

## G3-C Universal Grip

### High Performance, Ergonomic Control Grip



G3-CK with 8-Button Faceplate Keypad



G3-C with CC Faceplate



G3-CK with Backlighted 8-Button Faceplate and a 10-Button Side Keypad



G3-C with Custom Faceplate Configuration



G3-C with Dual Direction Trigger on Back



G3-C with Pushbutton on Side and Back

Operator presence, trigger switches, side keypads, faceplate keypads and z-axis rotation are the exciting features of OTTO's ergonomically designed and customizable G3-C Universal Grip. Its high switch content capability increases the level of functionality, benefiting anyone who requires versatility in a grip.

The operator presence uses a sensor to detect the presence of the operator's hand on the grip. The new trigger switch selections for the back of the grip include single trigger, dual momentary trigger and dual maintained trigger. Keypads are available on both the faceplate, with up to 8 switches, and on either side of the grip as a side keypad, with up to 10 switches on each side (G3-CK). Backlighting is also an option. The z-axis feature allows for a +/- 25° horizontal rotation of the grip.

With numerous faceplate selections, the G3-C can be customized from applications requiring basic control functions to those requiring high switch content. The G3-C can be panel mounted as a fixed control grip, panel mounted with z-axis, or it can be mounted on an OTTO JH, JHL and JHM joystick with or without z-axis.

The G3-C is designed for use with OTTO's pushbuttons, rockers, toggles and Hall effect switches, and can handle many types of high-performance industrial vehicle and machinery applications.

### Features

- The grip can be used with either the left or right hand
- Operator presence option
- Z-axis option with +/- 25 rotation
- Numerous standard faceplate designs incorporating up to 8 control switches (G3-C) or an 8-button keypad (G3-CK)
- 10-button side keypad option (G3-CK)
- Switch selections for the back of the grip handle include pushbutton, thumbwheel and trigger switches
- Various mounting & termination styles available
- Includes mounting adapter with boot ring

### Benefits

- Modular design provides high level of customization and reduces the need for tooling charges
- Compatible with the OTTO JH, JHL and JHM series Hall effect Joysticks
- Accommodates a full line of OTTO pushbutton, rocker, toggle, and Hall effect switches

## G3-C & G3-CK UNIVERSAL GRIPS

Standard Characteristics/Ratings:					
<b>ELECTRICAL RATINGS:</b>					
<b>K1 Switches</b>					
Electrical Rating @ 28 VDC	16 AMP Resistive Load; 7 AMP Inductive Load				
Electrical Life	25,000 Cycles at Full Load				
<b>Keypads</b>					
Circuit Configuration	SPST N.O.				
Voltage	1-32 VDC				
Current	10-100mA Resistive				
<b>P9 Switches, Single and Dual Trigger</b>					
Electrical Rating @ 28 VDC	5 AMP Resistive Load; 3 AMP Inductive Load		10mA Resistive Load @ 5VDC		
Electrical Life	25,000 Cycles at Full Load		1,000,000 Cycles		
<b>HTWM Switches</b>					
Rated at Vcc = 5V @ 25°C; Load = 1ma (4-7KΩ)					
	<b>Units</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	
Supply Voltage	VDC	4.50	5.00	5.50	
Output Voltage - Return to Center Tolerance at Center	VDC @ 5V Vcc	-0.15	N/A	+0.15	
Output Voltage - Return to End Tolerance at Rest	VDC @ 5V Vcc	-0.25	N/A	+0.25	
Output Voltage Tolerance Full Travel	VDC @ 5V Vcc	-0.25	N/A	+0.25	
Supply Current B=0, Vcc=5V, Iout=0	mA	N/A	N/A	10	
<b>HTWS Switches</b>					
Rated at Vcc = 5V @ 25°C; Load = 1ma (4-7KΩ)					
	<b>Units</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	
Supply Voltage	VDC	4.50	5.00	5.50	
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-0.25	N/A	+0.25	
Output Voltage Tolerance Full Travel	VDC @ 5V Vcc	-0.25	N/A	+0.25	
Supply Current B=0, Vcc=5V, Iout=0	mA	N/A	N/A	20	
<b>HTLT4 Switches</b>					
Rated at Vcc = 5V @ 25°C; Load = 1ma (4-7KΩ)					
	<b>Units</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	
Supply Voltage	VDC	4.50	5.00	5.50	
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-0.25	N/A	+0.25	
Output Voltage Tolerance Full Travel	VDC @ 5V Vcc	-0.25	N/A	+0.25	
Supply Current B=0, Vcc=5V, Iout=0	mA	N/A	10	12	
<b>TC-5 Switches</b>					
Electrical Rating @ 1-32 VDC	10-100mA				
Electrical Life	3,000,000 Cycles				
<b>Operator Presence</b>					
Rated at Vcc = 5V @ 25°C; Load = 1ma (4-7KΩ)					
	<b>Units</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	
Supply Voltage	VDC	3.00	NA	5.50	
Output (Active Low)	VDC	N/A	N/A	0.60	
Output Current (Sink)	mA	N/A	N/A	20	

