

***LBI-39134A***

***Installation Manual***

**ORION  
MOBILE RADIO &  
CONTROL UNIT  
MOTORCYCLE INSTALLATION**

## NOTICE

This manual covers Ericsson and General Electric products manufactured and sold by Ericsson Inc.

## NOTICE!

Repairs to this equipment should be made only by an authorized service technician or at a facility designated by the supplier. Any repairs, alterations or substitutions of recommended parts made by the user to this equipment not approved by the manufacturer could void the user's authority to operate the equipment in addition to the manufacturers warranty.

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Figure 1 - Typical Orion Motorcycle Installation

# GENERAL INFORMATION

This manual contains instructions for installing the ORION mobile radio, ORION Control Unit, and associated hardware on a motorcycle. The instructions in this manual are typical installation instructions, and are not intended to cover all makes and models of motorcycles.

Final installation of the radio equipment is left to the discretion of the radio installer.

To simplify installation and minimize difficulties, it is suggested that the installer read the entire manual prior to installation. Figure 1 shows a typical motorcycle installation.

## NOTE

Ericsson Inc. does not assume liability for possible degradation of the radio or motorcycle performance due to mounting procedures.

## RELATED DOCUMENTATION

ORION Mobile Radio, Scan & System (136-174 MHz) . . . . LBI-38903  
ORION Mobile Radio, Scan & System (403-512 MHz) . . . . LBI-38904  
ORION Mobile Radio, Scan & System (800 MHz) . . . . . LBI-38902  
ORION Mobile Radio, Scan & System (900 MHz) . . . . . LBI-38906

## OPTIONS AND ACCESSORIES

All available options and accessories applicable to factory installed motorcycle installations are defined below. **NOTE:** These options do not include an ORION radio or an ORION Control Unit. The ORION mobile radio and control unit must be ordered separately and then factory modified to adapt it for motorcycle applications. Applicable hardware is included with each option.

D2ZB5L      ORION Mobile Radio w/Scan Control Unit, (USA Version, GE labels)  
  
D2ZB5M      ORION Mobile Radio w/System Control Unit, (USA Version, GE labels)

D2ZB5N	ORION Mobile Radio w/Scan Control Unit, (USA Version, Ericsson labels)
D2ZB5P	ORION Mobile Radio w/System Control Unit, (USA Version, Ericsson labels)
D2ZB5R	ORION Mobile Radio w/Scan Control Unit, (European Version, Ericsson labels)
D2ZB5S	ORION Mobile Radio w/System Control Unit, (European Version, Ericsson labels)
D2ZB5T	Field upgrade kit to adapt existing remote mount ORION radios (USA Version) for motorcycle applications.
D2ZB5U	Field upgrade kit to adapt existing remote mount ORION radios (European Version) for motorcycle applications.

## **VENDOR DROP SHIP OPTIONS**

The following is a listing of all available Vendor drop-ship options.

### **Antenna Options:**

LE-OM150K.125/TNC	Antenna, Black base w/TNC, 136-174 MHz
LE-OM406BK/TNC	Antenna, Black coil base w/TNC, 403-420 MHz
LE-OM420BK/TNC	Antenna, Black coil base w/TNC, 420-440 MHz
LE-OM440BK/TNC	Antenna, Black coil base w/TNC, 440-460 MHz
LE-OM450BK/TNC	Antenna, Black coil base w/TNC, 450-470 MHz
LE-OM470BK/TNC	Antenna, Black coil base w/TNC, 470-490 MHz
LE-OM490BK/TNC	Antenna, Black coil base w/TNC, 490-512 MHz
LE-OM806HDBK/TNC	Antenna, Black Base w/.100" Whip & TNC, 806-870 MHz
LE-OM900HDBK/TNC	Antenna, Black Base w/.100" Whip & TNC, 896-941 MHz

### **External Headset Options:**

SM-K71BP	Helmet Kit: Bell BT400 w/speaker and noise canceling microphone
SM-K74BP	Helmet Kit: Bell BT400 w/dual speakers and noise canceling microphone
SM-K71QA	Helmet Kit: SHOE1 TJ101 w/speaker and noise canceling microphone
SM-K74QA	Helmet Kit: SHOE1 TJ101 w/dual speakers and noise canceling microphone

SM-MC2GT Motorcycle Cable Kit: includes PTT and CG Monitor

SM-C70GM Belt Box Cable Assembly Interface

## **HARDWARE KITS**

A typical Motorcycle Kit is shown in Figure 2. Hardware Kits 350A1396G1-G4 are shown in Figure 3 and 4. Hardware kit 350A1396G1 is used to factory install the radio mounting bracket and alternator whine reject filter to the weather-resistant case. Hardware kits 350A1396G2-G4 are used by the customer in the field to mount the case and control head to the motorcycle and to optionally use the Harley-Davidson adapter bracket. The Motorcycle Kit includes the items listed below. The antenna and Helmet Kit are Optional.

- MIL-STD weather resistant locking ORION radio case with integral antenna ground plane.
- Radio case mounting plate kit.
- MIL-STD weatherproof microphone.
- Microphone hangar.
- MIL-STD weatherproof speaker.
- Power/Control Cable.
- Fuse Kit.
- Motorcycle accessory cable.

## **USER SUPPLIED EQUIPMENT**

Motorcycle Radio Mounting Bracket



Figure 2 - Typical Motorcycle Kit



## POWER CONSIDERATIONS

The motorcycle may be equipped with additional lights, light flashers, sirens, PA systems, etc. Therefore, consideration must be given to the total system current drain. It is recommended that the radios be set to not exceed the applicable rated RF power output and current drain shown in Table 1 for all ORION motorcycle applications.

### WARNING

**Do NOT** use an ORION mobile radio with power exceeding the power limits shown in Table 1 for motorcycle applications. To do so will result in damage to the motorcycle alternator, battery, and all circuits. Also, the possibility of interference is increased if the proper RF power level is not used. As a final note, RF power may not be set to exceed the maximum regulatory RF power specified by that country's regulatory agency.

### RF Power Adjustments

For factory installed options D2ZB5L, D2ZB5M, D2ZB5N, D2ZB5P, D2ZP5R, and D2ZP5S the maximum RF power levels are factory preset and should only require verification in the field. See Table 1.

For field installed options D22B5T and D2ZB5U, the RF power of previously purchased ORION mobile radios in the field must be appropriately set via modification of the maximum RF power tracking datafields. The left column is set for rated power (example: 250 for 25.0 watts). The tracking data numbers are adjusted to produce RF power as specified in the actual RF power setting column in Table 1.

### NOTE

High power ORION mobile radios **can not** be used in motorcycle applications. The RF power can not be turned down sufficiently to meet regulatory specifications.



Hardware Application Kit 350A1396G1



Case/Antenna Assembly Hardware Kit 350A1396G2

Figure 3 - Hardware Installation Kits for Harley-Davidson & Kawaski Motorcycles



Control Unit/Microphone Hardware Kit 350A1396G3



Motorcycle Adapter Mounting Kit 350A1396G4

Figure 4 - Typical Hardware Installation Kits for Harley-Davidson & Kawasaki Motorcycles

Table 1 - RF Power Versus Current Setting

STANDARD ORION RADIO		ORION MOTORCYCLE RADIO RF POWER		
RF PWR (Rated)	CURRENT (Typical)	RF PWR (Rated)	Actual RF POWER Setting	CURRENT (Typical)
<b>136-174 MHz</b>		<b>136-174 MHz</b>		
50 W (USA Mid Power)	14 A	25 W	27 $\pm$ 0.5 W	8 A
25 W (EURO)	12 A	25 W	24.5 $\pm$ 0.5 W	7 A
<b>403-470 MHz</b>		<b>403-470 MHz</b>		
40 W (USA Mid Power)	14 A	25 W	27 $\pm$ 0.5 W	8 A
20 W (EURO)	12 A	20 W	19.5 $\pm$ 0.5 W	6 A
<b>470-512 MHz</b>		<b>470-512 MHz</b>		
35 W (USA Mid Power)	14 A	25 W	27 $\pm$ 0.5 W	8 A
<b>806-825 MHz</b>		<b>806-825 MHz</b>		
35 W	15 A	25 W	27 $\pm$ 0.5 W	9 A
12 W	7 A	12 W	13.0 $\pm$ 0.5 W	7 A
<b>851-870 MHz</b>		<b>851-870 MHz</b>		
30 W	15 A	25 W	27 $\pm$ 0.5 W	9 A
12 W	7 A	12 W	13.0 $\pm$ 0.5 W	7 A
<b>896-941 MHz</b>		<b>896-941 MHz</b>		
30 W	14 A	20 W	22 $\pm$ 0.5 W	9 A
12 W	7 A	12 W	13 $\pm$ 0.5 W	7 A

