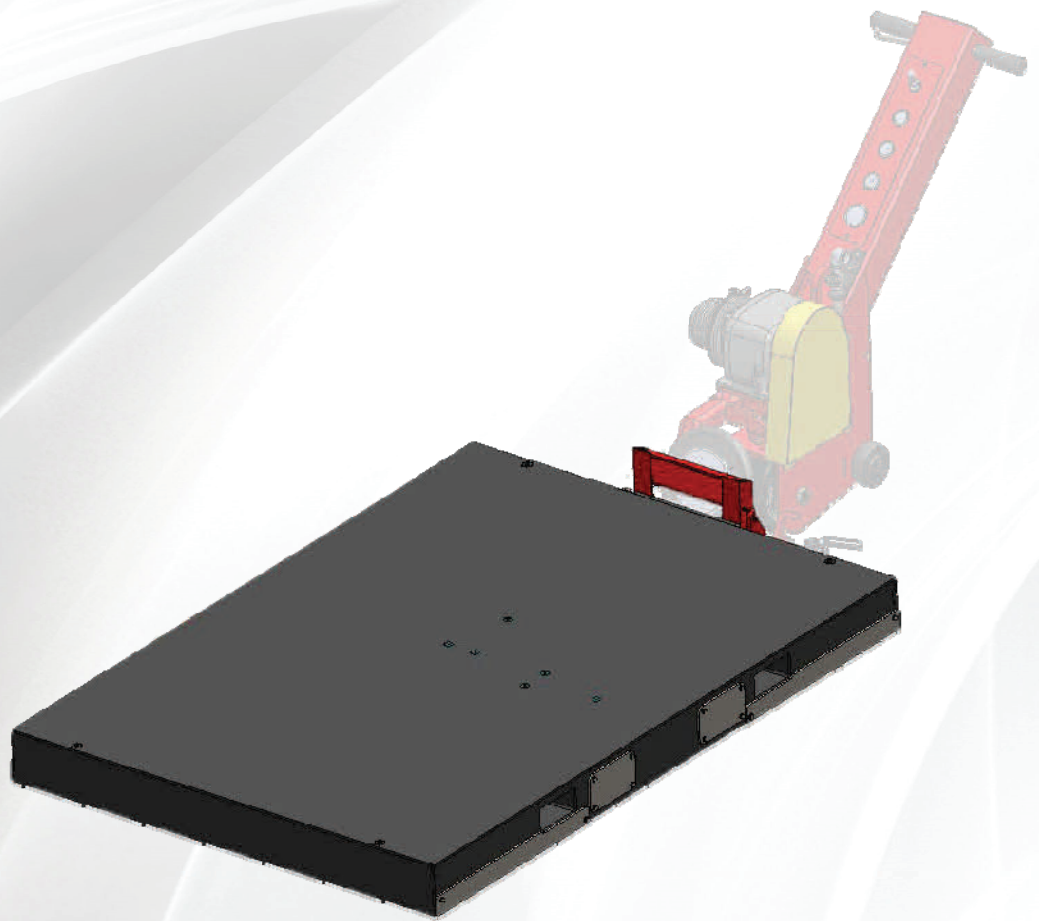




## STANDARD OPERATING MANUAL AIR BEARING PLATFORMS



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## I. DESCRIPTION OF EQUIPMENT

Airfloat air bearing platforms are load-carrying structural steel platforms equipped with air bearings, plumbing and controls. In operation, a continuous flow of air inflates the air bearings, lifting the platform free of the floor and allowing virtually frictionless movement of the load. Please read the following instructions to become familiar with the construction and operation of this equipment.

### INTRODUCTION

**Construction**— Airfloat platforms are fabricated from standard-angle rectangular tubing and plate. The end channels and centrally located bars rest on the floor and carry the load when the air is off. The use of rectangular tubing for the core section gives rigidity, allowing loads to be carried with a minimum of platform deflection. In addition to providing structural rigidity, the rectangular tubing provides a second important function: the ends of each tube are welded airtight to provide sealed chambers. An air line from each bearing inlet is connected to one of the tubes, which then functions as an accumulator to dampen possible pressure fluctuations.

**Caution:** If it is necessary to make modifications or attachments to the platform, avoid drilling or burning holes in the rectangular tubing. If it is impossible to avoid a tube, openings must be sealed to prevent air leakage.

Holes for chain hooks are provided at each end to allow for lifting. Avoid lift truck handling from the sides or control end as damage may result to the air bearing diaphragms or control valves.

