

ILC DOVER, INC.



Sole Designer and Manufacturer of
Apollo, Skylab and Shuttle Space Suits

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July 8, 1987

Commander
U.S. Army Natick RD&E Center
ATTN: STRNC-EML
Kansas Street
Natick, MA 01760-5014

REFERENCE: Statement of Need
Clothing & Individual Equipment
Improved Mask Drinking System

Dear Sir:

ILC Dover, Inc. is currently under CRDEC contract DAAA15-85-D-0023 Task 4 which involves both drink and speech improvements for advanced masks (Masks of the 90's").

After much study and evaluation of various concepts, a dual hose drink system was manufactured and is currently being evaluated at the Human Engineering Laboratory (HEL), Aberdeen, Maryland.

Our CRDEC liaison is Mrs. Laurie Kwiedorowicz, 301-671-2555.

This system allows filtered air to pass from the mask inside to the canteen. It requires modification to the canteen cap and mask for two hoses.

Tests at HEL should be completed within the next two months. Mrs. Kwiedorowicz can be contacted for the results of these tests. If satisfactory, further detail design, manufacture, and testing will be accomplished.

Sincerely,

John McMullen
John M. McMullen
Vice President of Marketing

JMMcM:bal

Camelbak-2001 - NBC Valve
adaptor For MASK
Connection to
Hydration System

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PERFORMANCE

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Products



Protective Mask Adapter Kit (PMAK)

While wearing protective masks during training or in a non-lethal gas environment, stay hydrated and moving with CamelBak's adapter. Complete with both a Big Bite Valve and Protective Mask Connect have the flexibility to train with a standard CamelBak and seamless transition to the CRR during operational conditions. MSRP (US only) \$24.00

For International pricing, please check your local distributor.
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Features [View Features](#) [Accessories](#)

- Includes both a Big Bite Valve and Protective Mask Connector.
- Quick-release fittings for easy connections.
- Can be used with any CamelBak reservoir.
- Steady flow of water, when you want it. Shut off valve for when you

To Assemble

1. Insert Quick-Release Fitting into reservoir tube.
2. Insert either Bite Valve Tube or Gas Mask Tube into Quick Release Fitting.

GSA Contract Number

GS07F-9727H
Cage Code: 063G3

Protective Mask Adapter Kit (PMAK) Product Reviews

Wow! I was just drilling this weekend with my reserve unit and was using my CamelBak and thought how tough it would be to be in MOPP4 and have to use my issue canteen, instead of my CamelBak. I was hoping that one day I would see an adaptor for the mask. I can't wait to try it! Thanks!
-- Kris, SLC, UT, 24-May-00

I love this idea! I wish I would have know about it when I was serving in South Korea! Keep up the good work guys!

-- Tom Hernan, Dover AFB De 19902, 15-May-00

Being a Nuclear, Biological, and Chemical Defense

Submit Your Review

Give us some feedback. We'd love to hear from you. Tell us your story. Submissions are moderated. (R) fields are required

Name (R)

City, State

Email

Comments (R)

By submitting the above information, I authorize CamelBak Products, Inc. to u

Camelbak - 7001 - NBC
hydration
system

2F

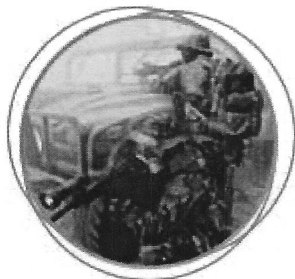
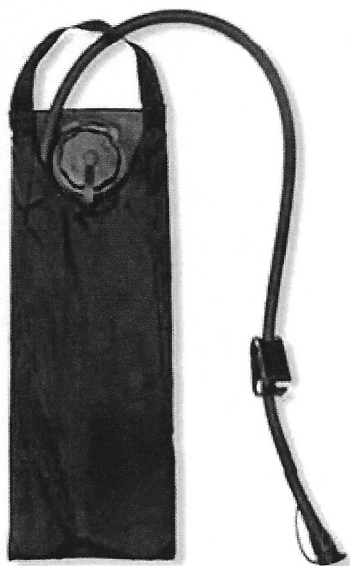


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Chemical Resistant Reservoir (CRR)

Meeting military 24-hour standards for resistance to chemical agent CRR easily slips into most CamelBak® hydration carriers. And when with Military Protective Masks, you and your water supply will never be exposed to the conditions. For the ultimate in convenience, the CRR fits into the back pocket of the ThermoBak 3 liter, allowing you immediate access to either it or your standard reservoir.

