JOYSTICK WITH GRIP OPTIONS

LONG LIFE, HALL EFFECT TECHNOLOGY JOYSTICK

HJMG3 Joysticks with Universal Grips

The HJMG3 is a top mount JHM medium Hall effect joystick with a variety of grip, faceplate, output and gating options. The HJMG3 allows you to easily create a catalog codable joystick with grip. Grip choices include the G3-A, G3-B and G3-C Universal and the G3-D Control Grips, with a total of 30 faceplate design options.

Analog and digital control outputs, CANopen, CANbus J1939, PWM, USB, and redundant sensor output selections are available. Gating options are single axis, dual axis, friction y-axis, and various omnidirectional selections that include round smooth feel, on-axis and off-axis guided feel and square on-axis guided feel.

The HJMG3 can be configured for top-of-the-line machines requiring high switch content, or to provide very basic functions on lower tier units, and can be manufactured with an almost unlimited variety of switches, custom termination and custom mounting options. The HJMG3 serves agriculture, construction, off-highway, material handling and specialized industrial equipment markets.

Features:

- **Designed for armrest and panel mounting**
- **Contactless Hall effect technology**
- **Multiple output options, both analog and digital**
- **Electronics sealed to IP68S**
- **Redundant sensors available**
- **Variety of gating options**
- **RoHS compliant**

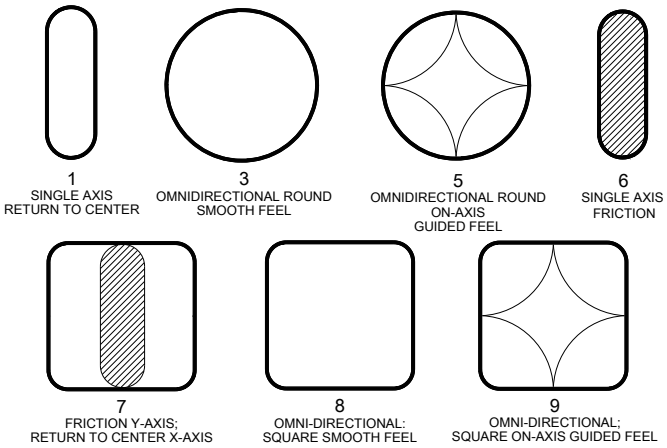
HJMG3 Joystick with G3-D Grip

Standard Characteristics/Ratings:				
ELECTRICAL: Output options AA-FT and LL				
Joystick				
Rated at Vcc = 5V @ 20˚C	**Units**	**Min**	**Typ**	**Max**
Load = 1 ma (4.7 KΩ)				
Supply Voltage, Vcc	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center	VDC	-.25	N/A	+.25
AA, BB, CC, DD, EE, FF, GG, HH	@ 5V Vcc			
Output Voltage Tolerance at Center	VDC	-.15	N/A	+.15
AT, BT, CT, DT, ET, FT	@ 5V Vcc			
Output Voltage Tolerance at	VDC	-.25	N/A	+.25
Full Travel	@ 5V Vcc			
Supply Current Per Sensor B=0, Vcc=5V, Iout=0	mA	N/A	N/A	10
Output Source Current Limit B=X*, Vo=0	mA	-1.20	N/A	1.20
P9 Switches				
Electrical Rating	10mA Resistive Load @ 5VDC			
Electrical Life	1250,000 Cycles			
HTW Switches				
Supply Voltage, Vcc	VDC	4.5	5.0	5.5
Output Voltage	VDC	-.15	NA	+.15
Tolerance at Center	@ 5V Vcc			
Output Voltage	VDC	-.25	N/A	+.25
Tolerance at Full Travel	@ 5V Vcc			
Supply Current B=0, Vcc=5V, Iout=0	mA	N/A	N/A	10
HTWM and HTLT4 Switches				
Output Voltage	VDC	-.25	NA	+.25
Tolerance at Center	@ 5V Vcc			
Output Voltage	VDC	-.25	N/A	+.25
Tolerance at Full Travel	@ 5V Vcc			
HTWM Supply Current B=0, Vcc=5V, Iout=0	mA	N/A	N/A	10
HTLT4 Supply Current B=0, Vcc=5V, Iout=0	mA	N/A	10	12
TC-5 Switches				
Electrical Rating @ 1-32 VDC	10-100mA			
Electrical Life	3,000,000 Cycles			
MECHANICAL:				
Joystick				
Mechanical Life	5,000,000 cycles; 250,000 cycles (Friction)			
Travel Angle	Degrees	18	20	22
Op. Force (w/Boot) High Force @ GRP, Ret. to Ctr.	Lbs.	1.5	2.5	3.5
Op. Force (w/Boot) Low Force @ GRP, Ret. to Ctr.	Lbs.	1.0	2.0	3.0
Op. Force (w/Boot) High Force @ GRP, Friction	Lbs.	1.0	2.5	4.0
P9 Switches				
Mechanical Life	1,250,000 cycles			
Operating Force	Oz.	1.2	1.7	2.2
HTW and HTWM Switches				
Mechanical Life Full Forward to Full Back	3,000,000 cycles			
Travel Angle	+/- 40˚			
Operating Force 25˚C at Top of Roller	Oz.	2	5	8
Maximum Allowable Radial Load	Lbs.	N/A	N/A	30
HTLT4 Switches				
Mechanical Life	3,000,000 cycles			
Travel Angle	Degrees	19	20	21
Operating Force (w/Boot) at Top of Button, @ 20˚ C	Oz.	5	8	16
Max Allowable Vertical Force on Button	Lbs.	N/A	N/A	25
Max Allowable Radial Force on Top of Knob	Lbs.	N/A	N/A	25
Max Allowable Torque on Button about Shaft Axis	In-Lbs.	N/A	N/A	5.5
TC-5 Switches				
Mechanical Life	3,000,000 cycles			
Operating Force	Oz.	8	16	24

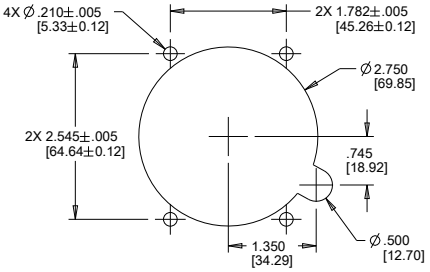
JOYSTICK WITH GRIP OPTIONS

UP TO 5 MILLION OPERATIONAL CYCLES IN ALL DIRECTIONS

HJMG3 Gating Icons



HJMG3 Suggested Panel Opening



SUGGESTED PANEL OPENING
MAX. PANEL THICKNESS = 0.15 INCHES

Standard Characteristics/Ratings:

