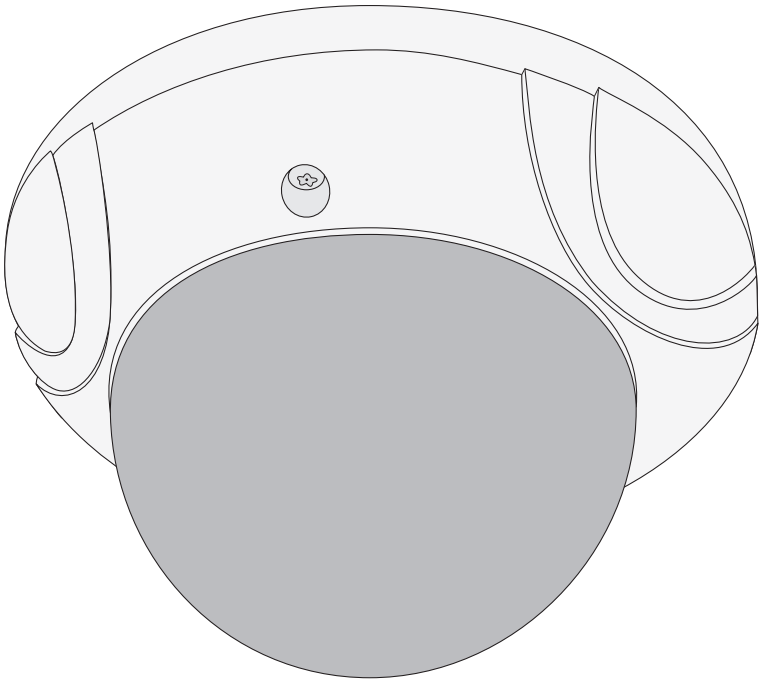
GE
Security

GE 16X PTZ

Installation Manual



1063759A

Document number/revision: **1063759A** (October 2008).

Disclaimer The information in this document is subject to change without notice. GE Security ("GE") assumes no responsibility for inaccuracies or omissions and specifically disclaims any liabilities, losses, or risks, personal or otherwise, incurred as a consequence, directly or indirectly, of the use or application of any of the contents of this document. For the latest documentation, contact your local supplier or visit us online at *www.gesecurity.com*.

This publication may contain examples of screen captures and reports used in daily operations. Examples may include fictitious names of individuals and companies. Any similarity to names and addresses of actual businesses or persons is entirely coincidental.

Trademarks and patents GE and the GE monogram are registered trademarks of General Electric Company.

Other trade names used in this document may be trademarks or registered trademarks of the manufacturers or vendors of the respective products.

Intended use Use this product only for the purpose it was designed for; refer to the data sheet and user documentation. For the latest product information, contact your local supplier or visit us online at *www.gesecurity.com*.

FCC compliance This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

EU directives **2004/108/EC (EMC directive).** Non-European manufacturers must designate an authorized representative in the Community. Our authorized manufacturing representative is GE Security B.V., Kelvinstraat 7, 6003 DH Weert, Nederland.

2002/96/EC (WEEE directive). Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information, visit *www.recyclethis.info*.

Regulatory CE

Contents

Preface

This is the *GE 16X PTZ Camera Installation Manual* for models GEC-DV-16FN, GEC-DV-16SN, GEC-DV-16-FP, and GEC-DV-16SP. This document includes an overview of the product and detailed instructions explaining how to install your camera.

There is also information describing how to contact technical support if you have questions or concerns.

To use this document effectively, you should have the following minimum qualifications:

- a basic knowledge of CCTV systems and components; and
- a basic knowledge of electrical wiring and low-voltage electrical connections.

Read these instructions and all other documentation entirely before installing or operating this product. The most current versions of this and related documentation may be found on our website. Refer to *Online resources* on page 36 for instructions on accessing our online publication library.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

The following conventions are used in this document:

Bold	Menu items and buttons.
Italic	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
Blue italic	(Electronic version.) Hyperlinks to cross-references, related topics, and URL addresses.
`Monospace`	Text that displays on the computer screen.
	Programming or coding sequences.

Safety terms and symbols

These terms may appear in this manual:

CAUTION: *Cautions* identify conditions or practices that may result in damage to the equipment or other property.

WARNING: *Warnings* identify conditions or practices that could result in equipment damage or serious personal injury.

Product overview

The GE 16X PTZ cameras are designed for installation in indoor/outdoor video surveillance systems. The camera incorporates the digital signal processor, pan/tilt mechanism, a 16X zoom lens, and an RS-485 communication interface in a compact enclosure.

Product contents

The GE 16X PTZ Camera system consists of the following

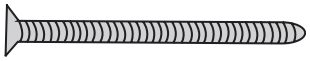
- Camera
- Power and data cables
- Optional camera mounting bracket
- Safety wire
- Allen wrench
- Installation template
- Junction board

Mounting hardware

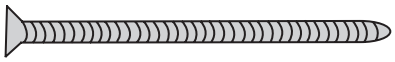
Pendant/surface type camera. This type of camera comes with three type of screws:

M3 (2). Used for installing the safety cable bracket.

Screw #6 (4). Used for installing mounting bracket.



Screw #8 (3). Used for installing camera to bracket.

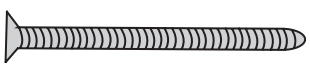


The pendant/surface type camera also comes with a lower surface-mount assembly bracket (1 piece), and an upper assembly bracket (2 pieces).

Flush type camera. This type of camera comes with two types of screws:

M3 (2). Used for installing the safety cable bracket.

Screw #6 (4). Used for installing mounting bracket.



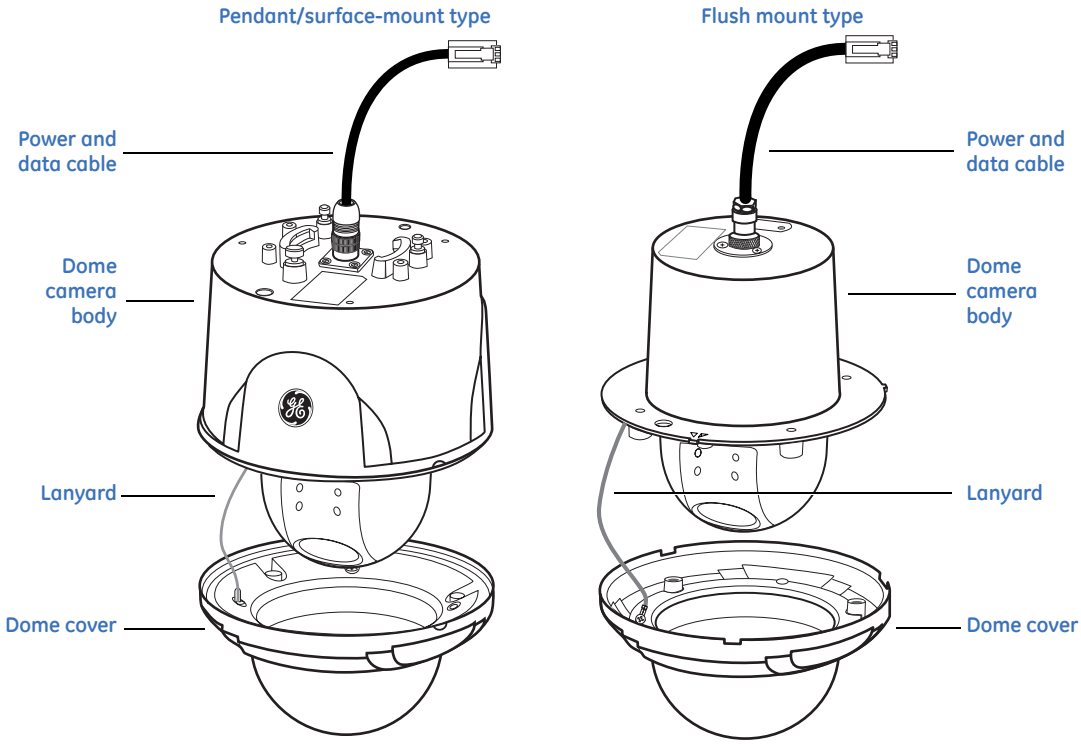
The pendant/surface type camera also comes with a lower flush mount assembly bracket (1 piece), and an upper assembly bracket (2 pieces).

Inspect the package and contents for visible damage. If any components are damaged or missing, do not use the unit; contact the supplier immediately. If you need to return the unit, you must ship it in the original box.

Camera components

Figure 1 shows basic camera components. The camera mounting bracket is optional for surface installation.

Figure 1. Camera components



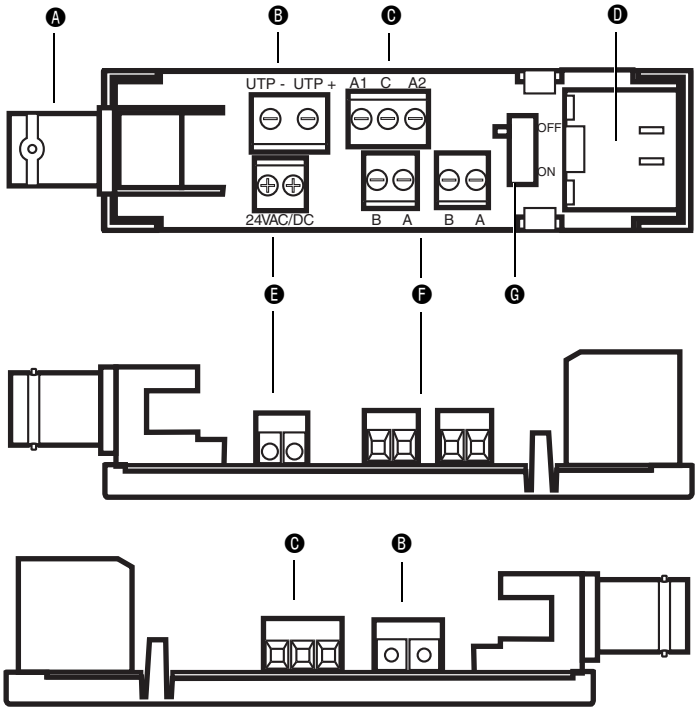
Note: Pendant-mount type configurations have an IP66 environmental rating. Flush-mount and surface-mount configurations do not.

CAUTION: Do not expose the power and data cable to moisture, this may cause leakage into the housing and damage the camera. If you must, please make sure that the connections are sealed tightly.

Junction board

Figure 2 shows the junction board components.

Figure 2. Junction board



- Ⓐ Video output jack with BNC connector
- Ⓑ Video output terminal with UTP connector
- Ⓒ Alarm input (sensor input) terminal (A1: Alarm Input 1 / A2: Alarm Input 2)
- Ⓓ RJ45 connector
- Ⓔ 24 VAC/24 VDC terminal (UL listed class 2 power supply only)
- Ⓕ Data communication port
- Ⓖ Daisy chain termination on/off switch

Connections

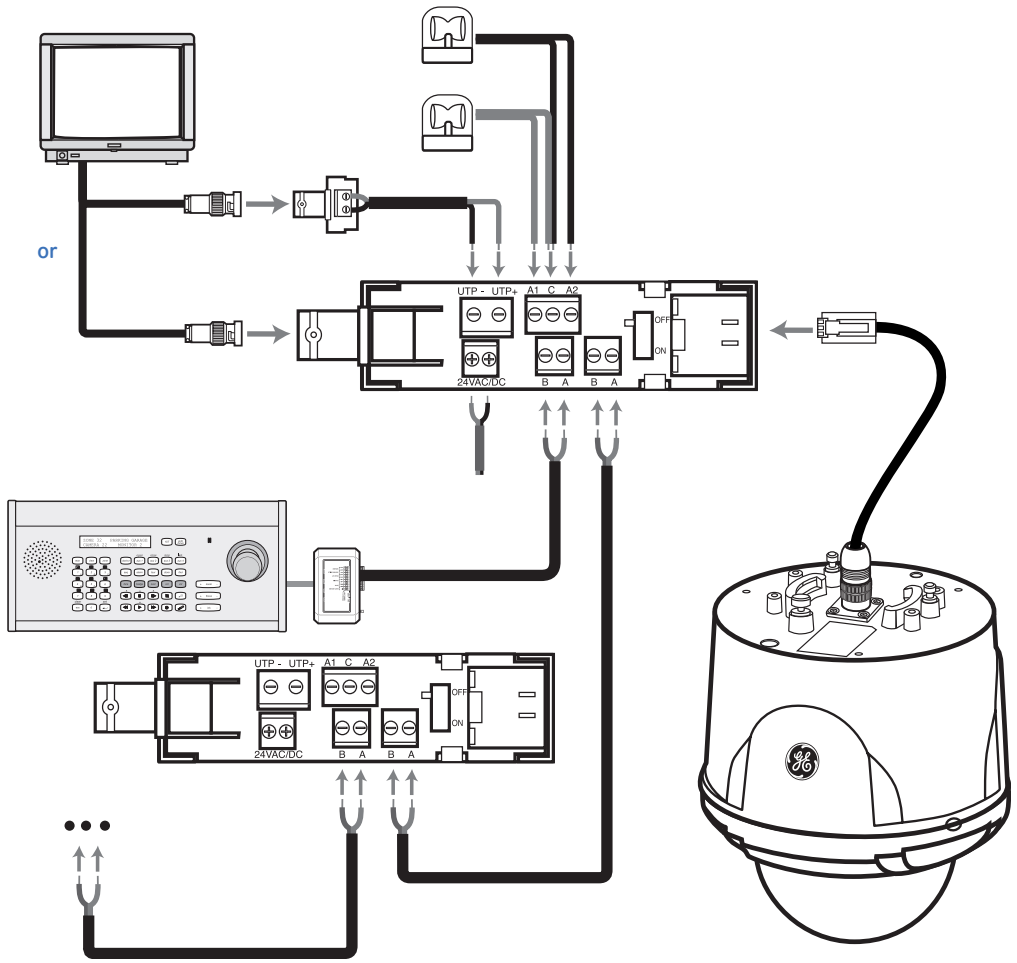
A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Note: Do not attempt to extend the power/data cable connection using RJ45 couplers and Cat5 cable. Only use the data cable connection provided.

