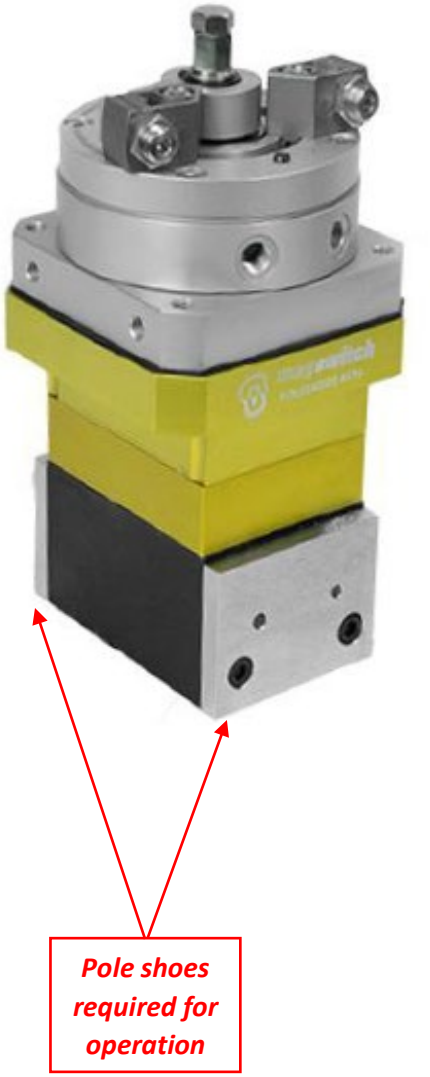
MAGSWITCH AR70 Classic
P/N: 8140320
+ 1 (303) 468.0662
magswitch.com

AR70 Classic | P/N: 8140320

The AR70 spans the gap between our best-selling AR50 Classic and the AR110 behemoth. It's a well-rounded tool designed for part pick-and-place, with a bit of extra "oompf" for those tricky applications.



General Specifications[1]

Maximum Breakaway Force	4261.3 N	958.0 lbf	434.5 kgf
Maximum Shear Force	1127.8 N	253.0 lbf	115.0 kgf
Net Tool Weight		15.0 lbs	6.8 kg
Full Saturation Thickness		0.50 in	12.7 mm
Minimum De-Stack Thickness		0.50 in	12.7 mm
Maximum Magnet Temperature		176 ^{0}F	80 ^{0}C
Maximum Allowable Air Pressure		145.0 psi	10.0 bar
Actuator Volume		5.49 in^3	90.00 cm^3
Air Port Threads			2x G1/8
Mounting Options			Sides: (6x) M8x1.25 Bottom: (4x) M8x1.25

Thin Sheet and Off-Target Operation

This tool was designed to operate on-target on material thicker than 3mm. Continuous operation of the tool off-target or on material thinner than 3mm will result in decreased tool life.

If this tool must be operated off-target or on thin material, Magswitch recommends adding a 0.74 mm (0.029") orifice in the OFF port to prolong tool life. If cycle time is a concern and application uses target material that is 3mm or thicker, do not operate the tool with an orifice in the OFF port.

Magswitch recommends AR50s (PN 81401167) or D120s (PN 81401457) for lifting thin sheets.

Contact Magswitch engineering at +1 (303) 468.0662 if you have any questions or concerns about your application.