ENVIRONMENTAL

	Units	Min	Typ	Max
Joystick				
Operating Temperature	˚C	-40	20	85
Enclosure Design	Sealed to IP68S			
EMI/RFI Withstand	Per SAE J1113. Contact factory for details			
P9 Switches				
Enclosure Design	Sealed to IP68S			
HTW Switches				
Electronics Seal Integrity	IP68S			
HTWM Switches				
Electronics Seal Integrity	IP68S			
Mechanical Seal Integrity	Unsealed			
HTLT4 Switches				
Electronics Seal Integrity	IP68S			
TC-5 Switches				
Electronics Seal Integrity	IP68S			
Grip				
Seal Integrity	Unsealed			

Unless otherwise specified, all dimensions are in inch [metric]. In the event of a conflict, the inch nominal value and tolerance will take precedence.

HJMG3 PART NUMBER CODE

HJMG3 – X XX X X XX X X X

Gating*

- **1.** Gated; Single Axis – Return to Center
- **3.** Omni-directional; Round Smooth Feel
- **5.** Omni-directional; Round On-Axis Guided Feel
- **8.** Omni-directional; Square Smooth Feel
- **9.** Omni-directional; Square On-Axis Guided Feel

Output 1**	Output 2***
AA. 2.5 +/- 2.0VDC	NONE
BB. 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC
CC. 2.5 +/- 2.0VDC	2.5 -/+ 2.0VDC
DD. 2.5 +/- 1.5VDC	NONE
EE. 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC
FF. 2.5 +/- 1.5VDC	2.5 -/+ 1.5VDC
GG. 0.5 - 4.5VDC	0.5 - 4.5VDC
HH. 1.0 - 4.0VDC	1.0 - 4.0VDC
AT. 2.5 +/- 2.0VDC*	NONE
BT. 2.5 +/- 2.0VDC*	2.5 +/- 2.0VDC
CT. 2.5 +/- 2.0VDC*	2.5 -/+ 2.0VDC
DT. 2.5 +/- 1.5VDC*	NONE
ET. 2.5 +/- 1.5VDC*	2.5 +/- 1.5VDC
FT. 2.5 +/- 1.5VDC*	2.5 -/+ 1.5VDC
JJ. CANbus J1939	NONE
KK. CANopen	NONE
LL. PWM	NONE
MM. USB	NONE

Force

- **1.** Low
- **2.** High

Grip

- **A.** G3-A Universal
- **B.** G3-B Universal
- **C.** G3-C Universal
- **D.** G3-D Control Grip

Faceplate

AN	**CG**
AP	**CJ**
AQ	**CK**
AR	**CL**
AS	**CM**
BA	**CN**
BB	**CP**
BF	**CQ**
BG	**CR**
BH	**DA**
BJ	**DB**
BK	**DC**
BL	**DD**
CA	**DE**
CB	**DF**

Trigger PB Color

- **1.** None
- **2.** Black
- **3.** Red

P9 Button Grip Head (Black)**

- **1.** None
- **2.** Left
- **3.** Right
- **4.** Left and Right

P9 Button Color (Faceplate)

- **N.** None
- **1.** Red
- **2.** Black
- **3.** Orange
- **4.** Yellow
- **5.** Green
- **6.** Blue
- **7.** Violet
- **8.** Gray
- **9.** White

* Contact factory for friction held versions

** Outputs are from the center to the full travel position in each direction. Options "AA", "BB", "CC", "DD", "EE", "FF", "AT", "BT", "CT", "DT", "ET" and "FT" provide increased voltage in +x, +y; and decreasing voltage in -x, -y for output 1. Options "GG" and "HH" provide increasing voltages in all directions (+x, +y, -x, -y) for output 1 and output 2.

Options "AT", "BT", "CT", "DT", "ET" and "FT" are identical to options "AA", "BB", "CC", "DD", "EE", and "FF" respectively except with a tighter center tolerance.

*** Options "BB", "EE", "BT", "ET" provide redundant output 2 which duplicates output 1. Options "CC", "FF", "CT", "FT" provide redundant output 2 which is inverse of output 1.

