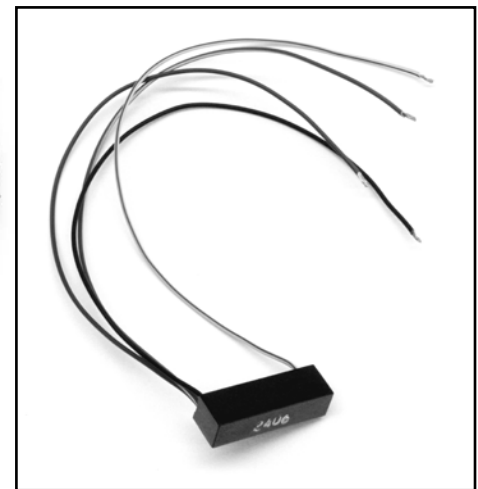




Owner's Manual

Micro Harness Controller
P/N EA4260 & EA4360



EA4094 Brake Light Module
(included with EA4360)

Thunder Heart Performance Corporation
120 Industrial Drive
White House, TN 37188
www.thunder-heart.com

MANUAL P/N EI4260
Revision 5/26/11

TABLE OF CONTENTS

WARRANTY	II
CHAPTER 1 INTRODUCTION	1
1.1 General Information.....	1
1.2 Special Tools Required	2
1.3 Connector Assembly	3
CHAPTER 2 SYSTEM INSTALLATION	5
2.1 Finding a Suitable Location for the Micro Harness Controller....	5
2.2 Trial Fitment of the Harness to the Bike.....	5
2.3 H-D Hand Control Connections.....	6
2.4 Indicator Hook-Up	7
2.5 Brake Light Module (EA4360 ONLY)	7
2.6 Ignition Switch, 3-Terminal.....	8
2.7 Ignition Switch, 2-Terminal.....	8
2.8 Harness Assembly	9
APPENDIX A WIRING TABLES AND DIAGRAMS	11

CONTACTING THUNDER HEART PERFORMANCE CORP.

Mailing Address	120 Industrial Drive White House, TN 37188
Shipping Address	120 Industrial Drive White House, TN 37188
Phone	615-672-8811
Fax.....	615-672-1353
Tech Support E-mail.....	techsupport@thunder-heart.com
Website.....	www.thunder-heart.com

WARRANTY

Thunder Heart Performance Corp. will repair or replace any parts that have manufacturing defects only under the following conditions:

- The customer must return the product to the original place of purchase.
- The product must be returned within one year of the original distribution sale date.
- All returns must be accompanied with a copy of the receipt.
- The product must be individually tagged with a completed description of the problem or defect.
- All returned items must be packaged and shipped in the same manner as Thunder Heart originally shipped them to the dealer.

Thunder Heart Performance Corp. reserves the right to repair or replace the product at Thunder Heart's discretion. We do not offer refunds or credit for the returned product. In addition, any product that is misused or otherwise damaged by the end customer will be billed for any repair or replacement costs associated with the damage.

CHAPTER 1 INTRODUCTION

1.1 General Information

The Micro Harness Controller consolidates all of the electronic functions of a motorcycle (with the exception of instrumentation and engine management) into one, easy-to-hide system. The Micro Harness Controller avoids the wiring “bird’s nest” of other systems so you spend less time wiring your bike...and more time riding!

Perfect for choppers and saddle tank bikes, the Micro Harness Controller system includes a billet aluminum controller housing, un-terminated “fantail” harness, shrink tubing, and all necessary connectors, a comprehensive instruction and troubleshooting manual for a durable, professional installation.

The information included in this manual is intended to provide a guideline for installing the Micro Harness Controller system on your motorcycle. However, each motorcycle is different. Due to the “universal” nature of this system, a certain level of technical skill is required to assure a complete, trouble-free installation.

Please read through this entire manual before attempting any part of the installation. If you are uncomfortable with the level of skill required to complete the installation of this system, either contact a Thunder Heart Performance technical specialist, or hire a professional to complete the install for you.

WARNING! TO AVOID DAMAGE TO THE MICRO HARNESS CONTROLLER, A 30-AMP CIRCUIT BREAKER MUST BE INSTALLED BETWEEN THE BATTERY AND THE MAIN POWER WIRES (RED, PINS 3 AND 4)!

IMPORTANT! EA4260 is designed for applications that DO NOT have a separate brake light (for example, a center brake light mounted on the fender). The brake light function is incorporated into the turn signals. To add a third brake light function (for example, an additional brake light mounted on license plate frame), purchase a Thunder Heart Performance Center Brake Light Module, P/N EA4094.

IMPORTANT! EA4360 is designed for applications where separate turn signals and a center brake light are used. To operate the brake light, it requires a Thunder Heart Performance Center Brake Light Module, P/N EA4094 (included).

1.2 Special Tools Required

Most of the installation of the Micro Harness Controller can be completed with basic hand tools. However, a few special tools make the job much easier:

- A **heat gun** (such as the unit shown in Figure 1) is required to shrink the heat shrink tubing onto the harness. The heat gun makes quick work of shrinking the tubing, as it provides a broad, even source of heat. No other means of shrinking the tubing is recommended.



Figure 1 – Heat Gun

- A good-quality **wire-crimping tool** is also required. The “W” style (shown in Figure 2) is available at www.digikey.com (Digikey part number WM9999-ND).
- The AMP style (shown in Figure 3), while considerably more expensive, will produce better results. The AMP style is recommended if you plan on wiring many bikes using the AMP connectors included with the Electronic Harness Controller system.





Figure 3—“AMP” crimping tool

- A **multi-meter** is useful for diagnosis. A common “test light” is OK, but a test light will not tell you if you have a short to ground, or a resistance problem. In other words, a pinched wire may provide enough current for the test light, but not enough to power the horn, ignition, etc. A multi-meter allows you to check current, and you can check the suspect circuit for any grounding issues.