# INSTALLATION

Installation of the ORION mobile radio and control unit consists of:

- Assembling and installing the weather resistant motorcycle case assembly, including the adapter bracket, case/antenna mounting bracket, and bottom case (previously assembled) to the motorcycle mounting bracket (user supplied).
- Installing the radio in the radio mounting bracket located inside the weather-resistant case,
- Installing the control unit, microphone, and speaker
- Installing the antenna
- Routing the power, control, and option cables
- Connecting all cables including: power, control, and option cables.
- Installing the Headset Option
- Operational check

All mounting hardware consists of stainless steel screws, locknuts, nuts, and lockwashers to resist corrosion.

## TOOLS REQUIRED

- Socket wrench set U.S./metric with 3" extender
- Open end wrench, adjustable
- Wire clippers
- TORX BIT set, small metric

## **EQUIPMENT INSTALLATION**

### **Assembling & Installing The Weather Resistant Case Assembly**

The motorcycle Weather Resistant Case Assembly may be installed on almost any motorcycle. Installation instructions provided here include information for the Harley-Davidson Dyna and Road King models and the Kawasaki K1000. Figure 5 illustrates installation on Harley-Davidson motorcycles while Figure 6 illustrates installation on a Kawasaki K1000. Refer to these diagrams during installation.

Installation on other motorcycles is at the discretion of the installer.

### **Harley-Davidson Installation**

1. Unpack the weather resistant motorcycle case, remove the key taped to the top cover and open the case.
2. Refer to Figure 5 and verify that all components shown in the diagram are available.
3. Mount the adapter bracket onto the Dyna or Road King radio mounting bracket (user supplied) using the 1/4-20 x 5/8 screws provided.

#### **NOTE**

The radio mounting bracket for the Dyna and Road King models are different and require the use of different mounting holes. See Figure 5. Radio Installation, Harley-Davidson Motorcycles.

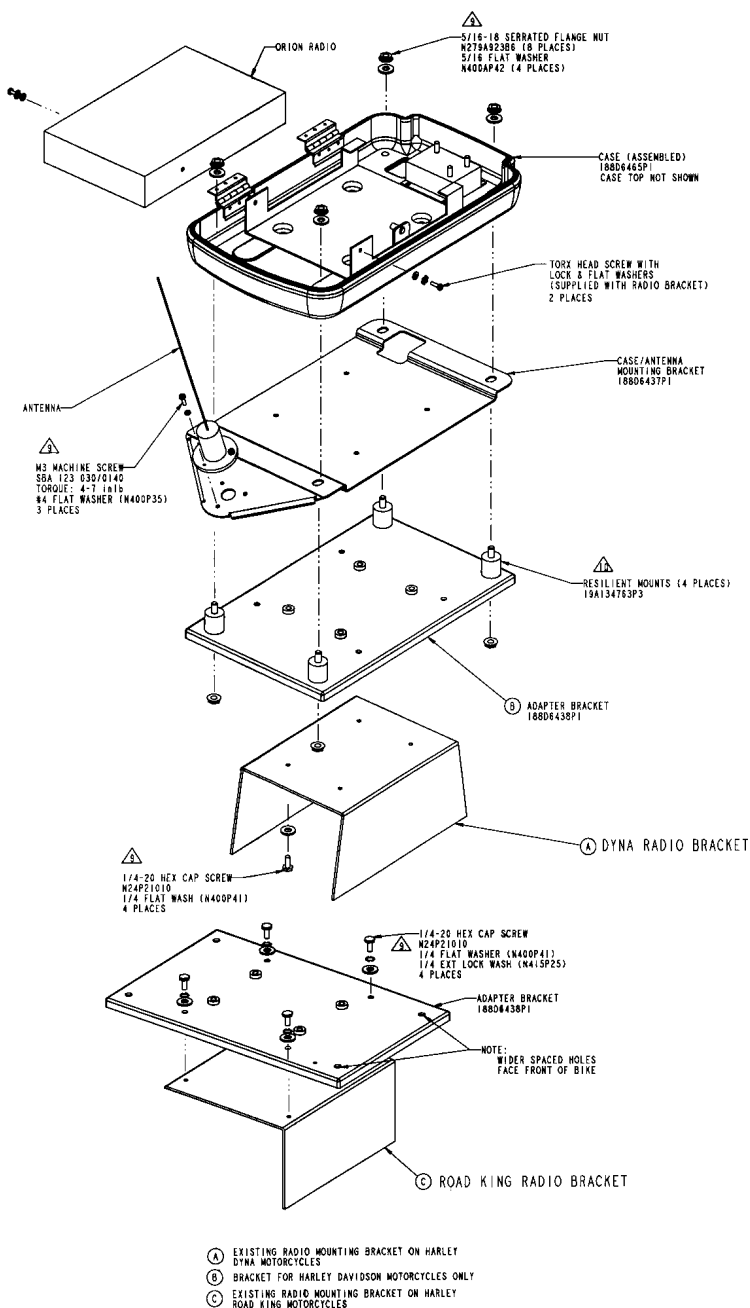


Figure 5 - Radio Installation, Harley-Davidson Motorcycles  
(188D6803, Sh. 1, Rev. 2A)