Note: Use 24 VAC / 24 VDC. (use a UL listed Class 2 power source only.)

Figure 3 shows a typical camera installation.

Figure 3. Camera installation sample



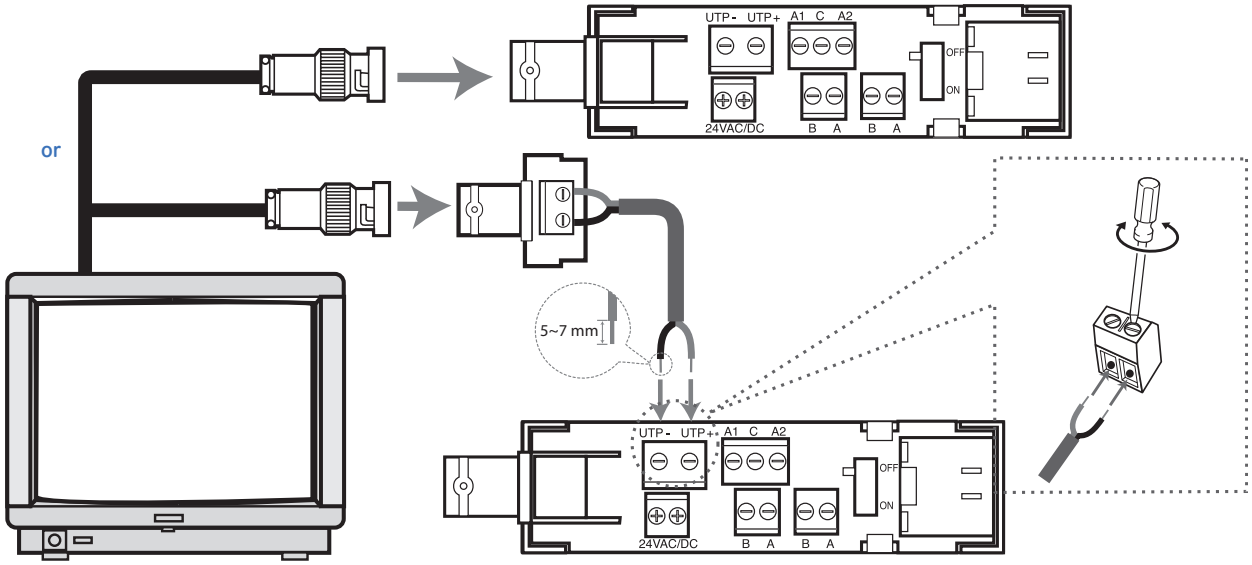
CAUTION: Do not expose the power and data cable to moisture, which may cause damage to the camera. If you cannot avoid installing the camera in a damp area, please make sure that the connections are sealed tightly.

Pendant-mount configurations have an IP66 environmental rating. Flush-mount and surface-mount configurations do not.

Monitor

Figure 4 shows the video signal connection between the camera and the monitor.

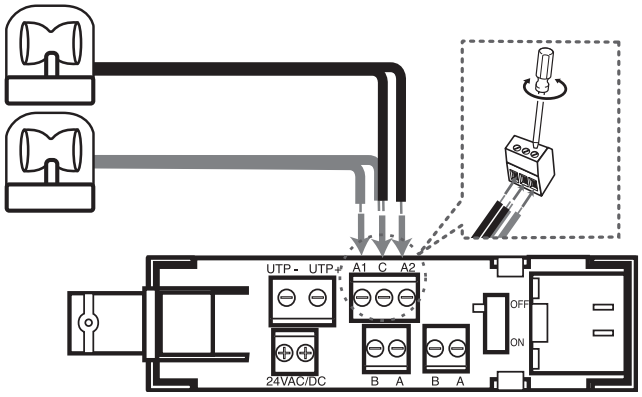
Figure 4. Monitor connection



Alarm input

You can connect up to two alarm sensors to the camera (*Figure 5*). Connect each alarm sensor to C (Common). You can adjust the signal state to NO (normally open) or NC (normally closed) through the setup menu.

Figure 5. Alarm input connections



Power source

Connect only a 24 VAC/24 VDC UL listed Class 2 power source to the power input terminal (*Figure 6*).

Figure 6. Power source connection

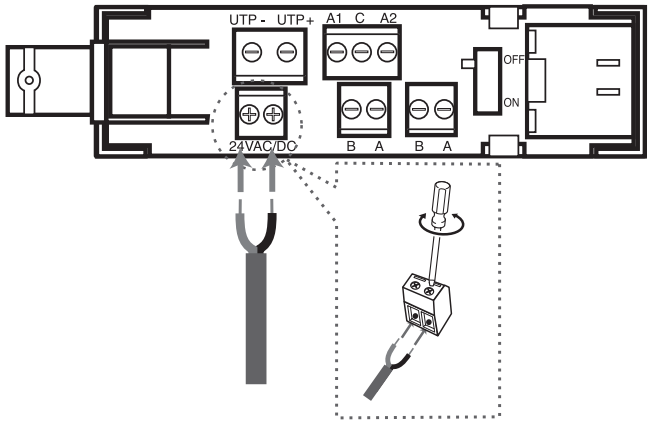


Table 1. Power requirements

Model	Maximum power
Flush mount (dome without fan)	16 VA
Surface mount (dome with fan x3)	25 VA

Table 2. Power cable size and length requirements

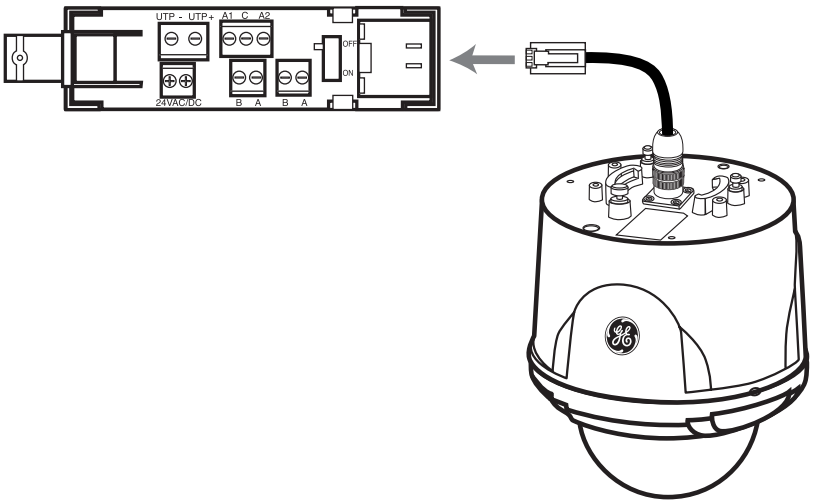
Wire gauge		Flush mount (16 VA)		Surface mount (25 VA)	
AWG	mm2	feet	meter	feet	meter
14	1.62	744	226	465	141
16	1.29	469	143	293	89
18	1.02	295	89	185	56
20	0.81	186	56	117	35
22	0.64	116	35	73	22

RJ45 cable

Connect the RJ45 cable from the camera to the RJ45 jack of the junction board (*Figure 7*).

Note: Do not attempt to extend the power/data cable connection using RJ-45 couplers. Only use the cable connection provided.

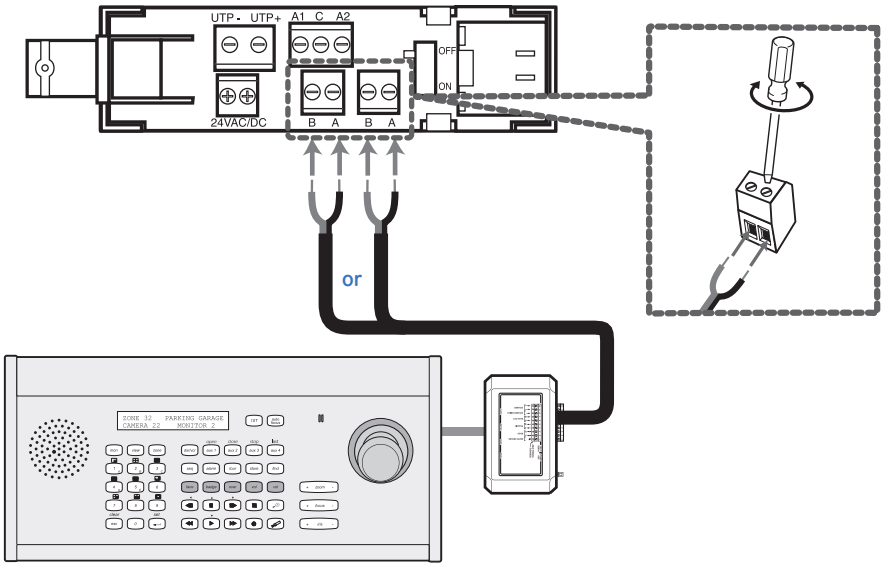
Figure 7. RJ45 cable connection



KTD-405/KTD-405A keypad

Connect the KTD-405/KTD-405A keypad to either data terminal on the junction board (*Figure 8*). These data terminals are interchangeable.

Figure 8. KTD-405/KTD-405A connection



Length and type of the RS-485/422 cable

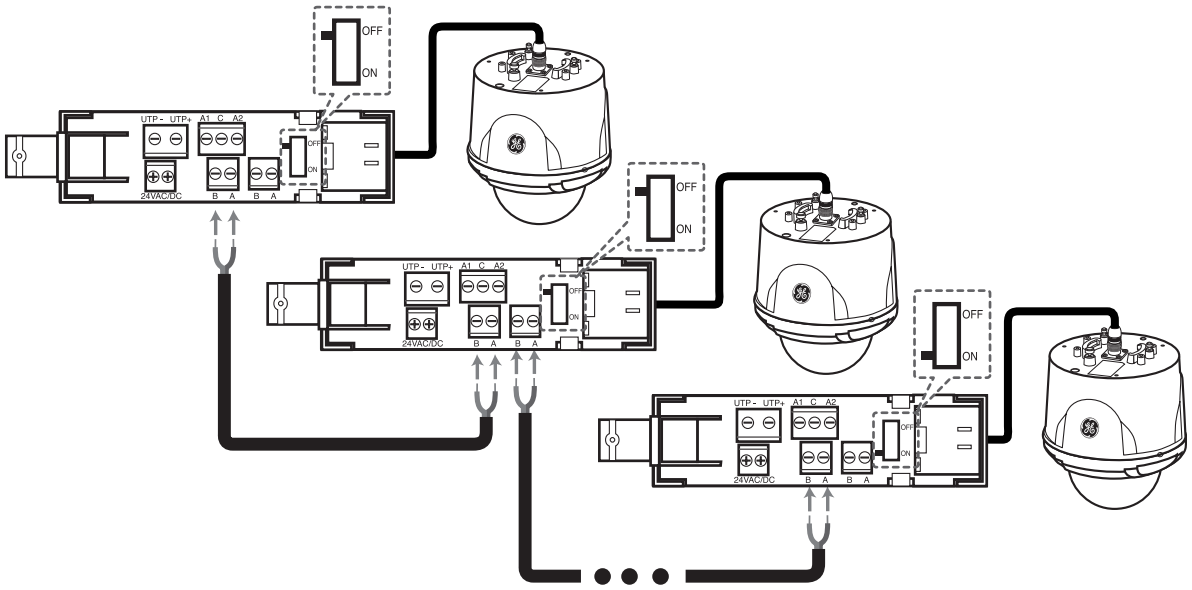
RS-422 Digiplex and RS-485 Impac cable can be 22 gauge, twisted-pair, and have a maximum length of 3900 feet (1,200 meters).

Connecting multiple GE 16X PTZ cameras in parallel

If you choose to daisy chain multiple cameras in the field, leave all camera termination switches off except for the last camera in the chain which should be on (*Figure 9*). The cameras may not function properly if they are not terminated correctly.

Note: If you are connecting only one GE 16X PTZ Camera to the junction board, you must set the termination switch to ON.

Figure 9. Multiple cameras connection



Installation

Use the following installation guidelines:

- A qualified service person, complying with all applicable codes, should perform all required hardware installation.
- Do not install the camera near the air outlet of an air conditioner.
- Be sure to hook the lanyard (fall prevention wire) onto a bracket.
- Seal cable parts tightly and do not expose them to rain or damp environments.
- Use a 24 VAC/24 VDC UL listed class 2 power supply only.
- When turned on, camera does a self-check, including panning, tilting, zooming, and focusing operation.

Note: Pendant-mount type configurations are IP66 environmentally rated. Flush-mount and surface-mount configurations are not.

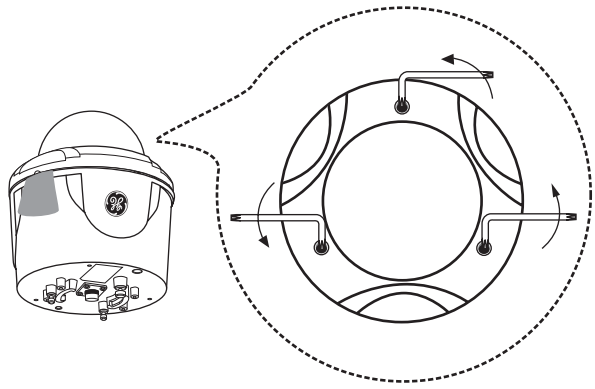
WARNING: Be sure to switch the camera off before installation and connection.