MSRP (US only) - \$98.00

For International pricing, please check your local distributor.
Find a Dealer

Accessories

Features

- Made with the highest grade of proprietary butyl polymer.
- Attaches directly to standard protective mask fittings – fits M17, M MCU2P, and C4 masks.
- Integrates with any 70 oz or 100 oz reservoir pocket.
- Secure Screw Cap closure.

Specifications:

Capacity: 70 oz (2.0 l)
Dimensions: 17 in x 6 in x 1 in (432 mm x 152 mm x 25 mm)
Volume: Cargo Only – N/A • Including Water – 126 cu. in. (2.0 l)
Weight: Empty Reservoir – 0.99 lbs (0.45 kg) • Filled Reservoir – 5. (2.43 kg)

GSA Contract Number

GSO7F-9727H
Cage Code: 063G3

Chemical Resistant Reservoir (CRR) Product Reviews

This and the Gas Mask adapter are the best new products on the market since the standard CamelBak came out. Unfortunately the NBC environment is what we have to train for and this product is an excellent way to assist in a safe and successful mission. Maybe soon the Army will buy this for everyone, until then hammer your S4 to get this for your unit. Thanks CamelBak keep up the good work.
-- SSG Chris O'Malley, Fort Campbell, KY, 24-Jan-01

Submit Your Review

Give us some feedback. We'd love to hear from you. Tell us your story.
Submissions are moderated. (R) fields are required

Name (R)

City, State

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Comments (R)

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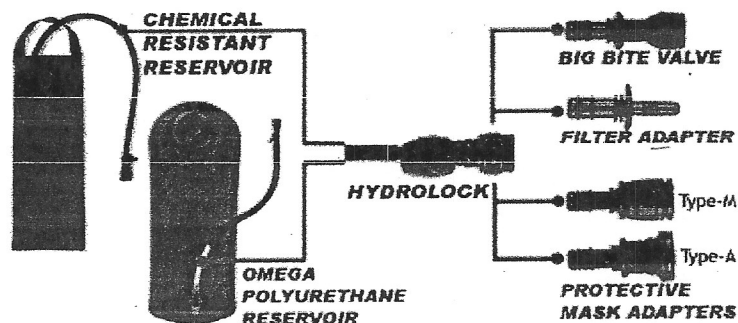
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CAMELBAK

HYDROLINK™

HydroLink™ Modularity:

Lets you easily transition from a standard environment with a bite valve to environment with a protective mask. Simply choose the appropriate reserv situation and snap in the appropriate components.



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From training to combat, push forward with a steady flow of water...
more info & instructions >>
parts list >>



► NBC Environment

When normal combat turns into an NBC threat...
more info & instructions >>
parts list >>

► Buy Now

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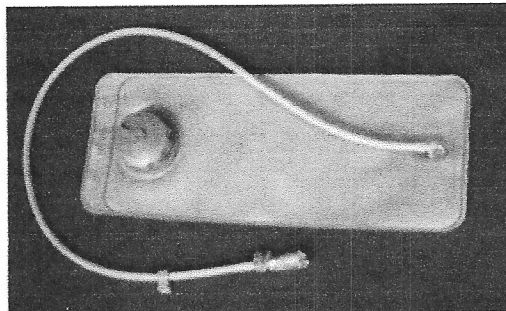
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Horizons

Spring 2005



The MOLLE hydration system

Product Spotlight The Marvelous MOLLE Hydration System

Through the purchase of two new injection mold machines, the Seattle Lighthouse has added a new product to the list of items we manufacture for federal customers: **hydration units for Modular Lightweight Load-carrying Equipment (MOLLE) systems**. "It's a very good project," says Don Helsel, director of manufacturing. "We have a lot of people working on **hydration packs**."

