AIRFLOAT

Standard Operating Manual

Utility Platforms

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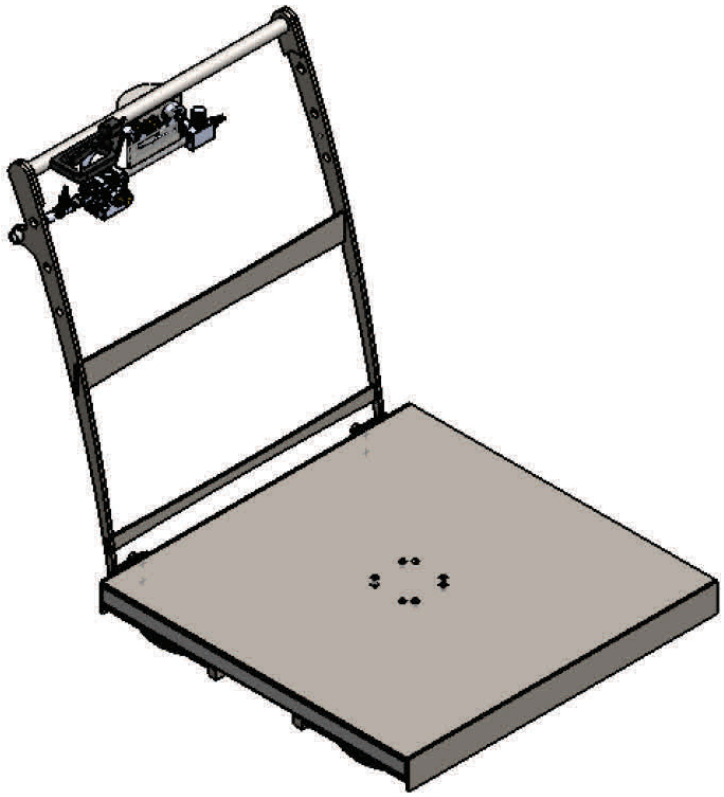


Your Airfloat utility platform is a revolutionary product that presents a new approach to material handling. Rather than overpowering friction, Airfloat platforms eliminate friction by supporting loads on a thin film of air. Designed primarily for operation with compressed or "shop" air, at pressures of 60 to 100 psi, the platforms will efficiently support large loads with very low airflow.

The rated capacity is based upon operation on a smooth surface with the load centered on the platform. Poor floor surfaces or greatly off-center loads will reduce platform capacity and increase the force required for movement. The instructions found in the following pages will assist you in matching airflow requirements with surface and load.

The unique frictionless operation feature of these platforms enables one person to move loads weighing up to 8,000 or 12,000 lbs., depending on model. Care must be exercised in controlling the movement of such loads. Movement over slopes, around corners, and braking effort may sometimes require more effort than one person can exert.

I. Setup

Damage could occur to the air bearings if the platform is carelessly forked from the bottom.

Utility platforms are shipped fully assembled with the air bearings installed. If an accessory operator handle is included, the handle will normally be unbolted and laid flat for shipping. The deadman valve comes preassembled on the handle. The handle simply attaches to the bolting pads, located at the back of the platform, with the bolts provided.

Damage could occur to the air bearings if the platform is carelessly forked from the bottom. It is therefore recommended that the platform be lifted or slid by hand off the shipping crate and set onto a clean area of floor.

II. Required Air Supply

Required Air Pressure

The large lifting area of the air bearings permits carrying of a load with surprisingly low air pressure. The air pressure required is proportional to the load being carried. For the worst condition, a platform loaded to capacity with the load off-center would require at least 40 psi at the inlet to the platform. This will normally require at least 50 to 60 psi at the source to overcome pressure drop in the hose.

Accessories such as an air-actuated guide wheel or a lift deck normally will require more pressure. There is no maximum pressure limit. The air bearing cannot be damaged by supplying excessive air pressure.

Continued...

Required Air Pressure (Cont.)

Utility platforms are normally directly connected to the building compressed air supply in manufacturing plants, which generally range between 80-120 psi. A pressure regulator for the supply air is not required, but it would be beneficial if there are large variations in the supply pressure. If provided, it should be a high-capacity type and have ports at least as big as the hose size.

Required Air Flow

The amount of airflow required to float a specific utility platform is determined mainly by the floor conditions. If the operating surface is ideal, the required airflow will be very low. As the surface texture becomes rougher, more airflow will be required. Friction-free movement requires adequate airflow. To determine the required airflow for a specific size of platform, first determine which floor condition listed below most closely describes the actual floor conditions.