Removing the protective tape

Before using the camera, you must remove the protective tape. To remove the tape, do the following:

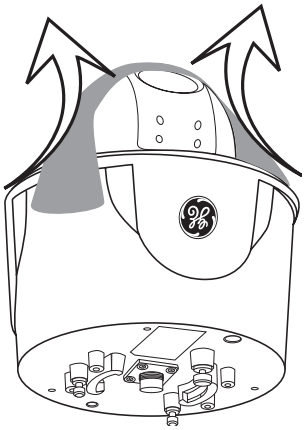
1. Use the supplied Allen wrench to loosen the screws and remove the dome cover (*Figure 10*).

Figure 10. Loosen dome screws



2. Carefully remove the protective tape (*Figure 11*).

Figure 11. Removing protective tape



Protocol and baud rate settings

The camera has two 4-bit DIP switch blocks that determine the protocol and baud rate of the data communication. Settings are loaded when the camera boots up. Be sure to turn the camera off, change the DIP switch settings, and then power the camera back up to load the changes.

Note: If you have difficulty accessing the dip switches when the camera is installed, remove the camera shroud.

Figure 12. Camera shroud

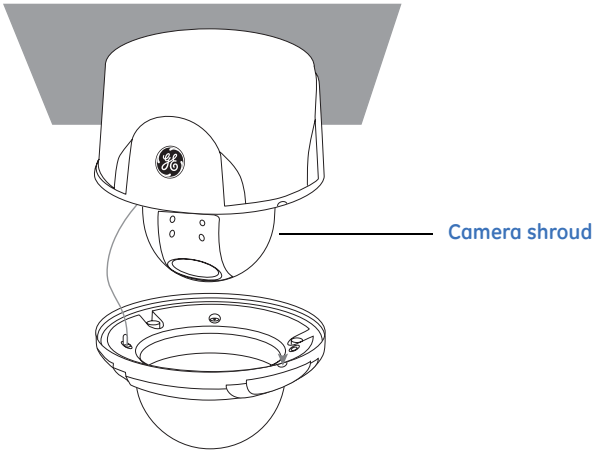
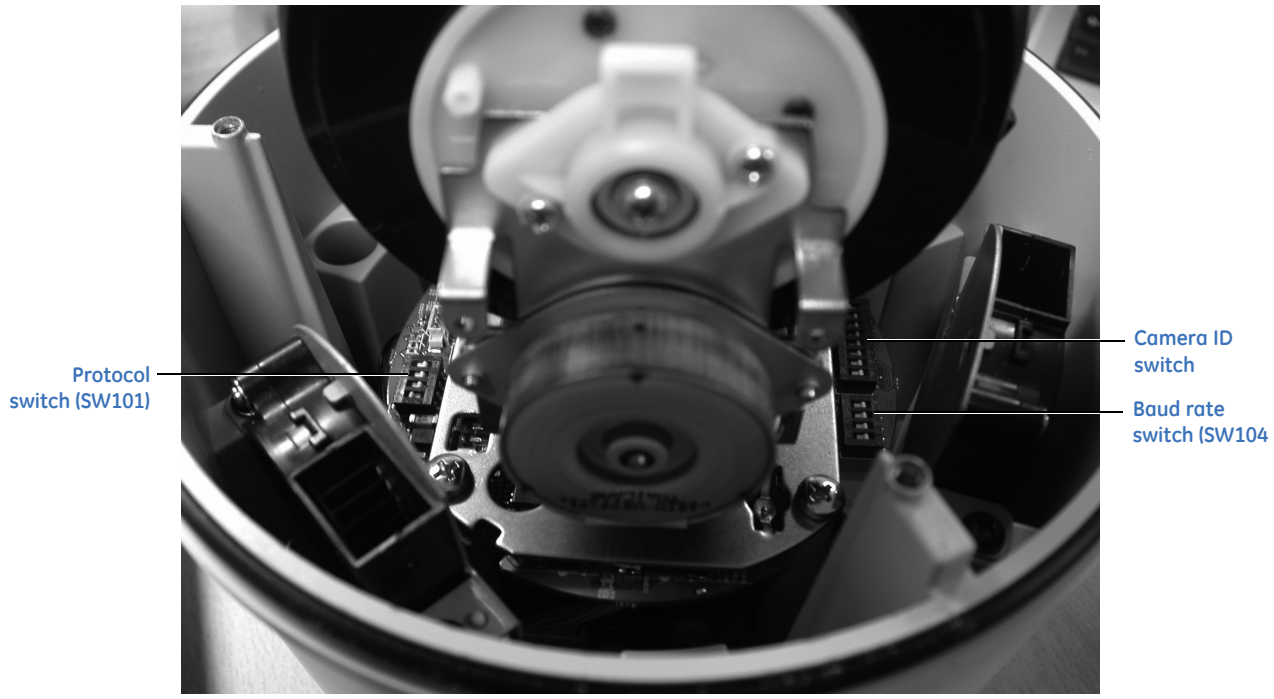


Figure 13. DIP switch locations



To set protocol (SW101) and baud rate parameters (SW104), do the following:

1. Turn the camera off.
2. The SW104 DIP switch on the bottom of the camera (*Figure 14* on page 12) sets the baud rate. Use *Table 3* to find the correct sequence of 1s (on) and 0s (off) for the baud rate that you want to use.

Note: SW104 is located next to the 8-bit camera ID DIP switch.

Figure 14. SW104

Table 3. SW104 baud settings

Switch position	Baud
0, 0, 0, 0	9,600 bps
0, 0, 0, 1	1,200 bps
0, 0, 1, 0	2,400 bps
0, 0, 1, 1	4,800 bps (default)

Switch position	Baud
0, 1, 0, 0	19,200 bps
0, 1, 0, 1	38,400 bps
0, 1, 1, 0	57,600 bps
0, 1, 1, 1	115,200 bps

Note: The baud rate for Digiplex 422 is 4800. The baud rate for IMPAC RS-485 is 9600. The baud rate for ASCII is 9600. The Pelco P/D protocol requires no specific baud rate.

3. The SW101 DIP switch on the bottom of the camera (*Figure 15*) sets the protocol. Use *Table 4* to find the correct sequence of 1s (on) and 0s (off) for the protocol that you want to use.

Note: SW101 is located on the opposite side of the board from the 8-bit camera ID DIP switch.

Figure 15. SW101

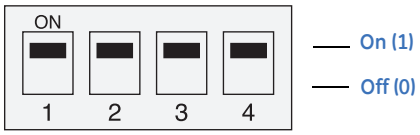


Table 4. SW101 protocol settings

Switch position	Protocol
1, 1, 1, 1	Digiplex 422 (default)
1, 0, 1, 1	ASCII
0, 1, 1, 1	IMPAC RS-485
0, 0, 1, 1	Pelco-D
1, 1, 0, 1	Pelco-P
0, 1, 0, 1	Reserved 4
1, 0, 0, 1	Reserved 5
0, 0, 0, 1	Reserved 6

Switch position	Protocol
1, 1, 1, 0	Reserved 7
0, 1, 1, 0	Reserved 8
1, 0, 1, 0	Reserved 9
0, 0, 1, 0	Reserved 10
1, 1, 0, 0	Reserved 11
0, 1, 0, 0	Reserved 12
1, 0, 0, 0	Reserved 13
0, 0, 0, 0	Reserved 14

4. Power up the camera to load the changes.

Camera ID setting

The camera's ID is set to "1" as default. If you use two or more cameras simultaneously, change the ID of the cameras.

To set the camera ID, do the following:

1. Locate the 8-bit camera ID DIP switch block on the bottom of the camera.
2. Using *Figure 16* and *Table 5*, determine how to set the DIP switches for the desired camera ID.
3. Place the switches that correspond to those values in the on position.

Figure 16. Camera ID DIP switch

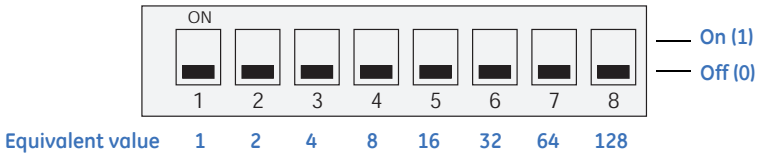


Table 5. Camera ID DIP switch settings

#	Switch
0	00000000
1	10000000
2	01000000
3	11000000
4	00100000
5	10100000
6	01100000
7	11100000
8	00010000
9	10010000
10	01010000
11	11010000
12	00110000
13	10110000
14	01110000
15	11110000
16	00001000
17	10001000
18	01001000
19	11001000
20	00101000
21	10101000
22	01101000
23	11101000
24	00011000
25	10011000
26	01011000
27	11011000
28	00111000
29	10111000
30	01111000
31	11111000

#	Switch
32	00000100
33	10000100
34	01000100
35	11000100
36	00100100
37	10100100
38	01100100
39	11100100
40	00010100
41	10010100
42	01010100
43	11010100
44	00110100
45	10110100
46	01110100
47	11110100
48	00001100
49	10001100
50	01001100
51	11001100
52	00101100
53	10101100
54	01101100
55	11101100
56	00011100
57	10011100
58	01011100
59	11011100
60	00111100
61	10111100
62	01111100
63	11111100

#	Switch
64	00000010
65	10000010
66	01000010
67	11000010
68	00100010
69	10100010
70	01100010
71	11100010
72	00010010
73	10010010
74	01010010
75	11010010
76	00110010
77	10110010
78	01110010
79	11110010
80	00001010
81	10001010
82	01001010
83	11001010
84	00101010
85	10101010
86	01101010
87	11101010
88	00011010
89	10011010
90	01011010
91	11011010
92	00111010
93	10111010
94	01111010
95	11111010

#	Switch
96	00000110
97	10000110
98	01000110
99	11000110
100	00100110
101	10100110
102	01100110
103	11100110
104	00010110
105	10010110
106	01010110
107	11010110
108	00110110
109	10110110
110	01110110
111	11110110
112	00001110
113	10001110
114	01001110
115	11001110
116	00101110
117	10101110
118	01101110
119	11101110
120	00011110
121	10011110
122	01011110
123	11011110
124	00111110
125	10111110
126	01111110
127	11111110

#	Switch
128	00000001
129	10000001
130	01000001
131	11000001
132	00100001
133	10100001
134	01100001
135	11100001
136	00010001
137	10010001
138	01010001
139	11010001
140	00110001
141	10110001
142	01110001
143	11110001
144	00001001
145	10001001
146	01001001
147	11001001
148	00101001
149	10101001
150	01101001
151	11101001
152	00011001
153	10011001
154	01011001
155	11011001
156	00111001
157	10111001
158	01111001
159	11111001

#	Switch
160	00000101
161	10000101
162	01000101
163	11000101
164	00100101
165	10100101
166	01100101
167	11100101
168	00010101
169	10010101
170	01010101
171	11010101
172	00110101
173	10110101
174	01110101
175	11110101
176	00001101
177	10001101
178	01001101
179	11001101
180	00101101
181	10101101
182	01101101
183	11101101
184	00011101
185	10011101
186	01011101
187	11011101
188	00111101
189	10111101
190	01111101
191	11111101

#	Switch
192	00000011
193	10000011
194	01000011
195	11000011
196	00100011
197	10100011
198	01100011
199	11100011
200	00010011
201	10010011
202	01010011
203	11010011
204	00110011
205	10110011
206	01110011
207	11110011
208	00001011
209	10001011
210	01001011
211	11001011
212	00101011
213	10101011
214	01101011
215	11101011
216	00011011
217	10011011
218	01011011
219	11011011
220	00111011
221	10111011
222	01111011
223	11111011

#	Switch
224	00000111
225	10000111
226	01000111
227	11000111
228	00100111
229	10100111
230	01100111
231	11100111
232	00010111
233	10010111
234	01010111
235	11010111
236	00110111
237	10110111
238	01110111
239	11110111
240	00001111
241	10001111
242	01001111
243	11001111
244	00101111
245	10011111
246	01101111
247	11101111
248	00011111
249	10011111
250	01011111
251	11011111
252	00111111
253	10111111
254	01111111
255	11111111

Mounting the camera

You can mount the camera on a ceiling or wall.

Flush-mount

A flush-mount type camera is required for this installation.

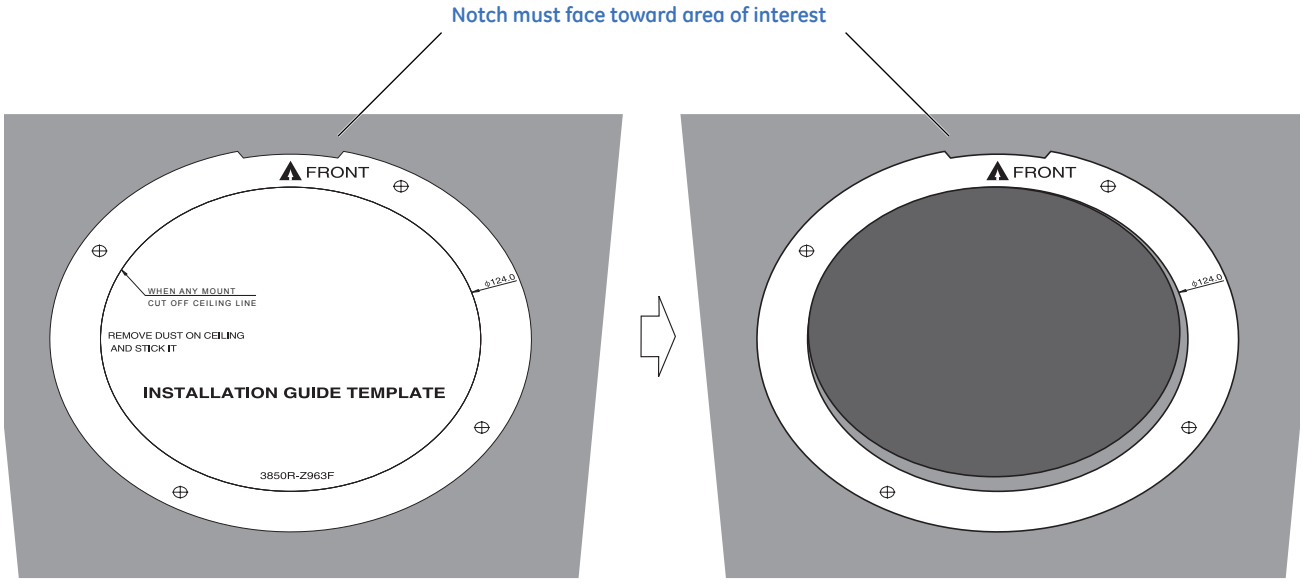
Note: The flush-mounted camera housing is not IP66 rated.

