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AIRSCREEN

INSTALLATION GUIDE

The inflatable solution for open air
and arena events projection.

AIRSCREEN INSTALLATION GUIDE

Please read these installation instructions carefully **BEFORE** attempting to install your Harkness Hall AIRSCREEN. Before commencing inflation, ensure that all items and personnel required to complete the installation are available.

Adhering to the procedures set out in this guide will ensure a safe and successful installation.

GENERAL INFORMATION

- The Airscreen should not be operated in wind speeds over Beaufort 5 (19-24mph / 30-38kph); this is when the tree tops are waving vigorously in the wind.
- Always cordon off the area inside the guy rope anchoring points and do not allow any members of the public within this area.
- The first row of the audience should be the height of the frame plus 2 mtrs / 6' 5" away from the frame. Thus if the frame is 10 mtrs / 32' 6" high, the first row of seats should be positioned 12 mtrs / 39' back.
- If using water containers as ballast, water can often be supplied by arrangement with the local fire brigade.
- If the system is being used at an event over several days, then it is recommended to deflate the system at the end of each screening.
- When deflating and inflating, it is recommended to put a ground sheet between the screen and the ground to protect the screen surface from dirt and sharp objects.
- Fire certificates for the screen surface can be found in Harkness Hall's surface data sheets, which are available on our website or by request from the office. The frame material is industrial PVC, like that used on curtain-sided lorries.

Harkness Hall have endeavoured to investigate all regulations regarding the use of the Airscreen. We have found no specific regulations relating to the use of this screen; however we cannot take responsibility if there are any such regulations in the country you intend to operate the system in. Therefore, it is the responsibility of the user to be aware of regulations and to abide by these. Harkness Hall will not accept responsibility for failure to meet local regulations.

GENERAL SPECIFICATIONS

Table 1

Screen Size (w x h)	Frame Size (w x h)	Weight	Personnel Recommended		Minimum Ballast weight per corner	Ideal projector for outdoor use
			For inflation	For Unpacking/packing		
8 x 4mtrs 26' x 13'	10 x 7mtrs 32' 6" x 42'	110kg 242lbs	2/5	2	0.5 tonne	4kw
12 x 6mtrs 39' x 19' 6"	14 x 9mtrs 45' 6" x 29' 3"	150kg 330lbs	2/5	2	1 tonne	4kw
15 x 7.5mtrs 49'9" x 24' 4"	17 x 10.5mtrs 58' 6" x 34'	300kg 660lbs	4/9	3	1 tonne	4kw
20 x 10mtrs 65' x 32' 6"	22 x 13mtrs 71' 5" x 42' 3"	450kg 990lbs	4/9	4	2 tonne	7kw
24 x 12mtrs 78' x 39'	26 x 15mtrs 84' 5" x 48' 9"	600kg 1320lbs	4/9	5	3 tonne	7kw

The ground border height is always 1.4m / 4' 6" high; this is the bottom picture line.

A banner can also be fitted to the back of the frame. The size of this is screen height plus border height.

Check List: LIST OF ITEMS

Item A	1	Frame
Item B	3	Vent Hole Covers
Item C	1	Vent Connector
Item D	1	Vent Connector Strap
Item E	1	Ground Border
Item F	1	Ground Border Lacing Rope
Item G	1	Screen Surface
Item H	*	Screen Ties for Lacing screen to frame ("bungees")
Item I	1	220v or 110v Air Pump
Item J	8	Guy Ropes
Item K	2	Middle Ropes
Item L	1	System Strap and Ratchet
Item M	1	Black Circular Protective Patch

* the number of screen ties varies according to screen size.

ALSO NEEDED FOR ERECTING AIRSCREEN

Ground Space - add 2mtrs / 6' 5" to the width and 3mtrs / 9' 9" to the height of the Airscreen; this tells you the minimum space you need to un-pack the frame.

Minimum 4 People (see Table 1 page 1)

1 - 3 tonnes of ballast weight for each corner depending on screen size, or ground fixings capable of taking the strain (see Table1 page 1)

1 UNPACKING

Place the frame on ground and remove the strap. (Item L)

2 LAYING OUT

Unroll the frame, ensuring there is enough space to lay the frame flat out.

Unfold the system section by section; stop when it is simply folded in half.

There should be a Harkness Hall label on the side of the underneath section on the right as you look at the frame. (You have to lift the upper layer up to be able to locate the logo). If not, then the system is the wrong way up and you will need to turn it over. This can be done by dragging the system over itself from right to left.

Now check that the logo is on the right-hand side (as you look at the system) of the underneath section. When erected, the logo is on the front of the frame on the right near the base of the frame.

3 FIXING THE VENT HOLE COVERS

On each side of the frame there are 2 vent holes; one is at the top of the frame and one is at the bottom. The pump can go either side of the bottom of the frame; decide which side you wish to use. For the purpose of these instructions we are using the left-hand side of the frame (as you are looking at it) for the pump.

