



Rescue Bags

Basic Operating Procedures



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NOTICE

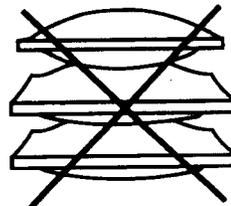
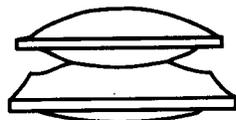
This booklet includes technical information on Hurst Rescue Bags and instructions for basic one- and two-bag lifts. While the procedures have been tested and are known to be effective, they should be viewed only as guidelines. The selection and use of high pressure Airbags must be based on factors such as the lifting requirements, the weight, size and shape of the object that must be lifted, and the lifting capacities and lifting heights of the different bags. It may be necessary to vary the procedures suggested in this and other manuals, or to adopt

new procedures. Neither the manufacturer nor the Hurst Jaws of Life Division of Hale Products, Inc. can assume any personal responsibility for personal injury or property damage that may result from improper or incorrect uses of Hurst Rescue Bags and related products. The figures listed on the inside back cover of this booklet are nominal. The lifting capacities and lifting heights of Hurst Rescue Bags may vary in actual operations.

WARNING

Failure to follow instructions can cause severe injury, read this manual before operating your Hurst Rescue Bags.

- Never work under a load without cribbing.
- Stand Clear of an Airbag supporting a load.
- Never exceed 118 psig (8 Bar) inflation pressure.
- Never stack more than 2 airbags on top of each other.



TIPS for SAFE and EFFICIENT OPERATIONS

Always wear personal protection when working with Hurst Rescue Bags. If you are a firefighter or a member of a rescue squad, wear a full set of approved turnout gear. If you are a contractor's employee, an industrial craftsman or maintenance worker, wear a helmet, eye protection, gloves, and whatever other personal safety items provided by your employer.

Correct transportation of Hurst Rescue Bags is important. Carry a small Airbag under one arm with one hand supporting the lower edge, and your other hand supporting the front of the bag. Carry larger Airbags by gripping the opposite sides with both hands. Always keep bag nipple facing up so that it will not be damaged if the Airbag is dropped.

When transporting a large, heavy Airbag from the storage

area to the worksite, have another person help you carry it. Do NOT drag the Airbag; if the nipple is pointing down, it may be damaged to the point where coupling to an air supply hose is not possible.

Protect the lifting surface of a Hurst Rescue Bag with a square of plywood when the Airbag will be used to lift an object that has a temperature greater than 135° F. Heat in excess of that temperature may damage the Airbag.

Working in the dark is dangerous, even when the task is as simple as positioning and inflating a Hurst Rescue Bag. Place floodlights or bright handlights in such a way that they provide shadow-free illumination of the work area. Don't dismiss the idea of using lights during daylight hours when visibility is decreased by deep shadows.

How the HURST RESCUE BAG SYSTEM Works

A steel or composite air cylinder (1) provides up to 300 cubic feet of compressed air at pressures up to 4500 psig (310 BAR).

A truck or train air brake system, a vehicle mounted, cart mounted, or skid-mounted cascade system, a wheeled stationary compressor, or an inflated truck tire can be used as an alternate source of compressed air.

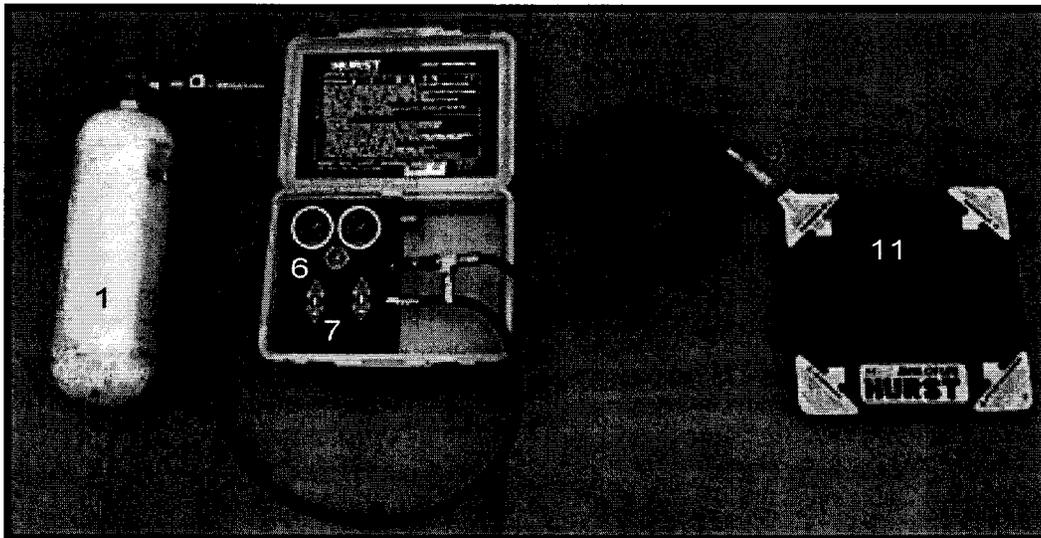
When the cylinder valve (2) is opened, a perma-set regulator (3) reduces the air pressure to approximately 180 psig (12.6 BAR).

Compressed air at 180 psig fills the remainder of the controller air supply hose (4) and piping within the command console (5) up to the console's valves. Inlet pressure is

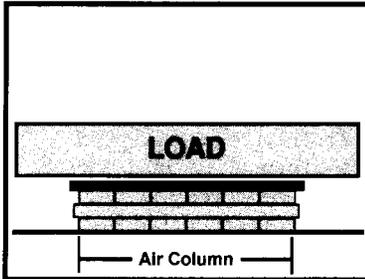
indicated in pounds per square inch (psig) and atmospheres (BAR) on the console's center gauge (6).

When the operator pulls back on the joystick of the right side command console valve (7) air flows through the right bag supply hose (8), past the quick-disconnect safety coupling (9) and the bag nipple (10), and into the Airbag (11). A similar action occurs when the operator pulls back on the joystick of the left side command console valve. Non-adjustable, automatic relief valves that are built into the controller release compressed air into the atmosphere when pressure in an Airbag exceeds 118 psig (8 BAR).

Airbag supply hoses are field repairable; hose fittings and nipples are also field replaceable.

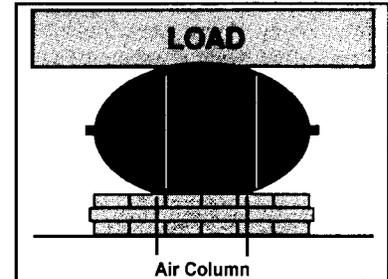


How a HURST RESCUE BAG SYSTEM Works

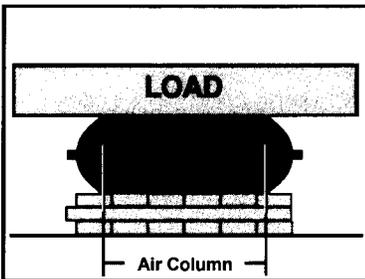


A Hurst Rescue Bag has been placed under a load in preparation for making a lift. Three layers of cribbing are in place under the Airbag so that maximum lifting height will be available.

A fully-deflated Airbag has very little air trapped inside. Nonetheless, the trapped air has the shape of a square column. It is this column of air that will lift the load when the Airbag is inflated.



As the Airbag nears full inflation, the cross-section of the column of air diminishes considerably, and so does the lifting ability.

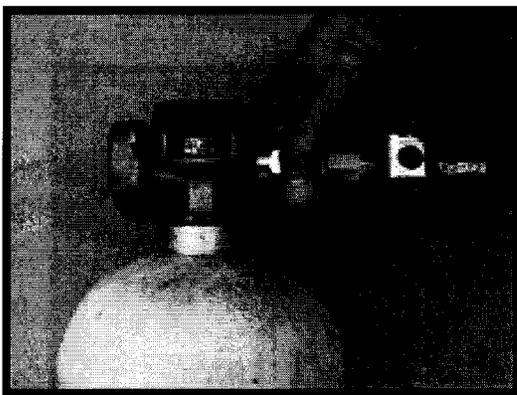


When air flows into the Airbag, the column of air within the bag becomes taller. The inflating Airbag contacts the underside of the load, and lifting begins. Maximum lifting capacity is possible for just one inch, however.

