



ROADRUNNER/HD

HEADER TRANSPORT



ROADRUNNER HEADER TRANSPORT MAINTENANCE

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**INNOVATING
THE FUTURE OF
AGRICULTURE**

TRANSPORTATION

UNVERFERTH MFG. CO., INC.
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SECTION IV

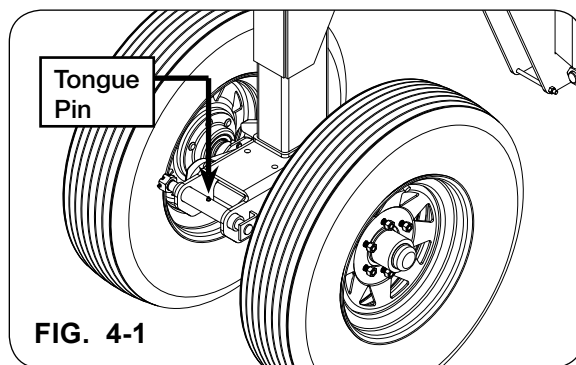
Maintenance

General Maintenance Information	4-2
Grease Gun Lube Points Lube Cycle.....	4-2
Miscellaneous Lube Points	4-2
Front Pivot Thrust Bearing	4-3
Hub Maintenance.....	4-3
Brake Cleaning and Inspection	4-4
Brake Lubrication.....	4-4
Magnets.....	4-4
Shoes and Linings.....	4-5
How to Measure Voltage.....	4-5
How to Measure Amperage.....	4-6
Brake Drum Inspection.....	4-7
Bearing Inspection	4-7
Bearing Lubrication.....	4-7
Troubleshooting — Brakes	4-8
Storage.....	4-8
Break Away Kit.....	4-8
Wheels and Tires.....	4-9
Wheel Nut Torque Requirements.....	4-9
Tire Pressure	4-9
Tire Warranty.....	4-10
Complete Torque Chart.....	4-10
Schematics.....	4-11

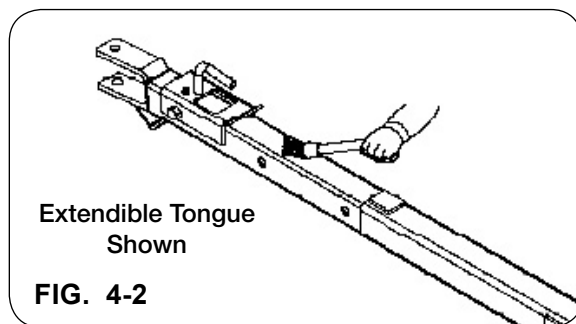
General Maintenance Information

For running gear and bearing longevity, as well as ease of operation, periodic lubrication is essential. This also helps to flush out moisture and dirt. Lubricate with an SAE multi-purpose grease.

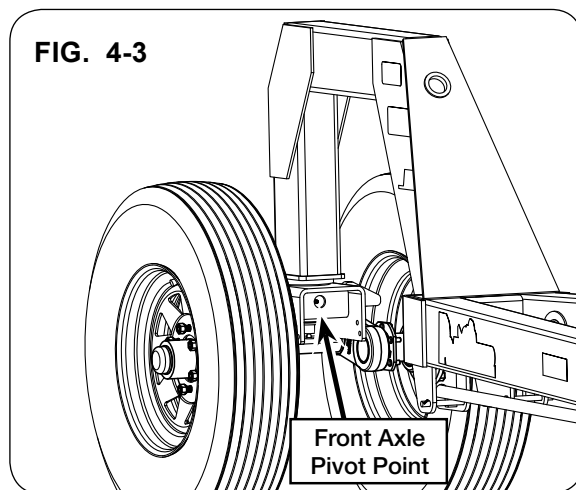
Tongue Pin (Front Axle)
- 1 Point Grease Once/Year



Extension Part of Extendable Tongue
- Oil or Grease When Needed



Front Axle Pivot Point - 5 Hours



Wheel Bearing - 6 Points Repack Grease Yearly

The wheel bearings should be cleaned, replaced, and adjusted once per season. See hub maintenance section for proper assembly information.

Front Pivot Thrust Bearing

The thrust bearing located between the front axle and the fifth wheel arm should be cleaned, greased, and adjusted once per season. The front axle must be removed from the fifth wheel arm and thrust bearing removed for proper lubrication.

Periodically during usage, check the following:

1. Tongue pivot pin.
2. Check all hardware for tightness.
3. Tire pressure-follow manufacturer's specification (too high or too low of pressure causes abnormal tread wear.)
4. Check wheel lug nuts.

After each season's use:

1. It is recommended for improved tire life that tires be rotated diagonally.

Hub Maintenance

1. Lubricate the seal lip with grease.
2. While rotating the hub, place the hub on the spindle, making sure not to damage the seal lip.
3. Be sure the outer cone slides on the spindle and into the cup.
4. Assemble the washer and nut.
5. While rotating the hub, torque the spindle nut to 20-25 ft.-lbs.
6. Back the spindle nut off until the next slot.
7. Insert the cotter pin (9391-035) and bend the ends to secure.
8. Install the hub cap.

NOTE: Reference hub parts pages in PARTS section.

IMPORTANT

- *For maximum bearing life, never tow the Roadrunner in excess of 20 mph.*

Brake Cleaning and Inspection

Your header transport brakes must be inspected and serviced immediately if a loss of performance is experienced. With normal use, servicing at one year intervals is usually adequate. With increased usage, this work should be performed more frequently as required. Magnets and shoes must be changed when they become excessively worn or scored, a condition which can reduce vehicle braking. Clean the backing plate, magnet arm, magnet, and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect for any loose or worn parts, stretched or deformed springs and replace as necessary.

WARNING

- **POTENTIAL ASBESTOS DUST HAZARD - SOME BRAKE LININGS MAY CONTAIN ASBESTOS DUST, WHICH HAS BEEN LINKED TO SERIOUS OR FATAL ILLNESSES. CERTAIN PRECAUTIONS NEED TO BE TAKEN WHEN SERVICING BRAKES:**
 1. Avoid creating or breathing dust.
 2. Avoid machining, filing or grinding the brake linings.
 3. Do not use compressed air or dry brushing for cleaning (dust can be removed with a damp brush).

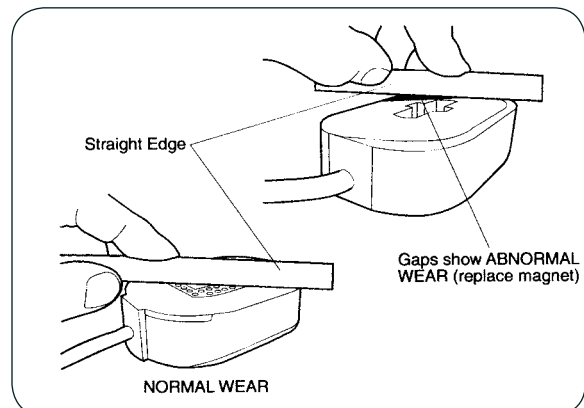
Brake Lubrication

Before reassembling, apply a light film of grease or anti-seize compound on the brake anchor pin, the actuating arm bushing and pin, and the areas on the backing plate that are in contact with the brake shoes and magnet lever arm. Apply a light film of grease on the actuating block mounted on the actuating arm.

NOTE: Do not get grease or oil on the brake linings, drums or magnets.

Magnets

Your electric brakes are equipped with high-quality electromagnets that are designed to provide the proper input force and friction characteristics. Your magnets should be inspected and replaced if worn unevenly or abnormally. Use a straightedge to check magnet condition. For best results, the magnet should be flat. Even if wear is normal as indicated by your straightedge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of the magnet. It is also recommended that the drum armature surface be refaced when replacing magnets. Magnets should also be replaced in pairs - both sides of an axle.



Brake Cleaning and Inspection

Shoes and Linings

A simple visual inspection of your brake linings will tell if they are usable. Replacement is necessary if the lining is worn (to within 1/16" or less), contaminated with grease or oil, or abnormally scored or gouged. Hairline heat cracks are normal in bonded linings and should not be cause for concern. When replacement is necessary, it is important to replace both shoes on each brake and both brakes of the same axle. This will help retain the "balance" of your brakes.

After replacement of brake shoes and linings, the brakes must be re-burnished to seat in the new components. This should be done by applying the brakes 20 to 30 times from an initial speed of 40 m.p.h., slowing the vehicle to 20 m.p.h. Allow ample time for brakes to cool between applications. This procedure allows the brake shoes to seat in to the drum surface.

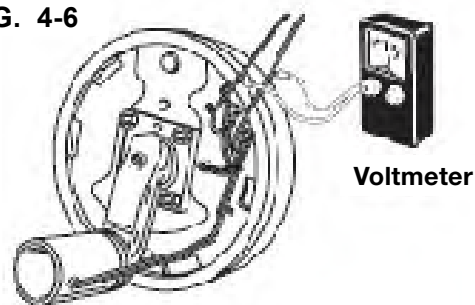
FIG. 4-5



How to Measure Voltage

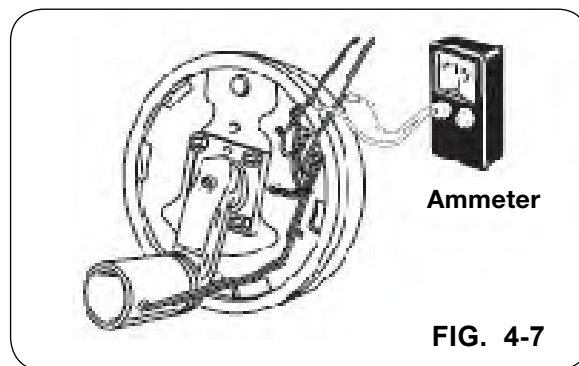
System voltage is measured at the magnets by connecting the voltmeter to the two magnet lead wires at any brake. This may be accomplished by using a pin probe inserted through the insulation of the wires. The engine of the towing vehicle should be running when checking the voltage so that a low battery will not affect the readings. Voltage in the system should begin at 0 volts and, as the controller bar is slowly actuated, should gradually increase to about 12 volts. If the controller does not produce this voltage control, consult your controller manual. The threshold voltage of a controller is the voltage applied to the brakes when the controller first turns on. Lower threshold voltage will provide for smoother braking. If the threshold voltage is too high, the brakes may feel grabby and harsh.

FIG. 4-6



How to Measure Amperage

System amperage is the current flowing in the system when all the magnets are energized. The amperage will vary in proportion to the voltage. The engine of the tow vehicle should be running with the trailer connected when checking the trailer braking system. One place to measure system amperage is at the BLUE wire of the controller which is the output to the brakes. The BLUE wire must be disconnected and the ammeter put in series into the line. System amperage draw should be as noted in the following table.



Make sure your ammeter has sufficient capacity and note polarity to prevent damaging your ammeter. If a resistor is used in the brake system, it must be set at zero or bypassed completely to obtain the maximum amperage reading. Individual amperage draw can be measured by inserting the ammeter in the line at the magnet you want to check. Disconnect one of the magnet lead wire connectors and attach the ammeter between the two wires. Make sure that the wires are properly reconnected and sealed after testing is completed. The most common electrical problem is low or no voltage and amperage at the brakes. Common causes of this condition are:

1. Poor electrical connections
2. Open circuits
3. Insufficient wire size
4. Broken wires
5. Blown fuses (fusing of brakes is not recommended)
6. Improperly functioning controllers or resistors

Another common electrical problem is shorted or partially shorted circuits (indicated by abnormally high system amperage). Possible causes are:

1. Shorted magnet coils
2. Defective controllers
3. Bare wires contacting a grounded object

Finding the cause of a short circuit in the system is done by isolating one section at a time. If the high amperage reading drops to zero by unplugging the trailer, then the short is in the trailer. If the amperage reading remains high with all the brake magnets disconnected, the short is in the trailer wiring. All electrical troubleshooting procedures should start at the controller. Most complaints regarding brake harshness or malfunction are traceable to improperly adjusted or nonfunctional controllers. See your controller manufacturer's data for proper adjustment and testing procedures. For best results, all the connection points in the brake wiring should be sealed to prevent corrosion. Loose or corroded connectors will cause an increase in resistance which reduces the voltage available for the brake magnets.

