

HEAVY EQUIPMENT & MATERIAL HANDLING GRIPS

The G3 Universal Grips can be customized for top-of-the-line machines requiring high switch content, or to provide only basic control functions on lower tier units. The OTTO G3 Universal Grips have a modular design and were developed for use with OTTO's standard pushbuttons, rockers, toggles, Hall effect switches and the JH and JHM series Hall effect joystick. Both the Small Universal Grip and the Medium Universal Grip are easily customized with multiple switch configurations, quickly and without tooling charges.

Features:

- **Modular design eliminates the need for tooling charges**
- **Compatible with the OTTO JH and JHM series Hall effect Joysticks**
- **Small & medium sizes available**
- **Accommodates a full line of pushbutton, rocker, toggle, HP Hall effect & HPL proportional output series of switches**
- **Various mounting & termination options available**
- **Includes mounting adapter with boot ring**



Small Universal Grip
Shown Unpopulated
and with Pushbutton
and Rocker Switches

Medium Universal Grip
Shown with Pushbutton
and Rocker Switches



G3-C Universal
Contour Grip



Internal View



G3-C Contour Grip
Available in Left-hand
and Right-hand Options



Custom Mounting
Adapters Available

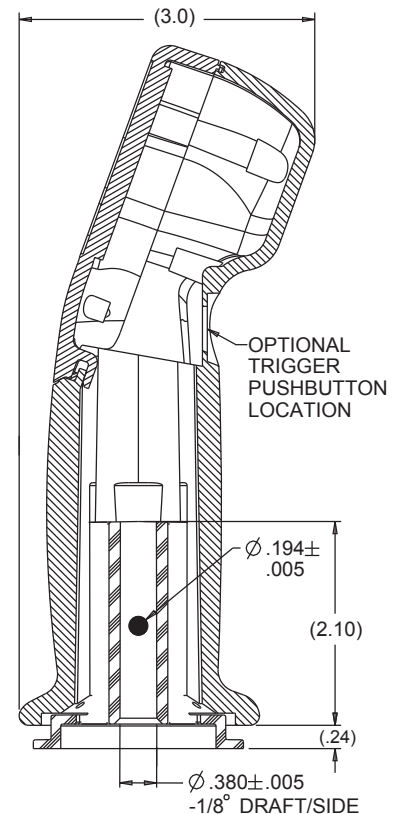
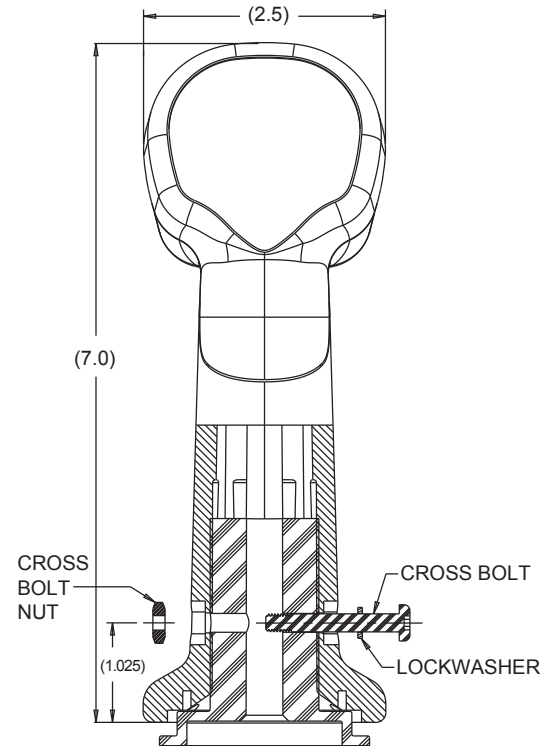


Custom
Terminations Available

HEAVY EQUIPMENT & MATERIAL HANDLING GRIPS

SMALL UNIVERSAL GRIPS

Standard Characteristics/Ratings:				
ELECTRICAL RATINGS:				
K1 Switches				
Electrical Rating @ 28 VDC	16 AMP Resistive Load; 7 AMP Inductive Load			
Electrical Life	25,000 Cycles at Full Load			
P9 Switches				
Electrical Rating @ 28 VDC	5 AMP Resistive Load; 3 AMP Inductive Load			
Electrical Life	25,000 Cycles at Full Load			
MECHANICAL RATINGS				
K1 Switches				
Mechanical Life	100,000 Cycles			
P9 Switches				
Mechanical Life	1,000,000 Cycles			
ENVIRONMENTAL:				
Operating Temperature:	Units	Min	Typ	Max
	° C	-30	20	85
K1 Switches				
Switch Seal Integrity	Watertight per IP68S (1 meter) and IP69K			
P9 Switches				
Switch Seal Integrity	Watertight per IP68S (1 meter) and IP69K			
Grip				
Seal Integrity	Unsealed			
MATERIALS:				
Handle	Thermoplastic, Glass Reinforced, Black			
Faceplate	Thermoplastic, Glass Reinforced, Black			
Mounting Hardware	#10 Crossbolt with Nut and Lockwasher			
Wires	22 AWG, UL Style 1569, (20" Long)			



Note: All dimensions are for reference only.