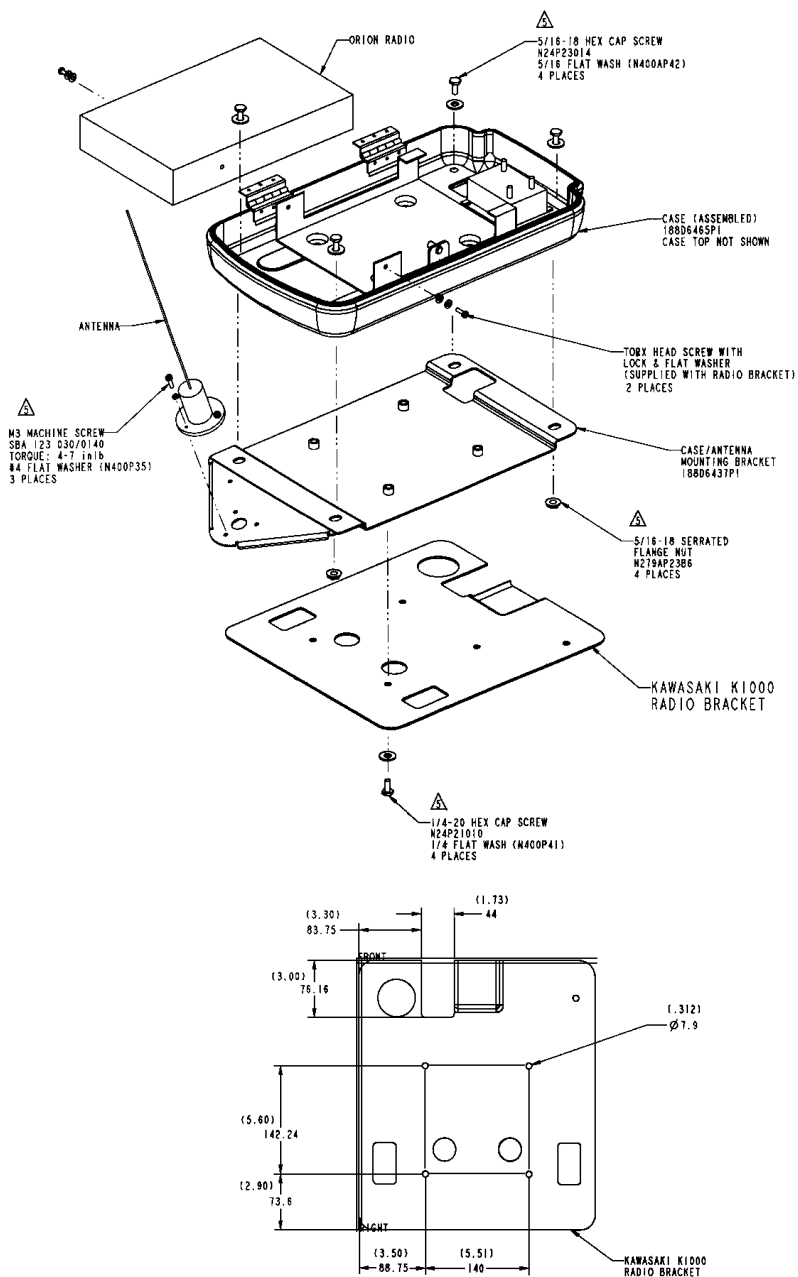


Figure 6 - Radio Installation, Kawasaki K1000  
(188D6803, Sh. 2, Rev. 2A)



4. Insert the power, control, and antenna cables through the square hole in the case/antenna mounting bracket and then through the bottom case assembly.
5. Mount the case mounting bracket and bottom case assembly onto the 4 resilient mounts using the serrated flange nuts and flat washers included inside the weather resistant case. Refer to Figure 7, Mounting Bracket And Case Assembly.
6. Refer to Figure 8 and connect the power cable to the radio. (Refer to Cable connections).
7. Position the radio, fins up, inside the bracket in the bottom case assembly and slide onto the arms. Lock in place using the TORX head screws and lock washers (Taped to the radio bracket).
8. Refer to Figure 8 and connect the antenna and control cables to the radio. (Refer to Antenna Installation).
9. Mount the antenna to the case/antenna mounting bracket using the M3 x 16 mm pan head screws provided. Refer to Figure 7.

## **Kawasaki K1000**

When installing a radio on the Kawasaki K1000, the radio mounting bracket on the motorcycle (user supplied) must be modified by adding 4 holes and notching to allow mounting to the case/antenna mounting bracket. Refer to Figure 6, Radio Installation, Kawasaki K1000.

To install the radio on the Kawasaki K1000, follow the installation procedures for the Harley-Davidson, excluding the use of adapter bracket 188D6438P1. This adapter bracket is used only with Harley-Davidson motorcycles.

## **RADIO MOUNTING BRACKETS**

Radio mounting brackets for all models of bikes are not available from the factory. Should a special application arise for a custom made radio mounting bracket, it must be made using 0.125" steel (minimum). When designing and mounting the bracket, corners/edges should be rounded to the maximum extent possible.



Figure 7 - Case Mounting Bracket And Case Assembly



Figure 8 - Radio Connections

## CONTROL UNIT MOUNTING

Mount the control unit within convenient reach of the operator, and where it will not interfere with the safe operation of the motorcycle. Figure 9 shows a typical installation of the control unit and microphone. Note also, the location of the option switch for the Headset Option.

Due to the large number of different makes and models of motorcycles, it is up to the installer to decide how to mount the control unit and optional equipment. Mounting brackets for all makes and models are not available from the factory, making it necessary to obtain a custom made bracket.

When designing and mounting the control unit bracket, the following guidelines should be considered.

- The installation must NOT interfere with steering or operation of the motorcycle.
- Mounting locations must NOT interfere with the driver or with instrument visibility.
- The installation should provide easy access to the radio operating controls.
- Rounded corners/edges should be employed to the maximum extent possible.



Figure 9 - Typical Control Unit Installation

## CAUTION

Be careful to avoid damaging some vital part of the motorcycle if it becomes necessary to drill mounting holes. Also, always check to see how far the mounting screws will extend below the mounting surface before installing. Caution must be exercised to not drill through the gasoline tank.

## **Control Unit And Mic Hangar Installation**

Refer to Figure 10 for a detailed mechanical drawing of the control unit and microphone mounting assembly. The mounting bracket shown mates with the Harley-Davidson Road King hardware. For all other models, an additional adapter bracket is required.

1. Using the hardware supplied (part of Hardware Kit 350A1396G3), mount the control unit bracket to the motorcycle.

## NOTE

A special spacer may be required between the control unit bracket and the motorcycle to raise the level of the control unit bracket. This spacer, if needed, must be constructed locally.

2. Mount the control unit and mic hangar to the mounting bracket.

After installing the control unit, do not make any cable connections until all cables have been run and secured. Speaker and option connectors are shown on the Interconnection Diagrams listed in the Table of Contents.

## **SPEAKER MOUNTING**

Mount the speaker where the operator can hear it, and where it does not interfere with the safe operation of the motorcycle. On some motorcycles, the speaker can be attached to the windshield bracket using existing bolts to secure the speaker mounting bracket (see Figure 11).

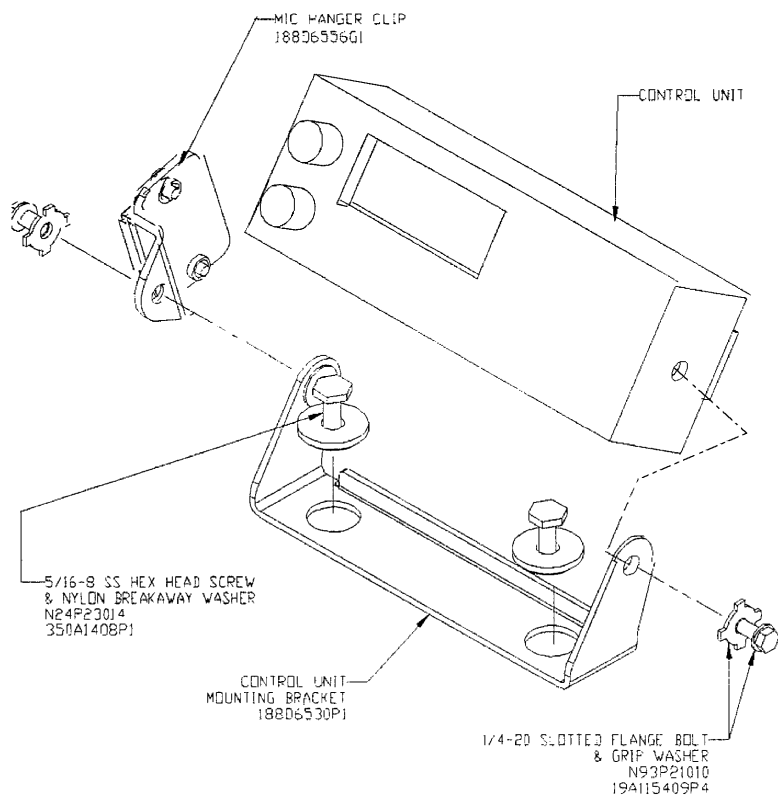


Figure 10-Control Unit Mounting Assembly (188D6804, Rev. 2)



Figure 11 - Typical Speaker Mounting

## **Cable Routing**

### **Power And Control Cables**

Cable routing consists of planning and routing the cable runs between the radio, control unit, and battery. The cables should be routed away from exhaust pipes, mufflers, and moving parts, or where mechanical damage may result. Secure all cables with black cable ties to provide a clean installation.

The power and control cables, red and black, exit the radio case assembly through the square hole in the front of the box and are routed to the area beneath the saddle. The fused power cables (19B802622P2 or 19B802554P25) from the radio terminate here and are connected to the battery. The control cable is routed through the triangular frame assembly to the rear of the control unit.

