

## Specifications

Maximum Breakaway Force <sup>1,2</sup>	506.5 lb / 229.7 kg
Maximum Shear <sup>1,2</sup>	165.3 lb / 75 kg
Thickness for De-Stack <sup>3</sup>	0.35 in / 9 mm
Maximum Allowable Pressure	90 psi / 0.62 MPa
Off Target Actuation Pressure	80 psi / 0.55 MPa
Net Weight	6.83 lb / 3.1 kg
Air Port Thread	2x G1/8
Mounting Options	Side: 2x Ø8-M8-Ø8
Magnetic Pole Footprint	82 x 52 mm



Material Thickness - mm (in)	0.5 (.019)	1 (.039)	2 (.078)	3 (.118)	4 (.157)	5 (.196)	6 (.236)	7 (.276)	9.5 (.375)	12.7 (.5)
Maximum Force - kg (lbs)	14.4 (31.8)	32.4 (71.4)	56.3 (124.2)	92.5 (203.9)	130.9 (288.6)	174.3 (384.3)	201.1 (443.4)	215.8 (475.8)	223.8 (493.5)	229.7 (506.5)
Required Air Pressure <sup>4</sup> - bar (psi)	4.1 (59)	3.3 (48)	2.7 (39)	2.0 (29)	1.6 (23)	1.4 (21)	1.3 (19)	1.3 (19)	1.3 (19)	1.3 (19)

$$SWL \text{ (Safe Working Load)} = \frac{\text{Maximum Force}^5}{\text{Safety Factor} (\geq 3)}$$

<sup>1</sup> Determined in laboratory environment on SAE1018 Steel with surface roughness 63 micro inches with optimized pole shoes. Many factors contribute to the actual breakaway force and safe working load in each application. Consult a Magswitch Applications Engineer and test the Magswitch in each application before deployment.

<sup>2</sup> All data applies to unit with standard combination V/flat pole shoes installed.

<sup>3</sup> Determined with SAE1018 Steel L=200mm W=200mm.

<sup>4</sup> Values may vary by +/- 5%.

