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Magnetic Joysticks

HFX Panel Mount Magnetic Joystick Information and Specifications

Designed for applications requiring a rugged, durable joystick, the HFX incorporates automotive quality non-contacting Hall Effect sensors and solid magnets in a small, compact housing. A durable rubber boot and secondary gasket provide for a watertight (IP65) seal when properly mounted. The precision-ground .25 inch (6.35mm) stainless steel shaft and stainless steel pivot pins offer impressive strength and corrosion resistance. Available in single, dual, and three-axis models with or without push-buttons, the HFX joystick is ideal as a control for both stepping motors and servo motors.

The HFX joystick is truly the next generation of small magnetic joysticks and is meant as a replacement for older inductive coil joysticks, which have remained basically unchanged since their introduction in the late 1970s. The primary problem with the inductive coil joystick is that it is inherently susceptible to both radio frequency interference (RFI) and electromagnetic interference (EMI). By using industry-proven Hall Effect sensors and high-grade solid magnets, the HFX line of products is practically impervious to RFI and EMI distortions. The HFX joystick is also form-fit-function compatible with most major brands of inductive coil joysticks. This means that it will easily fit into the same panel cut-outs using the same mounting holes.

Typical Applications:

-Power Wheelchair Controls	-Automated Conveyer Systems	-Hydraulic Controls
-Scissor Lift Platforms	-Construction and Farm Equipment	-Forklifts

Electrical Specifications:

Supply Voltage: 5.0V	Typical: Vdd=5V
Supply Current: 2-Axis = 4.8mA Min to 11.0mA Max	Typical: 8mA
Supply Current: 3-Axis = 7.2mA Min to 16.5mA Max	Typical: 12mA
Resolution: Infinite	Response: 40-80uSec
Output Current: ± 2mA	Center Voltage: 2.5V (± 10mV)

Electrical MTBF (mean time between failures): 1,000,000 operational (power on) hours

Output Voltage Option 0: 0V Min to 5V Max (full rang e rail to rail) ±2%

Output Voltage Option 1: 0.5V Min to 4.5V Max (fault range = < 0.5V or >4.5V) ±2%

Output Voltage Option 2: 0.25V Min to 4.75V Max (fau lt range= < 0.25V or >4.75V) ±2%

Output Voltage Option 3: 2V Min to 3V Max (±10% of Vdd) ±2%

Note: The fault range is controlled by a clamping circuit in the Hall Effect sensor which limits the output voltage to a pre-set range.

Physical Specifications:

Joystick Travel: 40° (±20°)	Centering: single spring, omnidirectional
Panel Thickness: .046 to .125in (1.17 to 3.17mm)	Return to Center Repeatability: ±0.5%
Housing: high impact glass-filled nylon	Shaft: .25 inch (6.35mm) diameter, stainless steel
Handle: thermoset phenolic (model 100)	Boot & Gasket: thermoplastic rubber
Breakout Force: X/Y axes = 1.25N nominal	Operation Force: X/Y axes = 2.25N nominal
Weight: two-axis with ball handle = .2 lbs (.091 kg)	Weight: three-axis with 1 button = .215 lbs (.098 kg)
Environmental: sealed to IP65 above panel	Flammability Rating: 94HB
Operating Temperature: -25°C to 85°C	Storage Temperature: -55°C to 165°C

Mechanical MTBF (mean time between failure): 15,000,000 cycles under normal use

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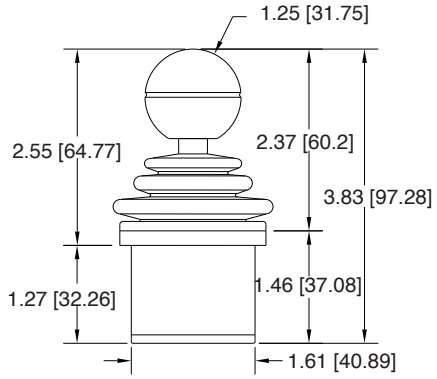
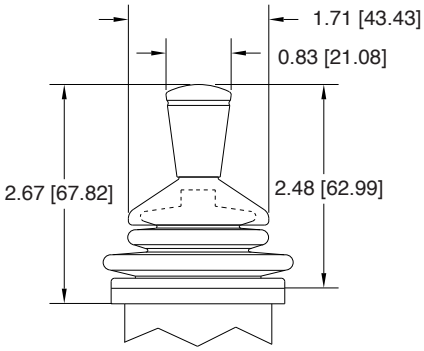
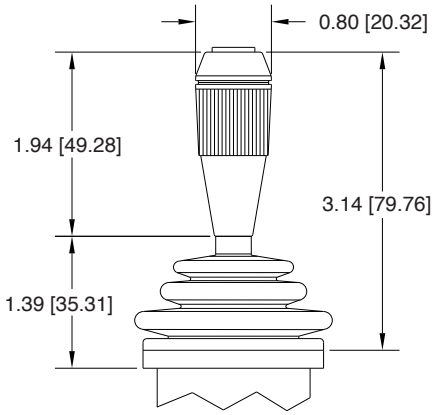
Model 100, 200, 300, 400 handle line drawings



