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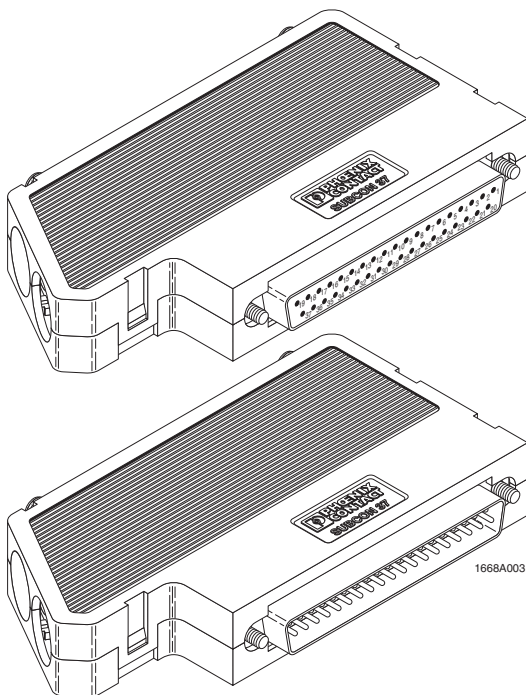
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# SUBCON 37

## D-Subminiature Connector

Installation Instructions 1668\_en\_C



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## 1 Unpacking and Inspection

This SUBCON 37 D-sub connector was inspected prior to shipment. After connector is unpacked, inspect all items for possible damage that may have occurred during shipment. Contents applicable to the SUBCON 37 are shown in Figure 1.

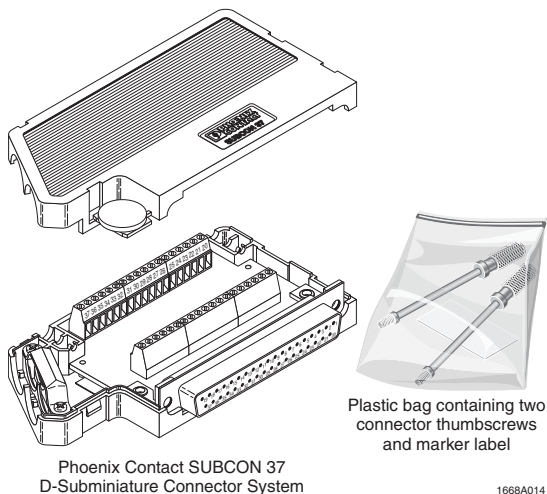


Figure 1. Components of the SUBCON 37 D-Subminiature Connector

## 2 Physical Description

Components that make up a typical SUBCON 37 connector are identified in Figure 2. Table 1 provides a description of the items shown in Figure 1. Table 2 at the back of these instructions provides ordering information for the SUBCON 37 connector and Table 3 provides technical data for the SUBCON 37 connector.



