BVA® HYDRAULICS

MADE IN THE USA

# HIGH PRESSURE AIR LIFTING BAGS OPERATION AND INSTRUCTION MANUAL

BVA® HYDRAULICS

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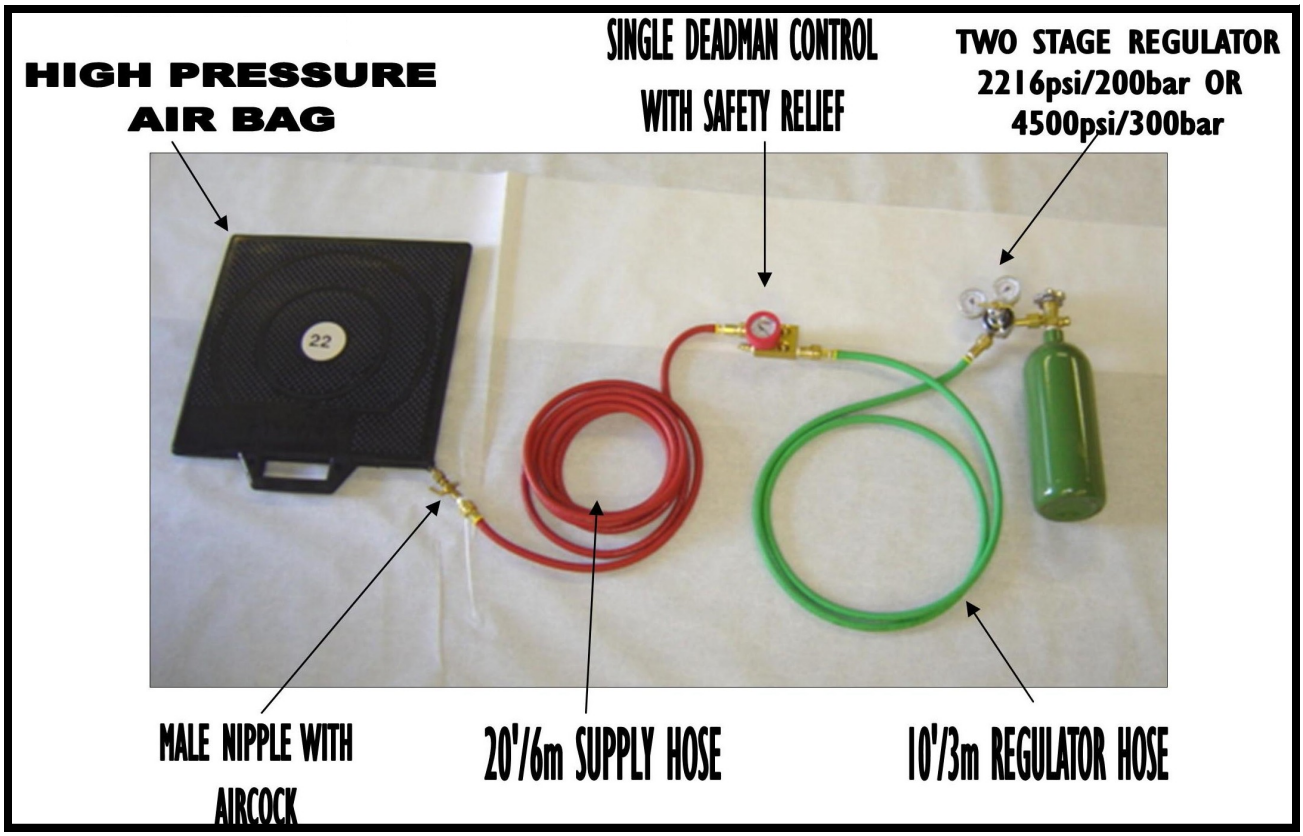
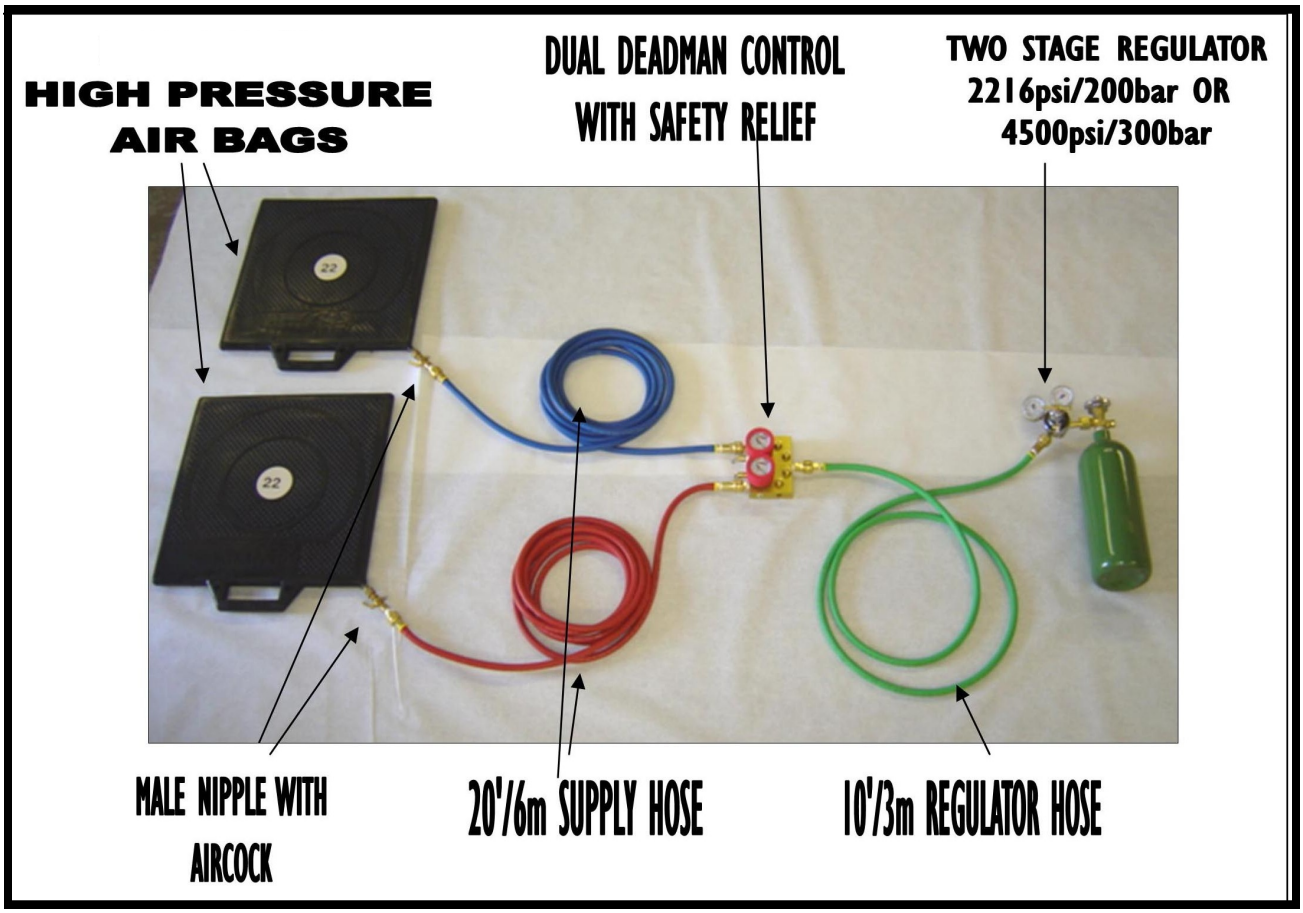
## PART IDENTIFICATION
## FOR SINGLE AND DUAL AIR BAG APPLICATION