### **Option Cable**

The option cable is routed from the option connector on the rear of the control unit CG/PTT disable switch mounted on the left handlebar.

## Typical Harley-Davidson Installation

1. Disconnect gas line from tank and drain gas into an approved container.
2. Remove cowling, gas tank, and fairing, if required, to gain access to the triangular frame assembly beneath the gas tank to permit cable routing.
3. Push saddle support springs forward to release the saddle and tilt forward to gain access to the area beneath the saddle.

### NOTE

The power cable is designed for negative ground systems only. The power and control cable functions provided for the USA version consist of three separate cables: RED (positive), BLACK (negative), and a control cable. In the European version, all functions are in one cable, the power/control cable.

4. Pass the power and control (power/control cable - European version) cables through the square hole in the bottom of the radio case assembly to the area beneath the saddle. See Figure 8 which shows cable routing under the center of the case assembly. Figure 12 shows the cabling underneath the saddle area. (Note the location of the option cable and connector, not being used).
5. Refer to Figure 13 and route the cables through the center of the triangular frame assembly to the area at the rear of the control unit. The cable may be routed along side existing cables and secured to them with cable ties.

### NOTE

It may be necessary to notch a portion of the cowling at the control unit end and at the saddle area to provide entrance and exit holes for the cable. The entrance and exit cutaway holes are required to permit the cowling to be remounted flush to the gas tank.

6. Route the control cable to the rear of the control unit and make the connection to the right rear of the control unit as shown in Figure 14. Any excess cable will reside beneath the saddle area. (The option and accessory cable is shown connected to the left rear of the control unit).
7. Re-examine cable routing and be sure that all cables are neatly routed and secured with cable ties.
8. Install a cable clamp on saddle mounting bracket (left side) and secure the power and control cables from the radio case assembly.

9. Route speaker leads from the control cable underneath the handlebar to the rear of the instrument panel assembly in the vicinity of the speaker. Secure to headlight cabling with cable ties. Excess cable should be bundled and secured with cable ties behind the instrument panel assembly.

### **NOTE**

Refer to Headset Option Installation for accessory cable routing instructions.

10. Connect speaker leads from accessory cable to speaker cable.
11. Connect negative power lead to the battery negative (-) terminal.
12. Connect positive power lead to the battery positive (+) terminal.
13. Reinstall gas tank, cowling, and secure saddle.
14. Verify all electrical connections: radio, control unit, antenna, option switch, speaker, and battery.
15. Close and lock radio case assembly.



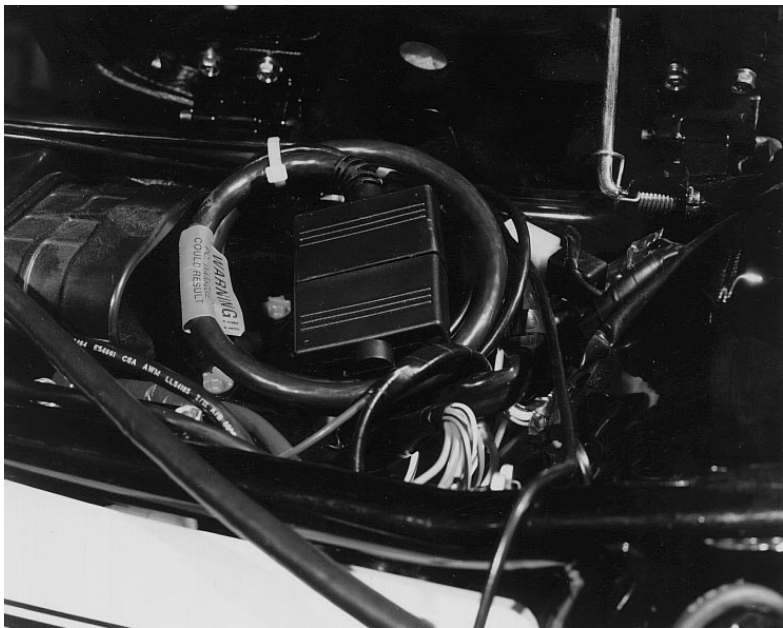


Figure 12 - Option Cable Stored Beneath Saddle Area

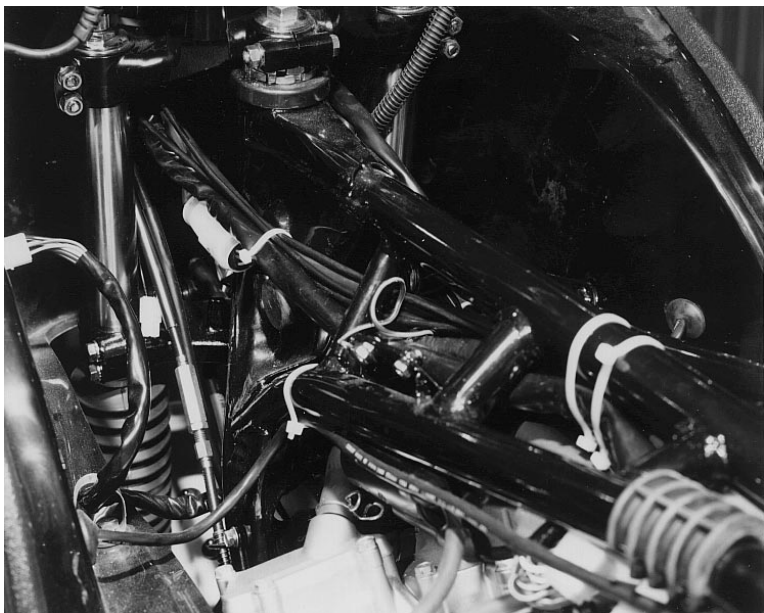


Figure 13 - Triangular Frame Assembly

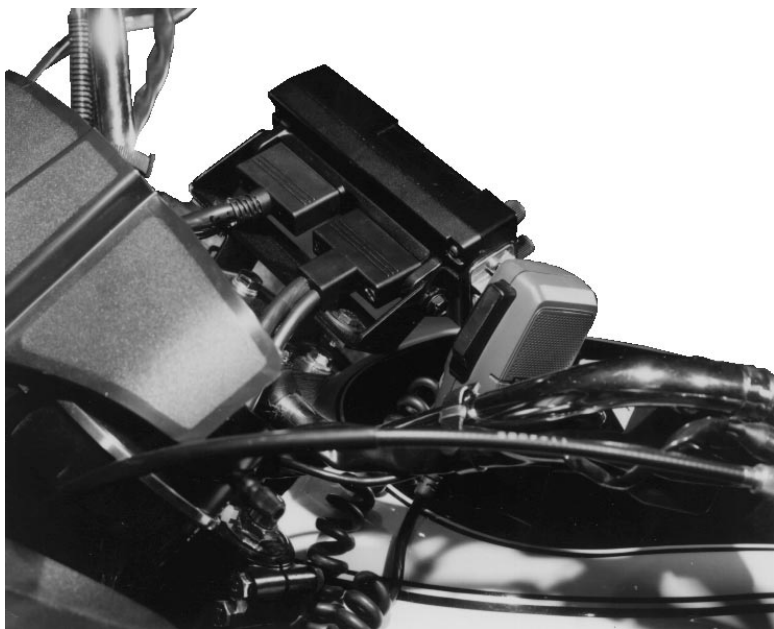


Figure 14 - Control Unit Connections

**For motorcycle models equipped with gas tank fairing**

The cable may be routed from the saddle area, under the fairing, around the left side of the gas tank filler pipe, and up to the area of the control unit. The fairing may have to be notched to provide entrance and exit space. Run the control cable as directed in Steps 1 thru 3.

1. Remove all the screws securing the fairing. Next, unscrew and remove the gas tank cap and lift off the fairing. Replace the gas cap immediately.

**WARNING**

Always replace the gas cap as soon as the fairing is replaced/removed. This is necessary to reduce the possibility of an explosion as well as to prevent drill shavings or other debris from getting into the gas tank.

