movement in the bushing.

**Snap Ring Assembly:**
Place the jack bracket over the mount so that the snap ring groove is reachable on the inside of the jack bracket. Insert the snap ring into the groove. Be sure the snap ring is fully seated in the groove.

**Plunger Pin Assembly:**
First select the appropriate hole for the plunger pin. When viewing the jack from the crank side, 3/8” pins fit into the left hole, 1/2” plunger pins fit into the right hole. Also check that the mating bracket has the correct size holes in it.
1) Start the plunger pin through the jack bracket and place the spring and washer on the plunger pin before fully inserting the plunger pin through the jack bracket.
2) The spring and washer must be compressed to allow the cotter pin to be properly inserted into the plunger pin.
3) Be sure the jack is assembled properly and functions as new before bending the cotter pin to secure the plunger pin assembly and before using it to support a load.
Under both the standard and enhanced lighting schemes, when traveling straight forward, the amber (outside) lights flash in unison with the tractor’s amber lights on the high intensity at approximately 100 pulses per minute, and the low intensity of the red (inside) lights are on constantly.

With the standard wire harness in place, when a turn is being signaled, the amber light signaling the turn will increase flashing to approximately 120 pulses per minute with the amber light on the opposite side changing to a constant high intensity light. This mirrors the amber light on the tractor. Both red lights, however, remain on a constant low intensity.

To meet the enhanced lighting standard, introduce Electronic AG Light Enhanced Module to the implement’s wire harness, and simply add red lights that have an active high intensity along with an additional RH and LH wire to these red lights. With this enhanced AG lighting system, during a turn the red light next to the amber turn side light will rapidly flash on the high intensity in unison with the amber light, and the red light on the opposite side will remain constant on the high intensity. This is a dramatic safety feature to better signal (to everyone) turns by tractors and implements.

Normal Driving Mode
1. Red tail lights (low filament) steady burn if turned on.
2. Amber warning lights flashing in unison with tractor at 60 to 85 flashes per minute.

Turning Mode
1. Amber flashing warning light and red light opposite the direction of turn shall become steady burning. The red light is on high filament.
2. Amber flashing warning light in direction of turning shall increase in flashing a minimum of 20 flashes per minute. In addition the red light in the direction of turning shall change from steady burn to flash in unison with the amber turn light and will flash from high red to low red filament.

NOTES:
1. ELECTRONIC CONVERTER SUPPLIED WITH CIRCUIT PROTECTION ON RED AND BLACK LEADS

Rev. 02/10
**Normal Driving Mode**
1. Red tail lights (low filament) steady burn if turned on.
2. Amber warning lights flashing in unison with tractor at 60 to 85 flashes per minute, controlled by flasher in tractor.
3. Red stop lights (High Filament) steady burn if the brake is applied.

**Turning Mode**
1. Amber flashing warning light and red light opposite the direction of turn shall become steady burning. The red light is on high filament.
2. Amber flashing warning light in direction of turn shall increase in flashing a minimum of 20 flashes per minute. In addition the red lamp in the direction of turning shall change from steady burn to flash in unison with the amber turn light and will flash from high red to low red filament.
3. If brake is applied during turning mode there will be no change in the state of the light; hence turning mode overrides brake signal.

**NOTES:**
1. ELECTRONIC CONVERTER SUPPLIED WITH CIRCUIT PROTECTION ON RED AND BLACK LEADS.
**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 ensure 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. Disconnect trailer from tow vehicle. 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.
ABCD/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. Disconnect trailer from tow vehicle. 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 Multi Stage/Maintenance Charger. Tekonsha charger 2024-07 is recommended for proper charging.
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. Tekonsha charger 2024-07 is recommended for proper charging.
5. To only charge the breakaway battery when vehicle is running, a battery isolator may be installed in the 12 volt supply line (RED 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.

**Battery Data Chart**
- **12 VOLT**
- Maximum charge current must be limited to 1.2 amps
- **Length** = 3.54” **Width** = 2.76” **Height** = 4.13”
- **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 MULTI STAGE CHARGER**

**ABCD (Accelerated Battery Charging Device)**

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.
- Check for defective resistor or loose wiring at resistor (hydraulic units only).
- Check for defective or worn magnet(s).
- Check for damaged or worn connector between towing vehicle and trailer.
- Ensure correct controller is installed.