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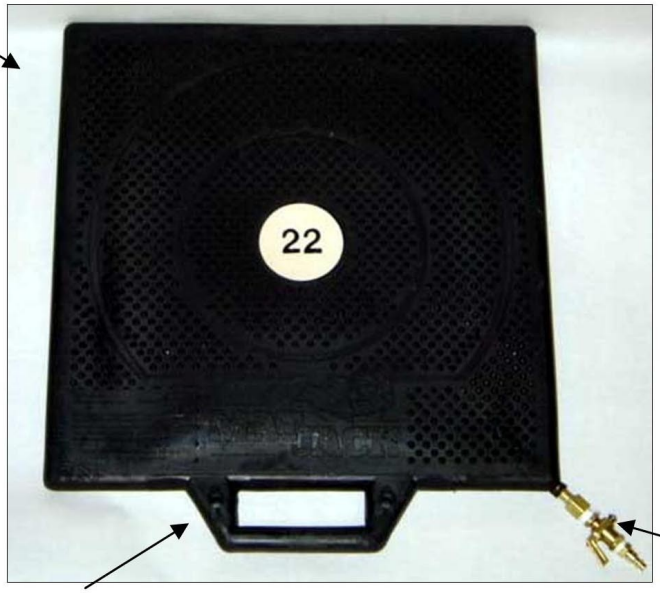
# HIGH PRESSURE AIR BAG