Using the vent hole covers (Item B), seal the two top vent holes and the bottom one not being used. Peel the flaps back, place the cover over the hole, and ensure that it is secured and flat; fix in place by putting the flaps back over the top of the covers and securing in place.

4 FIXING THE VENT CONNECTORS

Attach the vent connector (Item C) to the preferred vent hole in the same way as attaching the vent hole covers. The bottom vent hole, which is not going to be used, should have been covered at stage 3.

On the vent connectors there is a seam; this seam must be lined up so it faces downwards, towards the bottom of the frame.

It is important to fix the vent connector in place as described, ensuring the seam is in the correct position. If it is in the wrong position when the frame inflates, the tube will twist and prevent the air getting through; you need to imagine how the frame will twist when it is inflated.

5 FIXING THE GROUND BORDER

This is usually left in place after the first installation.

Unfold the frame completely.

Unroll the black ground border (Item E), leaving the shiny side facing upwards.

Find the bottom centre eyelet of the frame; this is indicated by a white line which is marked on the underside of the flap the eyelets are fixed in. Match this with the centre eyelet on the border.

Using the ground border lacing rope (Item F), lace the bottom of the border to the frame. Simply lace it over and under. Ensure that the rope is pulled tight and knotted off at each end.

The sides and the top of the ground border are attached to the screen using the screen ties (see below).

6 FIXING THE SCREEN SURFACE

The screen surface can be left in place if the Airscreen is used regularly; if it is not going to be used within 1 month, then remove it completely

Unroll the screen surface (Item G) in the centre of the frame with the projection surface upwards. See Figs. 1 and 2 below.



Find the top centre eyelet of the screen surface and the top centre eyelet of the frame, indicated by a black strap on the top edge of the frame. See Figure 3 above.

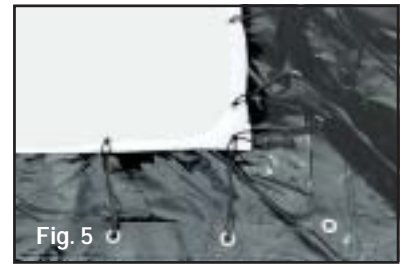
Secure the top of the screen working from the centre outwards using the screen ties. Pass loop end of tie through frame eyelet from under; pass through corresponding screen eyelet from under; pass loop end back through frame eyelet from above; pass loop end round hook end and pull loop back through the frame eyelet. See Figs 4.1 - 4.4



In the corners, do not necessarily match up the eyelets; just ensure that the screen is square in the space, see figure 5.

Lace the sides starting at the top and working downwards to the bottom of the screen.

Use the screen ties to lace the bottom of the screen to the top of the ground border in the same way.



Now fold the frame back on itself lengthways so that the top covers the bottom as in section 2. See Figure 6.



7 ATTACHING THE VENT TO THE PUMP

Pass the vent strap (Item D) end through the holes in the open end of the vent connector tube.

Then feed the end through the ratchet loosely. Put the vent connector open end over the pump nozzle. Remember to ensure that the seam in the vent connector is at the bottom as detailed in Section 4. See Figure 7.

When you are happy with the positioning, tighten the strap using the ratchet until you cannot pull the vent connector off. Ensure that it is tight since this will be taking the air pressure when the pump is on. See Figure 8.



It is vital to cover the fan if the weather is wet outdoors to avoid the fan shorting out. Also do not turn on its side as it may ingest grit or other material from the ground, which will damage it.

8 ATTACHING THE GUY ROPES

The guy ropes are attached to the orange crosses located at the top and bottom of the frame.

12m x 6m / 39' x 19' 6" frames and larger will have two orange crosses, one for the front guy rope and one for the back; the 8m x 4m / 26' x 13' has only one fastening point for guy ropes.

Take one of the guy ropes (Item J) and tie a knot in one end approx. 1 metre (3' 3") from the end.

Flatten the orange cross that is on the top of the frame.

Take the rope and feed the end with the knot through both parts of the cross leaving the knot about 30cm / 12" from the cross. Figs 9.1 - 9.7





Fig. 9.5



Fig. 9.6



Fig. 9.7

Tie the guy off with a figure of eight knot, by feeding the end through the original knot. Ensure that the knot is tied towards the direction the rope will be pulled, so that the rope points towards the ballast weight or ground fixing.

Note: two guy ropes are secured on each top corner, one facing the front and one facing the back of the frame.

On the small frame, use the same orange cross for both guy ropes; for the larger frames, use the separate orange crosses to attach the front and rear guy ropes.

Repeat for the opposite top corner, ensuring that one knot faces the front and one to the back.

Repeat for the bottom corners. Eight guy ropes should now be secured to the frame.

On the outside edge in the middle fold of the frame on either side there is another cross, this is for the middle ropes (Item K).