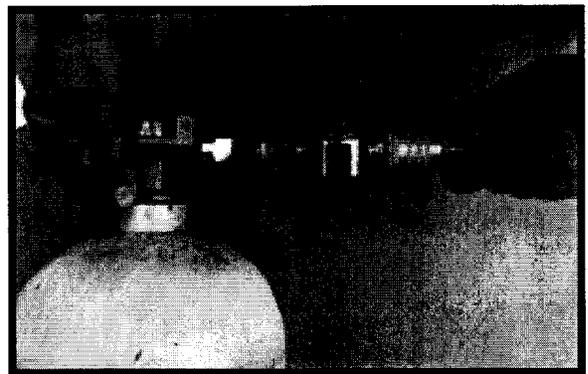
As the Airbag inflates, it takes on the double-dome shape that is characteristic of all high pressure Airbags. The column of air grows taller, but the cross-section of the column decreases, and so does the Airbag's lifting capacity.

As the operator of a Hurst Rescue Bag System, you must know the maximum load that each Airbag can lift, the maximum inflation height, and the maximum load that can be lifted to the full inflation height. Then you will be able to correctly match a Hurst Rescue Bag to the lifting application. These figures are included in the table that appears on the inside back cover.

Assembling Components into a Lifting System



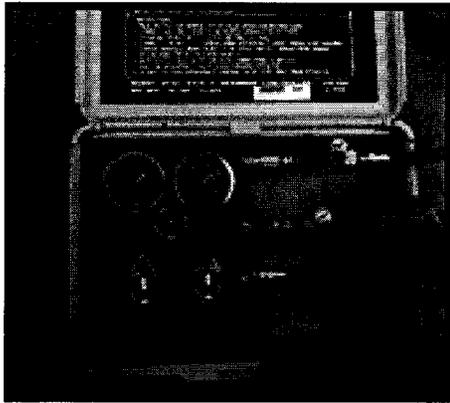
1. Connect the perma-set regulator to the air supply cylinder outlet.



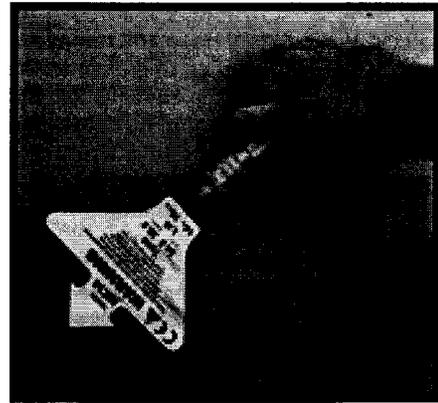
2. Connect the air inlet hose from the Airbag command console to the perma-set regulator.

cont.

Assembling Components into a Lifting System

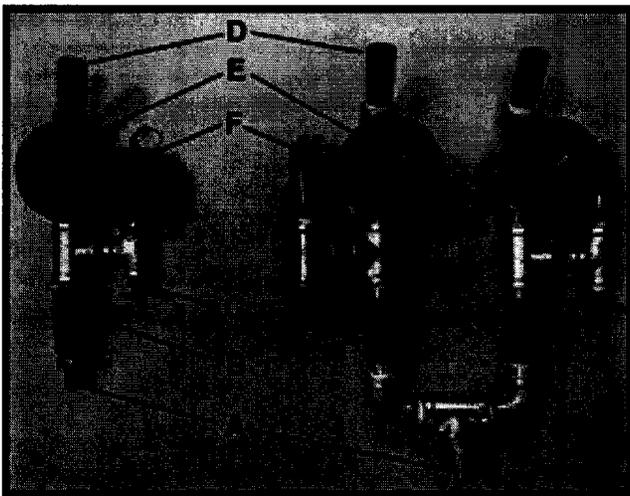


3. Connect the safety hose to the appropriate outlet of the Airbag command console.



4. Connect the safety hose to the nipple of the Hurst Rescue Bag.

Using Other Hurst Controllers Single or Dual Fitting Controller



1. Connect Perma-Set regulator to the air supply as shown in photo 1, page 3.
2. Connect Hurst gray air inlet hose from the Perma-Set regulator to the inlet coupling (A) on the fitting controller.
3. Check the dump valve (C) to be sure that the cap is closed. To close cap, twist in clockwise motion.
4. Connect Hurst Safety Hose or Hurst Standard Hose to the discharge coupling (D).

To lock the coupling, rotate the collar; to unlock, rotate the collar and align the ball with the slot in the collar. Pull back to disengage.

5. Connect safety hose to Hurst Rescue Bag, the same as in photo 4, shown above.
6. Turn air supply on. To flow air from the air supply to the Airbag, twist quarter turn valve (B) counter-clockwise; to stop air flow, twist valve (B) clockwise.

Gauges (E) show the air pressure inside the Hurst Rescue Bags during operation. When the needle reaches the red area, the relief valve (F) will open up, releasing excess air into the atmosphere.

7. To deflate air from the Hurst Rescue Bag, turn dump valve (C) counter-clockwise.

Using HURST Hoses

Hurst Safety Air Hose

1. Uncoil the Hurst Safety Hose and remove all of the kinks or knots before hooking up to the controller or rescue bag.
2. Insert the nipple end of the hose (A) into the controller. Rotate the collar on the coupling to lock the hose to the controller.
3. Connect the plug end of the hose (B) onto the Airbag and turn the collar to lock the coupling onto the Airbag.

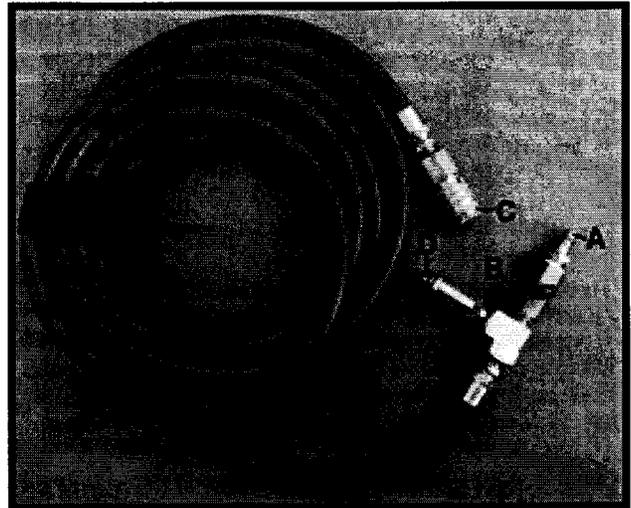
To unlock the coupling, realign the slot in the collar with the silver bead on the coupling. Check to be sure that the quarter turn valve (B) is in the open position. Closed, the handle will be pointing across the valve body; open, the handle will be pointing towards the hose. Pull back to disengage.

To flow air into the Airbag, refer to the controller portion of this manual.

To disconnect the hose from the controller while the Airbag is still being used:

4. Turn off the valve (B).
5. Align the slot in the collar with the silver bead on the coupling, slide the coupling collar back and the hose will separate.

The Airbag still has air contained inside of it, and is protected by the resetting relief valve (D) which will prevent over pressurization from occurring in the Airbag.



To test valve for proper relieving:

6. Plug the hose into the control cabinet as described earlier.
7. Turn the valve (B) to closed position and open the control valve.
8. Check to see that the relief (D) opens at the same time or earlier than the relief valve in the controller.

This test should be done periodically to assure that the relief is operating correctly.

Hurst Standard Hose

1. Uncoil the Hurst Standard Hose and remove all of the kinks or knots before hooking up to the controller or rescue bag.
2. Insert the nipple end of the hose (A) into the controller. Rotate the collar on the coupling to lock the hose to the controller.
3. Connect the plug end (C) of the hose onto the Airbag. Turn the collar to lock the coupling onto the Airbag.

To unlock the coupling, realign the slot in the collar with the silver bead on the coupling. Pull back to disengage.