2. Run the cables from the saddle area up the left side of the gas tank to the area of the control unit.

## **NOTE**

It may be necessary to notch a portion of the fairing at the control unit end and at the saddle area to provide entrance and exit holes for the cable. The entrance and exit cutaway holes are required to permit the fairing to be remounted flush to the gas tank.

3. Before replacing the fairing, the control cable and any option cables may be run under the fairing also. Replace the fairing by removing the gas cap, repositioning the fairing, then replacing the gas cap and the screws that secure the fairing.

### **For motorcycles not equipped with a gas tank fairing.**

After making power connections, run the control cables up the left side of the motorcycle to the control unit and secure the cables with the cable ties. All cables connect to the back of the control unit.

## **Cable Connections**

Cable connections consist of connecting the power and control cables (individual red + and black -), the radio control cable, and the antenna cable. Verify that all cables have been connected and are secure.

Refer to control cable assembly drawings 19B802554 and Interconnection Drawings 188D6783 for all electrical and mechanical application details.

### **Power Cable (19B802622P2, USA Version)**

As shipped from the factory, the power cable is equipped with a 12 ampere in-line fuse (installed) and ring terminals. The power cable supplies power from the battery to the radio. Refer to Figure 8, Radio Connection. **Note:** The European Version Power Cable, 19B802554P25, is a combined cable containing both the power and control cables.

1. Connect the red lead (+) to the battery terminal on the alternator whine filter and the black lead (-) to ground on the alternator whine filter.
2. Route the cables to the battery and then connect the black (-) and the red lead (+) to the battery terminals.

## **Control Cable**

The control cable (remote mount, extended option) is routed between the control unit and the motorcycle radio case. In addition to the main cable, the cable assembly contains a pair of black speaker leads and a single yellow wire for ignition switch standby control. Normally, the ignition switch standby control feature is not used in motorcycle applications and the yellow fuse assembly provided is discarded and the wire terminated. However, at the customers discretion, the ignition switch standby control feature may be used.

The plug connections include the microphone, speaker, option cable, and the control cable. Refer to the interconnection diagram 188D6783 and to diagram 19B802554P23 or P25 (European) for cable identification.

1. Plug the black speaker leads from the control cable into the speaker cable.
2. Plug the control cable into the right rear receptacle of the control unit.

## **Ignition Switch Option**

### **NOTE**

The ORION radio, as shipped from the factory, has the “ignition sense” feature disabled. As such, the radio is powered ON or OFF as determined by the front panel ON-OFF/VOLUME control only (assuming A+ and A- are connected). If the “ignition sense” feature is to be enabled, open the top cover of the radio and remove the shield from the logic PWB. Slide switch SW601 from position 3-2 to 1-2. Replace shield and top cover. Be sure to apply correct torque to screws holding the top cover in place. Refer to ORION Maintenance manual for installation instructions.

**Accessory Cable** - The accessory cable (19B802554P24) provides connections for the external headset, VGE/DES keyloader, and other options i.e., data terminal, external encoder/decoder, etc. Refer to “Headset Option Installation.

# ANTENNA INSTALLATION

## General

The Ericsson ORION motorcycle options for the VHF, UHF, 800 MHz, and 900 MHz land mobile radio bands were specifically designed for use with Larsen OM series antennas. With the OM series antenna a ground plane is no longer necessary. The OM series antenna is an end fed high impedance antenna which provides the proper VSWR and radiation pattern without the use of a ground plane. Typical antenna gain without a ground plane is 0 dB. If a ground plane were to be used, the antenna gain will increase by 2.4 dB.

The case/antenna mounting plate (188D6437P1) was specifically designed to fit the hole mounting pattern for the OM series mount.

### CAUTION

Since the Larsen OM series antenna is a high impedance, voltage fed antenna, the length of the coaxial cable from the antenna to the ORION's RF port is critical. It cannot be just any arbitrary length. To prevent possible extraneous radiation, RFI feedback from the antenna to the radio, high VSWR, and antenna ground currents, select an antenna coaxial cable length that is close to a multiple of an odd quarter-wavelength.

To properly use a thru-line wattmeter one of the following two conditions must be met:

- If the wattmeter is installed right at the ORION's RF port and the odd multiple of a quarter-wavelength of coax to the antenna is used, correct readings will result. Any other length of coax will result in improper readings.
- If a length of coax equal to a multiple of a half-wave length is installed between the ORION's RF port and the thru-line wattmeter and an odd multiple of a quarter-wavelength of coax to the antenna is used, correct readings will also result. Any other length of coax will result in improper readings.

To calculate the proper cable length of the antenna coaxial cable, proceed as follows:

1. Determine the center frequency of the majority of programmed transmit channel frequencies.

2. Use the formula:  $\frac{1}{4}\lambda \text{ in} = \frac{2805}{F(\text{MHz})}$

Example 1: Assume the customer has an 800 MHz ORION with most of the transmit frequencies between 816-821 MHz. Therefore, center frequency is 818.5 MHz. Applying the above formula results in:

$$\frac{1}{4}\lambda \text{ in} = \frac{2805}{818.5} = 3.43 \text{ inches}$$

$$\frac{1}{2}\lambda \text{ wavelength (in inches)} = 6.85 \text{ inches}$$

The cable length should be  $3.43 + n \times 6.85$  inches. Since the installer will need a length of the coax from the OM series antenna to the radio to be at least 22 inches long to physically connect the antenna to the radio, he must calculate a length of coax that will meet the odd quarter-wavelength requirement and be greater than 22 inches.

Choose  $n=3$ . Coaxial cable length is  $3.43 + 3 \times 6.85 = 23.99$  inches.

Example 2: Assume the center frequency is 155 MHz. Applying the formula:  $\frac{1}{4}\lambda = 18.10$  inches;  $\frac{1}{2}$  wavelength = 36.19 inches;  $n=1$ .

Coaxial cable length is  $18.10 + 1 \times 36.19 = 54.29$  inches.

## **Antenna Installation**

1. After the proper length of coax cable has been calculated, cut the coax cable (provided by Larsen) so that when the TNC crimp style connector is installed the overall length will equal the calculated length.
2. Route the assembled proper length coax from the antenna, under the antenna bracket, and into the weather-resistant case.
3. Connect the antenna cable to the RF port on the ORION radio.

## **FINAL CHECKS AND CONNECTIONS**

After the weather resistant case is installed, all cables run, and the radio, control unit, speaker, and microphone installed, refer to the interconnection diagrams and verify that all connections have been made and the equipment is properly grounded. Make a final check of all cables to make sure they are

properly connected and dressed away from all moving parts and exhaust pipes, and secured with cable ties. Then recheck all electrical connections and radio mounting hardware.

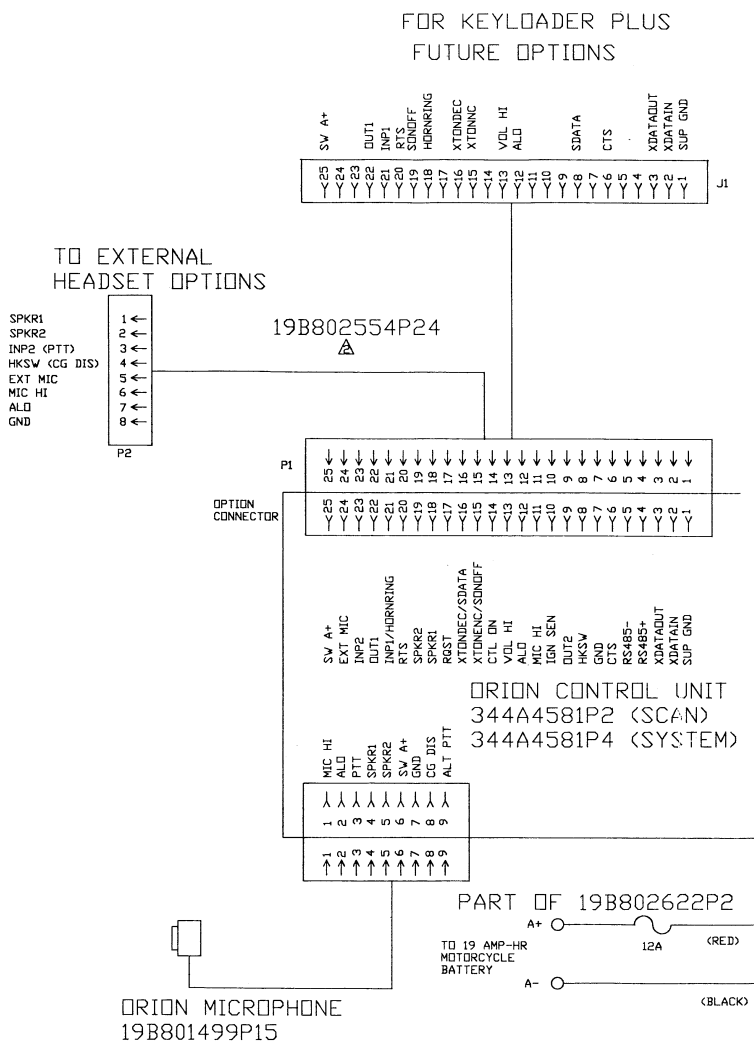
## HEADSET INSTALLATION (OPTION)