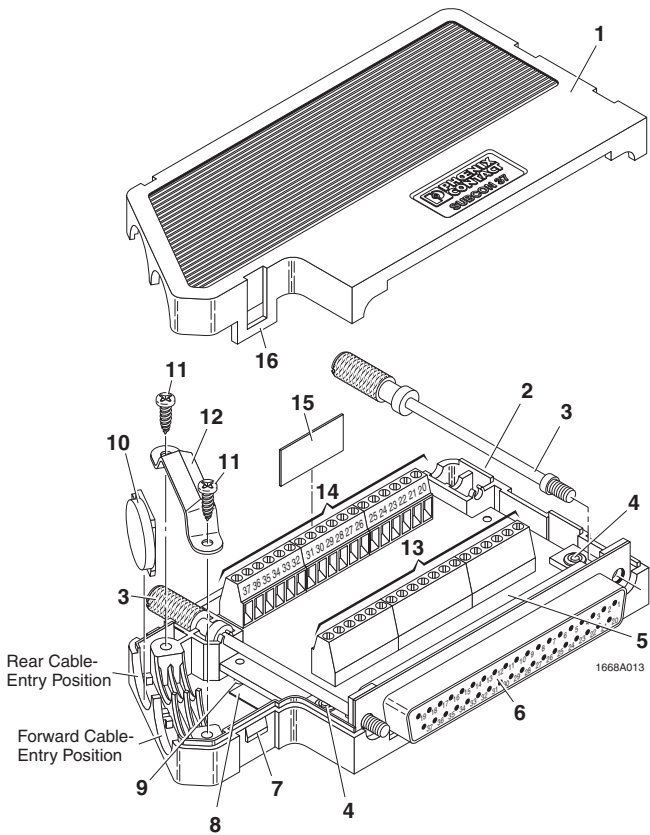


Figure 2. Exploded View of the SUBCON 37 D-Subminiature Connector

**Table 1. Key to Figure 2**

Item No..	Description
1	SUBCON housing, half "A"
2	SUBCON housing, half "B"
3	SUBCON connector thumbscrew
4	PC board guide pin
5	PC board assembly
6	SUBCON connector, 37-pin (receptacle shown)
7	Molded-in locking tab for housing latch
8	Electrical insulator for PC board
9	Rear standoff for PC board (typical both sides)
10	Cable-entry plug
11	Pan-head, self-tapping screws
12	Strain relief and ground clamp for cable
13	COMBICON screw-clamp PCB terminal blocks for SUBCON D-sub connector positions 1 through 19
14	COMBICON screw-clamp PCB terminal blocks for SUBCON D-sub connector positions 20 through 37
15	SUBCON connector marker label
16	Housing latch

### 3 Cable-Entry Plug

The SUBCON 37 connector comes from the factory with a cable-entry plug, shown in Figure 3, that is lightly attached to housing half "A" (see Figure 1). To prevent the plug from breaking off and being lost, we recommend that you remove it and store it safely away until needed.

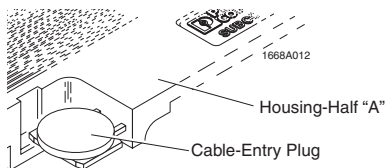


Figure 3. Cable-Entry Plug Shown Attached to Housing

## 4 Cable Preparation

The SUBCON 37 can accept either one or two individual cables with an outside diameter ranging from 4 mm to 12.5 mm. Wire and cable recommendations are shown in Table 2. Figure 4 shows general stripping recommendations for cables with one or a combination of shielding types.

1. Strip 80 mm (3.149 in.) from the cable jacket.
2. Cut back the braided shielding or foil wrap 70 mm (2.755 in.) so there is 10 mm (0.393 in.) remaining. If drain wire is used, do not cut.
3. Strip 4.5 mm (0.177 in.) from the end of each conductor.

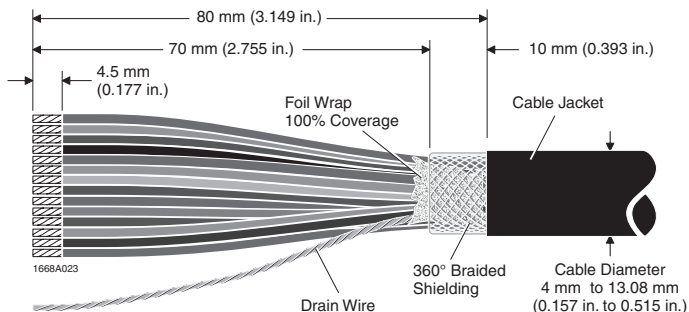


Figure 4. Strip-Length Requirements

4. Fold back the braided shielding, foil wrap, or drain wire evenly over the cable jacket.

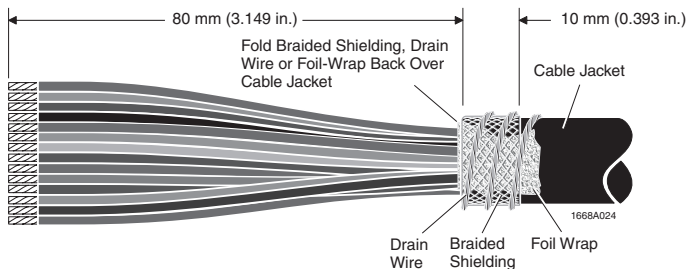


Figure 5. Preparing the Cable Shielding



## 5 Connector Preparation



The SUBCON 37 is shipped with the cable strain relief/ground clamp installed (see Figure 6). The clamp must be removed to install cable.

1. Remove and save the two self-tapping screws from strain relief/ground clamp.
2. Remove and save the clamp.



The strain-relief/ground-clamp can be installed two ways (see Figure 6). One way for large diameter cables and another way for smaller diameter cables.

The SUBCON 37 has two cable-entry positions. For ease of terminating conductors, we recommend using the forward entry position first.