Standard Characteristics/Ratings (continued):				
<b>MECHANICAL RATINGS</b>				
<b>K1 Switches</b>				
Mechanical Life	100,000 Cycles			
<b>Keypads</b>				
Mechanical Life	3,000,000 Cycles			
<b>P9 Switches, Single and Dual Trigger</b>				
Mechanical Life	1,000,000 Cycles			
<b>HTWM Switches</b>				
Mechanical Life (Full Forward to Full Back)	3,000,000 Cycles (Return to Center) 1,000,000 Cycles (Return to End)			
<b>HTWS Switches</b>				
Mechanical Life (Full Forward to Full Back)	3,000,000 Cycles			
<b>HTLT4 Switches</b>				
Mechanical Life	3,000,000 Cycles			
<b>TC-5 Switches</b>				
Mechanical Life	3,000,000 Cycles			
<b>ENVIRONMENTAL:</b>				
<b>Operating Temperature:</b>	<b>Units</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>
	° C	-40*	20	85
<b>K1 Switches</b>				
Switch Seal Integrity	Watertight per IP68S and IP69K			
<b>Keypads</b>				
Switch Seal Integrity	Watertight per IP68S and IP69K			
<b>P9 Switches, Single and Dual Trigger</b>				
Switch Seal Integrity	Watertight per IP68S and IP69K			
<b>HTWM Switches</b>				
Electronics Seal Integrity	Watertight per IP68S and IP69K			
<b>HTWS Switches</b>				
Electronics Seal Integrity	Watertight per IP68S and IP69K			
<b>HTLT4 Switches</b>				
Electronics Seal Integrity	Watertight per IP68S and IP69K			
<b>TC-5 Switches</b>				
Electronics Seal Integrity	Watertight per IP68S and IP69K			
<b>Grip</b>				
Seal Integrity	Unsealed			
<b>MATERIALS:</b>				
<b>Handle</b>	Thermoplastic, Glass Reinforced, Black			
<b>Faceplate</b>	Thermoplastic, Glass Reinforced, Black			
<b>Keypads</b>	Silicone Rubber, Black			
<b>Keypads, Lighted</b>	Silicone Rubber, Black with White Graphic			
<b>Wires</b>	22 AWG			
<b>Side Keypad Wires</b>	24 AWG			
<b>Wire Length</b>	40 +/- 3 inches			

\* The min. temperature is -30°C when using a K1 switch.

**WARNING:** Do not use the operator presence as a safety or emergency stop device or in any application where failure of the product could result in personal injury. Failure to comply with these instructions could result in death or serious injury. OTTO Engineering Inc. makes no warranty, representation, or guarantee regarding the information contained herein or the suitability of its products and services for any particular purpose, nor does OTTO Engineering Inc. assume any liability whatsoever arising out of the application or use of any product. The product sold hereunder by OTTO has been subject to limited testing and should not be used in conjunction with detection of the presence of an operator on or with any equipment that is in any way safety related. OTTO does not accept any liability for incidental, consequential damages, personal injury or loss of life for any claims against the use of this product.

## G3-C UNIVERSAL GRIP PART NUMBER CODE

<b>G3-C</b>	<b>X</b>	<b>XX</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>Part Number Code Continues Below</b>
<b>Configuration</b>	<b>Faceplate</b>	<b>Trigger in Handle</b>	<b>PB in Grip Head - Black</b>	<b>K1 Rocker #1 Style - Black **</b>	<b>K1 Rocker #2 Style - Black **</b>		
1. Grip With Adapter 2. Grip Without Adapter	See Configuration Sheet	1. None 2. One Pushbutton, Black 3. Two Pushbuttons, Black 4. HTWS* 5. Single Direction Momentary 6. Dual Direction Momentary 7. Dual Direction Maintained	1. None 2. Left 3. Right 4. Left & Right	1. None 2. ON-OFF 3. (ON)-OFF 4. ON-OFF-ON 5. (ON)-OFF-(ON)	1. None 2. ON-OFF 3. (ON)-OFF 4. ON-OFF-ON 5. (ON)-OFF-(ON)		

\* HTWS-1A12X22

\*\* ( ) denotes momentary action. On position or momentary position is up or to the right. Contact factory for rocker legends and additional color options.

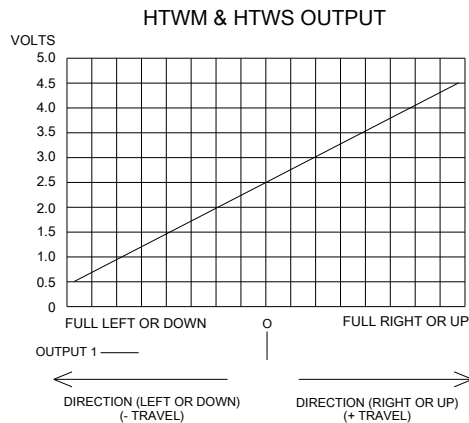
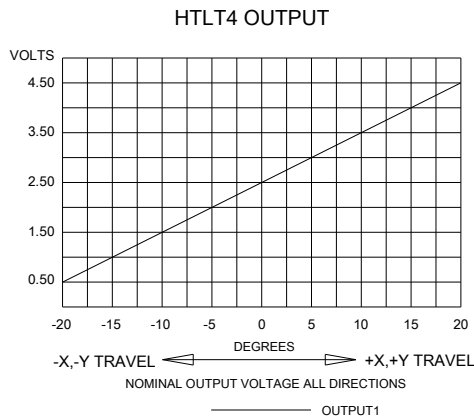
## G3-C PART NUMBER CODE CONTINUED