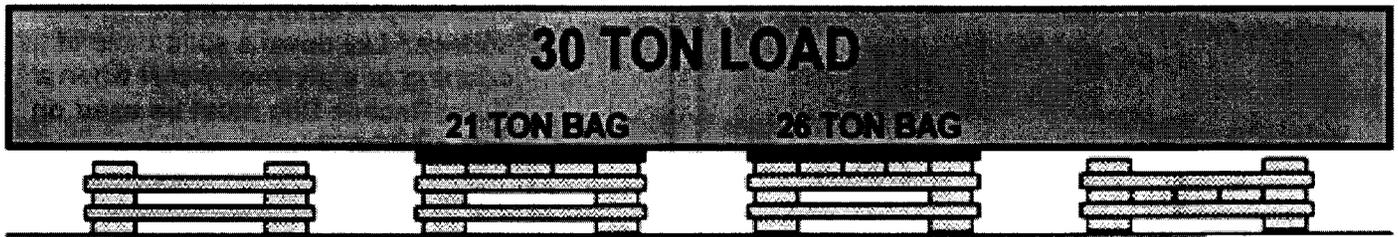
To flow air into the Airbag, refer to the controller portion of this manual.



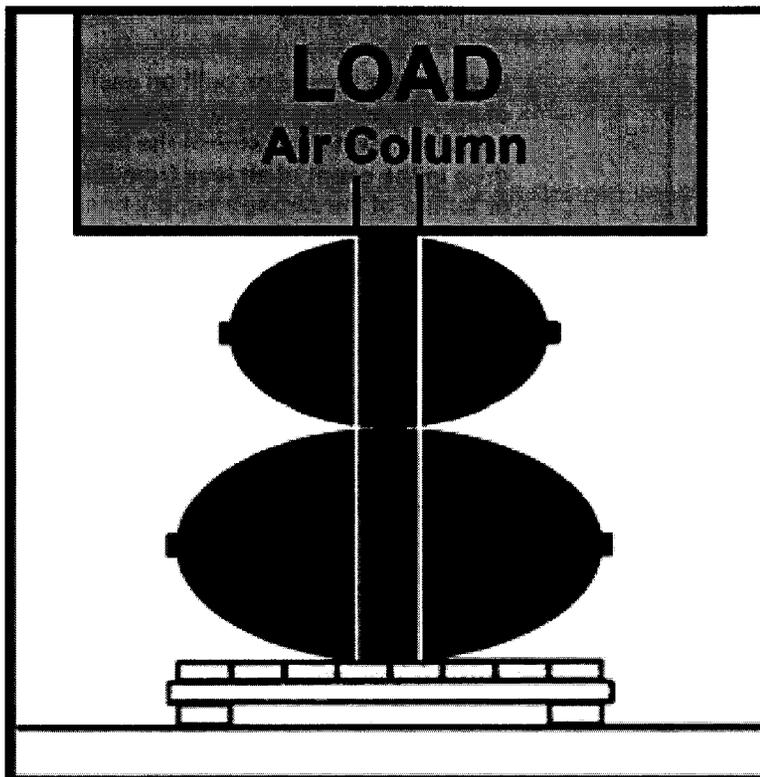
Increasing Lifting Capacity and Lifting Height

Contrary to popular opinion, the lifting capacity of high pressure airbags is not increased by stacking one bag on top of another and inflating both bags. A stack of two high pressure airbags has only the lifting capacity of the smaller bag. Remember that lifting capacity depends on the size of the column of air that is in contact with the underside of the load. However, the lifting capacity of high pressure airbags can be increased by placing two bags side by side and inflating them simultaneously. In the

illustration below, two Hurst Rescue Bags have been placed side by side on support cribs. One bag is rated for a 26 ton lift, the other is rated for a 21 ton lift. Neither bag can exert sufficient force to lift the 30-ton object, even for a short distance. When the bags are inflated together they will have the *potential* to lift 47 tons and can now lift the 30 ton load. Cribbing helps to maximize lifting height as well as lifting force.



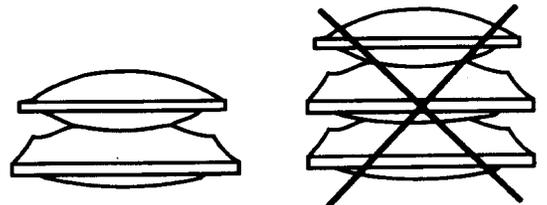
Increasing Lifting Height



Lifting height can be increased by stacking two Hurst Rescue Bags. In the illustration at the left, a bag that has a maximum inflation height of 17 inches has been centered on a bag that can lift to a maximum 20 inches. When fully inflated, the two bags will provide a maximum lift of about 37 inches.

⚠ WARNING

Under no circumstances should more than two Hurst Rescue Bags be stacked in the manner shown below. The effect of stacking three Airbags is like trying to balance three inflated footballs.



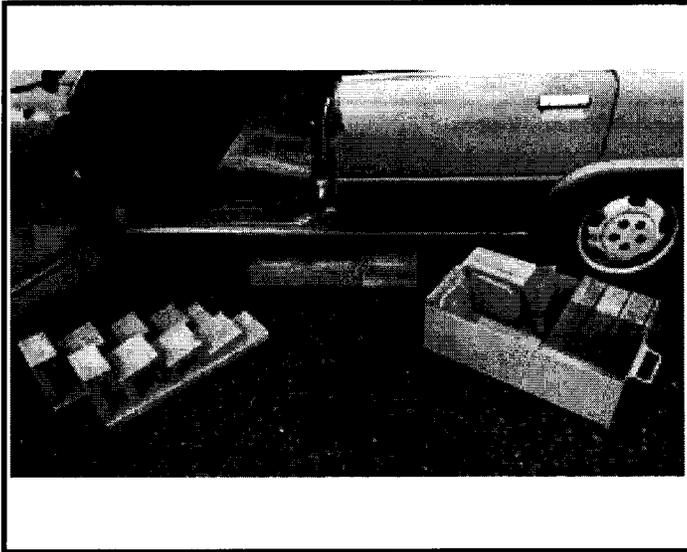
Lifting With One Hurst Rescue Bag



1

Sweep broken glass, small metal parts, and other potentially-damaging debris from the surface on which the bag will be placed. While Hurst Rescue Bags are tough, they are not completely damage-proof.

Spread a layer of sand, gravel, or other granular material when the bag must be placed on an icy or oil-slick surface. Lay down a solid base of cribbing or a plywood panel when a Hurst Rescue Bag must be used on soft ground.

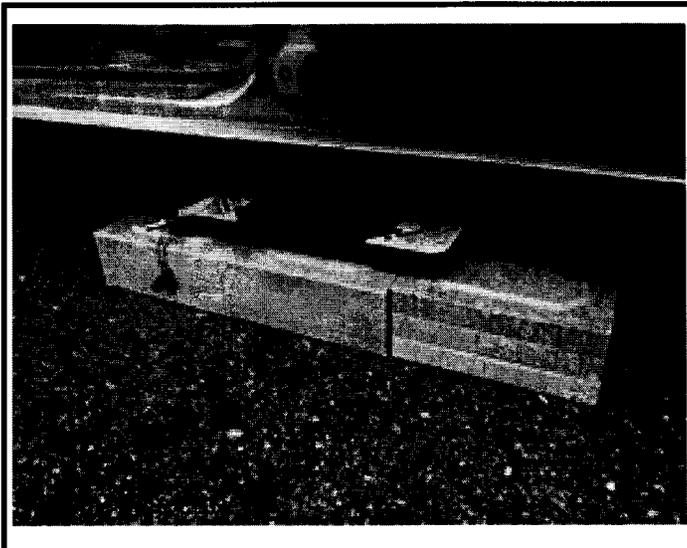


2

Construct a bag support crib under the lifting point of the load if the space between the load and the surface beneath the load is greater than 3 inches. Leave just enough space for the deflated Airbag.

Make the top layer of the crib solid; otherwise the crib will collapse when the Airbag inflates to its characteristic double-dome shape.

Safety cribs should be built on each side of the Airbag support crib. The safety cribs minimize the distance the load will drop in the event of air loss from the bag or failure of the Airbag's supply hose.



3

Center the Hurst Rescue Bag on the support crib with the nipple pointing away from the load toward the left or right.

Be sure to position the Airbag so the center of the bag's lifting surface will always be in contact with the underside of the load. An Airbag that is improperly positioned under a load may slip during inflation.