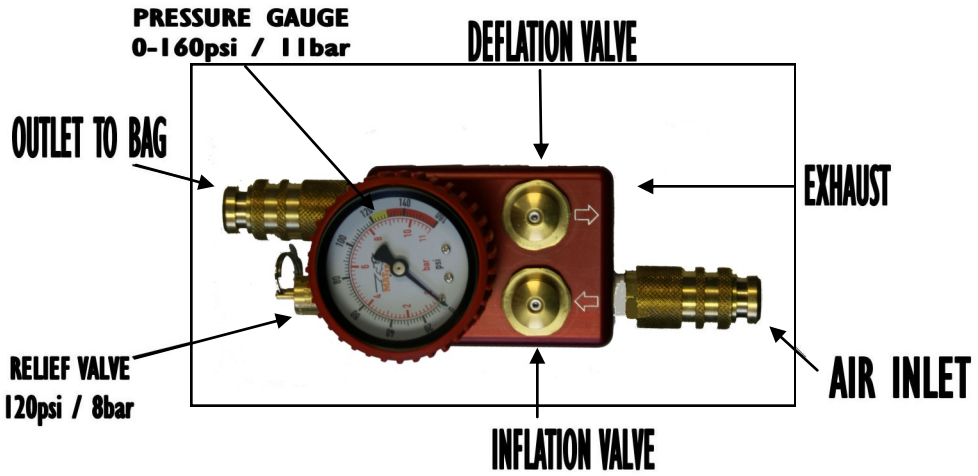


MALE NIPPLE
WITH AIRCOCK

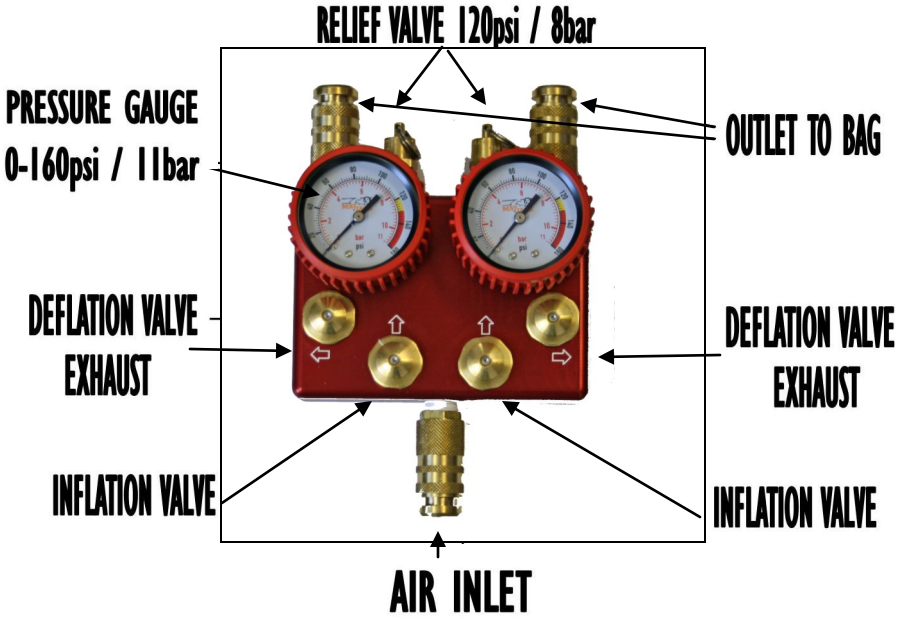
SOME SIZES WITH CARRYING HANDLE OR TABS

# PART IDENTIFICATION FOR HIGH PRESSURE AIR BAGS EQUIPMENT

## SINGLE DEADMAN CONTROL VALVE AND SAFETY RELIEF



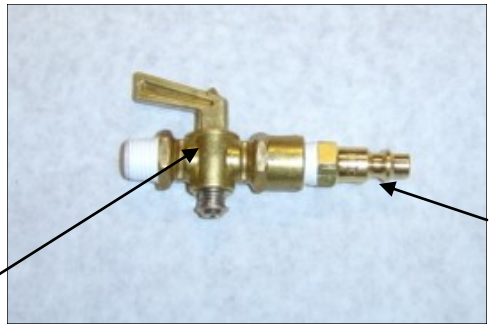

## DUAL DEADMAN CONTROL VALVE AND SAFETY RELIEF



# PART IDENTIFICATION FOR HIGH PRESSURE AIR