Figure 4—Multi-Meter; useful for circuit diagnosis

1.3 Connector Assembly

The following information highlights proper assembly procedures for the AMP connectors included with the Micro Harness Controller system:

1. Strip approximately 3/16" of insulation off of the end of the wire to be terminated.

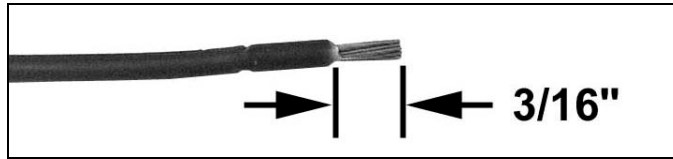


Figure 5—Proper wire strip amount

2. Clip a terminal from the supplied "tree" of terminals.
3. Using either a "W" or an "AMP" tool, crimp the terminal onto the end of the wire. The following figures show examples of "good" and "bad" crimps:

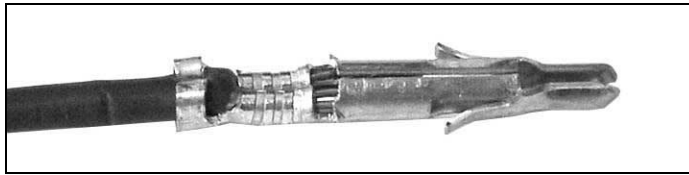


Figure 6—Good Crimp; insulation retained by outside tabs, conductor retained by inside tabs

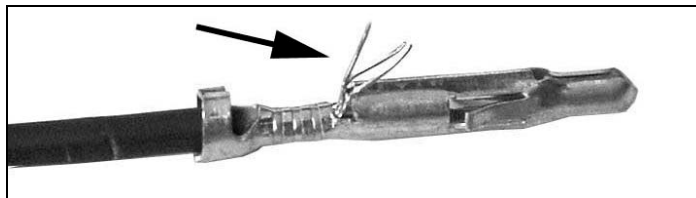


Figure 7—Poor Crimp; too much wire stripped; strands exposed outside of terminal

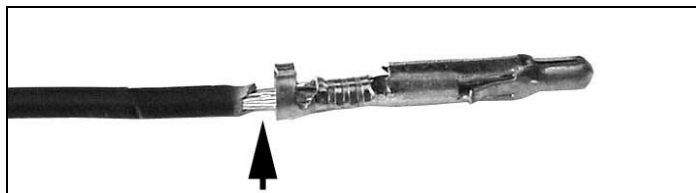


Figure 8—Poor Crimp; too much wire stripped; insulation not retained by outside tabs

4. Insert the wire through the blue seal into the connector body until you hear a "click." Gently pull on the wire to ensure that the terminal is fully engaged in the housing.

CHAPTER 2 SYSTEM INSTALLATION

2.1 Finding a Suitable Location for the Micro Harness Controller

The Micro Harness Controller (MHC) is housed in a billet aluminum case for durability and cool operation. Before routing the harness, a mounting location must be chosen for the MHC. It may be mounted directly using the two 1/4" holes provided. Use the template shown in Figure 9 to mount the MHC. Common mounting locations are:

- near the battery under the seat
- near the pivot of the swing arm
- under the transmission

|----- 3- 3/8" -----|
Verify template Scale (due to printer scaling)



Figure 9—MHC Mounting Template

*Note: Though the MHC is moisture and vibration resistant, care should be taken in mounting the MHC so that it is not subjected to excessive amounts of vibration, heat, and moisture. **The MHC should be mounted at least four inches away from the engine to avoid radiating engine heat.***

WARNING! FAILURE TO MOUNT THE MICRO HARNESS CONTROLLER, WIRES, OR CONNECTORS AWAY FROM EXCESSIVE HEAT SOURCES (SUCH AS THE ENGINE AND EXHAUST PIPES) MAY RESULT IN FAILURE OF THE MICRO HARNESS CONTROLLER SYSTEM.

2.2 Trial Fitment of the Harness to the Bike

The following steps outline the process of trial fitting the harness to the bike. The installer may experiment with different routings to achieve the best results:

1. With the MHC mounted, plug the harness connector into the MHC.

Note: Each wire is labeled according to its function. Refer to the wiring tables and diagrams in APPENDIX A. Command (or CMD) wires connect to switches; other wires either supply power or ground to a device (such as a light or ignition, etc.). "Auxiliary Power" sources can be used to power brake lights, license plate lights, etc.

2. Route each wire to its destination, but do not cut them yet. Keep wires bundled together until they need to break off to their destination. Use electrical tape to construct branch points and to temporarily attach the harness to the bike while fitting is performed. Wires not used should be terminated at the connector to prevent short circuits.

Tip: Try to minimize the number of branches from the main harness by combining wires that branch off closely in one larger branch, as this will make the heat shrink easier to apply later.

Tip: Remember to allow extra length for suspension movement or strain relief when locating the harness-to-bike attachment points.

WARNING TAKE CARE TO ROUTE THE HARNESS AWAY FROM SHARP EDGES OR SURFACES THAT MAY PINCH THE HARNESS. ROUTE THE HARNESS AWAY FROM SOURCES OF HIGH HEAT, SUCH AS THE ENGINE AND EXHAUST SYSTEM.

3. When all the wires are routed and the harness is temporarily attached at their mounting points, cut the excess length from the ends of the wires, leaving them approximately 3" too long for final fitment.

2.3 H-D Hand Control Connections

Use the information presented in Table 1, Table 2, and Figures 19 and 20 to make the hand control connections.

Note: Starting in 1996, Harley spliced the power wires of both the left turn signal and the horn, and the power wires of both the right signal and the brake switches together.