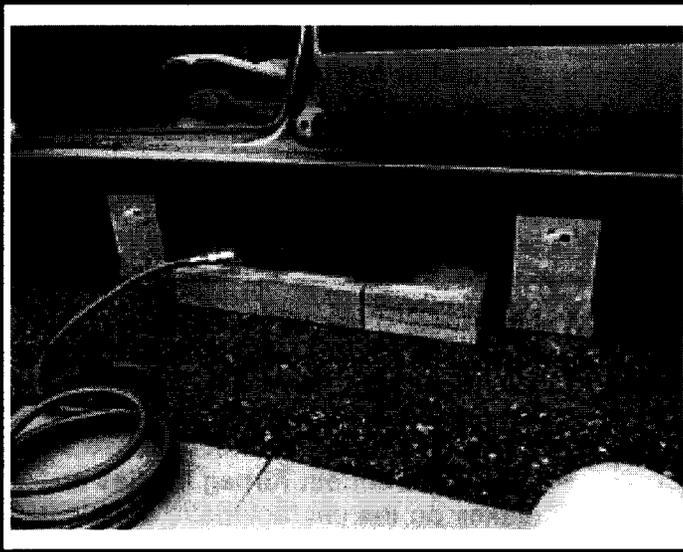
Lifting With One Hurst Rescue Bag



4

Inflate the Airbag until the load is lifted to the desired height. Then increase the height of the safety cribs until it is not possible to insert another layer.

If one or two rescuers are available, they can add to the safety cribs as the Airbag inflates. "Lift an inch, crib an inch" is the rule when using any sort of lifting device.



5

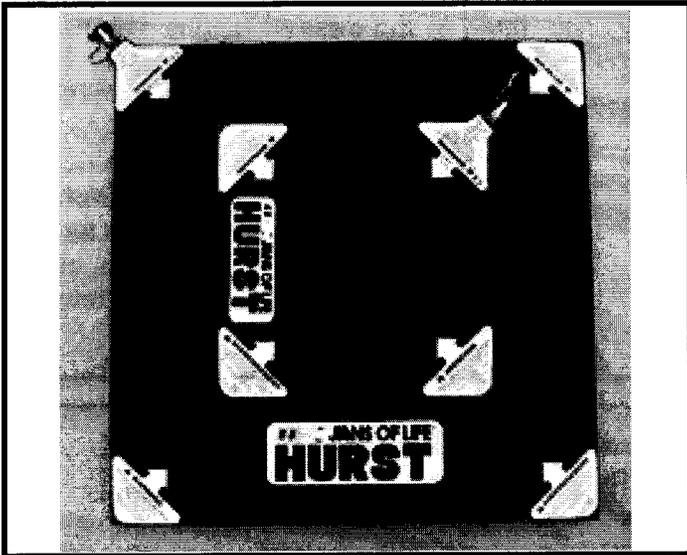
Deflate the Airbag slowly to allow the load to settle onto the safety cribs.

Remove the Airbag and the support crib if working space is needed directly under the lifting point.

⚠ WARNING ⚠

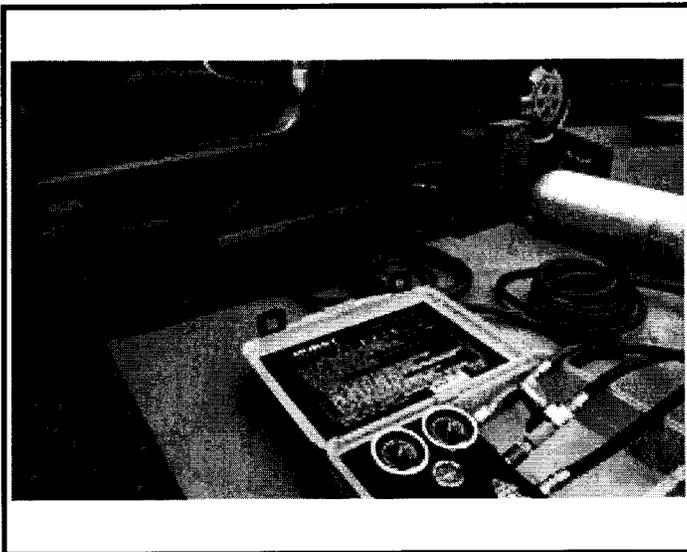
Safety cribs are essential for all lifting operations. Do not under any circumstances work under a load that is supported only by an inflated Airbag.

Lifting With Two Hurst Rescue Bags



1

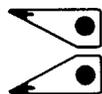
If two Hurst Rescue Bags will be used to gain lifting height, center the smaller bag on the larger bag with the nipples pointing away from the load and away from each other. Because of the skid-resistant surfaces of the Airbags, it will be necessary to do the centering on the ground or road rather than on the Airbag safety crib.



2

Position the two Hurst Rescue Bags on an Airbag safety crib. Remember to make the top layer of cribbing solid so the crib will not collapse when the bottom Airbag inflates and takes on the characteristic double-dome shape.

Build a safety crib on each side of the Airbag support crib. The safety cribs will minimize the distance that the load will drop in the event of air loss from one or both Airbags, or failure of a hose line.

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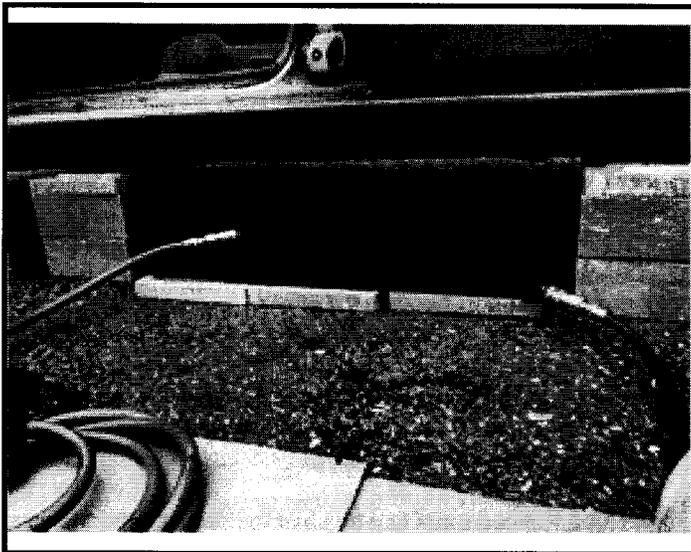
Lifting With Two Hurst Rescue Bags



3

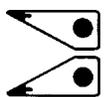
Operate the Airbag Command Console from a position to one side of the bag stack. Inflate the bottom Airbag until the top Airbag firmly contacts the underside of the load. Then fully inflate the top Airbag. If additional lift is needed, continue to inflate the bottom Airbag until the load is at the desired height.

If sufficient personnel are available, cribbing can be added to the safety cribs while the Airbags are inflating. In a limited personnel situation, cribbing can be added to the safety cribs after the load has been lifted to the desired height. The individuals who are cribbing must do so in such a way that their hands and arms will not be trapped if the load suddenly shifts or drops.

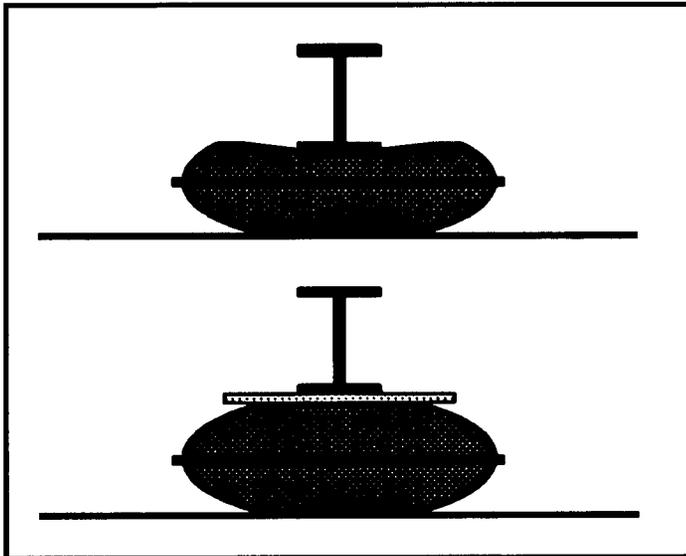


4

When the safety cribs are at the desired height, slowly deflate the top Airbag and allow the load to settle onto the cribs. Remove the Airbags and the support crib to create space if someone is required to work directly under the lifting point of the load.

