



## OPERATION MANUAL



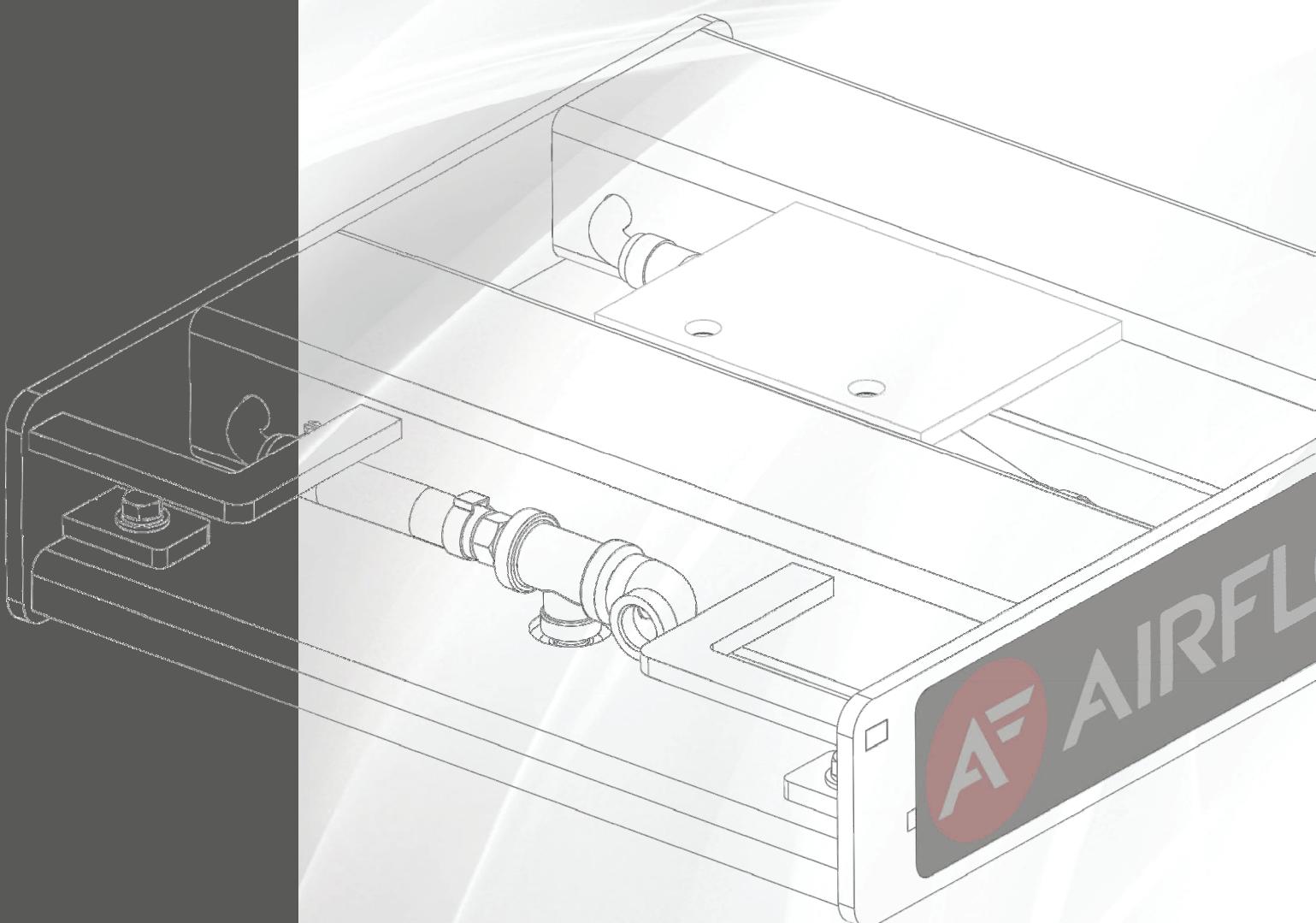
# AIRFLOAT

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## STANDARD OPERATING MANUAL AIR BEARING SKIDS & SYSTEMS



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## I. SUGGESTIONS ON START-UP



For operator video tips, visit  
[www.airfloat.com/videos](http://www.airfloat.com/videos)