**** Switches on grip head are available for "C" grip version only

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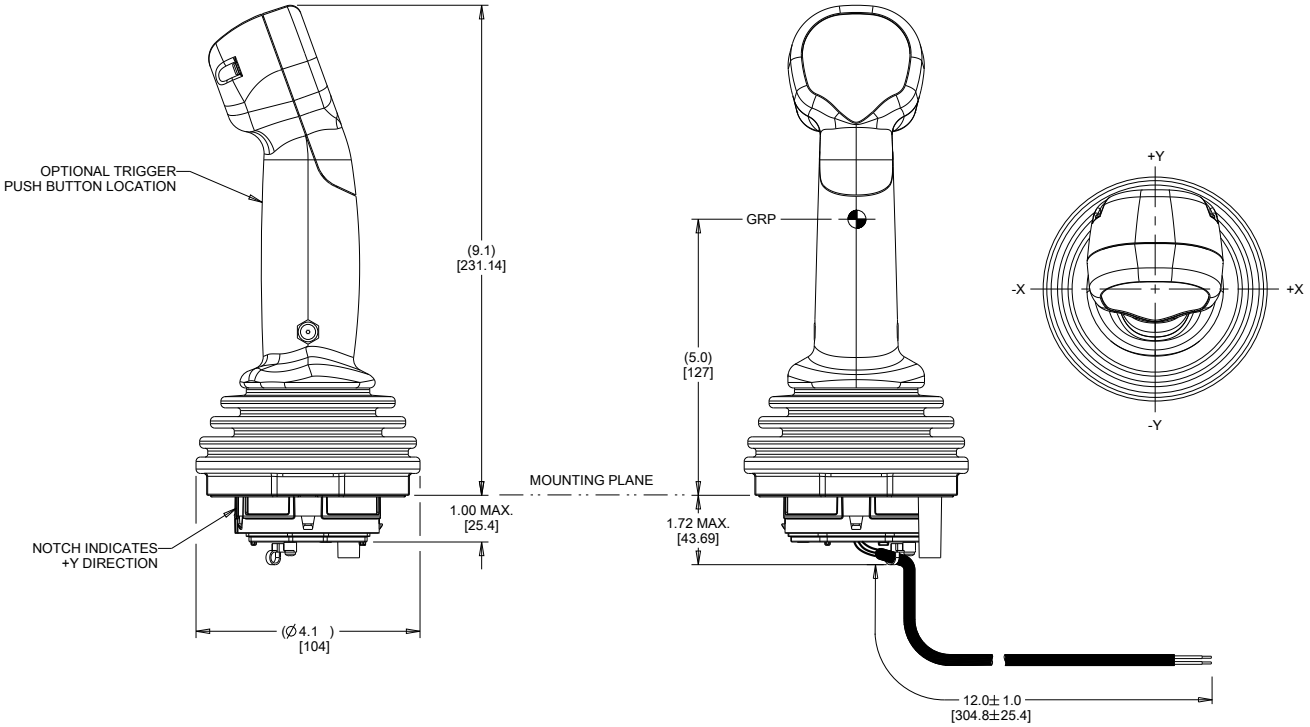
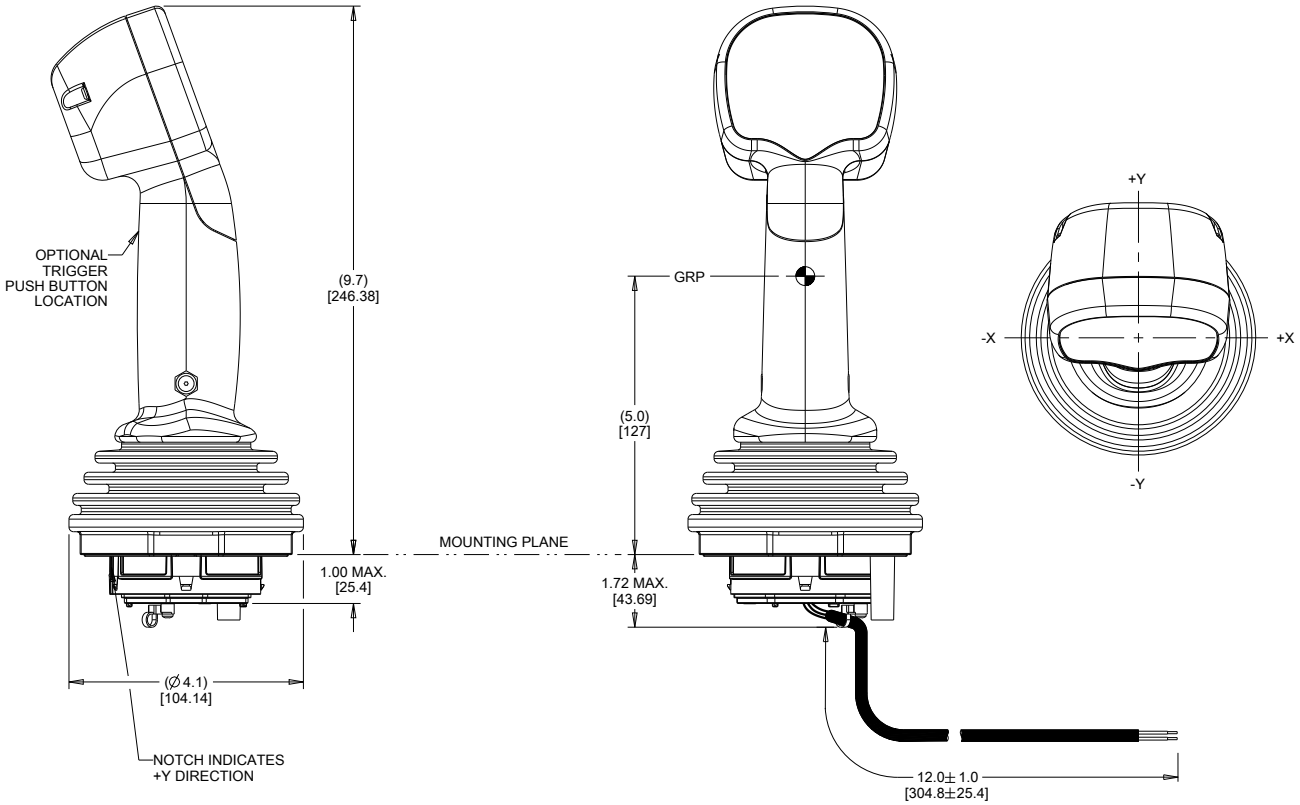
G3-A Universal Grip with AS Faceplate



