

We move your world

AIR CASTER TRANSPORTATION



Aerofilm Systems INC.
AIRCUSHION TRANSPORT ■ ■ ■ ■

CONTENT

AIR CASTER
TRANSPORTATION

AIR CASTERS

CUSTOM MADE
ENGINEERED SOLUTIONS

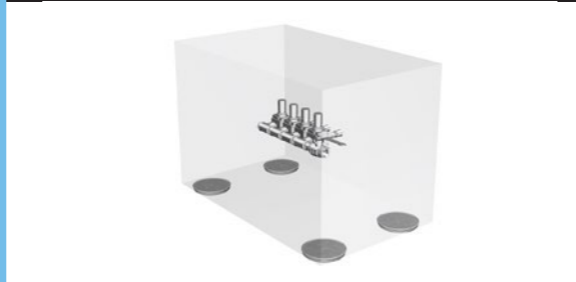
FLOOR &
COMPRESSED AIR

AEROFILM SYSTEMS

USERS

CONTACT

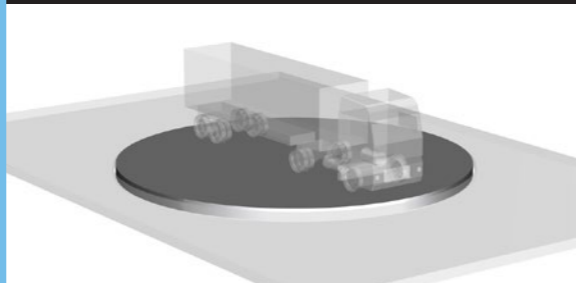
PERMANENTLY INSTALLED AIR CASTER SYSTEM



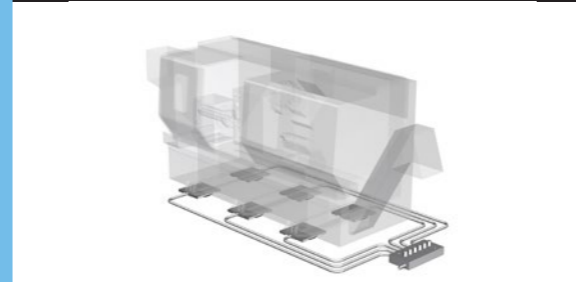
AIR CASTER TRANSPORT PLATFORMS



AIR /WATER CASTER TURNABLES



MODULAR AIR CASTER SYSTEM



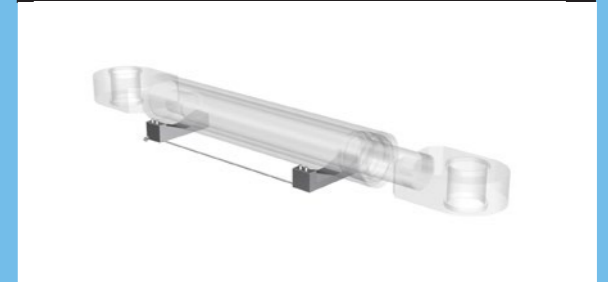
AIR CASTER ROLL TRANSPORTERS



AIR POWERED DRIVES



AIR CASTER BEAMS



AIR CASTER MOBILE CRANES



Air Caster Transportation



With over 30 years' experience, Aerofilm Systems designs, develops and manufactures air casters and air caster transport systems. This form of transportation is the ideal solution for moving light to very heavy objects in a safe, ergonomic and cost effective way. It is also ideal for sensitive and therefore often expensive objects because air casters create no vibration during moving.

Air casters are being used in all kinds of industries and applications worldwide. Both standard and custom made. The systems are typically used for internal movement of objects ranging from 200 lbs to over 2,500 tons.

The air casters exist of a flexible rubber membrane that is fed by compressed air operating from 15-60 psi. A controlled leakage of the compressed air creates a thin air film between the floor and the air caster. The air caster can now float above the floor with virtually no friction which makes it possible to move heavy loads and objects with relatively low force. It only requires 1 lbs of pulling force to move a weight of 1,000 lbs.

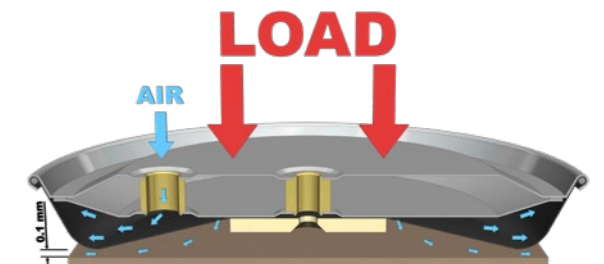
For example:

One single air caster with a 15 inch diameter has a capacity of 8,500 lbs.

The load itself is only raised by a few inches. Due to the relatively low pressure (15-60 psi), no dust cloud is created and the floor does not get damaged because there is no point-concentrated load. The noise level is also low due to the low pressure applied.

