MAGSWITCH M30 2.0
P/N: 81401590
+ 1 (303) 468.0662
magswitch.com

M30 2.0 | P/N: 81401590



The M30 2.0 magnetic gripper brings back a classic design with several upgrades. This deep field pneumatic magnet is compact and powerful boasting cutting-edge technology enhancements and NAAMS (and optional G-threaded) mounting interfaces. This automation magnet is great for industrial applications, Pick and Place, robotic End of Arm Tools (EOAT) material handling, sheet metal handling, automation fixtures in Body-in-White (BIW), COBOT and other robotic process automation.

General Specifications[1]

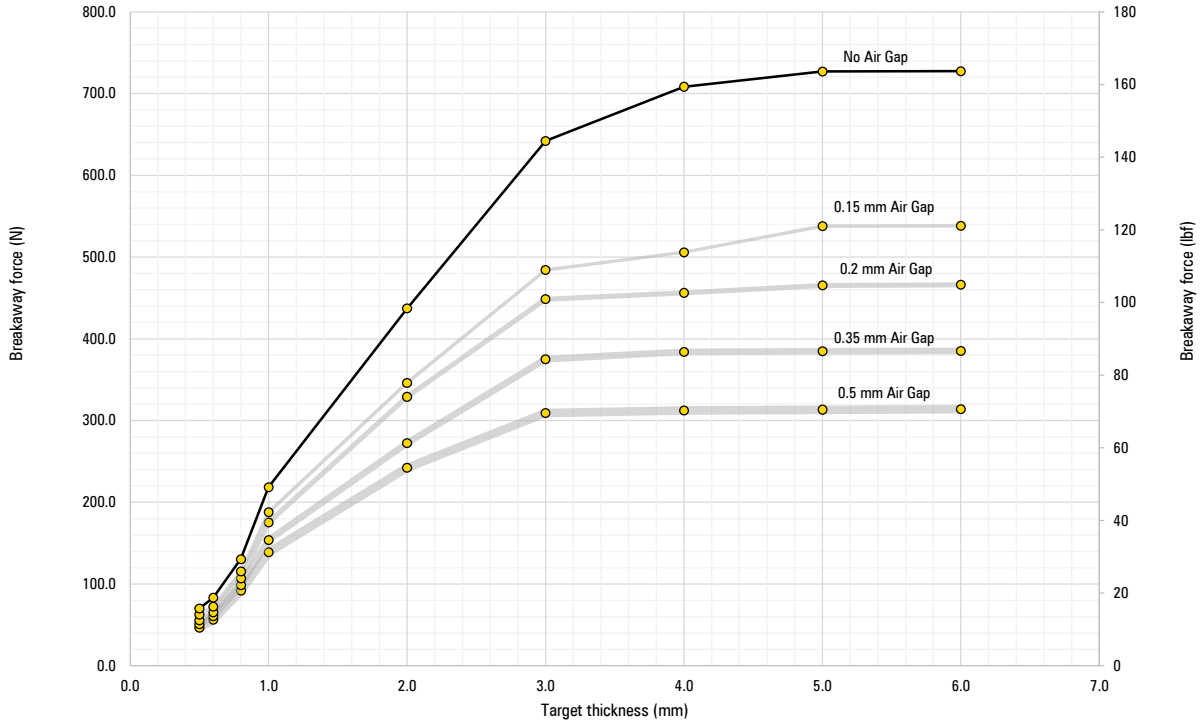
Maximum Breakaway Force	727.3 N	163.5 lbf	74.2 kgf
Maximum Shear Force	156.9 N	35.2 lbf	16.0 kgf
Net Tool Weight		1.0 lbs	0.5 kg
Minimum Target Thickness for Maximum Breakaway Force		0.20 in	5.0 mm
Minimum De-Stack Thickness		0.16 in	4.0 mm
Maximum Magnet Temperature		176 ^{0}F	80 ^{0}C
Maximum Allowable Air Pressure		145.0 psi	10.0 bar
Actuator Volume		6.10 in^3	100.00 cm^3
Air Port Threads	2x G1/8		
Mounting Options	1x Top (With 3/8 NPT Mounting Option): 3/8 - 18 NPT 1x Top (With NAAMS Mounting Option): Ø6-M8-Ø6		

Magnet Strength[1]

