

## 2.2 PREPARATION

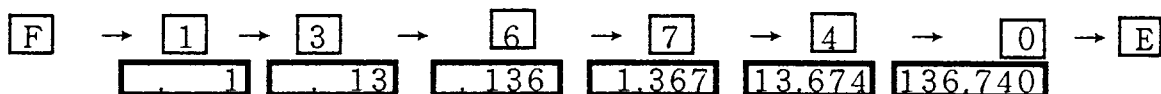
### 2.2.1 Power

- (1) Confirm at first, that a DC power, 11V~ 35V, is supplied from a DC source.  
(or AC power source, option).  
Check DC voltage at the time of checking.
- (2) Turn power switch on by pulling the POWER knob. All settings and adjustments at the last power off are restored. For example, the unit starts and continues signal reception after power on when the unit was receiving before the last power off.
- (3) Turn power switch off to terminate operation.

### 2.2.2 Frequency Memory

- (1) Basic procedure to set a frequency (MANU mode)
  - a. Confirm that MANU is selected. If not, press MANU .
  - b. Enter frequency **[F]** → **Frequency, 6 digits** → **[E]**  
Note : Bearing display (DEGREE) blinks until E is pressed.

Example : Enter 136.740 MHz



Note : In case of missentry, press **[C]** to clear , then enter the correct number.

The first digit should be 0 or 5 , due to setting of 5kHz step and the 2nd 1~7, due to the frequency range of 110~170MHz.. Erroneous input is not accepted.

Above procedures are rewritten as : **[MANU]** → **[F]** → **Frequency, 6 digits** → **[E]**

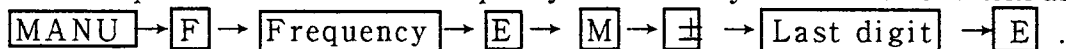
The unit starts reception when a frequency is set.

- (1') To set a frequency in step of 5 kHz when the unit is receiving a frequency in MANU mode.  
Press **[S]** as many times as wanted. The frequency increases or decreases in step of 5 kHz.

- (2) Enter the frequency in a memory

After setting a frequency by procedure (1) or (1'), press **[M]** and set a channel number in the order of a group number and a last digit, and finally, press **[E]** to enter the frequency in the memory channel.

The basic procedures to enter a frequency in a memory channel is rewritten as



## 2.2 PREPARATION

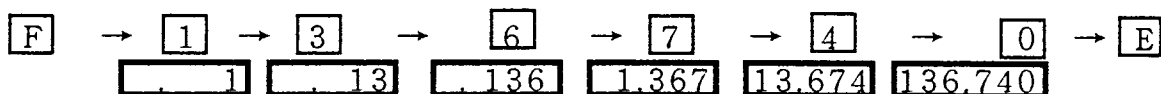
### 2.2.1 Power

- (1) Confirm at first, that a DC power, 11V~ 35V, is supplied from a DC source.  
(or AC power source, option).  
Check DC voltage at the time of checking.
- (2) Turn power switch on by pulling the POWER knob. All settings and adjustments at the last power off are restored. For example, the unit starts and continues signal reception after power on when the unit was receiving before the last power off.
- (3) Turn power switch off to terminate operation.

### 2.2.2 Frequency Memory

- (1) Basic procedure to set a frequency (MANU mode)
  - a. Confirm that MANU is selected. If not, press MANU .
  - b. Enter frequency **[F]** → **Frequency, 6 digits** → **[E]**  
Note : Bearing display (DEGREE) blinks until E is pressed.

Example : Enter 136.740 MHz



Note : In case of missentry, press **[C]** to clear , then enter the correct number.

The first digit should be 0 or 5 , due to setting of 5kHz step and the 2nd 1~7, due to the frequency range of 110~170MHz.. Erroneous input is not accepted.

Above procedures are rewritten as : **[MANU]** → **[F]** → **Frequency, 6 digits** → **[E]**

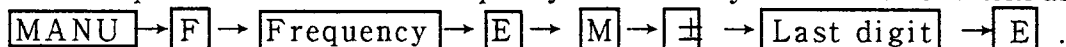
The unit starts reception when a frequency is set.

- (1') To set a frequency in step of 5 kHz when the unit is receiving a frequency in MANU mode.  
Press **[S]** as many times as wanted. The frequency increases or decreases in step of 5 kHz.