Machine-troweled concrete is an example of a smooth floor.

- **Smooth Floor –** smooth steel, aluminum or plastic sheet, machine troweled concrete with a dense polished appearance, asphalt, rubber or vinyl tile with tight joints, un-textured linoleum.
- **Normal Floor** – steel with slightly textured mill scale, good concrete with a slight texture.
- **Textured Floor** – Steel plates with some flaky scale, slightly textured concrete or smooth concrete with minor pits and hairline cracks.
- **Rough Floor** – Broom-finished concrete or highway-type asphalt surfaces. Note: This surface is not suitable for air bearing use.

Use the chart below to determine the approximate airflow requirements for a specific utility platform. Since air bearing sizes may vary for special platforms, verify from the name plate tag which air bearings size is being used.

SCFM* Airflow Requirement per Platform				
		Floor Condition		
No. of Air Bearings	Air Bearing Diam.	Smooth	Normal	Textured
4	10 inch.	9	28	46
4	12 inch.	11	32	54
4	14 inch.	13	35	64
4	17 inch.	16	48	80
4	20 inch.	18	54	90

*SCFM = Standard Cubic Feet Per Minute

Required Air Flow (Cont.)

The approximate air compressor size required for continuous operation of the platform may be determined from the following equation:

$$\text{Required Compressor Size (HP)} = \frac{\text{Required Airflow from Chart (SCFM)}}{4}$$

If an air receiver is included in the system, a much smaller air compressor may be adequate for short intervals.

III. Required Size of Air Supply Hose

The required diameter of the air supply hose to your utility platform will vary according to hose length (see chart below). In general, the longer the air hose, the greater the required diameter.

Quick disconnects should offer the minimum possible resistance to flow. Use straight-through type when possible. One-way shut-off type may require over sizing to the next available size. The use of two-way shut-off disconnects should be avoided.

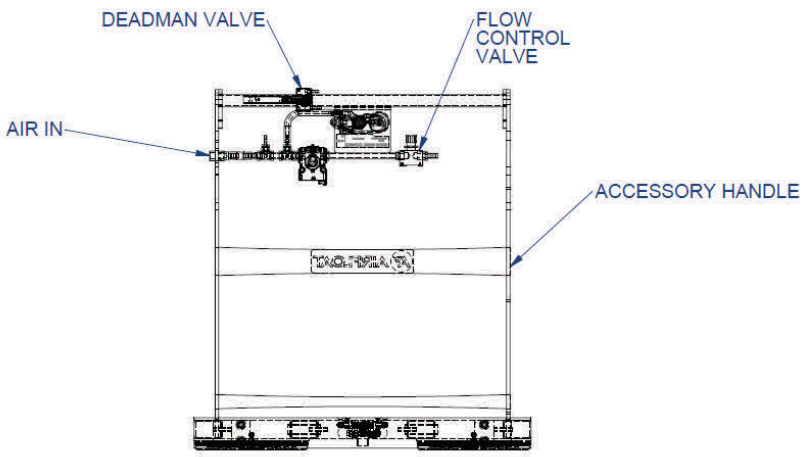
Minimum Recommended Hose I.D.* for Four Air Bearing U-Platform

No. of Air Bearings	Air Bearing Diam.	Recoil Hose Size	Hose Length		
			0 - 25’	26’ - 50’	51’ - 100’
4	10 inch.	3/8”	3/8”	1/2”	1/2”
4	12 inch.	3/8”	3/8”	1/2”	5/8”
4	14 inch.	3/8”	1/2”	1/2”	5/8”
4	17 inch.	3/8”	1/2”	5/8”	3/4”
4	20 inch.	1/2”	1/2”	5/8”	3/4”

* Based on a 90 PSI supply pressure and operating on a textured floor as described in table on previous page to give acceptable operation.

IV. Operating Instructions

Two valves on the utility platform control airflow to the air bearings (see below). Mounted on the operator handle is the deadman valve. Located on the platform, at the rear, is a flow control valve. To adjust these valves, the maximum anticipated load should be set on the platform.