### NOTE

To enable the PTT switch on the handlebar switch for external headset options, the ORION mobile radio must be programmed so that INP2 is defined to be “PTT” or “EXTPTT”. Without this software addition, the headset options will not transmit.

The Headset Option includes the helmet-mounted noise canceling microphone with single (or dual) speakers, the belt box assembly (with internal amplifier), and motorcycle cable (with PTT/CG monitor switch).

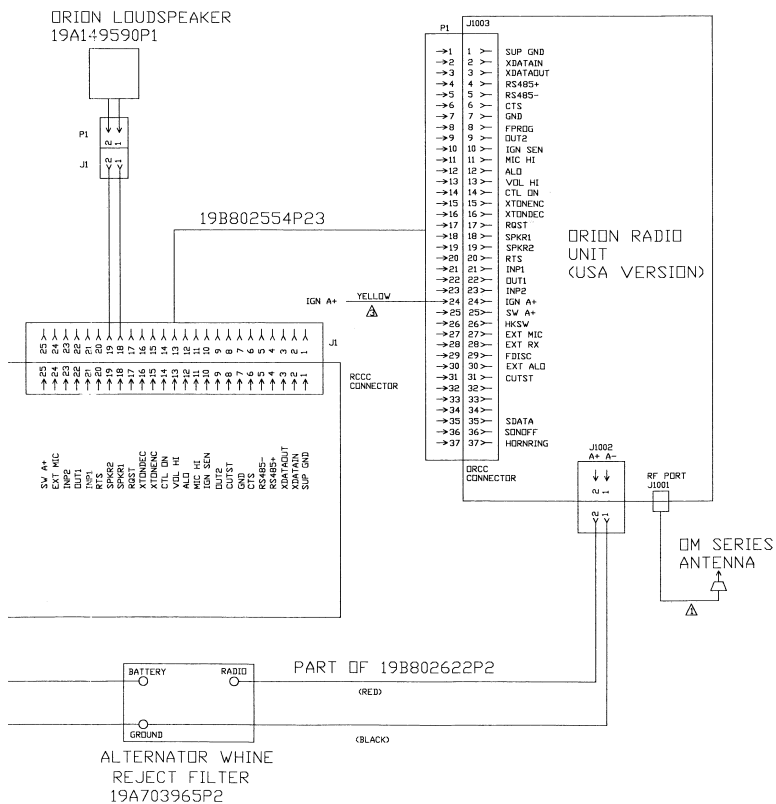
1. Install the noise canceling microphone and single (or dual) speakers in the helmet per instructions provided by the vendor.
2. Remove the RIA plug 19B802554P26 from the option connector on the back of the ORION radio control unit. Connect the accessory cable 19B802554P24 to the option connector.
3. Install the motorcycle cable (SM-MC2GT) containing the PTT/CG disable switch to the left handlebar, insuring that freedom of motion is not compromised. Route the eight pin waterproof connector over to and mate it with the eight pin waterproof connector that is part of accessory cable 19B802554P24.
4. Route the long end of the motorcycle cable (SM-MC2GT) containing the four position quick disconnect plug along the bike and bring it out near the location of the driver's hip.
5. The long end of the accessory cable 19B802554P24 which contains the 25 pin D-subminiature receptacle connector is also to be routed along the bike and any excess is to be coiled up and left under the seat.
6. The driver takes the belt box (SM-C70GM) and attaches it to his belt. The helmet kit quick disconnect plug is mated to the belt box quick disconnect connector.
7. Finally, the other quick disconnect connector of the belt box is mated to the motorcycle cable (SM-MC2GT) quick disconnect connector.



- ⚠ LENGTH OF COAXIAL CABLE TO BE ODD MULTIPLE OF 1/4 WAVELENGTH  
 ⚠ MAY BE DELETED AND REPLACED WITH 19B802554P26 CABLE PLUG.  
 ⚠ IGN A+ NOT NORMALLY USED IN ORION MOTORCYCLE OPTION AND MAY BE REMOVED.

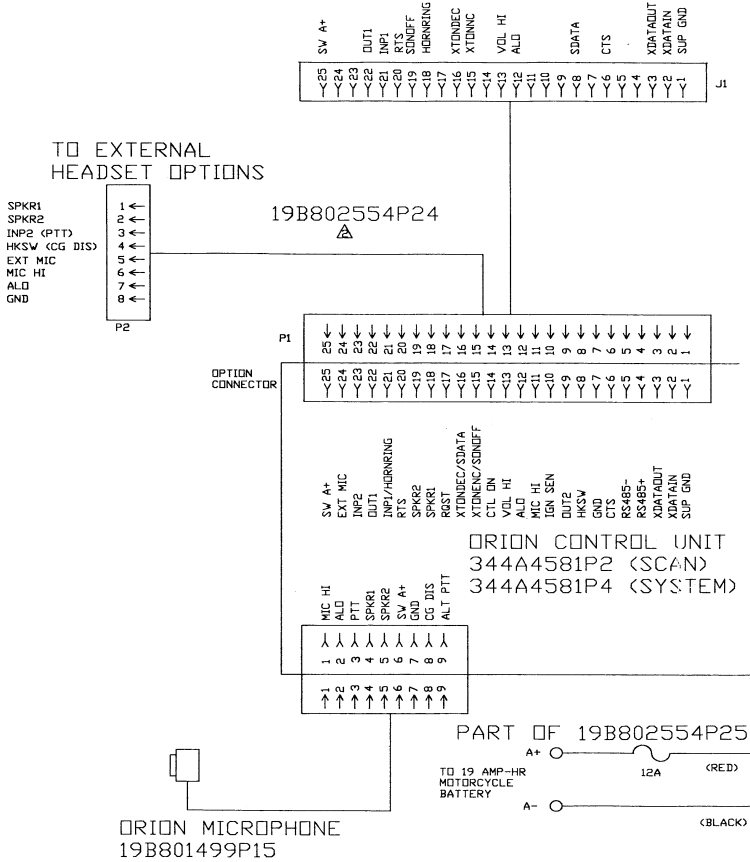
Interconnection Diagram (USA version)  
 (188D6783, Sh. 1, Rev. 2)





Interconnection Diagram (USA version)  
(188D6783, Sh. 1, Rev. 2)

# FOR KEYLOADER PLUS FUTURE OPTIONS



- △ LENGTH OF COAXIAL CABLE TO BE ODD MULTIPLE OF 1/4 WAVELENGTH
- △ MAY BE DELETED AND REPLACED WITH 19B802554P26 CABLE PLUG.
- △ IGN A+ NOT NORMALLY USED IN ORION MOTORCYCLE OPTION AND MAY BE REMOVED.