Or visit our YouTube channel:  
[www.youtube.com/airfloat](http://www.youtube.com/airfloat)

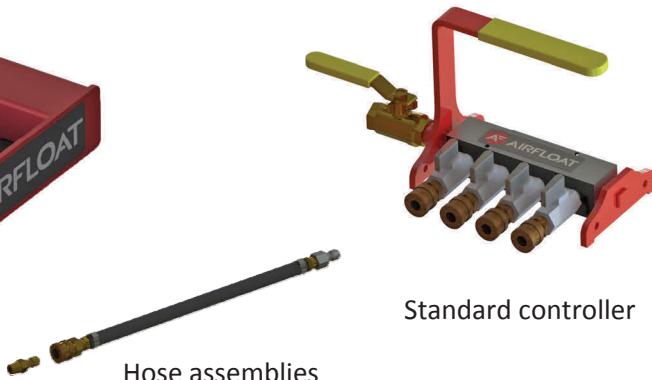
- A. Before operating your Airfloat equipment, please thoroughly read this manual. We also highly recommend watching our online training videos (see sidebar).
- B. **Caution:** When removing from crate, carefully remove skids from crate and place on smooth, clean floor, free of any foreign objects.
- C. Inspect the equipment for possible damage in shipment or unpacking. Check especially for cuts or damage to air bearing diaphragms.
- D. Some skids are shipped with bearings removed and crated separately to avoid bearing damage. When applicable, install the air bearings by sliding the air bearing and tray assembly into the air skid frame at the opening provided. Fasten the tray in place with the retainer bolts. Connect the short hose from the inlet tee to the air skid chamber pipe and secure with the worm gear clamp. See page 9 for more info.
- E. **Note:** A Styrofoam spacer is used to protect the diaphragm in some shipments, and must be removed. Remove any tape residue left by the attachment tape.
- F. Please review the information on skid placement under the load, air flow, and flooring contained on the following pages.

## EQUIPMENT

Your equipment may include a combination of the following components:



Steel air skid(s)