Brake Drum Inspection

The drum surface should be inspected for excessive wear or heavy scoring. If worn more than .020" oversized, or the drum has worn out of round by more than .015", then the drum surface should be re-machined. If scoring or other wear is greater than .090" on the diameter, the drum must be replaced. When turning the drum surface, the maximum re-bore diameter is as follows:

The machined inner surface of the brake drum that contacts the brake magnet is called the armature surface. If the armature surface is scored or worn unevenly, it should be re-faced to a 120 micro inch finish by removing not more than .030" of material. To insure proper contact between the armature face and the magnet face, the magnets should be replaced whenever the armature surface is re-faced and the armature surface should be re-faced whenever the magnets are replaced.

NOTE: It is important to protect the wheel bearing bores from metallic chips and contamination which result from drum turning or armature re-facing operations. Make certain that the wheel bearing cavities are clean and free of contamination before reinstalling bearing and seals. The presence of these contaminants will cause premature wheel bearing failure.

Bearing Inspection

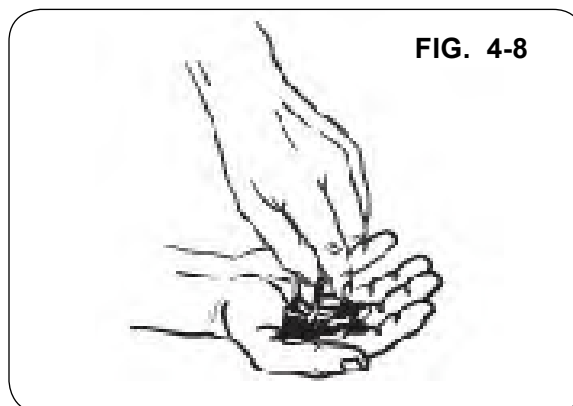
Wash all grease and oil from the bearing cone using a suitable solvent. Dry the bearing with a clean, lint-free cloth and inspect each roller completely.

There are two areas of the brake drum that are subject to wear and require periodic inspection. These two areas are the drum surface where the brake shoes make contact during stopping and the armature surface where the magnet contacts (only in electric brakes).

Bearing Lubrication

Along with bearing adjustment, proper lubrication is essential to the proper function and reliability of your trailer axle. Bearings should be lubricated every 12 months or 12,000 miles. The method to repack bearing cones is as follows:

1. Place a quantity of grease into the palm of your hand.
2. Press a section of the widest end of the bearing into the outer edge of the grease pile closest to the thumb forcing grease into the interior of the bearing.
3. Repeat this while rotating the bearing from roller to roller.
4. Continue this process until you have the entire bearing completely filled with grease.
5. Before reinstalling, apply a light coat of grease on the bearing cup.



Troubleshooting — Brakes

Most electric brake malfunctions, that cannot be corrected by either brake adjustments or synchronization adjustments, can generally be traced to electrical system failure. Voltmeters and ammeters are essential tools for proper troubleshooting of electric brakes. Mechanical causes are ordinarily obvious, i.e. bent or broken parts, worn out linings or magnets, seized lever arms or shoes, scored drums, loose parts, etc. Please consult the following troubleshooting charts to determine the causes and solutions for common problems found in trailer braking systems.

CAUTION

- **BEST BRAKING PERFORMANCE IS ACHIEVED WITH A CONTROLLER SETTING THAT IS JUST SHORT OF WHEEL LOCK UP OR SLIDE. OVERLY AGGRESSIVE BRAKING WHICH RESULTS IN WHEEL LOCK UP AND SLIDING, CAN CAUSE A DANGEROUS LOSS OF CONTROL AND RESULT IN PERSONAL INJURY OR DEATH.**

Storage

Your implement is an important investment. Spend a little time to protect it from destructive rust and corrosion. You will be repaid in longer service life and better performance.

Before placing the implement in storage:

1. Repaint any chipped or scraped areas.
2. Inspect for damaged or worn parts. Replace before next season.
3. Store implement inside, away from livestock.
4. Use blocking to keep implement tires off bare ground.

Break Away Kit

The breakaway system located on the front of the Roadrunner attached to the pick up truck hitch. It requires a fully charged 12V battery, located on the Roadrunner.

Periodically check the battery, charge or replace as needed.

Wheels and Tires

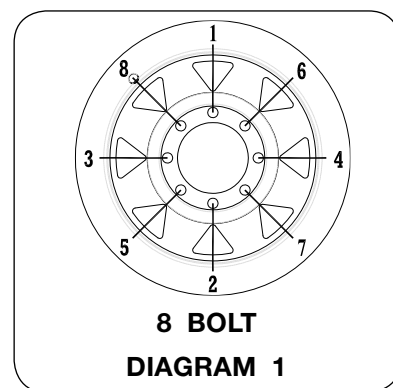
Wheel Nut Torque Requirements

 CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. TORQUE WHEEL NUTS/BOLTS TO VALUES IN TABLE. CHECK TORQUE BEFORE USE, AFTER ONE HOUR OF UNLOADED USE OR AFTER FIRST LOAD, AND EACH LOAD UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THERE-AFTER. AFTER EACH WHEEL REMOVAL START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS..

Failure to check torque before first load may damage wheel nut/bolt seats. Once seats are damaged, it will become impossible to keep nuts/bolts tight. Tighten nuts/bolts to applicable torque value shown in table. Start all nuts/bolts by hand to prevent cross threading. Torque nuts/bolts in the recommended sequence as shown in Diagram 1.

WHEEL HARDWARE	
SIZE	FOOT-POUNDS
9/16-18 (UNF)	110 Ft.-Lbs.



Tire Pressure

The following is to be used as a general guide for tire inflation and figures can vary depending on specific brand of tire used. It is important that tires are inspected after Roadrunner is loaded. Start with minimum pressure indicated. The tire should stand up with no side-wall buckling or distress as tire rolls. Record the pressure needed to support the full load and maintain this pressure to achieve proper tire life. Do not exceed maximum recommended tire pressure.

TIRE SIZE & PRESSURE
225/75 x 15 - 65 PSI
235/80R x 16 - 80 PSI

(All tire pressures in psi)

Wheels and Tires (continued)

Tire Warranty

For questions regarding new tire warranty, please contact your local original equipment tire dealer. Used tires carry no warranty. Following are phone numbers and Websites for your convenience:

Firestone www.firestoneag.com
Phone 800-847-3364

Titan www.titan-intl.com
or Phone 800-USA-BEAR
Goodyear Fax 515-265-9301

Michelin/ www.michelinag.com
Kleber Phone 888-552-1213
Fax 864-458-5538

Carlisle www.carlisletire.com
Phone 800-260-7959
Fax 800-352-0075

Greenball www.greenball.com
Phone nearest location:
California 800-937-5204
Georgia 800-283-4569
Florida 800-935-0200
Indiana 800-426-4068
Tennessee 800-946-9412
Ohio 800-840-7295
Pennsylvania 800-869-6787

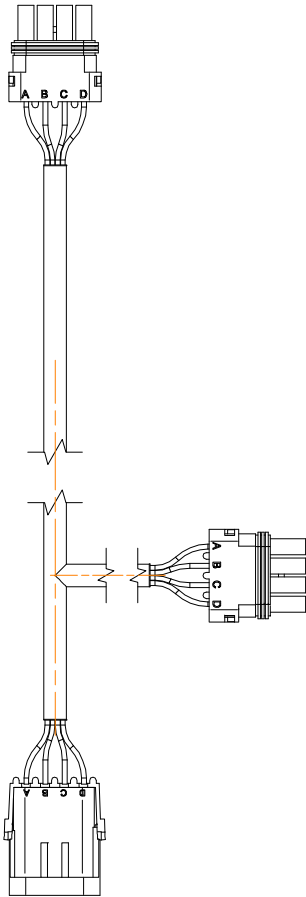
Complete Torque Chart - Capscrews - Grade 5

IMPORTANT

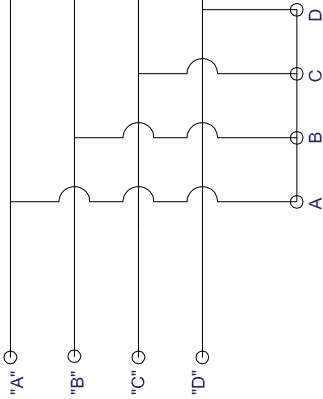
- Grade 5 capscrews can be identified by three radial dashes on head.
- For wheel torque requirements, refer to Wheels and Tires.
- Tighten U-bolts to have the same number of threads exposed on each end.

SIZE	FOOT POUNDS	NEWTON METERS	SIZE	FOOT POUNDS	NEWTON METERS
1/4-20	8-10	11-13	3/4-10	200-220	270-300
1/4-28	9-11	12-15	3/4-16	210-230	285-310
5/16-18	15-17	20-23	7/8-9	330-350	425-475
5/16-24	17-19	23-26	7/8-14	360-380	460-515
3/8-16	25-28	34-38	1-8	500-525	675-710
3/8-24	28-31	38-42	1-14	540-560	730-760
7/16-14	40-45	54-61	1 1/8-7	600-635	815-860
7/16-20	45-50	61-68	1 1/8-12	665-700	920-950
1/2-13	62-68	84-92	1 1/4-7	850-895	1150-1215
1/2-20	68-75	92-102	1 1/4-12	940-990	1275-1340
9/16-12	90-98	22-133	1 3/8-6	1125-1175	1525-1590
9/16-18	100-110	134-148	1 3/8-12	1280-1335	1735-1810
5/8-11	120-135	162-183	1 1/2-6	1500-1560	2035-2115
5/8-18	124-137	168-186	1 1/2-12	1685-1755	2285-2380

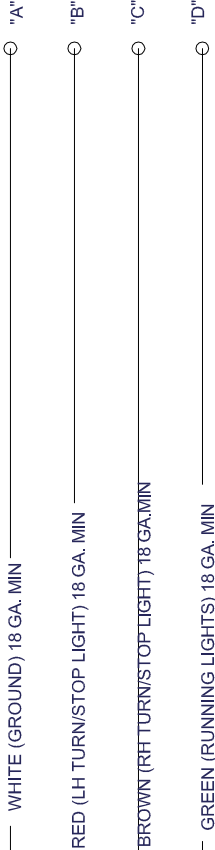
Wiring Harness #31868 for 30' Units — Electrical Schematic