To flush mount the camera, do the following:

1. Use the installation guide template to check the mounting location. Face the front of the label toward the area of interest. Using the template as a guide, make a hole through the ceiling (*Figure 17*).

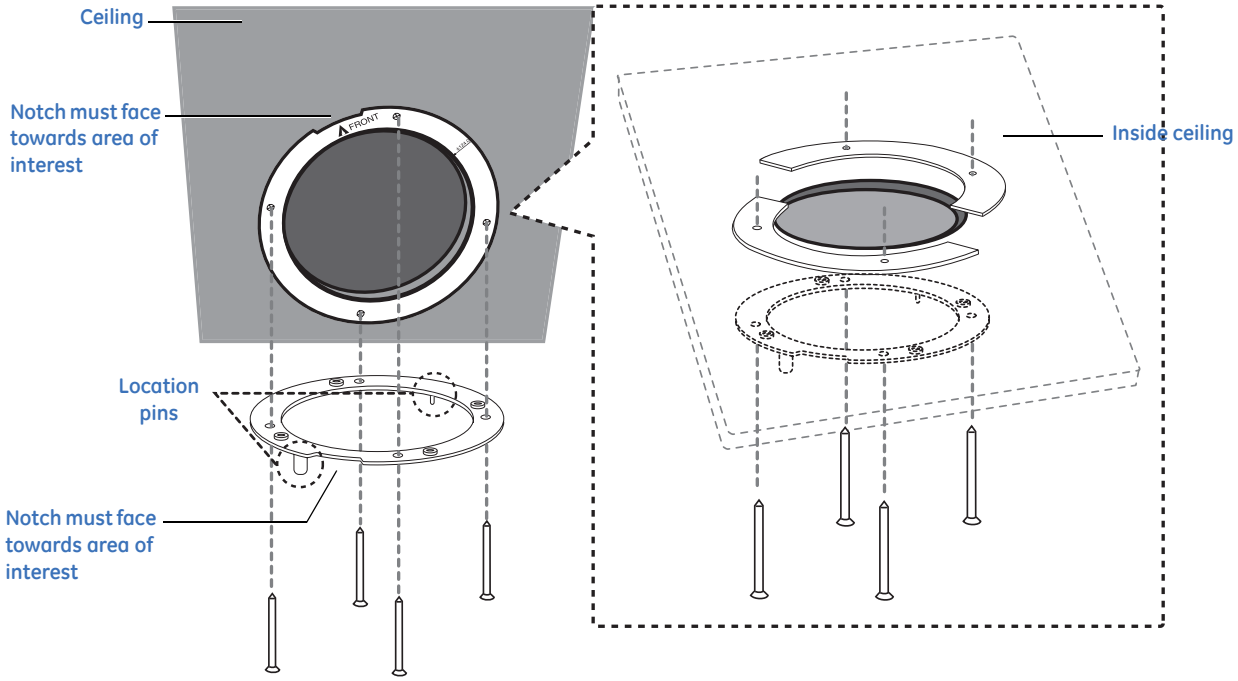
CAUTION: The building superstructure must be able to support 80 lb. (36 kg).

Figure 17. Installation guide template



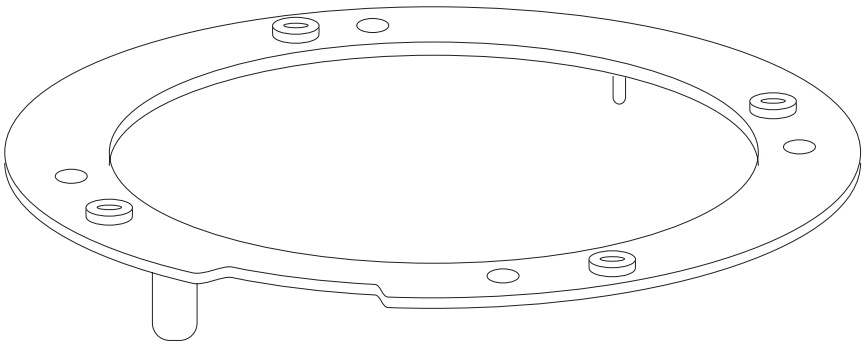
2. Fasten the camera assembly bracket to the ceiling. Face the location pins downward (*Figure 18*).

Figure 18. Camera assembly bracket



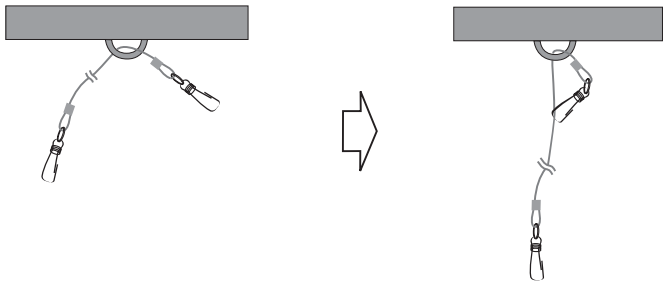
Note: For this installation, you must use the bracket depicted in *Figure 19*. The GE 16X PTZ camera models have different brackets that are designed to work with specific models

Figure 19. Flush-mount bracket



3. Fasten the dome safety cable to the building superstructure (*Figure 20*). The building superstructure can vary depending on your installation environment.

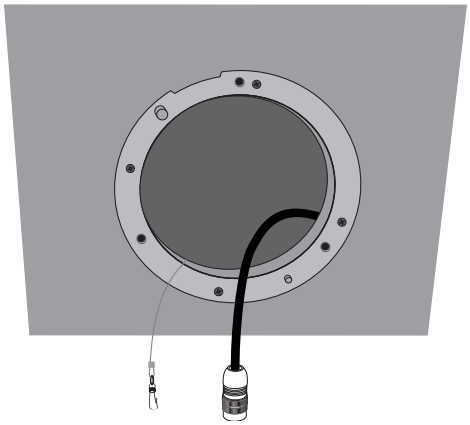
Figure 20. Dome safety cable



CAUTION: The building structure must be able to support 80 lb. (36 kg).

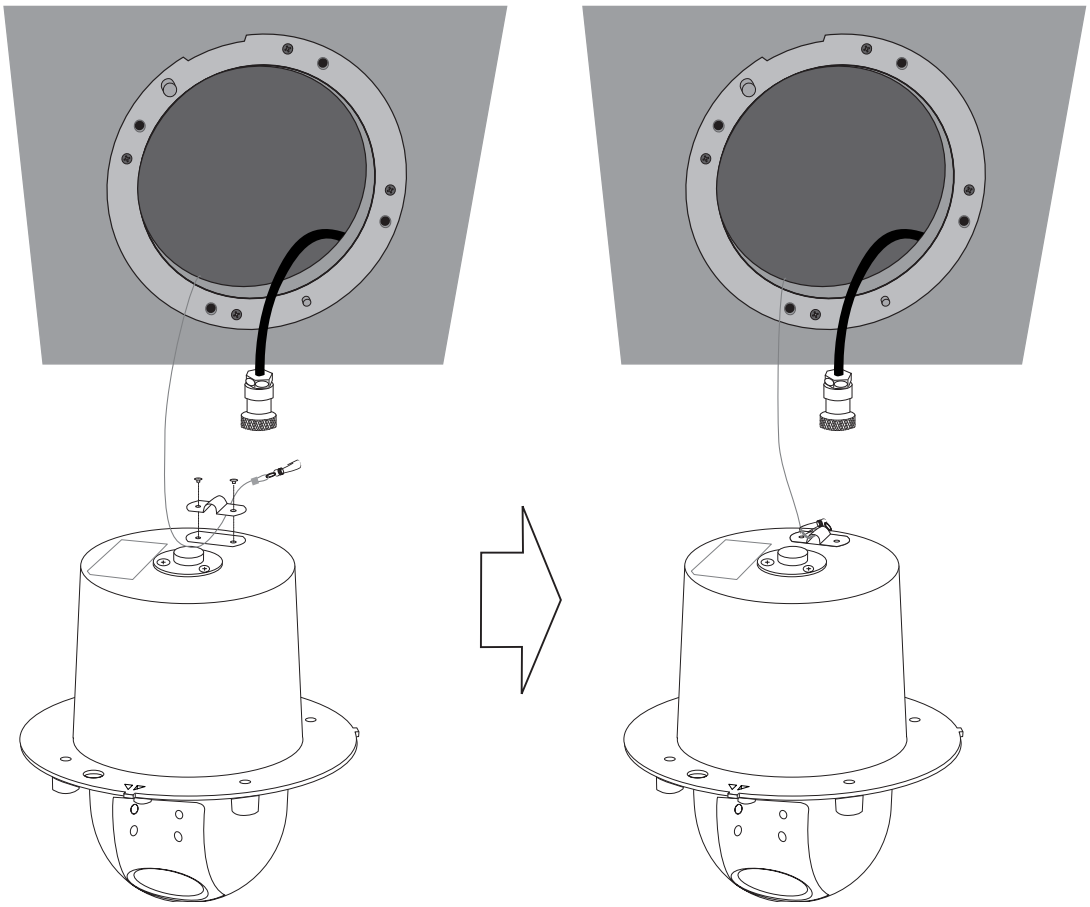
4. Pass the connection cable and the safety cable through the hole so that they hang down (*Figure 21*).

Figure 21. Connection cable



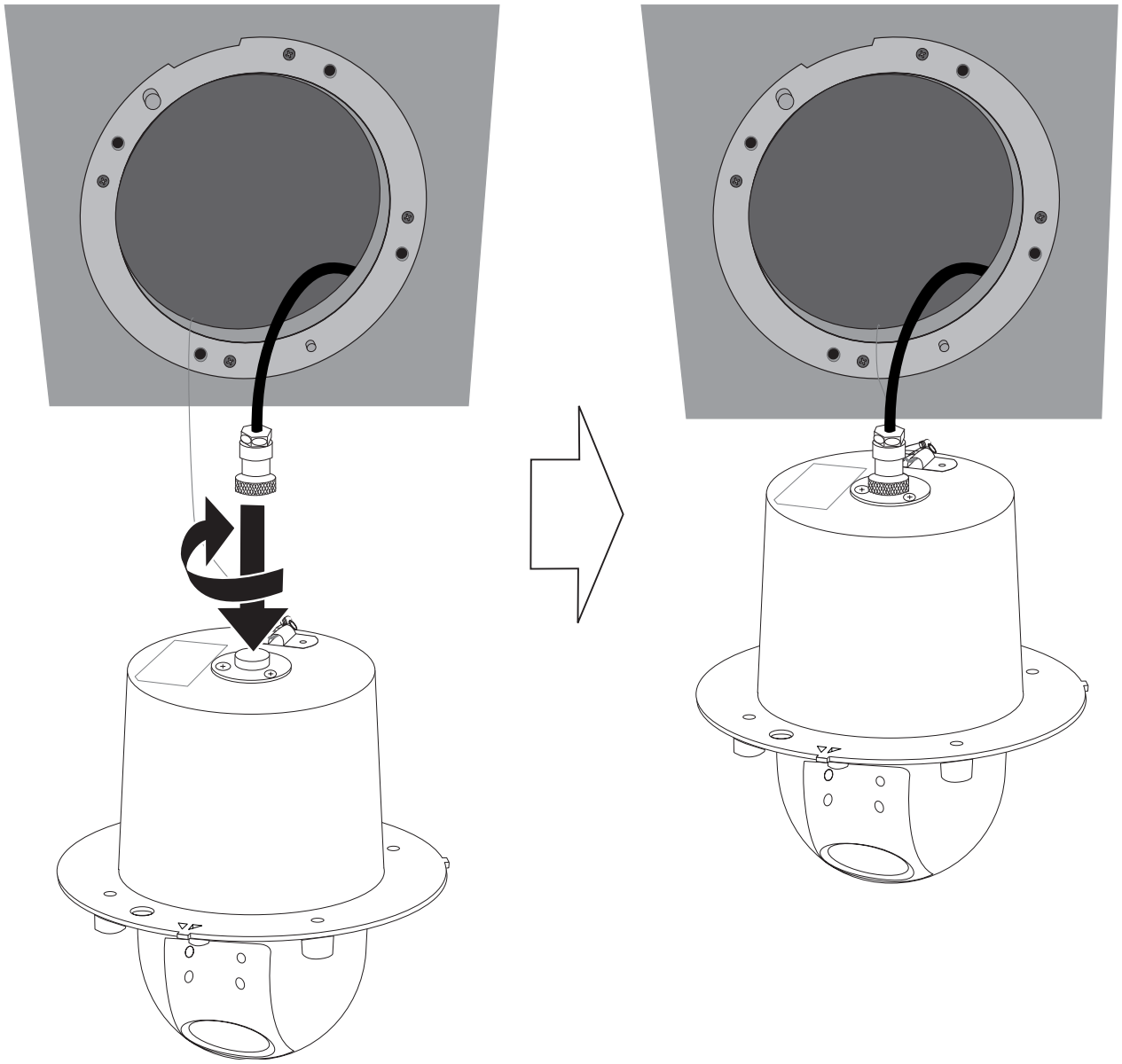
5. Using the two smallest screws in the mounting hardware kit, connect the safety cable to the camera body with the safety bracket (*Figure 22*).