BAGS EQUIPMENT

## 20' / 6M SUPPLY HOSE

## MALE NIPPLE WITH AIRCOCK



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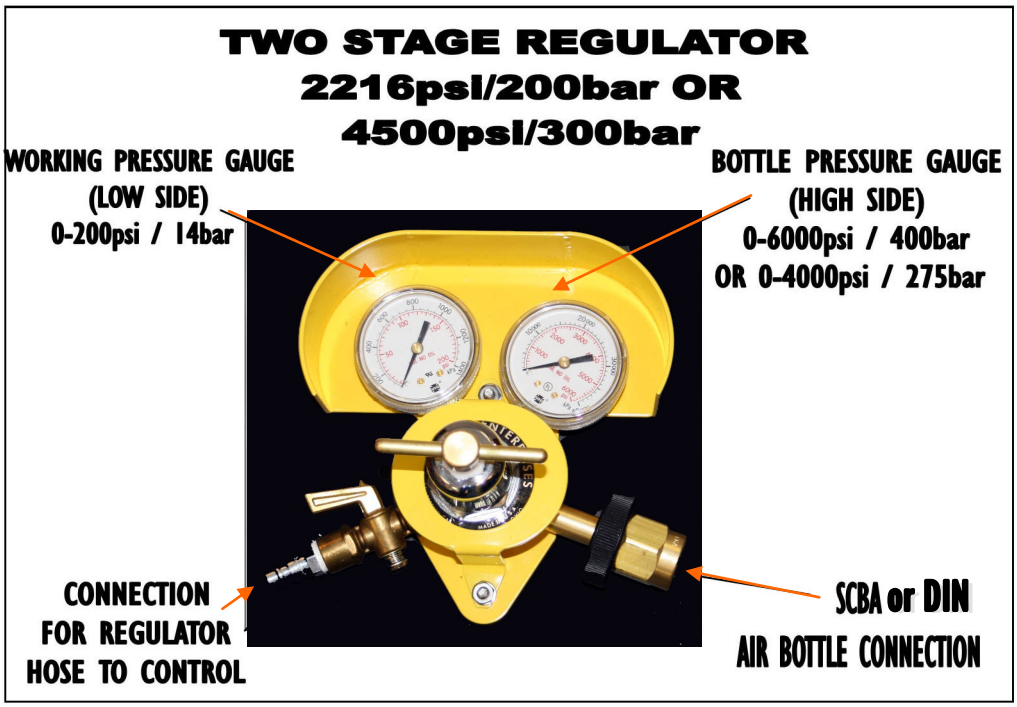
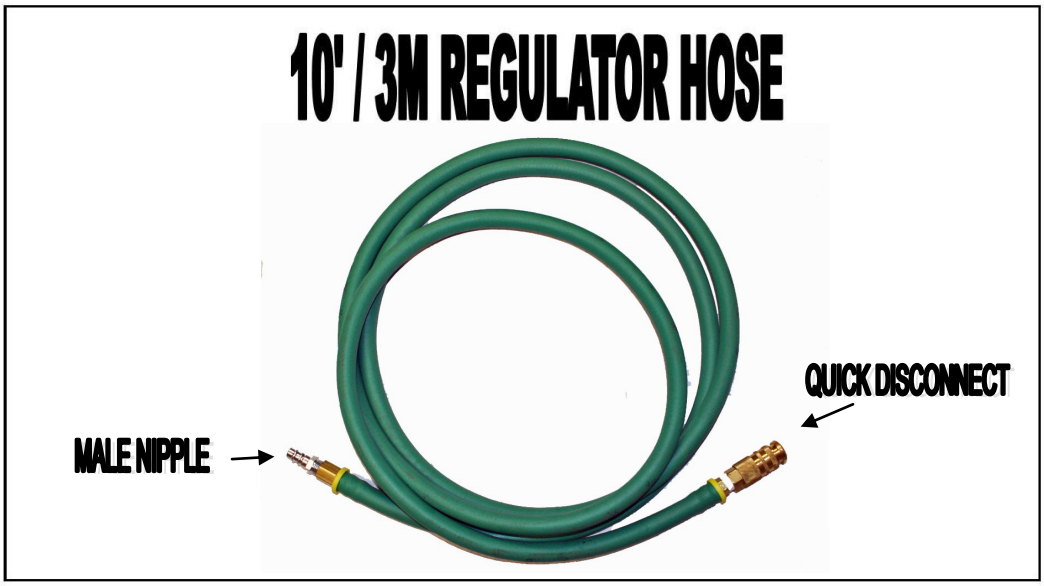


# INSPECTION AND ASSEMBLY

After unpacking, lay out system for general familiarization. Inspect for any shipping damage, check hoses, regulator, pressure control unit, bag and accessories.