Standard controller



Hose assemblies



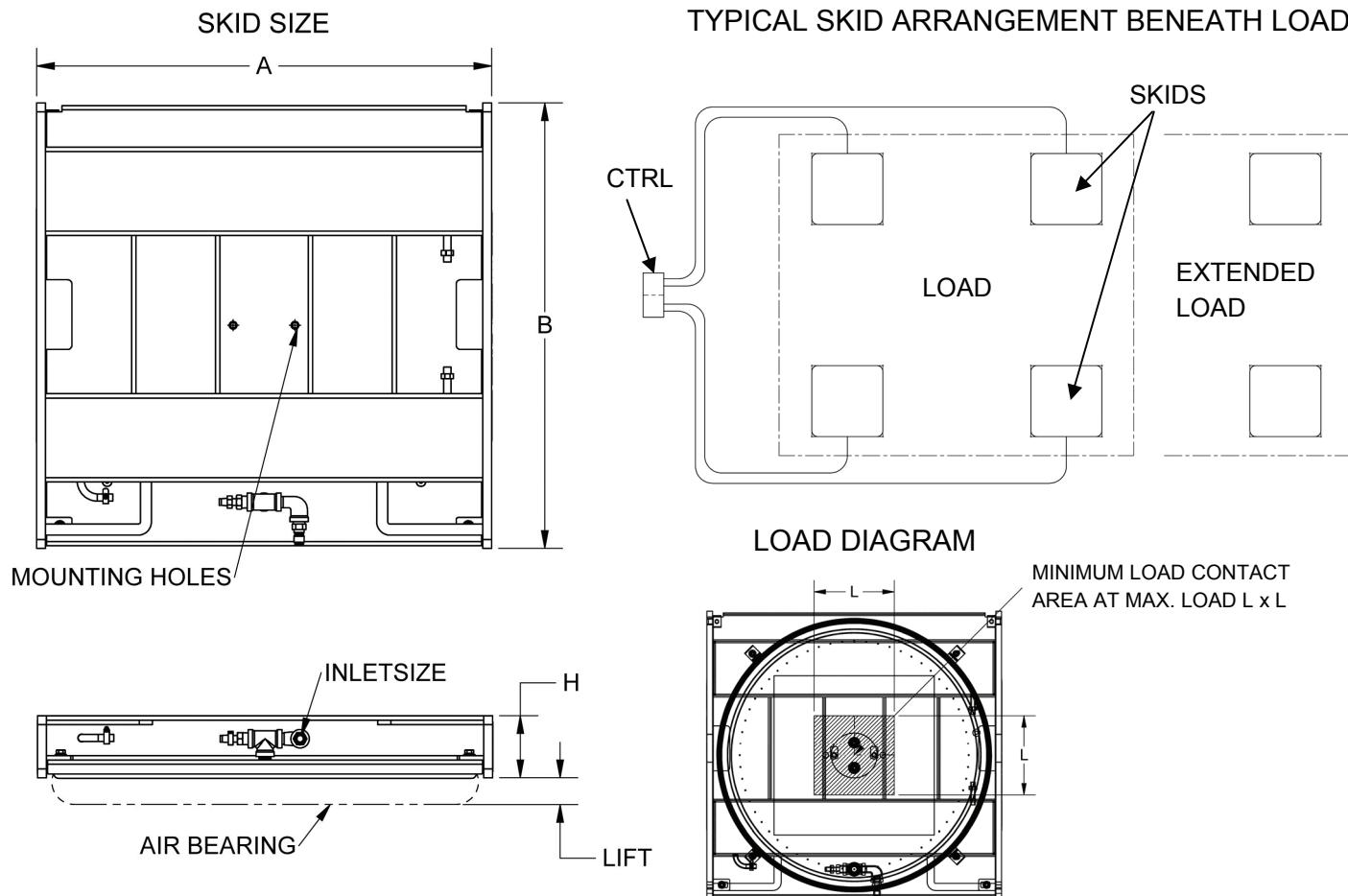
Precision controller



Deadman Pendant

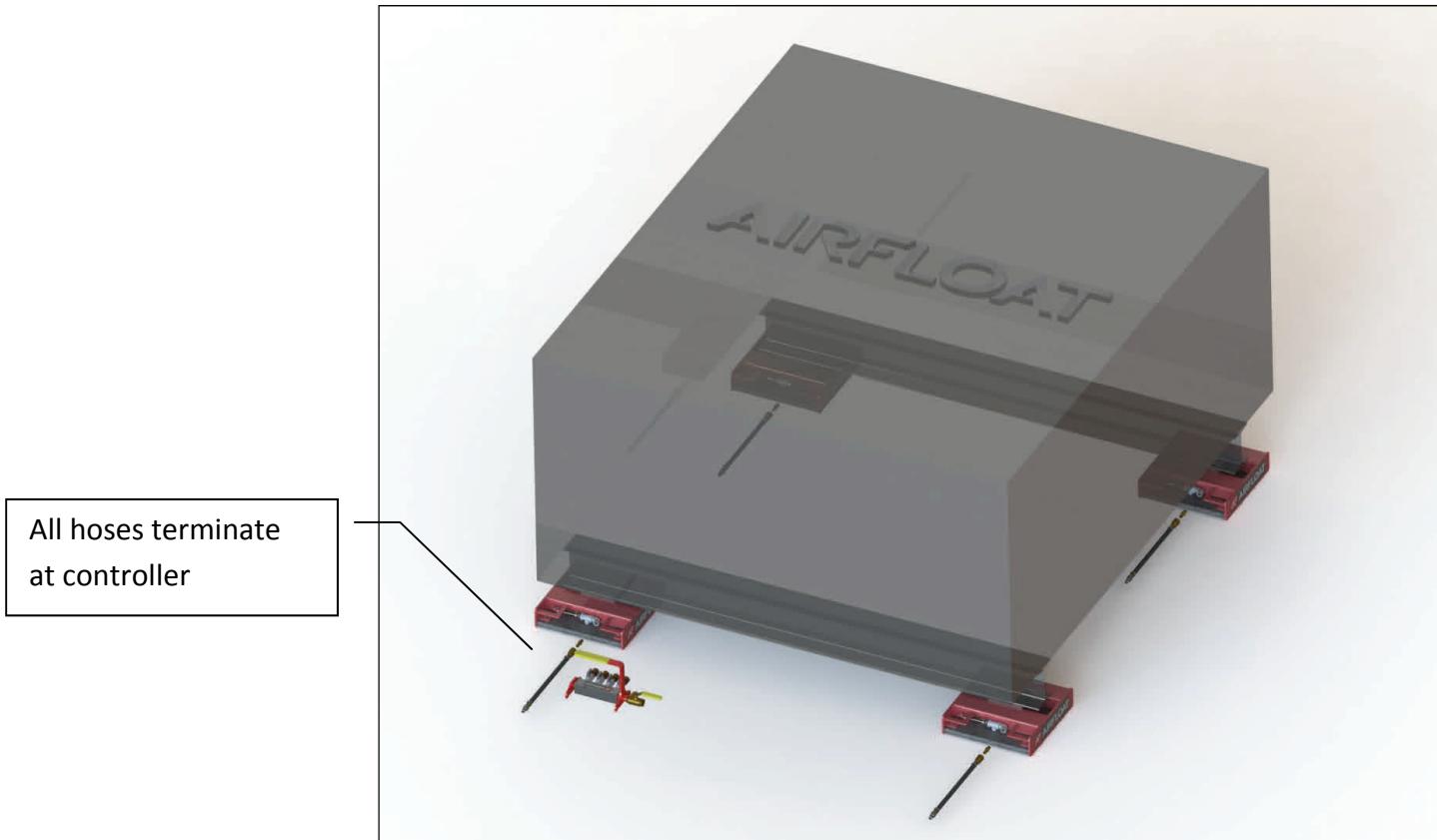
## II. SIZING CHART

Steel Skid Model No.	Capacity	Dimensions A x B x H	Mounting Holes	Inlet Size NPT.	Lift	Flow	Bearing Number	Min. Load Area L x L	Weight
AF01012	3,000 lbs. 1,360 kg	13 x 13 1/4 x 3 in. 330 x 337 x 76 mm	2 @ 3/8 - 16 on 2 1/2" Ctr.	3/8 in.	1/4 in. .64 cm	11 CFM .39 L/min.	H-0012	4 x 4 in. 10.2 x 10.2 cm	26 lbs. 12 kg
AF01017	6,250 lbs. 2,800 kg	18 1/2 x 18 1/4 x 2 7/8 in. 470 x 464 x 73 mm	2 @ 3/8 - 16 on 3 1/2" Ctr.	3/8 in.	3/8 in. .95 cm	16 CFM .57 L/min.	H-0017	5 x 5 in. 12.7 x 12.7 cm	44 lbs. 18 kg
AF01020	8,750 lbs. 3,980 kg	21 1/2 x 21 1/4 x 2 7/8 in. 546 x 540 x 73 mm	2 @ 3/8 - 16 on 3 1/2" Ctr.	3/8 in.	3/8 in. .95 cm	18 CFM .64 L/min.	H-0020	6 x 6 in. 15.2 x 15.2 cm	58 lbs. 26 kg