G3-B Universal Grip with BL Faceplate

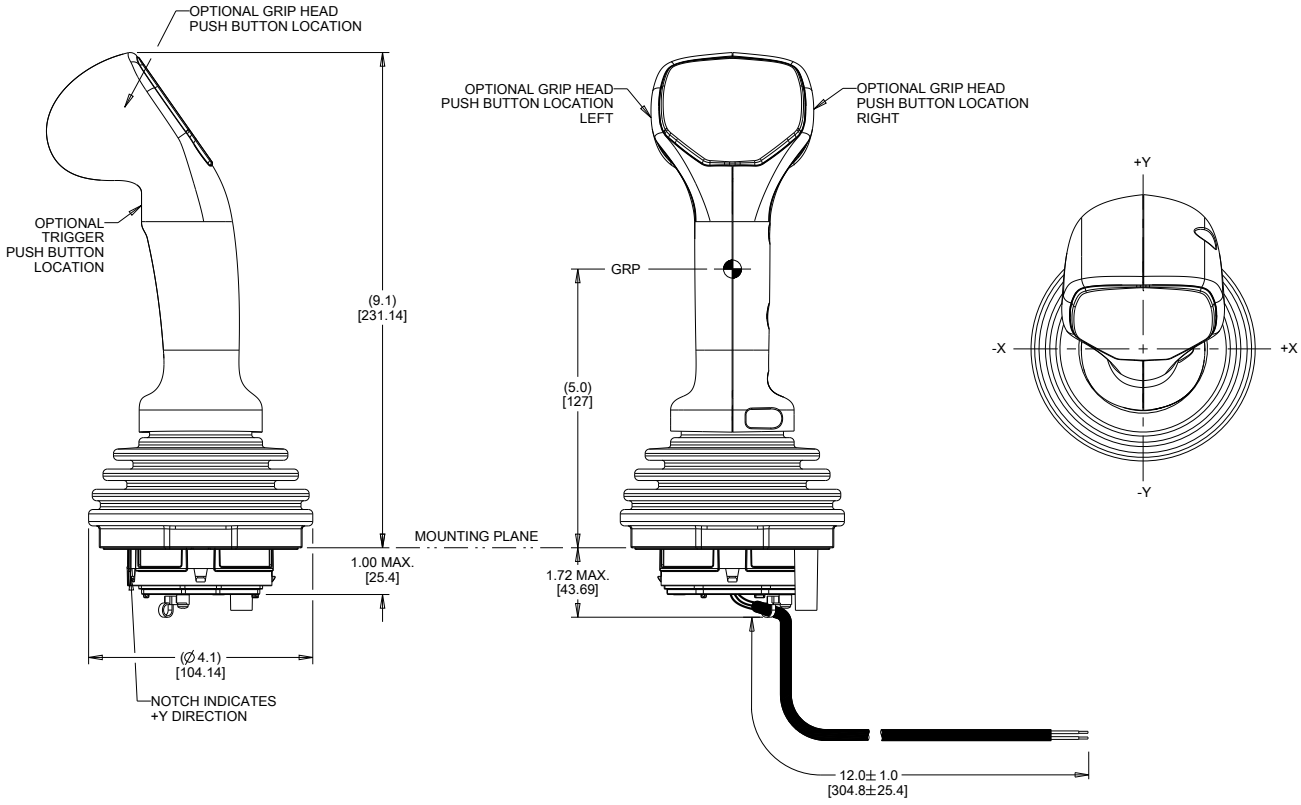


Wires and strain relief not shown in all views for clarity.
Unless otherwise specified, all dimensions are in inch [metric]. In the event of a conflict, the inch nominal value and tolerance will take precedence.

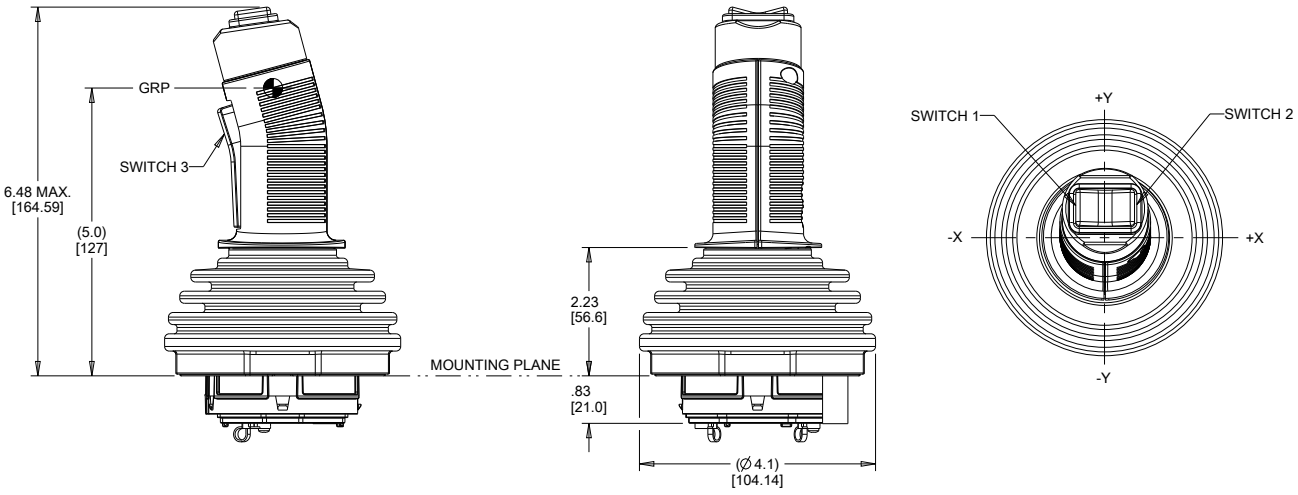
JOYSTICK WITH GRIP OPTIONS

UP TO 5 MILLION OPERATIONAL CYCLES IN ALL DIRECTIONS

G3-C Universal Grip with CL Faceplate



G3-D Control Grip with DA Faceplate



Wires and strain relief not shown in all views for clarity.
Unless otherwise specified, all dimensions are in inch [metric]. In the event of a conflict, the inch nominal value and tolerance will take precedence.

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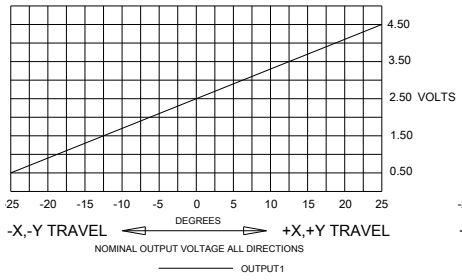
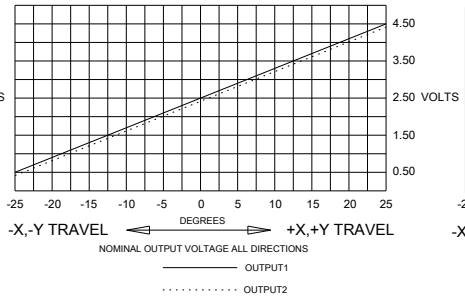
HJMG3 OUTPUT