Figure 22. Safety cable to camera



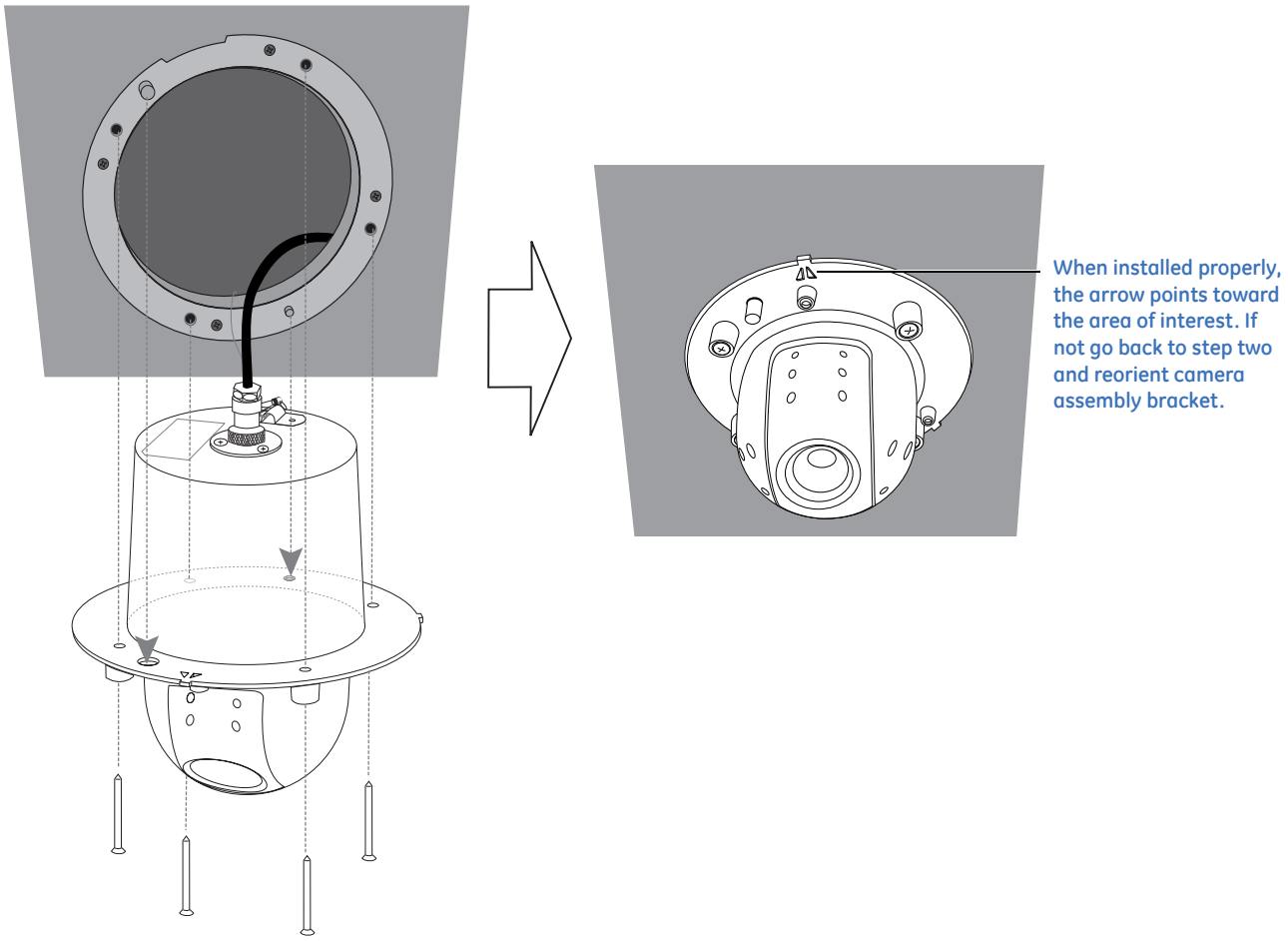
6. Connect the cable to the terminal on the camera body (*Figure 23*).

Figure 23. Cable connection



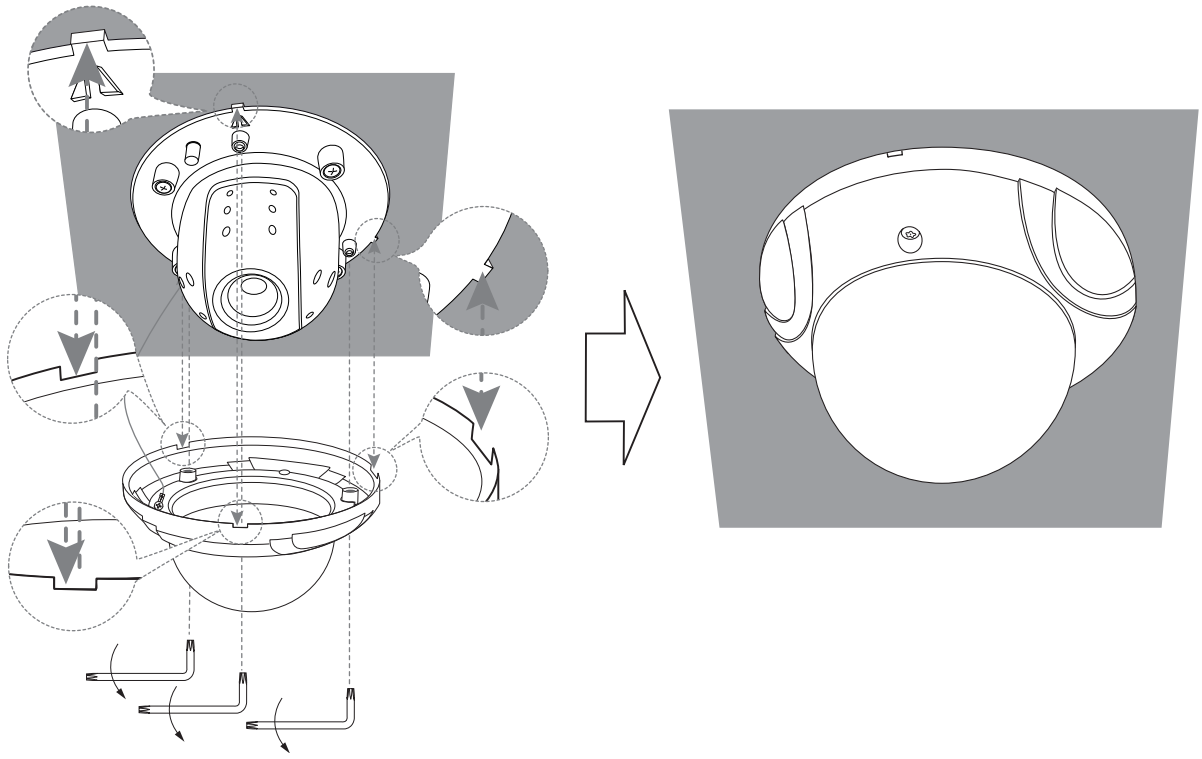
7. Fasten the camera body to the camera assembly bracket (*Figure 24* on page 20). For proper orientation, use the location pins to align the camera.

Figure 24. Camera body to bracket installation



8. Assemble the camera cover and camera body. Fasten the screws using the supplied Allen wrench (*Figure 25*).

Figure 25. Camera cover assembly



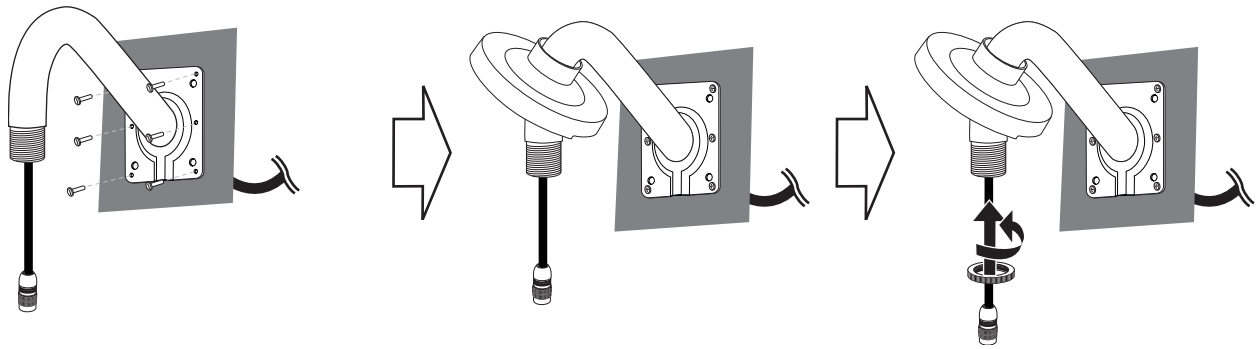
Optional wall-mount

Note: Requires a pendant/surface type camera along with wall-mount kit GEC-DV-WM.

To wall-mount the camera, do the following:

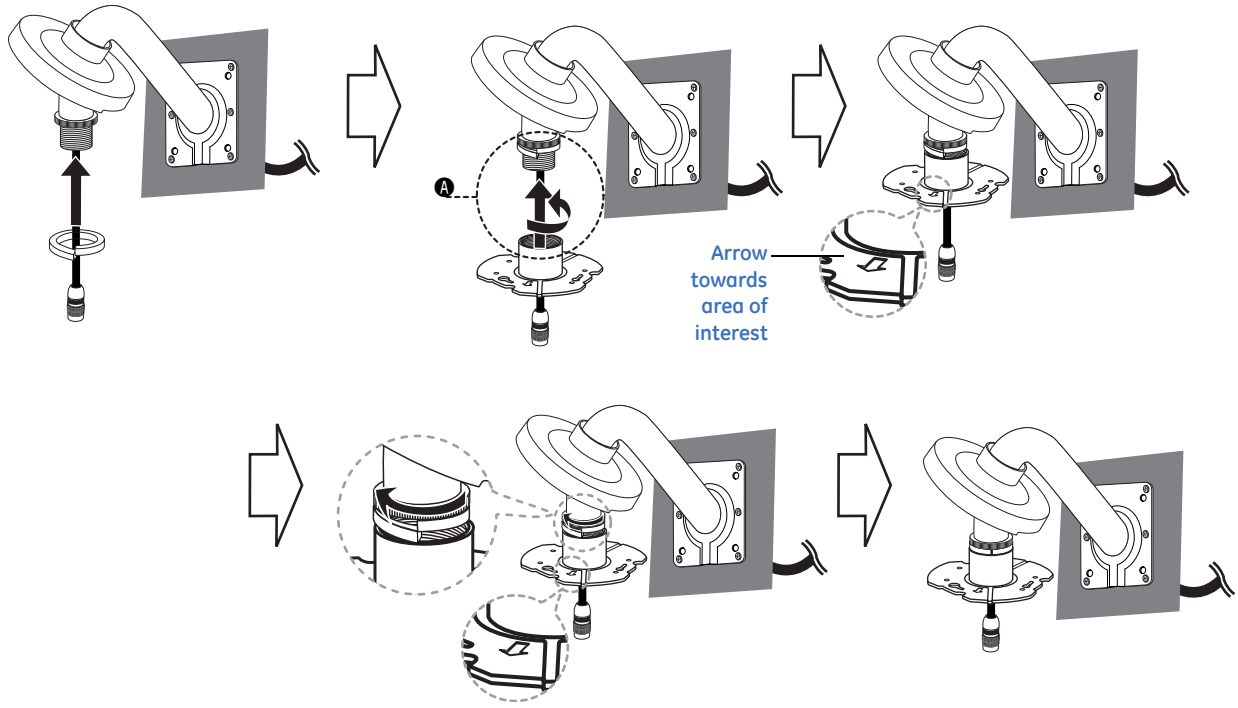
1. Drill holes in the wall where you want to install the wall-mount.
2. Install the wall-mount (*Figure 26* on page 22).