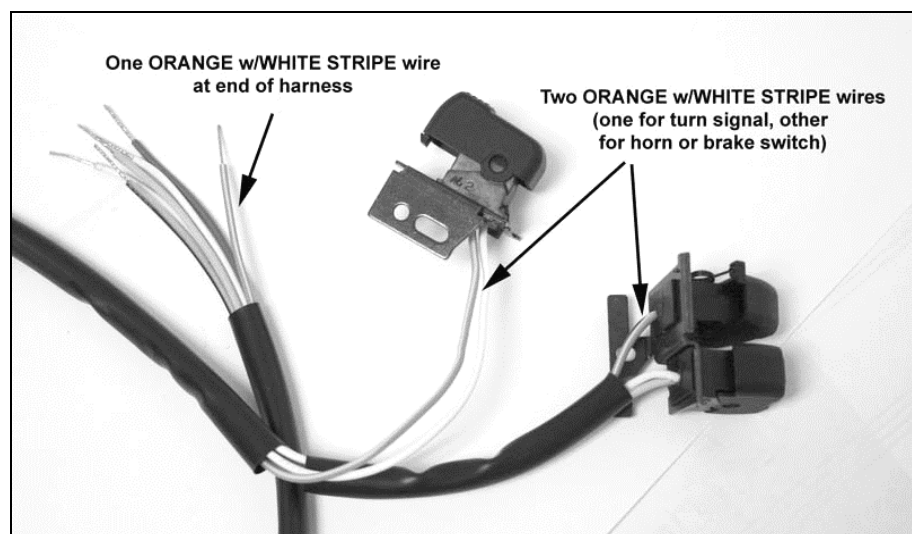


Figure 10—H-D 1996-2003 Hand Control Harness

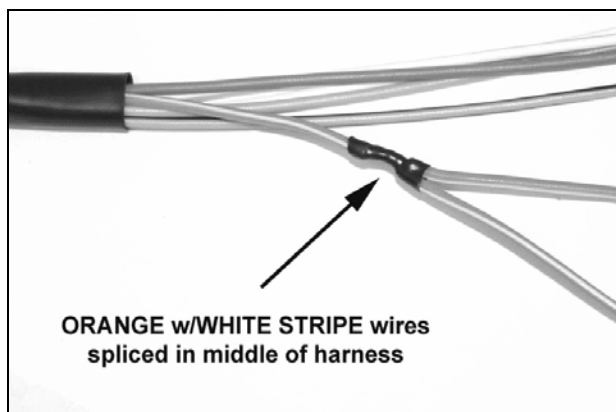


Figure 11—H-D 1996-2003 Hand Control Wire Splice

Table 1 Left Handlebar Harness Connections

PIN	WIRE LABEL	MHC COLOR	HAND CONTROL COLOR (pre-1996)	HAND CONTROL COLOR (1996-2003)
	N/A	N/A	YELLOW	YELLOW
25	L CONTROLS PWR	ORANGE w/ WHITE STRIPE	ORANGE	ORANGEw/WHITE STRIPE
25	L CONTROLS PWR	ORANGE w/ WHITE STRIPE	BLUE	BLUE
30	HI BEAM CMD	WHITE	WHITE	WHITE
25	L CONTROLS PWR	ORANGE w/ WHITE STRIPE	GREEN	ORANGEw/WHITE STRIPE
29	HORN CMD	YELLOW w/ BLACK STRIPE	BLACK	YELLOWw/BLACK STRIPE
28	LEFT TURN SW CMD	WHITE w/ VOILET STRIPE	VIOLET	WHITEw/PURPLE STRIPE

Table 2 Right Hand Control Harness Connections

PIN	WIRE LABEL	MHC COLOR	HAND CONTROL COLOR (pre-1996)	HAND CONTROL COLOR (1996-2003)
26	R CONTROLS PWR	ORANGE w/ WHITE STRIPE	GREEN	ORANGEw/WHITE STRIPE
26	R CONTROLS PWR	ORANGE w/ WHITE STRIPE	ORANGE	ORANGEw/WHITE STRIPE
26	R CONTROLS PWR	ORANGE w/ WHITE STRIPE	GREY	GREY
31	START RELAY CMD	BLACK w/ RED STRIPE	BLACK	BLACKw/RED STRIPE
32	KILL CMD	GREY	WHITE	WHITEw/BLACK STRIPE
27	RIGHT TURN SW CMD	WHITE w/ BROWN STRIPE	BROWN	WHITEw/BROWN STRIPE
33	FRONT BRAKE CMD	RED w/ YELLOW STRIPE	RED	REDw/YELLOW STRIPE

2.4 Indicator Hook-Up

The Micro Harness Controller is designed for use with 12V+ incandescent and 12V+ LED indicators. Most indicator panels are of this type. However, some Thunder Heart Performance indicators need 6V+, so an adapter harness may be required. If you are using a Thunder Heart Performance indicator panel, contact Thunder Heart Performance for the correct harness for your application.

2.5 Brake Light Module (EA4360 ONLY)

The Brake Light Module allows the use of a center brake light with the Micro Harness Controller. It is compatible with both LED and incandescent bulbs.

The solid-state construction of the Center Brake Light Module is fully circuit-protected and has no relays to wear out. Its compact 2" x 0.6" x 0.5" size means you can hide it just about anywhere. Find a suitable location and complete the connections as shown in APPENDIX A, Figure 17.

2.6 Ignition Switch, 3-Terminal

When using a 3-terminal ignition switch (Power, Accessory, Run). Connect the wires of the MHC harness to the switch as shown in Table 3 and Figure 12.

Table 3—Connections Using a 3-Terminal Ignition Switch

PIN	WIRE LABEL	COLOR	SWITCH TERMINAL
20	SWITCH PWR	RED	2
21	SWITCH RUN	RED w/ BLACK	1
22	SWITCH ACC	RED w/ GREY	3

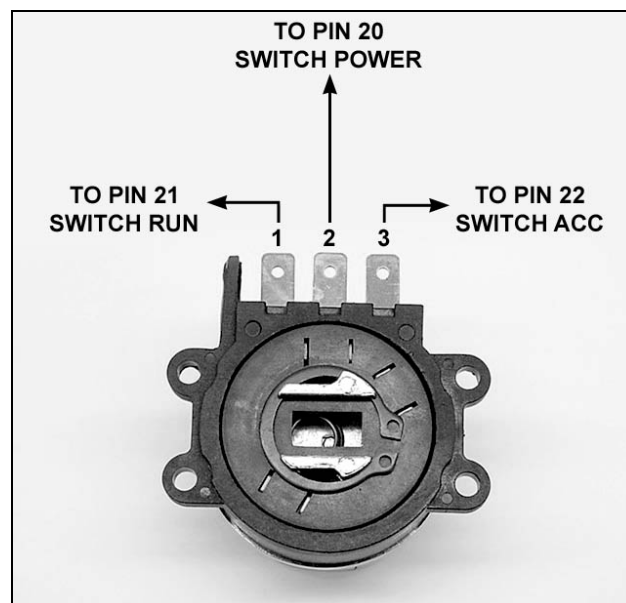


Figure 12—3-Terminal Ignition Switch Connections

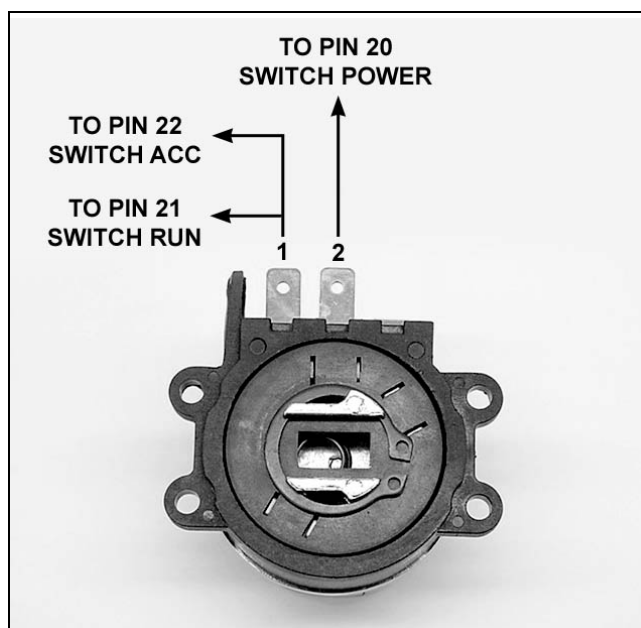
Note: In order for the MHC to function, pins 21 AND 22 MUST be supplied with 12V+ (in other words, the switch must have continuity between all three terminals in the "RUN" position).

2.7 Ignition Switch, 2-Terminal

When using a 2-terminal ignition switch, BOTH Switch Run and Switch Accessory (pins 21 and 22) must be connected to the SAME TERMINAL on the switch. See Table 4 and Figure 13.