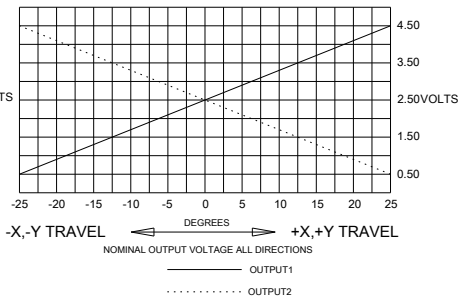
OPTION AA & AT



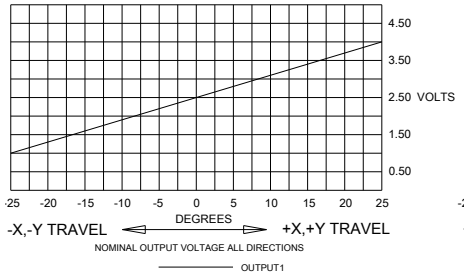
OPTION BB & BT



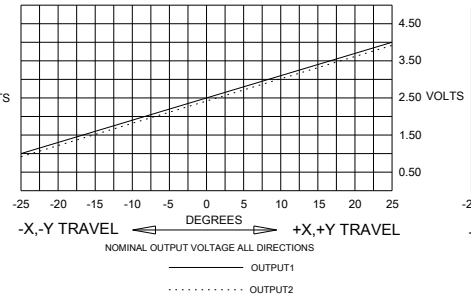
OPTION CC & CT



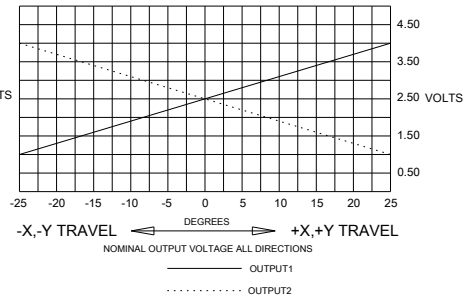
OPTION DD & DT



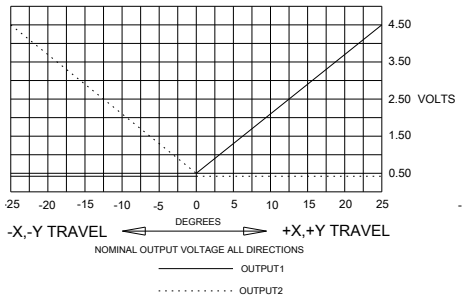
OPTION EE & ET



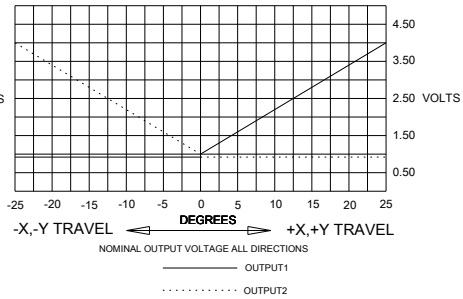
OPTION FF & FT



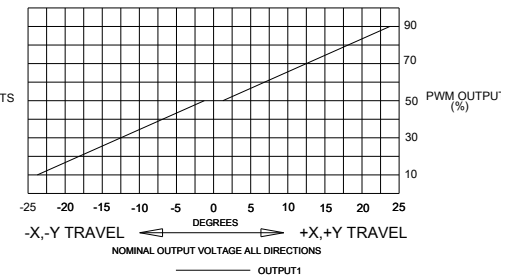
OPTION GG



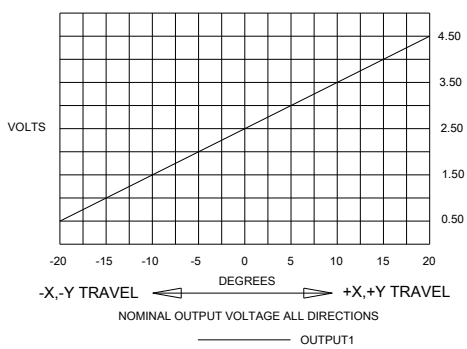
OPTION HH



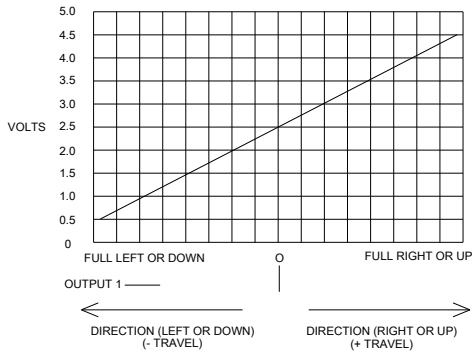
OPTION LL



HTLT4 OUTPUT



HTW & HTWM OUTPUT

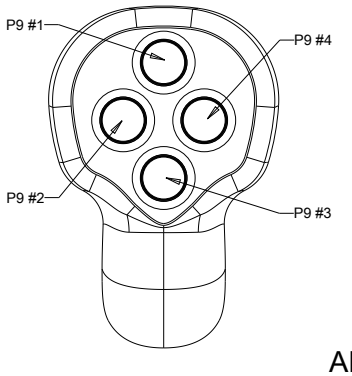


JOYSTICK WITH GRIP OPTIONS

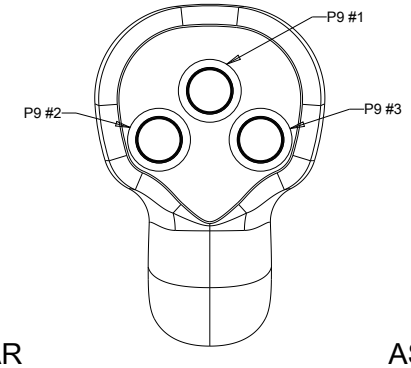
UP TO 5 MILLION OPERATIONAL CYCLES IN ALL DIRECTIONS

