

DESCRIPTION AND INSTRUCTIONS FOR THE USE OF THE
DESCO SHALLOW WATER MASK

(Catalog #59067)

Diving has been generally divided into two classes, on the basis of depth;

(1) Shallow-water diving--that is, diving in less than 36 feet of water using a mask, hose, and hand pump, or compressor, and requiring no decompression during ascent;(2) Deep-sea diving--diving to any depth using a helmet, dress, weighted shoes, belt, control valve, air compressor, etc. and requiring decompression during ascent depending on the depth and duration of the dive.

While it is permissible for personnel who do not have a designation as a diver to use shallow-water or lightweight diving equipment in depths not in excess of 36 feet and for qualified divers for greater depths, it should not be assumed that depth is the only condition or consideration, or that all types of work can be undertaken with this equipment in shallow water. The primary considerations for distinguishing between the use of the two types of outfits are the physical protection required, the type and location of work, and the training and experience required to accomplish the work. **ALL PERSONNEL USING DIVING EQUIPMENT SHOULD BE TRAINED** in the operation of the particular equipment they are required to use.

It has been the practice to use the heavy or so-called deep-sea diving equipment for the following: extensive damage repairs; working inside a ship; working in harbors or rivers where visibility is poor or where there may be sharp projections, stone walls, pilings, etc.; where the length of the dives requires decompression of the diver; diving in cold water; diving in water containing skin irritants or poisonous chemicals; etc. A great number of diving operations involving the above conditions are undertaken in less than 36 feet of water and require the use of the rugged deep-sea diving equipment regardless of depth.

The present shallow-water diving equipment is used primarily where diving and working conditions are less severe and access to the work and the divers freedom of motion are relatively unrestricted; such as for inspection, searching, clearing lines, making minor external ship repairs, etc.

The Shallow Water Mask Outfit consist essentially of the following:

1 Pair Sneakers

59022--Breather bag

29089--Hose 5/16" - 50' Complete with couplings

59039--Canvas Quick Release Belt

29230--Portable Compressor or Hand Pump

59069--Complete Mask including Head harness, exhaust valve,

Non-return Valve, Control Valve

27145--Life line - 100'

BREATHING BAG The breathing bag acts as a reservoir to conserve air and essentially serves the same function as a demand valve. With the present shallow-water mask it is necessary to maintain the same flow of air during both the inhalation and exhalation portion of the breathing cycle, thereby wasting a considerable percentage of the available air. By using a breathing bag the volume of the air flow can be reduced due to the fact that while the diver is exhaling, the breathing bag is being inflated with fresh air, and then during the inhalation air is received by both the air hose and also from the breathing bag reservoir. In order to realize fully its advantage, careful attention must be given to the detail of positioning and securing the bag and to adjustment of the air control valve. To prevent resistance to breathing the bag must be located around the neck at mouth level and adequately anchored in place.

A few inches displacement up or down can completely nullify all advantages. The thin rubber intake flapper valve on the mask side of the attachment fitting must be maintained in flexible condition and in accurate alignment to prevent exhaled air from re-entering the breathing bag, with consequent danger of carbon-dioxide poisoning. A shut-off cock is provided to bypass the bag in case of rupture or leakage. Whether the breathing bag is used will be dependent upon the available air supply and the diver's individual preference.

RIFLE CARTRIDGE BELT A standard rifle cartridge belt with lead weights cut to fit the pockets is satisfactory when using the mask alone. The buckle used on the cartridge belt permits the belt to be readily removed enabling the diver to surface rapidly in the event the air supply is lost or the mask is accidentally torn from his face.

COMPRESSOR A portable gasoline-engine-driven is furnished as the source of the diver's air supply. The compressor provides an adequate supply of air for the type of diving and work contemplated with the mask or complete lightweight outfit. The compressor will furnish sufficient air for two divers using the lightweight outfit to a depth of 60 feet.