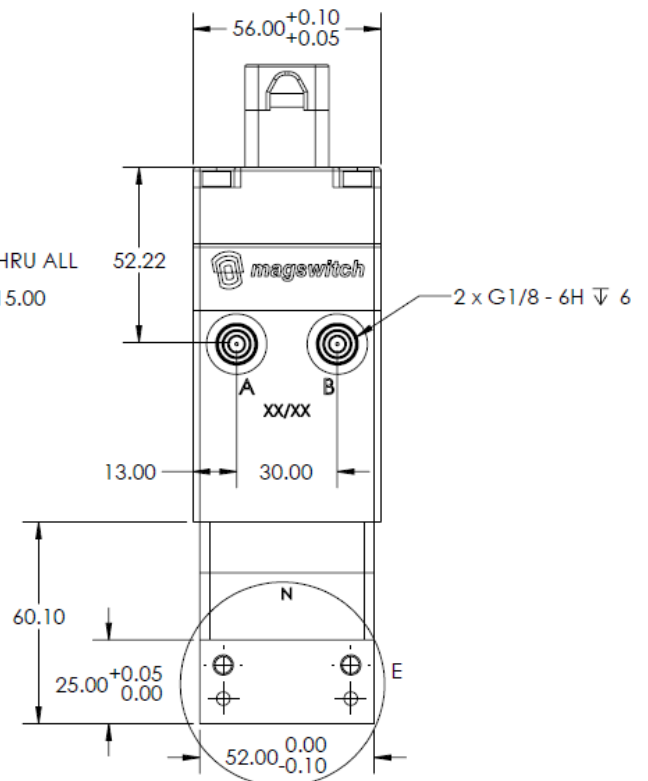
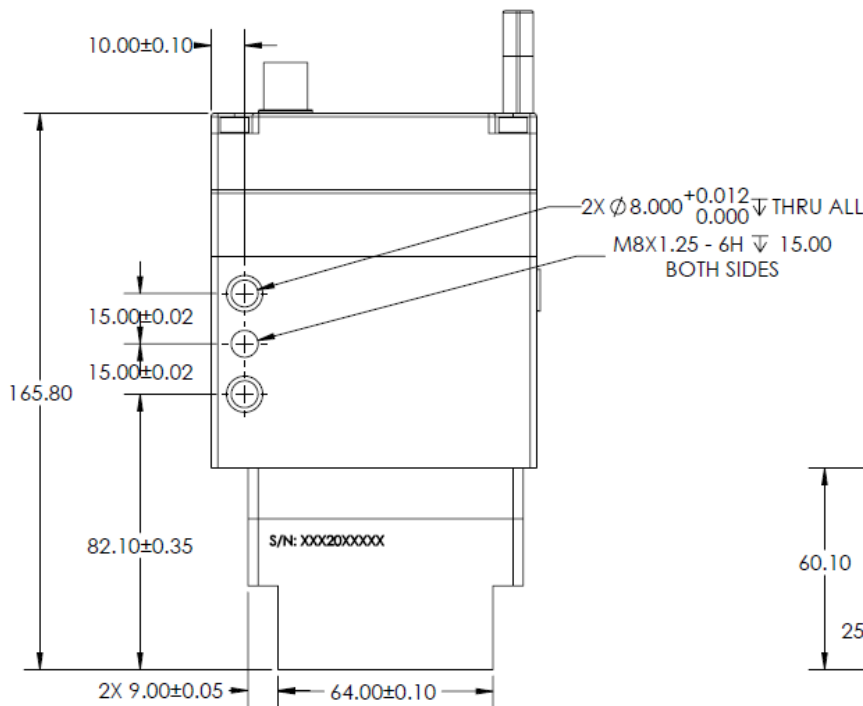
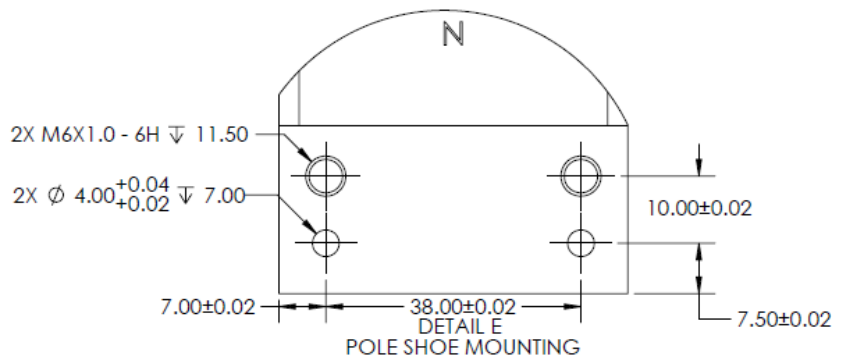
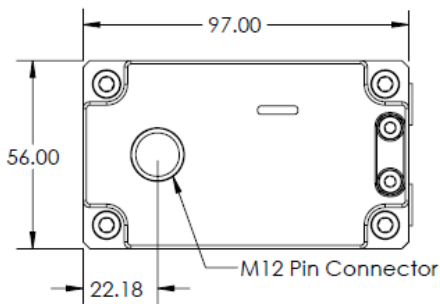
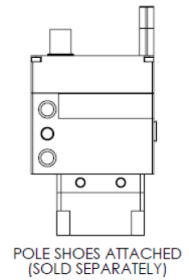
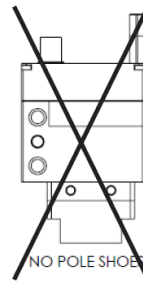
<sup>5</sup> Maximum forces listed above are not safe lifting forces. Designer must take into account safety factor when specifying tool. Magswitch recommends SWL = 3:1 for most lifting applications.

**Pole shoes are required for operation**

Standard kits available:

Standard Flat Pole Shoe Kit	8800762
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**WARNING!**  
 Do Not Operate Unless In Contact With Ferrous Target!



## General Electrical Characteristics for J-Series Tool

Input Power Supply for Degauss	24 V DC @ 4 A Max
Input Power Supply for Non-Degauss	7-36 V DC @ 1 A Max
Typical Degauss Current	<2.5 A peak
Continuous Current Draw for Smart Tool Operation, Nominal	200 mA
Connector on Tool	Male M12 – 12 Pin – A-Coded

### Inputs

Parameter	Min	Type	Max
Input Voltage	12 VDC	24 VDC	24 VDC
Input Current	~	5.0 mA	5.0 mA
Input Type	~	Sinking (NPN)	~
Input Isolation	~	Opto-isolated	~

### Outputs

Parameter	Min	Type	Max
Output Voltage	7 VDC	24 VDC	36 VDC
Output Current	~	100 mA	5.0 mA
Output Type	~	Sourcing (PNP)	~
Output Isolation	~	Non-isolated	~

## Ambient Conditions

Parameter	Max
Max Temperature	60 Deg. C.

## LED Color Codes

LED #	LED Color	Status	Function
LED 1 (Power, Blue LED)	Blue	Off Solid Flashing Slow Flashing	NO POWER TO TOOL POWER TO TOOL CALIBRATION WAS TRIGGERED AUTO-CALIBRATION TRIGGERED
LED 2 (State, RG LED)	Red Green Amber	Solid Solid Solid	MAGNET OFF MAGNET ON DEGAUSS IS RUNNING

## I/O Organization

### Normal I/O Functionality

Calibration bits must be set before entering calibration.