- (2) Enter the frequency in a memory

After setting a frequency by procedure (1) or (1'), press **[M]** and set a channel number in the order of a group number and a last digit, and finally, press **[E]** to enter the frequency in the memory channel.

The basic procedures to enter a frequency in a memory channel is rewritten as



Note : There are 3 groups, with group numbers, 0, 1, and 2. A channel number consists of a group number and a last digit. For example, a channel number, 26 has a group number, 2, and a last digit, 6.

(3) Memory of a frequency in SRCH mode

When an interesting frequency is found in SRCH reception, hold that frequency by pressing **HOLD** and enter it into the memory with a channel number by following procedures.

**HOLD** → **M** → **±** → **Last digit** → **E** .

(4) Enter a new SPOT frequency in a memory channel

Set a new frequency and enter the frequency to the memory channel. The old data is canceled by overwriting.

(5) To erase all SPOT frequencies in the memory

a. Turn power switch off once.

b. Then turn power switch on while pressing **M** .

## 2.2.3 Selection

(1) Select a mode of reception and a mode of modulation

a. Select the mode firstly, MANU, SPOT, SRCH or SCAN.

b. Press the chosen mode key .

c. Check the mode of modulation, AM or FM. Press or pull the AM/FM knob when necessary.

(2) Select DF/RCV (this selection may be changed while in operation)

Reception only is selected when DF/RCV switch is pulled. When it is pressed, both reception and bearing measurement are made parallel. RCV is usually selected when the level of signal is too weak to measure the bearing .

(3) Select HOLD (this selection may be changed while in operation)

There are two functions for hold, keeping bearing data while there is no signal and, in SRCH or SCAN mode, lock the frequency.

a. Bearing data in MANU or SPOT mode (the frequency does not change)

When there is no signal, the bearing output fluctuates. When a signal is received, instantaneous bearing data is displayed (data is continuously updated).

When the signal stops and HOLD is off, the bearing output fluctuates widely.

When the signal stops and HOLD is on, the bearing output keeps the last received data until next signal comes.

b. Bearing data and frequency in SRCH or SCAN mode

When there is no signal, the bearing output fluctuates and frequency is automatically swept. When a signal is received, frequency change stops and instantaneous bearing data is updated every second.

When HOLD is off and the signal stops, the unit automatically restarts SRCH or SCAN sweep and bearing output fluctuates.

When HOLD is on and the signal stops, the bearing output keeps the last data until next signal comes and the frequency is locked. When next signal comes at that frequency, the bearing data is updated. To restart SRCH or SCAN, press **[S]**.

## 2.2.4 Adjustment

### (1) DIMMER

When the DIMMER knob is pulled, the azimuth card is illuminated. Rotate the knob clockwise to raise brightness of LEDs and LCD.

### (2) VOLUME

Rotate the volume clockwise to increase the loudness of the speaker.

### (3) GAIN

Rotate the GAIN knob to elevate RF sensitivity.

### (4) SQUELCH

Rotate the SQUELCH knob clockwise to suppress the audio noise when there is no signal.

### (5) AZIMUTH (should be adjusted for true bearing measurement)

Rotate the AZIMUTH card according to the reading of the compass on board. The reading of LED to the AZIMUTH card gives the true bearing of the radio signal. Since azimuth setting is manual, AZIMUTH card should be rotated according to the compass reading when true bearing is required.

## 2.3 RECEPTION AND BEARING MEASUREMENT

### 2.3.1 Operation-MANU

#### (1) Basic procedure for manual reception

Confirm that MANU is ON. If not, press MANU. Set a frequency and receive.

**[F]** → **Frequency, 6 digits** → **[E]**

- Note:
- When **[F]** is pressed, **000** blinks in DF mode at the bearing display (DEGREE).
  - The first digit should be zero, the second should be 1,2,3,4,5,6 or 7, and the last one should be 0 or 5.
  - When an incorrect number is entered, press **[C]** and enter correct number.
  - The relative bearing is displayed in DF mode when a signal is received.
  - When there is no signal and HOLD is OFF, bearing data fluctuates.
  - When there is no signal and HOLD is ON, last bearing data remains.

#### (2) Change to another frequency in 5 kHz step while receiving in MANU mode.

**[S]** or **[±]** → **[S]**

Note: Press **[S]** as many times as necessary. A press of **[±]** alters the direction of frequency change.

