



TRANSPORTER® CYLINDER ACTUATED MAGNETS INSTALLATION & OPERATION MANUAL

TPCA and LA Series Magnets

Pneumatically actuated MAGNET without controls

OPERATING PRINCIPLE

The patented Industrial Magnetics Transporter® utilizes powerful, Rare Earth Permanent Magnets to pick and place metal parts in automated transfers or lift-assist material handling applications. The TPCA/LA Lifting System is a **Magnet Lifting Pod** consisting of a magnet, housing and actuation cylinder.

The cylinder, upon receiving an air signal from a control valve moves the magnet within the housing. By stroking the cylinder out, the cylinder moves the magnet toward the housing face and into the grip position. By stroking the cylinder in, the cylinder moves the magnet away from the housing face and into the release position.

OPTIONAL CONFIGURATIONS

The TPCA Transporter® can be configured in multiple sizes with varied lifting capacities. The magnets can be exposed or covered to suit the application requirements.

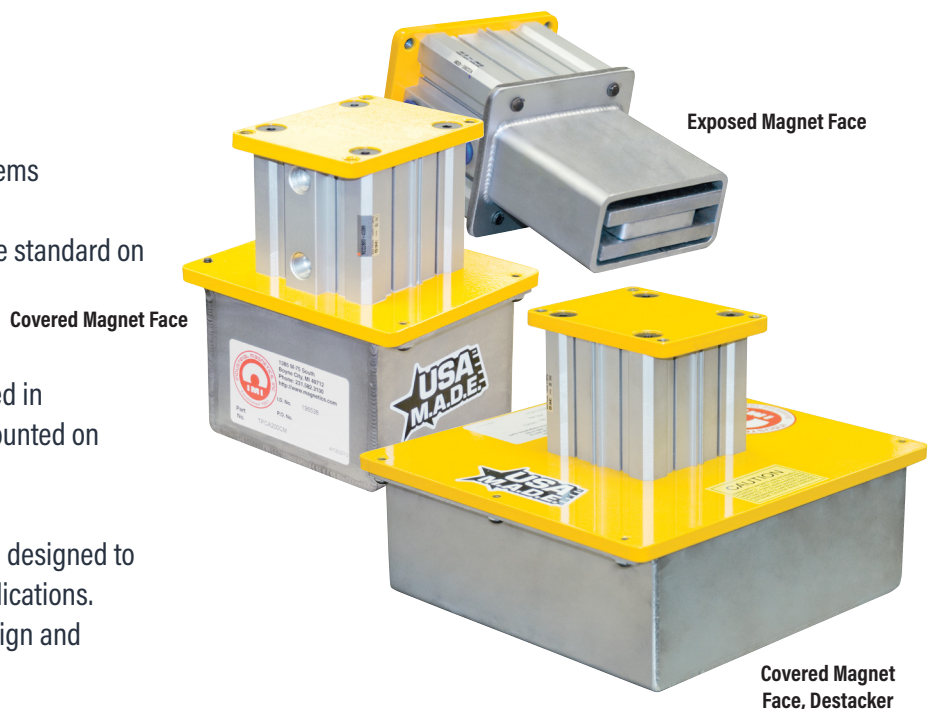
Options include:

- » Solenoid control valves
- » Custom designed pole shoes
- » Magnet mounted control valves
- » Magnets designed into ergonomic lifting systems
- » Custom designs are available
- » Magnetic pistons for limit switch detection are standard on TPCA200 - TPCA800 series

CUSTOM LIFT ASSIST ASSEMBLIES

IMI Cylinder Actuated Magnets can be configured in combination with multiple coordinated units mounted on common framework.

These Lift Assist (LA) assemblies can be custom designed to suit the load and part geometry for specific applications. Contact IMI Automation Group for Lift Assist Design and Engineering support.





HEALTH AND SAFETY WARNINGS

GENERAL



Please be advised that in and around the application of magnetic equipment, there are potential safety concerns that can arise with sensitive medical devices:



- » Pacemaker behavior can be affected when they are near strong magnetic fields
- » Medical implants and external fixation systems can be influenced by magnetic fields
- » Hearing aid behavior may be affected when exposed to strong magnetic fields

Any individual that carries the above equipment or other sensitive medical devices should use caution when they are around or handling magnets. For more specific information the wearer should contact their physician.



Beware of pinch points from sudden attraction and unexpected movement between magnets and ferrous metal equipment components or tools.

Keep feet and other extremities out from beneath a lifted load.