Although utility platforms will carry an off-center load, for best operation, try to keep the load centered over the air bearings. All air bearings will then share the load equally. With the flow control valve closed, fully squeeze the deadman lever. Now slowly open the flow control valve until the platform lifts and floats freely. Excess airflow cannot damage the platform, but on a very smooth surface, may cause oscillations. This oscillation or "hop" will fade as the airflow is reduced. Unless the floor or load conditions change, no further adjustment of the flow control valve will be required.

Although utility platforms will carry an off-center load, for best operation, try to keep the load centered over the air bearings.

Although virtually friction free on a good floor surface, because of inertia, the force required to start a load moving can be great. The same amount of force is also required to stop the load. To avoid accidents, caution and common sense must be used when moving heavy loads.

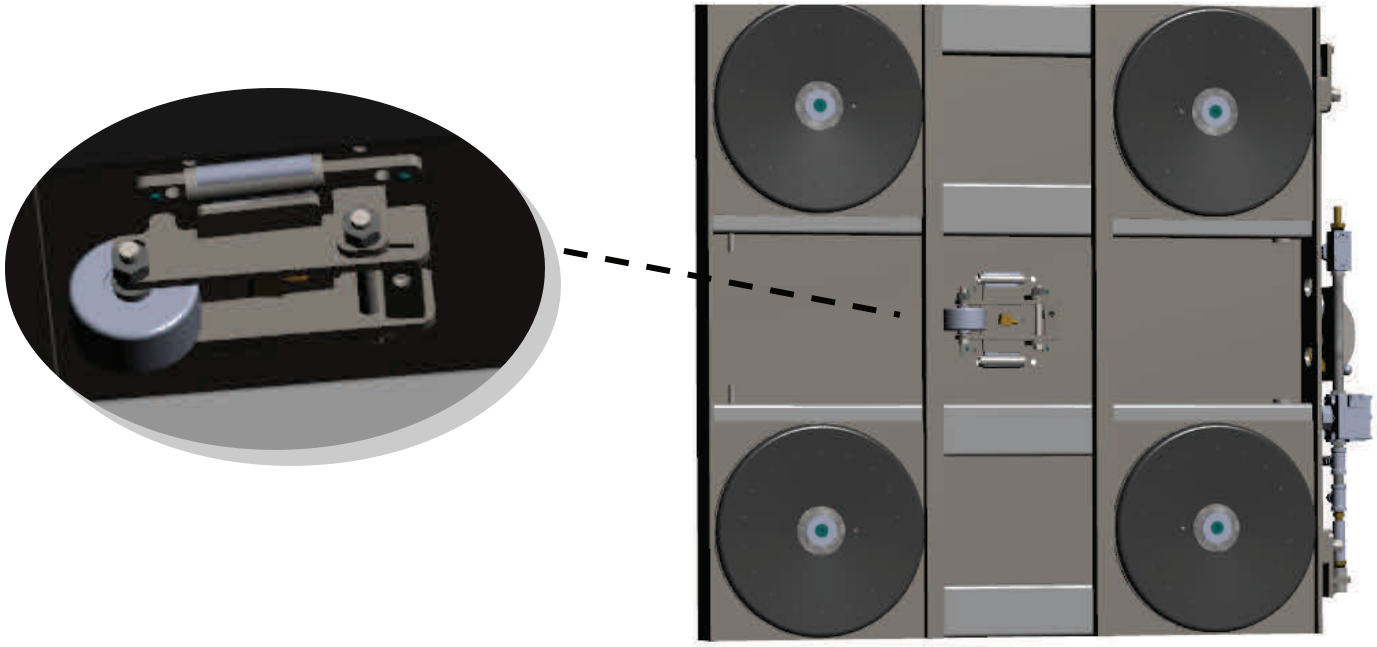
If the utility platform must also operate without a load, the deadman valve must be throttled or severe hopping will result. Airfloat platforms are designed to carry heavy loads and sometimes do not operate well without a load. When unloaded the air bearings operate with very low internal air pressure. Often two diagonally located air bearings will inflate and lift the platform before the remaining two have a chance to inflate. If this happens, try giving the air bearings a blast of air by briefly fully opening the deadman valve. This will help "pop out" the air bearing diaphragms and should inflate all of the air bearings. Once inflated the air can be turned down.