FACEPLATES GROUP A

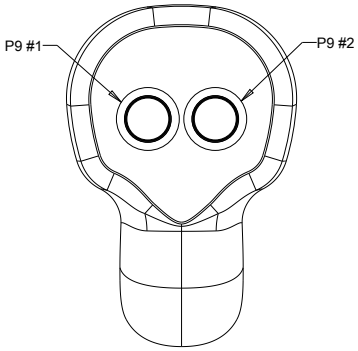
AN



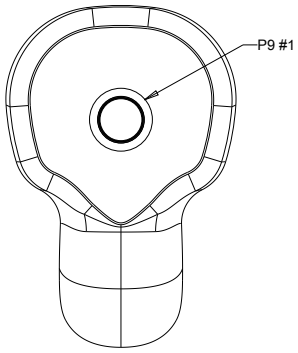
AP



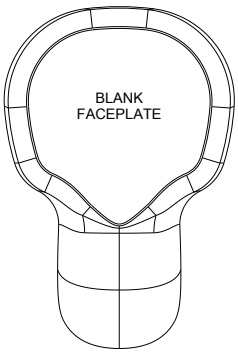
AQ



AR

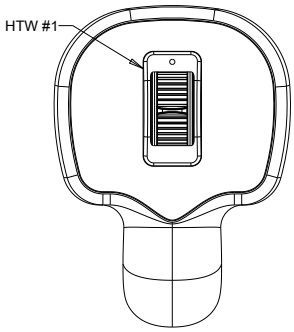


AS

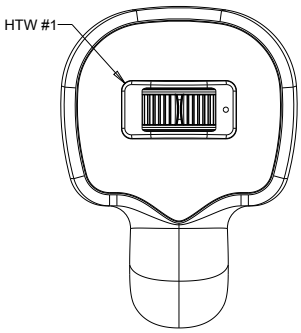


FACEPLATES GROUP B

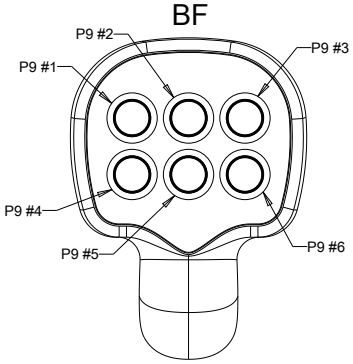
BA



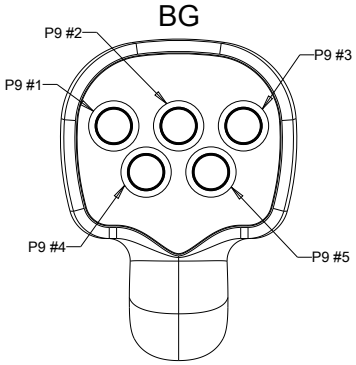
BB



BF



BG



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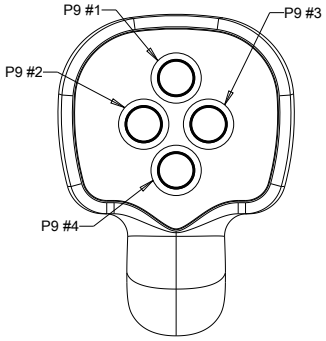
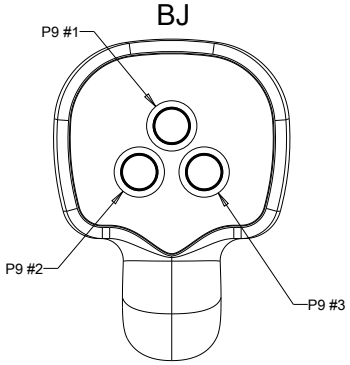
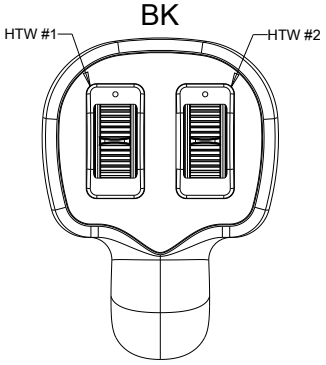


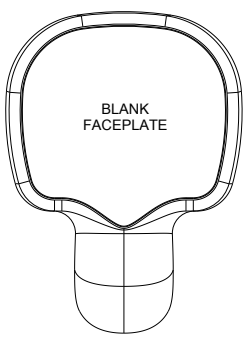
BJ



BK



BL



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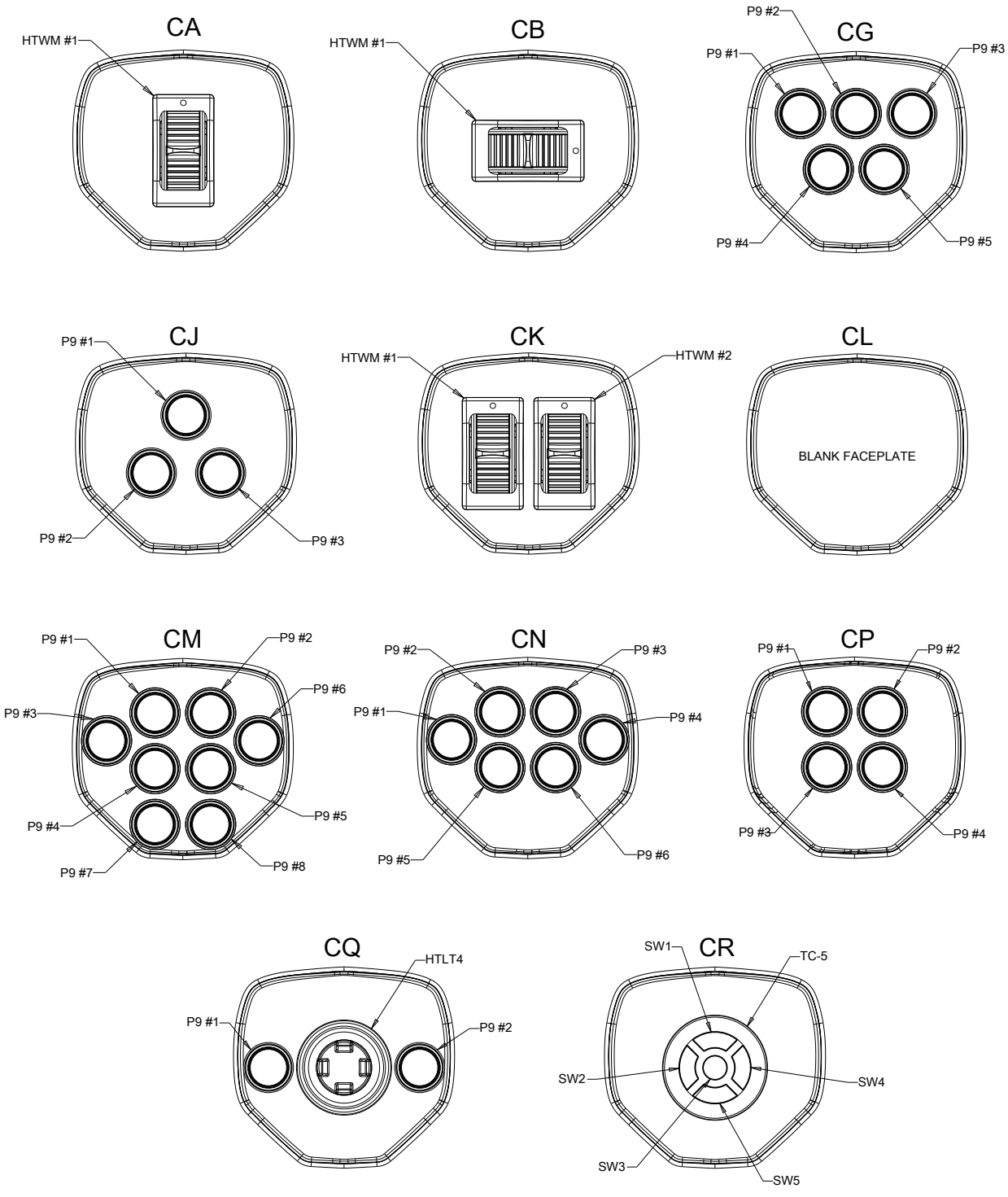
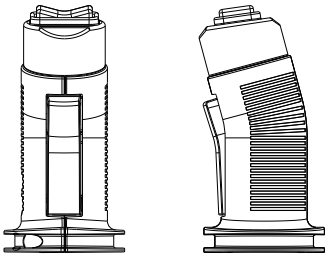
FACEPLATES GROUP C