Inspect the equipment for possible damage in shipment or unpacking. Check especially for cuts or damage to air bearing diaphragms.

**Air Bearing Attachment** — To allow easy replacement and/or servicing, the air bearings are mounted on slide-out trays. Information is given in sections VII. and VIII. of this manual if it becomes necessary to replace a bearing.

### CONTROLS

Most Airfloat platforms are designed for operation with plant air systems where pressures may range from 60 to 110 psi. Where pressure regulation is required for specific controls or accessory equipment, regulators will be installed on the platform by the factory. Air bearing controls include individual flow control valves for each air bearing and a main ON-OFF ball valve. To set air flow, close the ON-OFF valve and open each air bearing control valve 1/2 turn. Open ON-OFF valve fully open. If all bearings inflate, give equal lift, and the load is easily moved, the volume of air may be reduced with the ON-OFF valve. If the air bearings inflate but the load is difficult to move, increase each individual flow control valve setting 1/2 turn. Repeat until load is easily moved.

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



Note: If bearings fail to inflate on initial usage, open individual flow control valves to fully open. Open the main ON-OFF ball valve fully open to give the air bearings a large surge of air. After inflation, airflow may be reduced to normal operating requirements.

**Guide wheel operation** — To operate guide wheel, activate toggle valve located on the left-hand side of the front of the platform or on the power tugger.

**Deadman control** — Actuating a squeeze lever in the right-hand handle bar will provide pilot air to a pilot-actuated valve (usually mounted on the platform). This will cause the valve to open and provide air to the air bearings, resulting in their inflation. Inversely, releasing the lever will result in the platform settling to a rest condition.

**Maintenance** — The platforms have only a few moving parts and require very little maintenance. If equipped with guide wheels or casters, lubricate wheel and axles periodically. Periodic inspection and cleaning of the bearing diaphragms will ensure efficient performance.

## II. AIR SUPPLY

It is important that an adequate volume of air be supplied to the platform. The table below shows the volume required for operation on a smooth surface, and the hose size required for that flow.

| Model No.                  | Air Bearing Ø      | Supply Line (I.D.)   | Average Flow           |
|----------------------------|--------------------|----------------------|------------------------|
| AF030-0001 —<br>AF030-0028 | 17 in.<br>(432 mm) | 1/2 in.<br>(12.7 mm) | 48 CFM<br>22.7 L/sec.  |
| AF030-0029 —<br>AF030-0058 | 24 in.<br>(610 mm) | 3/4 in.<br>(19 mm)   | 66 CFM<br>31.1 L/sec.  |
| AF030-0059 —<br>AF030-0090 | 30 in.<br>(762 mm) | 3/4 in.<br>(19 mm)   | 85 CFM<br>40.1 L/sec.  |
| AF030-0091 —<br>AF030-0130 | 36 in.<br>(914 mm) | 1 in.<br>(25.4 mm)   | 100 CFM<br>47.2 L/sec. |

Note: Airflow requirements for air bearings vary greatly with the quality of the floor. Under excellent conditions, it may be possible to use one hose size smaller than shown. If unsure of compressor capacity, multiply compressor horsepower x 4 to obtain an approximate capacity (CFM).

## AIR SUPPLY (CONT.)

Connect main air supply to Airfloat platform.

Note: OSHA requires a safety excess flow check valve for hoses larger than 1/2" I.D. The check valve will shut off air flow in the event of a severed hose.

Operate the platform per the controls instructions given in section I (p. 4-5).

If the load is very tall, the greatest stability can be achieved when individual flow controls are opened completely and the main valve is throttled. This setting, however, will not work with off-center loads.

## III. 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.

### 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 (next page) illustrates the relative floor flatness of any given location in the air bearing equipment operating area.

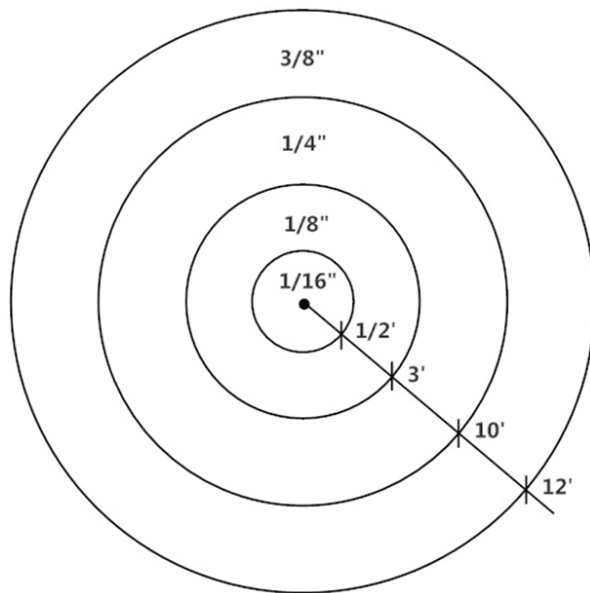


Diagram 1

## 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 1/4 inch rise in any 10 feet). See Diagram 2 in which A = rise and B = run.