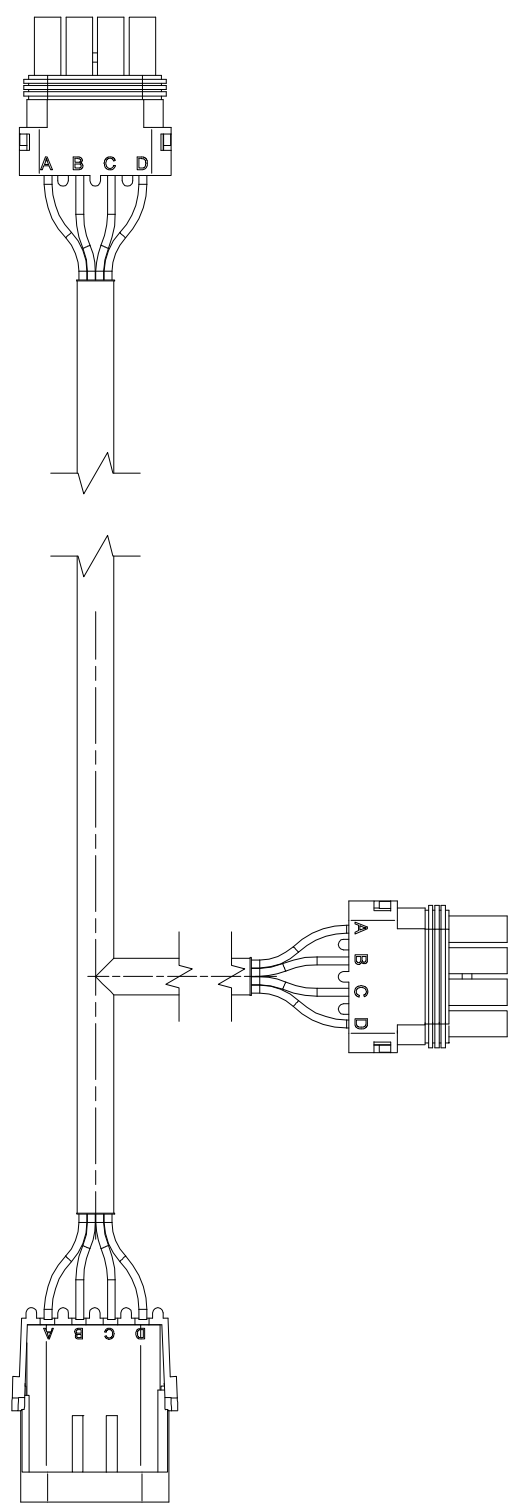
SHROUD SIDE



TOWER SIDE

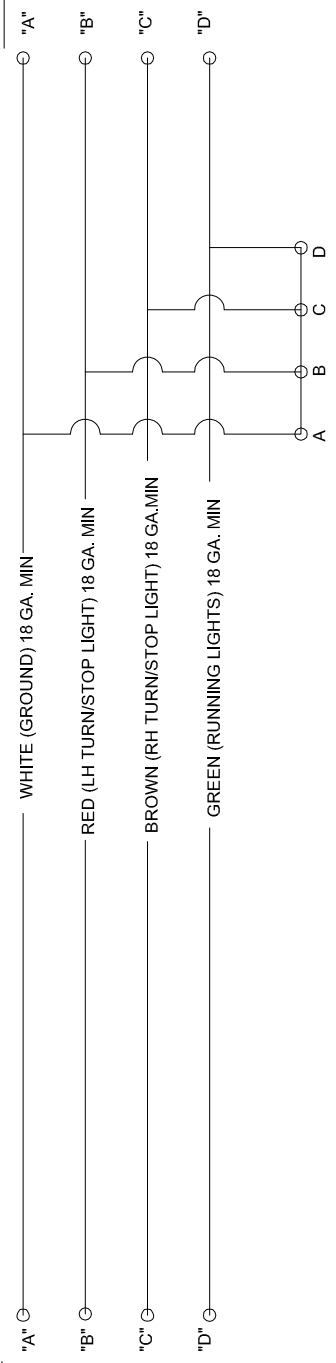


Wiring Harness #31815
for 36', 42' & 48' Units — Electrical Schematic

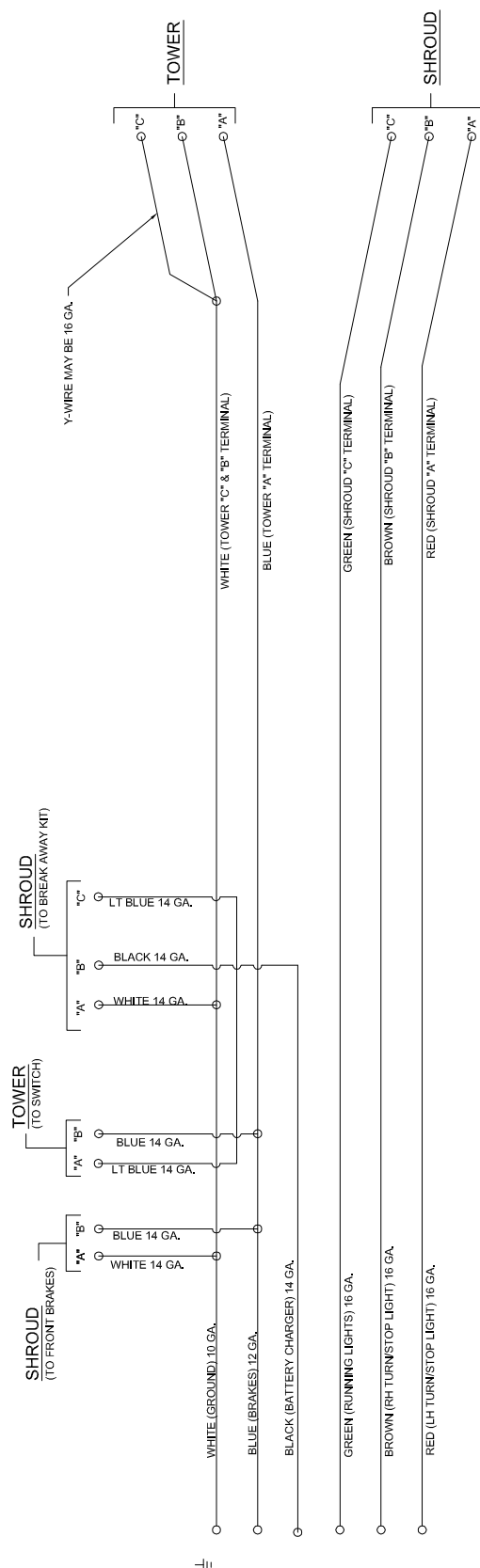
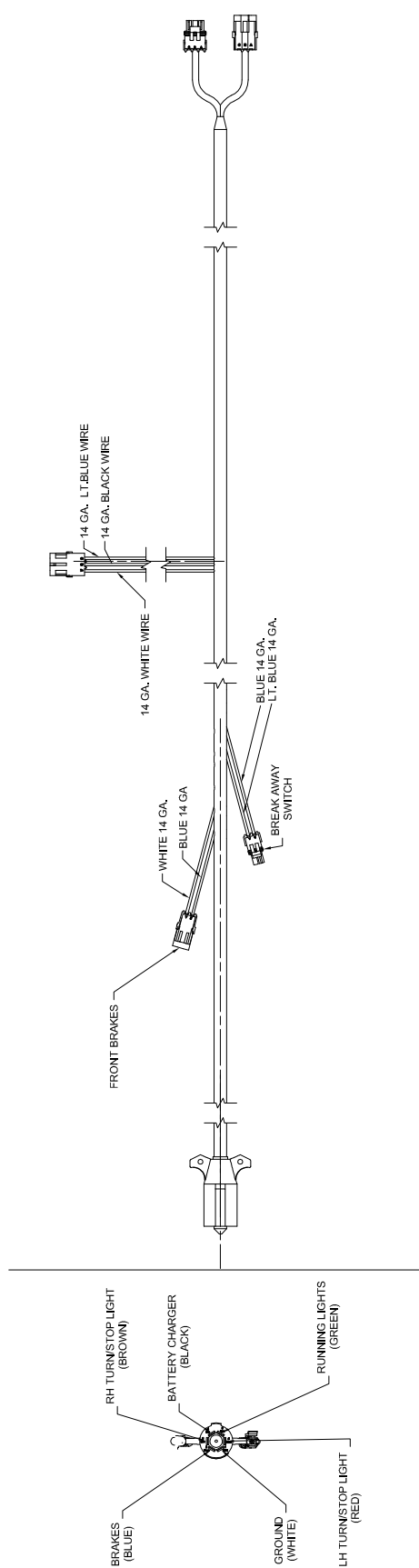


SHROUD SIDE

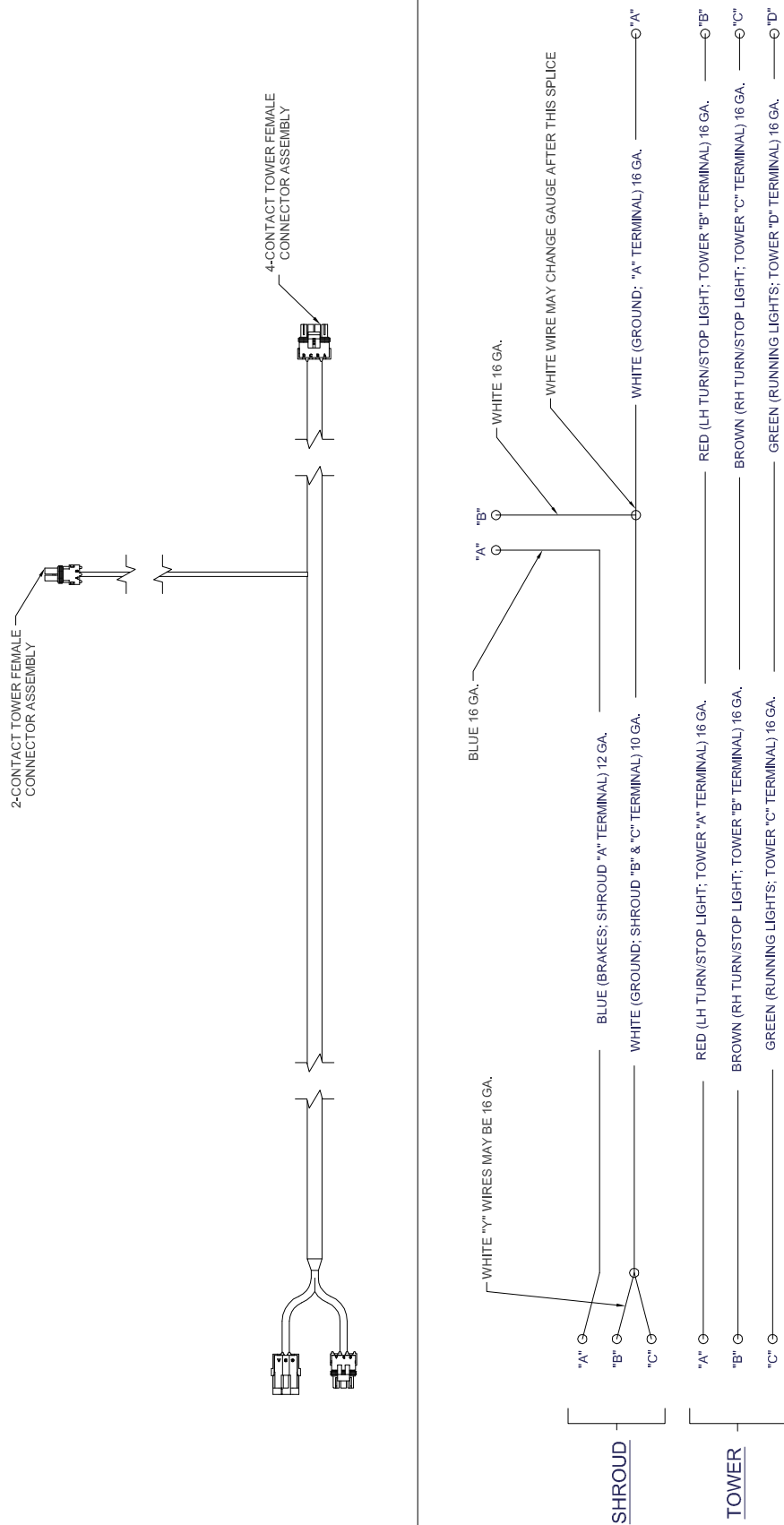
TOWER SIDE



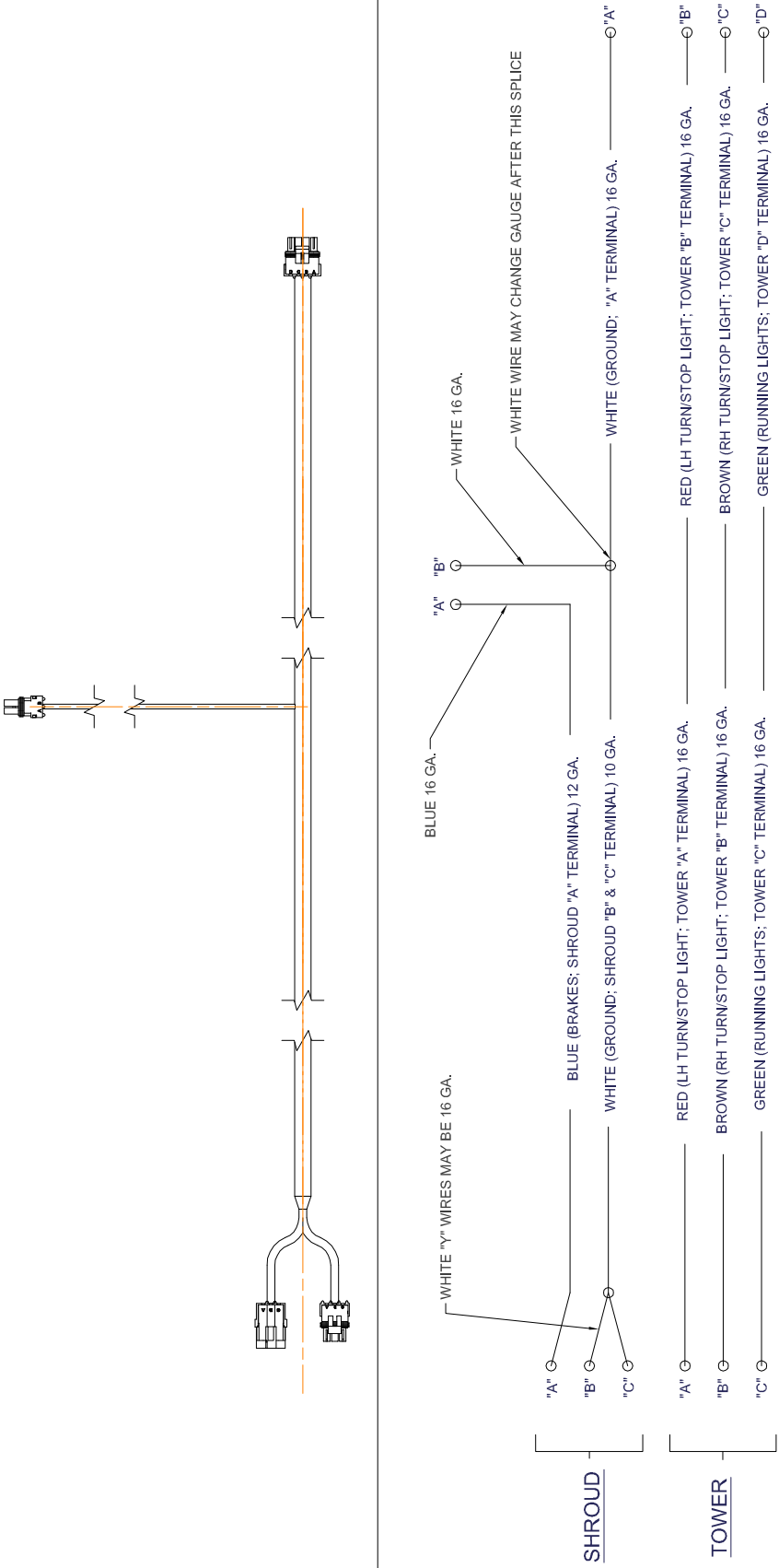
Wiring Harness #32051 – Electrical Schematic