MASK The essential parts of the mask are the copper frame, rubber seal, plastic front window, inlet valve, exhaust valve, and head harness. The copper frame and rubber are molded in a shape that provides a seal with the hood facepiece and provides a broad field of vision with minimum distortion.

The mask complete with fittings does not include the air control valve or non return valve which are furnished as separate items.

Air enters the mask through the two-way inhalation valve on the side of the mask, When the inhalation valve handle is pointed toward the rear, air enters directly from the air line into the mask.

When the inhalation valve handle is pointing forward, air is entering both the breathing bag and the mask simultaneously. The section of the inhalation valve on the inside of the mask is a rubber flapper valve which prevents air in the mask from escaping back into the breather bag. On the opposite side of the mask from the inhalation valve is the exhaust valve consisting of a rubber disc which opens during exhalation and closes by water pressure at the end of the exhalation period. The rubber disc is held in place by an adjustable stem. The adjustment of the stem is usually set in the proper position. However, if the entire mask seems to bounce or gives a "water hammer" effect, the valve stem should be readjusted.

The mask is held in place by means of an adjustable head harness.

While the mask is reasonably rugged, care should be exercised in the handling and storage of it. The mask should be kept away from sunlight, heat, and oil when not in use and should be thoroughly cleansed with fresh water and dried before storing.

SNEAKERS Standard canvas sneakers should be used to protect the feet when using the mask without the diving dress.

CONTROL VALVE The control valve used to control the quantity of air entering the mask is a modified standard commercial globe valve. The valve is attached to the inhalation valve on the mask, and it is so placed to maintain it in a fixed position, and to be in the most accessible place for controlling the air supply where it is least likely to be closed by accidentally hitting; the valve handwheel.

The control valve handwheel should be maintained sufficiently tight by means of the packing-gland nut to prevent the handle from turning loosely or too readily.

NON-RETURN VALVE The non-return valve is attached to the air control valve. The purpose of the non-return valve is to prevent the diver from being injured by "squeeze" in the event that the air hose bursts or the air supply system becomes so seriously damaged as to fail to maintain an air pressure within the mask sufficient to maintain a pressure equilibrium. Under either condition the air pressure to the hose would decrease suddenly, and, should there be no non-return valve, the compressed air in the mask would escape through the air hose, thereby causing the pressure within the mask to become less than the external pressure and thus causing a "squeeze".

The mask being rigid, the effect of the greater external pressure would be to squeeze the diver's face into the mask. The conditions of the squeeze might have serious results.

The use of the non-return valve is so essential that no diving, regardless of depth, should be undertaken unless there is a non-return valve that is operating satisfactorily in the line. A simple method of determining whether the valve is operating satisfactorily is by attempting to blow smoke through it in a direction opposite to the normal flow of air.

LIFE LINE The life line is made from manila rope or sisal rope of equal strength. The life line is secured around the diver's chest with the line extending to the surface from the front of the diver. The line should not be connected to or looped around the weighted belt and should be arranged so that there will be no interference with releasing the belt.

The life line serves two purposes. First, for making normal and emergency ascent, and second, for maintaining communication with the surface. In the event of an emergency ascent involving either the loss of air or face mask, the diver shall continue to exhale during the ascent. If this is not done, air embolism is very likely to result. Communication with the surface is accomplished by the use of hand signals. The following hand signals are universal and should be memorized by both the diver and the tender before any and every under taking.

SIGNALS FROM TENDER TO DIVER

1 Pull -- Are you all right, or when the diver is going down, it means "STOP.

2 Pulls-- You have come up too far. Go down until I stop you.

3 Pulls-- Stand by to come up.

4 Pulls--- Come up.

SIGNALS FROM DIVER TO TENDER

1, Pull -- I am all right

2 Pulls-- Lower, or give me slack.

3 Pulls-- Take up my slack.

4 Pulls-- Haul, me up,

2-1 Pulls-- I understand

SEARCHING SIGNALS

1 Pull -- Stop and search where you are.

2 Pulls- Go straight ahead.