AF01024	12,500 lbs. 5,680 kg	25 3/4 x 25 1/4 x 3 1/2 in. 654 x 641 x 89 mm	2 @ 3/8 - 16 on 3 1/2" Ctr.	3/8 in.	3/8 in. .95 cm	22 CFM .78 L/min.	H-0024	6 x 6 in. 15.2 x 15.2 cm	98 lbs. 44.5 kg
AF01030	21,250 lbs. 9,660 kg	31 3/4 x 31 1/2 x 3 1/2 in. 806 x 800 x 89 mm	2 @ 1/2 - 13 on 6" Ctr.	3/8 in.	3/8 in. .95 cm	28 CFM .99 L/min.	H-0030	7 x 7 in. 17.7 x 17.7 cm	138 lbs. 62.6 kg
AF01036	31,250 lbs. 14,200 kg	37 3/4 x 37 1/2 x 4 in. 959 x 953 x 102 mm	2 @ 1/2 - 13 on 3 1/2" Ctr.	3/4 in.	1/2 in. 1.3 cm	35 CFM 1.24 L/min.	H-0036	8 x 8 in. 20.3 x 20.3 cm	235 lbs. 107 kg
AF01048	52,500 lbs. 23,800 kg	50 x 49 1/2 x 5 in. 1,270 x 1,257 x 127 mm	4 @ 1/2 - 13 on 8" Ctr.	3/4 in.	1/2 in. 1.3 cm	47 CFM 1.66 L/min.	H-0048	10 x 10 in. 25.4 x 25.4 cm	430 lbs. 195 kg