Table 4—Connections Using a 2-Terminal Ignition Switch

PIN	WIRE LABEL	COLOR	SWITCH TERMINAL
20	SWITCH PWR	RED	2
21	SWITCH RUN	RED w/ BLACK	1
22	SWITCH ACC	RED w/ GREY	1

**Figure 13—2-Terminal Ignition Switch Connections**

Note: In order for the MHC to function, pins 21 AND 22 MUST be supplied with 12V+.

2.8 Harness Assembly

After the harness is trial fitted to the bike, the next steps highlight the installation of heat shrinkable tubing to the harness:

1. Remove the harness from the bike.
2. Starting from the main power connector at the MHC, cut a piece of heat shrink tubing long enough so that it extends about 1" past the first branch in the harness. This extra length will allow the tubing for the branches to slide into the main tubing as shown in Figure 10. This creates a smooth transition to the branches.

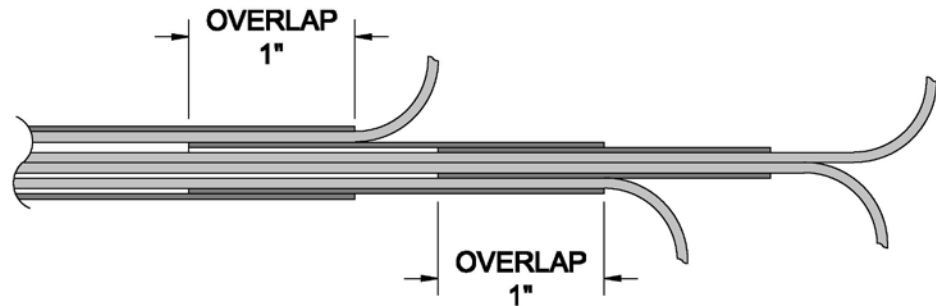


Figure 14 – Proper Heat Shrink Overlap

3. When the tubing section ends at a termination point (connector or terminal), slide a long piece into the main tubing and then cut it at the end of the wire (removing the last 1/4" or so of the wire as well).
4. With the heat shrink tubing installed, use a heat gun to shrink the tubing. Start at the main connector and work to the other end.
5. Start to re-fit the harness to the bike by plugging in the main connector into the MHC.
6. Move along the harness and attach it to the bike where necessary.
7. Cut the ends of the harness to length (remember to allow room for movement and strain relief).
8. Strip the ends of the harness.
9. Attach the terminals to the wire ends (see the general information section on "Connector Assembly") and use a heat gun to shrink the strain reliefs.

Note: If no colored shrink tubing is attached to a terminal, use the black 1" pieces supplied with the kit.

APPENDIX A WIRING TABLES AND DIAGRAMS

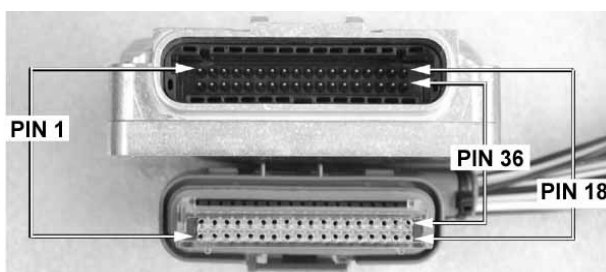


Table 5 – MHC Pin assignments

PIN	FUNCTION	WIRE LABEL	COLOR	AWG
1	STARTER SOLENOID	STARTER SOL	GREEN	18
2	STARTER SOLENOID	STARTER SOL	GREEN	18
3	POWER	PWR	RED	18
4	POWER	PWR	RED	18
5	COMPRESSION RELEASE	COMP RELEASE	GREEN/BLACK	20
6	TURN SIGNAL, RIGHT REAR	RIGHT REAR TURN	BROWN	20
7	REAR BRAKE SWITCH	R BRAKE SWITCH	ORANGE w/ WHITE STRIPE	18
8	POWER, AUXILARY	AUX PWR	REDw/BUE STRIPE	18
9	POWER, AUXILARY	AUX PWR	REDw/BUE STRIPE	18
10	POWER, SPEEDOMETER	SPEEDO PWR	RED	20
11	TURN SIGNAL, RIGHT INDICATOR	RIGHT TURN IND.	BLUE	20
12	TURN SIGNAL, RIGHT FRONT	RIGHT FRONT TURN	BROWN	20
13	TURN SIGNAL, LEFT INDICATOR	LEFT TURN IND.	VOILET	20
14	TURN SIGNAL, LEFT FRONT	LEFT FRONT TURN	VIOLET	20
15	LOW BEAM	LOW BEAM	YELLOW	18
16	HIGH BEAM	HI BEAM	WHITE	18
17	HIGH BEAM INDICATOR	HI BEAM	WHITE	20
18	TURN SIGNAL, LEFT REAR	LEFT REAR TURN	VIOLET	20
19	GROUND	GND	BLACK	20
20	POWER TO SWITCH	SWITCH PWR	RED	20
21	SWITCH RUN POSITION	SWITCH RUN	RED w/ BLACK	20
22	SWITCHED ACC. POSITION	SWITCH ACC	RED w/ GREY	20
23	VEH. SPEED (SPEEDO)	VSPEED	WHITE	20
24	VEH. SPEED (SENSOR)	VSPEED	GREEN	20
25	POWER, LEFT CONTROLS	L CONTROLS PWR	ORANGE w/ WHITE STRIPE	20
26	POWER, RIGHT CONTROLS	R CONTROLS PWR	ORANGE w/ WHITE STRIPE	20
27	COMMAND, RIGHT TURN SWITCH	RIGHT TURN SW CMD	WHITE w/ BROWN STRIPE	20
28	COMMAND, LEFT TURN SWITCH	LEFT TURN SW CMD	WHITE w/ VOILET STRIPE	20
29	COMMAND, HORN SWITCH	HORN CMD	YELLOW w/ BLACK STRIPE	20
30	COMMAND, HIGH BEAM SWITCH	HI BEAM CMD	WHITE	20
31	COMMAND, START RELAY SWITCH	START RELAY CMD	BLACK w/ RED STRIPE	20
32	COMMAND, KILL SWITCH	KILL CMD	GREY	20
33	COMMAND, FRONT BRAKE SWITCH	FRONT BRAKE CMD	RED w/ YELLOW STRIPE	20
34	COMMAND, REAR BRAKE SWITCH	REAR BRAKE CMD	RED w/ YELLOW STRIPE	20
35	POWER, IGNITION	IGN PWR	WHITE w/ BLACK STRIPE	18
36	HORN	HORN	YELLOWw/BLACK STRIPE	18