INTERMITTENT OR SURGING BRAKES
- Check for defective circuit breaker.
- 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 magnets 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 shorted circuit.
- Check for proper variable resistor resistance (external resistor or controller) to trailer (for hydraulic units only).
- Worn or defective magnet.
- Check brake adjustment. Check for bent backing plate flange.
- Check for contaminated brake linings.
- Check brake system wiring to ensure proper gauge wiring is used. Ensure wiring is not connected through the stop light 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 settings (level or gain).

GRABBING OR LOCKING BRAKES
- Check for improperly installed flanges.
- Check for contaminated brake linings (grease on linings).
- Check for weak or broken brake shoe return spring.
- Check for out-of-round brake drums.
- Ensure a variable resistor is installed (if necessary) (hydraulic units only).
- Check for variable resistor for proper resistance (hydraulic units only).

GRABBING OR LOCKING BRAKES (Continued)

INOPERATIVE BREAKAWAY SWITCH
- Check for dead or weak 12-volt battery, on trailer.
- Check all wiring and connections.
- Check brakeaway 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 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

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL-KO</td>
<td>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.</td>
</tr>
<tr>
<td>Dexter</td>
<td>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.</td>
</tr>
<tr>
<td>Hayes</td>
<td>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.</td>
</tr>
<tr>
<td>Fayette</td>
<td>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.</td>
</tr>
</tbody>
</table>

## Brake Size Identification

<table>
<thead>
<tr>
<th>Identification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axle Identification</td>
<td>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.</td>
</tr>
<tr>
<td>Brake Drum / Shoe Size</td>
<td>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.</td>
</tr>
</tbody>
</table>

## Magnet Identification

Magnets can be identified by the color of the wire used.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Identification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexter</td>
<td>7” X 1 1/4”</td>
<td>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.</td>
</tr>
<tr>
<td>Dexter</td>
<td>10” X 1 1/2”</td>
<td>The magnet wires for the early model round magnets are white and the late model oval magnets are yellow.</td>
</tr>
<tr>
<td>Hayes</td>
<td>10” X 1 5/8”</td>
<td>The magnet wires for the early model round magnets are red and the late model oval magnets are green.</td>
</tr>
<tr>
<td>AL-KO</td>
<td>10” X 2 1/4”</td>
<td>It will have light green wires.</td>
</tr>
<tr>
<td>Hayes</td>
<td>10” X 2 1/4”</td>
<td>The early model round will have red wires and the late model will have oval green wires.</td>
</tr>
<tr>
<td>Dexter</td>
<td>10” X 2 1/4”</td>
<td>It uses green wires.</td>
</tr>
<tr>
<td>Fayette</td>
<td>10” X 2 1/4”</td>
<td>The round magnets will have white wires (obsolete).</td>
</tr>
<tr>
<td>AL-KO</td>
<td>12” X 2”</td>
<td>It will have white wires.</td>
</tr>
<tr>
<td>Hayes</td>
<td>12” X 2”</td>
<td>The early model round magnet will have red wires, the late model will be an oval magnet with white wires.</td>
</tr>
<tr>
<td>Dexter</td>
<td>12” X 2”</td>
<td>It will have white wires.</td>
</tr>
<tr>
<td>Dexter Centerline</td>
<td>12” X 2”</td>
<td>The 4.5K axles will have red orange wires, the 6/7K axles will have red wires (obsolete for both sizes).</td>
</tr>
</tbody>
</table>

**Technical Information is Current as of the Printing of this Catalog. Contact Technical Service for Periodic Updates.**
INSTRUCTIONS FOR THE BENCH TESTER

Many apparent brake control “failures” are the result of either faulty wiring or improper setup. The Tekonsha® Bench Tester is a test device designed to assist in determining if a brake control is working properly. This unit allows you to check a brake control for output, independent of vehicle wiring. The Bench Tester can simulate many fault conditions including open ground, short circuit, open load, and more.

To Use Bench Tester:
1. Turn off the power of the Bench Tester.
2. Disconnect the brake control from the tow vehicle.
3. Strip the insulation from the brake control’s wires to about 1/4 inch and clip the matching color/function alligator clip of its corresponding stripped wire. DO NOT REVERSE THE GROUND AND POWER WIRES AS YOU MAY PERMANENTLY DAMAGE THE BRAKE CONTROL.
4. Turn on the power of the Bench Tester.