<b>HTWM #1***</b>	<b>HTWM #2***</b>	<b>P9 Button #1 Color</b>	<b>P9 Button #2 Color</b>	<b>P9 Button #3 Color</b>	<b>P9 Button #4 Color</b>	<b>P9 Button #5 Color</b>	<b>P9 Button #6 Color</b>	<b>P9 Button #7 Color</b>	<b>P9 Button #8 Color</b>
1. None 2. Return to Center <sup>1</sup> 3. Return to End <sup>2</sup>	1. None 2. Return to Center <sup>1</sup> 3. Return to End <sup>2</sup>	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White

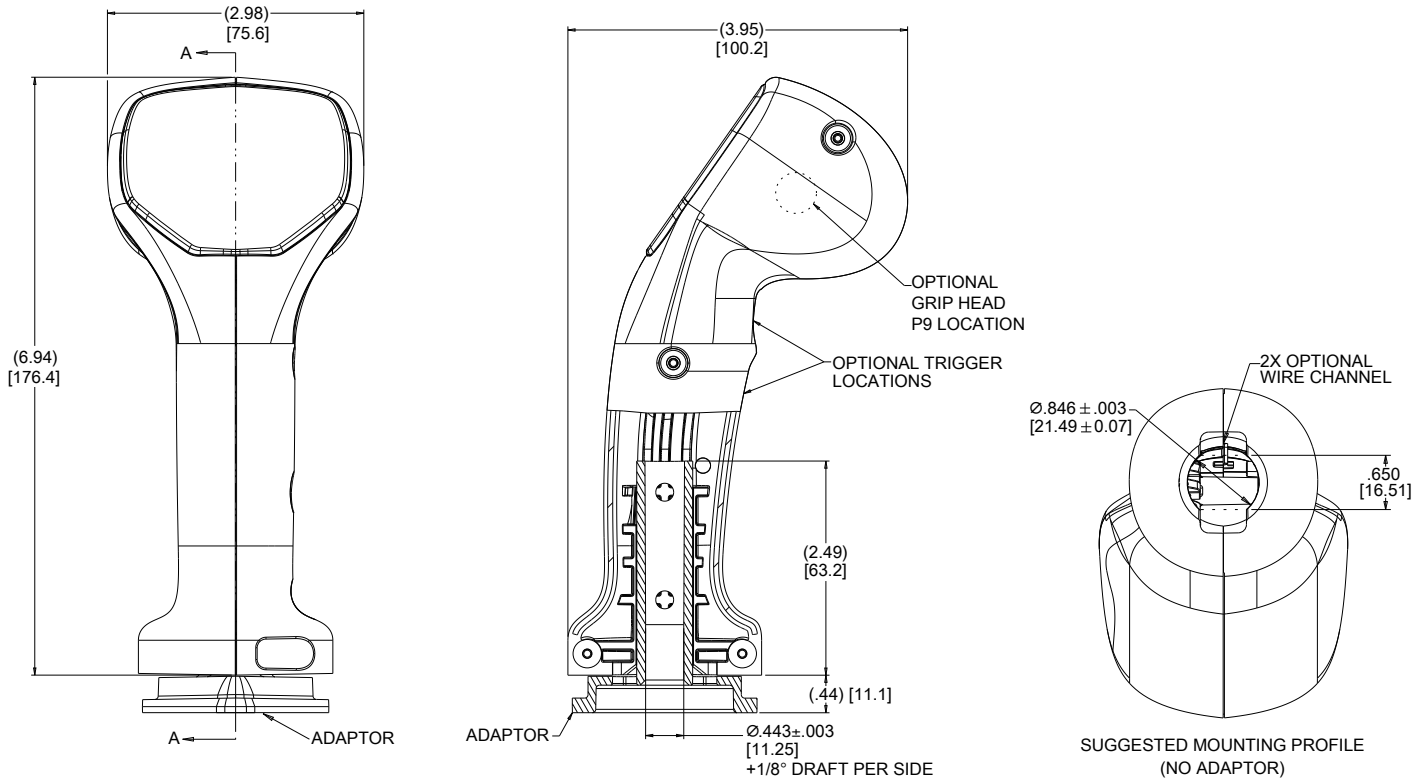
<sup>1</sup> = HTWM-1J12X22\*\*\*\*  
<sup>2</sup> = HTWME-1A12X22\*\*\*\*

\*\*\* Positive travel is up or to the right. Contact factory for additional options.  
 \*\*\*\* Contact factory for additional options.