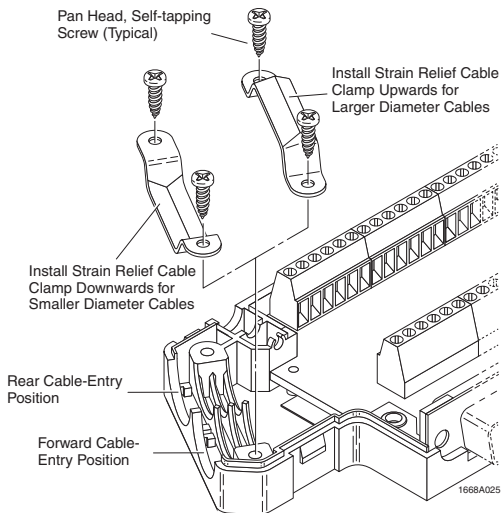


Figure 6. Strain Relief/Ground Clamp Orientation

## 6 Determining Cable-Entry Orientation



The SUBCON 37 can be set up to accept cable that enters the connector from either the left-side or the right-side. The main difference is in the assembly of the connector.

Prior to assembly, determine the direction that the cable will enter the SUBCON connector. The following paragraphs provide housing assembly requirements for left- and right-side cable entries.

### 6.1 Left-side Cable Entry

Figure 7 (VIEW "A") shows a typical SUBCON assembly where the cable enters the connector from the left. You will note in this assembly that housing-half "A" is on the top and housing-half "B" is on the bottom.

### 6.2 Right-Side Cable Entry

Figure 7 (VIEW "B") shows a typical SUBCON assembly where the cable enters the connector from the right. Note that in this assembly housing-half "A" is on the bottom and housing-half "B" on top.

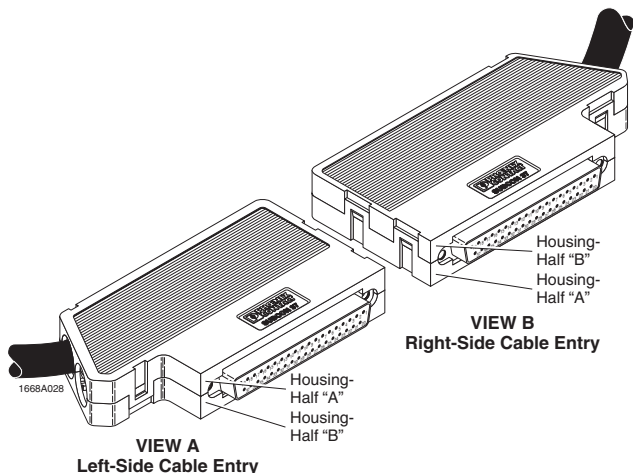


Figure 7. Connector Orientation for Left- and Right-side Cable Entry

## 7 Assembly Procedures

### 7.1 Left-side Cable Entry

1. Place the printed circuit board onto the PC board guide pins of housing-half "B" (see Figure 8).
2. Lay the cable, previously prepared, on housing-half "B" so that the shielded end of the cable is about 10 mm (3/8 in.) in from the forward cable-entry hole of the housing.
3. Terminate conductors using the guidelines shown in Figure 8. For cable containing over 20 conductors, we also recommend installing one of the connector thumbscrews after about one-half of the conductors have been terminated.



### CAUTION

To prevent conductors from becoming damaged during assembly of the two housing halves, make sure conductors are clear from the mating surfaces..

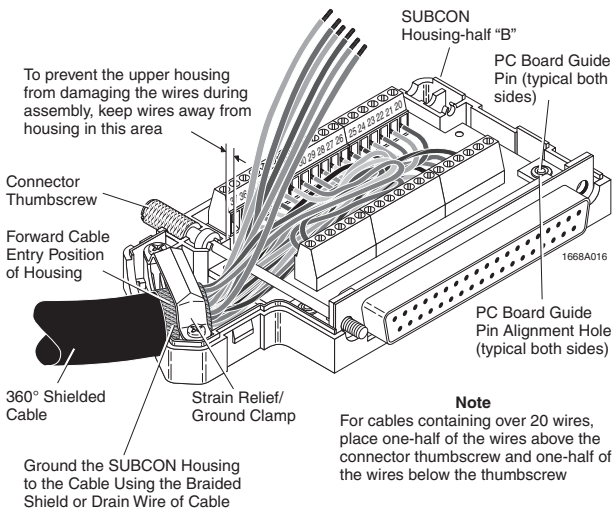


Figure 8. Assembling Connector for Left-side Cable Entry



The SUBCON 37 connector utilizes the Phoenix Contact COMBICON PCB Terminal Block because of its highly reliable screw-clamp termination method.