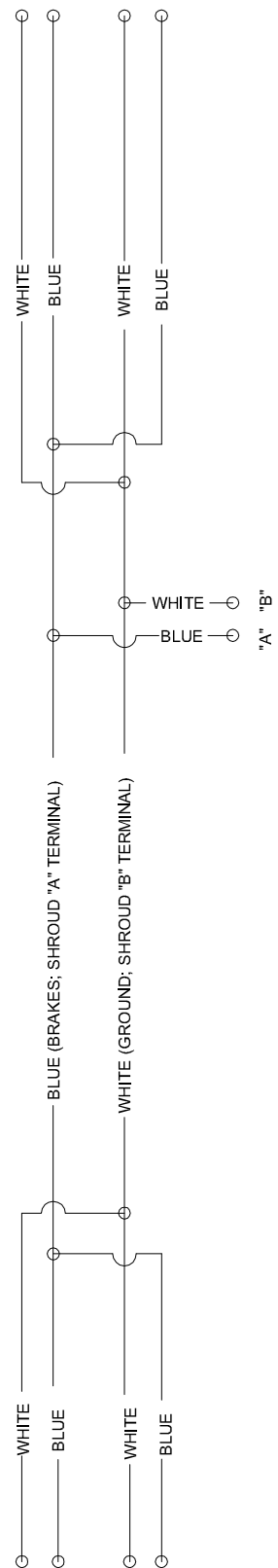
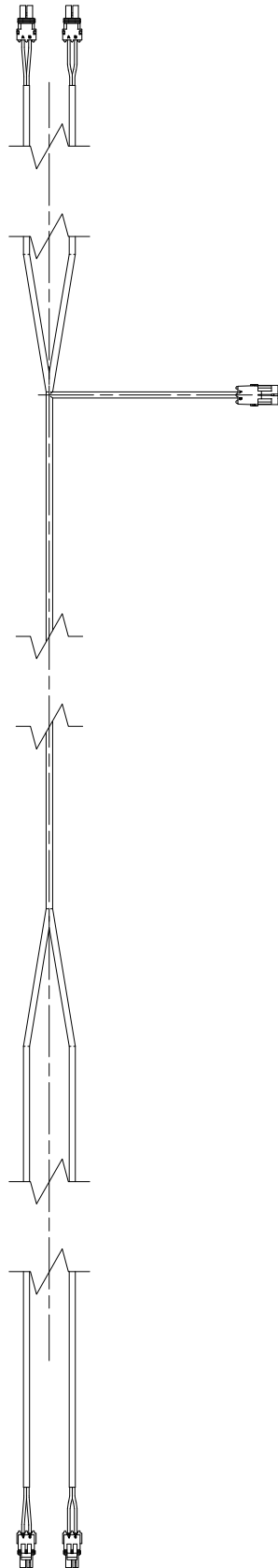
Wiring Harness #32062
for 30' & 36' Units — Electrical Schematic



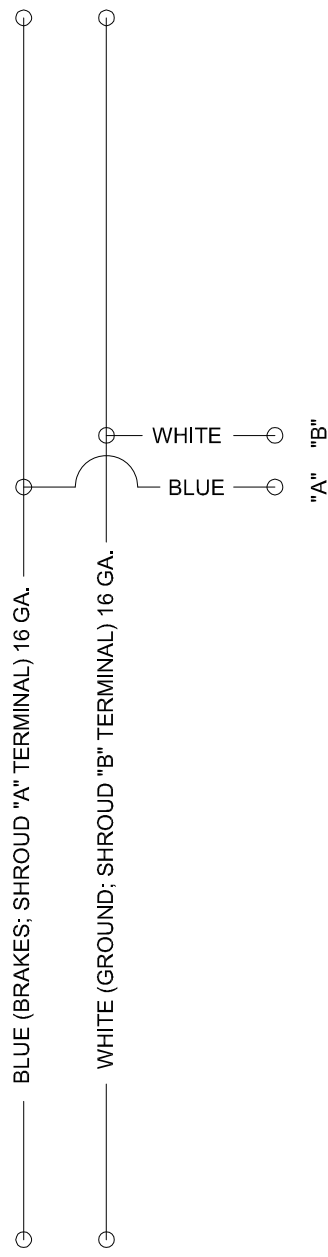
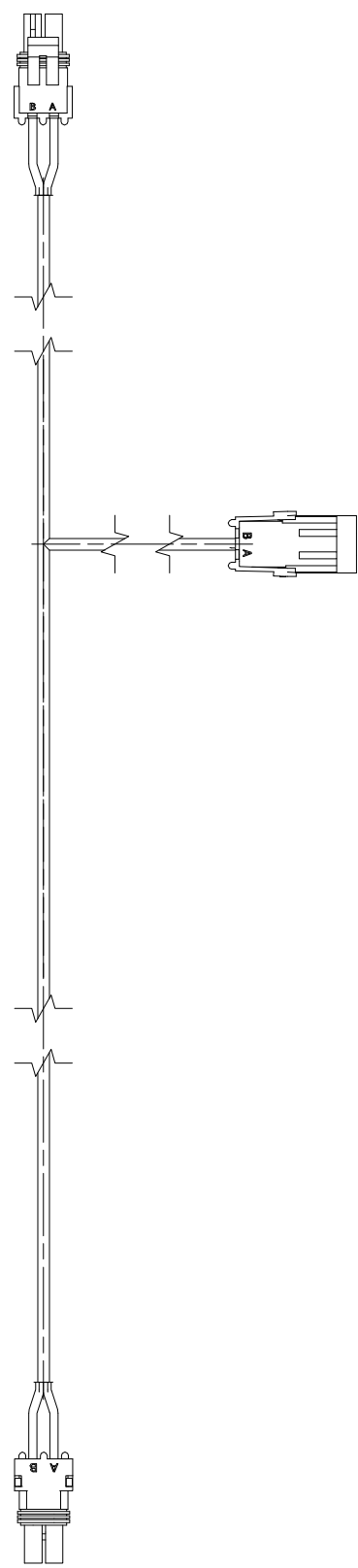
Wiring Harness #32063
for 42' & 48' Units — Electrical Schematic



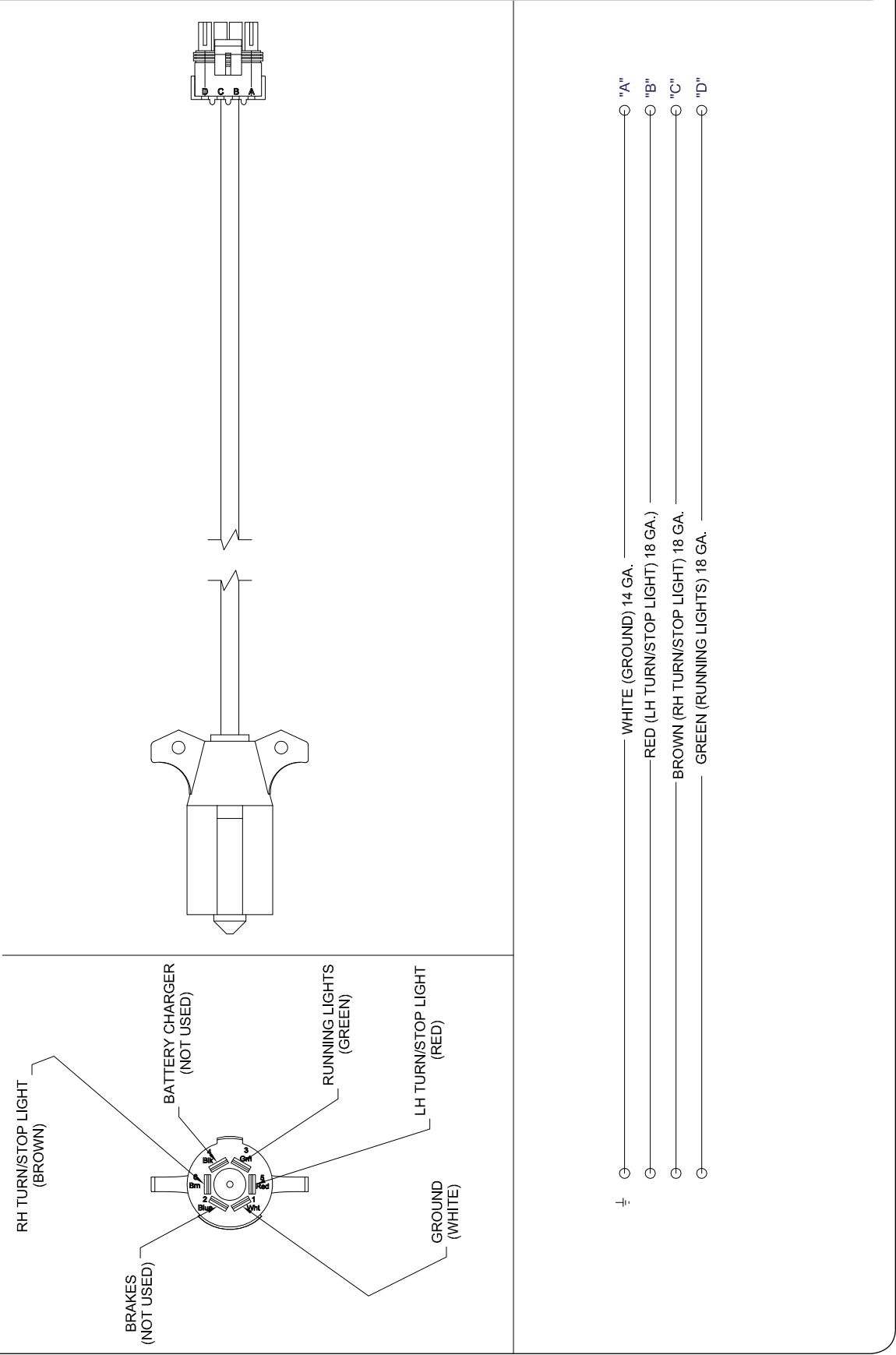
Brake Wiring Harness #900635 — Electrical Schematic



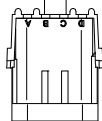
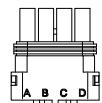
Brake Wiring Harness #900632 — Electrical Schematic