If the control being tested is manufactured by Tekonsha:
1. The brake control’s LED should glow green if it has a bi-colored LED. The display should show a “.c” if it has a digital readout. If you have the P3 brake control, you will see the Tekonsha logo. These conditions indicate a normal load connection.
2. Now set the brake control’s power setting to maximum and actuate the control’s manual override lever. The output voltage on the Bench Tester’s voltmeter should read about 12 volts and the brake control LED display should glow bright red or show either 12 or 13. Release the manual lever. Lay the control on a flat surface and follow the directions for leveling the sensor per manufacturer’s instructions.
3. Depress and hold the Bench Tester’s brake switch.
   A. If you are testing a proportional control, tilt the brake control by moving the front of the control up to about 30-45 degrees to fully activate the accelerometer. The voltage on the tester’s meter should again read approximately 12V.
4. Depress the vehicle’s brake pedal and/or engage the brake control’s manual override.

NOTE:
If the brake control works normally on the Bench Tester then the problem is likely in the vehicle wiring or the control setup. If you check the vehicle/trailer wiring and it appears to be normal you can refer to our product catalog or visit our web site (www.tekonsha.com) for control setup and / or additional troubleshooting assistance.

CAUTION: Tekonsha controls are built to withstand many electrical fault conditions without damage to their ultimate performance. Please be aware that some competitive products may not be capable of surviving the same punishment so care should be exercised when testing these units.

Brake Voltage must register at least 10 Volts. Brake Control Current Output should register at least:
12 Amps for two (2) axle trailers, or 18 Amps for three (3) axle trailers.

NOTE:
If the brake control will not generate 18 or more amps when used with three or more axle trailers BE SURE that you are using a brake control designed to deliver this performance.

If you discover a performance or wiring problem, look for one or more of the following fault conditions:
1. Improper wiring of the brake control to the vehicle’s power and/or battery ground. (As with any electronic device, Cequent™ Electrical Products recommends grounding all brake controls directly to the vehicle battery to ensure the proper performance of the control’s advanced circuitry.)
2. Defective or improper wiring of the trailer connector.
3. Broken, dirty or corroded trailer connector pins.

4. Open brake magnets, or open, broken or shorted wiring.
5. Defective brake control.

NOTE:
If the control being tested is a time-actuated device, you will see the voltage progressively “ramp-up” to the control’s maximum output.

Instructions for the Current Monitor

The Current Monitor is a testing device designed to assist in determining whether a tow vehicle’s trailer connector has been wired properly. This unit is also an excellent diagnostic tool for the installation, setup and troubleshooting of electric trailer brake controls and may be used to level and pre-set a brake control when a trailer is not available.

To Use Current Monitor:
1. Simply plug the tester into the vehicle’s trailer connector.
2. Sitting in the driver’s seat, position the switch (located between the amp meter & voltmeter gauges) to the “Trailer Brakes” position.
3. Then position the switch labeled “Number of Axles” to the appropriate position for the trailer that is expected to be towed.
4. Now, activate each function indicated by the four LED lights across the front of the test unit. Once it has been determined that all lighting connections are working properly, test the output of the vehicle’s trailer brake control.

NOTE:
Be sure the brake control has been properly leveled per manufacturer’s instructions.

5. Depress the vehicle’s brake pedal and/or engage the brake control’s manual override.

Brake Voltage must register at least 10 Volts. Brake Control Current Output should register at least:
12 Amps for two (2) axle trailers, or 18 Amps for three (3) axle trailers.

NOTE:
If you discover a performance or wiring problem, look for one or more of the following fault conditions:
1. Improper wiring of the brake control to the vehicle’s power and/or battery ground. (As with any electronic device, Cequent™ Electrical Products recommends grounding all brake controls directly to the vehicle battery to ensure the proper performance of the control’s advanced circuitry.)
2. Defective or improper wiring of the trailer connector.
3. Broken, dirty or corroded trailer connector pins.

TECHNICAL INFORMATION IS CURRENT AS OF THE PRINTING OF THIS CATALOG. CONTACT TECHNICAL SERVICE FOR PERIODIC UPDATES.
TOOLS / TESTERS - TECHNICAL

INSTRUCTIONS FOR TRAILER TESTER

The Trailer Tester (Part #8010) is designed to help you quickly identify problems in the wiring of the trailer such as opens, shorts, incorrect wiring, etc. This is done by testing the Left Turn, Right Turn, Tail/Marker, Brake and Back Up circuits on the trailer, by indicating the approximate amount of current used in each circuit. It will also test the voltage of the external battery connected to the trailer charge circuit (i.e. trailer battery).