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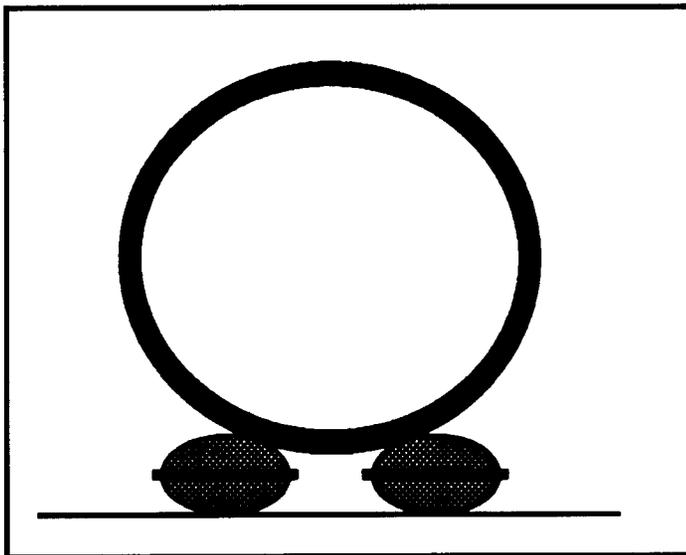
Lifting Odd Shaped Objects



Lifting Beams and Pipes

Special Care should be taken when lifting a beam or pipe with a Hurst Rescue Bag. The maximum lifting force of the Airbag cannot be employed when it takes on the shape of a saddle or pillow during inflation. Also, the steel cord or Kevlar reinforcement layer can be damaged when it becomes a sling.

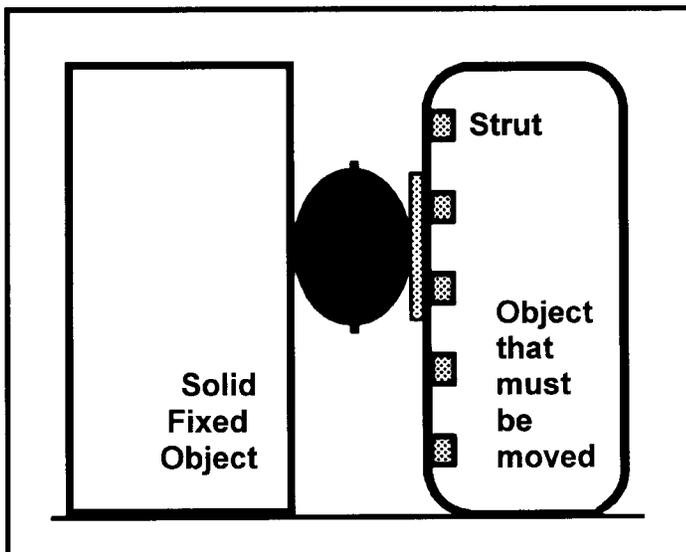
Position a plywood panel between the Airbag and the underside of the load so that the weight of the load is distributed over the Airbag's lifting surface as it inflates.



Lifting a Cylindrical Object

Lifting a large-diameter cylindrical object such as a tank with a single Hurst Rescue Bag is impossible. If the object is not firmly anchored, it will roll to one side as soon as the Airbag starts to inflate and take on the characteristic double-dome shape.

Use two Hurst Rescue Bags to lift a cylindrical object, one under each side of the load. Operate the Command Console valves in such a way that the Airbags make a smooth, level lift.

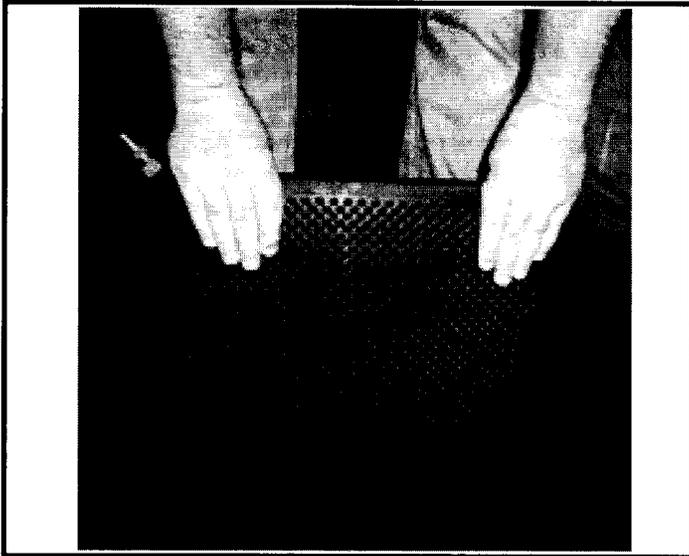


Pushing with a High Pressure Airbag

Hurst Rescue Bags can be used to push or separate as well as lift. Pushing a solid object is usually not a problem. But when the object has a thin skin, a high pressure Airbag can dimple and even tear the skin as the bag inflates.

Position the Airbag against a strut, rib or other rigid structural member. If this is not possible, place a thick square of plywood between the base for the Airbag and the object that must be moved to distribute pushing forces over a wider area.

Cleaning Hurst Rescue Bags After Use

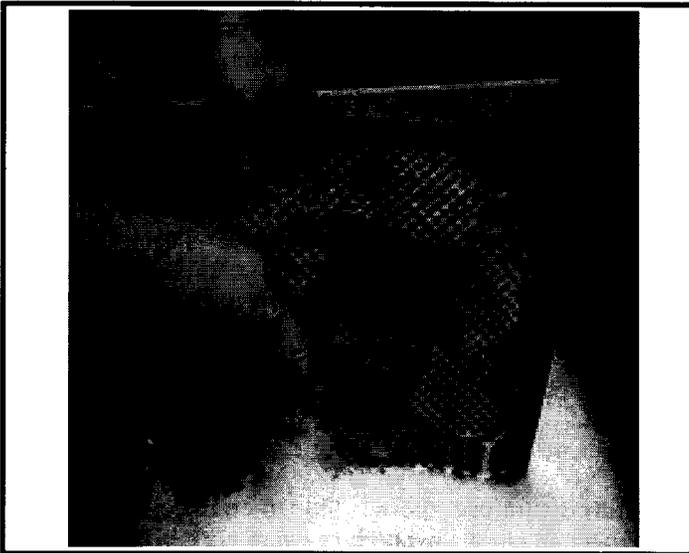


1

Hurst Rescue Bags should be cleaned after each use. Oil and grease make the Airbags slippery and caked dirt can prevent the coupling of hoses to the bags.

Hold the Airbag vertical with the nipple pointing up. Shake the Airbag vigorously and tap it against your foot to rid the top and bottom surfaces of loose dirt.

While the Airbag is vertical, inspect the nipple. If you see that it is plugged with dirt, insert a length of thin wire between the dirt plug and the nipple wall. Pull the dirt from the nipple rather than push it into the Airbag.



2

Use a stiff-bristle brush to remove any thick accumulations of dirt from between the cones that make up the top and bottom surfaces of the Airbag. Be sure to brush in several directions. Do not use a sharp-pointed object to remove caked dirt from between the cones.

When all of the caked dirt has been removed, pour a mild solution of dishwashing liquid and warm water onto the soiled areas. Remove any remaining dirt film with a stiff-bristle brush.



3

Rinse the Airbag thoroughly with cool, clear water. A high velocity spray from a hose nozzle will usually remove any film of dirt and soap, although a final brushing under the water spray may be necessary.

Stand the Airbag upright on edge with the nipple pointing up. Wipe the outside of the nipple with a clean rag. Allow the Airbag to air dry.

Do not place the airbag in a hose dryer, or subject it to any form of artificial heat in an attempt to dry it more quickly.

Inspection, Storage and Preventive Maintenance

The care and maintenance of Hurst Rescue Bags involves more than simply cleaning the Airbags after use. They should be inspected, properly stored, and periodically maintained during extended storage periods.

Inspecting Hurst Rescue Bags After Cleaning

- 1** When the Airbag is dry, thoroughly inspect all four edges for air bubbles, cuts and abrasions that may have been hidden by the accumulation of dirt. If you see what appears to be serious damage, mark the damaged area with chalk. Remove the Airbag from service and call the manufacturer or distributor for advice.
- 2** Inspect the nipple for burrs and other damage that may prevent coupling the Airbag to an air supply hose. Replace the nipple if necessary.