Note: pins 25 through 34 go to the handlebar controls

Figure 15—Front Lighting Wiring Diagram

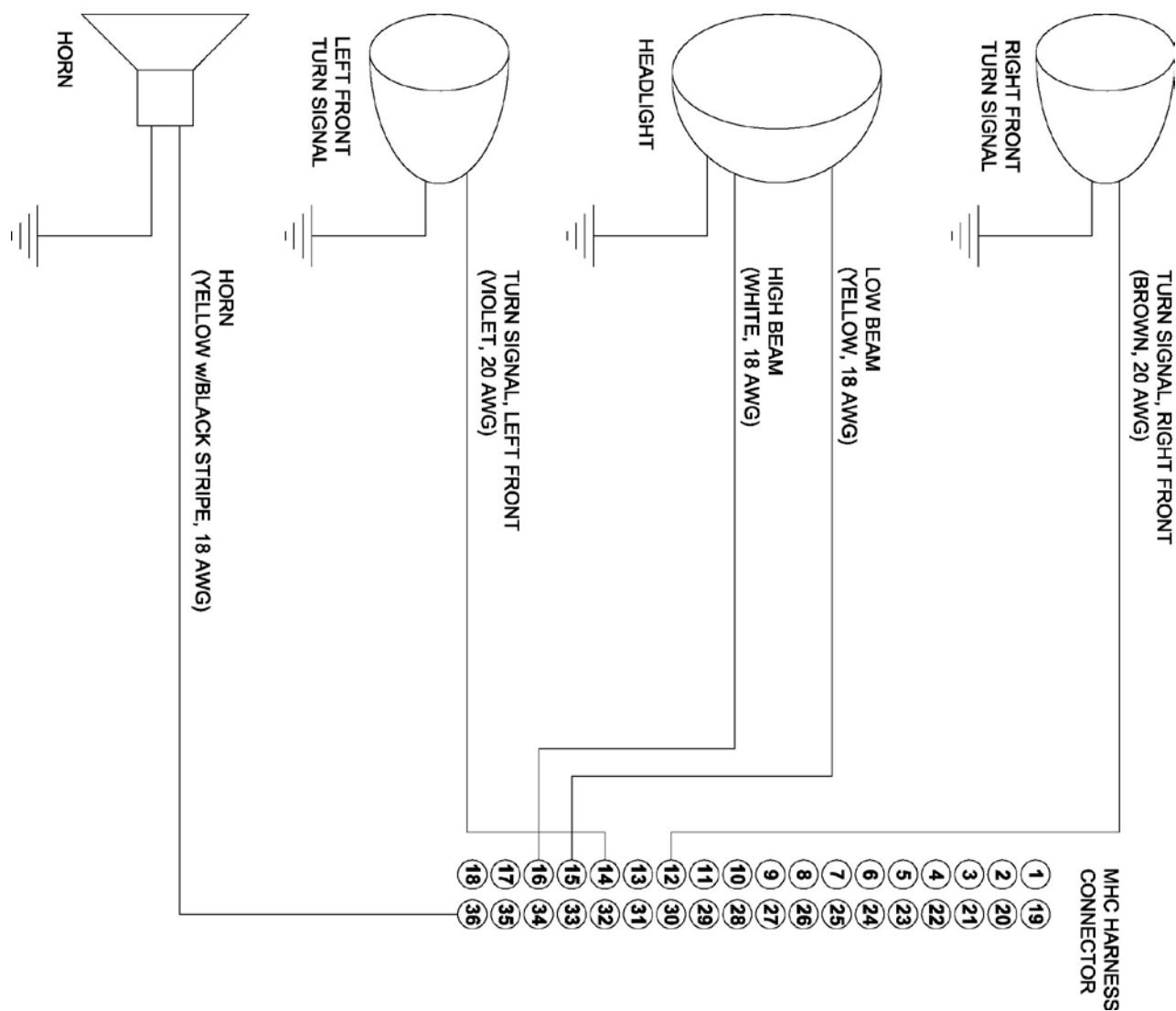


Figure 16—Rear Lighting Wiring Diagram (without Brake Light Module)

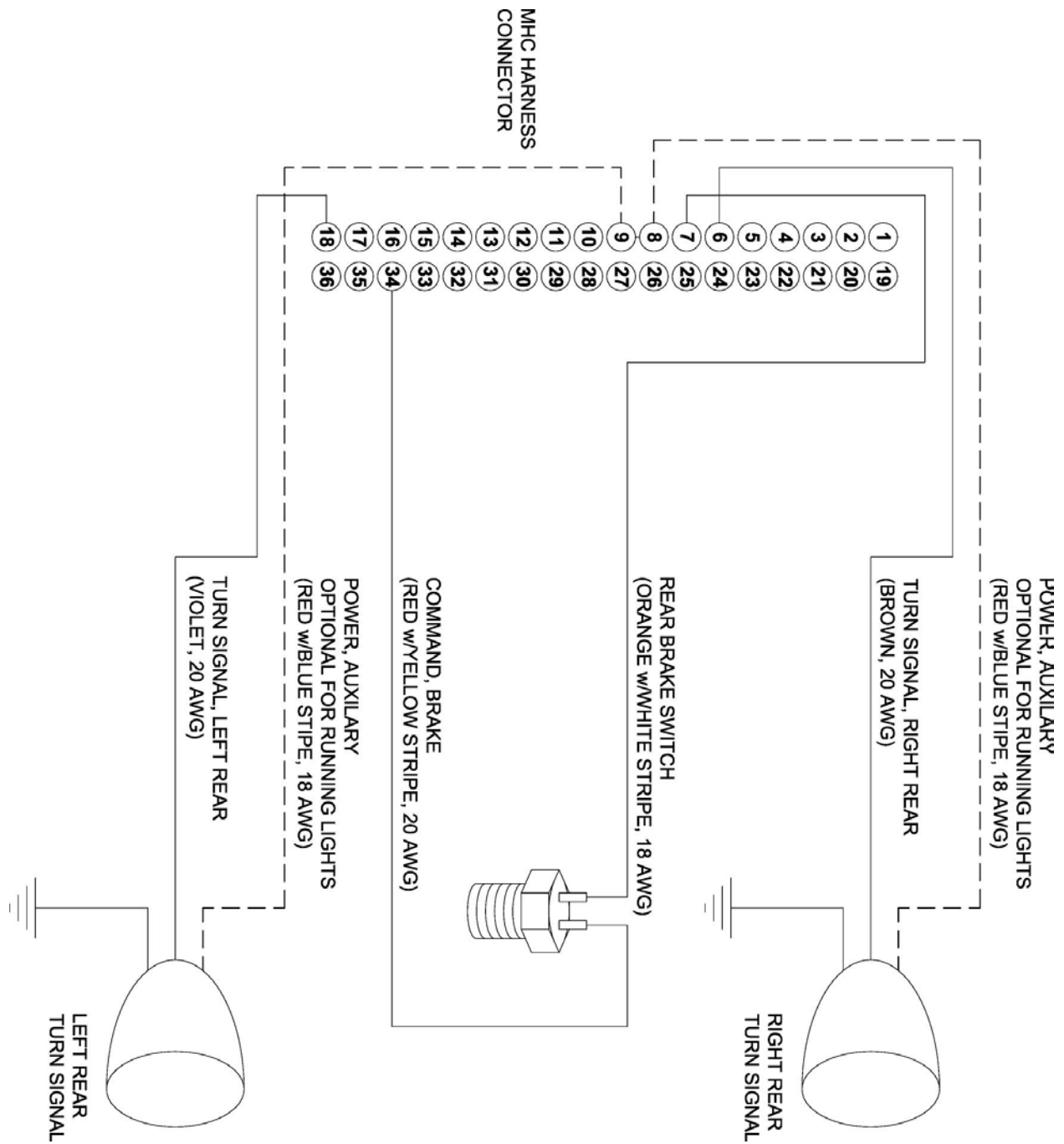


Figure 17—Rear Lighting Wiring Diagram (with Brake Light Module)