JOYSTICK WITH GRIP OPTIONS

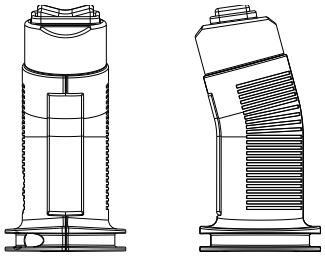
UP TO 5 MILLION OPERATIONAL CYCLES IN ALL DIRECTIONS

FACEPLATES GROUP D



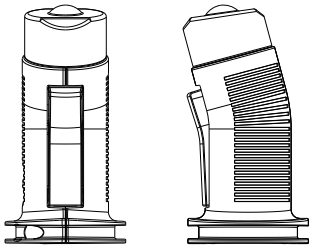
DA

ROCKER
AND OPERATOR PRESENCE



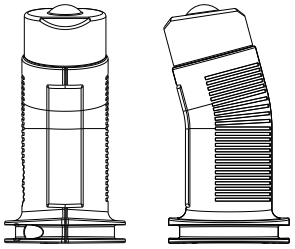
DB

ROCKER



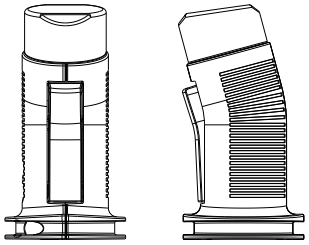
DC

ONE PUSHBUTTON
AND OPERATOR PRESENCE



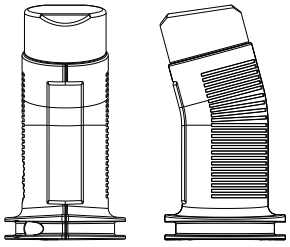
DD

ONE PUSHBUTTON



DE

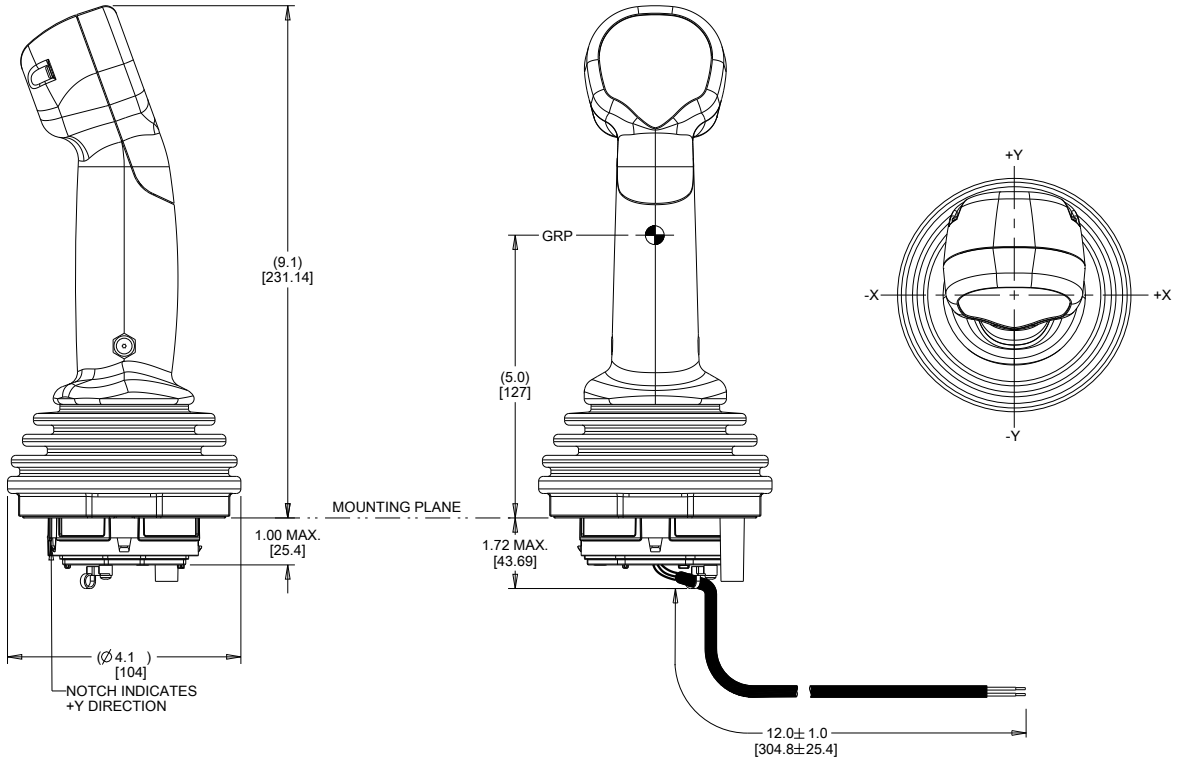
NO PUSHBUTTON
AND OPERATOR PRESENCE



DF

BLANK

OUTPUTS AA-FT AND LL



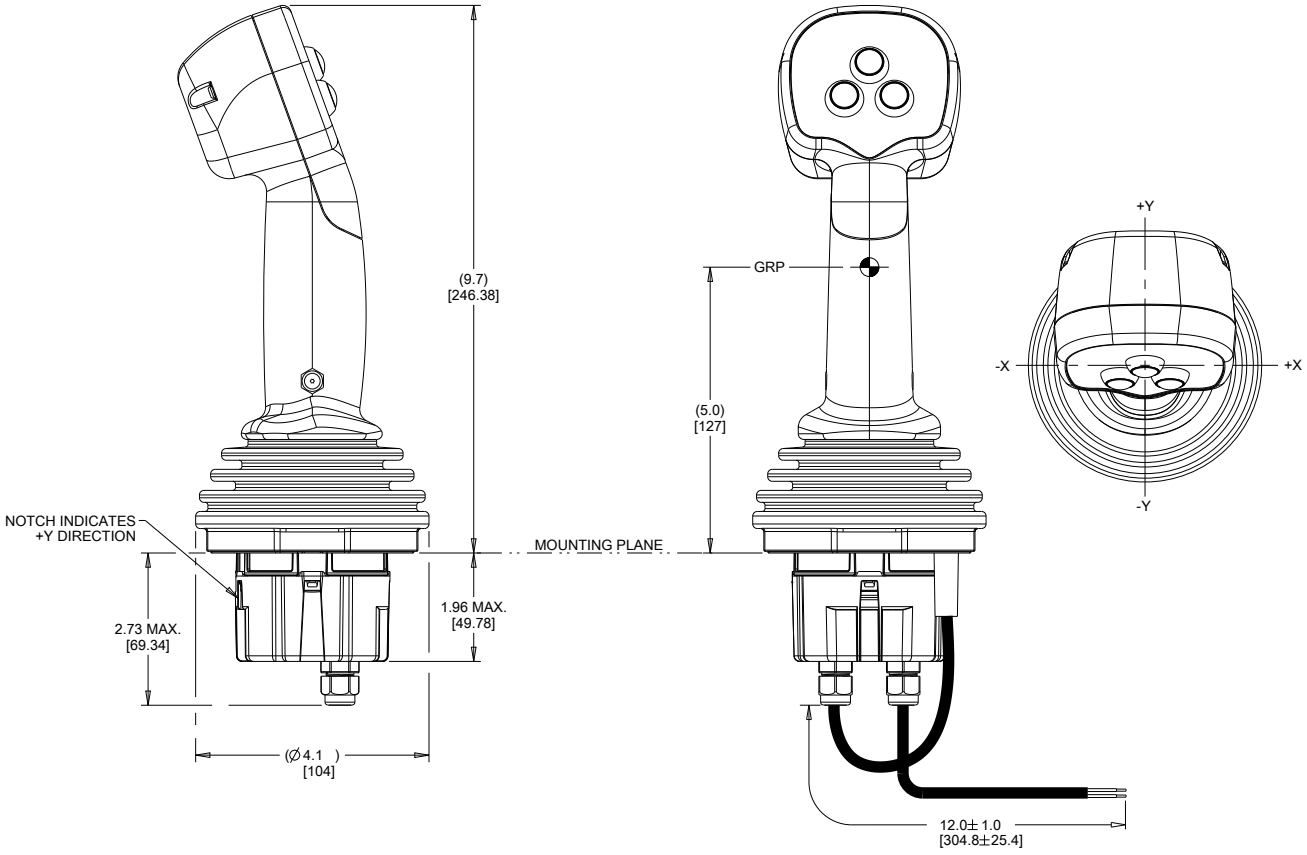