Main benefits of air caster transportation:

- Ergonomic; less effort required to move loads
- The only exhaust gas is compressed air
- No floor damage and very low floor load
- Suitable for very heavy loads
- Virtually friction-free, easy movement
- Low to no maintenance
- Very accurate positioning
- Vibration free movement
- No expensive cranes or gantries needed
- Compact, light and efficient design
- Easy to store
- Omni-directional movement
- Applicable in ISO 5 class cleanrooms
- No lubricants needed
- No mechanical wear parts
- No permanent installation needed in your facility



Air Casters



Air Casters are also often called Air Cushions, Air Skates or even Air Bearings. They can be mounted permanently underneath specific equipment or tools or used as a modular air caster system.

Air casters are pneumatic elements that can be placed underneath an object or frame, allowing almost friction-free movement and positioning in all horizontal directions.

Aerofilm Systems produces the P-, B- and NC-type each with their specific advantages that are described below. Also water casters are available which use water as their operating medium instead of air.

AIR CASTER: P-TYPE

The P-type are the low pressure air casters that have a membrane made out of Polyurethane material. They are mainly used for permanent installation underneath a machine, frame or object as OEM equipment. Wear free because they are vacuum formed out of a single piece of Polyurethane.



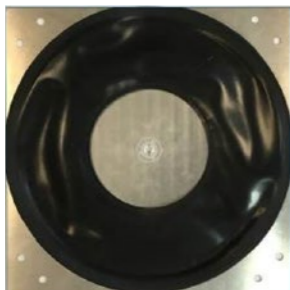
Specific properties:

BUILD HEIGHT	1 inch
AIR CASTER DIAMETER	8 - 36 inch
LIFT	1/4 inch - 1 1/4 inch
CAPACITY	100 - 26,000 lbs per piece
AIR PRESSURE	15 - 30 psi

- Wear free
- Lowest coefficient of friction (COF) 0,001 of the weight
- Least air consumption
- Most suitable for 24/7 usage
- Equipped with a cassette system. The air caster can be changed without lifting the transporter
- In stock item

AIR CASTER: B-TYPE

The B-type are the higher pressure air casters that have a membrane made out of Neoprene. They are mainly used for less frequent movement. They generate a higher lift than the P-type and can therefore both lift and transport the object. Because of the higher pressure they have a higher capacity per diameter.



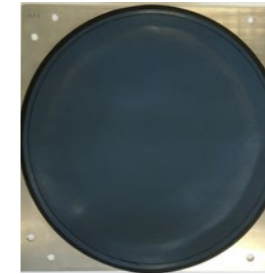
Specific properties:

BUILD HEIGHT	3/8 - 1 inch
AIR CASTER DIAMETER	8 - 48 inch
LIFT	1/2 - 3 1/4 inch
CAPACITY	550 - 88,000 lbs per piece
AIR PRESSURE	30 - 60 psi

- Greater capacity per diameter
- Lifts the load before transporting it
- Equipped with a cassette system. The air caster can be changed without lifting the transporter
- In stock item

NC-TYPE

The NC-Type, also called Gapmasters, have multiple smaller holes to divide the air outlet over a bigger surface. Because of this principle they can overcome small gaps in your floor.



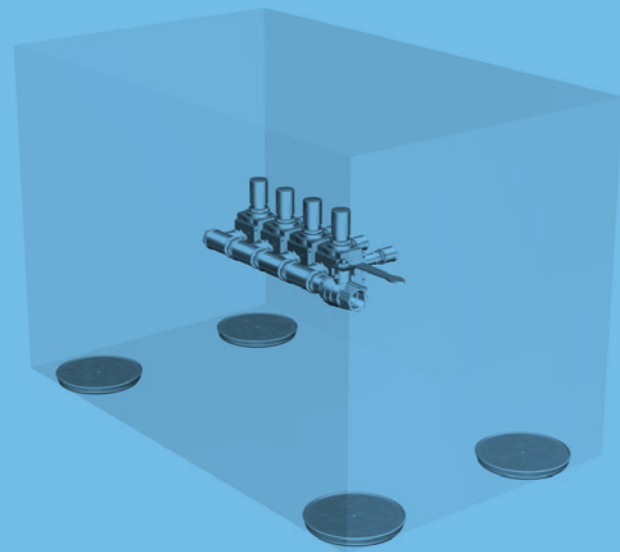
WATER CASTERS

Both the P-type and B-type of air casters can be supplied as water casters where the medium is changed from air into water. The principle remains the same. The medium consumption from water casters is generally 5% of the amount of air you would need.

SPECIALS

Specific coatings and protection layers can be applied on request for harsh environments. Also different types of housings can be delivered to meet specific requirement e.g. the food or pharmaceutical industry.