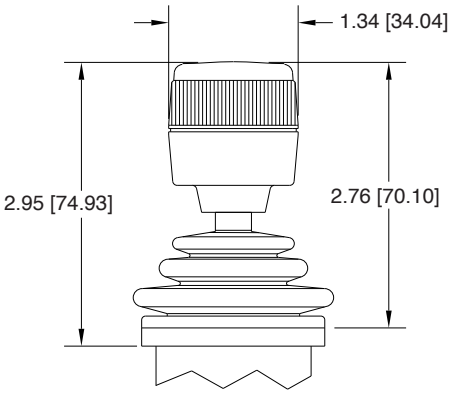
Model 100 - Option 0 (2 axis)



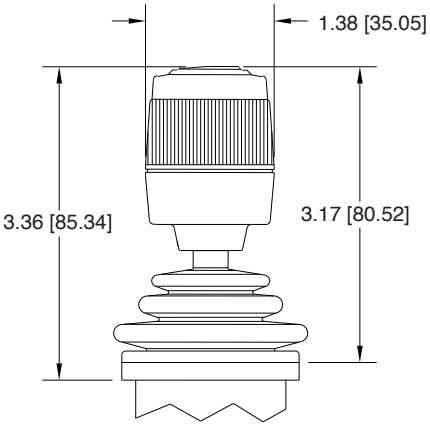
Model 100 - Option 1 (2 axis)



Model 200 - Option 2 (2 axis with button)



Model 300 - Option 3 (3 axis)



Model 400 - Option 4 (3 axis with button(s))

Notes: 1. Third axis (Z) twist handle incorporates Hall effect sensor.
2. Above panel dimensions are the same for both option 4 and option 5 handles.

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Magnetic joystick pictures

Model 100 Option 0 (2 axis-Ball tip)	Model 100 Option 1 (2 axis-Tapered)	Model 200 Option 2 (2 axis with pushbutton)	Model 300 Option 3 (3 axis)	Model 400 Option 4 (3 axis with 1 pushbutton)	Model 400 Option 5 (3 axis with 2 pushbuttons)

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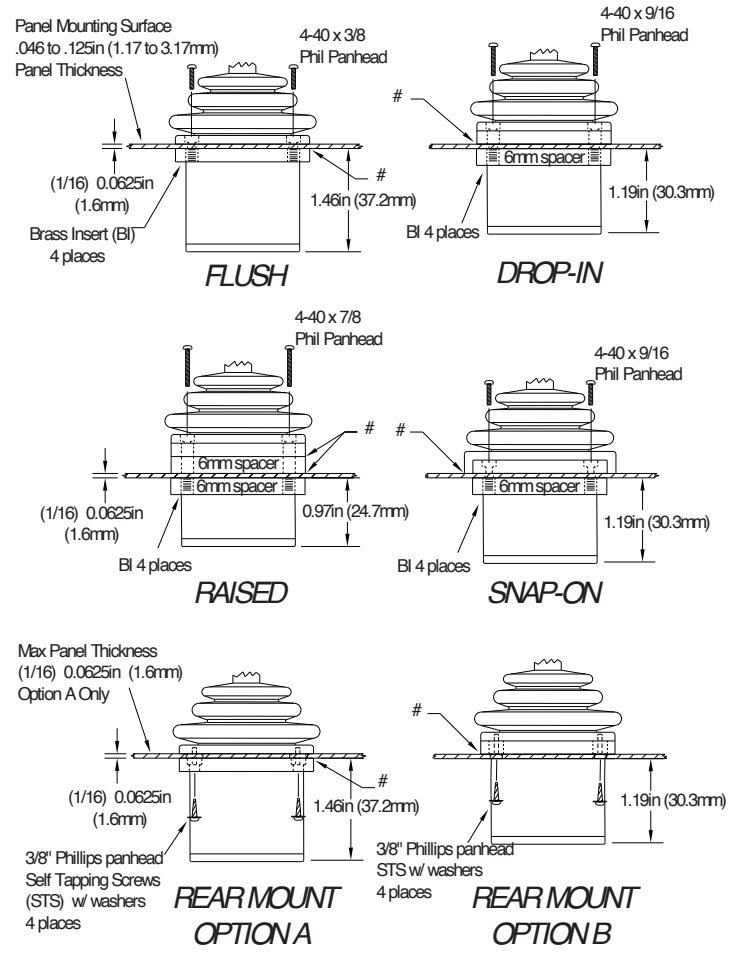
HFX Joystick mounting option line drawings

Mounting Options: In order to suit a variety of integration requirements, the HFX joystick offers six different mounting options from which to choose.



Notes: 1) # indicates suggested position for optional gasket
2) Mounting screws are included with each unit

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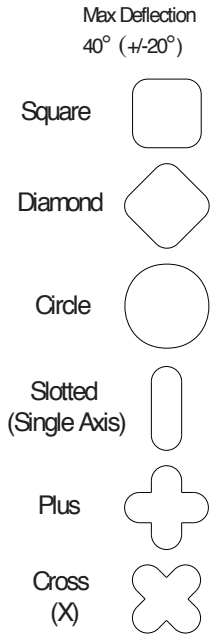
HFX Joystick limiter plate options

The limiter plates are used to determine the deflection pattern of the HFX joystick.



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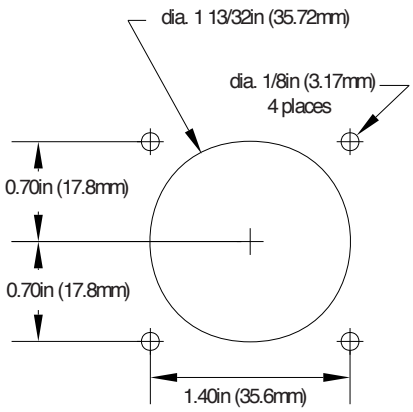
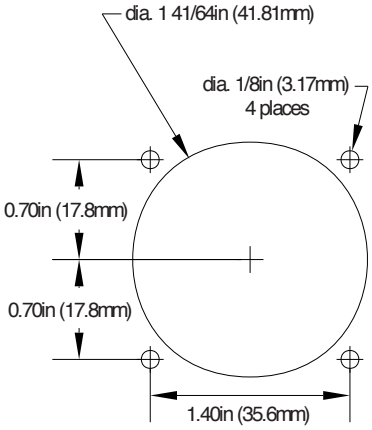
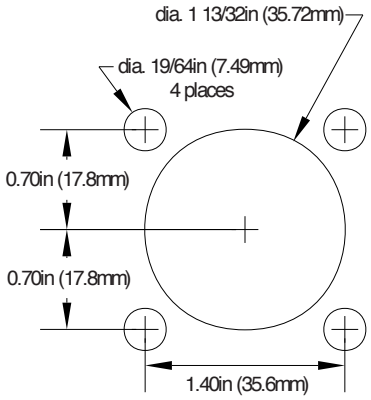
HFX Joystick mounting cutout dimension line drawings



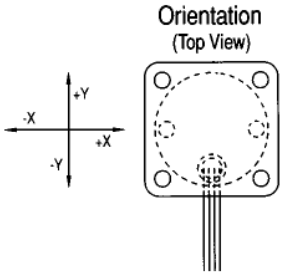
Cutout Dimensions for Flush Mount



Cutout Dimensions for Drop-in, Raised, Snap-on, and Rear Mount Option B



Cutout Dimensions for Rear Mount Option A



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Part Number, Configuration & Feature Availability Guide

(select one key option from each description field)

Description Field	Key	Feature	Feature Availability			
Model	HFX-1	Mod. 100, 2 axis	100			
	HFX-2	Mod. 200, 2 axis with pushbutton		200		
	HFX-3	Mod. 300, 3 axis			300	
	HFX-4	Mod. 400, 3 axis with pushbutton(s)				400
Joystick Handle	0	Ball Tip	X			
	1	Tapered (see Note 3)	X			
	2	2 axis with pushbutton		X		
	3	3 axis			X	
	4	3 axis with 1 pushbutton				X
	5*	3 axis with 2 pushbuttons				X
Limiter Plate	S	Square	X	X	X	X
	D	Diamond	X	X	X	X
	R	Round	X	X	X	X
	M	Slotted "-" (Single Axis)	X	X	X	X
	P	Plus "+"	X	X	X	X
	X	Cross "x"	X	X	X	X
Mounting Option	0	Flush	X	X	X	X
	1	Drop In	X	X	X	X
	2*	Raised	X	X	X	X
	3	Snap On	X	X	X	X
	4	Rear Mount	X	X	X	X
Output Option	0	0V to +5V Rail to Rail	X	X	X	X
	1	+0.5V to +4.5V with Fault Detection	X	X	X	X
	2	+0.25V to +4.75V with Fault Detection	X	X	X	X
	3	+2V to +3V	X	X	X	X

Notes: (1) X denotes availablity of features
(2) * denotes additional charge - see pricing information
(3) Tapered handle is not compatible with either the Flush or Rear Mount Option A mounting options
(4) Customers desiring options not listed should contact factory representative
(5) Example: Joystick Part Number HFX-11D11 is
HFX Model 100, 2 axis joystick with tapered handle, diamond limiter plate, drop-in mounting, and +0.5V to +4.5V output with fault detection

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