Storing Hurst Rescue Bags

- 1** If the Airbags are to be stored flat in a truck compartment, store them with the nipple facing the compartment door. When the Airbags are removed for the next job, the nipples will not be dragged across the compartment floor or snagged on the lip of the compartment door opening.
- 2** If the Airbags must be stored on an edge in a cabinet or truck compartment, be sure that the nipples are pointed up and toward the compartment door. The next user will be able to protect the nipple with one hand while removing the Airbag from the storage area.

Preventive Maintenance

When Hurst Rescue Bags are properly cared for and correctly stored after use, there is little to do to keep them in peak operating condition and ready for immediate use. Just follow this simple procedure every six months:

- 1) Wipe dust from each Airbag and nipple with a clean cloth.**
- 2) With a bright light, carefully inspect both surfaces and all four edges of each Airbag. Look for abrasions, cuts, air bubbles, and bulges that may have been missed during the last inspection. Keep in mind that minor surface damage is not a problem unless the underlying Airbag reinforcement layer is exposed.**
- 3) Wipe down the command console, air supply hoses and accessories with a clean cloth.**
- 4) Assemble the system components and inflate all of the Airbags to one half operating pressure 59 psig (4 BAR). You will have the opportunity to refresh your memory of the assembly procedures while at the same time assuring that the system is fully operational. Check all of the components for air leaks.**
- 5) Inspect each inflated Airbag for leaks, bulges, bubbles, cuts and abrasions that may have been missed when the Airbags were inspected after the last cleaning. If you see what appears to be a serious defect, mark the area with chalk and contact the manufacturer or distributor for advise.**

CHEMICAL COMPATIBILITY

The following chemical compatibility sheets apply to the Hurst Rescue Bags. The time parameters listed for exposure time for various chemicals will change according to the strength of the chemical, temperature and age of the Rescue Bag. These ratings are based on the neoprene compound used to manufacture the Hurst Rescue Bag. Hurst Rescue Bags can be safely used in ambient temperatures of -40 degrees F to 140 degrees F. For operation at high temperatures the Rescue Bag must be protected and isolated from the heat source.

The following pages list some of the known chemicals and the reactions that can be expected when using Hurst Rescue Bags with or around these chemicals.

- A** Contact with any chemicals in this category will not harm the Hurst Rescue Bag. The Hurst Rescue Bag can be in contact with these chemicals for no longer than 12 hours.
- B** Contact with any chemicals in this category may affect certain properties of the Hurst Rescue Bag. The Hurst Rescue Bag can be kept in contact with these chemicals for a time period of no longer than 6 hours.
- C** Contact with any chemical in this category will undoubtedly affect certain properties of the Hurst Rescue Bag. If it is necessary to use the Rescue Bags around these chemicals, contact should be limited to the shortest possible time.
- D** Contact with these chemicals will result in SEVERE damage to the Hurst Rescue Bag. DO NOT EXPOSE HURST RESCUE BAGS TO THESE CHEMICALS. Softening and possible total bag failure can result even from short-term exposure.

After ANY exposure to chemicals, oils or corrosive fluids the Hurst Rescue Bags should be properly cleaned and checked as described previously in this operating manual. See *Cleaning Hurst Rescue Bags After Use*. If after cleaning the Hurst Rescue Bag(s) the surface seems soft, sticky or changed in any way, the Rescue Bag(s) should then be returned to the factory for inspection.

Acetaldehyde	B
Acetic Acid 5%	B
Acetic Acid 30%	B
Acetic Acid, Hot	D
Acetic Acid, Glacial	C
Acetic Anhydride	B
Acetone	B
Acetophenone	D
Acetyl Chloride	D
Acetylene	B
Acetylene Tribromide	D
Acrylonitrile	B
Adipic Acid	D
Air Below 300 Degrees F	B
Air Above 300 Degrees F	D
Aluminum Acetate	B
Aluminum Bromide	A
Aluminum Chloride	A
Aluminum Fluoride	A
Aluminum Nitrate	A
Aluminum Phosphate	A
Aluminum Sulfate	A
Amines, Mixed	D
Ammonia Anhydrous	A
Ammonia Gas, Cold	A
Ammonia Gas, Hot	B
Ammonia Carbonate	B
Ammonia Chloride	A
Ammonium Hydroxide (CONC)	B
Ammonium Nitrate	A

Ammonium Nitrate	A
Ammonium Persulfate Soln	D
Ammonium Persulfate, 10%	D
Ammonium Phosphate	A
Ammonium Sulfate	A
Ammonium Sulfide	A
Amyl Acetate	D
Amyl Alcohol	A
Anhydrous Hydrazine	D
Anhydrous HF	D
Aniline	C
Animal Fats	B
Animal Fats (Lard Oil)	B
Aqua Regia	D
Aromatic Fuel, 50%	D
Arsenic Acid	A
Asphalt	B
ASTM Oil #1	B
ASTM Oil #2	B
ASTM Oil #3	B
ASTM Reference Fuel A	A
ASTM Reference Fuel B	C
ASTM Reference Fuel C	C
Auto Trans. Fluid	C
Auto Brake Fluid	B
Barium Chloride	A
Barium Hydroxide	A
Beet Sugar Liquors	A
Benzaldehyde	D
Benzene	D

Benzenesulfonic Acid	A
Benzene	B
Benzachloride	D
Benzic Acid	A
Benzyl Alcohol	C
Benzyl Chloride	D
Bleach Solution	D
Borax	A
Boric Acid	A
Brake Fluid (Non-Petro)	B
Brine	A
Bromine	D
Bromine Anhydrous	D
Bromine Pentafluoride	D
Bromine Trifluoride	D
Bromine Water	B
Bromobenzene	D
Butadiene	B
Butane	B
Butane 2.2 Dimethyl	D
Butane 2.3 Dimethyl	D
Butanol (Butyl Alcohol)	A
1-Butene, 2-Ethyl	B
Butter	B
Butyl Acetate	D
Butyl Acrylate	D
Butyl Alcohol	A
Butyl Amine	D
Butyl Benzoate	D
Butyl Butyrate	D

CHEMICAL COMPATIBILITY (cont.)

A) No harm up to 12 hours **B)** May affect bag. No contact longer than 6 hours. **C)** Will affect bag. Shortest possible contact time. **D)** Do NOT expose bag to this chemical.

Butyl Cellosolve Adipate	D
Butyl Ether	B
Butyl Oleate	D
Butyl Stearate	D
Butylene	C
Butryaldehyde	C
Butyric Acid	C
Calcium Acetate	B
Calcium Bisulfite	A
Calcium Chloride	A
Calcium Hydroxide	A
Calcium Hypochlorite	D
Calcium Nitrate	A
Calcium Phosphate	A
Calcium Silcate	A
Calcium Sulfide	B
Caliche Liquors	B
Cane Sugar Liquors	A
Carbitol	B
Carbon Bisulfide	D
Carbon Dioxide, Dry	A
Carbon Dioxide, Wet	A
Carbon Disulfide	D
Carbon Monoxide	B
Carbon Tetrachloride	D
Castor Oil	A
China Wood Oil (Tung Oil)	B
Chloroacetic Acid	D
Chloronated Salt Brine	D
Chloronated Solvents, Dry	D
Chloronated Solvents, Wet	D
Chlorine, Dry	C
Chlorine, Wet	D
Chlorine Dioxide	D
Chlorine Trifluoride	D
Chloroacetone	C
Chloroacetic Acid	D
Chlorobenzene	D
Chlorobenzene, Mone	D
Chlorobromomethane	D
Chlorobutadiene	D
Chlorododecane	D
Chloroform	D
O-Chloronaphthalene	D
Chlorosulfonic Acid	D
Chlorotoluene	D
Chrome Plating Solution	D
Chromic Acid	D
Chromic Oxide	D
Citric Acid	A
Cobalt Chloride	A
Cobalt Chloride 2N	A
Coconut Oil	B
Cod Liver Oil	B
Coffee	A