### 2.3.2 Operation-SPOT

#### (1) Basic procedure for spot reception

Confirm that SPOT is ON. If not, press **[SPOT]** Call up a channel and receive.

**[M]** → **[±]** → **Last digit** → **[E]**

- Note:
- When **[M]** is pressed, **000** blinks in DF mode at the bearing display (DEGREE).
  - The relative bearing is displayed in DF mode when a signal is received.
  - When there is no signal and HOLD is OFF, bearing data fluctuates.
  - When there is no signal and HOLD is ON, last bearing data remains.

#### (2) Change to another channel in the same group while receiving in SPOT mode.

Press **[S]** as many times as necessary.

### 2.3.3 Operation-SRCH

#### (1) Basic procedure for search reception

Confirm that SRCH is ON. If not, press **[SRCH]**. Set a center frequency,  $F_c$ . When E is pressed, searching starts in step of 5 kHz in the range of  $F_c \pm 500$  kHz.

**[F]** → **Center frequency, 6 digits** → **[E]**

#### (2) Change the direction of frequency sweep, press **[±]**.

- (3) When a signal is received and frequency search stops, press **[S]** several times to find a frequency at which the level indicator shows maximum.
- (4) When an interesting frequency is found in SRCH reception, store it in a memory channel by following procedure.  
**[HOLD]** → **[M]** → **[±]** → **[Last digit]** → **[E]**
- (5) When HOLD is on, incoming signal locks frequency search. To restart search, press **[S]**.

### 2.3.4 Operation-SCAN

- (1) Set SCAN mode

Confirm that SCAN is ON. If not, press **[SCAN]**.

When SCAN mode was selected at the last power off, SCAN restarts when the power switch is turned on.

- (2) Check the group number. To change the group number, operate key as following. **[±]** may be pressed a few times:

**[M]** → **[±]** → **[E]**.

- (3) When HOLD is on, incoming signal locks frequency scan. To restart scan, press **[S]**.

- (4) SCAN pass

When a frequency is not necessary to be scanned while it is being received, following procedure restarts scanning and that frequency is skipped from the next scan:

**[M]** → **[E]** → **[S]**

- (5) A frequency returns to be scanned again from being scan-passed, enter the last digit of its channel number by following procedure.

**[M]** → **[Last digit]** → **[E]**.

### 2.3.5 Bearing Measurement

- (1) Bearing data relative to the bow direction is displayed when a signal is being received both in the digital display in 1° step and on the ring display in 10° step.
- (2) The relative bearing is updated every second and it is an averaged value over a second.
- (3) When the true bearing (relative to the North direction) is necessary, read the bow direction on the compass and rotate the azimuth card. Then the true direction is shown on the azimuth card.  
 Digital true bearing is calculated as the sum of the bow direction and the relative bearing.

# Chapter 3 INSTALLATION

## 3.1 ANTENNA

### 3.1.1 Antenna Site

Following items should be important for antenna installation to minimize disturbance to direction measurement since the performance of a short wave direction finder is vulnerable to the influence of conductive bodies nearby, e.g., upper structure, stay cables, derricks and other antennas.

- (1) The separation of Adcock antenna and the keel line should be minimized.
- (2) The top of the fore mast, radar mast or highest possible position is recommended.
- (3) The Adcock antenna should be situated 2m or higher from the main antenna. Make the horizontal separation larger than 1m from the main antenna by inserting insulators.
- (4) The antenna should be 1m or higher than radar antenna and the horizontal separation from a tip of radar antenna should be 0.8m or more.