Table 1: Breakaway Strength with Different Target Thicknesses

Target Thickness	mm	0.5	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0
	in	0.020	0.024	0.031	0.039	0.079	0.118	0.157	0.197	0.236
Hold Force	N	70.0	83.0	130.1	218.4	437.0	642.0	708.4	727.0	727.3
	lbf	15.7	18.7	29.2	49.1	98.3	144.3	159.2	163.4	163.5

Figure 1: Breakaway Strength with Different Air Gaps



[1] Footnotes:

- **The forces listed in this document represent ideal maximums and may not accurately reflect the actual forces achievable in a customer's specific application due to variations in materials or process conditions.**
- **Review and understand the warnings section on page 3 before operating the tool.**

- Breakaway forces were determined in laboratory environment on a 200mm x 200mm sheet of SAE1018 Steel with surface roughness of 63 microinches with standard pole shoes. Values may vary by ±5%.
- Breakaway forces in Table 1 were determined using standard pole shoes on clean, flat surfaces with no air gaps between the pole shoes and the target material. Any variation from this ideal scenario will decrease breakaway forces.

Warnings

Review and understand all warnings before operating the tool.

Contact and consult Magswitch engineering at +1(303) 468.0662 if you have any questions or concerns about your application or the tool's operation.

The breakaway and shear forces listed in this document are not safe working load limits. Designers must account for the safety factor. Safe working load limits must account for additional forces placed on the magnet and part when in motion or out of balance. For the safe Work Load Limit (WLL), the applicable DIN standard requires a minimum safety factor of 2 without permanent deformation and a safety factor of 3 under static loading.

WLL (Working Load Limit) = Maximum Breakaway Force ÷ Safety Factor (≥ 3)

- The forces listed in this document represent ideal maximums and may not accurately reflect the actual forces achievable in a customer's specific application due to variations in materials or process conditions.
- The following conditions affect the tool's strength and impact the safe handling and transport of target materials:
  - Motion of the magnet (e.g. fast movements, emergency stops, and steep carrying angles)
  - Debris or contamination on the target surface
  - Air gaps between the magnet and target materials
  - Wear and damage to the tool's pole shoes
  - Target material thickness
  - Target material shape
  - Target material alloy
  - Pole shoe design
- To safely use the tool:
  - **Do not actuate the magnet off-target.** Actuation of the magnet off-target may create hazardous conditions where body parts could get trapped between the tool and ferromagnetic material.
  - **Failure to provide adequate air pressure to the tool may result in incomplete actuation and reduced breakaway force.** If the tool is partially actuated and a power failure occurs, the tool will lose grip and parts may fall.
  - Always use pole shoes. If your pole shoes include dowel pins, always operate with dowel pins installed.
  - The COG of the material being lifted should be centered on the magnet to reduce pry.
  - Ensure all surfaces are clean and free of debris for maximum magnetic hold force. Any air gaps will reduce the magnet's hold force.
  - The north and south pole shoes of the magnet must make full contact with the target at time of actuation.
  - Do not expose the magnet to temperatures above 80^0C (176^0F). High temperatures will permanently degrade the magnet and may result in an unsafe condition.
  - Consult Magswitch engineering for custom pole shoes if working with irregular target surfaces
- To prolong the life of the tool:
  - Always use armor in bin picking operations.
  - Do not actuate the magnet off-target. Actuation of the magnet off-target will lead to increased wear on the magnet's internal actuation mechanisms.
  - Do not operate using more than the maximum listed actuation pressure.
  - Use clean dried air filtered to 40um to operate the tool.
- Always perform testing before deployment.

- Please refer to document 110636, Magswitch Automation Tool Operation and Integration Guidelines, or contact Magswitch engineering for details on actuation pressures, volumes, and detailed actuator information.

Pneumatic Operation

Maximum Allowable Air Pressure	145.0 psi	10.0 bar
Minimum Pressure Required for Actuation (mm thick target)	35.5 psi	2.5 bar
Maximum Pressure Required for Actuation (Off-target)	80.1 psi	5.5 bar
Actuator Volume	6.10 in^3	100.00 cm^3
Actuation On Time	On target (5mm with no air gap)	53 ms
	Off target	104 ms
Actuation Off Time	On target (5mm with no air gap)	37 ms
	Off target	37 ms
Air Port Threads		2x G1/8
Air Preparation		Clean dried air filtered to 40um