**Air Lifting Bags**

- Inspect them and look for any obvious shipping damage. These bags are made to be durable. If there is any damage, please report this immediately to your dealer or our service department through our toll free number 888-332-6419 or 816-891-6390

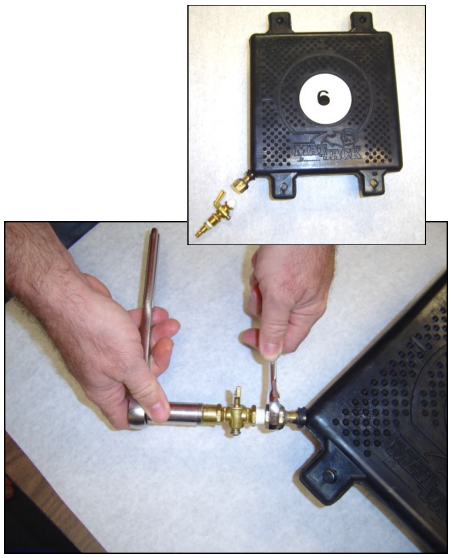
**High / Low Pressure 2 stage regulator**

- Regulator must be used whenever you use a high pressure air source, such as, a breathing air cylinder. Check for damaged gauge lenses, dented surfaces, bad threads, etc. before each use. If any exist contact your dealer or our service department.
- The gauge closest to the air intake will give the operator a reading of the pressure of his air source. The second gauge indicates the working pressure operating range of the air bag.

**CAUTION**

**Working Pressure not to exceed 120 psi / 8 bar on the low pressure side of the regulator**

**Assembly for Male Nipple With Aircock**



- Install the replaceable male nipple and aircock into the air inlet fitting on each air lifting bag. These fittings are tapered brass and do not need to be over tightened, a snug fit is all that is required.

# ASSEMBLY INSTRUCTIONS

1. Connect regulator to air source.

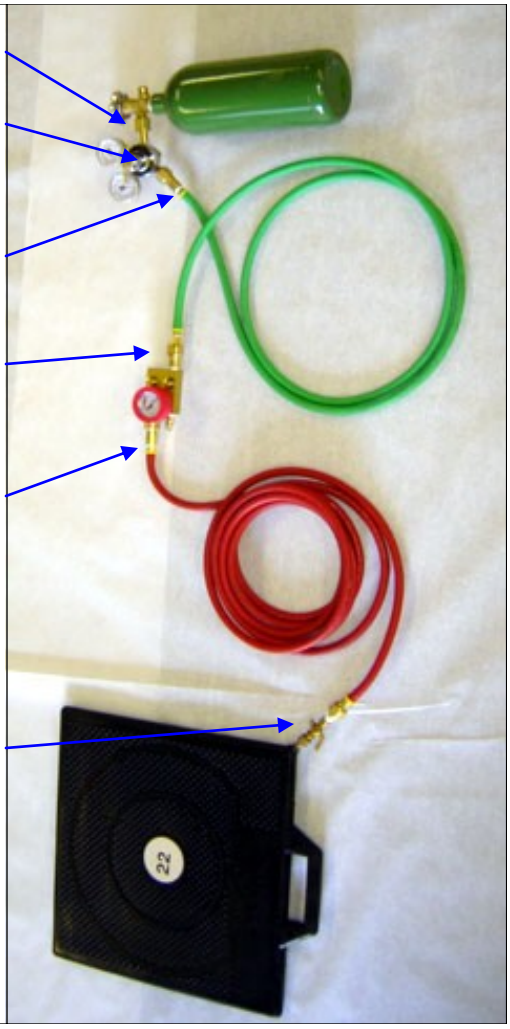
2. Loosen pressure adjusting handle on the regulator.

3. Connect the regulator hose quick disconnect fitting to the regulator.

4. Connect the regulator hose male nipple to the inlet on the control valve.

5. Connect the supply hose to the control valve outlet

6. Connect the other end of the supply hose to the male nipple with air-cock on the air lifting bag.



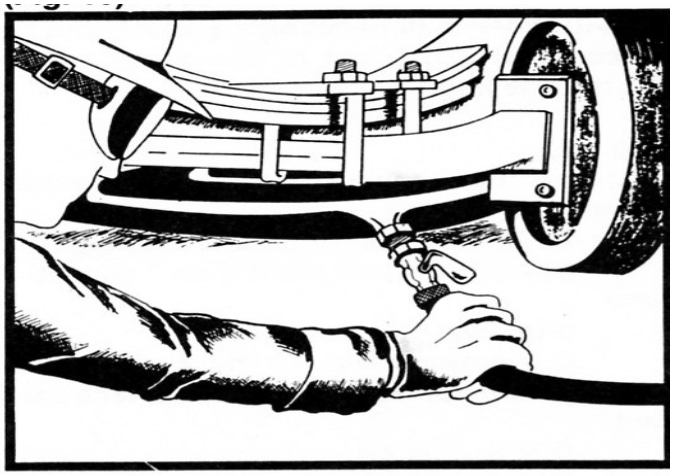

# OPTIONAL EQUIPMENT

**Your specific order may vary with equipment shown above, (air source, controls or fittings, etc.). For assembly and operation instructions look for separate instruction sheet or contact BVA or your local dealer.**