## III. AIR SKID SYSTEM AND THE LOAD

## TYPICAL ARRANGEMENT

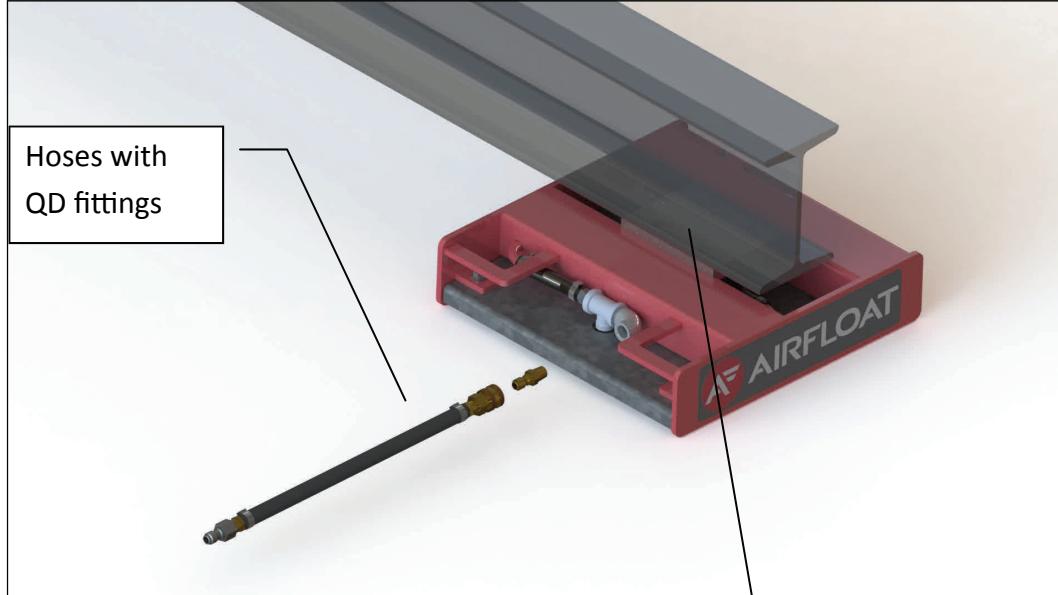


- A. Care should be taken so that capacities of individual air skids are not exceeded (see sizing chart on p.3 for air skid capacities). Although a set of skids may have a combined capacity to carry a load, if the load is not distributed equally (i.e., one end is heavier than the other), the capacity of individual air skids may be exceeded.