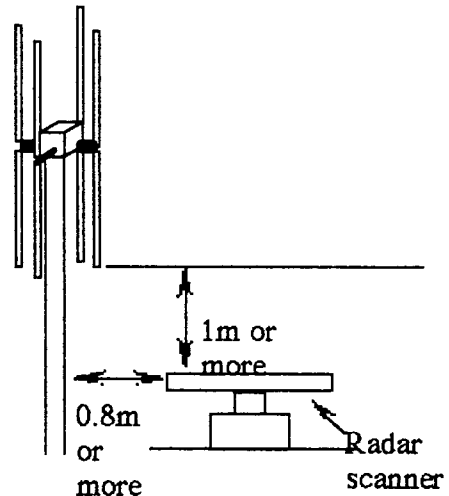
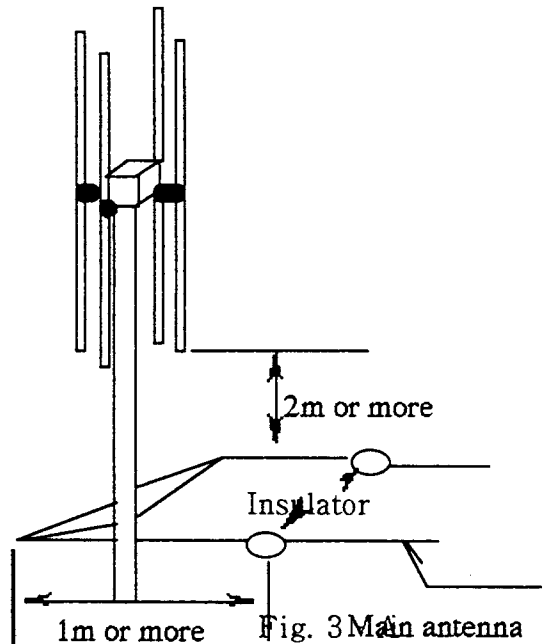


Fig. 3 - B

Fig. 3 - A and Fig. 3 - B  
Installation of antenna

When an H type Adcock antenna is installed on board a small fishing boat, say 15m or smaller, refer to the following figure:

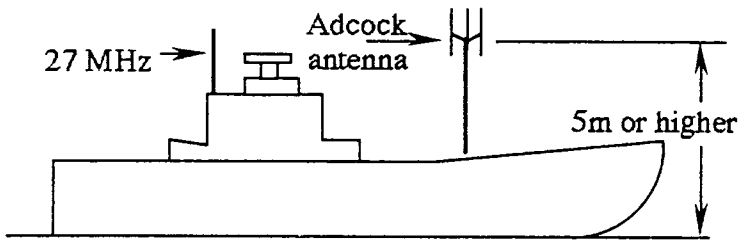


Fig.4-A

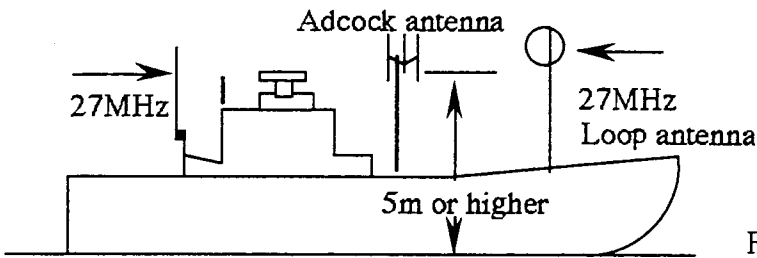


Fig.4-B

Fig. 4-A and 4-B Position of antenna

When a H type Adcock antenna is installed on board a fishing boat, approx. 20~30m long, refer to the following figure :