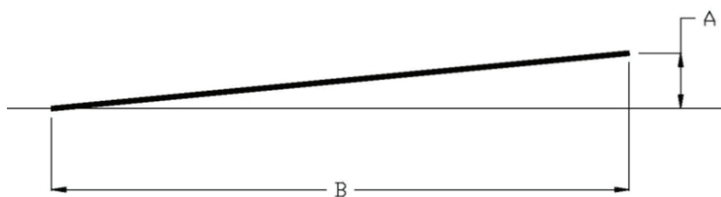


Diagram 2

Please note that unlevelled 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.

## FLOORING REQUIREMENTS (CONT.)

### 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  $\frac{3}{4}$ " 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. It 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  $\frac{1}{32}$ " 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.



## IV. TROUBLE SHOOTING

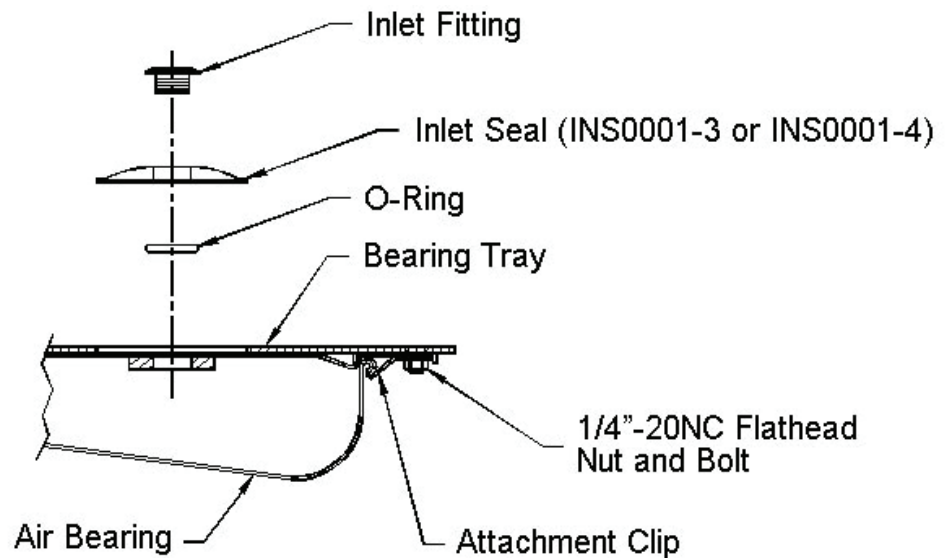
| Problem                                          | Cause                                                        | Remedy                                                              |
|--------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------|
| Load is difficult to move                        | Load is too heavy                                            | Try lighter load                                                    |
|                                                  | Surface too rough for the air supply (insufficient air flow) | Test on smooth surface to verify                                    |
| One corner of the load is low or drags           | Too much restriction to that bearing                         | Increase flow control valve setting                                 |
|                                                  | Torn or damaged diaphragm                                    | Replace bearing                                                     |
|                                                  | Dirt or object clinging to diaphragm                         | Clean diaphragm                                                     |
|                                                  | Bearings over a hole or porous floor section                 | Test on good surface to verify                                      |
|                                                  | Low corner more heavily loaded than others                   | Increase air flow to low corner or reduce flow to other corners     |
|                                                  | Platform not centered under load contact surface             | Center platform                                                     |
| Platform tips or tends to ground out on one edge | Low corner more heavily loaded than others                   | Increase air flow to low corner or reduce air flow to other corners |
| Load rocks                                       | Individual flow controls too restricted                      | Open individual flow controls and reduce inlet pressure             |
| Load hops                                        | Excess air is being supplied                                 | Decrease air flow                                                   |

## V. SPARE PARTS

| Platform Model Number   | Air Bearing Part Number | Inlet Seal Part Number |
|-------------------------|-------------------------|------------------------|
| AF030-0001 — AF030-0028 | H-0017                  | INS0001-3              |
| AF030-0029 — AF030-0058 | H-0024                  | INS0001-3              |
| AF030-0059 — AF030-0090 | H-0030                  | INS0001-3              |
| AF030-0091 — AF030-0130 | H-0036                  | INS0001-4              |