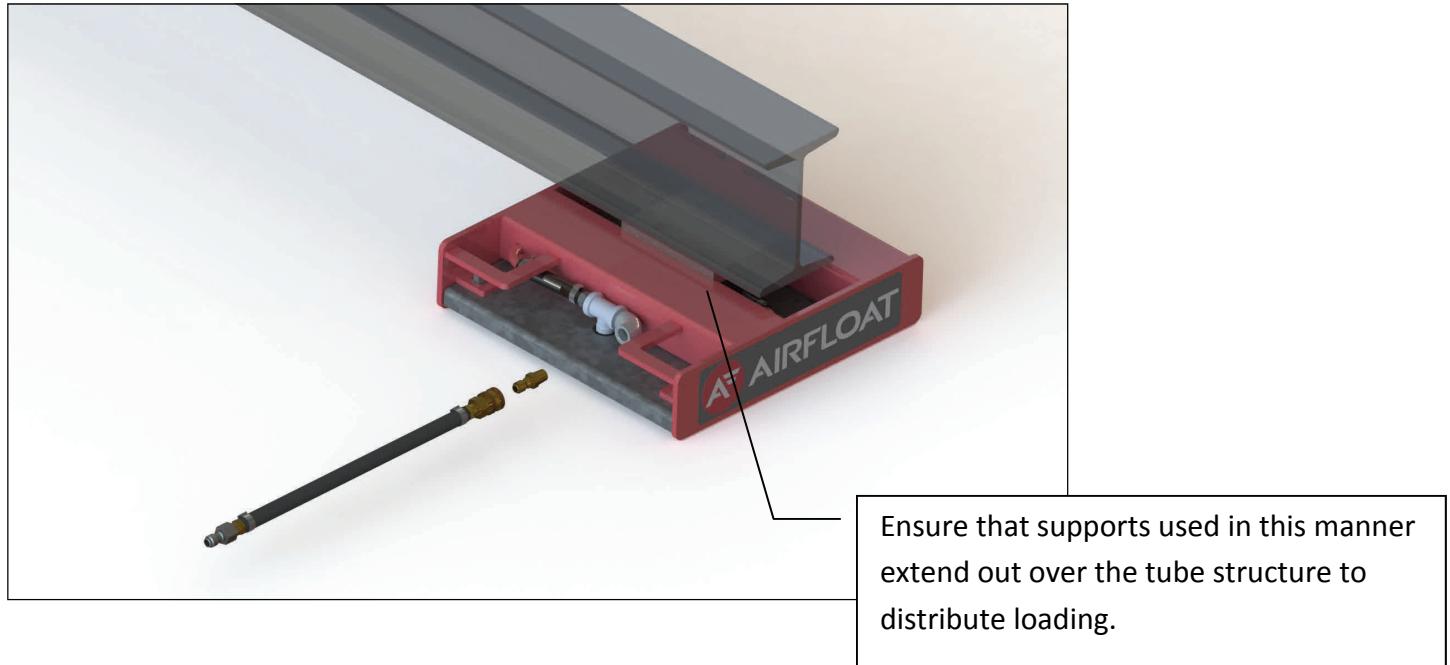
Where possible, position the air skids under the load to balance weight distribution to each air skid. If equal weight distribution is not possible, this can be compensated for by increasing or decreasing individual flow control valves until approximately the same amount of lift is attained at each air skid. See page 8 for more info.

- B. For bolted attachment of skids to load, use mounting holes provided or use an adapter plate as shown at right. For simple placement under load, check specifications section to verify that load contact with skid meets or exceeds minimum.
- C. **CAUTION: DO NOT DRILL HOLES IN THE TUBE FRAME OF THE STEEL SKIDS.** These areas act as damping chambers to prevent vertical "hop" in the air bearings when air flow is high and the load is light.

When using an adapter plate (by customer) as illustrated, ensure that minimum pad size as specified in the specification chart.



Load support beams should have the same minimum specified width per chart if an adapter plate is not used.



## IV. SKID SYSTEM OPERATION

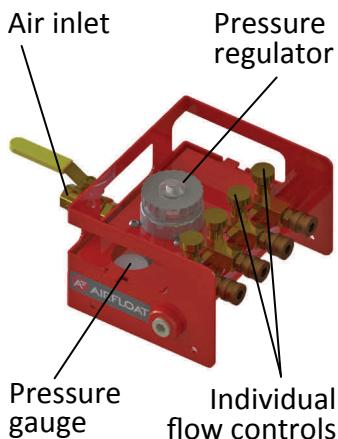
A. It is important that an adequate volume of air be supplied to the air skids. The table below shows the volume required for operation on a smooth surface, and the recommended "supply" hose size required for that flow.

Air Bearing Size	Average Air Flow (SCFM) Set of Four (4)	Supply Hose Size (I.D.) to 100' Set of Four (4)
12	44	3/4 inch.
17	64	3/4 inch.
20	72	3/4 inch.
24	88	3/4 inch.
30	112	1 inch.
36	140	1 inch.
48	188	1 1/4 inch.

**Standard Controller**



**Precision Controller**



Note: Air flow 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 (SCFM).

B. Connect main air supply to control package or manifold assembly. NOTE: OSHA requires a safety excess flow check valve for hoses larger than  $\frac{1}{2}$ " I.D. The check valve will shut off air flow in the event of a severed hose. Consult factory if required.