4. Insert a prestripped wire into the appropriate position of the PCB terminal block. Then using a blade-type screwdriver (2 mm wide), tighten the PCB terminal block screw to a maximum of 0.4 Nm (see Figure 9). Continue terminating all remaining wires in this same manner until all wires have been terminated.

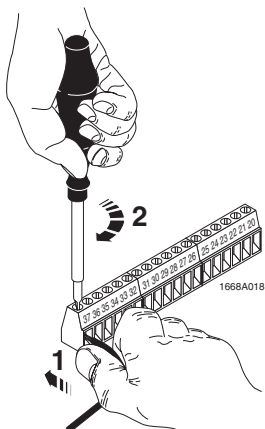


Figure 9. Terminating Conductors

5. Install any remaining connector thumbscrews.
6. Obtain the cable-entry plug previously removed from housing-half "A". Then carefully install the plug (see Figure 10).
7. Determine the best ground clamp orientation for the cable diameter being used (see Figure 6). Then install the strain-relief/ground clamp.
8. Check that there are no conductors laying on the mating surfaces between the two housing halves. Next, carefully align the upper housing half with the lower housing half. Then push the housing halves together until all the latches of the one housing half are fully engaged with the locking tabs of the other housing half.

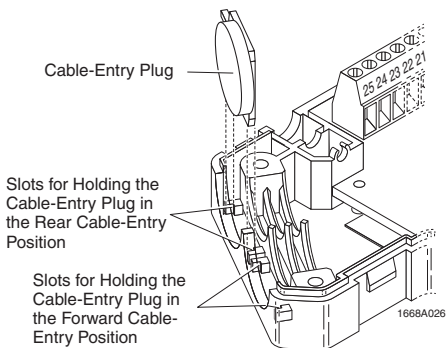


Figure 10. Installing the EMI Cable-Entry Housing Plug

## 7.2 Right-side Cable Entry

1. Place the printed circuit board onto the PC board guide pins of housing-half "A" (see Figure 11).
2. Then lay the cable, previously prepared, on housing-half "A" so that the shielded end of the cable is about 10 mm (3/8 in.) in from the forward cable-entry hole of the housing.
3. Terminate conductors using the guidelines in Figure 11. For cable containing over 20 conductors, we also recommend installing one of the connector thumbscrews after about one-half of the conductors have been terminated.



### CAUTION

To prevent conductors from becoming damaged during assembly of the two housing halves, make sure conductors are clear from the mating surfaces.



The SUBCON 37 connector utilizes the Phoenix Contact COMBICON PCB Terminal Block because of its highly reliable screw-clamp termination method.

4. Insert a prestripped wire into the appropriate position of the PCB terminal block. Then using a blade-type screwdriver (2 mm wide), tighten the PCB terminal block screw to a maximum of 0.4 Nm (see Figure 9). Continue terminating all remaining wires in this same manner until all wires have been terminated.