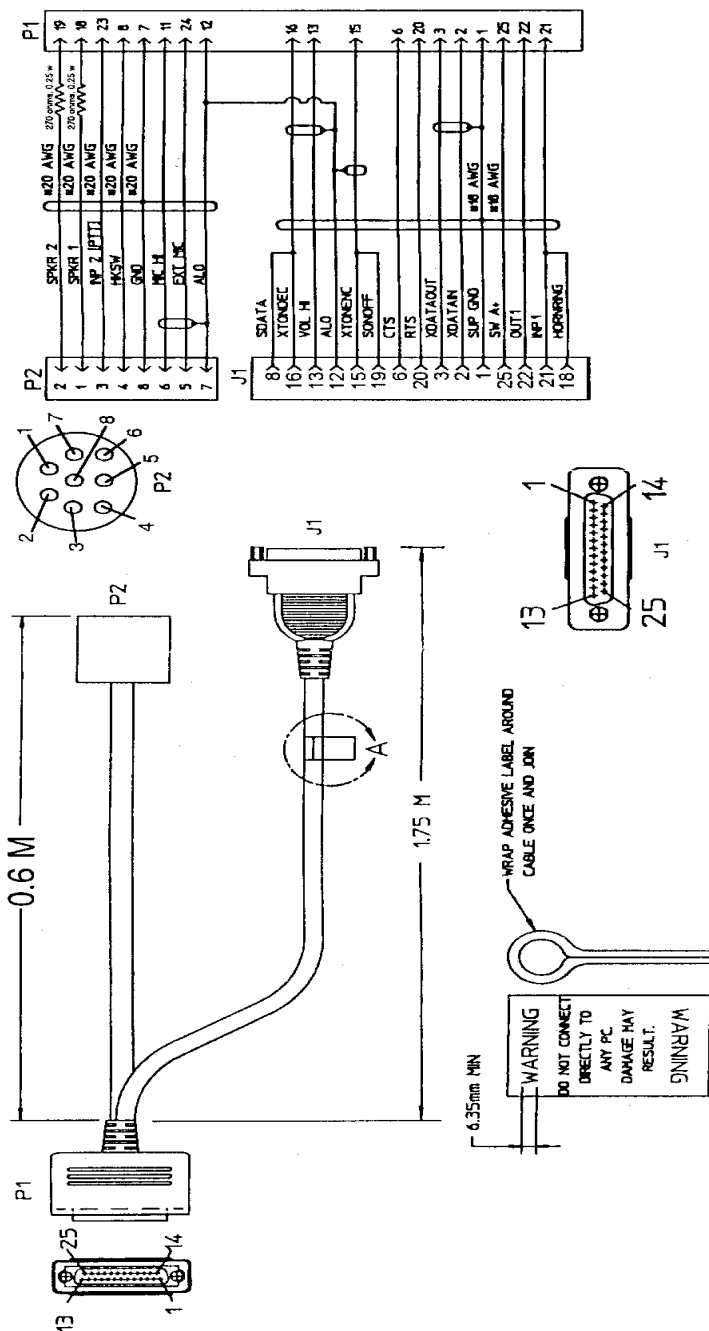
## Interconnection Diagram (European Version)

(188D6783, Sh. 2, Rev. 2)

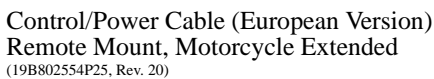


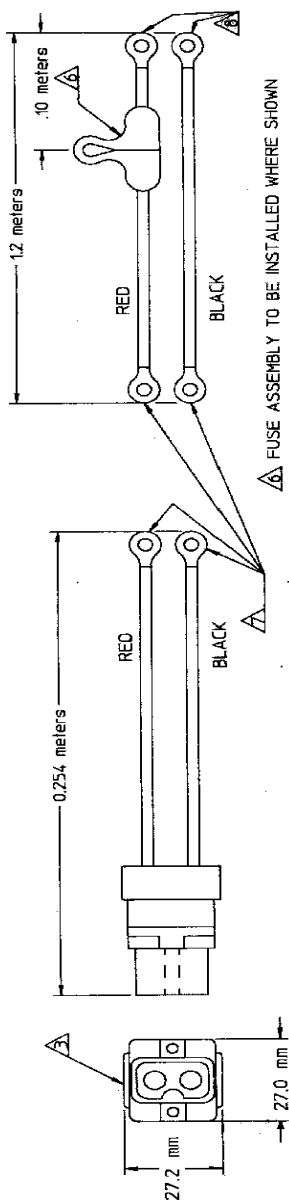


## 36



Motorcycle Accessory Cable  
(19B802554P24, Rev. 20)





△ FUSE ASSEMBLY TO BE INSTALLED WHERE SHOWN USING FUSEHOLDER (BUSSMANN HFB) AND FUSE (12 AMP 32 VOLT BUSSMANN AGC-12)

△ RING TERMINAL SIMILAR TO AMP P/N 2-320565-2

△ RING TERMINAL SIMILAR TO AMP P/N 2-321045-1

9) CONNECTOR MUST PROVIDE A DRIVEN RAIN WEATHERPROOF SEAL PER MIL-STD-810E. NO WATER ENTRY INSIDE CONNECTOR OR ONTO PINS ALLOWED.

② POWER CABLE KIT #14 AWG, 600 VOLTS.

1) ALL DIMENSIONS ARE FOR REFERENCE ONLY. CABLE TO MATCH APPROVED SAMPLE.

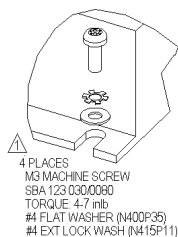
2) CABLE CONSTRUCTION TO BE OF INDIVIDUALLY TINNED STRANDED WIRE. JACKET OF CABLE TO BE OF PVC AND MUST BE EASILY REMOVABLE BY HAND STRIPPING TOOLS.

△ CONNECTOR WITH JACK SCREWS SIMILAR TO JAPAN RADIO COMPANY P/N B19/H-6JWLD00004.

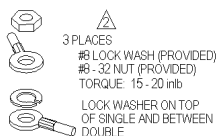
4) BAG AND MARK PART NUMBER 19B802622P2 CLEARLY AND PERMANENTLY ON CABLE AND ON BAG.

5) CONNECTOR MUST WITHSTAND VIBRATION PER MIL-STD-810C, D, & E, HELICOPTER LEVEL (PROCEDURE I).

**DETAIL HDW1  
SCALE 3.000**



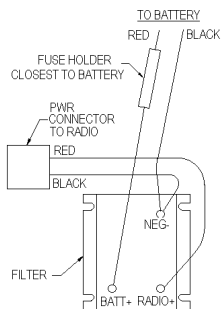
**DETAIL HDW2  
SCALE 1.500**



**DETAIL A**

**WIRE CONNECTION**

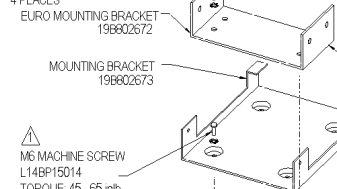
1. USA VERSION PWR CABLE 19B602622P2  
EURO CONTROL/PWR CABLE 19B602554P25
2. CONNECT POWER WIRES TO FILTER USING  
SMALL LUGS



⚠ PART OF HARDWARE KIT 350A1396G1



M4 MACHINE SCREW  
SBA 123 040 0120  
TORQUE: 14-19 inlb  
#8 EXT LOCK WASH (N415P16)  
4 PLACES



M6 MACHINE SCREW  
L14BP15014  
TORQUE: 45-65 inlb  
1/4 EXT LOCK WASH (N415P25)  
4 PLACES



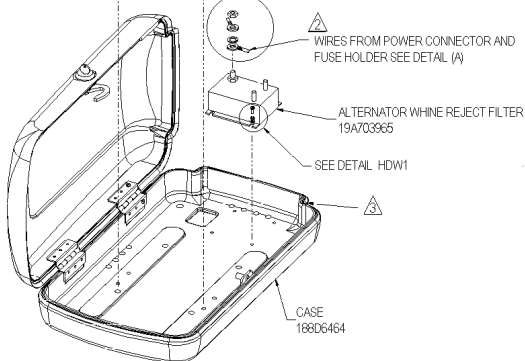
CONNECT POWER CABLES TO FILTER USING LOCK WASHERS  
AND HEX NUTS SUPPLIED WITH FILTER. ORIENT CONNECTORS  
AS SHOWN IN DETAIL (A).