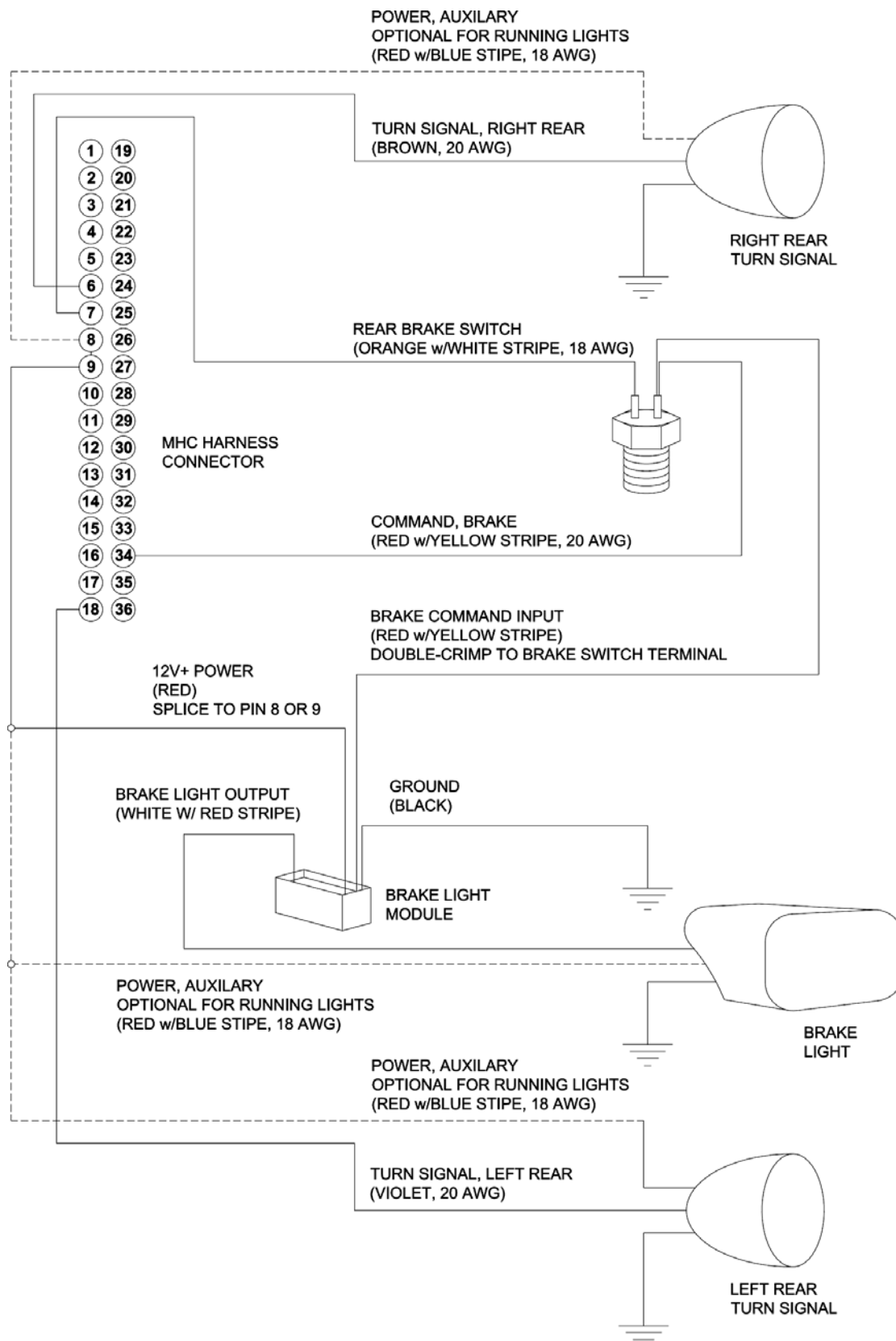


Figure 18—Indicator Wiring Diagram

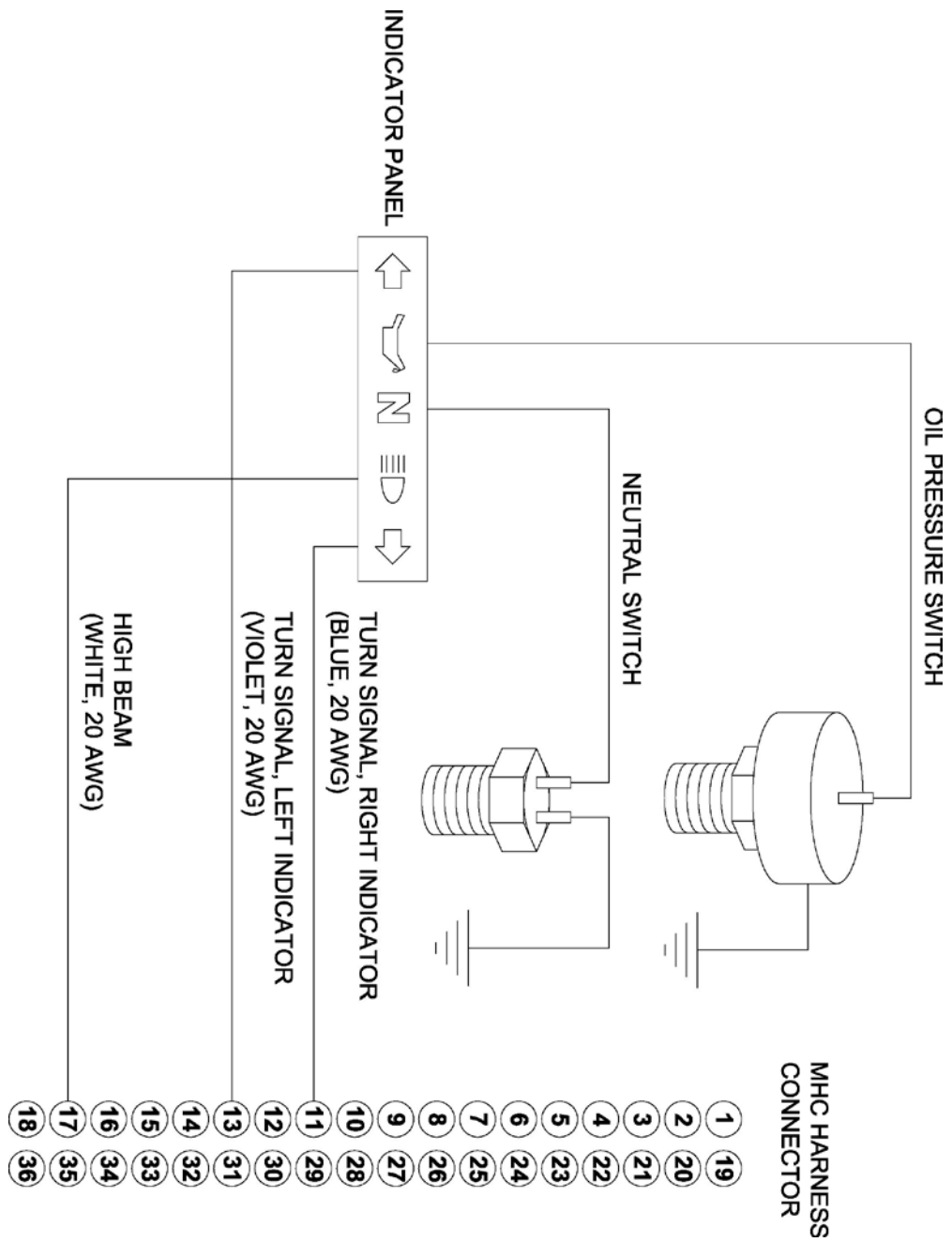