Wiring Harness #900661
for Units Less Brakes — Electrical Schematic



Wiring Harness #900662
for Units Less Brakes — Electrical Schematic

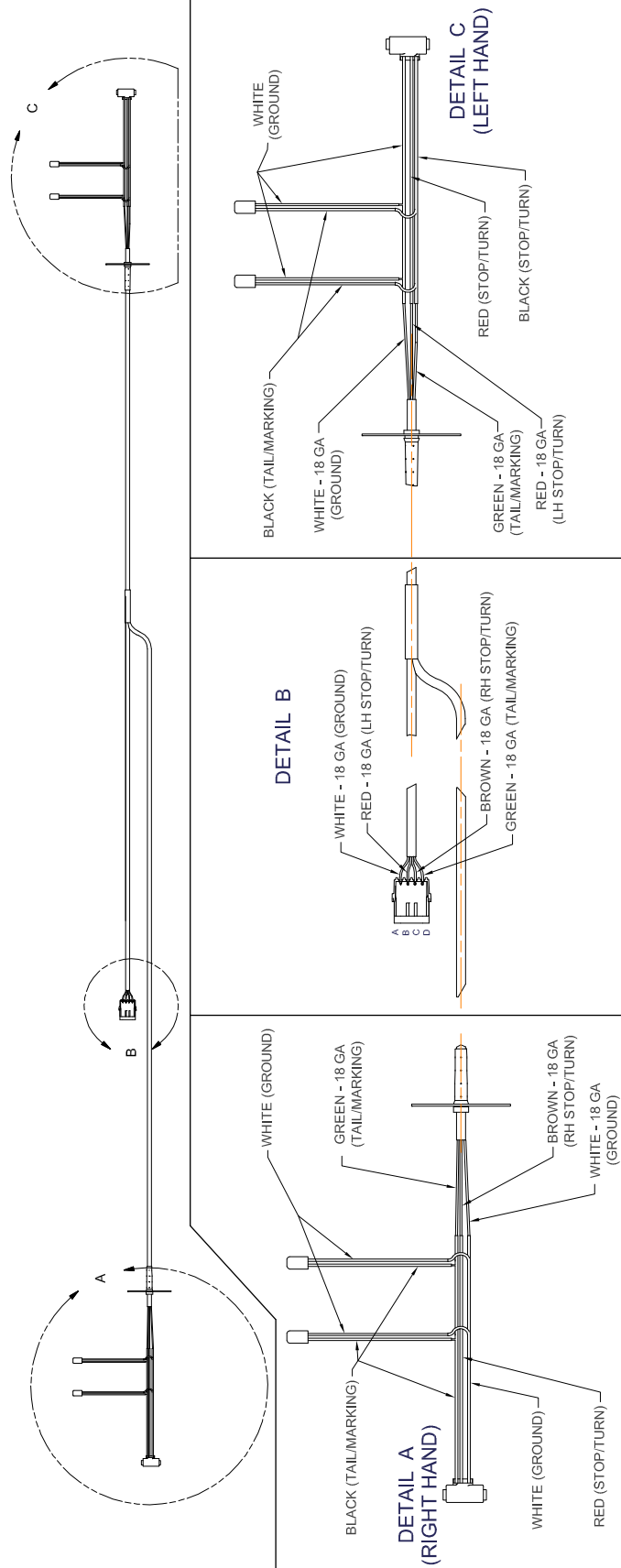


TOWER SIDE

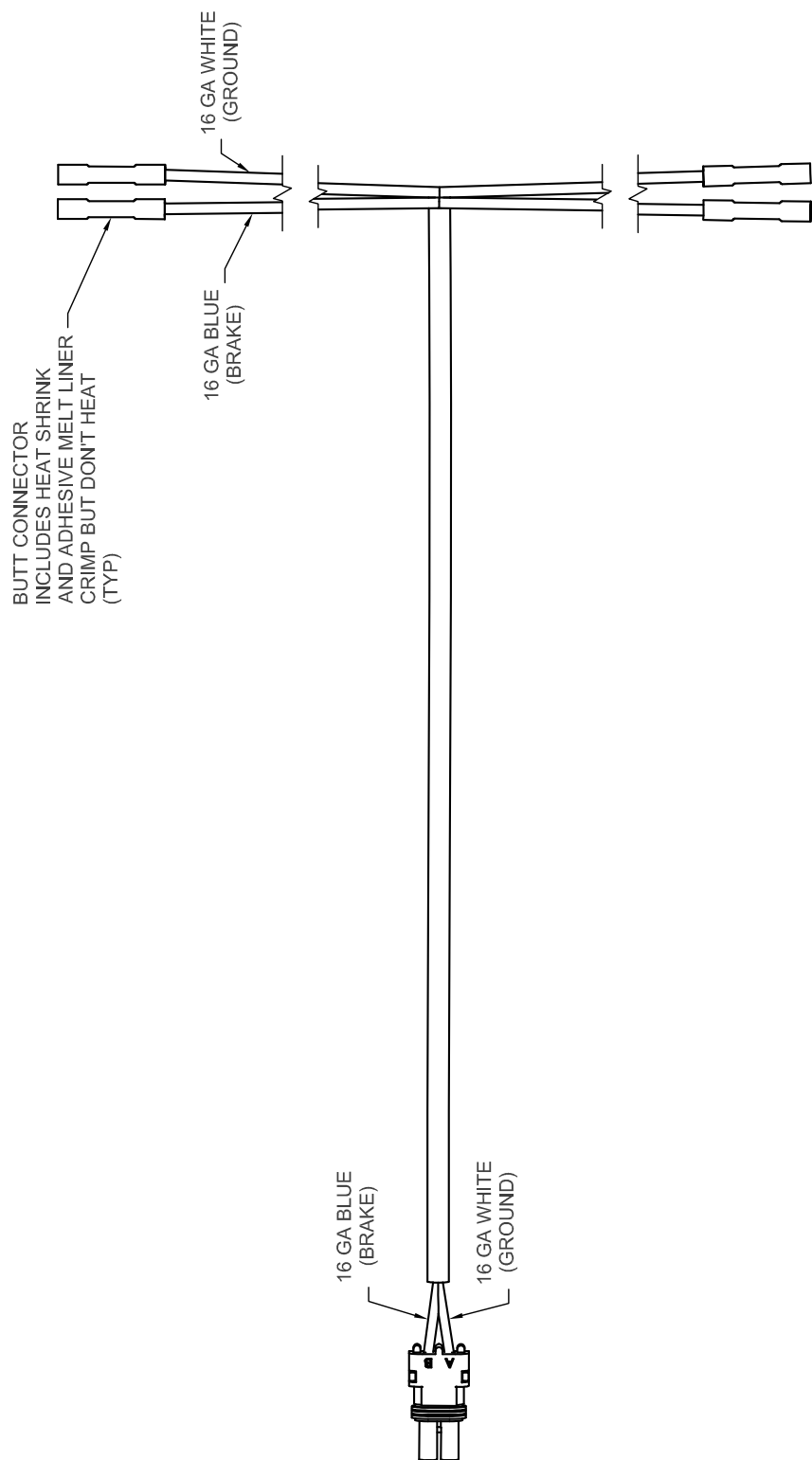
- "A" — WHITE (GROUND) 18 GA. — ○
- "B" — RED (LH TURN/STOP LIGHT) 18 GA. — ○
- "C" — BROWN (RH TURN/STOP LIGHT) 18 GA. — ○
- "D" — GREEN (RUNNING LIGHTS) 18 GA. — ○

SHROUD SIDE

Light Bar Harness #31811— Electrical Schematic



Front Axle with Brakes — Electrical Schematic #902264



SECTION IV

Maintenance

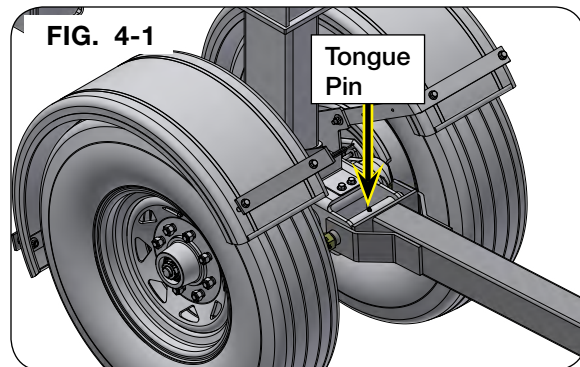
General Maintenance Information	4-2
Grease Gun Lube Points Lube Cycle.....	4-2
Miscellaneous Lube Points	4-2
Front Pivot Thrust Bearing	4-3
Hub Maintenance.....	4-3
Brake Cleaning and Inspection	4-4
Brake Lubrication.....	4-4
Magnets.....	4-4
Shoes and Linings.....	4-5
How to Measure Voltage.....	4-5
How to Measure Amperage.....	4-6
Brake Drum Inspection.....	4-7
Bearing Inspection	4-7
Bearing Lubrication	4-7
Troubleshooting — Brakes	4-8
Storage.....	4-8
Breakaway Kit.....	4-8
Wheels and Tires.....	4-9
Wheel Nut Torque Requirements.....	4-9
Tire Pressure	4-9
Tire Warranty	4-10
Complete Torque Chart.....	4-10
Wiring Harness Overhead Layout.....	4-11
Electrical Schematics.....	4-12

General Maintenance Information

For running gear and bearing longevity, as well as ease of operation, periodic lubrication is essential. This also helps to flush out moisture and dirt. Lubricate with an SAE multi-purpose grease.

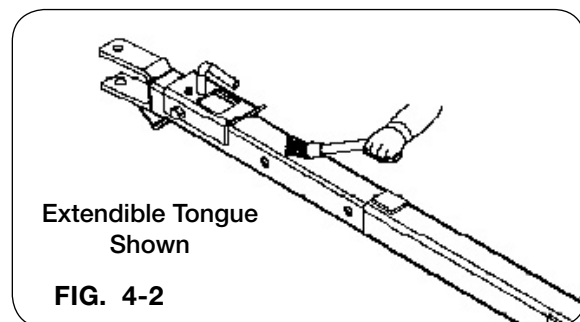
Grease Gun Lube Points Lube Cycle

Tongue Pin (Front Axle)
- 1 Point Grease Once/Year

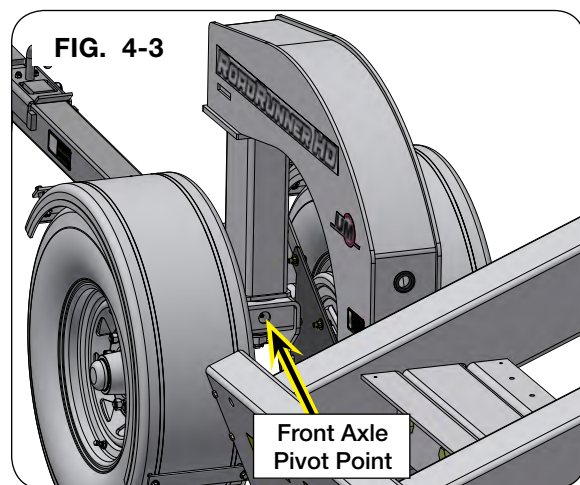


Miscellaneous Lube Points

Extension Part of Extendable Tongue
- Oil or Grease When Needed



Front Axle Pivot Point - 5 Hours



Wheel Bearing - 6 Points Repack Grease Yearly

The wheel bearings should be cleaned, replaced, and adjusted once per season. See hub maintenance section for proper assembly information.

Front Pivot Thrust Bearing

WARNING

- **FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 5,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

The thrust bearing located between the front axle and the fifth wheel arm should be cleaned, greased, and adjusted once per season. Using a safe lifting device rate at 5,000 lbs., support the front of the RoadRunner frame. The front axle must be removed from the fifth wheel arm and thrust bearing removed for proper lubrication.

Periodically during usage, check the following:

1. Tongue pivot pin.
2. Check all hardware for tightness.
3. Tire pressure-follow manufacturer's specification (too high or too low of pressure causes abnormal tread wear.)
4. Check wheel lug nuts.

After each season's use:

1. It is recommended for improved tire life that tires be rotated diagonally.

Hub Maintenance

1. Lubricate the seal lip with grease.
2. While rotating the hub, place the hub on the spindle, making sure not to damage the seal lip.
3. Be sure the outer cone slides on the spindle and into the cup.
4. Assemble the washer and nut.
5. While rotating the hub, torque the spindle nut to 20-25 ft.-lbs.
6. Back the spindle nut off until the next slot.
7. Insert the cotter pin (9391-035) and bend the ends to secure.
8. Install the hub cap.

NOTE: Reference hub parts pages in PARTS section.

IMPORTANT

- *For maximum bearing life, never tow the RoadRunner in excess of 20 mph.*

Brake Cleaning and Inspection

Your header transport brakes must be inspected and serviced immediately if a loss of performance is experienced. With normal use, servicing at one year intervals is usually adequate. With increased usage, this work should be performed more frequently as required. Magnets and shoes must be changed when they become excessively worn or scored, a condition which can reduce vehicle braking. Clean the backing plate, magnet arm, magnet, and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect for any loose or worn parts, stretched or deformed springs and replace as necessary.