Specifications Subject To Change Without Notice

HEAVY EQUIPMENT & MATERIAL HANDLING GRIPS

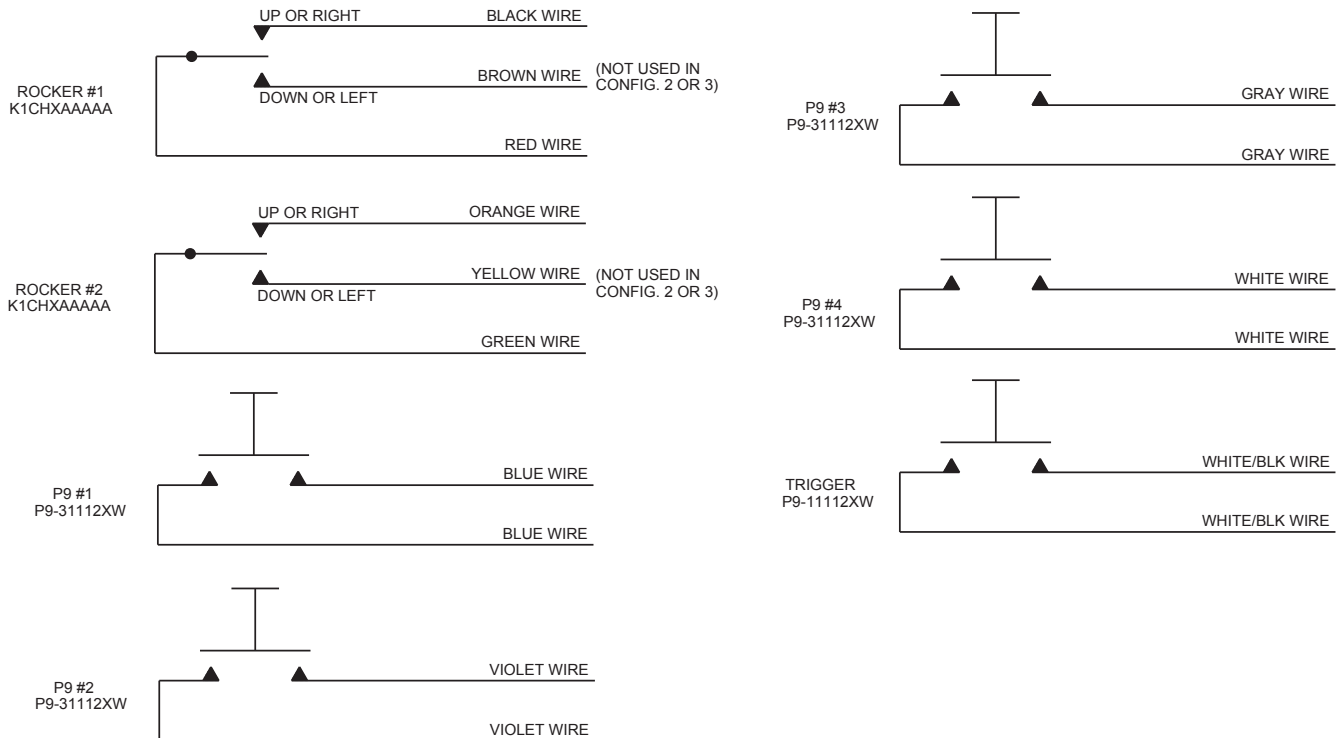
SMALL UNIVERSAL GRIPS

G3-A PART NUMBER CODE

G3-A	X	XX	X	X	X	X	X	X	X
Configuration	Switches	Trigger Pushbutton in Handle	K1 Rocker #1 Style - Black *	K1 Rocker #1 Style - Black *	K1 Rocker #2 Style - Black *	P9 Button #1 Color	P9 Button #2 Color	P9 Button #3 Color	P9 Button #4 Color
1. Grip Only	See Configuration Sheet on next page	1. None 2. Black 3. Red	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)	1. None 2. On-Off 3. (On)-Off 4. On-Off-On 5. (On)-Off-(On)	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