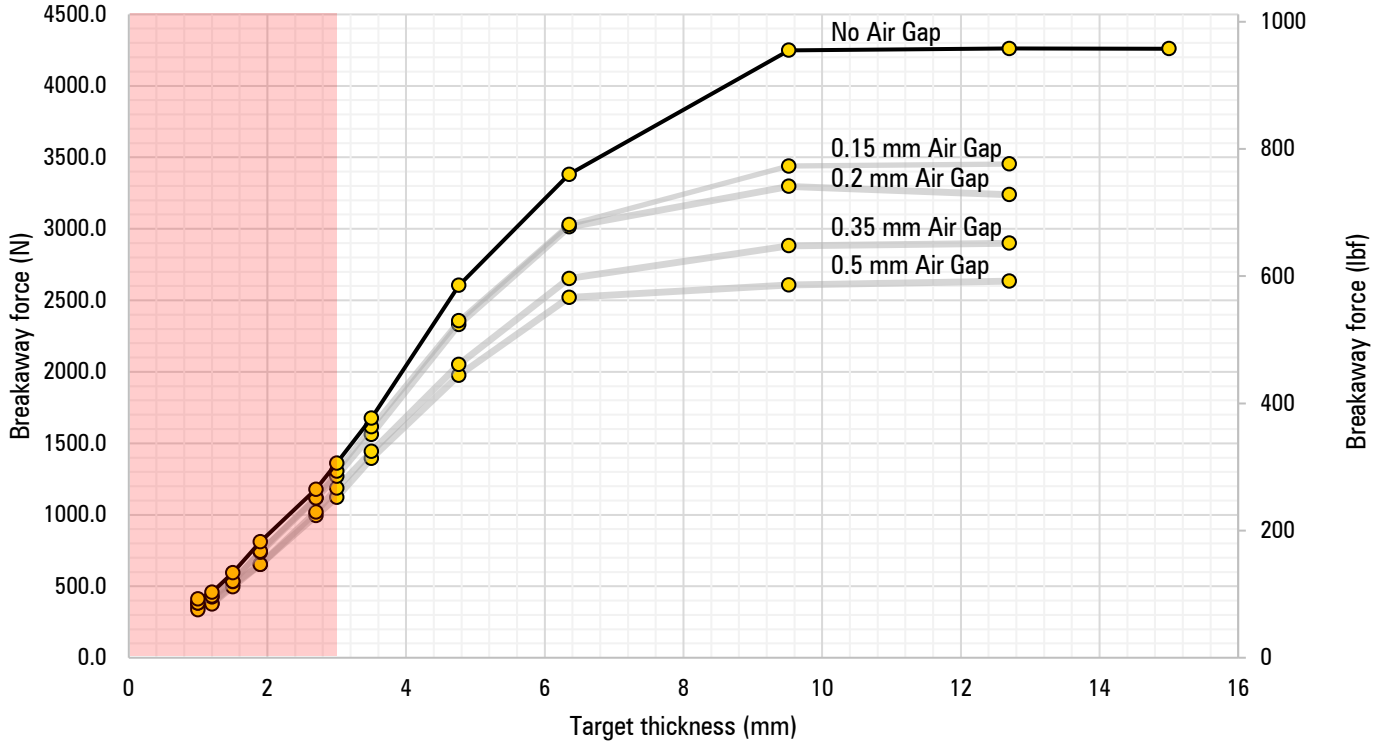
Magnet Strength[1]

Table 1: Breakaway Strength with Different Sheet Thicknesses

(See thin sheet warning on page 1 for operation on material thinner than 3mm)

Target Thickness	mm	1	1.2	1.5	1.9	2.7	3	3.5	4.76	6.35	9.52	12.7	15
	in	0.039	0.047	0.059	0.075	0.106	0.118	0.138	0.187	0.250	0.375	0.500	0.591
Hold Force	N	410.6	457.6	594.0	812.3	1178.8	1361.5	1676.0	2605.0	3380.7	4248.9	4261.3	4260.0
	lbf	92.3	102.9	133.5	182.6	265.0	306.1	376.8	585.6	760.0	955.2	958.0	957.7

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.
- Breakaway forces in General Specifications, Table 1, and Figure 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 lifting forces. Designers must account for the safety factor. Safe working loads must account for additional forces placed on the magnet and part when in motion or out of balance.
- All mounting hardware SHALL be non-magnetic stainless steel or aluminum.
- 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 (Reference *Table 1* on page 2 for reduced hold force on thinner material)
    - Target material shape
    - Target material alloy
    - Pole shoe design
- To safely use the tool:
    - Always use pole shoes. If your pole shoes include dowel pins, always operate with dowel pins installed.
    - 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.
    - 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.
    - Do not expose the magnet to temperatures above 80^{0}C (176^{0}F). 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.

Accessories Available

Standard pole shoes	
AR70 Standard Flat Pole Shoes (Included)	8800363
Kit AR70 Combo Flat/Pipe Poles Standard	8800072
AR70 Standard Pin Clamp Pole Shoe Kit	8800493
Armor	
ARMOR KIT, AR70, Bin Picking Kit	88001415
Armor-ready pole shoes	
PSK, AR70, FLAT, ARMOR READY	88002241
PSK, AR70, 135deg V-CUT, 2”-5” DIA. Range, ARMOR READY	88001417
PSK, AR70, 155deg V-CUT, 5”-10” DIA. Range, ARMOR READY	88001418
Flow Control for Thin-Target Applications	
KIT, ADAPTER, BUILT IN ORIFICE, 1/8 BSPP MALE X FEMALE, FOR AR70 CLASSIC , AR70 EH/SH, WITH G1/8 PORTS	88001986
Sensing	
SENSOR BRACKET, M8 PROX, AR70 CLASSIC	8800797

Pole Shoe Installation

1. Remove any pole shoes currently installed on the sides of the tool.
2. Ensure dowel and fastener holes are clean. Confirm the side surfaces of the magnet housing are flat and smooth.
3. Align dowel pins with housing bores and apply light pressure to seat poles flush against housing.
4. Apply Loctite 222 to fastener threads and install 4x M6 socket head cap screws.
5. Torque all screws to 11.5 Nm (8.5 ft-lbf). There should be no visible gap between the pole shoes and the magnet housing.