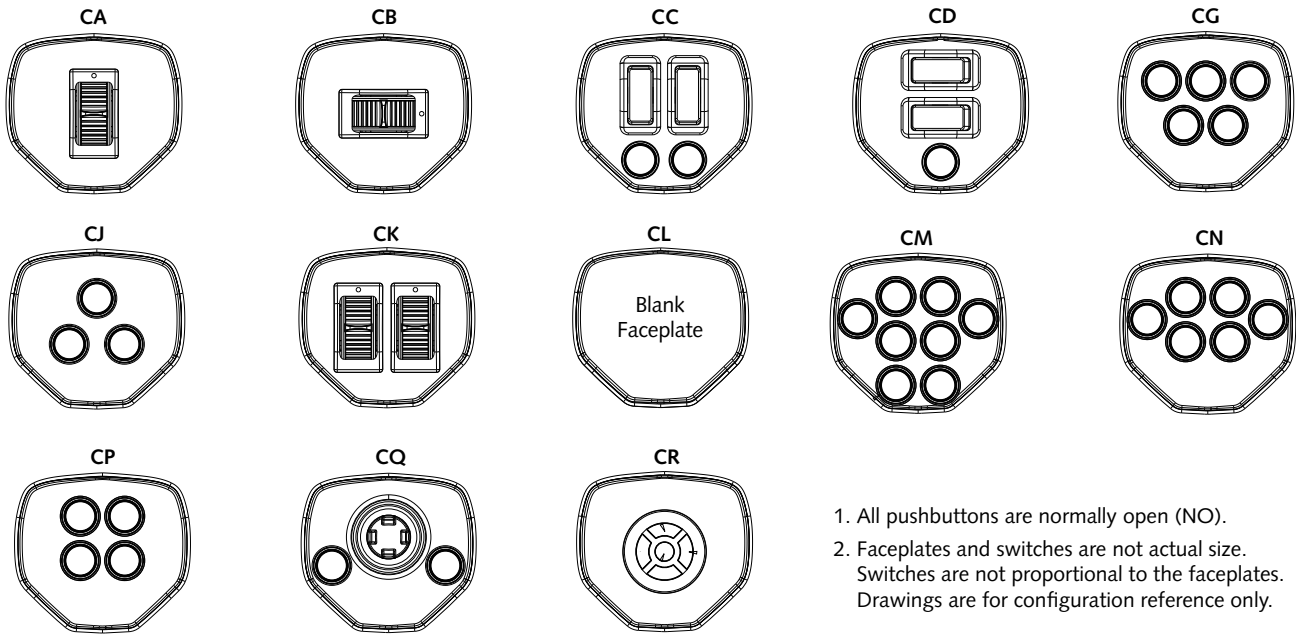
## G3-C UNIVERSAL GRIP OUTPUT



## G3-C UNIVERSAL GRIP DRAWINGS



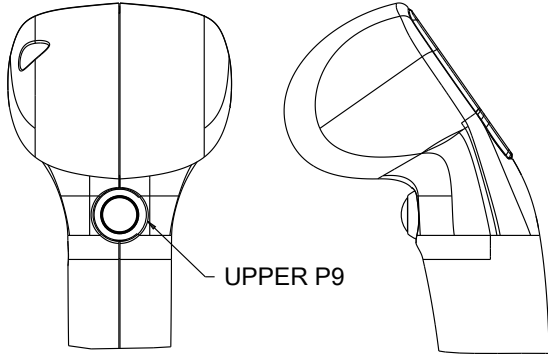
## G3-C UNIVERSAL GRIP FACEPLATES



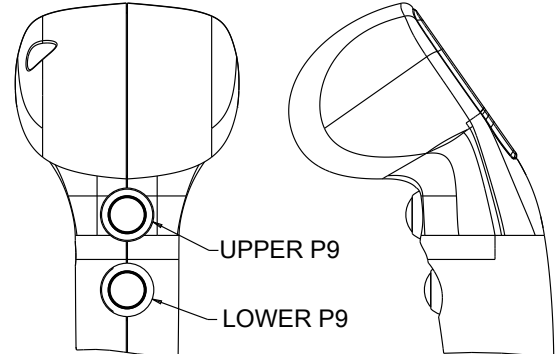
1. All pushbuttons are normally open (NO).
2. Faceplates and switches are not actual size. Switches are not proportional to the faceplates. Drawings are for configuration reference only.