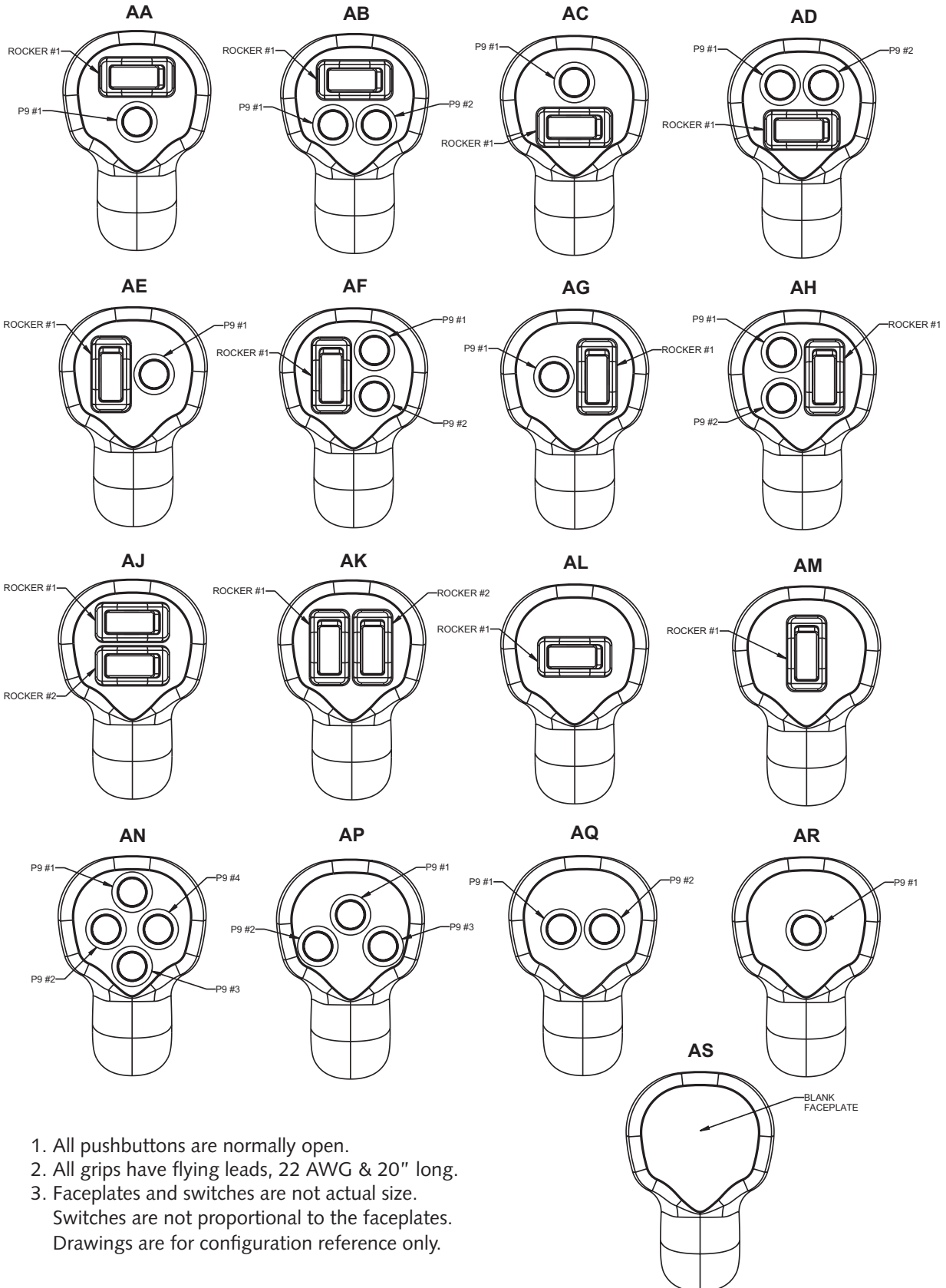
* () denotes momentary. On position or momentary position is up or to the right. Contact factory for rocker legends and additional color options.

G3-A SMALL UNIVERSAL GRIPS SCHEMATICS



HEAVY EQUIPMENT AND MATERIAL HANDLING GRIPS

SMALL UNIVERSAL GRIPS SWITCH CONFIGURATIONS



1. All pushbuttons are normally open.
2. All grips have flying leads, 22 AWG & 20" long.
3. Faceplates and switches are not actual size.
Switches are not proportional to the faceplates.
Drawings are for configuration reference only.

HEAVY EQUIPMENT AND MATERIAL HANDLING GRIPS

MEDIUM UNIVERSAL GRIPS

Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

K1 Switches

Electrical Rating @ 28 VDC	16 AMP Resistive Load; 7 AMP Inductive Load
Electrical Life	25,000 Cycles at Full Load

P9 Switches

Electrical Rating @ 28 VDC	5 AMP Resistive Load; 3 AMP Inductive Load
Electrical Life	25,000 Cycles at Full Load

Thumbwheels

Rated at Vcc=5V@20°C; Load = 1ma (4-7K)					
	Units	M	In	Typ	Max
Supply Voltage	VDC		4.50	5.00	5.50
Output at Center	VDC @ 5V Vcc		2.35	2.5	2.65
Output 1 at Full Travel Direction Left or Down (+ Travel)	VDC @ 5V Vcc		0.45	0.50	0.75
Output 1 at Full Travel Direction Left or Down (- Travel)	VDC @ 5V Vcc		4.25	4.50	4.55
Supply Current B=0, Vcc=5V, Io=0	mA		N/A	N/A	10

MECHANICAL RATINGS

K1 Switches

Mechanical Life	100,000 Cycles
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P9 Switches

Mechanical Life	1,000,000 Cycles
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Thumbwheels

Mechanical Life (Full Forward to Full Back)	3,000,000 Cycles (Return to Center) 1,000,000 Cycles (Return to End)
Mechanical Life - Friction (Full Forward to Full Back)	250,000 Cycles
	Units Min Typ Max
Operating Force (25°C at the Top of Roller)	OZ 8 12 16
Operating Force - Friction (25°C at the Top of Roller)	OZ 2 5 8
Max Allowable Radial Load	LBS N/A N/A 30.0
Travel	± 40 Degrees

ENVIRONMENTAL:

	Units	Min	Typ	Max
Operating Temperature:	° C	-30	20	85

K1 Switches

Switch Seal Integrity	Watertight per IP68S (1 meter) and IP69K
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P9 Switches

Switch Seal Integrity	Watertight per IP68S (1 meter) and IP69K
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Thumbwheels

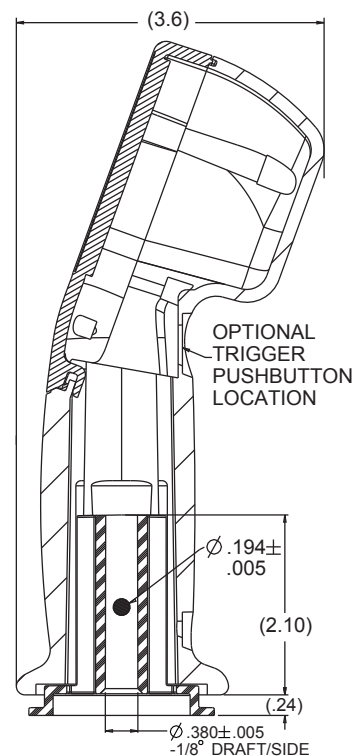
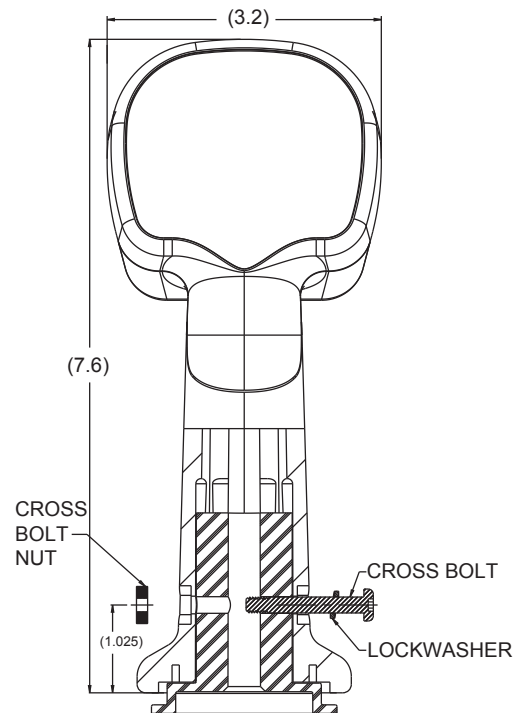
Electronics Seal Integrity	Watertight per IP68S (1 meter)
Mechanical Seal Integrity	Unsealed

Grip

Seal Integrity	Unsealed
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MATERIALS:

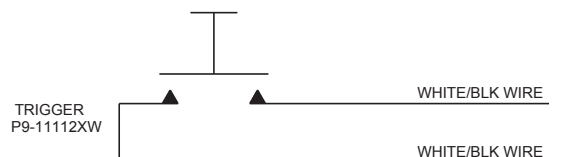
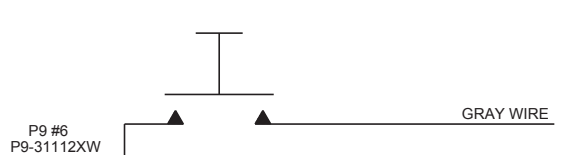
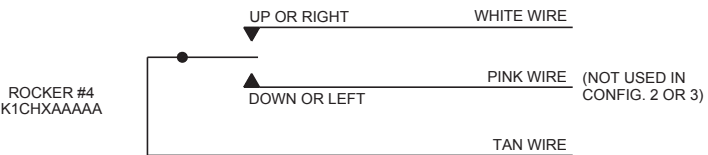
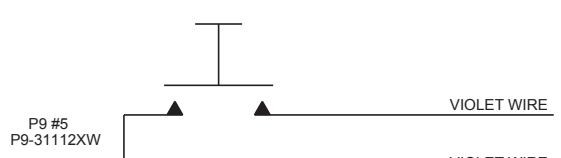
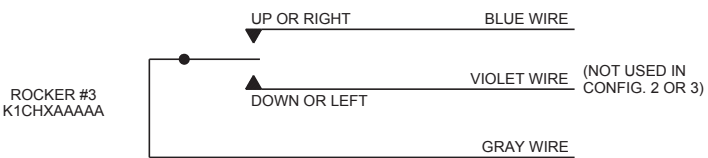
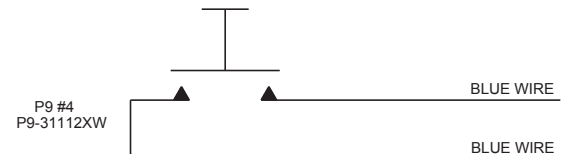
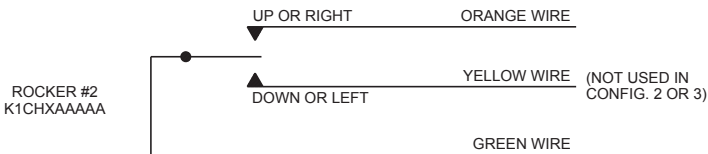
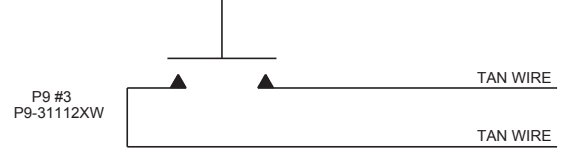
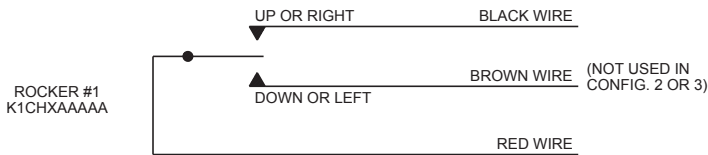
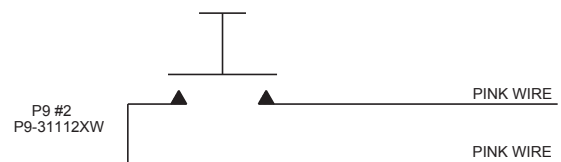
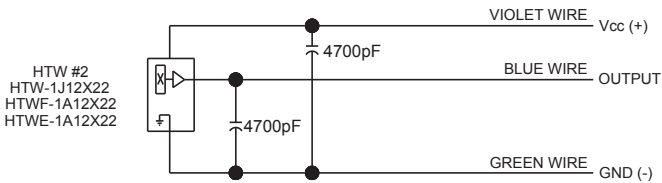
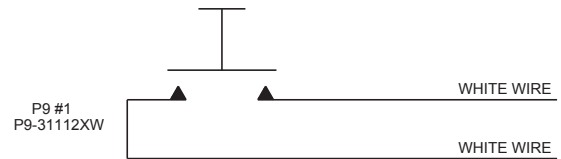
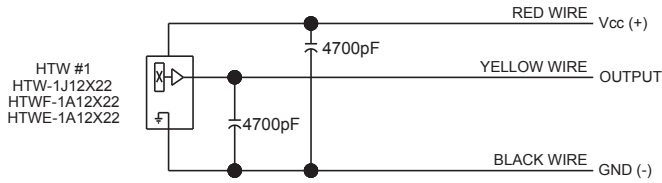
Handle	Thermoplastic, Glass Reinforced, Black
Faceplate	Thermoplastic, Glass Reinforced, Black
Mounting Hardware	#10 Crossbolt with Nut and Lockwasher
Wires	22 AWG, UL Style 1569, (20" Long)



Note: All dimensions are for reference only.

HEAVY EQUIPMENT & MATERIAL HANDLING GRIPS

MEDIUM UNIVERSAL GRIPS SCHEMATICS



MEDIUM UNIVERSAL GRIPS

G3-B PART NUMBER CODE								Part Number Code Continued Below
G3-B	X	XX	X	X	X	X	X	
Configuration	Switches	Trigger Pushbutton in Handle	K1 Rocker #1 Style - Black *	K1 Rocker #2 Style - Black *	K1 Rocker #3 Style - Black *	K1 Rocker #4 Style - Black *		
1. Grip Only	See Configuration Sheet on next page	1. None 2. Black 3. Red	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)	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)	1. None 2. On-Off 3. (On)-Off 4. On-Off-On 5. (On)-Off-(On)	

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

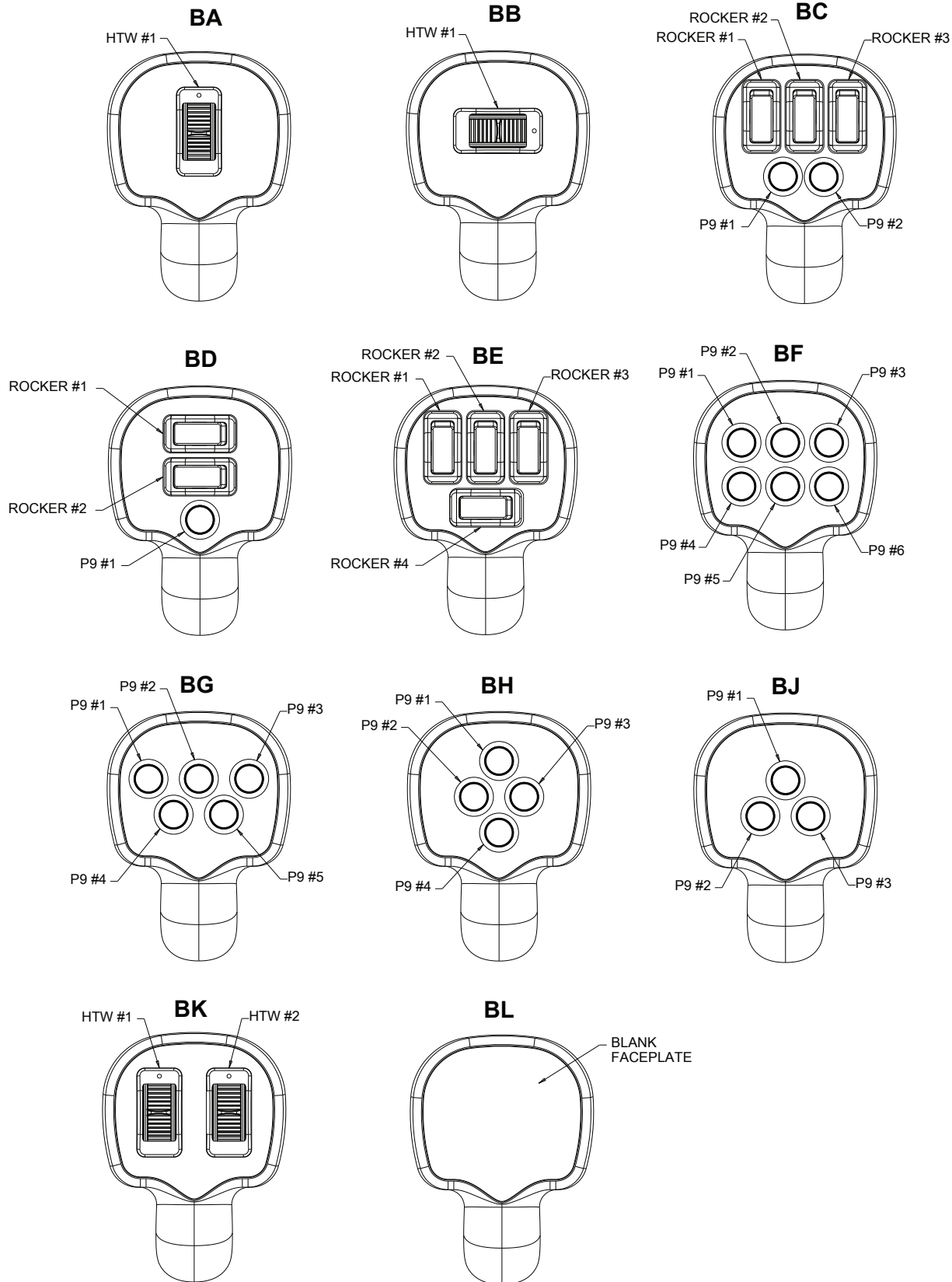
G3-B PART NUMBER CODE CONTINUED							
Cont.	X	X	X	X	X	X	X
HTW #1**	HTW #2**	P9 Button #1 Color	P9 Button #2 Color	P9 Button #3 Color	P9 Button #4 Color	P9 Button #5 Color	P9 Button #6 Color
1. None 2. Return to Center ¹ 3. Friction ² 4. Return to End ³	1. None 2. Return to Center ¹ 3. Friction ² 4. Return to End ³	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

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

***Contact factory for additional options.

STANDARD FACEPLATES

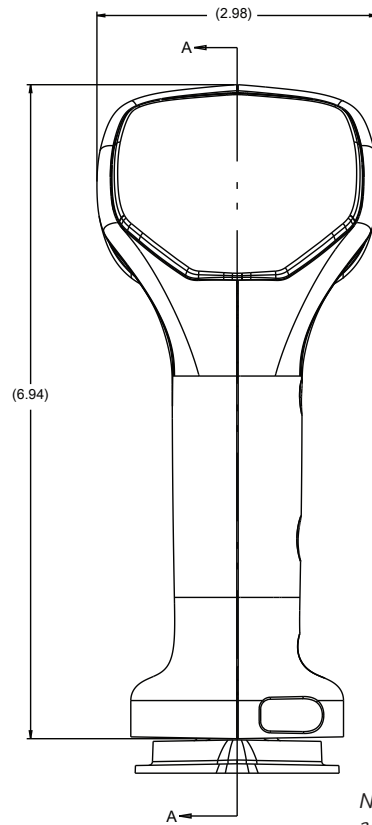
MEDIUM UNIVERSAL GRIPS SWITCH CONFIGURATIONS



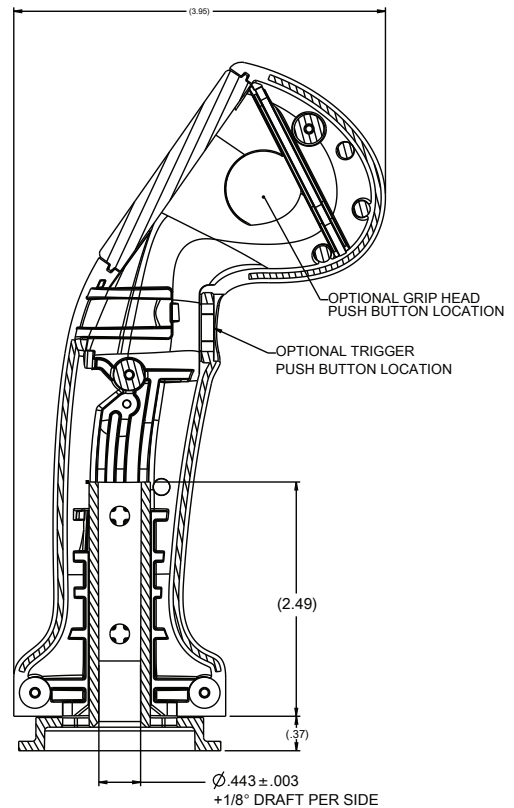
HEAVY EQUIPMENT AND MATERIAL HANDLING GRIPS

CONTOUR UNIVERSAL GRIPS

Standard Characteristics/Ratings:				
ELECTRICAL RATINGS:				
K1 Switches				
Electrical Rating @ 28 VDC	16 AMP Resistive Load; 7 AMP Inductive Load			
Electrical Life	25,000 Cycles at Full Load			
P9 Switches				
Electrical Rating @ 28 VDC	5 AMP Resistive Load; 3 AMP Inductive Load			
Electrical Life	25,000 Cycles at Full Load			
Thumbwheels				
Rated at $V_{cc}=5V@20^{\circ}C$; Load = 1ma (4-7K)	Units	In	Typ	Max
Supply Voltage	VDC	4.50	5.00	5.50
Output at Center	VDC @ 5V Vcc	2.35	2.5	2.65
Output 1 at Full Travel Direction Left or Down (+ Travel)	VDC @ 5V Vcc	0.45	0.50	0.75
Output 1 at Full Travel Direction Left or Down (- Travel)	VDC @ 5V Vcc	4.25	4.50	4.55
Supply Current B=0, Vcc=5V, Io=0	mA	N/A	N/A	10
MECHANICAL RATINGS				
K1 Switches				
Mechanical Life	100,000 Cycles			
P9 Switches				
Mechanical Life	1,000,000 Cycles			
Thumbwheels				
Mechanical Life	3,000,000 Cycles (Return to Center) 1,000,000 Cycles (Return to End)			
Max Allowable Radial Load	Units	Min	Typ	Max
Travel	LBS	N/A	N/A	30.0
Travel	± 40 Degrees			
ENVIRONMENTAL:				
Operating Temperature:	Units	Min	Typ	Max
	$^{\circ}C$	-30	20	85
K1 Switches				
Switch Seal Integrity	Watertight per IP68S (1 meter) and IP69K			
P9 Switches				
Switch Seal Integrity	Watertight per IP68S (1 meter) and IP69K			
Thumbwheels				
Electronics Seal Integrity	Watertight per IP68S (1 meter)			
Mechanical Seal Integrity	Unsealed			
Grip				
Seal Integrity	Unsealed			
MATERIALS:				
Handle	Thermoplastic, Glass Reinforced, Black			
Faceplate	Thermoplastic, Glass Reinforced, Black			
Mounting Hardware	#10 Crossbolt with Nut and Lockwasher			
Wires	22 AWG, UL Style 1569, (20" Long)			

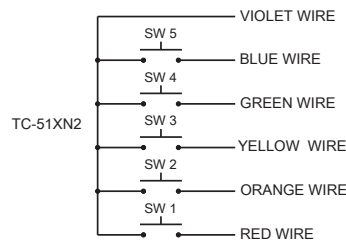
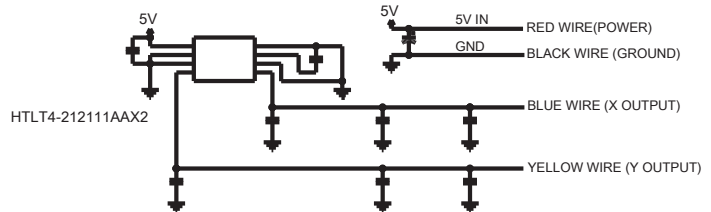
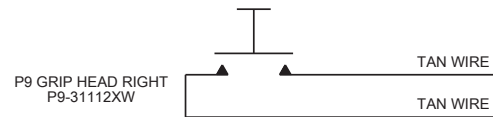
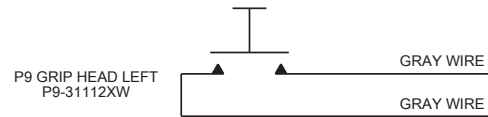
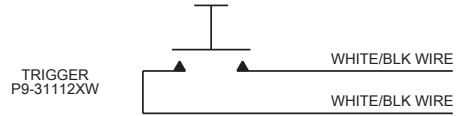
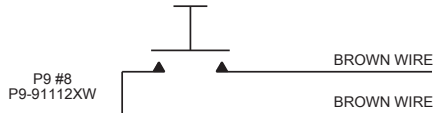
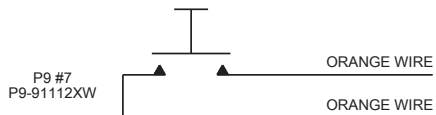
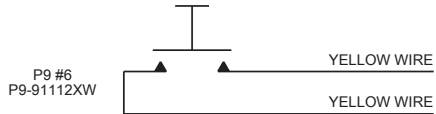
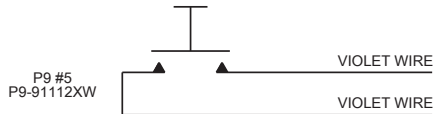
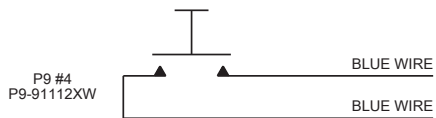
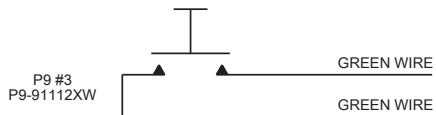
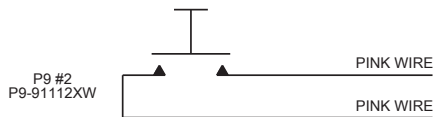
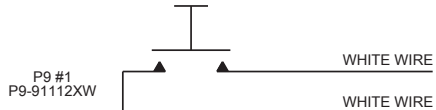
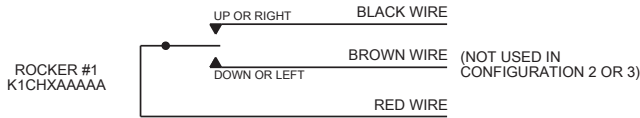
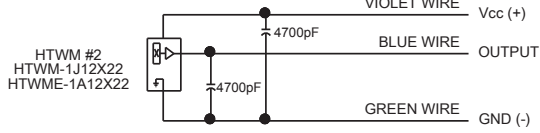
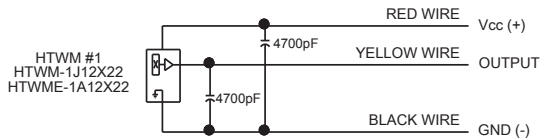


Note: All dimensions are for reference only.