Wires and strain relief not shown in all views for clarity.

Unless otherwise specified, all dimensions are in inch [metric]. In the event of a conflict, the inch nominal value and tolerance will take precedence.

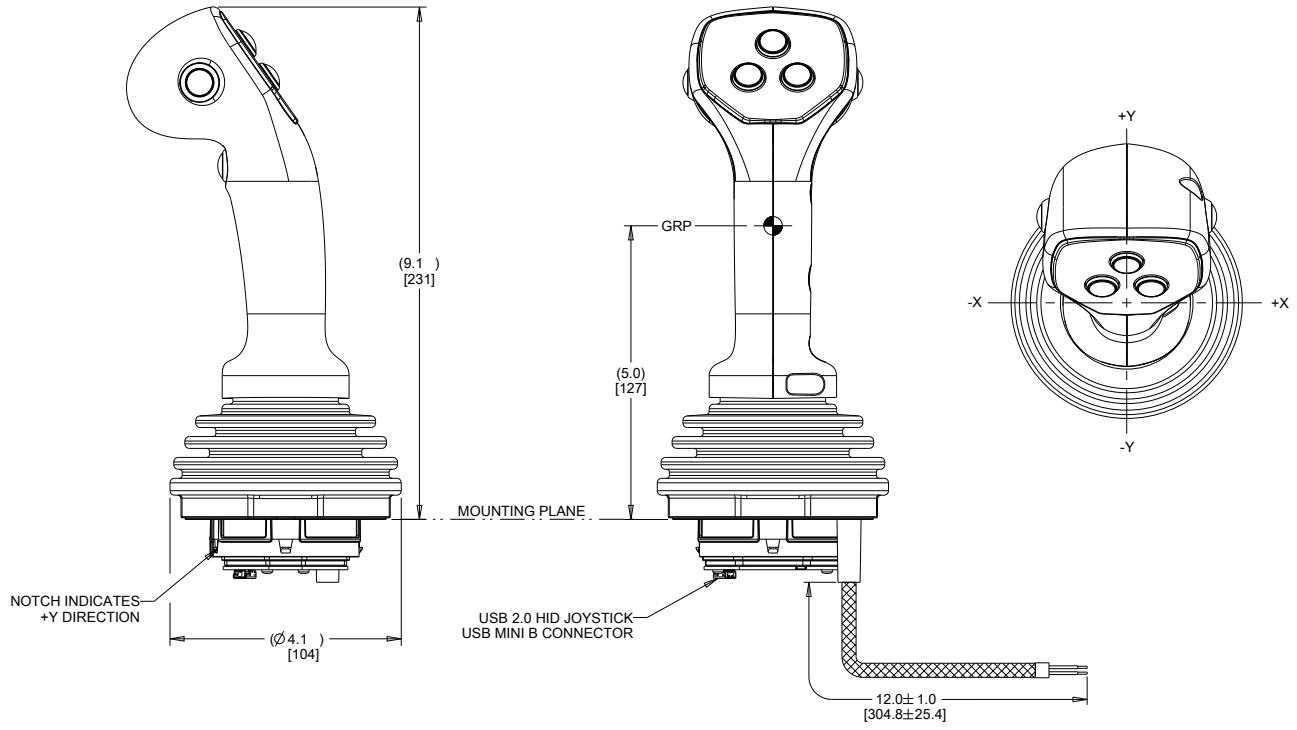
JOYSTICK WITH GRIP OPTIONS

LONG LIFE, HALL EFFECT TECHNOLOGY JOYSTICK

OUTPUTS JJ AND KK



OUTPUT MM



Wires and strain relief not shown in all views for clarity.

Unless otherwise specified, all dimensions are in inch [metric]. In the event of a conflict, the inch nominal value and tolerance will take precedence.

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