# RULES FOR SAFE OPERATION

**CAUTION**

## READ RULES FOR SAFE OPERATION BEFORE OPERATING THE AIR BAG



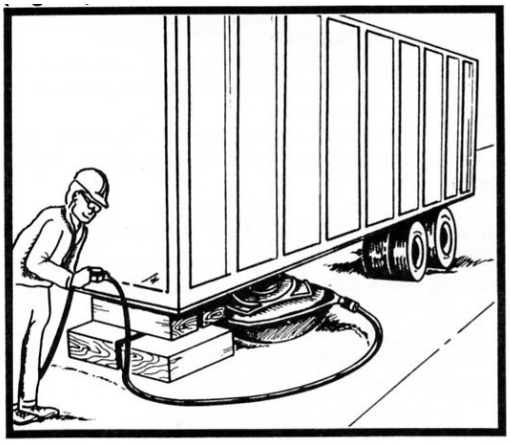
- **Before putting the air lifting bag system into operation, the operator and personnel in the working area must be properly suited to the environment in which they will be working. Safety equipment is of the utmost importance. Hard hat, gloves, protective clothing and footwear MUST be worn to prevent injuries.**

- **Because air lifting bags may be used in so many different environments, operators must be aware of the many HAZARDS to which they may be exposed to and should possess protective equipment accordingly.**

- **Before raising an object, careful evaluation should be made to predetermine desired height or load movement. This allows you to obtain, in advance, all necessary blocks and/or shoring before you commit the air lifting bags.**

- **Always maximize the contact area of the air lifting bag (see page 13) This may require you to either block up the air lifting bag before inflating or to use two bags simultaneously.**

- **As the bag is being inflated stand to one side and clear all other personnel from the vicinity. DO NOT stand in front of the opening where the air lifting bag has been placed, as there is a possibility of the air lifting bag being pushed out by the load shifting.**



- **As the load is being moved or lifted, always block and/or shore the load.**
  - **A. When blocking, have the operator stop the lift. After blocking, resume the lift.**
  - **B. Use blocks and shoring that will be able to assume the load. Remember, although the air lifting bag does not need a smooth surface, blocks and shoring do.**

**NEVER WORK UNDER THE LOAD!**

**WHEN SHORING USING THE BOX CRIBBING METHOD MAKE SURE THE BAG IS PLACED ON A SOLID TOP LAYER. DO NOT LEAVE A HOLLOW CENTER AS ANY MOVEMENT OF THE LOAD MAY CAUSE THE CRIBBING TO SHIFT AND COLLAPSE**

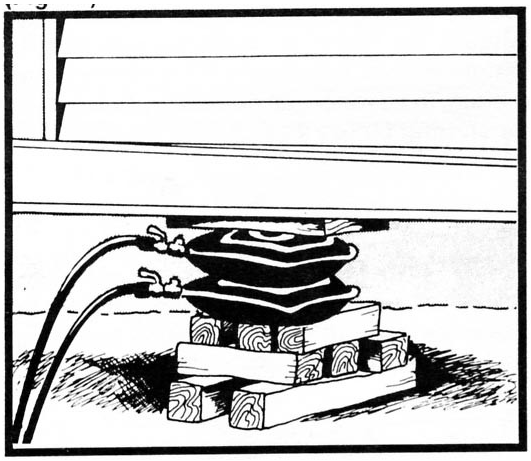
# RULES FOR SAFE OPERATION

**CAUTION**

## READ RULES FOR SAFE OPERATION BEFORE OPERATING THE AIR BAG

- **<u>NEVER</u> inflate bags against sharp objects or on a heated surface over 230 degrees Fahrenheit. When it is necessary a block can be placed between a hot or sharp surface to protect the bag.**

- **Two bags may be used safely by using a dual control.**



**STACKING:**
**A. This allows for a greater lift height.**
**B. <u>NEVER</u> stack more than 2 bags at a time.**
**C. When using two bags always inflate the bottom bag first.**
**SIDE BY SIDE:**
**A. Allows you to lift the same load at two separate points to maximize surface contact.**
**B. Safer lifting practice due to spreading load on two lift points rather than a single point load lift.**

- **When using the air lifting bags, always inflate at a slow rate.**
- **<u>NEVER</u> operate air lifting bags, hoses, valves, regulators, etc. that are damaged or improperly assembled.**

# OPERATING INSTRUCTIONS

**Always open the high pressure air source slowly. Failure to do so may damage the regulator.**

**1. After assembly is completed make sure pressure adjusting handle on the regulator is loosened.**

**2. Open air source slowly. Observe the high pressure gauge. The gauge should reflect the air supply pressure.**

**3. The outlet valve on the regulator can now be opened, allowing air flow to the controller by adjust working pressure on the regulator to 120 psi by turning the handle clockwise.**