Figure 19—Hand Controls Wiring Diagram

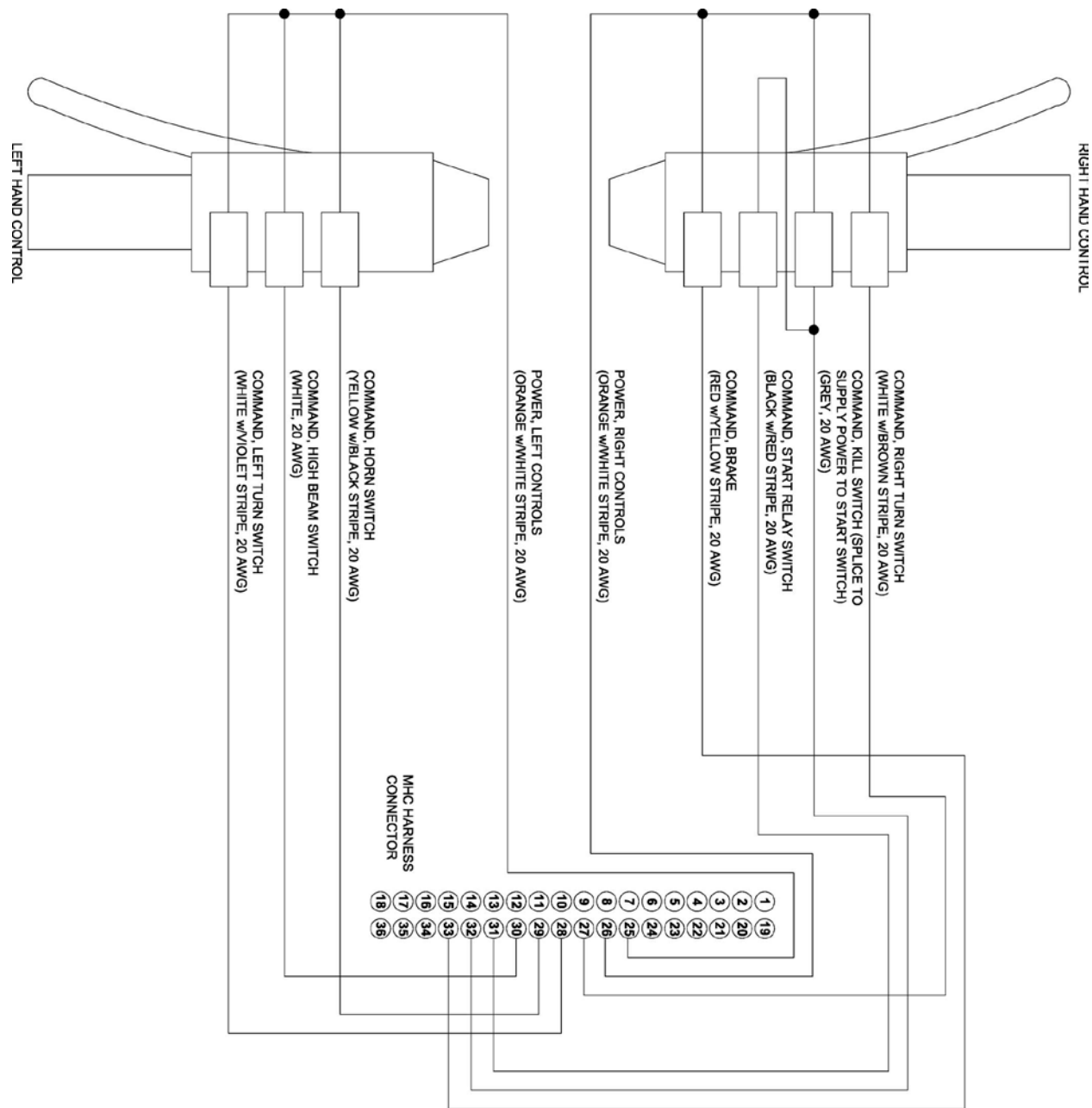


Figure 20—'93-up Harley Hand Control Wire Connections to MHC