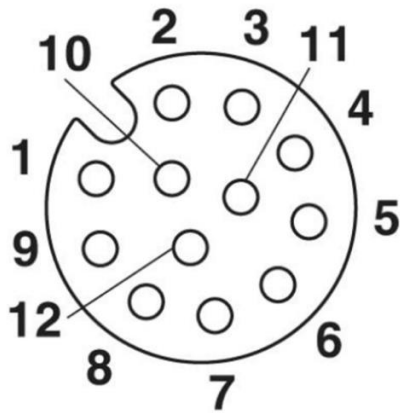
Pin #	Function	Logic	Direction
1	Vin		24VDC
2	GND		GND
3	Calibrate	Requires 1 second HIGH to enter Hold 3 seconds HIGH to enter auto-calibrate – <i>WHEN ENABLED</i>	Input
4	Run Degauss	Requires 20ms HIGH to begin – <i>WHEN ENABLED</i>	Input
5	Sensitivity / Calibration Bit 1		Input
6	Sensitivity / Calibration Bit 2		Input
7	Tool ON	High when magnet is ON	Output
8	Tool OFF	High when magnet is OFF	Output
9	Calibration Match/Part Present	High when within calibrated range	Output
10	Degauss Cycle Running	High while degauss cycle is running – <i>WHEN ENABLED</i>	Output
11	North Pole	High when within calibrated range	Output
12	South Pole	High when within calibrated range	Output

### Calibration I/O Functionality

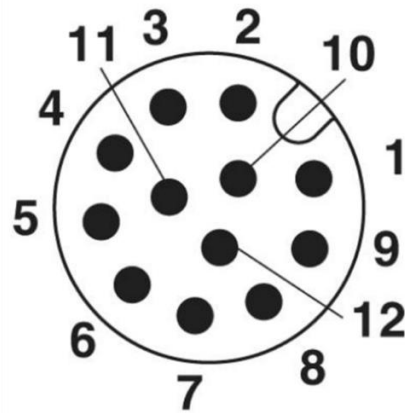
The following output functionality is not included on Degauss tools.

Pin #	Function	Logic	Direction
1	Vin		24VDC
2	GND		GND
3	Confirm Calibration Steps / Exit Auto-Calibrate	Pull HIGH, then LOW to confirm steps 1-4 Hold 3 seconds HIGH, then pull LOW to confirm and exit auto-calibrate – <i>WHEN ENABLED</i>	Input
4	Exit Calibration	Goes back to sensing, does not store values	Input
5	N/A		Input
6	N/A		Input
7	Waiting for Limiting Position 1	High when true	Output
8	Limiting Position 1 Saved / Waiting for Limiting Position 2	High when true	Output
9	N/A		Output
10	In Calibration	High while in calibration or auto-calibration	Output
11	South Pole Position Saved / Waiting for North Pole Position	High when true	Output
12	Limiting Position 2 Saved / Waiting for South Pole Position	High when true	Output

## M12 Connector Pinout



Cable Side: Pin assignment M12, 12-pos., A-coded female connector



Tool Side: Pin assignment M12, 12-pos., A-coded male connector

## Calibration Bit Functionality

Calibration Bit 1	Calibration Bit 2	Calibration / Sensitivity #
LOW	LOW	Calibration / Sensitivity 1
HIGH	LOW	Calibration / Sensitivity 2
LOW	HIGH	Calibration / Sensitivity 3
HIGH	HIGH	Calibration / Sensitivity 4

## 4-Step Calibration Procedure

See calibration manual 1101261 and next page for more detail

### Step 1

Limiting Position 1 for Calibration Match Signal

### Step 2

Limiting Position 2 for Calibration Match Signal

### Step 3

South Pole Position for South Pole Signal

### Step 4

North Pole Position for North Pole Signal

**Calibration Match Signal** will be HIGH (24V) when the contact quality is between Limiting Position 1 and Limiting Position 2. Minimums and maximums from the two limiting positions will be stored to incorporate the proper range for the Calibration Match Signal.

**South Pole Signal** will be HIGH (24V) when in equal to or better contact than the stored South Pole Position.

**North Pole Signal** will be HIGH (24V) when in equal to or better contact than the stored North Pole Position.

## Auto-Calibration Procedure

Actuate tool OFF and enter auto-calibration mode by holding input pin 3 HIGH for 3 seconds (rather than 1 second). Position the tool on the desired part. Once the tool is actuated ON, the tool records magnetic field strengths in the current configuration and stores them as allowable Part Present boundaries. Add or adjust parts to widen allowable range of field strengths. By lowering, raising pin 3 HIGH for 3 seconds, and lowering once more, auto-calibration parameters are saved and standard operation resumes.

# Operational Flowchart