C. Connect all hoses to the air skids.

D. To float the load, first set each of the individual flow control valves approximately  $\frac{1}{2}$  of a turn open.

1. If a pressure regulator is used, set the regulator at zero and fully open the main on/off ball valve. Slowly increase pressure at the regulator until the load floats freely. If the load becomes unstable, reduce the air pressure until the load stabilizes. Loads not centered may cause variations in the lift height of individual skids. Increase or decrease the air flow at the individual flow control valves to approximately equalize lift.
2. If a pressure regulator is not used, slowly open the main valve until the load is floating freely. Increase or decrease the air flow at the individual flow control valves to approximately equalize lift.

E. If the load is very tall and/or the air skids must be positioned close together, greatest stability can be achieved when individual flow controls are opened completely and the main regulator or main valve is throttled. This setting, however, will not work with off-center loads.

## V. 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.

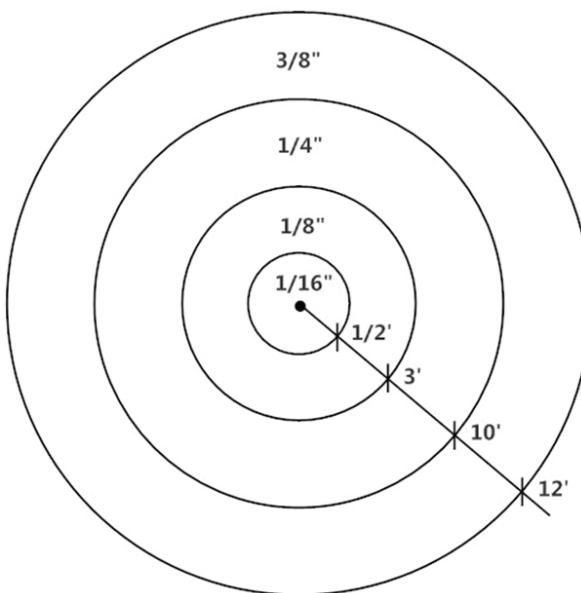
### FLATNESS

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



**Diagram 1**

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

## 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.

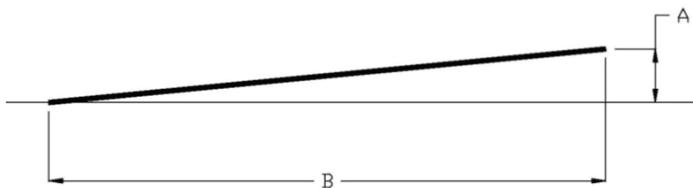


Diagram 2

Please note that 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  $\frac{3}{4}$ " 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  $1/32$ " 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.

## VI. MAINTENANCE

### A. CLEANING AND INSPECTION

Air skids require very little maintenance. The air bearings should be periodically inspected for tears and dirt build up. The air bearings should be thoroughly cleaned before inspection. Dirt build up on the air bearing diaphragm will cause the air bearing to produce high drag forces. 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 air skid is provided with tray mounted air bearings (steel skids), the bearings may be removed for inspection and cleaning without lifting, inverting or removing the load from the skid. Simply remove the two  $\frac{1}{4}$ "-20 tray retainer bolts located just under the lifting handle. Loosen the worm gear hose clamp on the hose connected to the skid frame inlet tube. Pull the hose from the inlet tube. A quick twist of the hose on the tube helps to break the hose loose for easier removal.

The air bearing and tray assembly should now be free to slide out from under the skid. The air bearing diaphragms should be carefully inspected for cuts, tears or punctures. Often a cut in the air bearing diaphragm is not very obvious. Cuts

around the outer perimeter of the air bearing are the most detrimental. This location of cut will cause the air bearing to waste air, lose lift height and prevent movement. The air bearing must be replaced.