**4. The operation of the controller is simple. On the deadman push button control the inflation valve is simply depressed allowing air to flow to the bag.**

Notice on the operating gauge dial

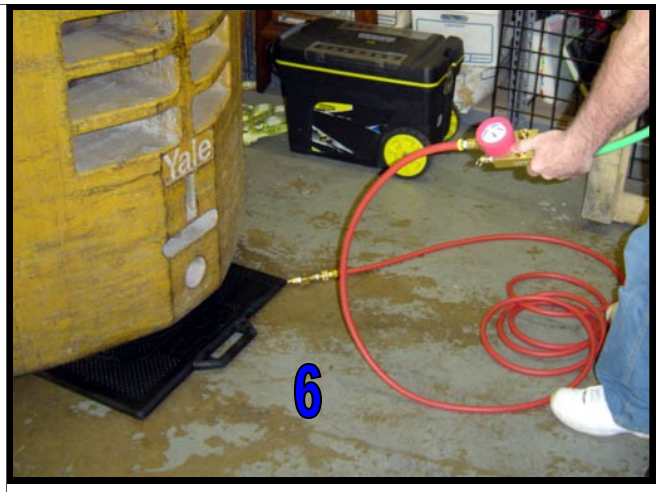
**Clear / Go** **Red / No Go**

**5. To deflate the air bag the deflation valves are depressed. Make sure the air exhaust outlet is clear of debris.**

**Due to tremendous forces exerted on the air lifting bag, inflation should not exceed 30 psi while the air lifting bag is unrestrained. Always have the air lifting bag connected prior to placing the bag under or between the load to minimize the operator's exposure to the load area and eliminate the possibility of the operator placing the air lifting bag with the air inlet under the load.**

# OPERATING INSTRUCTIONS

**6. Place the air lifting bag under the load with the air inlet protruding. Always place the bag as close to the load as possible. This will maximize the contact area between the air lifting bag and the load and make for a much more efficient lift, (see load vs. contact area page 13).**




**7. When operating the controller with (2) air lifting bags connected, practice operating the bags simultaneously and alternately, inflating and deflating. As you can see, the operation of the air bag system is simple.**

**Remember when using (2) bags always inflate the bottom bag first.**

**When using more than one air lifting bag the use of different colored air hoses enables the operator to rapidly identify the air lifting bag that is connected to each outlet of the control valve.**

**CAUTION**

**Always inflate the air lifting bags slowly to minimize chance of the load shifting.**

# OPERATING INSTRUCTIONS
# LOAD VS CONTACT

The purpose of this information is to provide information regarding the lifting and height capabilities of BVA Air Lifting Bags.

Mechanical or hydraulic jacks concentrate their energy into a small contact surface area, while air lifting bags distribute forces equally over the entire surface area of the bag.

BVA air lifting bags work on a simple yet proven law of physics. For each pound (psi) of air pumped into the lifting bags, that force is multiplied over the bag's entire surface area, creating tons of force.

Both standard jacks and air lifting bags have their merits. BVA air lifting bags have a 1" maximum thickness and this singular difference permits access to lift areas where no known conventional lifting devices can be used.

**MAXIMUM LIFTING CAPACITIES AND HEIGHTS AS SHOWN IN OUR LITERATURE ARE BASED ON:**

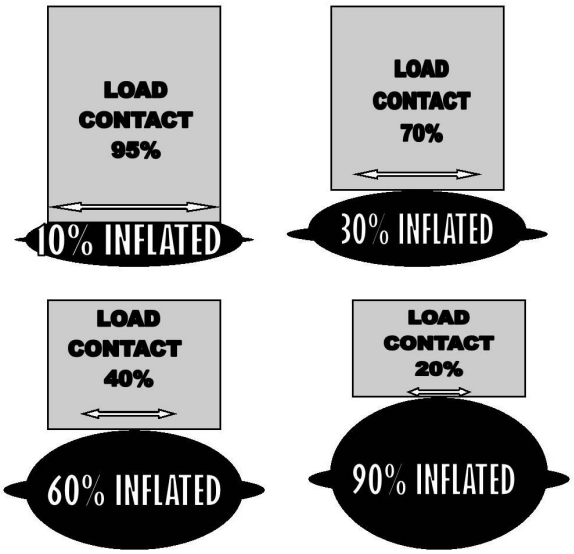
1. Full surface contact of the bag to the load and support area.
2. Maximum lifting height the bags can achieve at nominal-not listed maximum tonnages as shown.