HEAVY EQUIPMENT AND MATERIAL HANDLING GRIPS

CONTOUR UNIVERSAL GRIPS SCHEMATICS



HEAVY EQUIPMENT AND MATERIAL HANDLING GRIPS

CONTOUR UNIVERSAL GRIPS

G3-C PART NUMBER CODE

G3-C	X	XX	X	X	X	X	Part Number Code Continues Below
Configuration	Switches	Trigger	PB in Grip Head - Black	K1 Rocker #1 Style - Black *	K1 Rocker #2 Style - Black *		
1. Grip Only	See Configuration Sheet on next page	1. None 2. Black 3. Red	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)		

* () denotes momentary. 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

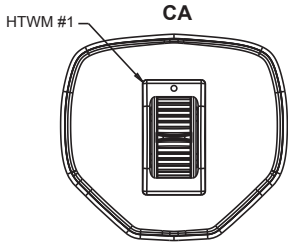
Cont,	X	X	X	X	X	X	X	X	X	X
HTWM #1**	HTWM #2**	P9 Button #1 Color	P9 Button #2 Color	P9 Button #3 Color	P9 Button #4 Color	P9 Button #5 Color	P9 Button #6 Color	P9 Button #7 Color	P9 Button #8 Color	P9 Button #9 Color
1. None 2. Return to Center ¹ 3. Return to End ²	1. None 2. Return to Center ¹ 3. Return to End ²	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	N. None 1. Red 2. Black 3. Orange 4. Yellow 5. Green 6. Blue 7. Violet 8. Gray 9. White

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

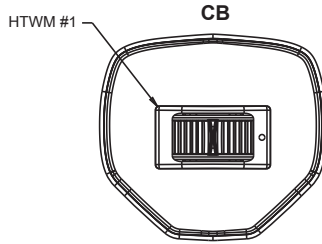
***Contact factory for additional options.

STANDARD FACEPLATES

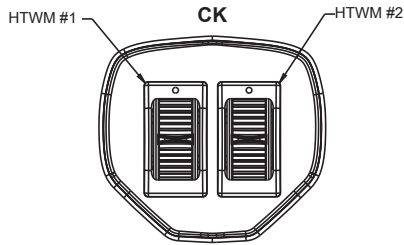
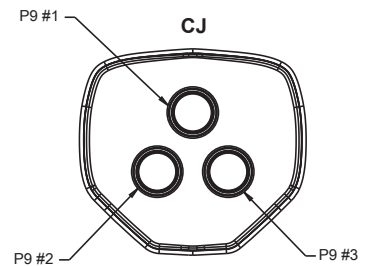
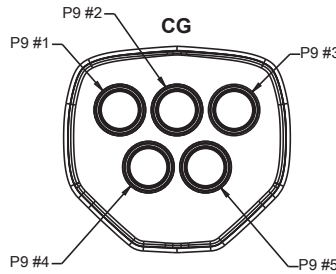
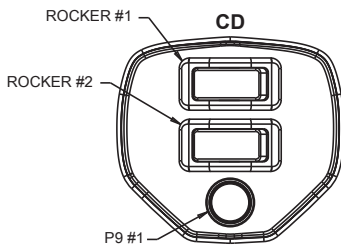
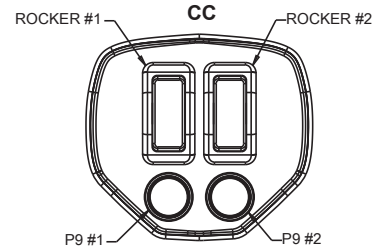
CONTOUR UNIVERSAL GRIPS FACEPLATES



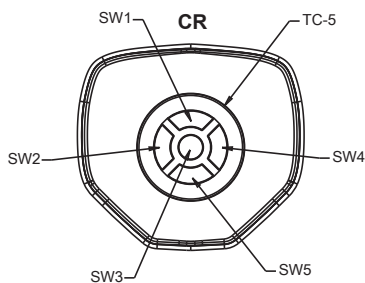
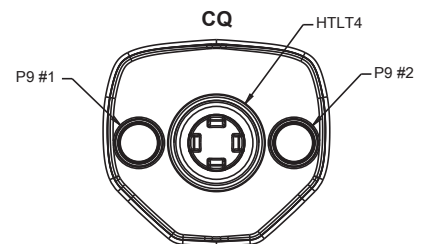
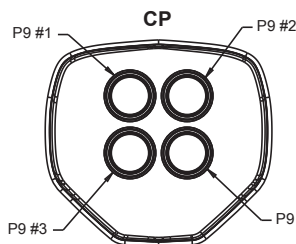
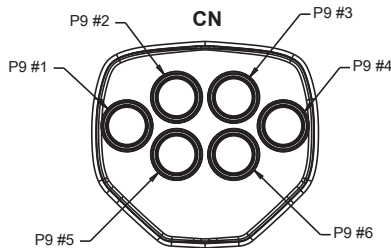
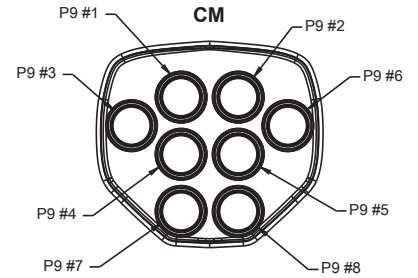
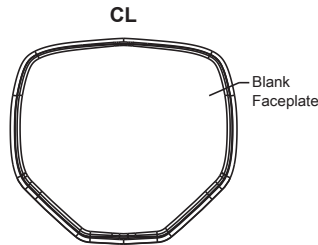
#1 HTWM -1J12X22



#1 HTWM -1J12X22



#1 HTWM -1J12X22
#2 HTWME -1A12X22



Note: Faceplates and switches are not actual size.
Switches are not proportional to the faceplates.
Drawings are for configuration reference only.