WARNING

- **POTENTIAL ASBESTOS DUST HAZARD - SOME BRAKE LININGS MAY CONTAIN ASBESTOS DUST, WHICH HAS BEEN LINKED TO SERIOUS OR FATAL ILLNESSES. CERTAIN PRECAUTIONS NEED TO BE TAKEN WHEN SERVICING BRAKES:**
 1. Avoid creating or breathing dust.
 2. Avoid machining, filing or grinding the brake linings.
 3. Do not use compressed air or dry brushing for cleaning (dust can be removed with a damp brush).

Brake Lubrication

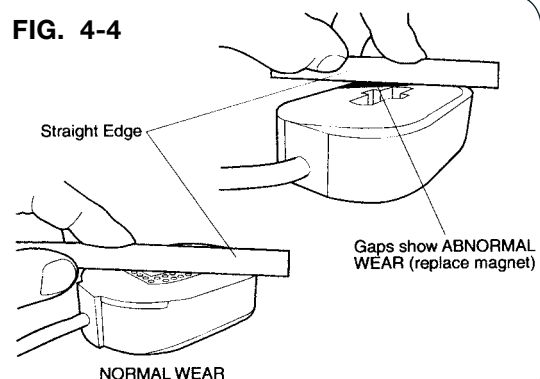
Before reassembling, apply a light film of grease or anti-seize compound on the brake anchor pin, the actuating arm bushing and pin, and the areas on the backing plate that are in contact with the brake shoes and magnet lever arm. Apply a light film of grease on the actuating block mounted on the actuating arm.

NOTE: Do not get grease or oil on the brake linings, drums or magnets.

Magnets

Your electric brakes are equipped with high-quality electromagnets that are designed to provide the proper input force and friction characteristics. Your magnets should be inspected and replaced if worn unevenly or abnormally. Use a straightedge to check magnet condition. For best results, the magnet should be flat. Even if wear is normal as indicated by your straightedge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of the magnet. It is also recommended that the drum armature surface be refaced when replacing magnets. Magnets should also be replaced in pairs - both sides of an axle.

FIG. 4-4



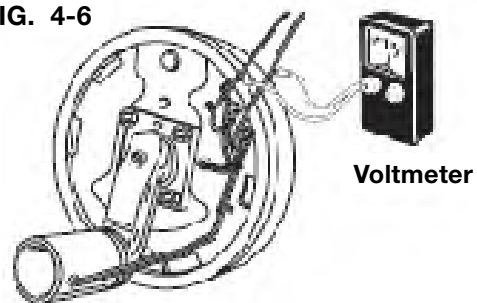
Brake Cleaning and Inspection (continued)**Shoes and Linings**

A simple visual inspection of your brake linings will tell if they are usable. Replacement is necessary if the lining is worn (to within 1/16" or less), contaminated with grease or oil, or abnormally scored or gouged. Hairline heat cracks are normal in bonded linings and should not be cause for concern. When replacement is necessary, it is important to replace both shoes on each brake and both brakes of the same axle. This will help retain the "balance" of your brakes.

After replacement of brake shoes and linings, the brakes must be re-burnished to seat in the new components. This should be done by applying the brakes 20 to 30 times from an initial speed of 40 m.p.h., slowing the vehicle to 20 m.p.h. Allow ample time for brakes to cool between applications. This procedure allows the brake shoes to seat in to the drum surface.

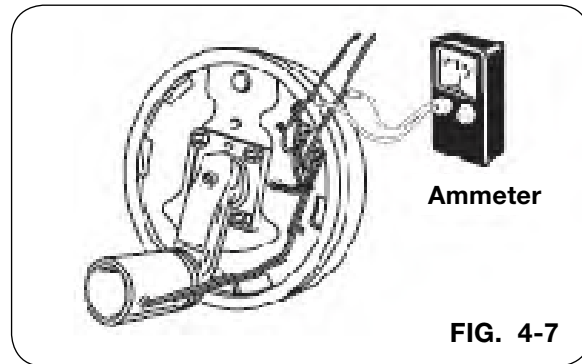
FIG. 4-5**How to Measure Voltage**

System voltage is measured at the magnets by connecting the voltmeter to the two magnet lead wires at any brake. This may be accomplished by using a pin probe inserted through the insulation of the wires. The engine of the towing vehicle should be running when checking the voltage so that a low battery will not affect the readings. Voltage in the system should begin at 0 volts and, as the controller bar is slowly actuated, should gradually increase to about 12 volts. If the controller does not produce this voltage control, consult your controller manual. The threshold voltage of a controller is the voltage applied to the brakes when the controller first turns on. Lower threshold voltage will provide for smoother braking. If the threshold voltage is too high, the brakes may feel grabby and harsh.

FIG. 4-6

How to Measure Amperage

System amperage is the current flowing in the system when all the magnets are energized. The amperage will vary in proportion to the voltage. The engine of the tow vehicle should be running with the trailer connected when checking the trailer braking system. One place to measure system amperage is at the BLUE wire of the controller which is the output to the brakes. The BLUE wire must be disconnected and the ammeter put in series into the line. System amperage draw should be as noted in the following table.



Make sure your ammeter has sufficient capacity and note polarity to prevent damaging your ammeter. If a resistor is used in the brake system, it must be set at zero or bypassed completely to obtain the maximum amperage reading. Individual amperage draw can be measured by inserting the ammeter in the line at the magnet you want to check. Disconnect one of the magnet lead wire connectors and attach the ammeter between the two wires. Make sure that the wires are properly reconnected and sealed after testing is completed. The most common electrical problem is low or no voltage and amperage at the brakes. Common causes of this condition are:

1. Poor electrical connections
2. Open circuits
3. Insufficient wire size
4. Broken wires
5. Blown fuses (fusing of brakes is not recommended)
6. Improperly functioning controllers or resistors

Another common electrical problem is shorted or partially shorted circuits (indicated by abnormally high system amperage). Possible causes are:

1. Shorted magnet coils
2. Defective controllers
3. Bare wires contacting a grounded object

Finding the cause of a short circuit in the system is done by isolating one section at a time. If the high amperage reading drops to zero by unplugging the trailer, then the short is in the trailer. If the amperage reading remains high with all the brake magnets disconnected, the short is in the trailer wiring. All electrical troubleshooting procedures should start at the controller. Most complaints regarding brake harshness or malfunction are traceable to improperly adjusted or nonfunctional controllers. See your controller manufacturer's data for proper adjustment and testing procedures. For best results, all the connection points in the brake wiring should be sealed to prevent corrosion. Loose or corroded connectors will cause an increase in resistance which reduces the voltage available for the brake magnets.

Brake Drum Inspection

The drum surface should be inspected for excessive wear or heavy scoring. If worn more than .020" oversized, or the drum has worn out of round by more than .015", then the drum surface should be re-machined. If scoring or other wear is greater than .090" on the diameter, the drum must be replaced. When turning the drum surface, the maximum re-bore diameter is as follows:

The machined inner surface of the brake drum that contacts the brake magnet is called the armature surface. If the armature surface is scored or worn unevenly, it should be re-faced to a 120 micro inch finish by removing not more than .030" of material. To insure proper contact between the armature face and the magnet face, the magnets should be replaced whenever the armature surface is re-faced and the armature surface should be re-faced whenever the magnets are replaced.

NOTE: It is important to protect the wheel bearing bores from metallic chips and contamination which result from drum turning or armature re-facing operations. Make certain that the wheel bearing cavities are clean and free of contamination before reinstalling bearing and seals. The presence of these contaminants will cause premature wheel bearing failure.

Bearing Inspection

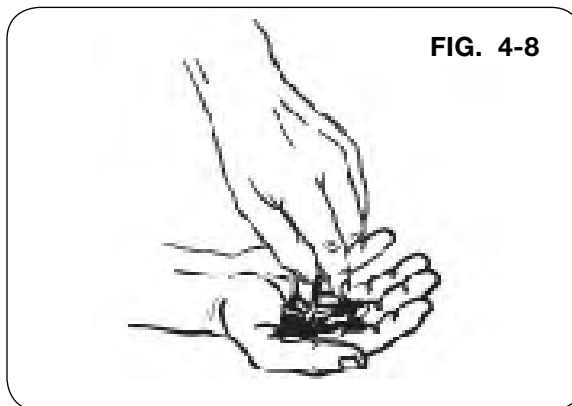
Wash all grease and oil from the bearing cone using a suitable solvent. Dry the bearing with a clean, lint-free cloth and inspect each roller completely.

There are two areas of the brake drum that are subject to wear and require periodic inspection. These two areas are the drum surface where the brake shoes make contact during stopping and the armature surface where the magnet contacts (only in electric brakes).

Bearing Lubrication

Along with bearing adjustment, proper lubrication is essential to the proper function and reliability of your trailer axle. Bearings should be lubricated every 12 months or 12,000 miles. The method to repack bearing cones is as follows:

1. Place a quantity of grease into the palm of your hand.
2. Press a section of the widest end of the bearing into the outer edge of the grease pile closest to the thumb forcing grease into the interior of the bearing.
3. Repeat this while rotating the bearing from roller to roller.
4. Continue this process until you have the entire bearing completely filled with grease.
5. Before reinstalling, apply a light coat of grease on the bearing cup.



Troubleshooting — Brakes

Most electric brake malfunctions, that cannot be corrected by either brake adjustments or synchronization adjustments, can generally be traced to electrical system failure. Voltmeters and ammeters are essential tools for proper troubleshooting of electric brakes. Mechanical causes are ordinarily obvious, i.e. bent or broken parts, worn out linings or magnets, seized lever arms or shoes, scored drums, loose parts, etc.



CAUTION

- **BEST BRAKING PERFORMANCE IS ACHIEVED WITH A CONTROLLER SETTING THAT IS JUST SHORT OF WHEEL LOCK UP OR SLIDE. OVERLY AGGRESSIVE BRAKING WHICH RESULTS IN WHEEL LOCK UP AND SLIDING, CAN CAUSE A DANGEROUS LOSS OF CONTROL AND RESULT IN PERSONAL INJURY OR DEATH.**

Storage

Your implement is an important investment. Spend a little time to protect it from destructive rust and corrosion. You will be repaid in longer service life and better performance.

Before placing the implement in storage:

1. Repaint any chipped or scraped areas.
2. Inspect for damaged or worn parts. Replace before next season.
3. Store implement inside, away from livestock.
4. Use blocking to keep implement tires off bare ground.

Breakaway Kit

The breakaway system is located on the front of the RoadRunner needs to be attached to the towing vehicle's hitch. It requires a fully charged 12V battery, located on the RoadRunner.

Periodically check the battery, charge or replace as needed.

Wheels and Tires

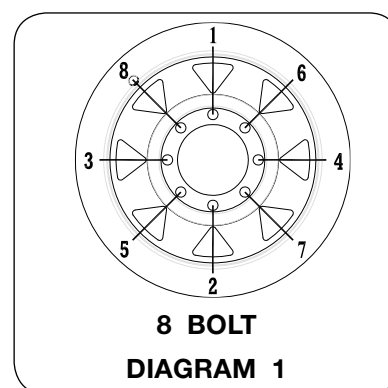
Wheel Nut Torque Requirements

CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. TORQUE WHEEL NUTS/BOLTS TO VALUES IN TABLE. CHECK TORQUE BEFORE USE, AFTER ONE HOUR OF UNLOADED USE OR AFTER FIRST LOAD, AND EACH LOAD UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THERE-AFTER. AFTER EACH WHEEL REMOVAL START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS..

Failure to check torque before first load may damage wheel nut/bolt seats. Once seats are damaged, it will become impossible to keep nuts/bolts tight. Tighten nuts/bolts to applicable torque value shown in table. Start all nuts/bolts by hand to prevent cross threading. Torque nuts/bolts in the recommended sequence as shown in Diagram 1.

WHEEL HARDWARE	
SIZE	FOOT-POUNDS
9/16-18 (UNF)	110 Ft.-Lbs.



Tire Pressure

The following is to be used as a general guide for tire inflation and figures can vary depending on specific brand of tire used. It is important that tires are inspected after RoadRunner is loaded. Start with minimum pressure indicated. The tire should stand up with no side-wall buckling or distress as tire rolls. Record the pressure needed to support the full load and maintain this pressure to achieve proper tire life. Do not exceed maximum recommended tire pressure.

