

UNDERWATER LIFTING BAG GENERAL USERS GUIDE

This is not comprehensive but is intended to assist an operator employing lifting bags by mentioning some of the basic principles.

1. Study the problem carefully and log all the available information to build up a complete picture of the situation.

Where applicable include:

- a) Weight, dimensions and stability of the object to be raised.
 - b) Type of construction and suitable attachment points for bags.
 - c) Depth of water.
 - d) Accessibility.
 - e) Tidal predictions.
 - f) Weather predictions, especially winds.
 - g) Intended disposal of raised object and where responsibility of it lies.
2. Estimate the weight, obtaining as much information as possible from builders and drawings etc, allowing for additions and/or modifications which may have been made to the original object.
 3. From the above assess the type and number of bags required. For shallow lifts, and where a tow is anticipated, totally enclosed bags may be used, but in most cases the parachute type is preferable. Use the minimum amount of lift necessary to achieve the desired result as this will avoid excessive ascent rates. The strength and number of fixing points and the stability of the object may dictate the number of bags to use.
 4. To calculate the amount of air required add the displacement of all the bags used together and multiply by the absolute pressure at the depth of the object expressed in atmospheres. Relate this to compressor output and allow about 30% loss in the air lines and you can assess the inflation time.
 5. Plan the operation in detail taking all the above data into account and if possible ensure that all personnel involved have a copy of your program.

NOTES

- 1 Avoid unduly high ascent rates as forces are produced which can distort the shape of the bag and induce instability, which, in extreme cases, may cause air dumping and consequent buoyancy loss.
- 2 When using totally enclosed bags it is essential that they are secured in such a way that they remain horizontal throughout the lifting operation. If they deviate the air will migrate to the higher end of the bag causing deformation and loss of efficiency.
- 3 All lifting bags in J.W. Automarine's standard range are supplied with carefully designed harness straps of adequate strength and suitable shackles. They are also equipped with hose couplings, inlet, relief and dump valves where appropriate.
- 4 Care should be exercised in all lifting operations both above and below water -check and double check everything!
- 5 When they are securely attached, partially inflate the bags prior to commencing the lift. This ensures that all straps are correctly positioned and the bags assume their shape. After which the bags are fully inflated for the final ascent.