Tie a middle rope to each side, in the same way as above, but with just one rope on each side. See Figure 10.

These are only used to pull the middle of the Airscreen back during deflation, ensuring that it folds back down in half.



Fig. 10

If you need to reposition the Airscreen at this point, it is easiest to move it a little at a time, rather than trying to move it all at once. See Figures 11.1 - 11.4



Fig. 11.1



Fig. 11.2



Fig. 11.3



Fig. 11.4

9 WEIGHTS/GROUND FIXING

Now the guy ropes are secured to the frame, we need to secure them to the ballast weights or ground fixings.

The position of the counterweights is important; **this can be worked out as follows in relation to frame height:**

Each ballast weight is placed the frame height away from the frame (front and rear) and a quarter of the height outwards from the sides.

Once weights are in position, the guy rope must be wrapped around it and secured. See Figure 12.



Fig. 12

Tie the top guy ropes off at their longest point to the ballast weight during inflation. Ideally you will need two persons handling each of the four top guy ropes. (Refer to Table 1 page 1 of this guide). One person needs to feed rope to the other who will release it as the frame inflates. **It is very important not to take the full force of the weight on the person;** hold the rope indirectly and let the ballast weight take the strain.

The person feeding the rope to the second person must be ready to tie the rope off securely when the frame is fully inflated.

Tie the bottom guy ropes off securely to the ballast weights.

10 INFLATION

Inflation must be done with the frame folded in half and the top guy ropes tied off to the ballast containers at the longest point. Get everyone in position. Turn on the airflow.

As the frame inflates, ensure that the top half does not slip back slightly. Pull it back into correct position if this happens. See Figure 13.1 - 13.2.



Release the guy rope gradually keeping tension on the rope at all times. Check that the fold is always in the middle. The frame will gradually rise. The people securing the frame from the back must not let too much rope out. Both front and back ropes must be counterbalancing. The aim is to keep the top of the frame as near vertical over the bottom as possible during inflation.

Once fully inflated, tie guy ropes off to ballast weights. The side ropes can be left hanging. Use knots (clove hitch) that are secure but can be easily untied; this is important if the Airscreen needs to be deflated quickly.

11 DEFLATION

During deflation, the frame will be guided back in half as in the starting position.

To deflate the frame, ensure that there is nobody within the area inside of the ballast weights, and that there are people controlling the tension of the guy ropes front and rear and also at the side ropes.

There are two methods of deflation:

Controlled Deflation

Turn off the airflow; this lets the Airscreen deflate in a controlled manner.

As the frame deflates, the front guy rope handlers should encourage the frame to fold back into the folded position. The top corners should come down on top of the bottom corners. Be careful not to let it tip onto its front during deflation.

The side ropes are used to encourage the centre to fold; they should be pulled from the back. See Figure 14.1 - 14.4



Quick Deflation

In certain conditions (e.g. sudden strong wind) it may be necessary to deflate the system quickly.

All guy rope handlers must be in position as above. Stop the airflow and remove the bottom vent cover completely. The frame will deflate rapidly so be careful. This method is **not** recommended in normal weather conditions.

Remove all other vent hole covers completely to allow air to escape. Encourage all remaining air out of the frame before attempting to pack it. See Figure 15.



12. RE-PACKING

The system can be packed away in two ways:

With screen and ground border in place

- Remove all guy ropes, and tidy away neatly.
- Fold the frame lengthways in half, (top over bottom) and repeat again.
- Then fold left edge to the middle point and the right edge to the middle point. Fold again lengthways in half. Now the frame is ready to be rolled up.
- Make sure that all the air is out of the inflatable frame and roll the system up.
- Once in a neat bundle, secure with strap (Item L), placing black circular protective patch (Item M) between the frame and the ratchet.

Without screen

If the system is going to be stored for more than 1 month, or if the screen surface is wet, then it must be removed and allowed to dry and then be carefully packed onto a tube without any folds in it for storage. The ground border can be left in the frame.

- Remove all guy ropes, and tidy away neatly.
- Open out the frame completely on its back.
- Carefully remove all screen ties from the screen and frame, and store together.
- Roll screen onto a tube for safe storage, ensuring it is dry.
- Unlace the ground border if you wish and fold away for storage.
- Fold the frame back in half (top over bottom).
- Fold the middle sections of the side of the frame onto the main section of the frame, so that the frame is one rectangular piece. Fold the entire frame in half one more time (still full width).
- Then fold left edge to the middle point and the right edge to the middle point. Fold this completely in half, lengthways.
- Now the frame is ready to be rolled. Make sure that all the air is out of the frame. Roll the system up.
- Once in a neat bundle, secure with strap (Item L), placing black circular protective patch (Item M) between the frame and the ratchet.

Please note that there is no single correct way to pack the frame away. As you use the system, you will develop your own method. The only vital thing is to remove the screen surface if the system is not going to be used for more than 1 month or if the screen surface is wet.

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