## G3-C UNIVERSAL TRIGGER CONFIGURATIONS

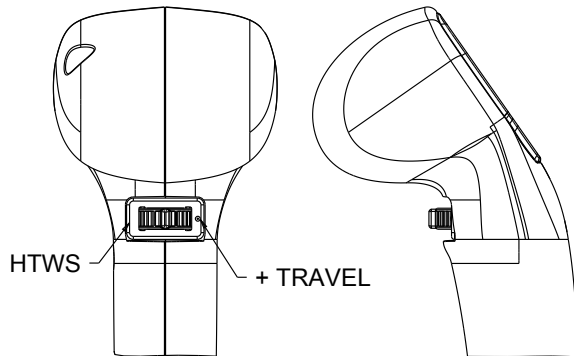
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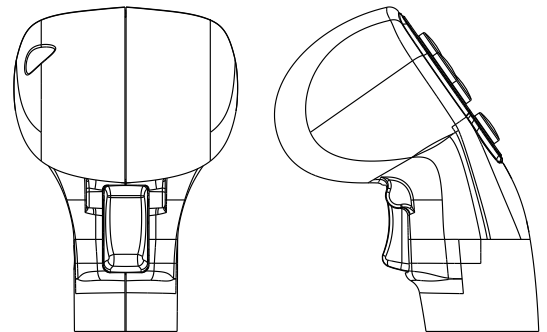
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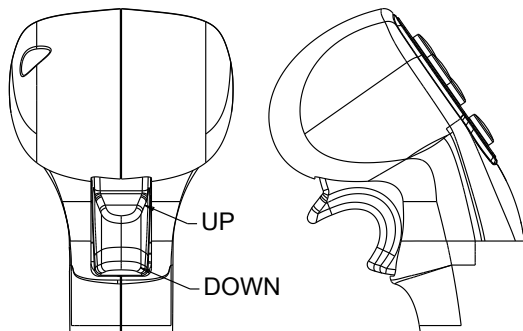
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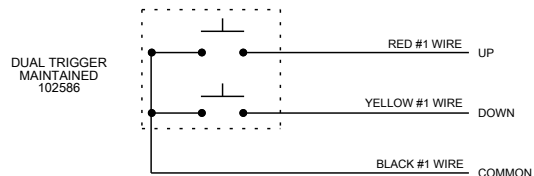
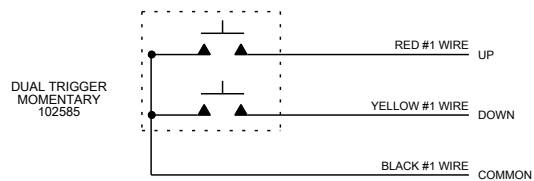
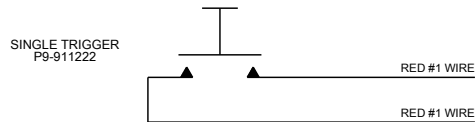
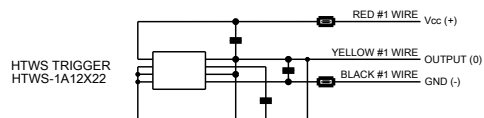
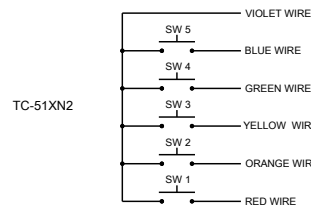
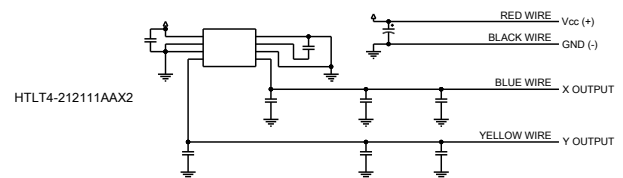
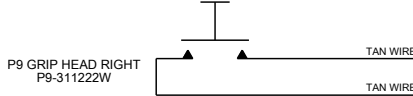
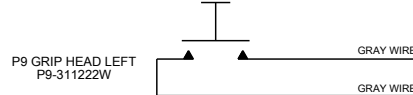
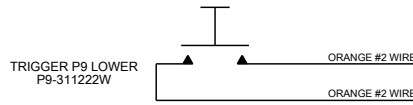
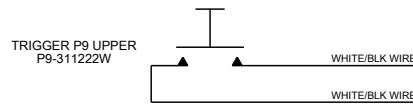
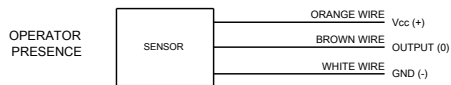
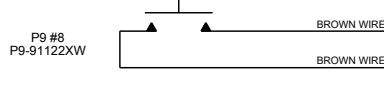
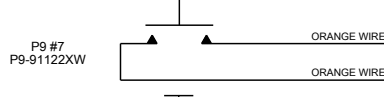
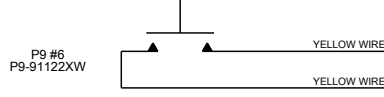
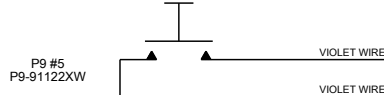
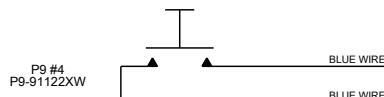
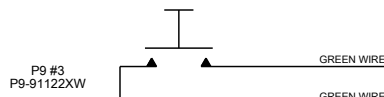
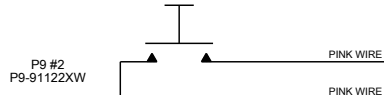
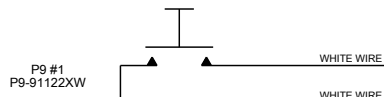
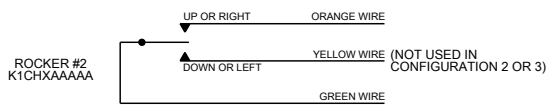
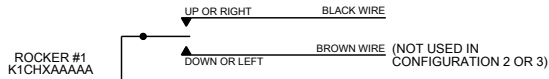
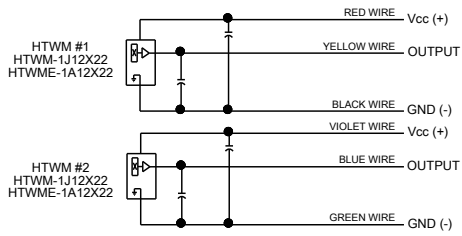
CONFIGURATION #5