COIL 19B602622P2 AND USA VERSION CONTROL CABLE 19B602554P23  
INSIDE CASE FOR SHIPMENT. COIL EURO VERSION CONTROL/PWR CABLE  
19B602554P25 INSIDE CASE FOR SHIPMENT OF EURO ORDERS.



AFTER ASSEMBLY CLOSE AND LOCK CASE, TAPE KEY IN  
CORNER RECESS, AND REPACK IN ORIGINAL BOX.

BRACKETS NOT USED  
SIMULTANEOUSLY



## Motorcycle Radio Case Assembly

(188D6465, Sh.1 Rev. 3)



# PARTS LIST

## Option D2ZB5L: Scan Control Unit, 344A4581P2 Option D2ZB5M: System Control Unit, 344A4581P4

344A4757P1	Nameplate (USA Label)
344A3723P11	Motorcycle Version Label
19A703965P2	Alternator Filter
19B802554P23	Control Cable (USA Version)
19B802554P24	Accessory Cable
19B802622P2	Power Cable (USA Version)
19B802671P1	Remote Mount Front Cover
19B802672P1	Radio Mounting Bracket (USA Version)
19B803225P1	Foam Pad Cover
188D6464P1	Motorcycle Case (Black)
188D6437P1	Case/Antenna Bracket
188D6438P1	Adapter Bracket (for Harley-Davidson Motorcycles)
350A1396G1	Hardware Kit For Motorcycle Case
350A1396G2	Hardware Kit For Case/Antenna Bracket
350A1396G3	Hardware Kit For Control Unit Mounting Bracket
350A1396G4	Hardware Kit For Adapter Bracket (For Harley-Davidson Motorcycles)

## Option D2ZB5N: Scan Control Unit, 344A4581P2 Option D2ZB5P: System Control Unit, 344A4581P4

344A4757P2	Nameplate (Ericsson Label)
344A3723P11	Motorcycle Version Label
19A703965P2	Alternator Filter
19B802554P23	Control Cable (USA Version)
19B802554P24	Accessory Cable
19B802622P2	Power Cable (USA Version)
19B802671P1	Remote Mount Front Cover
19B802672P1	Radio Mounting Bracket (USA Version)
19B803225P1	Foam Pad Cover
188D6464P1	Motorcycle Case (Black)
188D6437P1	Case/Antenna Bracket
188D6438P1	Adapter Bracket (for Harley-Davidson Motorcycles)
350A1396G1	Hardware Kit For Motorcycle Case
350A1396G2	Hardware Kit For Case/Antenna Bracket
350A1396G3	Hardware Kit For Control Unit Mounting Bracket
350A1396G4	Hardware Kit For Adapter Bracket (For Harley-Davidson Motorcycles)

**Option D2ZB5R: Scan Control Unit, 344A4581P2**  
**Option D2ZB5S: System Control Unit, 344A4581P4**

344A4757P2	Nameplate (Ericsson Label)
344A3723P11	Motorcycle Version Label
19A703965P2	Alternator Filter
19B802554P25	Control/Power Cable (European Version)
19B802554P24	Accessory Cable
19B802671P1	Remote Mount Front Cover
19B802672P2	Radio Mounting Bracket (European Version)
19B803225P1	Foam Pad Cover
188D6464P1	Motorcycle Case (Black)
188D6437P1	Case/Antenna Bracket
188D6438P1	Adapter Bracket (for Harley-Davidson Motorcycles)
350A1396G1	Hardware Kit For Motorcycle Case
350A1396G2	Hardware Kit For Case/Antenna Bracket
350A1396G3	Hardware Kit For Control Unit Mounting Bracket
350A1396G4	Hardware Kit For Adapter Bracket (For Harley-Davidson Motorcycles)

**Option D2ZB5T: Field Upgrade Kit**  
**(ORION Radio Conversion, USA Version)**

344A3723P11	Motorcycle Version Label
19A703965P2	Alternator Filter
19B802554P23	Control Cable (USA Version)
19B802554P24	Accessory Cable
19B802622P2	Power Cable (USA Version)
188D6464P1	Motorcycle Case (Black)
188D6437P1	Case/Antenna Bracket
188D6438P1	Adapter Bracket (for Harley-Davidson Motorcycles)
350A1396G1	Hardware Kit For Motorcycle Case
350A1396G2	Hardware Kit For Case/Antenna Bracket
350A1396G3	Hardware Kit For Control Unit Mounting Bracket
350A1396G4	Hardware Kit For Adapter Bracket (For Harley-Davidson Motorcycles)

## Option D2ZB5U: Field Upgrade Kit (ORION Radio Conversion, European Version)

344A3723P11	Motorcycle Version Label
19A703965P2	Alternator Filter
19B802554P25	Control/Power Cable (European Version)
19B802554P24	Accessory Cable
188D6464P1	Motorcycle Case (Black)
188D6437P1	Case/Antenna Bracket
188D6438P1	Adapter Bracket (for Harley-Davidson Motorcycles)
350A1396G1	Hardware Kit For Motorcycle Case
350A1396G2	Hardware Kit For Case/Antenna Bracket
350A1396G3	Hardware Kit For Control Unit Mounting Bracket
350A1396G4	Hardware Kit For Adapter Bracket (For Harley-Davidson Motorcycles)

### Motorcycle Case Assembly

PART NO.	DESCRIPTION
	Motorcycle Case Assembly 188D6464P1 (Refer To Drawing No. 188D6464)
188D6215P1	Case Top
188D6221P1	Case Bottom
19B804433P1	Hinge (top & bottom)
350A1341P1	Gasket
19B804263P1	Catch Assembly
200-9202	Lock; (sim. to Dirak)
205-0101.0-001	Key; (sim. to Dirak)
19B804717P1 or 19B804717P2	Key: Part 1 is 2 keys (unmolded, Part 2 is 1 key (molded)
19B804429P1	Hooked Cam (sim. to Dirak)
19A702362P306	Cap screw (used to secure hinge)

### Motorcycle Case/Antenna Assembly Mounting Hardware Kit (Less Bracket) 350A1396G2

N415P25	Washer, Lock (Qty. 4)
N400P35	Washer, Flat (Qty. 3)
N400AP42	Washer, SS, FL, 5/16 (Qty. 4)
N279AP23B6	Hex Nut, Serrated, 5/16 (Qty. 8)
N400P41	Washer, Flat (Qty. 4)
SBA123030/0140	Screw, M3x14 (Qty. 3)
N24P21010	Screw, Cap (Qty. 4)
N24P23014	Screw Hex head, 5-16x7-8 (Qty. 4)

**Control Unit/Hand Held Microphone  
Hardware Kit  
350A1396G3**

188D6530P1	Control Unit Bracket (Qty. 1)
350A1408P1	Washer, Breakway (Qty. 2)
19B802554P26	Plug, DB25 (Qty. 1)
19B802871P2	Cover, Micophone, Connector (Qty. 1)
118D6556G1	Hanger, Micophone (Qty. 1)
19A115409P4	Washer, Lock (Qty. 2)
N24P21010	Screw, Cap (Qty. 2)
N24P23014	Screw, Hex head HD, 5-16x7 - 8 (Qty. 2)
19A134763P2	Mount, resilient

**Motorcycle Adapter Bracket Mounting Kit  
350A1396G4**

N415P13	Washer, Lock
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**Hardware Kit  
350A1396G1**

SBA123030/0080	Screw
N415P9	Washer, Lock
SBA123040/0100	Screw
N415P11	Washer, Lock
L14B15014	Screw, Hex Head, M6 x 14
N400P35	Washer, flat

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