TIRE SIZE & PRESSURE
225/85R x 16 - 80 PSI MAX.
235/75R x 17.5 - 125 PSI MAX.

(All tire pressures in psi)

Wheels and Tires (continued)

Tire Warranty

For questions regarding new tire warranty, please contact your local original equipment tire dealer. Used tires carry no warranty. Following are phone numbers and Websites for your convenience:

Firestone www.firestoneag.com
Phone 800-847-3364

Titan www.titan-intl.com
or Phone 800-USA-BEAR
Goodyear Fax 515-265-9301

Michelin/ www.michelinag.com
Kleber Phone 888-552-1213
Fax 864-458-5538

Carlisle www.carlisletire.com
Phone 800-260-7959
Fax 800-352-0075

Greenball www.greenball.com
Phone nearest location:
California 800-937-5204
Georgia 800-283-4569
Florida 800-935-0200
Indiana 800-426-4068
Tennessee 800-946-9412
Ohio 800-840-7295
Pennsylvania 800-869-6787

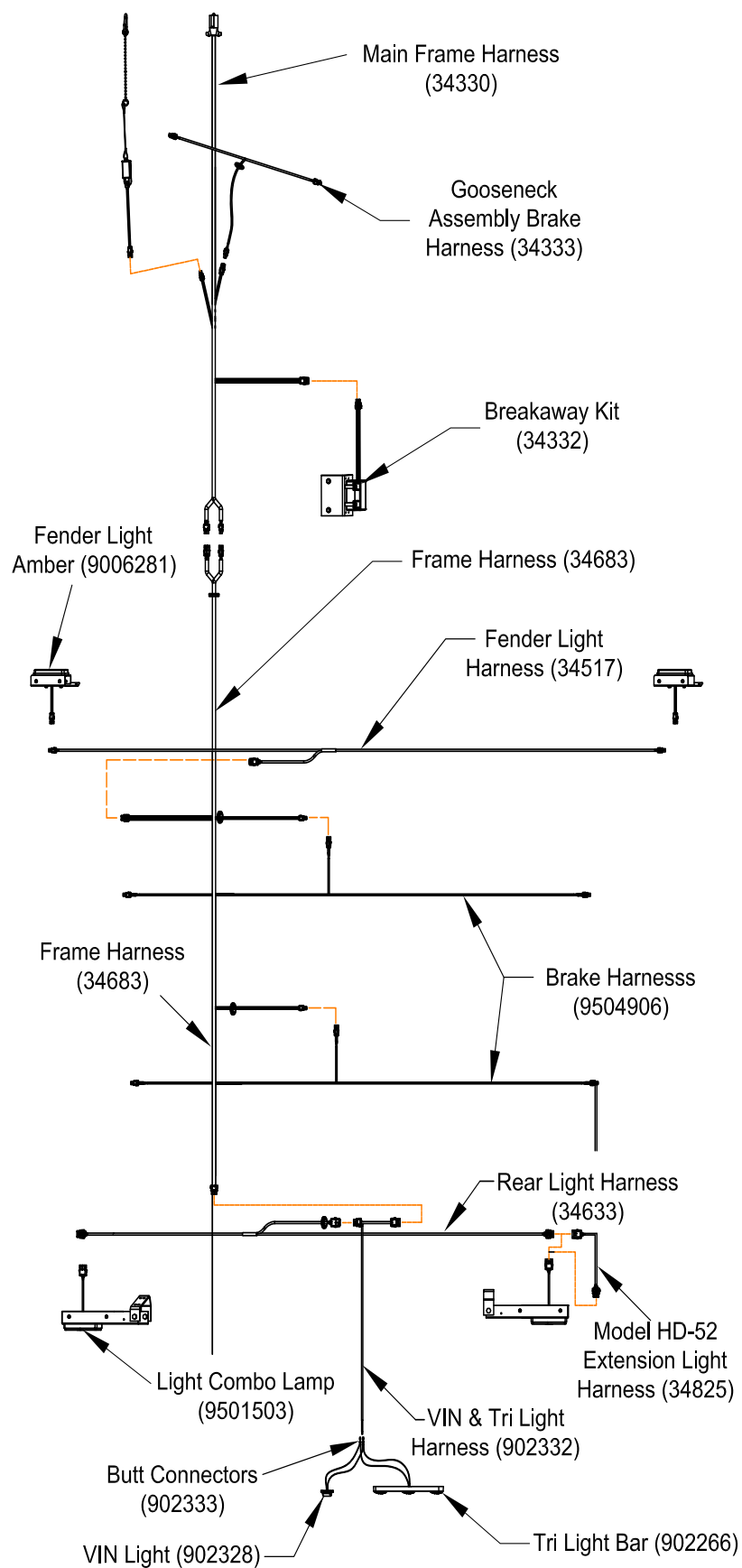
Complete Torque Chart - Capscrews - Grade 5

IMPORTANT

- Grade 5 capscrews can be identified by three radial dashes on head.
- For wheel torque requirements, refer to *Wheels and Tires*.
- Tighten U-bolts to have the same number of threads exposed on each end.

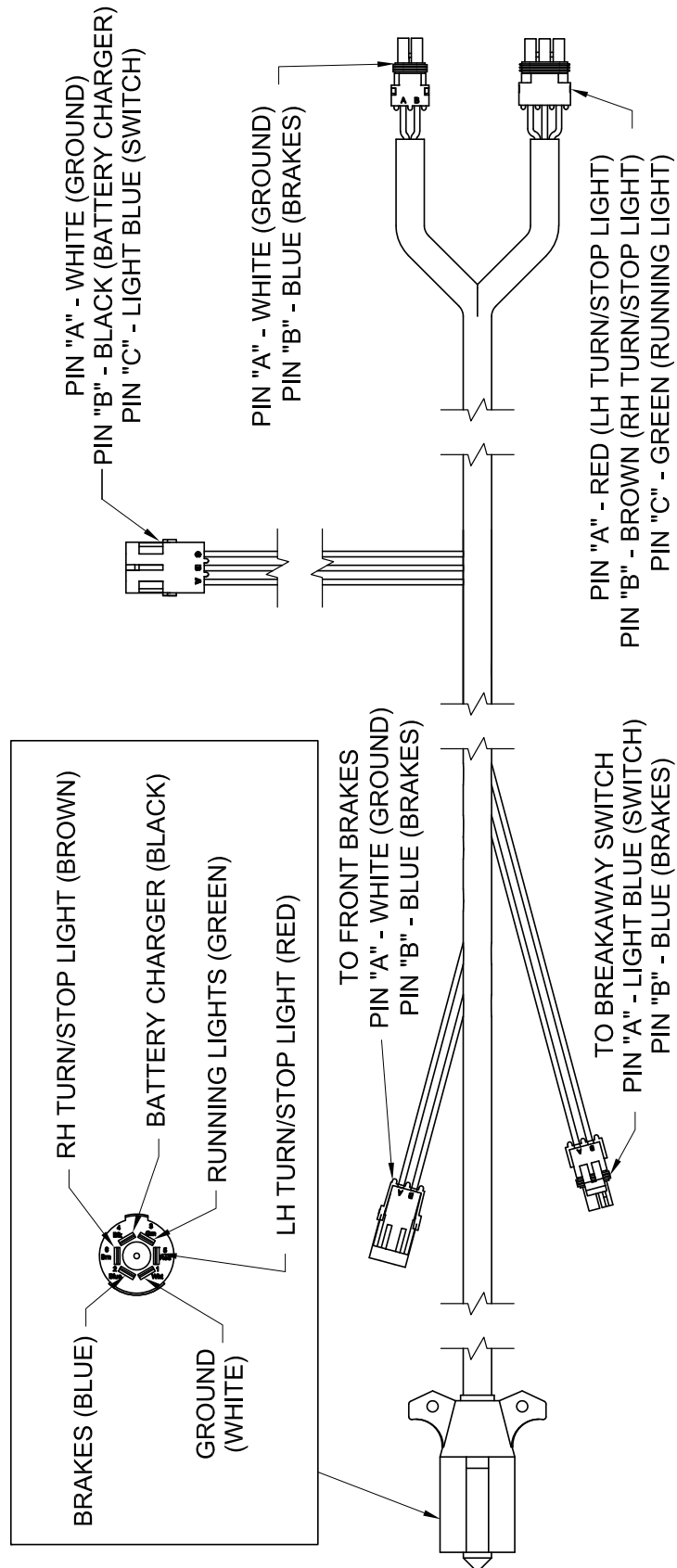
SIZE	FOOT POUNDS	NEWTON METERS	SIZE	FOOT POUNDS	NEWTON METERS
1/4-20	8-10	11-13	3/4-10	200-220	270-300
1/4-28	9-11	12-15	3/4-16	210-230	285-310
5/16-18	15-17	20-23	7/8-9	330-350	425-475
5/16-24	17-19	23-26	7/8-14	360-380	460-515
3/8-16	25-28	34-38	1-8	500-525	675-710
3/8-24	28-31	38-42	1-14	540-560	730-760
7/16-14	40-45	54-61	1 1/8-7	600-635	815-860
7/16-20	45-50	61-68	1 1/8-12	665-700	920-950
1/2-13	62-68	84-92	1 1/4-7	850-895	1150-1215
1/2-20	68-75	92-102	1 1/4-12	940-990	1275-1340
9/16-12	90-98	22-133	1 3/8-6	1125-1175	1525-1590
9/16-18	100-110	134-148	1 3/8-12	1280-1335	1735-1810
5/8-11	120-135	162-183	1 1/2-6	1500-1560	2035-2115
5/8-18	124-137	168-186	1 1/2-12	1685-1755	2285-2380