Permanently Installed Air Caster System



Specific properties:

BUILD HEIGHT	3/8 - 1 inch
AIR CASTER DIAMETER	8 - 48 inch
LIFT	1/4 - 2 3/4 inch
CAPACITY	300 lbs - unlimited
AIR PRESSURE	15 - 60 psi

- Takes very little space underneath your object
- Object can be permanently moved because the air casters are embedded in the design
- Ideal OEM solution
- No harmful exhaust gasses, just regular compressed air
- In stock item

Typical applications:

- To exchange high-tech modules with integrated air casters for servicing purposes
- Accurately position fixture systems with products to the measurement location
- Move products between production stations
- Move fragile, high-voltage test equipment to the testing area
- Replace wheels one-on-one by air casters
- Move stock shelves/ systems around the factory
- Make seating modules mobile with integrated air casters for use in sporting/concert arenas
- Enable retractable seating units to be moved effortlessly in theatres, sports halls and stadiums
- Embed the air casters into a sub-frame or platform
- Integrate the embedded air caster system to make your production line more flexible

This system is permanently installed underneath the object itself or its support frame to create a fixed air caster transport solution. These systems are mainly chosen for frequent usage in production processes.

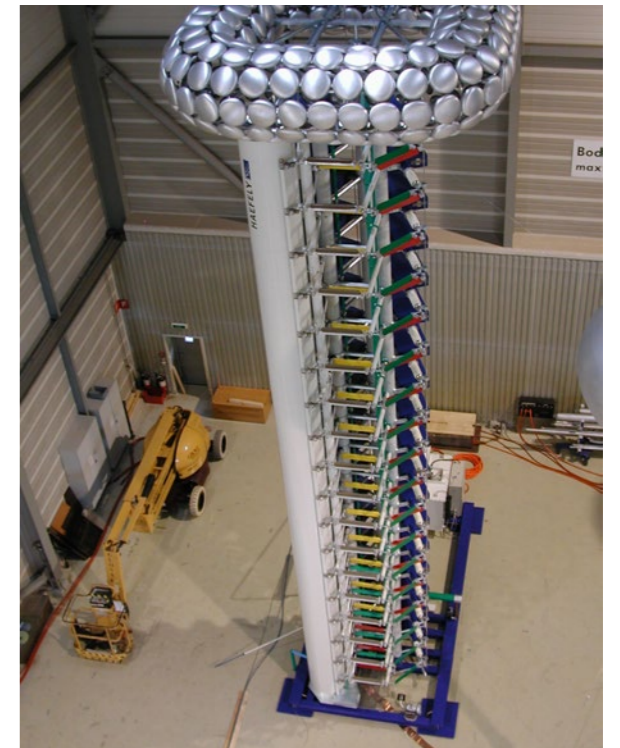
An embedded air caster system is a package that consists of just the air casters and an air regulator.

In order to guarantee maximum stability, at least three (but preferably four) air casters should be placed under the load. The air regulator ensures that the compressed air is correctly divided amongst all different air casters to compensate the weight above and move the load.

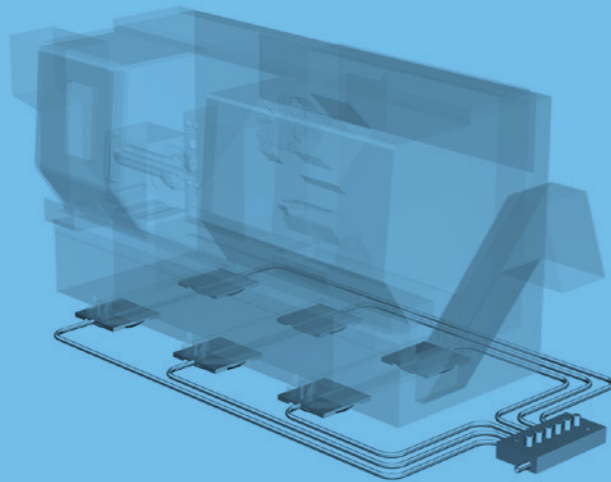
For objects weighing more than 9,000 lbs we recommend to use external drives to control the load properly and safely. These can be found in this brochure under the section **Air Powered drives**.

The system can be made with either P- or B-Type air casters in all different sizes with matching air regulators that fit the total air consumption. Depending on the weight that needs to be transported, the size, number of air casters and regulator is chosen.

The embedded air caster system is a very safe and cost effective solution to optimize your production process.



Modular Air Caster System



Specific properties:

BUILD HEIGHT	1 inch - unlimited
AIR CASTER DIAMETER	8 - 48 inch
LIFT	1/4 - 2 3/4 inch
CAPACITY	1 - 240 tons
AIR PRESSURE	15 - 60 psi

- Lowest build height in the industry
- The system can both lift and transport the object
- Plug and play
- No permanent installation needed in the building
- Small footprint so easy to store after usage
- No harmful exhaust gasses, just regular compressed air
- One single system can be used for different kinds of objects
- In stock item

Typical applications:

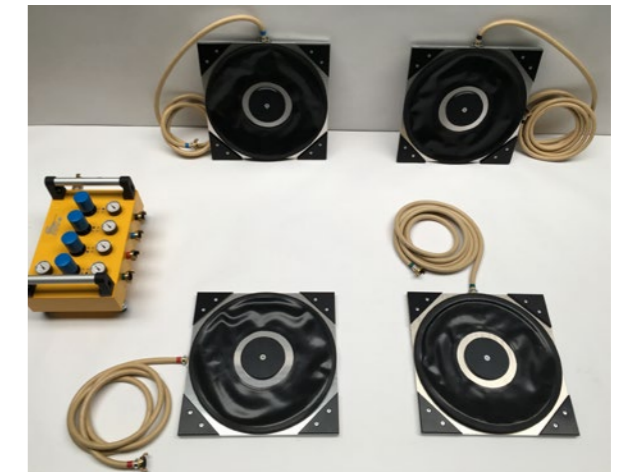
- Position or move heavy machinery inside a factory
- Transport between production stations
- Place sensitive CT scanners into a facility
- Move transformers in a dismantling facility
- Move/position big containers
- Position fragile (antique) objects or artwork
- Move boats into a dry dock for maintenance
- Position and move big tunnel drills
- Move and position equipment in data centres

The purpose of this system is to use it for less frequent movement of objects and is ready to use straight out of the box. Just connect it to your facilities air supply and go! It takes up very little space when compared to alternative transport methods and can therefore be stored very easily. The modular system consists of air casters, mounted on support plates with an air inlet, air regulator unit in a control box, air hoses with couplings and an instruction manual. In order to guarantee maximum stability, at least three (but preferably four) air casters should be placed underneath the load. The air regulator ensures that the compressed air is correctly delivered to all the air casters to compensate for any uneven weights above and to move the load safely.

For example:
One single modular system with four air casters can transport an object weighing 26,000 lbs priced at a little over 6,000 US Dollars per system.

The system can be made with B-Type air casters in different sizes with matching air regulators that fit the total air consumption. Depending on the weight that needs to be moved, the size, number of air casters and regulator is selected.

For objects weighing more than 9,000 lbs we recommend using external drives to control them correctly and safely. These can be found in this brochure under the section [Air Powered drives](#).

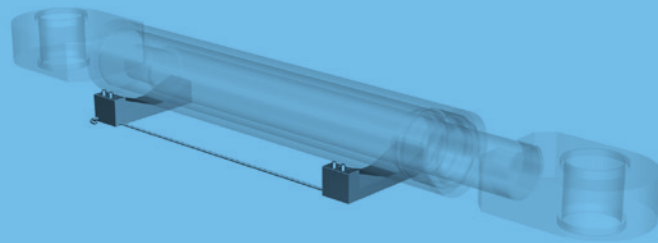


**Most commonly used
Modular Air Caster Systems:**

Type B		
Max. Capacity	Type	Air Casters
8,800 lbs	TS-8,8-B12N	4 x B12N
13,200 lbs	TS-13,2-B12N	6 x B12N
17,600 lbs	TS-17,6-B15N	4 x B15N
26,400 lbs	TS-26,4-B15N	6 x B15N
28,400 lbs	TS-28,4-B21N	4 x B21N
35,200 lbs	TS-35,2-B15HD	4 x B15HD
42,600 lbs	TS-42,6-B21N	6 x B21N
52,800 lbs	TS-52,8-B15HD	6 x B15HD
52,800 lbs	TS-52,8-B21HD	4 x B21HD
52,800 lbs	TS-52,8-B27N	4 x B27N
79,200 lbs	TS-79,2-B21HD	6 x B21HD
79,200 lbs	TS-79,2-B27N	6 x B27N
88,000 lbs	TS-88-B36N	4 x B36N
105,000 lbs	TS-105-B27HD	4 x B27HD
132,000 lbs	TS-132-B36N	6 x B36N
158,000 lbs	TS-158-B27H	6 x B27HD
176,000 lbs	TS-176-B36H	4 x B36HD
264,000 lbs	TS-264-B36H	6 x B36HD
352,000 lbs	TS-352-B48H	4 x B48HD
529,000 lbs	TS-529-B48H	6 x B48HD



Air Caster Beams



Specific properties:

BUILD HEIGHT	1 inch - unlimited
WIDTH	8 - 48 inch
LENGTH	18 inch - unlimited
LIFT	1/4 - 21 inch
CAPACITY	100 lbs - unlimited
AIR PRESSURE	15 - 60 psi

- Low building height to easily pick up and transport objects
- The system can both lift and transport the object
- Plug and play
- Can be applied for different types and shapes of objects
- No harmful exhaust gasses, just regular compressed air
- Small footprint so easy to store after usage

Typical applications:

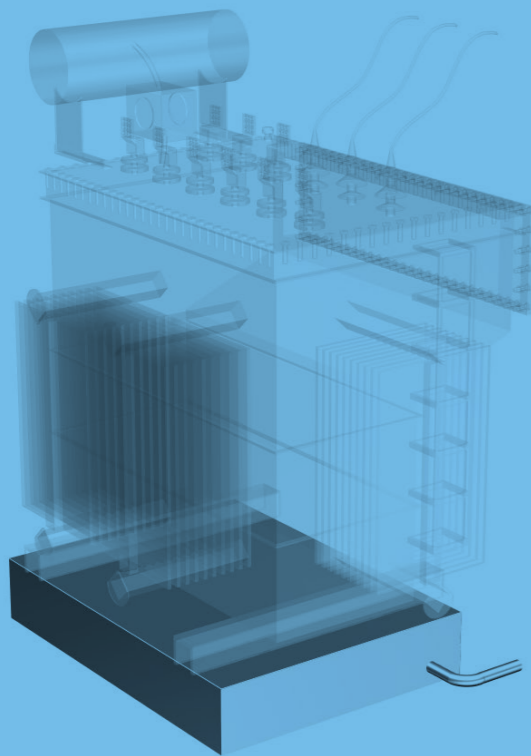
- Pick up standard or customer specific pallet or frames
- Move seating modules in sports arenas or theatres
- Place and position heavy parts in tight spaces for assembly on big ships
- Position or move heavy machinery inside the factory

Many industries deal with heavy equipment or objects that frequently need to be moved and have little space available underneath them. Because of the extreme low build height of minimum 1 inch they are ideal to (lift) and move different sizes of objects that can be picked up from underneath. A minimum of two beams can be used to transport different kinds of loads, more beams can be applied to handle larger loads or more complex shapes.

Air caster beams are rectangular shaped transport devices that contain a minimum of two air casters. The width is usually determined by the diameter of the air caster used, the length often varies. The beams can be equipped with wheels for unloaded movement. Optional lift cushions can be added to enable the beams to lift higher in order to pick up the load. Quite similar to a pallet truck. The air regulators can be installed within the beams or placed into an external cabinet for fine-tuning the air casters and activating the lift cushions.



Air Caster Transport Platforms



Specific properties:

BUILD HEIGHT	1 inch - unlimited
WIDTH	15 inch - unlimited
LENGTH	18 inch - unlimited
LIFT	1/4 inch - unlimited
CAPACITY	100 lbs - unlimited
AIR PRESSURE	15 - 60 psi

- High reliability
- No harmful exhaust gasses, just regular compressed air
- Low investment compared to other transportation methods
- Heavy objects can be operated by one single person
- Low floor pressure
- Plug and play
- Compact build, often smaller than the object itself
- Complete freedom of movement and very accurate positioning
- Customisation possible to fully meet the client's requirements

Typical applications:

- Move machinery on a dedicated platform between production stations in a factory
- Fully automatically position huge magnets in one of the world's biggest research institutes
- Move chassis of trucks and trains through a production or modification process
- Use an air operated pallet transporter to move pallets
- Move material to the production station
- Move large coils and complete transformers during production
- Exchange heavy castings, dies etc.
- Use lift tables to create an extra lift to feed objects into an assembly line
- Move finished equipment into testing centres

Each industry has different transportation needs in material handling. An air caster transport vehicle can be designed and built entirely to the client's specifications to move heavy or sensitive objects on a thin film of air. Air caster vehicles can replace expensive cranes, roller conveyors and forklifts, either completely or partially. The fact that you can move the air caster vehicle in every horizontal direction and accurately position them, makes them the ideal transport method to move and replace heavy components.

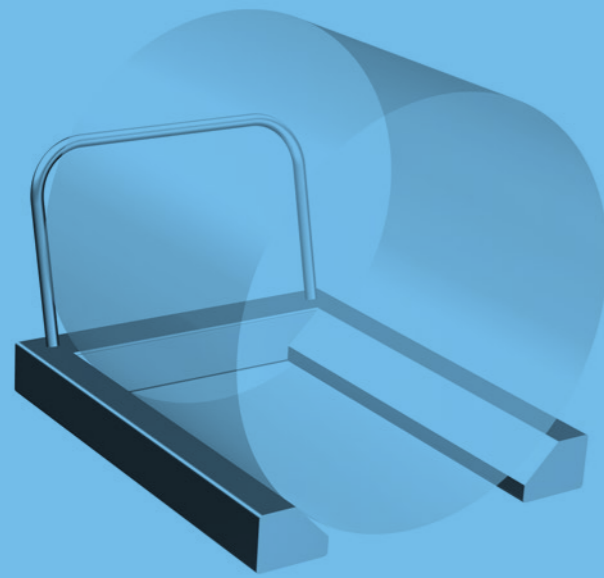
There are many different shapes and sizes available and the load can be picked up by the transport vehicle or directly loaded onto it. It is also possible to have a sub-frame or stillage underneath the object that can be picked up by the transport vehicle.

The air caster transport vehicles can be equipped with:

- Air powered driven wheels; no more manual movement
- Remote controls; to control the movement from a distance
- Automated guidance systems; to create an Automatic Guided Vehicle (AGV)
- Lift tables; to provide an extra high lift
- Master - Slave system; to enable cooperation between multiple vehicles
- On-board air supply; to make the vehicle self-sufficient



Air Caster Roll Transporters



Specific properties:

BUILD HEIGHT	2 inch - unlimited
WIDTH	15 inch - unlimited
LENGTH	18 inch - unlimited
LIFT	1/4 inch - unlimited
CAPACITY	100 lbs - unlimited
AIR PRESSURE	15 - 60 psi

- High reliability
- No harmful exhaust gasses, just regular compressed air
- Low investment compared to other transportation methods
- Heavy objects can be operated by one single person
- Low floor pressure
- Plug and play
- Compact build, often smaller than the object itself
- Complete freedom of movement and very accurate positioning
- Customization possible to fully meet customer requirements

Typical applications:

- Feed new paper rolls into a printing machine
- Move to the production site and unwind cable reels
- Move and rotate cable reels after production
- Move steel coils from production to the storage facility

The internal movement of rolls is usually both cumbersome and labour-intensive. Paper/metal/plastic rolls, cable reels, coils, and other types of round objects, can be easily moved using roll transporters on air casters. The roll transporters are an excellent alternative to forklifts or overhead cranes. Also the wheels of cars, trucks etc. can be transported using roll transporters. The greatest benefit is that the roll transporter is hardly any larger in size than the roll that needs to be transported.

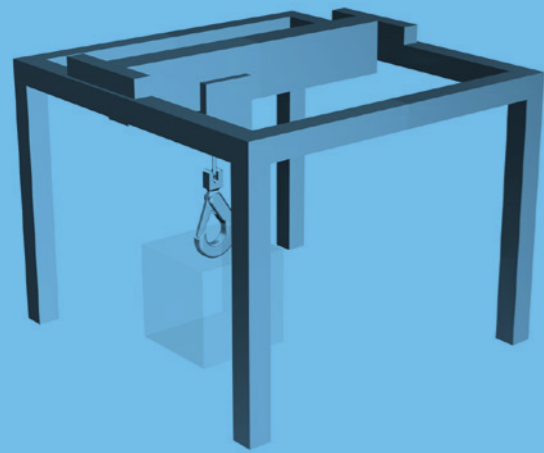
The roll transporter on air casters can be built to the client's specifications and makes it possible to move very heavy rolls, irrespective of the material and size of the roll. The rolls can be placed directly on the roll transporter or, thanks to variable forks and integrated lift cushions, can be picked up directly from the floor.

The air caster roll transporters can be equipped with:

- Power driven wheels; no more manual movement
- Remote controls; to control the movement from a distance
- Automated guidance systems; to create an Automatic Guided Vehicle (AGV)
- Master - Slave system; to enable cooperation between multiple vehicles
- Adjustable forks; to pick up different diameters of rolls directly from the floor
- On-board air supply; to make the vehicle self sufficient



Air Caster Mobile Cranes



Specific properties:

- No expensive structural changes needed to the building
- Small footprint of the crane
- Complete freedom of movement and very accurate positioning
- Heavy objects can be operated by one single person
- Plug and play
- No harmful exhaust gasses, just regular compressed air
- High reliability
- Customisation possible to fully meet the requirements

Typical applications:

- Move fragile lenses to the production station
- Use air caster gantry cranes to position objects in all directions X, Y and Z into a cleanroom

When loads need to be lifted up high or to be stacked onto each other air caster mobile cranes are the ideal solution.

Because these cranes operate on air casters they are not restricted to rails and have complete free horizontal movement. In this case transportation is possible in the X, Y and Z position. The low vibration characteristics of the air casters means that mobile cranes can transport the objects more steadily than gantry cranes on rails.



The air caster mobile cranes can be equipped with:

- Power driven wheels; to automate the movement of the vehicle
- Remote controls; to control the movement from a distance
- On-board air supply; to make the vehicle self sufficient



Air / Water Caster Turntables

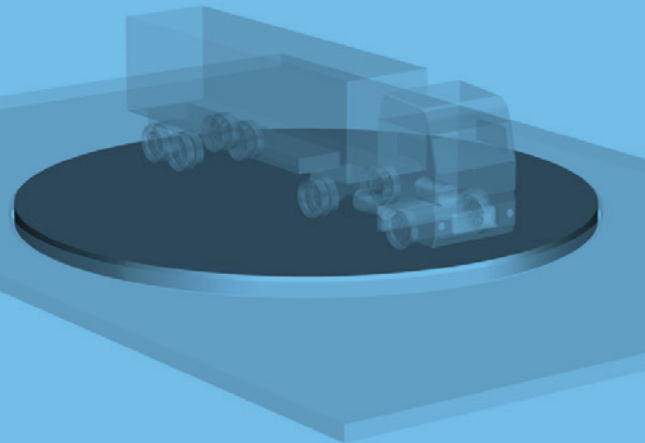
Specific properties:

BUILD HEIGHT	2 3/4 inch - unlimited
DIAMETER	23 inch - unlimited
CAPACITY	100 lbs - unlimited
AIR PRESSURE	15 - 60 psi
- NO FLOOR REQUIREMENTS -	

- High reliability
- Low maintenance
- Low build height
- Energy efficient
- Plug and play
- Customisation possible to fully meet the requirements
- Can be fully integrated into your current automation systems (PLC, DCS)

Typical applications:

- Store heavy offshore cable after production
- Turn trucks and trains around during production or in a distribution centre
- Feed parts into an assembly line by turning the storage buffer
- Turn vehicles around during shows and exhibitions
- To rotate equipment into an EMC testing area



The heavy vehicle industry often has the challenge of moving their products efficiently through the factory. For this purpose, an industrial turntable can be used. This is a system that uses air casters or water casters to rotate heavy objects. The turntable can be built to the client's specifications. The application possibilities are enormously wide ranging. Just think of rotating and turning trucks, trains and cars inside the plant. Industrial turntables using air/water casters offer an excellent solution for the storage of heavy marine cables after production.

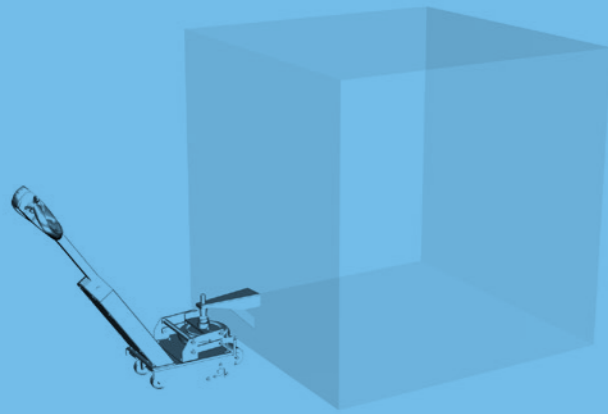
Turntables are manufactured with an aluminium, steel or wooden top plate placed onto a steel sub-frame. In this frame the air or water casters are mounted upside down so that they raise this top plate and create a film of air prior to rotating. A power drive motor rotates the table. Because the air/water casters 'float' the load there is little force needed to move the turntable. Due to the low building height, these turntables can be installed easily with little modification to your current infrastructure. The turntable can be built both into or onto the floor. Very little maintenance is needed because of the simple construction and low number of parts.

The air/water caster turntables can be equipped with:

- Power drive; to automatically rotate the turntable
- Remote controls; to control the movement from a distance
- Automated positioning; to automatically start and stop at the right position
- PLC/ DCS integration; to be operated fully automatically



Air Powered Drives



Specific properties:

- Very ergonomically because no manpower needed
- High reliability
- Low maintenance
- Heavy objects can be operated by one single person
- Plug and play
- The only exhaust gas is compressed air
- Customisation possible to fully meet the requirements

Typical applications:

- Connect standard external drives to safely and ergonomically move transportation platforms
- Connect drives to enable remote control of transportation platforms
- Use internal powered drives to control the platform in a safe and controlled way

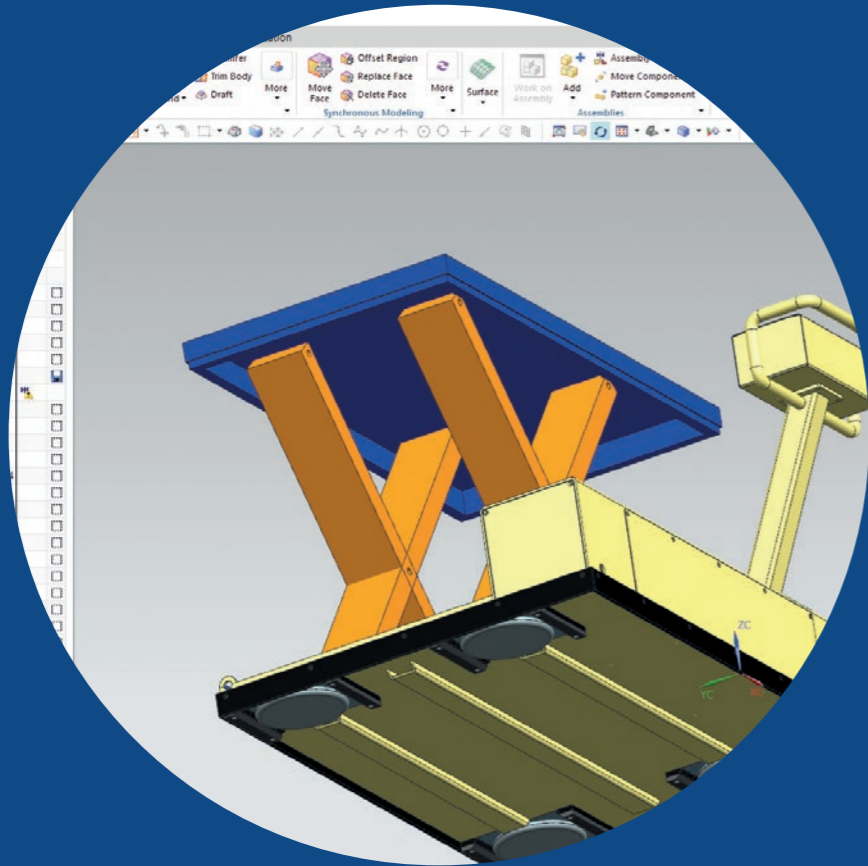
The movement on air casters can be compared to the movement on ice. It can take some force to overcome the initial inertia to start heavy objects moving, but once they are on the move controlling and stopping them also requires some power. The rule of thumb with air caster transportation is that above 9,000 lbs of weight we recommend to have a number of people available to control the load safely, or you can make use of external or internal power drives. The internal drives can be built into a system as an option. External power drives can be connected temporarily to move the objects and then stored again after use.

The attachable air power drive consists of a pneumatic drive motor, pneumatic actuator to connect the coupling and a control bar to control the speed and actuator. We also have power drives available that can be connected and then controlled remotely.

There is a standard type of external power drive available, modifications can be made on request.



Custom Made Engineered Solutions



Because Aerofilm Systems is solely specialised in air caster transport solutions we are always open for new applications. Both our engineering team and our customers continuously come up with new applications using air caster solutions.

Our design team makes use of the newest and best available in 3D design software, Siemens NX, to design projects from sketch to fully detailed production drawings. All necessary analyses are created in software before implementing the projects. All air caster transport systems are designed digitally in 3D first to make sure that we provide our customers with the right solution.

SIEMENS
Ingenuity for life

Floor & Compressed Air



In order to guarantee that the air casters function properly, there are just two requirements: an adequate air supply and a suitable floor.

Floor

The right kind of floor for air caster movement is characterised as being airtight, smooth and flat. An unsuitable floor can (temporarily) be improved to enable the air caster transport system to float. This can be done, for example, with metal or plastic sheets. Less suitable floors cause higher air use, friction and wear.

The ideal floor is mechanically power trowelled to a smooth, even finish. Any joints can be filled using a suitable silicone product.

If the floor is not level and you are handling heavy loads there is a risk that the object will drift. This can cause dangerous situations if you don't take the right precautions.

When you have a reasonably level floor you can make use of internal or external power drives to control and brake the load. We would recommend using power drives on loads above 9,000 lbs to be safe.

Below you can find an indication of the applicability of different types of floors. Where 1 is the optimum for air caster transportation and 10 is unsuitable.

GLASS	1
EPOXY FLOOR	1-2
GALVANIZED STEEL PLATE	1-2
HARDBOARD, PLASTIC, LINOLEUM	1-2
SPRAY PAINTED CHIPBOARD	1-2
CONCRETE FLOOR, IMPREGNATED	2
CONCRETE FLOOR, NOT TREATED	3-4
CONCRETE, MANUALLY TROWELLED	8-10
ASPHALT	10

Air

The basic principle of air caster transportation is that a thin air film is created between the air caster and the floor. To achieve this, you need to have sufficient air pressure and flow available at all times. The air needs to be dry and clean. Gauges have been mounted on almost all installations in order to control this supply.

Insufficient air supply results in higher friction, more wear and even failure to function.

Aerofilm Systems



About us

Aerofilm Systems designs, develops and manufactures **air casters** and air caster transport systems. This form of transportation is the ideal solution for moving light to very heavy objects in a safe, ergonomic and cost effective way. It is also ideal for sensitive and therefore often expensive objects because air casters create no vibration during moving.

Aerofilm Systems' activity in the air caster transportation field began more than 35 years ago, with the Dutch engineering company 'Ingenieurs-bureau van Brienen'. Since 1984 all air caster related activities have been transferred to Aerofilm Systems B.V.. We can deliver local expertise, advice and services.

Because air caster transportation is the company's sole business we have become experts in this field. We are working with a very competent team of designers, engineers and production specialists. The air caster systems are designed in-house and are either completely produced in our 16,000 square feet production factory in Eindhoven or assembled in our American facility.

Aerofilm Systems is the only company that produces both the Neoprene and Polyurethane air casters so we can provide you with the best advice for your transportation application.

Our locations

Aerofilm Systems is represented in the America's, UK and Germany with its three sister companies Aerofilm Systems Inc., Aerofilm Systems UK Ltd. and LS Luftkissensysteme GmbH. Thanks to an extensive network of distributors, the rest of the countries are covered and sales advice and service is always nearby.

Why Aerofilm Systems?

Due to the fact we already exist for more than 30 years, we have managed to build up a world-wide clientele. Each with its own internal transportation problem which is solved by our knowledge and experience.

Please visit our [website](#) for more information or call us with your internal transportation application.

USERS



AEROFILM SYSTEMS INC.

www.aerofilmsystemsinc.com

info@aerofilmsystemsinc.com

Tel: +1 317 804 9481

17408 Tiller Court

Westfield, Indiana

UNITED STATES

HEADOFFICE

www.aerofilmsystems.com

info@aerofilmsystems.com

Tel: +31 40 255 03 03

Adr. Mulderweg 16

NL-5657 EM Eindhoven

THE NETHERLANDS

LS LUFTKISSEN SYSTEME

www.luftkissensysteme.com

info@luftkissensysteme.com

Tel : +49 2821 7194 979

Siemensstraße 31

DE-47533 Kleve

GERMANY

AEROFILM SYSTEMS UK

www.aerofilmsystems.co.uk

info@aerofilmsystems.com

Tel : +44 20 8214 1008

160 London Road

Barking

Essex IG11 8BB

UNITED KINGDOM