Figure 26. Pipe installation



3. Install the camera installation bracket (*Figure 27*).

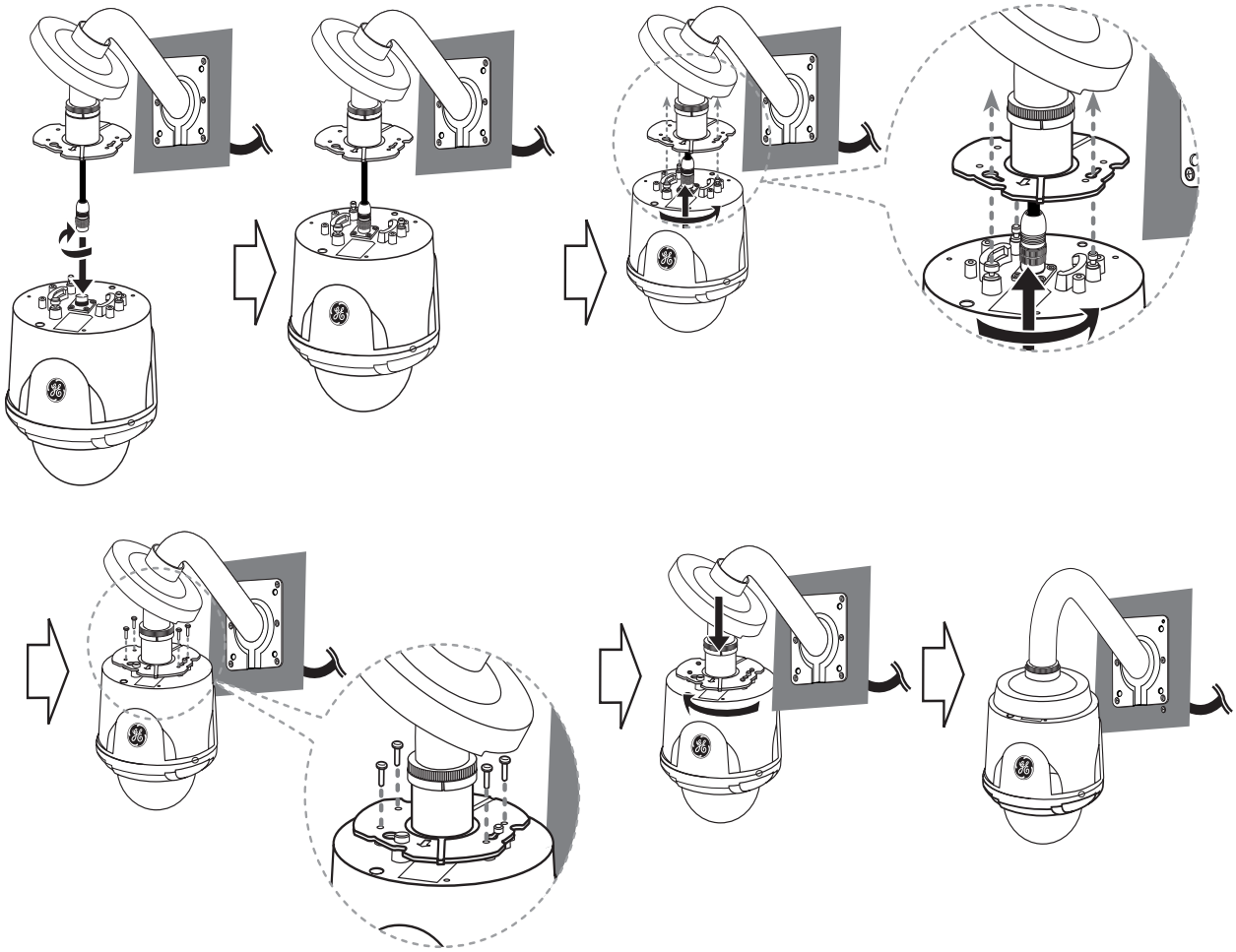
Figure 27. Camera installation bracket



Pipe threads should be clean and rust-free. Use a sealer such as PTFE tape and silicone sealer on the threads ❶.

4. Connect the RJ45 cable to the RJ45 camera jack and attach the camera to the installation bracket (*Figure 28*).

Figure 28. RJ45 cable and camera installation



Note: If properly installed, the GE logo should face toward the area of interest, or in this case, away from the wall. If it does not, go back to step 3 and readjust camera installation bracket.

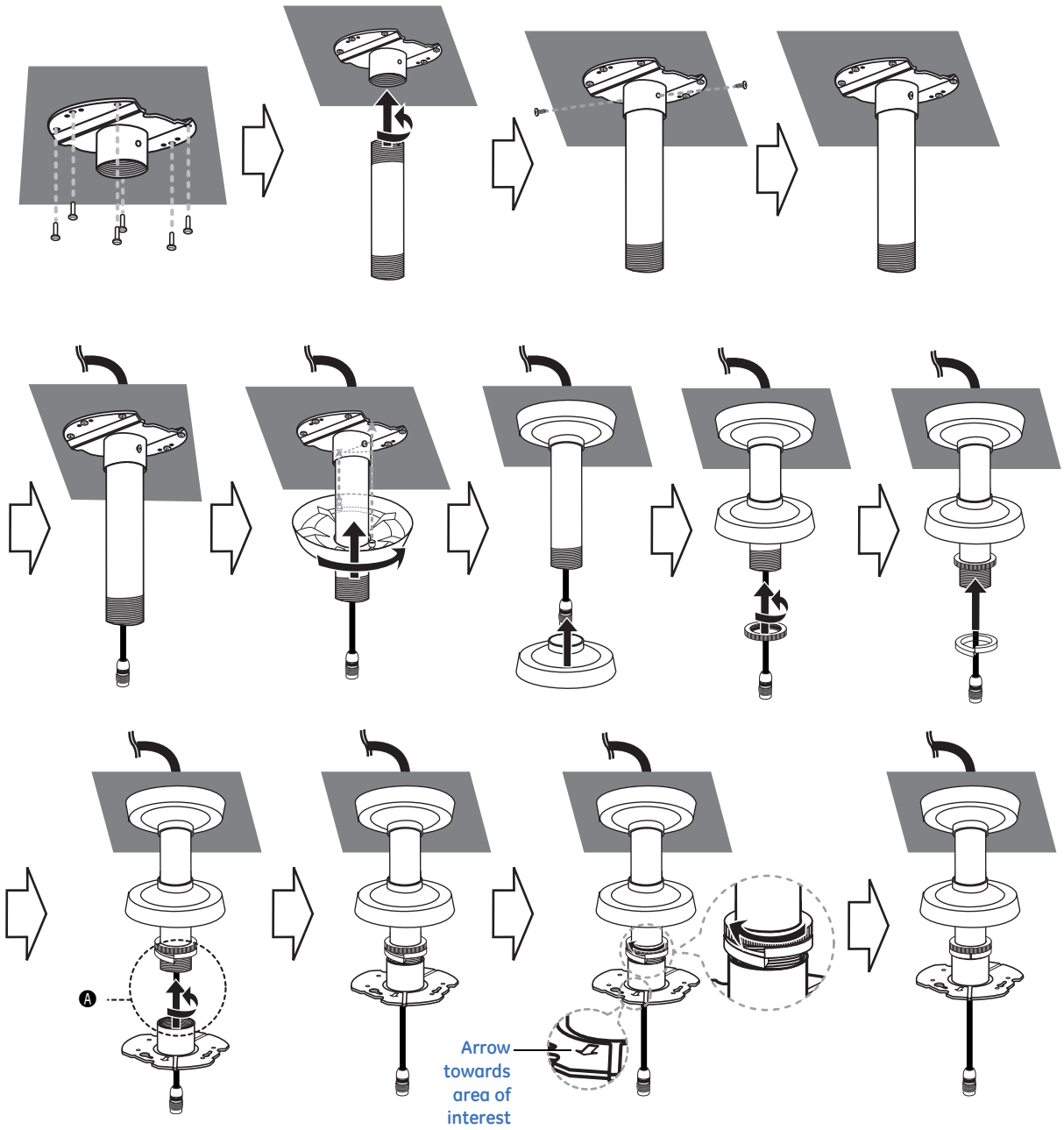
Optional pendant-mount

The pendant-mount kit GEC-DV-PM is for installation of a pendant/surface type camera.

To install the camera with a pendant-mount, do the following:

1. Install the pipe and camera installation bracket (*Figure 29*).

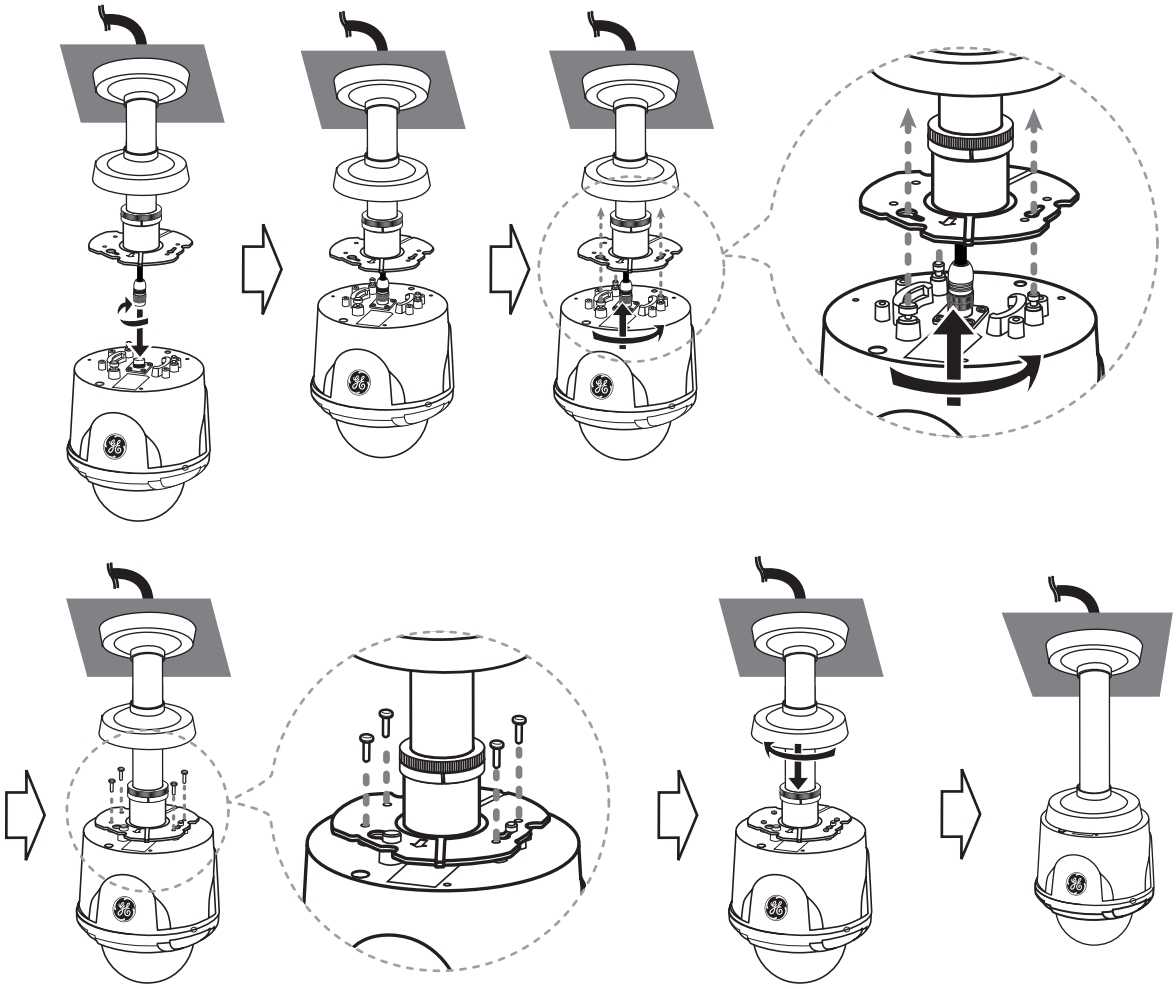
Figure 29. Pipe and camera installation bracket



Pipe threads should be clean and rust-free. Use a sealer such as PTFE tape or silicone sealer on the threads of both ends of the pipe ❶.

2. Connect the RJ45 cable to the RJ45 jack of the camera and attach the camera to the installation bracket (*Figure 30*).

Figure 30. Connect the camera

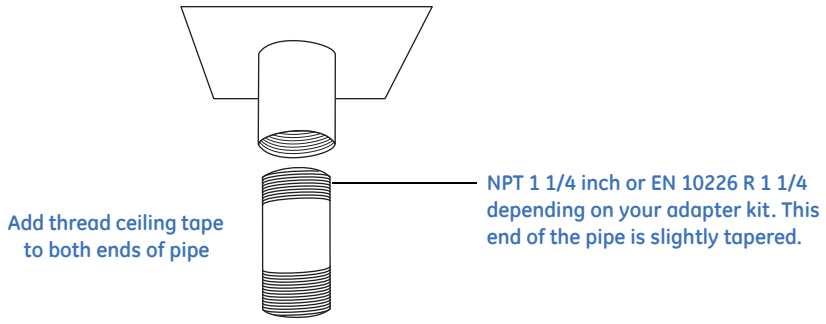


Note: When properly installed, the GE logo should face toward the area of interest. If it does not, readjust the lower camera installation bracket.

Pipe mount

GE Security offers two pipe-mount adapter kits designed for use with two different types of threaded pipe. The GEC-DV-PMA model is for 1-1/4 11.5 NPT threaded pipe, and the GEC-DV-BSP model is for 1-1/4 BSP threaded pipe. The pipe-mount adapter kits are for installation of a pendant/surface type camera.