Fig.5-A

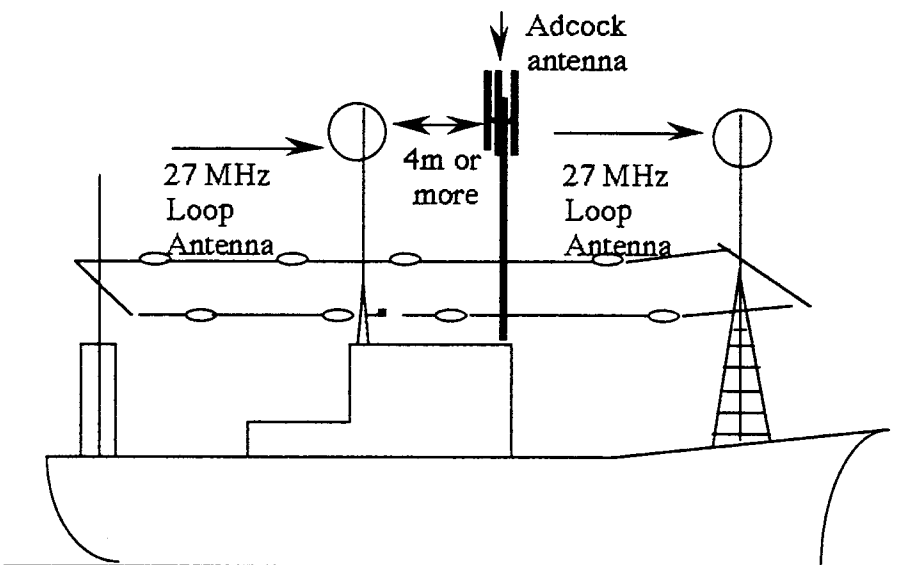




Fig.5-B

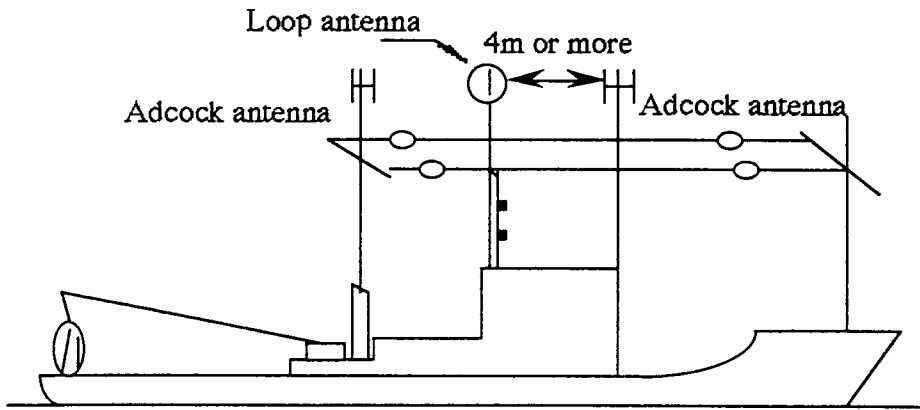


Fig.5-C

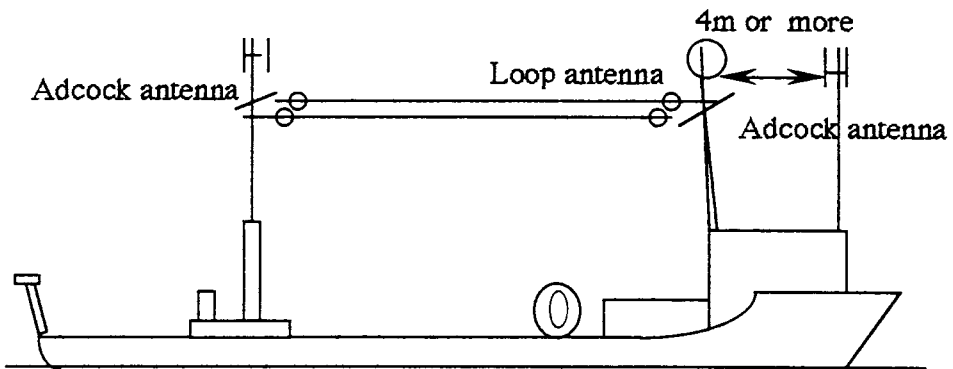


Fig.5-A, 5-B and 5-C      Position of antenna

### 3.1.2 Flange

Weld a flange to a mast or a stanchion by paying attention to its direction. One of diagonals passing through the center of the flange should be parallel to the keel line (bow-stern line). Work with care while welding, since the antenna cable is not heat resistive.

### 3.1.3 Antenna Cable

- (1) Keep separation from heat sources as cable is not heat proof.
- (2) Protect the cable from mechanical damage. When inevitable, protect cable in steel or plastic pipe.
- (3) Pay strict attention to welding after the cable has been laid.
- (4) Avoid electromagnetic interference by keeping distance from power cables of other equipments.
- (5) Never lay the cable along stays or other wires which may cause large error in bearing measurement.
- (6) Keep the length of a cable as fixed before shipment. To change the length of a cable, the main unit should be readjusted. Therefore, avoid to cut or elongate the cable.

NOTE : Two RF coaxial cables (RG-58A/U) are required. One for balanced modulator output signal and the other for sense signal. The sense signal cable is connected with BNC and M type plug. The balanced modulator cable is connected with both BNC plugs. BNC plug with M type plug is painted with red. Any cable length is allowed, but its sensitivity is affected by its length. The cable length is recommended as short as possible. The difference in the length of the coaxial cables must be within  $\pm 2\text{cm}$ .