The Seattle Lighthouse purchased these machines with the assistance of generous support from the community. One hundred and forty-six individuals and organizations helped make this purchase possible through cumulative donations of \$39,963.22.

The **MOLLE** system is a "whole load-carrying system of packs," according to Paul Fletcher, quality manager. "The heart of [the **MOLLE** unit] is a vest." **MOLLE** vests are worn by military personnel on the job. The Seattle Lighthouse manufactures **hydration systems**, water packs with drink tubes and bite valves, as components of **MOLLE** vest units so that people can carry water with them at all times. "It's drink on the move," Paul says.

"We've always been focused on developing **hydration systems** to maintain sales and employment. We do this in anticipation of increasing employment opportunities," explains Norm Slader, director of engineering. To create the complex components of the **hydration system**, the Lighthouse added state-of-the-art hydraulic and electric injection

mold machines for making precise plastic parts.

"It was a complicated process to make sure everything fit well," says Don. "The other machines do not have the same sophistication these new machines have. Without these new machines, we don't think we could have made these parts."

"The electric [injection mold machine] is more precise, the cycle time is more exact. It's consistent," says Ben Mariano, senior production lead. "Temperatures are better maintained. There's more control over how much material goes into the mold."

In the electric machine, plastic material is melted down then injected into molds where the material hardens. Once the plastic has hardened, a robot removes it from the machine and places it on a conveyor belt. Next, a blind or Deaf-Blind employee separates parts like plastic bite valves or on/off valves from excess plastic and packs them in preparation for assembly. Parts are marked with a plastic protrusion. This helps totally blind operators identify the parts and make sure they go in the correct box.

While small plastic parts are made in the injection mold shop, Lighthouse employees assemble water reservoirs in the upstairs production area. An opening for the water to flow out of is sealed to the water reservoir; then the two sides of the bag are fused together using radio frequency stations on a carousel table. Paul explains, "It takes radio frequency to excite the molecules in plastic. It's creating heat with radio frequency. It's similar to a microwave, only it's micro-directional. It makes a very strong weld. We put five hundred pounds of pressure on them and they withstood the load."

A third operation employs ultra-sonic welding technology to seal the reservoir's cap to a tether. "The sound waves are generating heat in this case," says Paul. "A tuned titanium horn melts the plastic button, permanently attaching a tether that still moves."

Approximately fourteen employees currently manufacture up to five thousand **hydration systems** for **MOLLE** units each week. The Seattle Lighthouse's initial contract is for approximately 230,000 **hydration systems**. Eight employees work on producing plastic parts while six assemble the **systems**. "For each unit we sell, there are seven injection molded items," says Paul. "It provides hours of work for all three shifts."

"It's a very interesting area. There are a lot of parts to assemble," says Nelly Barnett, production worker. "You can do a lot of different things, so that's very nice."

Nelly, who has macular degeneration, started work on the **hydration systems** after working at the Lighthouse for six months. "I knew I was legally blind, so I started looking for a job. I didn't have any idea I could have an opportunity in places like this company. I love my job. I like to work with disabled people and find out about all the wonderful things they can do."

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On-the-Move Hydration



- Chem / Bio Resistant bladder assembly
 - CB testing scheduled at Dugway Apr 06
- Blow molded bladder, 70 oz. capacity
 - Holds its shape, yet collapses as water is removed
 - Easy to insert and remove from carrier
 - EVA material, 30 mil minimum thickness
- Hang to dry with no creases for water residue and bacterial growth
 - Meets FDA and NSF standards
- Low projected production cost: \$21.50 bladder assembly