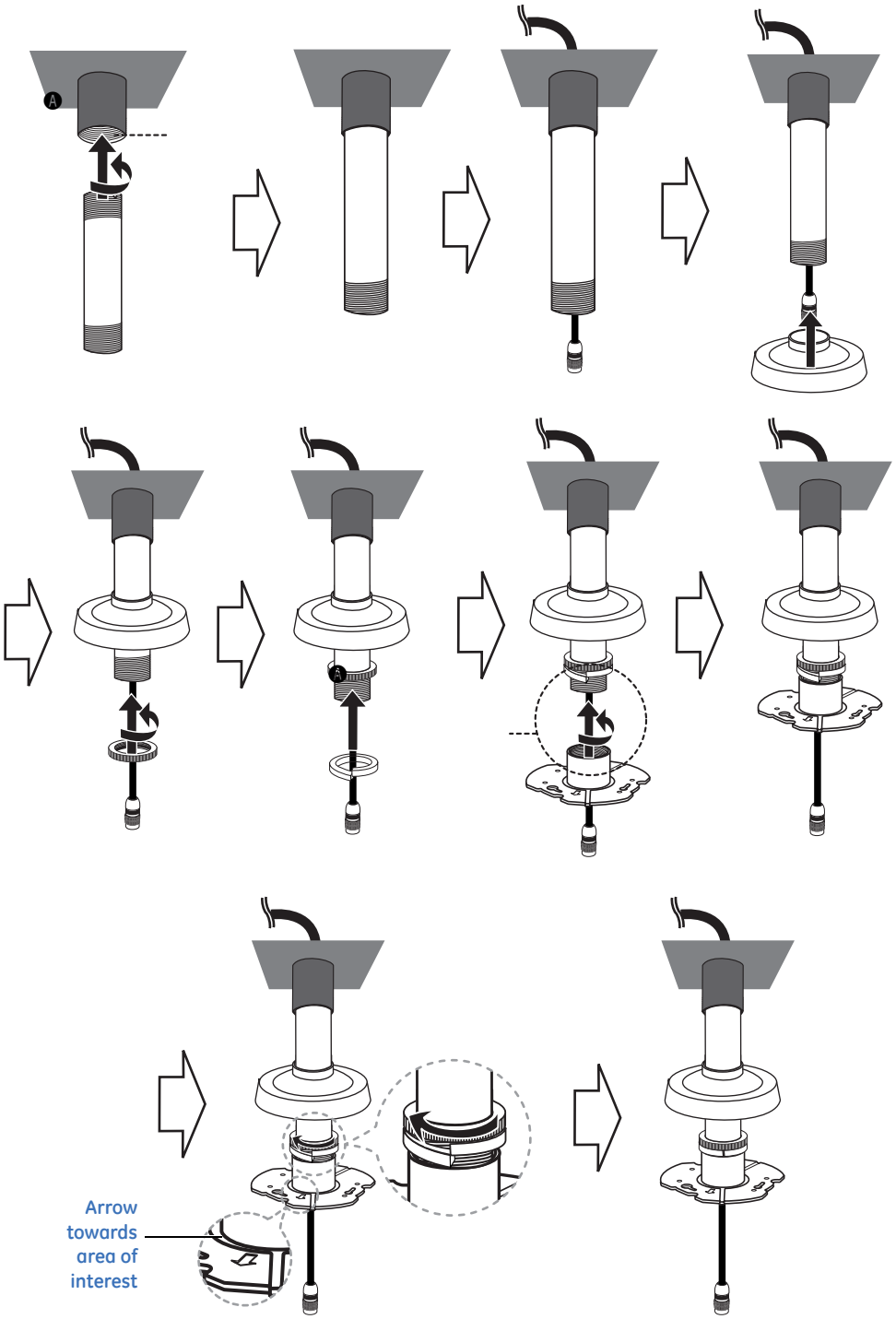
Figure 31. Pipe mount adapter



1. Add thread-sealing tape to both ends of your pipe. Pipe threads should be clean and rust free.

2. Install the NPT/BSP pipe and camera installation brackets (*Figure 32*).

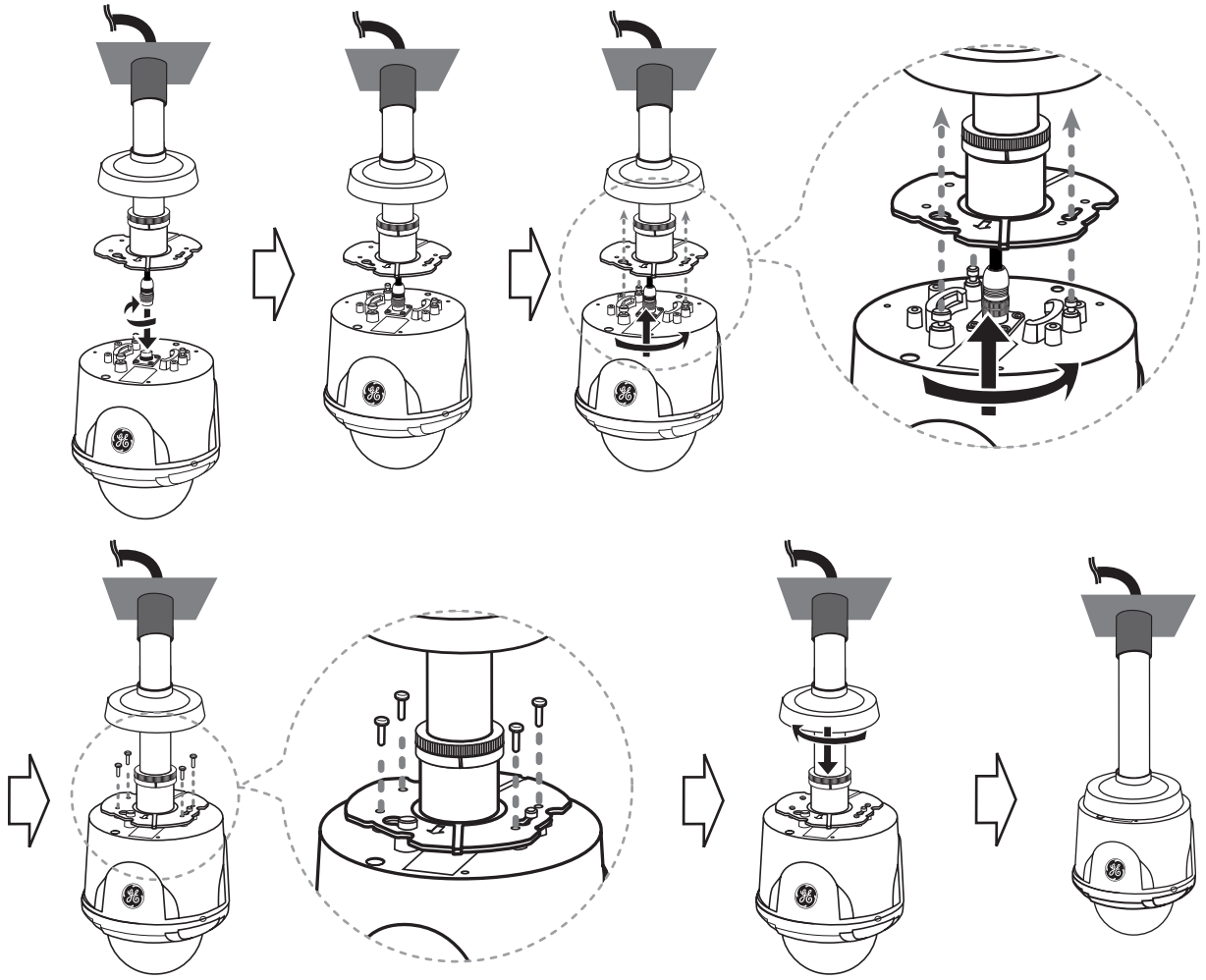
Figure 32. NPT/BSP pipe installation



Pipe threads should be clean and rust free. Use a sealer such as PTFE tape or silicone sealer on the threads Ⓐ.

3. Connect the RJ45 cable to the RJ45 jack of the camera and install the camera to the installation bracket (*Figure 33*).

Figure 33. RJ45 cabling



Note: If properly installed, the GE logo should face area of interest. If it does not, readjust the lower camera installation bracket.

Surface-mount

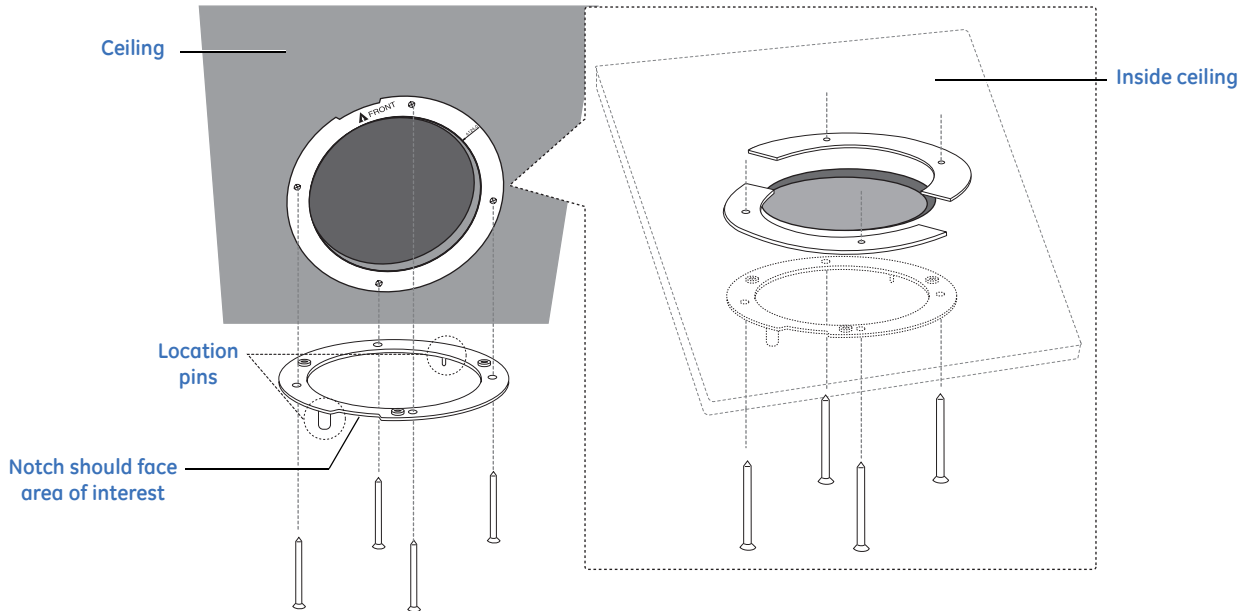
Note: The camera is no longer IP66 rated after surface mounting the camera.

To surface-mount the camera, do the following:

1. Use the installation guide template to check the mounting location. Point the arrow on the label marked "Front" towards the area of interest. Using the template as a guide, make a hole through the ceiling (*Figure 17*).

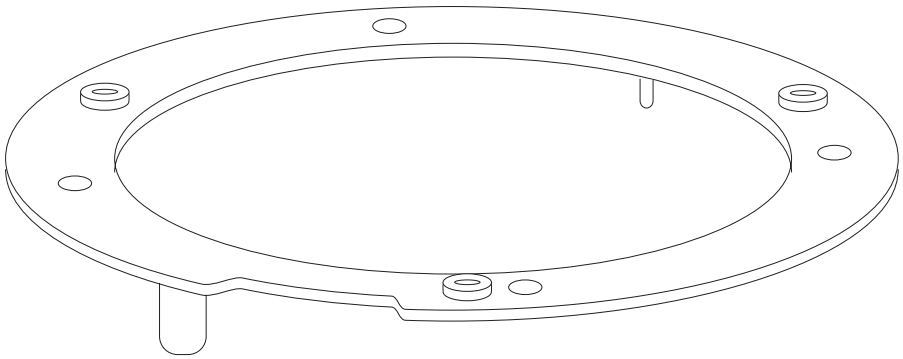
CAUTION: The building superstructure must be able to support 80 lb. (36 kg).

Figure 34. Camera assembly bracket



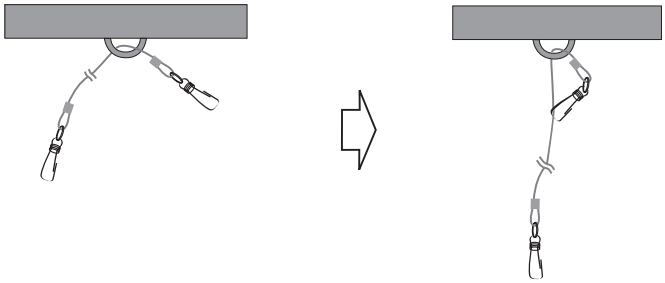
Note: For this installation, you must use the bracket depicted in *Figure 35* on page 30. The GE 16X PTZ camera models have different brackets that are designed to work with specific models.

Figure 35. Surface-mount bracket



2. Fasten the dome safety cable to the building superstructure (*Figure 20*). The building superstructure can vary depending on your installation environment.

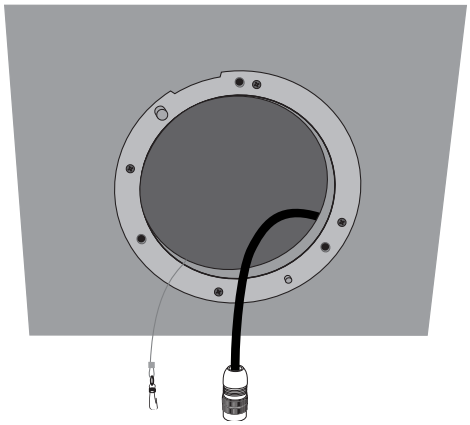
Figure 36. Dome safety cable



CAUTION: The building structure must be able to support 80 lb. (36 kg).

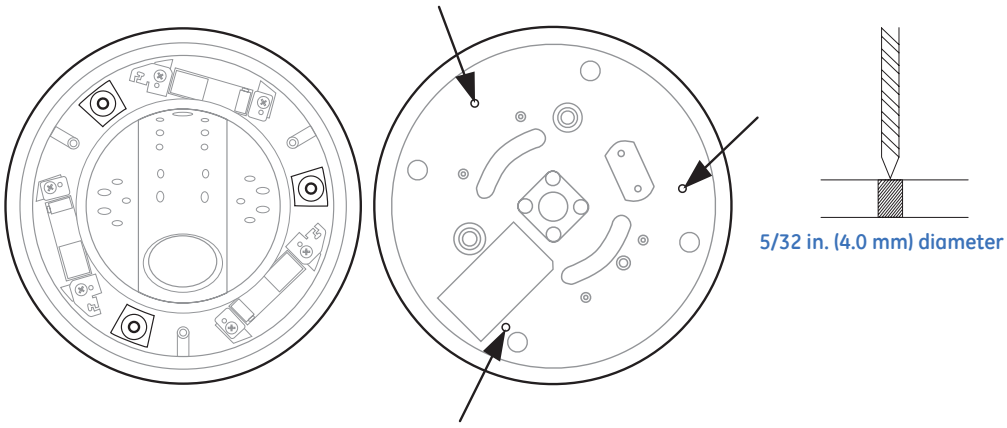
3. Pass the connection cable and the safety cable through the inner side of the ceiling (*Figure 21*).