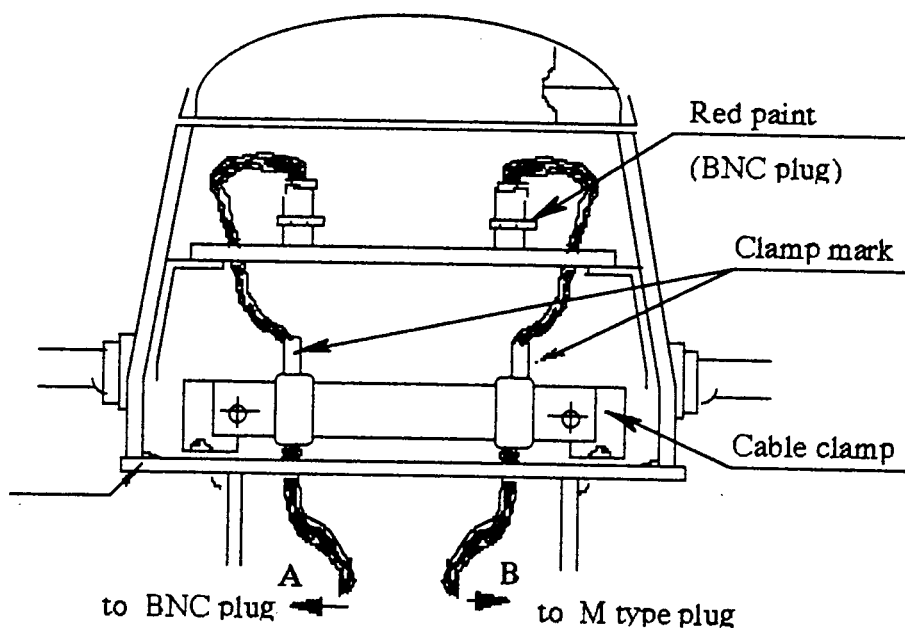


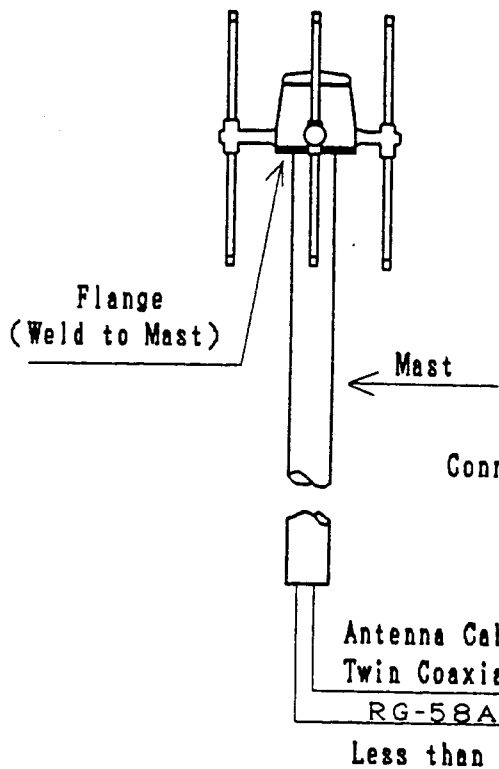
Fig. 6 Antenna Cable Connection

### 3.1.4 Installation of Antenna

Set the antenna on the flange which has been welded at the selected position. Adjust its direction so that the diagonal connection with NS element is set in parallel to the keel line. Confirm that "BOW" mark is on the bow direction. Pay attention to sea water or rain so that printed boards, connectors, etc. inside the antenna are not wet or contaminated during the work. ( refer to Appendix 21)

# STANDARD CONNECTION

H Type Adcock Antenna  
EA-351A



Model TD-L1620A

Connectors  
BNC Type M Type

INPUT  
DC12/24V  
+ : White  
- : Black

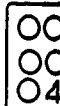
DC24V

AC Power Unit  
TG-1637CS  
(OPTION)

INPUT  
AC100/110V  
AC200/220V

Supplied by Shipyard

Spea



## OPTIONAL CONNECTION

Recommend to use following Antenna Cable depending on required length in order to avoid from attenuation.

Antenna Cable: Twin Coaxial Cable.

17~29m : 5D-2V

30m or longer : 8D-2V

Remark: When using 5D-2V or 8D-2V, additional joint cables for both Cable ends are required as those have larger diameter than that of RG58A/U.