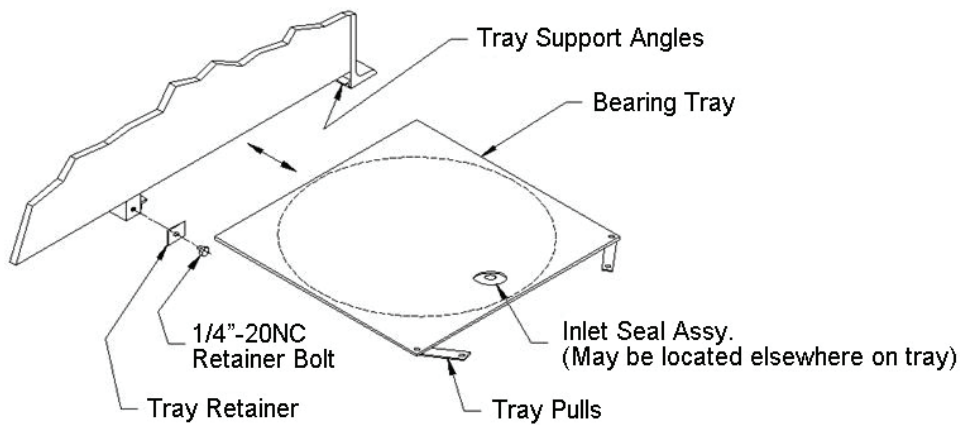
To reorder a part, please call **1-800-888-0018** and ask for the Parts Department.  
If possible, please have your Airfloat serial number handy for reference.

## VI. AIR BEARING REPLACEMENT



1. Remove tray retaining bolt and slide bearing tray from under platform.
2. Remove bearing from tray by loosening/removing attachment clips.
3. Remove inlet fitting and the inlet seal and O-ring will come out as an assembly. Clean and inspect inlet seal diaphragm for cuts or tears. Install seal assembly into new bearing.
4. Position new bearing on tray by centering inlet seal in 3" hole in bearing tray.
5. Replace attachment clips and replace bearing under equipment. Replace tray retainer and bolt to complete bearing replacement.

## VII. BEARING TRAY INSTALLATION



1. Before replacing bearing, make sure floor is clean and free of debris.
2. Remove tray retainer.
3. Insert end of tray (side opposite tray pulls) above tray support angles and slide completely under platform. Ensure end of bearing tray is firmly seated against the tray stops and the inlet seal is in contact with the inlet tube/plate.
4. Replace tray retainer and retainer bolt to hold bearing in proper location.

## LIMITED WARRANTY

Align Production Systems (APS) warrants all of its products to be free of defects in material and workmanship for a period of one (1) year from date of shipment to the original purchaser or 2,000 operating hours, whichever comes first, provided purchaser gives APS prompt notice of the alleged defect(s) and, if requested by APS, returns the defective items, freight prepaid (F.O.B. APS's plant in Decatur, Illinois). THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ALL OF WHICH ARE EXPRESSLY DISCLAIMED.

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.

This warranty does not cover, among other things, damages resulting from foreign matter or water, negligence, accident, unreasonable use, abuse or misuse, alterations not authorized by APS, failure to provide reasonable and necessary maintenance or failure to follow operating instructions or load limits. IN ADDITION, IN NO EVENT SHALL APS BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES, WHETHER OR NOT IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

APS makes no representation that the product complies with local, state or federal safety/product standards codes. If the product fails to comply in any way with those codes, it shall not be considered a defect in materials or workmanship, and APS shall not be liable for any damages resulting from noncompliance. This limited warranty is provided to the original purchaser (meaning the original end user) and is nontransferable. This limited warranty constitutes the complete and final agreement regarding APS warranty obligations for the product.

## ALIGN PRODUCTION SYSTEMS BRAND LINEUP



Airfloat



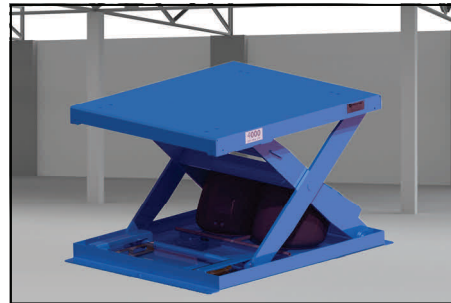
Silvestrini NA



Axial Industrial Turntables



Tecbo Tooling



Safebilt