IV. Operating Instructions (Cont.)

Guide Wheels

A guide wheel is a device which greatly improves the maneuverability of the utility platform. It is normally located under the center of the platform. The wheel is forced against the ground and prevents the platform from drifting sideways. The platform will easily move in the direction in which the wheel is pointing. The platform may also be pivoted about the guide wheel to aid in steering. There are two types of guide wheels available:

- **Spring-Loaded Guide Wheel** – This type of wheel is always forced against the floor by steel springs. Omnidirectional movement is lost.
- **Pneumatically Retractable Guide Wheel** – This type of wheel maintains contact with the floor by means of an air bladder. The wheel may be retracted for omnidirectional movement. A lever valve and pressure regulator are normally provided for actuation of the wheel.



Bottom of utility platform

VI. Flooring Requirements

The floor condition is an essential and integral part of any successful air film transport system. New installation or existing floor repair methods for air bearing use are generally different from those found in a typical plant or warehouse. Airfloat designs, manufactures, and tests our air bearings to the floor requirements listed below. Compliance to these floor requirements will ensure that your air bearing system operates at its optimum performance levels for which it was designed.

Airfloat air bearings are designed to operate on smooth, machine-troweled concrete floors, or other floor types with better or like finishes.

Flatness

Floor flatness refers to the length and amplitude of waviness, humps, bulges, ridges, gullies, troughs or depressions. Floor undulations considered here must be non-abrupt with well rounded edges. Abrupt floor irregularities must be repaired or avoided. Ways to navigate cracks, expansion joints, holes, seams, etc. are discussed further below in this manual. Airfloat air bearing equipment is engineered to operate on floors that meet the following flatness specification:

Deviation under straight edge (inches)	1/16	1/8	1/4	3/8
Length of straight edge (feet)	1/2	3	10	12

Chart 1

Chart 1 (above) lists allowable depression deviations under various lengths of straight edges laid anywhere on the floor surface where the air bearing transportation system is intended to operate. Diagram 1 (below) illustrates the relative floor flatness of any given location in the air bearing equipment operating area.

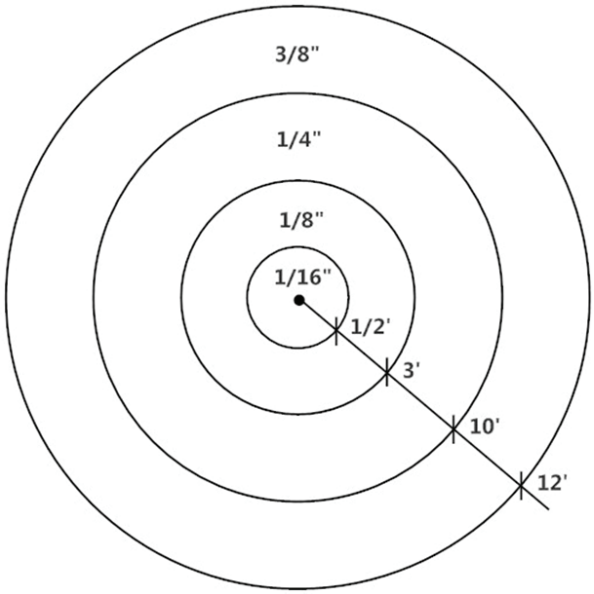


Diagram 1

Levelness

The levelness of a floor does not affect the air film produced by an air bearing and therefore does not degrade its performance. Floor levelness is only considered within the context of the overall control and maneuverability of the air bearing transport system.

For manually operated equipment, it is recommended that the floor not exceed a slope of 1% in any 10 foot run (a total of 1/8 inch rise in any 10 feet). For power driven or assisted equipment, it is required that the floor not exceed a slope of 2% in any 10 foot run (a total of ¼ inch rise in any 10 feet). See Diagram 2 in which A = rise and B = run.

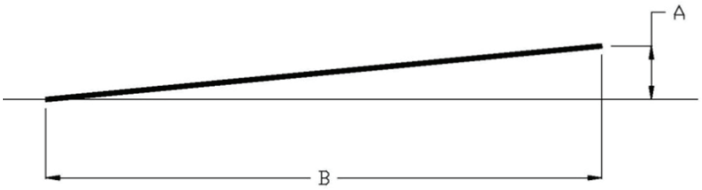


Diagram 2

Please note that unleveled floors will allow an air bearing transport system to drift along the floor grade if a guide wheel or power drive is not provided.

Surface Texture

Air bearings operate with a paper-thin film of air between the air bearing diaphragm and the floor. The degree of floor surface smoothness is of paramount importance. Airfloat air bearings are designed to operate on smooth, machine-troweled concrete floors, or other floor types with better or like finishes.