CONFIGURATION #6,7



## G3-C UNIVERSAL SCHEMATICS





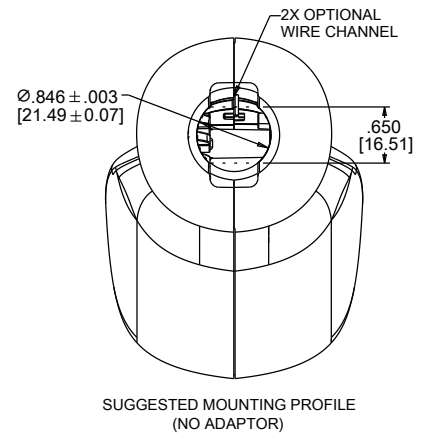
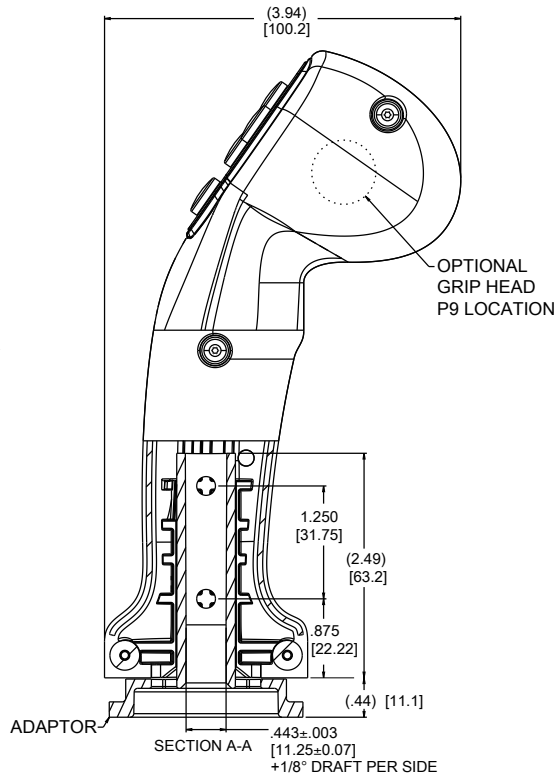
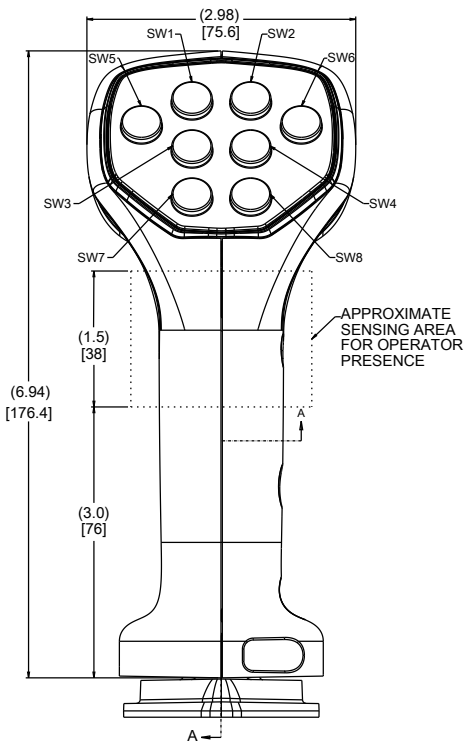
## G3-CK UNIVERSAL GRIP PART NUMBER CODE

<b>G3-CK</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Adaptor</b>	<b>Center Keypad Configuration</b>	<b>Side Keypad Configuration</b>	<b>Back Lighting*</b>	<b>Trigger Option</b>	<b>P9 In Head (Black)</b>	<b>Operator Presence**</b>	
1. None 2. Standard	4. 4 Buttons 6. 6 Buttons 8. 8 Buttons	1. None L. Left Hand R. Right Hand	N. None L. Lighted	1. None 2. One Pushbutton – Black 3. One Pushbutton – Red 4. Single 5. Dual Momentary 6. Dual Maintained 7. Two Pushbuttons – Black 8. Two Pushbuttons – Red 9. HTWS	1. None 2. Left Hand 3. Right Hand 4. Both	1. None 2. Handle	

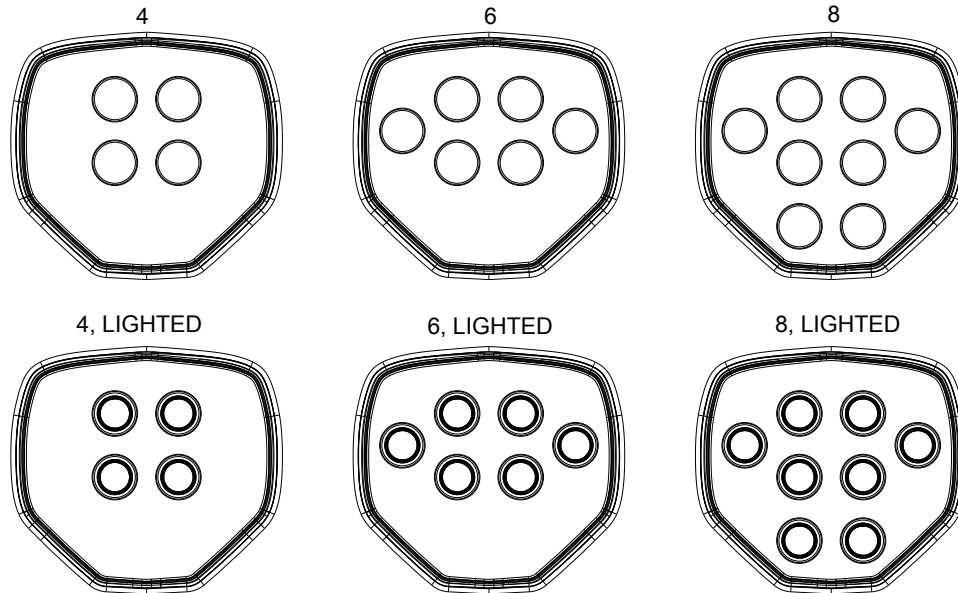
\* Backlighting applies to both the Keypad and Side Keypad

\*\* Operator Presence is not available with Trigger Option 5 or 6.