Coke Oven Gas	C
Caliche Liquors	B
Copper Acetate	B
Copper Chloride	A
Copper Cyanide	B
Copper Sulfate	A
Copper Sulfate 10%	A
Copper Sulfate 50%	A
Corn Oil	B
Cottonseed Oil	B
Creosote Creosol	D
Creosote, Coal Tar	B
Creosote, Wood	B
Crude Oil	C
Cumene	D
Cyclohexane	D
Cyclohexanol	A
Cyclohexanone	D
p-Cymene	D
DeCalin	D
Decane	D
Denatured Alcohol	B
Detergent Solutions	B
Developing Fluids (Photo)	A
Dextron	A
Diacetone	D
Diacetone Alcohol	B
Dibenzyl Ether	D
Dibenzyl Sebacate	D
Dibutylamine	D
Dibutyl Ether	C
Dibutyl Phthalate	D
Dibutyl Sebacate	D
6-Dichlorobenzene	D
Dichloro-Butene	D
Dichloro-Isopropyl Ether	D
Dicyclohexamine	D
Diesel Oil	B
Diethylamine	A
Diethylbenzene	D
Diethyl Ether	C
Diethyl Sebacate	D
Diethylene Glycol	A
Difluorodibromomethane	D
Dilsobutylene	C
Disocetyl Sebacate	D
Dilsopropylbenzene	D
Disopropyl Ketone	D
Dimethylanline	D
Dimethylformamide	D
Dimethylphthalate	D
Dinitrotoluene	D
Diocetyl Phthalate	D
Diocetyl Sebacate	D
Dioxane	D

Dipentene	D
Diphenyl	D
Doboroethyl Benzene	D
Drinking Water	A
Dry Cleaning Fluids	C
Epichlorohydrin	D
Esson Trans. Fluid	B
Ethane	B
Ethanol	B
Ethanolamine	B
Ethers	D
Ethyl Acetate	D
Ethyl Acetoacetate	D
Ethyl Acrylate	D
Ethyl Acrylic Acid	D
Ethyl Alcohol	A
Ethyl Benzene	D
Ethyl Benzoate	D
Ethyl Bromide	D
Ethyl Cellosolve	B
Ethyl Cellulose	B
Ethyl Chloride	B
Ethyl Chlorocarbonate	C
Ethyl Chloroformate	C
Ethyl Cyclopentane	D
Ethyl Ether	D
Ethyl Formate	B
Ethyl Hexanol	D
Ethyl Mercaptan	D
Ethylene Chlorohydrin	B
Ethylenediamine	A
Ethylene Dibromide	D
Ethylene Dichloride	D
Ethylene Glycol	A
Ethyl Oxalate	D
Ethyl Pentachlorobenzene	D
Ethyl Silicate	A
Ethylene	D
Ethylene Chloride	D
Ethylene Oxide	D
Ethylene Trichloride	D
Fatty Acids	C
Ferric Chloride	A
Ferric Nitrate	A
Ferric Sulfate	A
Fish Oil	D
Fluorine (liquid)	C
Fluorobenzene	D
Formaldehyde	B
3/Formic Acid	B
Freon 11	B
Freon 12	B
Freon 13	A
Freon 14	D
Freon 21	D

CHEMICAL COMPATIBILITY (cont.)

A) No harm up to 12 hours **B)** May affect bag. No contact longer than 6 hours. **C)** Will affect bag. Shortest possible contact time. **D)** Do NOT expose bag to this chemical.

Freon 22	B
Freon 31	A
Freon 32	A
Freon 112	B
Freon 113	A
Freon 114	A
Freon 115	A
Freon 142B	A
Freon 152A	A
Freon 218	A
Freon C316	A
Freon C318	A
Fuel Oil	B
Fuel Oil, Acidic	D
Fuel Oil #6	D
Fuming Sulfuric Acid	D
Furan (Furfutan)	D
Furtural	C
Furfuraldehyde	C
Furfuryl Alcohol	D
Fryl Carbinol	D
Gasoline	B
Gelatin	A
Glacial Acetic Acid	C
Glauber's Salt	A
Glucose	A
Glue (depending on type) ...	A
Glycerine	A
Glycerol	A
Glycols	A
Heavy Water	A
HEF-2 (high energy fuel)	D
Helium	A
N-Heptane	A
N-Hexaldehyde	A
Hexane	B
N-Hexane-1	B
Hexyl Alcohol	B
Hydraulic Oil (pet. based) ...	B
Hydrazine	C
Hydrobremic Acid	C
Hydrobromic Acid 40%	C
Hydrocarbons (saturated) ...	D
Hydrochloric Acid, Hot	D
Hydrochloric Acid, Cold	D
Hydrochloric Acid, 3 Molar ...	C
Hydrochloride Acid (Cont.) ...	D
Hydrocyanic Acid	C
Hydrofluoric Acid 65%, Cold	C
Hydrofluoric Acid 65% Min. Cold	D
Hydrofluoric Acid 65% max. Hot	D
Hydrofluoric Acid 65% min. Hot	D
Hydrogen Gas, Cold	A
Hydrogen Gas, Hot	A
Hydrogen Peroxide 90%	D

Hydrogen Sulfide, Dry, Cold	C
Hydrogen Sulfide, Dry, Hot	C
Hydrogen Sulfide, Wet, Cold	B
Hydrogen Sulfide, Wet, Hot	C
Hydroquinone	D
Hypochlorous Acid (SP)	D
Iodine	B
Iodine Pentafluoride	D
Iodoform	D
Isobutyl Alcohol	B
Isobutyl N-Butyrate	D
Isododecane	A
Isoctane	B
Isophorone (Ketone)	D
Isopropyl Acetate	D
Isopropyl Alcohol	A
Isopropyl Chloride	D
Isopropyl Ether	D
Kerosene	B
Lactams-Amino Acids	D
Lactic Acid, Cold	B
Lactic Acid, Hot	C
Lacquers	D
Lacquer Solvents	D
Lactic Acids	C
Lard, Animal Fats	B
Lavender Oil	C
Lead Acetate	A
Lead Nitrate	B
Light Grease	B
Lingroin	D
Linoleic Acid	D
Linseed Oil	B
Liquid Oxygen	D
Liquid Petroleum	B
Lubricating Oil, Di-Ester	D
Lubricating Oil, Pet. Based	B
Lubricating Oil, SAE 10	B
Lubricating Oil, SAE 20	B
Lubricating Oil, SAE 30	B
Lubricating Oil, SAE 40	B
Lubricating Oil, SAE 50	B
Magnesium Chloride	A
Magnesium Hydroxide	B
Magnesium Sulfate	A
Maleic Acid	A
Mercuric Chloride	B
Mercury	A
Mercury Vapors	D
Mestyl Oxide (Ketone)	D
Methane	B
Methanol	A
Methyl Acetate	C
Methyl Acetoacetate	D
Methylacrylate	C

Methyl Alcohol	A
Methyl Benzoate	D
Methyl Bromide	D
Methyl Butyl Ketone	D
Methyl Carbonate	D
Methyl Chloroformate	D
Methyl D-Bromide	D
Methyl Cyclopentane	C
Methylene Chloride	D
Methylene Dichloride	D
Methyl Ester	C
Methyl Ethyl Ketone	D
Methyl Ethyl Ketone Peroxide	D
Methyl Formate	C
Methyl Isobutyl Ketone	D
Methyl Isopropyl Ketone	D
Methyl Methacrylate	D
Methyl Oleate	D
Mineral Oils	B
Mono Bromobenzene	D
Mono Chlorobenzene	D
Mono Ethanolamine	C
Monomethyl Analine	D
Monomethylether	D
Monomethyl Hydrazine	D
Mononitrotoluene & Dinitrotoluene 40/60	D
Monovinyl Acetylene	D
Naptha	C
Napthalene	D
Nepthenic Acid	D
Natural Gas	D
Neatsfoot Oil	D
Neon	A
Nickel Acetate	C
Nickel Chloride	B
Nickel Salts	B
Nickel Sulfate	B
Nitric Acid (Cont.)	D
Notric Acid (Dilute)	B
Nitric Acid, Red Fume	D
Nitrobenzine	D
Nitrobenzene	D
Nitroethane	C
Nitrogen	A
Nitrogen Tetroxide	D
Nitromethane	C
Nitropropane	D
Otochloro Toluene	D
Octadecane	B
Octane	D
Octyl Alcohol	C
Oleic Acid	C
Oleum (Fuming Sulfuric Acid)....	D
Olive Oil	B

CHEMICAL COMPATIBILITY (cont.)