Porosity

Our equipment is designed for efficient operation on non-porous floors. Air bearings make a floating pressure seal with the floor. A porous floor wastes air through the pores of the floor surface which degrade the pressure seal.

Cracks and Expansion Joints

Hairline cracks are generally acceptable for air bearing use. As cracks widen, they must be filled and sealed to avoid air loss.

If at all possible, expansion joints should be avoided in the path of air bearing movement. If unavoidable, the joint should be filled with a backer rod, finished with a flexible epoxy and sanded flush to blend with the rest of the floor.

Projections

Any floor projections such as anchor bolts or cover plates should be finished flush with the floor surface. Blind holes with a diameter less than ¾” will work acceptably with air bearing systems, but should be filled if not used.

Bridge and Ramp Transitions

A bridge or ramp can be used to transition from one surface to another or navigate over obstacles. Typically only light gauge sheet metal is needed to bridge seams, cover floor grating, or ramp to differing floor materials. Please note that bridge and/or ramps must be longer than the diameter of their bearing so that the bearing only transitions over one edge at a time. Its is recommended that a very slight break be placed two inches behind the leading and trailing edges of the sheet metal to help keep the edges in uniform contact with the floor.

Sheet Material Overlays

Overlays are typically used in temporary rigging moves as they are the most cost effective way to achieve floor compliance over rough or porous floor surfaces. The most common materials used for overlays are sheet steel, plastic, hard tempered Masonite, and non-textured linoleum. The overlay material thickness should not exceed 1/32" to ease transition on to the overlay. When thicker overlay materials are required, they may necessitate the use of a ramp, which can be created by breaking the edge of the overlay material or by taping the leading edge with a thinner material. Overlay selection needs to consider subsurface conditions. Please consult with the factory.

Please note that in some instances, Airfloat may have the ability to design air bearing transport systems which can be specially engineered to operate on floor conditions outside the parameters of the requirements listed in this manual. Again, please consult with the factory for more information.

VII. Maintenance

Utility platforms require very little maintenance. The air bearings should be periodically inspected for tears and dirt build-up. The air bearings may be cleaned with any household cleaner. If the use of a solvent is required, either mineral spirits or naphthalene may be used.

If the platform has fixed-mounted air bearings, the platform must be turned over for inspection and cleaning.

If the platform is provided with tray-mounted air bearings, the bearings may be removed for inspection and cleaning without lifting or inverting the platform. Simply remove the air bearing retainer clip at each air bearing. Swing out the tray pull tabs and pull out the air bearing assembly.

To prevent lengthy down time due to air bearing failure, it is recommended that a minimum of one air bearing should be purchased as a spare part.

If the platform is equipped with wheels and casters, lubricate wheels, axles, and all other moving parts periodically.

To reorder a part, please call **1-800-888-0018** and ask for the Parts Department.
If possible, please have your Airfloat serial number handy for reference.

ALIGN PRODUCTION SYSTEMS

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For any claim under warranty, APS may elect to repair or replace the defective component or components. All claims for warranty must be accompanied by a Return Goods Authorization number, which may be obtained from APS. This warranty does not cover, and APS is not responsible for, any labor or other expense for inspections, removal or reinstallation of components or products.

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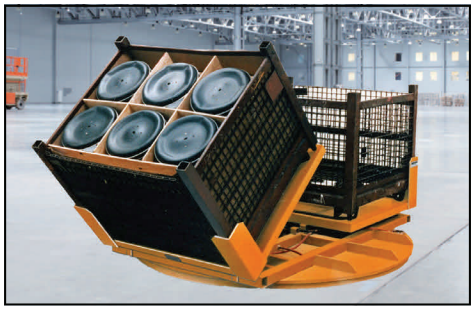
Align Production Systems Brand Lineup

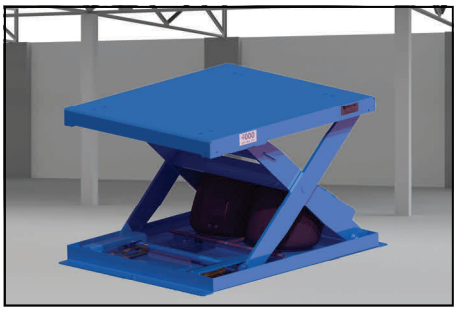
Airfloat

Silvestrini NA



Axial Industrial Turntables

Tecbo Tooling



Safebilt

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