1. Check to see that the mating surfaces of the trailer wiring connector matches the Trailer Tester connector. All connector surfaces should be clean and free of dirt. For proper operation, make sure the trailer tester battery is fully charged. Plug the trailer connector firmly into the Trailer Tester. Be sure that the connector is fully inserted.

2. Turn the tester ON by pressing the ON button. All LEDs will cycle in order from top to bottom and left to right and will flash once. The tester is ready for use.

3. INDICATOR “LED” LIGHTS – POWER ROW ONLY (Measuring the internal battery of the tester – LED will remain lit after power has been turned on)
   - Green LEDs 2, 3 and 4 mean that the internal battery is OK to perform tests.
   - Red LED 1 flashing means that the internal battery needs to be charged (see “Charging the Internal Battery” instructions below) or may need to be replaced.
   - Red LED 5 indicates that the battery is faulty or overcharged. Battery may need to be replaced.

4. CHARGING THE INTERNAL BATTERY

**CAUTION**

ONLY USE THE CHARGER (part no. 8008) PROVIDED WITH THE 8010 TESTER

- When the charger is plugged into the charger socket, Red LED 5 on the Power Row flashes if the unit is ON.
- If the unit is OFF, no LEDs will be lit, but the battery will still charge.
- The LED on the charger is RED while charging.
- The LED on the charger will turn GREEN when the battery is fully charged.

**NOTE:** The above LED light reference numbers are used in the following instructions for all rows.

5. MANUAL AND AUTO TEST – LEFT/STOP, RIGHT/STOP, TAIL, BRAKE, BACKUP CHANNELS

AUTO TESTING (measuring the amount of load on each channel):

- Press the AUTO TEST button. When pressed, its indicator Green LED begins to flash.
- Each channel will be tested from top to bottom
- Red LED 5 will flash as its channel is tested
- Green LED(s) will remain ON to indicate the amount of load. (See Step 6 for LED display readouts)
- See Step 7 for LED fault indication readouts.

MANUAL TESTING (visual test of trailer lighting)

- Depressing any manual button will cause that same channel to flash 11 times. This will allow you to walk around the trailer and confirm that lights are functioning properly.
- The Trailer Tester will automatically shut down after three minutes to conserve the battery.
- See Step 7 for LED fault indication readouts.

**NOTE:** To CLEAR THE DISPLAY or TURN OFF AUTO TEST, simply press the auto test button. Then you are ready to test again.

6. HOW TO READ THE LED DISPLAY (for approximate load readouts)

LEFT/STOP, RIGHT/STOP and BACKUP Load Readouts:

- Green LED 1 represents .25 amperes
- Green LED 2 represents 2 amperes
- Green LED 3 represents 3 amperes
- Green LED 4 represents 4 amperes

TIALE Load Readout:

- Green LED 1 represents .25 amperes
- Green LED 2 represents 4 amperes
- Green LED 3 represents 6 amperes
- Green LED 4 represents 8 amperes
- Green LED 5 represents 8 axles
- Green LED 6 represents 12 axles

**NOTE:** All current measurements are standard to RV.

7. FAULT INDICATION (See graph below)

- Red LED(s) 5 flashing on the affected channel represents: INTERCHANNEL SHORT OR REVERSED WIRES
- Red LED 5 solid on the affected channel represents: NO LOAD/OPEN CIRCUIT
- Green LEDs 1-4 and Red LED 5 all solid on the affected channel represents: OVERLOAD
- Green LEDs 1-4 and Red LED 5 flashing on the affected channel represents: SHORT CIRCUIT TO GROUND

8. EXTERNAL BATTERY (Measures the trailer battery’s (if present) open circuit voltage)

- Press the EXT BAT button. When pressed, its indicator Red LED will light.
- Voltage will be displayed by lit LEDs in the Power Row only.
- Green LED’s 2 and 3 mean that the external battery has normal voltage.
- Red LED 1 flashing means that the external battery needs to be charged or may need replacement.
- Red LED 5 indicates that the battery is faulty or overcharged. Battery may need replacement.

**NOTE:** This test will automatically stop after a few seconds and the red light will go out.

**NOTE:** This test does not indicate the amount of charge left in the trailer battery. (Excludes breakaway battery)

9. For technical assistance and warranty information call: 1-888-785-5832 or www.tekonsha.com

**FAULT INDICATION GRAPH**

P/N 8007 REV B