A) No harm up to 12 hours **B)** May affect bag. No contact longer than 6 hours. **C)** Will affect bag. Shortest possible contact time. **D)** Do NOT expose bag to this chemical.

Orthochloro Ethyl Benzene	D
Ortho-Dichlorobenzene	D
Oxygen, Cold	A
Oxygen (-200 to -400 Deg)	D
Ozone	B
Paint Thinner, Duco	C
Palmitic Acid	B
Paradichlorobenzene	D
Peanut Oil	B
Pentane, 2-Methyl	D
Pentane, 2,4 Di-Methyl	D
Pentane, 3-Methyl	D
N-Pentane	B
Perchloric Acid	A
Parchloroethylene	D
Petroleum Oil, Crude	B
Petroleum Oil, -250 Deg F ...	B
Petroleum Oil, +250 Deg F ...	D
Phenol	C
Phenol 70/30 Water	C
Phenol 85/15 Water	C
Phenylbenzene	D
Phenyl Ethyl Ether	D
Phenyl Hydrazine	D
Phorone	D
Phosphoric Acid, 20%	B
Phosphoric Acid, 45%	B
Phosphoric Acid, 3 Motar	C
Phosphoric Acid, Concentrated ..	B
Phosphoric Trichloride	D
Pickling Solution	C
Picric Acid, Water Solution	B
Picric Acid, Molten	C
Pinene	D
Pine Oil	D
Piperidine	D
Plating Solution, Chrome	D
Plating Solution, Others	A
Polyvinyl Acetate Emulsion ..	B
Potassium Acetate	B
Potassium Chloride	A
Potassium Cyanide	A
Potassium Dichronate	B
Potassium Hydroxide	C
Potassium Nitrate	A
Potassium Salts	A
Potassium Sulfate	A
Propane	B
Propyl Acetate	D
N-Propyl Acetone	D
Propyl Alcohol	A
Propyl Nitrate	D
Propylene	D
Propylene Oxide	D
Pydraul 10E 29ETL	D

Pydraul 30E 50E	D
Pydraul 65E 90E	D
Pydraul 115E	D
Pydraul 230E,312C,540C	D
Pydrine Oil	D
Pyrole	D
Radiation	B
Rapeseed Oil	B
Salt Water	B
Sewage	A
Silicone Greases	A
Silicone Oils	C
Silver Nitrate	A
Soap Solutions	B
Soda Ash	A
Sodium Acetate	B
Sodium Bicarbonate	A
Sodium Bisulfite	A
Sodium Borate	A
Sodium Carbonate	B
Sodium Chloride	A
Sodium Cyanide	A
Sodium Hydroxide	B
Sodium Hypochlorite	D
Sodium Metphosphate	C
Sodium Nitrate	B
Sodium Perborate	B
Sodium Peroxide	B
Sodium Phosphate, Mono	B
Sodium Phosphate, Dibasic ...	B
Sodium Salts	A
Sodium Silcate	A
Sodium Sulfate	A
Sodium Sulfide	A
Sodium Sulfite	A
Sodium Thiosulfate	A
Soybean Oil	B
Stannous Chloride	A
Steam < 350 Degrees F	D
Steam > 350 Degrees F	D
Stearic Acid	B
Slyrene	D
Slyrene Monomer	D
Sucrose Solutions	A
Sulfur	B
Sulfur Chloride	C
Sulfur Dioxide, Wet	C
Sulfur Dioxide, Dry	C
Sulfur Dioxide, Liquified	A
Sulfur Hexaflouride	B

Sulfur, Molten	D
Sulfur Trioxide	C
Sulfuric Acid, 3 Motar	C
Sulfurous Acid	D
Tannic Acid	A
Tannic Acid, 10%	A
Tar, Bituminous	C
Terpineol	D
Tertiary Butyl Alcohol	A
Tertiary Butyl Mercaptan	D
Tetrabromornmethane	D
Tetrachloroethlene	D
Tetraethyl Lead	D
Tetraethyl Lead Blend	D
Tetrahydrofuran	C
Tetralin	D
Thionyl Chloride	D
Transformer Oil	C
Triacetin	A
Tributyl Mercaptan	D
Trichloroacetic Acid	B
Trichlorocethane	D
Trichloroethylene	D
Tricresyl Phosphate	C
Triethanol Amine	B
Trioctyl Phosphate	D
Tripoly Phosphate	D
Tung Oil	B
Turbine Oil	B
Turbine Oil #15	D
Turpentine	C
Unsymmetrical Dimethyl Hydrazine	B
Varnish	C
Vegetable Oil	B
Vinegar	B
Vinyl Chloride	D
Water	A
White Pine Oil	D
Wood Alcohol	A
Wood Oil	A
Xylene	D
Xylidenes	D
Xyol	D
Xenon	A
Zeolites	C
Zinc Acetate	C
Zinc Chloride	B
Zinc Salts	D

Lifting Capacities and Other Information

Kevlar Reinforced Bags

Model	Max. Lifting Capacity (tons)	Max. Inflation Height Without Load	Length x Width	Min. Clearance Needed for Insertion	Weight	Part Number
HK1	1.2 US 1.1 Metric	3 in 8 cm	6 in x 6 in 15 cm x 15 cm	1 in 2.5 cm	1.5 lb 0.7 kg	106R064
HK3	2.5 US 2.3 Metric	4 in 10 cm	8 in x 8 in 20 cm x 20 cm	1 in 2.5 cm	2.7 lb 1.2 kg	106R065
HK9	9.2 US 8.3 Metric	7 in 18 cm	15 in x 15 in 38 cm x 38 cm	1 in 2.5 cm	4.3 lb 9.5 kg	106R026
HK13	13.4 US 12.2 Metric	9 in 22 cm	17 in x 17 in 43 cm x 43 cm	1 in 2.5 cm	12.5 lb 5.7 kg	106R027
HK21	20.8 US 18.9 Metric	11 in 27 cm	22 in x 22 in 56 cm x 56 cm	1 in 2.5 cm	19.5 lb 8.9 kg	106R028
HK26	26 US 23.6 Metric	12 in 30 cm	24 in x 24 in 61 cm x 61 cm	1 in 2.5 cm	26 lb 11.8 kg	106R029
HK34	34 US 30.8 Metric	14 in 36 cm	27 in x 27 in 69 cm x 69 cm	1.2 in 3 cm	33.5 lb 15.2 kg	106R030
HK43	42.8 US 38.8 Metric	17 in 42 cm	31 in x 31 in 79 cm x 79 cm	1.2 in 3 cm	41 lb 18.6 kg	106R031
HK74	70.2 US 63.7 Metric	20 in 51 cm	36 in x 36 in 91 cm x 91 cm	1.2 in 3 cm	57 lb 25.9 kg	106R032

Steel Reinforced Bags

Model	Max. Lifting Capacity (tons)	Max. Inflation Height Without Load	Length x Width	Min. Clearance Needed for Insertion	Weight	Part Number
HS9	9.2 US 8.3 Metric	7 in 18 cm	15 in x 15 in 38 cm x 38 cm	1 in 2.5 cm	11.5 lb 5.2 kg	106R033
HS13	13.4 US 12.2 Metric	9 in 22 cm	17 in x 17 in 43 cm x 43 cm	1 in 2.5 cm	16.5 lb 7.5 kg	106R034
HS21	20.8 US 18.9 Metric	11 in 27 cm	22 in x 22 in 56 cm x 56 cm	1 in 2.5 cm	30 lb 13.6 kg	106R035
HS26	26 US 23.6 Metric	12 in 30 cm	24 in x 24 in 61 cm x 61 cm	1 in 2.5 cm	37.5 lb 17 kg	106R036
HS34	34 US 30.8 Metric	14 in 36 cm	27 in x 27 in 69 cm x 69 cm	1.2 in 3 cm	51 lb 23.2 kg	106R037
HS43	42.8 US 38.8 Metric	17 in 42 cm	31 in x 31 in 79 cm x 79 cm	1.2 in 3 cm	61.5 lb 27.9 kg	106R038
HS74	70.2 US 63.7 Metric	20 in 51 cm	36 in x 36 in 91 cm x 91 cm	1.2 in 3 cm	88 lb 40 kg	106R039

Working Pressure: 118 psig (8 BAR) all models.
Bursting Pressure: 472 psig (32 BAR) all models.

HALE

IDEX

IDEX CORPORATION

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