Pneumatic Operation

Maximum Allowable Air Pressure	145.0 psi	10.0 bar
Minimum Pressure Required for Actuation (Full saturation)	29.0 psi	2.0 bar
Maximum Pressure Required for Actuation (Off-target)	79.8 psi	5.5 bar
Actuator Volume	5.49 in^3	90.00 cm^3
Actuation On Time	On target	96 ms
	On target, with flow restriction	800 ms
	Off target	295 ms
	Off target, with flow restriction	1200 ms
Actuation Off Time	On target	64 ms
	On target, with flow restriction	500 ms
	Off target	78 ms
	Off target, with flow restriction	500 ms
Air Port Threads		2x G1/8
Air Preparation		Clean dried air filtered to 40um

Figure 2: Air Port Configuration

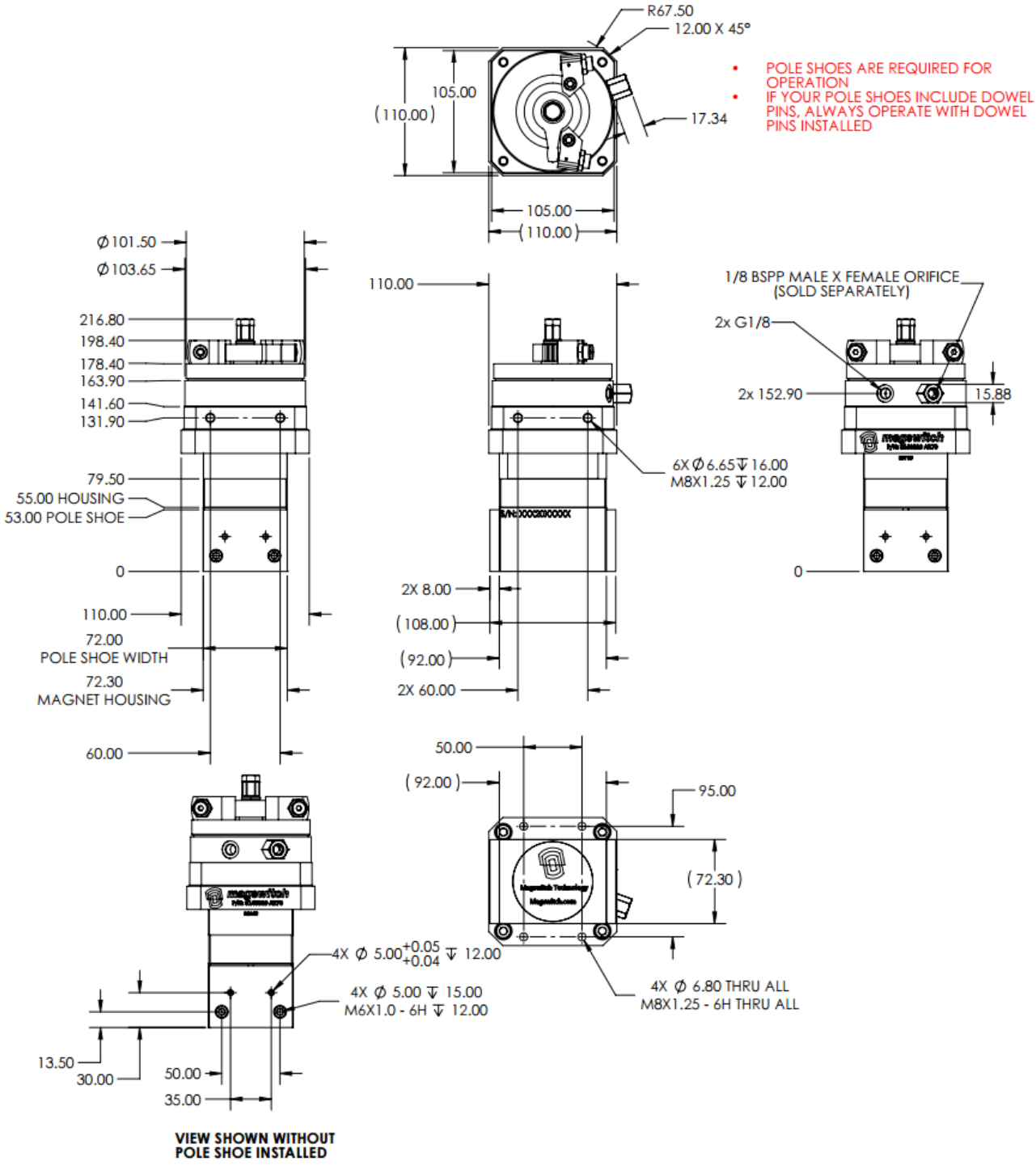


A (ON) Port

B (OFF) Port

Positive pressure must be applied to A port to actuate magnet ON.
Reversal of ports may result in dangerous off-target actuation.

Tool Dimensions



WARNING! Review and understand the warnings section on page 3 before operating the tool.

Center of Mass