Figure 2: Air Port Configuration

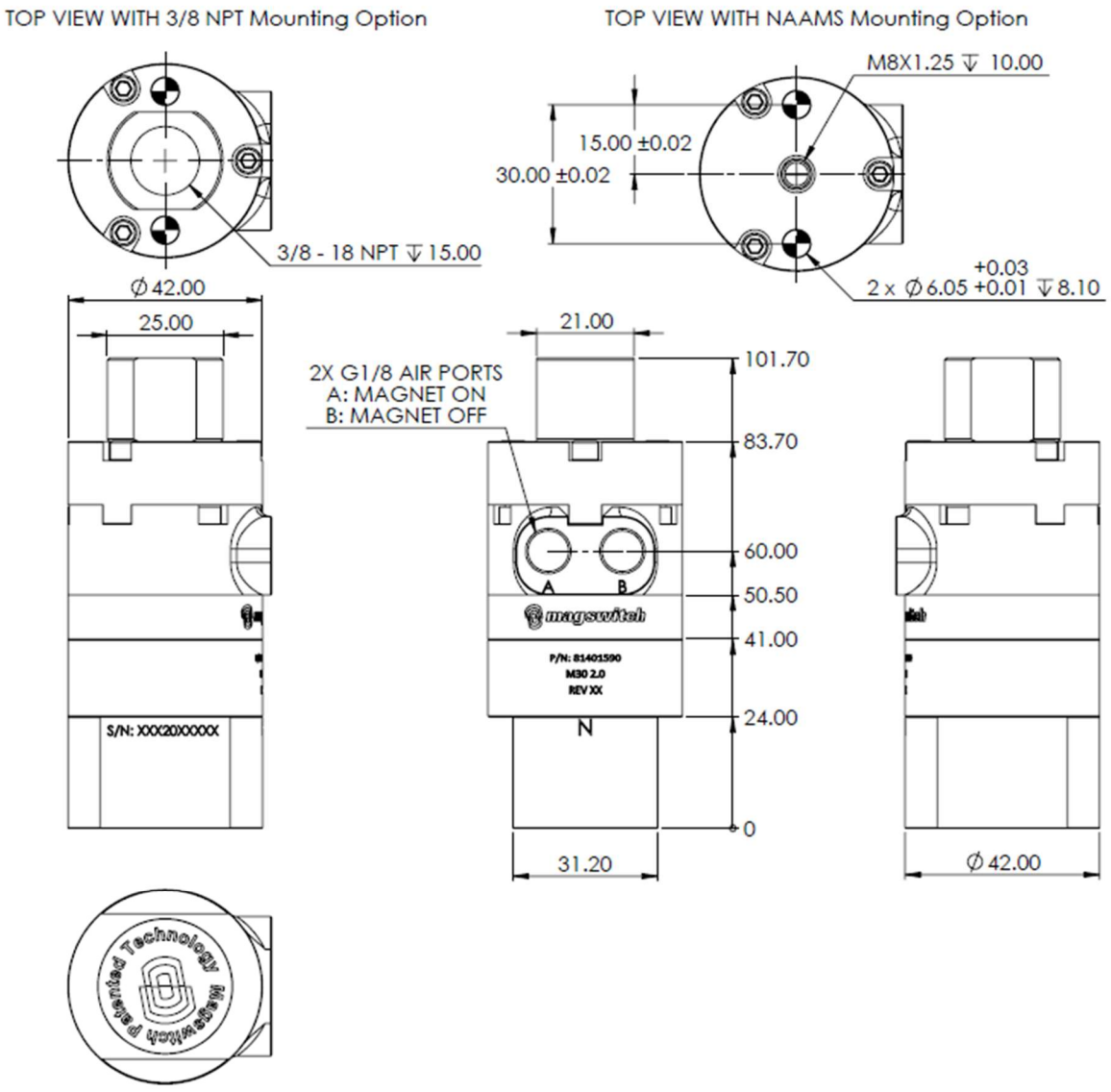
- **Positive pressure must be applied to A port to actuate magnet ON.**
  - Reversal of ports may result in dangerous off-target actuation.
- **Failure to provide adequate air pressure to the tool may result in incomplete actuation and reduced breakaway force.**
  - If the tool is partially actuated and a power failure occurs, the tool will lose grip and parts may fall.



Accessories Available

Compliance	
KIT, COMPLIANCE DEVICE, E50, TOP MOUNTED, 80X80X50 MM	88001628
KIT, COMPLIANCE DEVICE, D120, TOP MOUNTED, 80X80X50 MM	88001639

Tool Dimensions



Center of Mass