OTHER PRECAUTIONS & SAFETY MEASURES

The greatest effectiveness of any magnetic lift is achieved when the magnet face(s) makes complete contact with the load. Therefore, it is recommended to:

- » Keep the contact surface of the magnet clear of debris. Frequently wipe the surface of the magnet with a wire brush or shop rag with the magnet in the release mode.
- » Keep the material to be lifted clean and free of chips, oil, slag, welding beads, dirt, etc. Clear any foreign material from the part before setting the magnetic lift on it. Avoid setting the lift down in places that are very dirty.
- » Periodically check the condition of the magnetic contact face(s) to ensure that it is flat and has not been inadvertently damaged during its time in use.
- » DO NOT hoist a load weighing more than the lift's holding capacity.
- » DO NOT hoist a load if it is unbalanced.
- » DO NOT hoist a load before ensuring perfect magnet contact. First, make a test lift of 2 to 3 inches above the stack or table
- » DO NOT release the load before ensuring that the load is rigidly supported on the floor or adequate support.
- » DO NOT perform welding operations in close proximity to the magnet(s).
- » DO NOT use the magnet lift system as part of the welding system ground circuit.
- » DO NOT place the magnet lift system directly on to a conductive floor used as a welding ground plane.
- » DO NOT lift people or loads with people on them.
- » DO NOT leave suspended loads unattended.
- » DO NOT operate the lift system with missing parts or damaged or malfunctioning lift magnet(s).
- » DO NOT remove or obscure any product labeling.
- » DO NOT lift loads higher than necessary.
- » ALWAYS use the entire contact surface of all the system magnets.
- » ALWAYS keep magnet contact face perfectly flat and parallel to the surface of the load.



INSTALLATION INSTRUCTIONS

MECHANICAL

- » The standard magnet is supplied with a plate that has drilled and tapped holes for mounting.

PNEUMATIC

- » The magnet will require a control valve (supplied by others) to actuate the release cylinder. The valve should be a 4-way, 2 position unit with a Coefficient of Flow (Cv) of .7 or greater. The valve can be solenoid or air pilot operated or manually actuated dependent upon the control scheme chosen by the user. The valve cylinder ports are to be plumbed to the cylinder inlets using adequately sized tubing or hard piping.
- » Note that most systems used in conjunction with a float-collector-swivel device such a Gorbel G-Force will have the air supplied via a coil-hose wound around the lift cable or chain. The magnet valve can then be supplied from this hose.
- » Any switches or pilot valves used to operate the control valve are to be furnished by others.

OTHER

- » Crane Controls for Up/Down functions - supplied by others.

MAINTENANCE

MECHANICAL

- » Inspect magnet pods for damage to magnet housing
- » Inspect magnet pod supports. Look for loose bolts. Check for damaged adjustment knobs, cracked welds or bent pivot pins.
- » Clean magnet face at least daily with a rag or gloved hand to minimize collected tramp metal.
- » It is recommended that magnet performance be tested on an annual basis. Test methods may vary depending on the application; contact IMI for information and options for testing.

PNEUMATIC

- » Inspect for tubing damage (nicks/cuts).
- » Periodically check valving for wear/leakage.



TROUBLESHOOTING

IF MAGNETS WILL NOT CYCLE FROM ONE MODE TO THE OTHER:

- » Check air pressure at source and at magnet. Pressure must match that shown on equipment drawing.
- » If proper air pressure is present, perform the following check:
 - » Place magnet in Release mode then remove to a service area.
 - » Place magnet in Grip mode.
 - » Pass a piece of scrap steel fastened to a non-ferrous stick or rod under each magnet.

WARNING: DO NOT HOLD THE SCRAP STEEL IN YOUR HAND. INJURY MAY RESULT.



- » Working magnets will readily attract the scrap. Non-working magnets will not attract the scrap.
- » Inspect each magnet cylinder.
- » Remove the non-working magnet for servicing. Consult IMI for replacement parts or disassembly advice.

IF MAGNETS WILL NOT RELEASE THE SHEET, PLATE OR PARTS:

- » Check for voltage if solenoid type, or for air flow restrictions.
- » Check for proper valve operation and tubing connections.

SPARE PARTS

- » **SEAL KIT FOR CYLINDER**
- » **CYLINDER**
- » **STAINLESS STEEL HOUSING**
- » **MAGNET IS NOT REPLACEABLE. IMI MAY BE ABLE TO REBUILD IT.**

COMMENTS OR CONCERNS?

We believe Industrial Magnetics, Inc. offers the finest Lifting Magnets available today. Great pride has gone into the design and manufacture of this unit. Any comments or concerns should be directed to our Customer Service Department at 1-888-582-0823.

We appreciate the opportunity to serve you!