Wiring Harness Overhead Layout

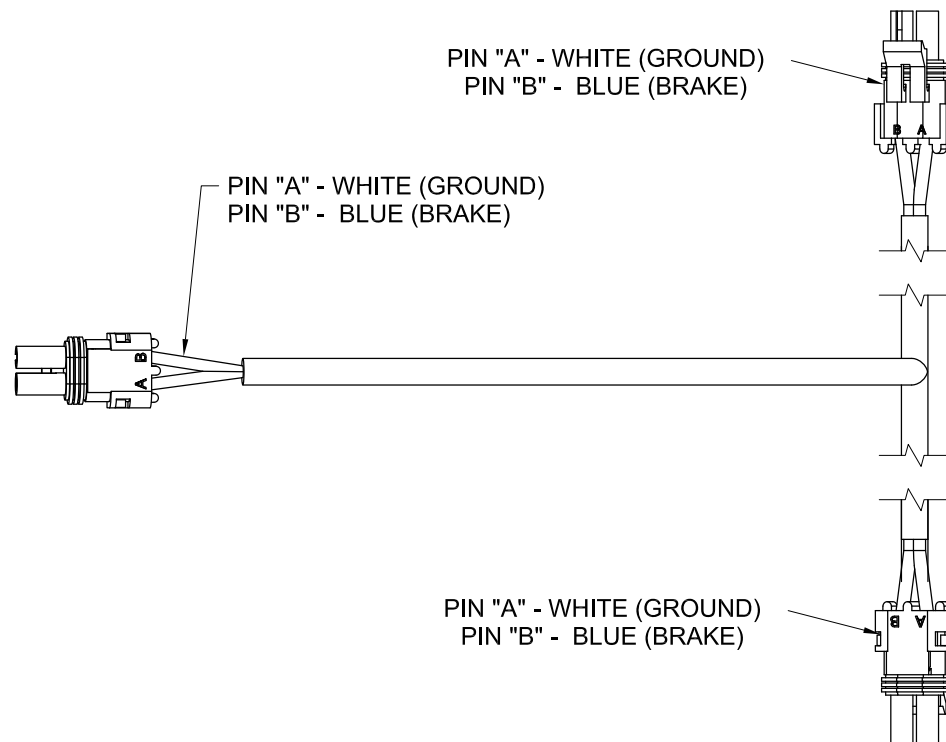


Wiring Harness #34330 — Electrical Schematic

Main Harness From Towing Vehicle to Frame Wiring Harness

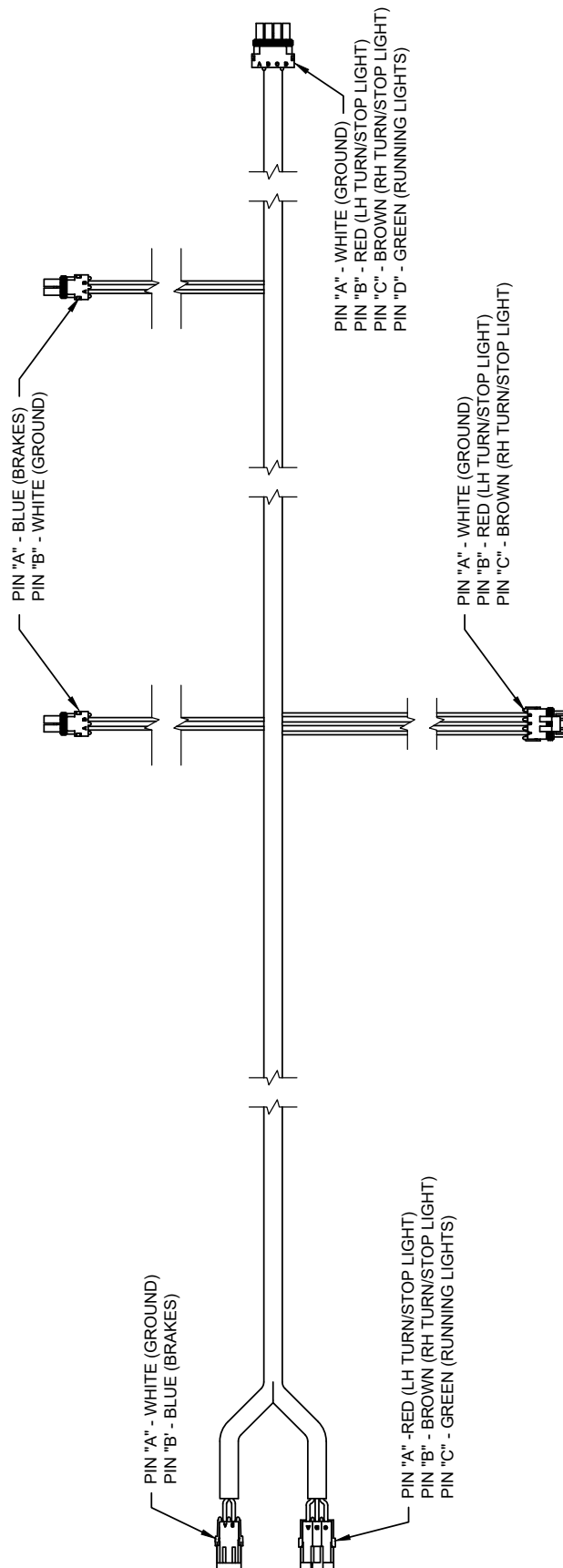


Wiring Harness #34333 — Electrical Schematic
Brake Harness For Gooseneck Assembly Axle Brakes

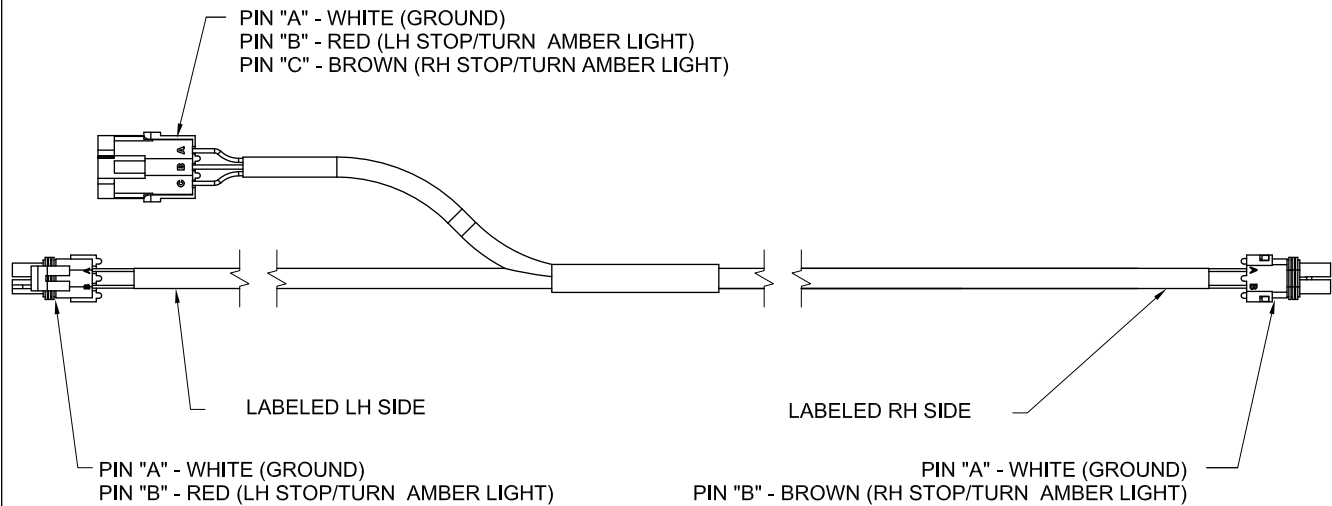


Wiring Harness #34683 — Electrical Schematic

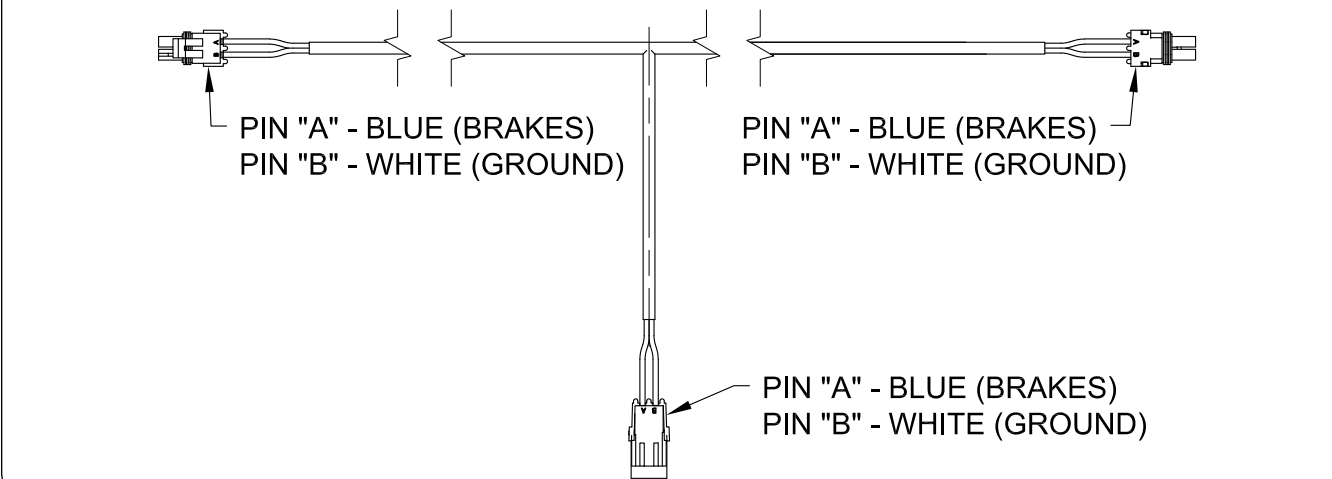
Frame Wiring Harness From Main Wiring Harness to Lights & Brakes



Wiring Harness #34517 — Electrical Schematic
Light Harness for Units with Axle Fenders

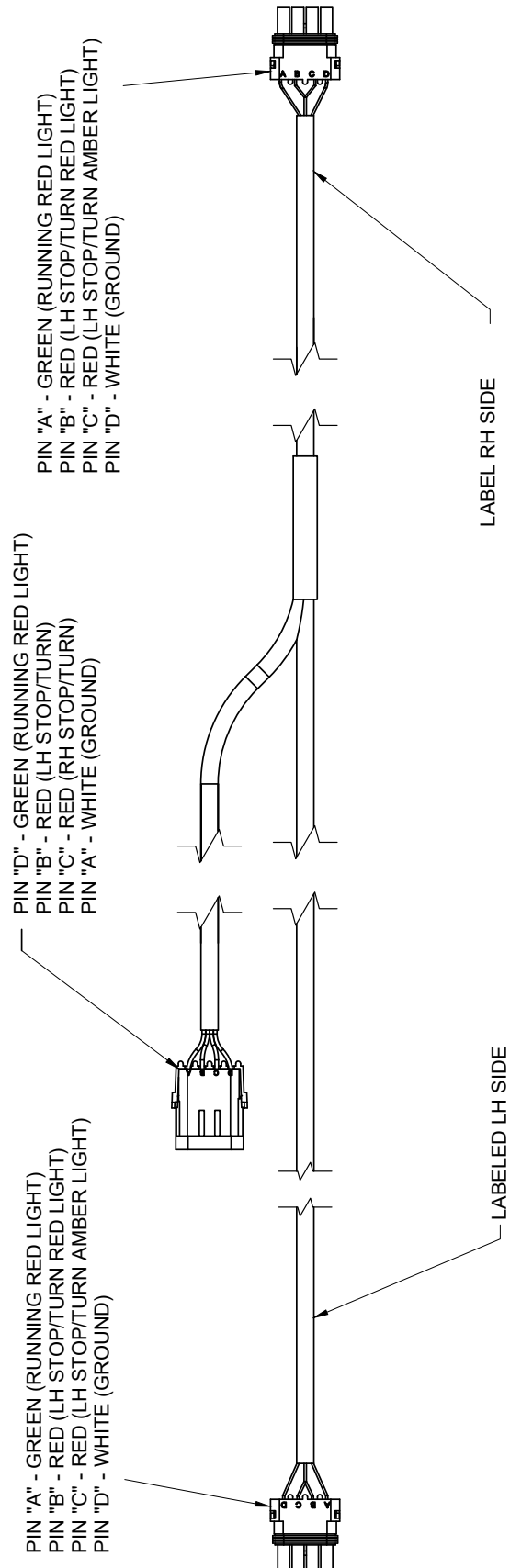


Wiring Harness #9504906 — Electrical Schematic
Brake Harness for Units with Axles with 2 or 4 Wheel Brakes

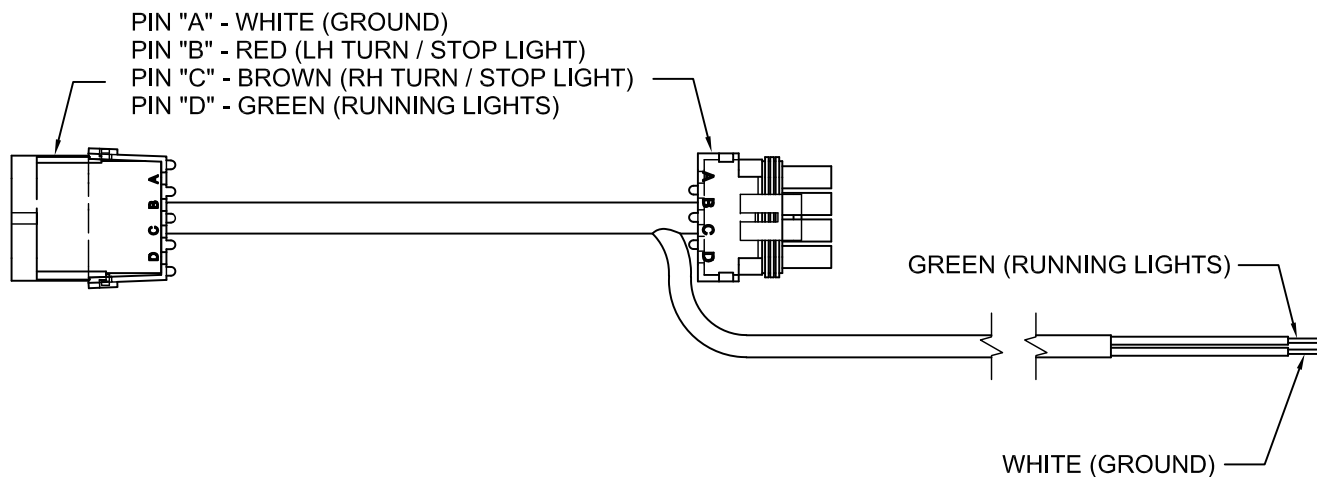


Wiring Harness #34633 — Electrical Schematic

Light Harness From Frame Harness to Rear Lights



Wiring Harness #902332 — Electrical Schematic
For VIN & Tri-Light Bar



Wiring Harness #34825 — Electrical Schematic
Light Extension Wire Harness for HD-52 Units ONLY