Figure 37. Connection cable



4. Drill three holes in the camera housing as shown in *Figure 38*.

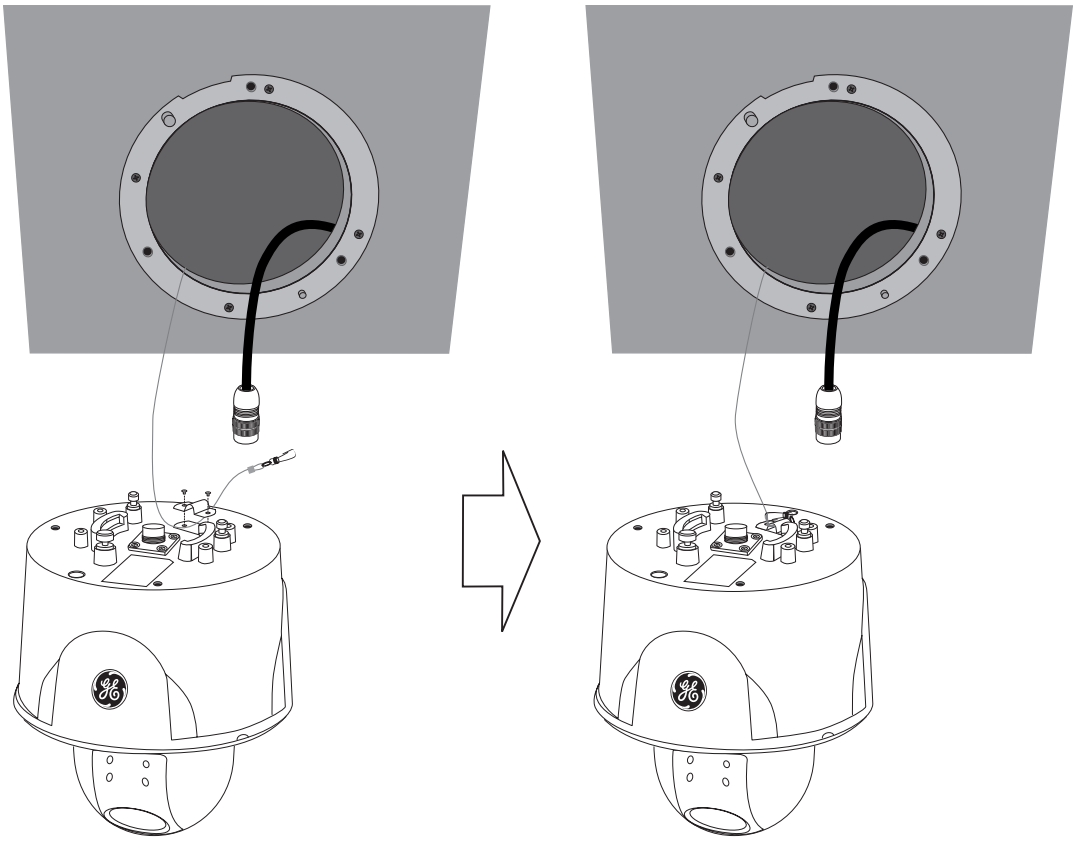
Figure 38. Drilling holes in the bottom of the camera housing



Note: The camera is no longer IP66 rated after drilling the holes.

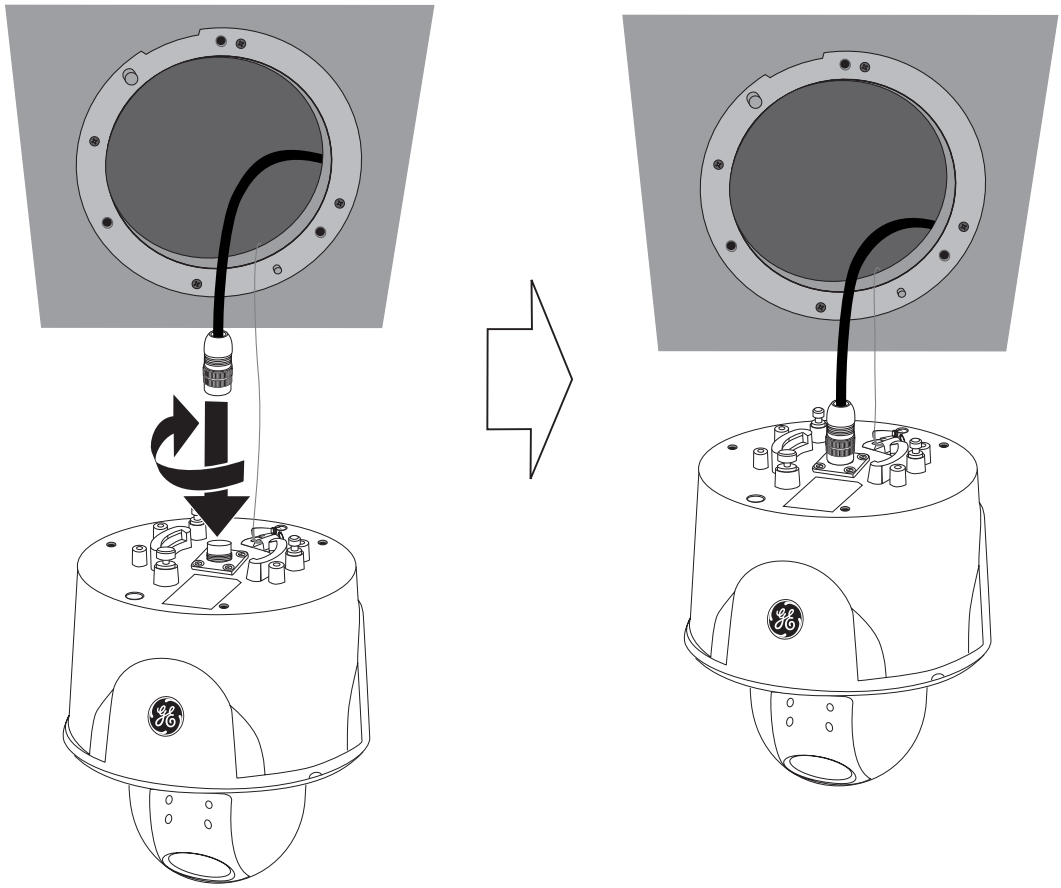
5. Using the two smallest screws in the mounting hardware kit, connect the safety cable to the camera body with the safety bracket (*Figure 22*).

Figure 39. Safety cable to camera



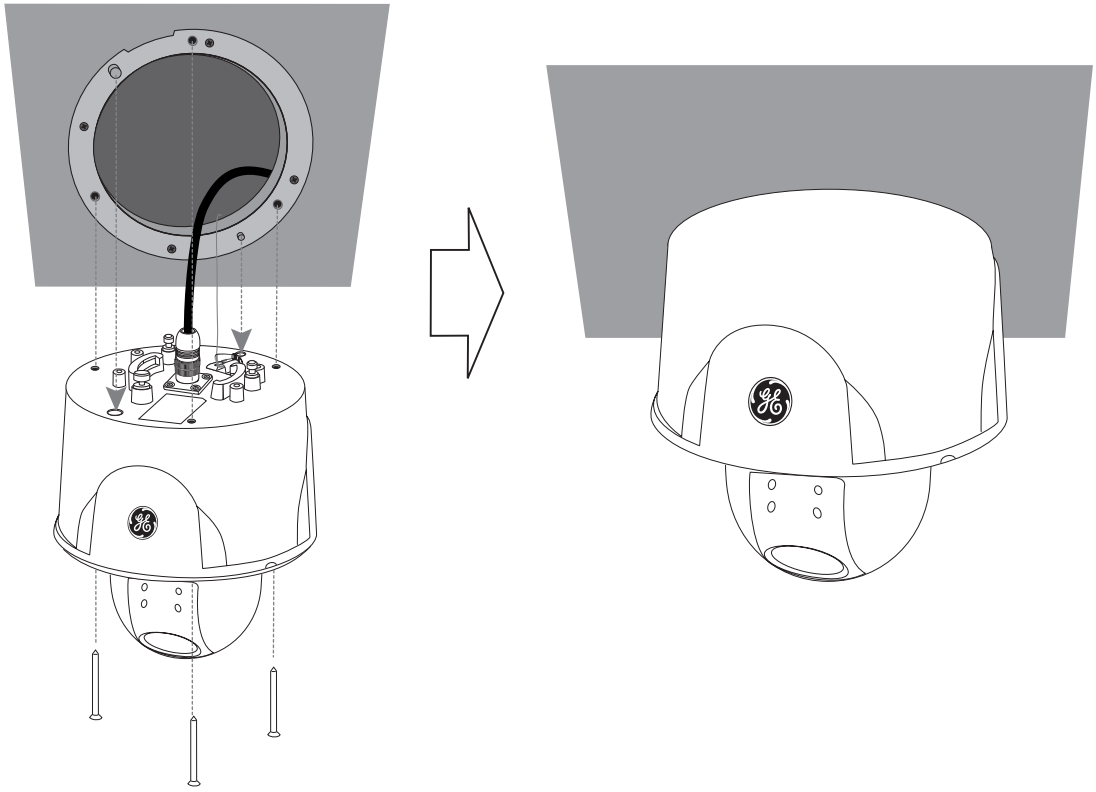
6. Connect the cable to the terminal on the camera body (*Figure 23*).

Figure 40. Cable connection



7. Fasten the camera body to the camera assembly bracket (*Figure 24*). For proper orientation, use the location pins to align the camera.

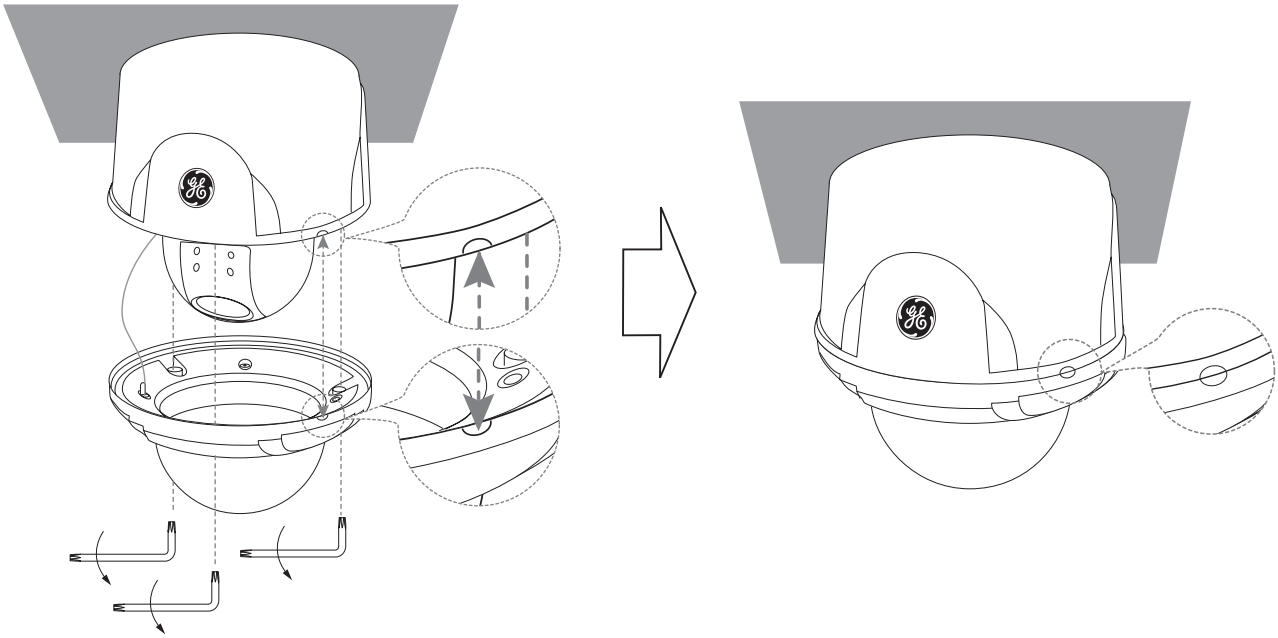
Figure 41. Camera body to bracket installation



8. Assemble the camera cover and camera body. Fasten the screws using the hexagonal wrench (*Figure 25*).

Note: The GE logo should face the area of interest. If it does not, go back to step 1 to reorient the assembly bracket.

Figure 42. Camera cover assembly



Contacting us

For help installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, contact us during business hours (Monday through Friday, excluding holidays, between 5 a.m. and 5 p.m. Pacific Time).

Table 6. Technical support

North America
T: 888 GE Security (888.437.3287) Toll-free in the US, Puerto Rico, and Canada. 503.885.5700 outside the toll-free area.
F: 888.329.0332 (Tualatin tech support) 561.998.6232 (Boca Raton tech support)
E: *nstechsrv@ge.com* *gesecurity.customerservice@ge.com*
Australia, New Zealand
E: *techsupport@gesecurity.com.au*

Latin America
T: 305.593.4301
F: 305.593.4300
E: *InfraSec.TechnicalServicesLatinAmerica@ge.com* *InfraSecCustomerService.LatinAmerica@ge.com*
Europe, Middle East, and Africa
W: At *www.gesecurity.eu*, select *Customer Support*.
China, India, Singapore, Taiwan, Southeast Asia
E: *ges.asiatechservice@ge.com*

Note: Be ready at the equipment before calling.

Online resources

Here are some useful links on our website *www.gesecurity.com*:

Online library. From the *Customer Support* menu, select the *Resource Library* link. After you register and log on, you may search for the documentation you need.[1]

Training. To view any available online training for GE Security products, select the *Training* link. (Online training is not available for all products.)

Warranty and terms information. From the *Customer Support* menu, select *Return and Warranty Policy Statement* or *Terms and Conditions Policy Statement*.

Customer service and technical support. From the *Customer Support* menu, select *Customer Service* or *Technical & Application*. Select the appropriate product category for the contact information or use the menu to select a location outside the US.

1. Many GE documents are provided in English only as PDFs. To read these documents, you will need Adobe Reader, which you can download free from Adobe's website at *www.adobe.com*.