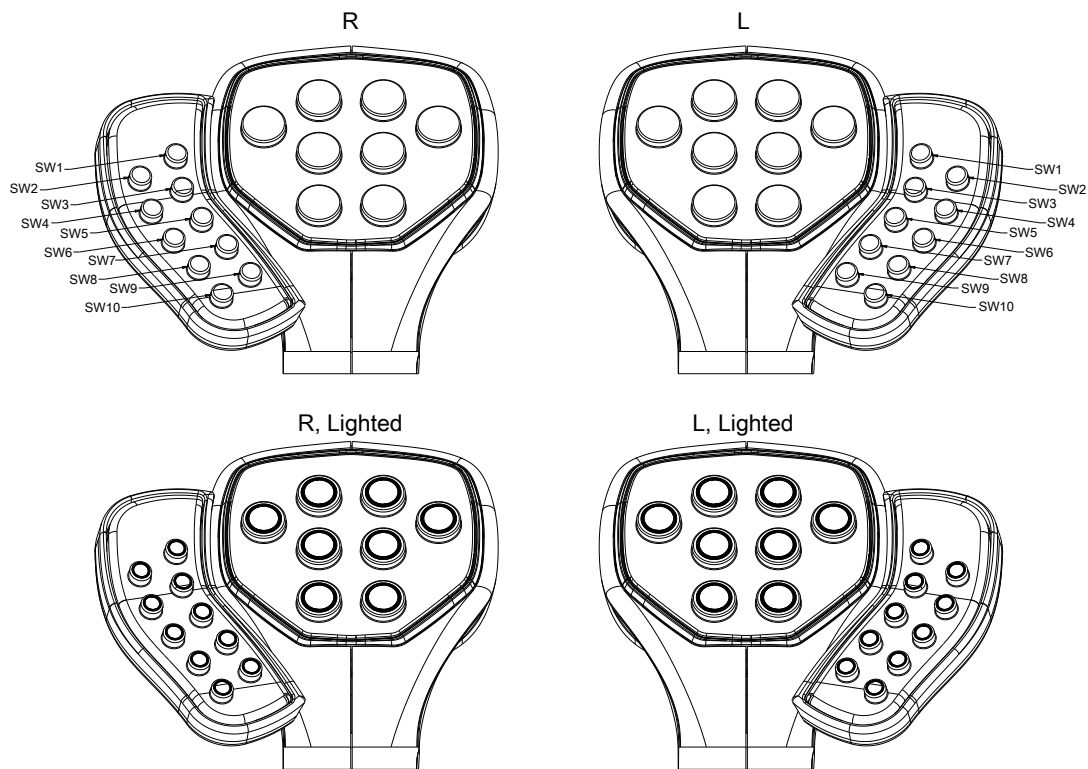
## G3-CK UNIVERSAL GRIP DRAWINGS



## G3-CK UNIVERSAL KEYPAD CONFIGURATIONS



## CENTER KEYPAD CONFIGURATIONS

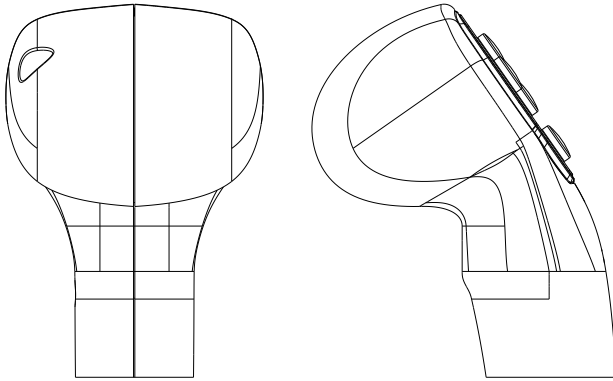


## SIDE KEYPAD CONFIGURATIONS

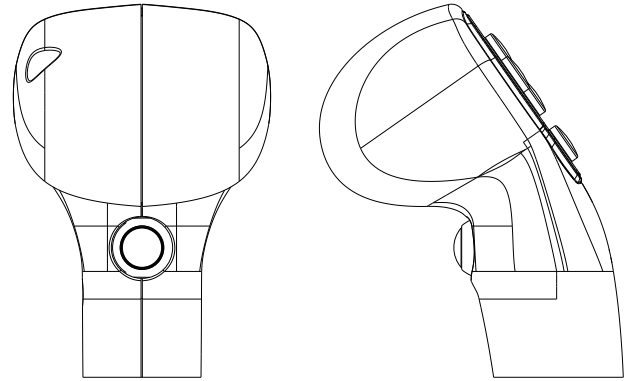


## G3-CK UNIVERSAL TRIGGER CONFIGURATIONS

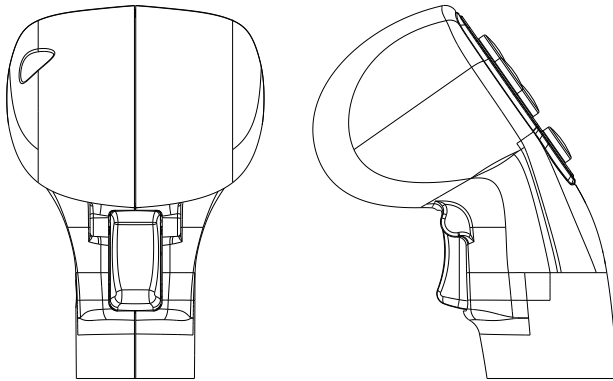
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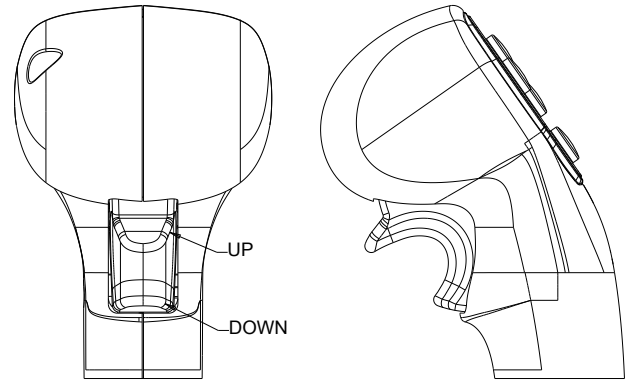