**MAXUMUM LIFTING HEIGHT AND MAXIMUM LIFTING FORCE CANNOT BE ACHIEVED SIMULTANEOISLY.**

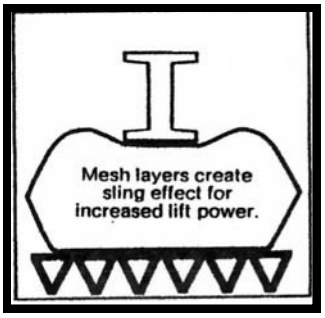
BVA air lifting bags are either square or rectangular. The 1" deflated profile begins to oval, as shown in the illustrations. With each additional pound of air pressure introduced, the arcing effect of the bag reduces surface contact and a loss of lifting power and height is in evidence. The same phenomenon occurs if the load being listed (i.e. beams or similar items) are smaller than the bag itself. In these cases, a shim/block equal in size to the air lifting bags is used to transfer the energy from the non-contact bag surface area to the lifted object. In addition on partially contacted loads, the internal steel cord construction aids in transferring lifting power to the point of lift.

Because of the infinite number of variables in weights, arc and contact areas BVA or its representatives should be contacted prior to lifting bag selection on critical weight/height requirements. The surest way to resolve any doubt is with a field demonstration on your specific application.

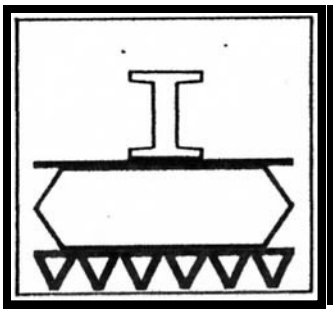
**Effect of surface contact as bags are inflated is variable in accordance with different load weight.**




**When only partial surface area of bags contact the load– lifting capacity varies in relation to load weight and bag arc.**




**NOT RECOMMENDED**
**Maximum lifting power cannot be achieved when only partial contact with top of bag is achieved (as illustrated).**



**RECOMMENDED**
**For partial contact loads, use steel plate (or equal) to place under load, increasing load distribution over more bag surface area.**

Illustrations above are for reference only and are not to be used as examples of the actual performance capabilities of the bags.

# CARE AND MAINTENANCE

## BVA air lfiting bags

- Inspect after each use.
- Remove any foreign objects that may be on the bag surface, such as, broken glass and debris.
- Wash bag in soap and water. Avoid getting water in the bag. If water does get in, allow the bag to thoroughly dry before the next use.
- Cuts on the surface can be repaired with rubber cement.
- Leak test the bag by pressurizing to 30 PSI for 30 minutes. If a loss of pressure has occurred, immerse in water of soap solution. The appearance of small air bubbles around the connection pipe/air inlet is of no significance with regards to the safety and operational readiness of the bag and may be disregarded or repaired by disassembling and re-taping threads and reassembling and then recheck for leaks.
- Check for damage on the air inlet nipple, if present contact BVA or local dealer for replacement.
- Always field test your air lifting bags annually to check for potential problems, (see field test procedures).
- All other questions contact BVA or local authorized dealer.

## Extension Hoses

- Keep couplings clean and dry.
- Broken hose must be replaced.
- Inspect for cracks or

## Control Valves & safety relief

- Keep couplings clean and dry.
- Replace broken gauge or fittings.

## Two stage regulator assembly

- Keep clean and dry.
- **Do not** lubricate.
- Operator should limit repairs to lens or gauge replacement and / or fittings.
- If any other repairs are necessary contact an authorized dealer or BVA directly.

## STATEMENT OF WARRANTY FOR HIGH PRESSURE AIR LIFTING BAG PRODUCTS

Seller warrants to the original purchaser that its product shall be free of defect in material and workmanship for a period not exceeding 3 years after delivery: Under normal use and service for which it is intended if, but only, if it has been properly operated pursuant to instructions supplied by seller. Seller's obligation under the warranty is limited to replacing free of charge any defective products manufactured by seller which are returned to seller's factory within 45 days after the defect is discovered. 3 years after delivery buyer shall receive a credit against the cost of replacing the product limited to $100.00

**THE WARRANTY PROVIDED IN THIS ARTICLE AND THE OBLIGATIONS AND LIABILITIES OF SELLER THEREUNDER ARE EXCLUSIVE AND IN LIEU OF AND BUYER HEREBY WAIVES ALL OTHER REMEDIES, WARRANTIES, GUARANTIES OR LIABILITIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE (INCLUDING WITHOUT LIMITATION ANY OBLIGATIONS OF THE SELLER WITH RESPECT TO FITNESS, MERCHANTABILITY AND CONSEQUESNTIAL DAMAGES) OR WHETHER OR NOT OCCASIONED BY SELLER'S NEGLIGENCE. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED OR VARIED BY A WRITTEN INSTRUMENT SIGNED BY**

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