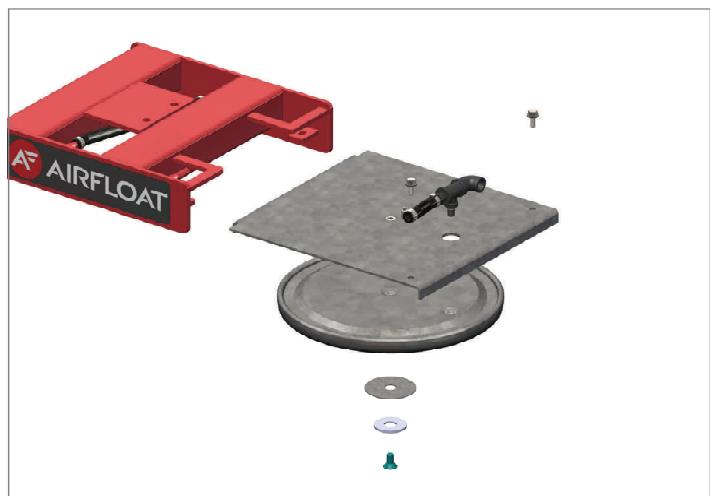
However, if the cut is away from the air bearing footprint, duct tape sometimes works as a temporary repair to get by. If the cut is under the air bearing, the air bearing will most likely still function, but may have some stability problems. The air bearing should still be replaced.

### B. AIR BEARING REPLACEMENT

Air bearings on steel skids are replaced by first unscrewing the two bolts that retain the tray to the skid. Simply remove the two  $\frac{1}{4}$ "-20 tray retainer bolts located just under the lifting handle. Loosen the worm gear hose clamp on the hose connected to the skid frame inlet tube. Pull the hose from the inlet tube. Slide the tray outward as illustrated below. Remove inlet tee from the air bearing inlet. The air bearing center bolt and washers are then removed. The air bearing is then free to be lifted off of the bearing tray. If the pipe nipple remains in the old air bearing, it will need to be switched to the replacement air bearing.



Step 1: Slide out air bearing and tray assembly from skid frame.



Step 2: Remove air bearing and inlet plumbing from tray.

## VII. TROUBLE SHOOTING



For operator video tips, visit  
[www.airfloat.com/videos](http://www.airfloat.com/videos)

Or visit our YouTube channel:  
[www.youtube.com/airfloat](http://www.youtube.com/airfloat)

Problem	Cause	Remedy
Load doesn't lift or lifts but doesn't move easily	Supply hose quick disconnect too restrictive	Supply hose quick disconnect too restrictive
	Supply hose too small for its length	Increase hose size
	Load is too heavy	Try lighter load
	Surface too rough for the air supply	Test on smooth surface to verify
One corner of the load is low, or	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
	Bearing over a hole or porous floor	Check on good surface
	Low corner more heavily loaded than others	Increase air flow to low corner or reduce flow to other corners
Skid tips or tends to 'ground out' on one edge	Skid not centered under load contact surface	Center skid
	Insufficient contact area	Increase contact area
	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 & reduce inlet pressure
	Skids too close together	Space skids further apart, use
Load hops	Excess air is being supplied	Decrease air flow

## SPARE PARTS

Air Skid Model	Replacement Air Bearing No.
AF01012	H-0012
AF01017	H-0017
AF01020	H-0020
AF01024	H-0024
AF01030	H-0030
AF01036	H-0036
AF01048	H-0048

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.



# AIRFLOAT

## INNOVATION IN MOVEMENT

### LIMITED WARRANTY

Airfloat LLC 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 Airfloat LLC prompt notice of the alleged defect(s) and, if requested by Airfloat LLC, returns the defective items, freight prepaid (F.O.B. Airfloat LLC'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, Airfloat LLC 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 Airfloat LLC. This warranty does not cover, and Airfloat LLC 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 Airfloat LLC, failure to provide reasonable and necessary maintenance or failure to follow operating instructions or load limits. IN ADDITION, IN NO EVENT SHALL AIRFLOAT LLC BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES, WHETHER OR NOT IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Airfloat LLC 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 Airfloat LLC 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 Airfloat LLC warranty obligations for the product.

### OUR PRODUCTS



Air Skids



Air Platforms



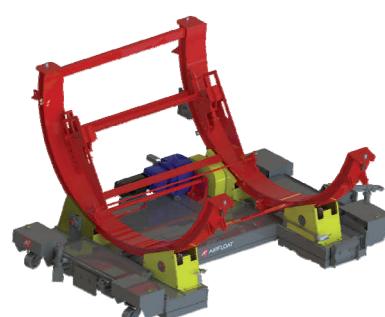
Assembly Transporters



Lifts/Tilts/Rotates



Heavy Duty Turntables



Custom Equipment

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