CONFIGURATION #2, 3



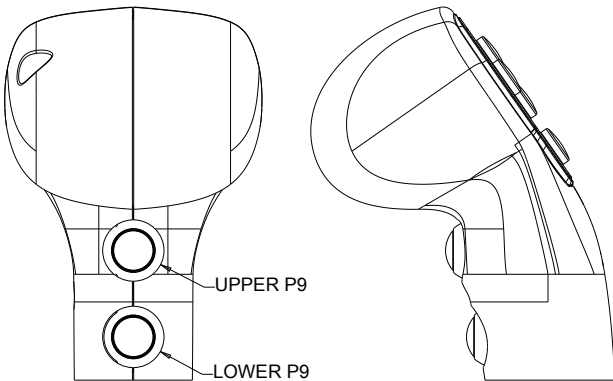
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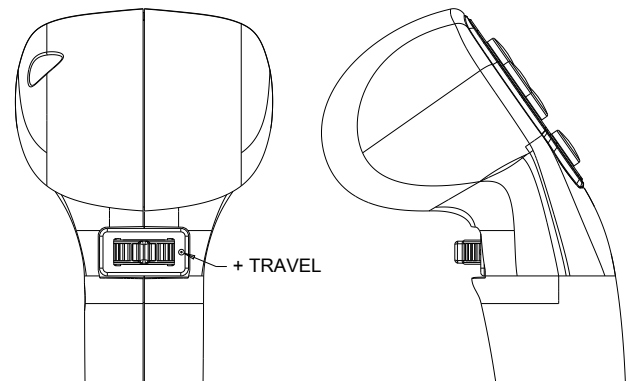
CONFIGURATION #5, 6



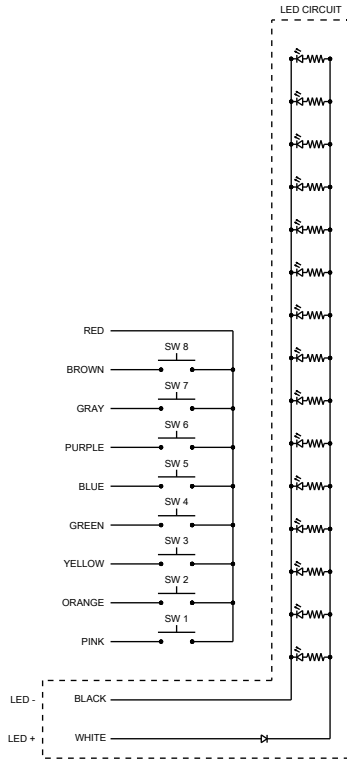
CONFIGURATION #7, 8



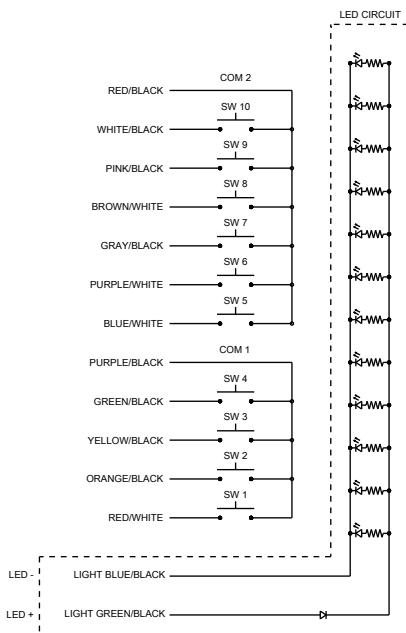
CONFIGURATION #9



## G3-CK UNIVERSAL SCHEMATICS



CENTER KEYPAD SCHEMATIC  
WITH OPTIONAL LED  
CIRCUIT SHOWN



SIDE KEYPAD SCHEMATIC  
WITH OPTIONAL LED  
CIRCUIT SHOWN