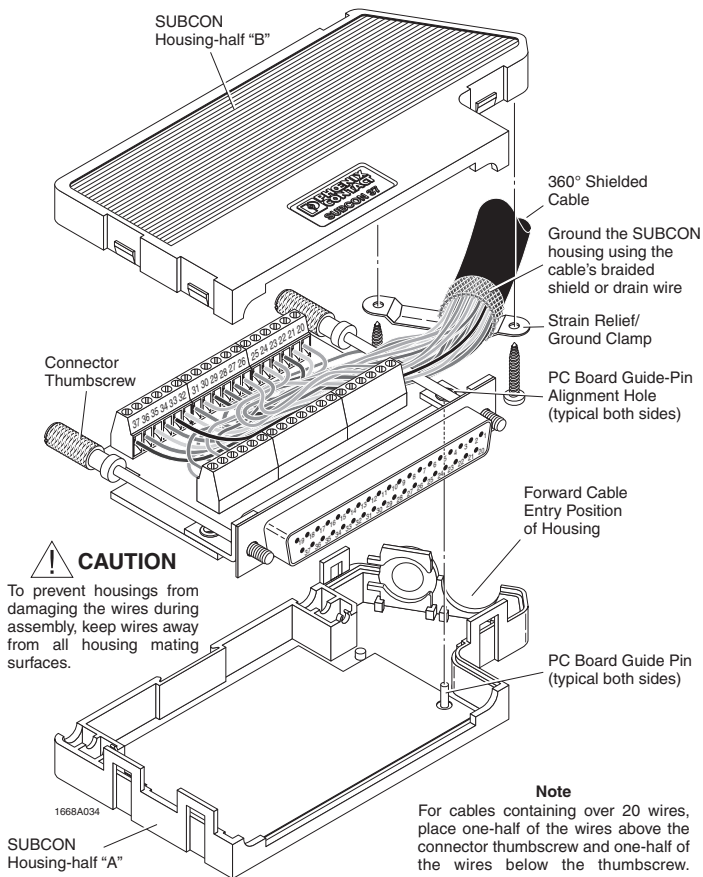


Figure 11. Assembling Connector for Right-side Cable Entry

5. Install any remaining connector thumbscrews.
6. Obtain the cable-entry plug previously removed from housing-half "A". Then carefully install the plug (see Figure 10).



- Determine the best ground clamp orientation for the cable diameter being used (see Figure 6).
- Install the strain-relief/ground clamp (see Figure 6).
- Check that there are no conductors laying on the mating surfaces between the two housing halves. Next, carefully align the upper housing half with the lower housing half. Then push the housing halves together until all the latches of the one housing half are fully engaged with the locking tabs of the other housing half.

## 8 Connector Labeling

- Obtain the blank connector identification label from the plastic bag that came with the SUBCON 37 (see Figure 1).
- Using a permanent marker, mark the label with the appropriate connector information. Allow marker ink to dry. Then carefully bend the label and insert it into the label slot in the back of the connector.

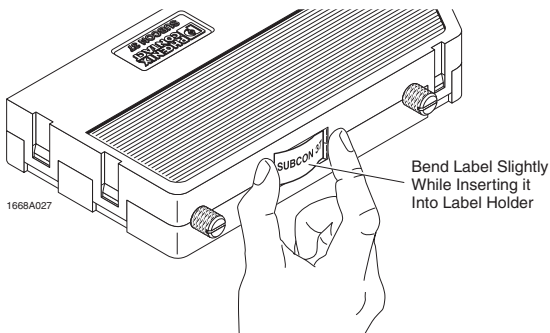


Figure 12. Inserting Connector ID Label

## 9 Opening the Housing



### CAUTION

To prevent breaking the latches when separating the housing halves, you should exercise care while disengaging the latches. **DO NOT** apply too great a pressure on the latch or pry the latch open to far..

To open the SUBCON 37 housing, use a blade-type screwdriver and “gently” pry out each of the four housing latches just until they disengage from their associated locking tabs (see Figure 13).

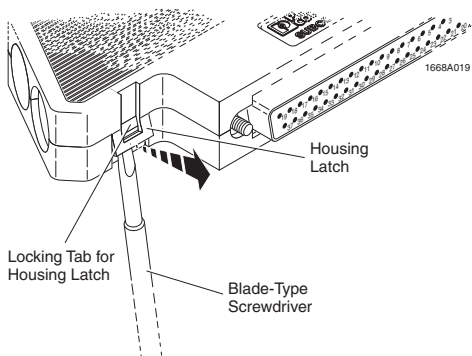


Figure 13. Opening the SUBCON 37 Housing

## 10 Ordering Data

Table 2. Ordering Data

Description	Type	Order No.	Pcs./Pkt.
D-sub connector, plug (37-position)	SUBCON 37/M-SH	2300973	1
D-sub connector, receptacle (37-position)	SUBCON 37/F-SH	2300986	1

## 11 Technical Data

Table 3. Technical Data

General Data	
SUBCON housing material	ABS, metal plated
Operating temperature	-20 ... 75°C
Maximum voltage	48 V AC/DC
Current rating	≤1 A
Durability (mating cycles)	50 (minimum)
Thumbscrew thread size	4-40 UNC
Printed Circuit Terminal Blocks	
Accepts wire sizes	0.14 ... 0.5 mm <sup>2</sup> (26 ... 20 AWG)
Terminal type	Screw-clamp
Screwdriver blade width	2.0 mm
Screw-terminal tightening torque	0.4 Nm (maximum)
Cable/Wires	
Cable diameter range	4 ... 12.7 mm
Conductor cross section (solid/stranded/AWG)	0.14 ... .5 mm <sup>2</sup> / 0.14...0.5 mm <sup>2</sup> /26 ... 20 AWG
Shielding requirement	
Braided	360°
Drain wire	360°
Foil wrapped	360°
Strip-length requirements	
Cable	80 mm
Shielding	70 mm
Individual wires	4.5 mm

# NOTES

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