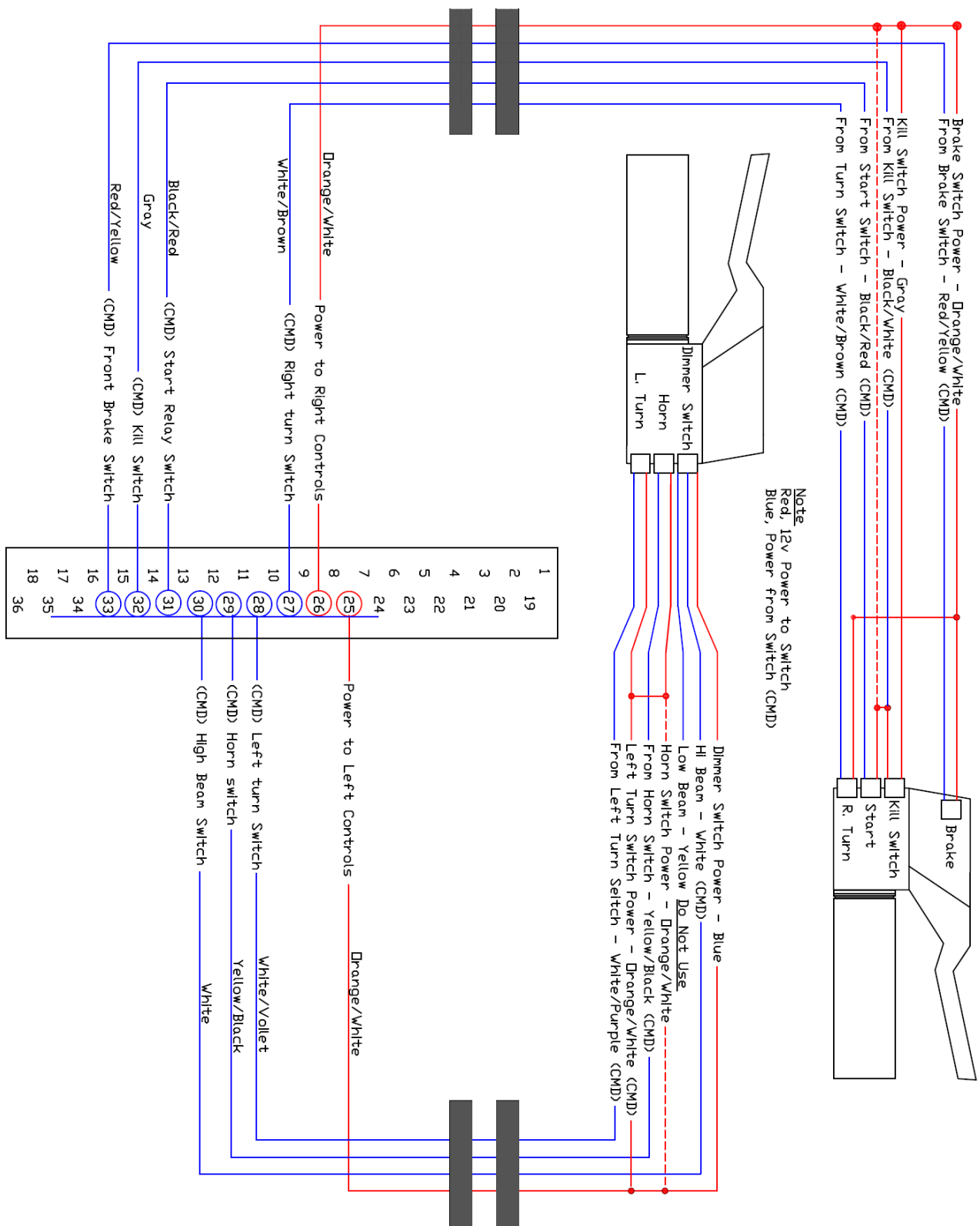
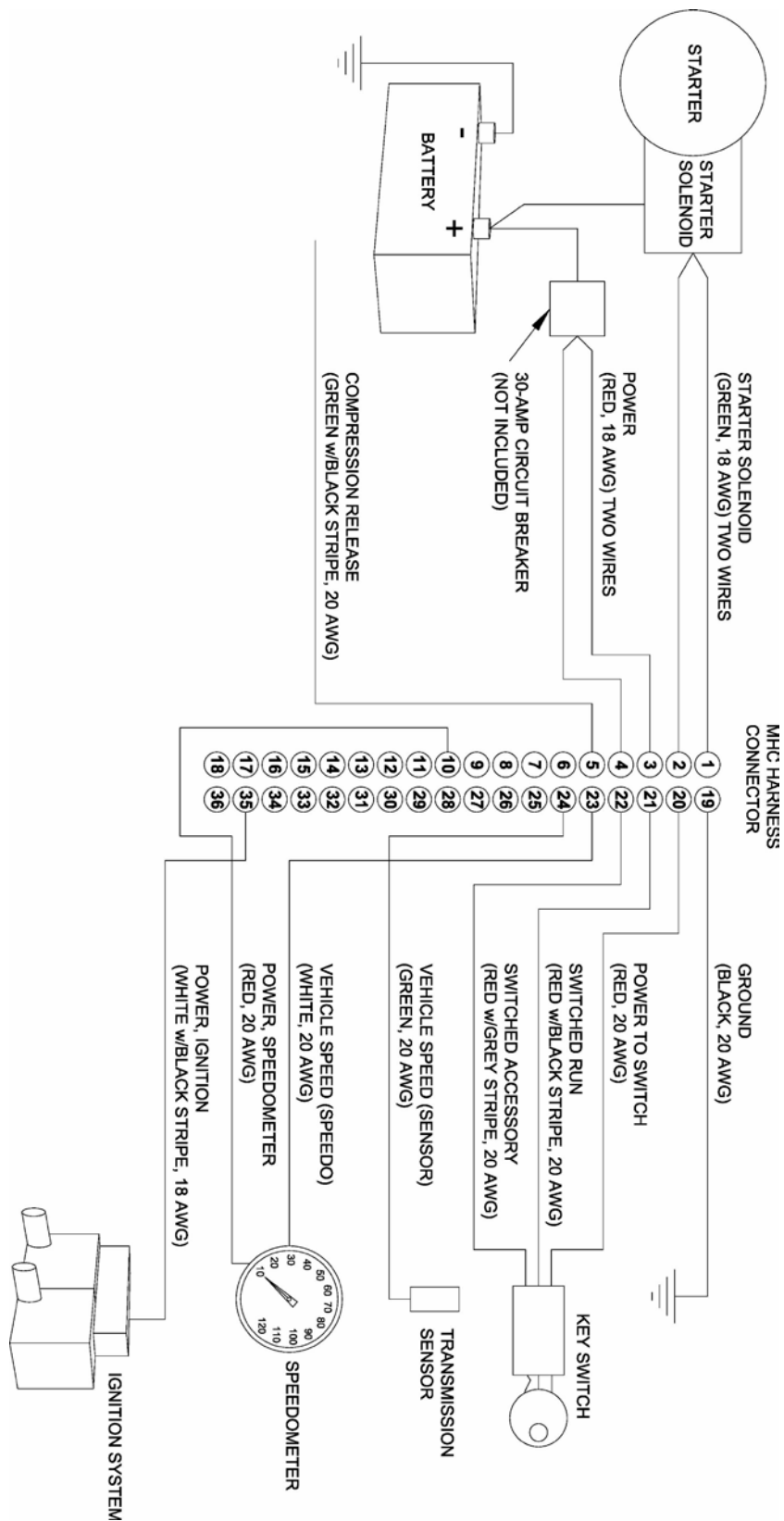


Figure 21—Engine Wiring Diagram



NOTES: