FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST)

Light Expeditionary Module (LEM)
BOH FPU Field Pack-up Units



Light Expeditionary Modules (LEM)

BOH FPU® Systems
BOH ENVIRONMENTAL LLC
14520 Avion Parkway, Suite 220
Chantilly, VA 20151
POC Doug Cresap (985) 674-0725
http://www.bohfpusystems.com

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to persons using equipment.

WARNING



Do not allow the Light Expeditionary Module (LEM) system to swing if using an overhead lift. Always ensure an appropriate sling and lifting points are used in lifting the LEM. Always use properly sized forklift, crane, or lifting device. Failure to comply could cause injury, death or damage to the equipment.

WARNING



Overhead power lines and obstructions can cause serious injury, death or damage to property. Forklift operators, truck drivers and ground guides should always clear overhead when loading or unloading the LEM Module.

WARNING



Use extreme caution when moving BOH LEM units into a transport vehicle or system. Make sure all LEM Module slam latches and 3g bars are properly seated, and secured before any movement of the LEM Module. Failure to comply could cause serious injury, death, or damage to the equipment.

WARNING



Standard forklift principles apply when moving a LEM Module. When working with ground guides during loading or unloading of a module, never move the LEM Module into a container while the ground guide is between the fork, LEM Module, and the container. Serious injury could occur if the ground guide is pinned between the forklift and the container. Forklift operators must maintain visual contact with their ground guides at all times.

WARNING



A tilt hazard exists when forklift operators try to lift the LEM module without the forklift tines fully inserted in the fork pockets provided in the base. A tilt situation exists when the heaviest part of the load is out on the tips of the tines or on uneven ground while traveling. Operators should always keep loads low and close to the forklift carriage. Operators should never travel when the load is in the fork's extended position.

WARNING



Two personnel are required when lifting empty cabinet or hull units. Always separate the drawers from the tray when assembling or disassembling the system. Two personnel are required when lifting drawers into and out of the trays. Make sure all latches are properly seated and 3G bars are in place. Follow all DOD safe lifting procedures when lifting any LEM component. Failure to follow securing procedures may result in damage to the equipment and/or stored material and injury to personnel.

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to persons using equipment.

WARNING





The module drawers, cabinets and their contents are heavy and could cause injury if they fall onto or strike personnel. A tilt hazard exists when more than one module drawer is extended. As a rule, always work on one drawer at a time. Never have more than one drawer extended in the full open position at a time, especially if loaded with material. When filling the module, always load material into the bottom drawers first to prevent tipping. Personnel should never stand on a drawer. Failure to comply could cause injury, death or damage to the equipment.

WARNING



Always inspect the working areas, insure that the front, rear and sides are free of oils, lubricants, and other potentially slippery substances. The module drawers may be used to store various forms of lubricants, and other potentially slippery substances. Keeping the drawers and the work area around the module clean is important to prevent slippery surfaces.

WARNING



The module drawers and cabinets can be heavy and awkward to handle by a single person. This is especially true of the larger components. The movement of these items is a two-person operation for drawers with stored material or empty drawers. Assistance is required from two or more personnel to separate and remove drawers from the tray of each cabinet assembly. Follow all DOD safe lifting procedures when lifting any LEM component. DO NOT remove or lift drawers/cabinet without assistance; injury to personnel will result. A forklift and MHE support is required to load and unload the LEM to and from transport vehicles.

WARNING



Protective gloves should be worn when handling metal parts in high temperatures. Failure to wear gloves may result in burning or blistering of the skin upon contact.

WARNING



Protective gloves should be worn when handling metal parts in below freezing temperatures. Failure to wear gloves may result in skin freezing to the metal upon contact and cause tearing of the flesh when attempting to pull away from the metal.

GENERAL WARNINGS



HEAVY PARTS - heavy object on human figure shows that heavy parts present a danger to life or limb.



HEAVY PARTS - heavy object pinning human figure against wall shows that heavy, moving parts present a danger to life or limb.



HEAVY PARTS - hand with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS - foot with heavy object on top shows that heavy parts can crush and harm.



SLICK FLOOR - wavy line on floor with legs prone shows that slick floor presents a danger for slipping or falling.



HEAVY OBJECT - human figure stooping over heavy object shows physical injury potential from improper lifting technique.



CRYOGENIC - hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.



HOT METAL SURFACES- Metal surfaces may become hot in extreme heat areas; prolonged contact may cause burning or blistering of the skin.



ELETRICAL POWER SOURCE- Electrical power source accidentally contacting equipment and/or personnel may cause injury or death.

FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST) LIGHT EXPEDITIONARY MODULE (LEM) BOH FPU Field Pack-up Units

REPORTING ERRORS & IMPROVEMENTS

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. Please let us know if you find any mistakes or if you know of a way to improve the procedures. You may send in your recommended changes by E-mail directly to: dcresap@bohfpusystems.com. A reply will be furnished directly to you.

Approved for public release; distribution is unlimited.

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REAR MATTER

BOH Light Expeditionary Module (LEM) Warranty Metric Conversion Chart

HOW TO USE THIS MANUAL

This manual contains general information, operating instructions, Preventative Maintenance Checks and Services (PMCS), and maintenance/repair instructions for the Light Expeditionary Module (LEM) Units.

Front matter consists of front cover, warning summary, title block, table of contents, "how to use this manual" pages, and provides information on the Light Expeditionary Module (LEM), and its associated equipment. Chapter 1 provides equipment description and data as well as the theory of operation. Chapter 2 provides instructions for operating under usual and unusual conditions. Chapter 3 contains troubleshooting procedures authorized at the Operator and Unit level. Chapter 4 contains Preventative Maintenance Checks and Services (PMCS) and Operator Maintenance Instructions. Chapter 5 contains Unit Maintenance Instructions. Chapter 6 contains the Maintenance Allocation Chart (MAC); it also includes the Repair Parts & Special Tools List (RPSTL) that identifies parts or tools unique to the operation and maintenance of the Light Expeditionary Module (LEM).

Manual Organization and Page Numbering

This manual is divided into six major chapters that detail the topics mentioned above. Within each chapter are work packages covering a wide range of topics. Each work package is numbered sequentially at page 1, and has its own page numbering scheme that is independent of the page numbering used by other work packages. Each page of a work package has a page number of the form "XXXX YY-ZZ", where "XXXX YY" is the work package number (e.g. 0010 00 is work package 10) and "ZZ" represents the number of the page within that work package. Blank pages will be labeled "This page was intentionally left blank".

Finding Information

The Table of Contents permits the reader to quickly find information in the manual. The reader should start here first when looking for a specific topic. The Table of Contents lists the topics contained within each chapter and the work package sequence number where it can be found.

Types of notations

Warnings - Warnings are posted immediately prior to text covering any area that would present a situation that may result in injury or death. Compliance is mandatory.

Cautions - Cautions will be found on the same page and preceding the text covering any area that would present a situation that may result in damage to equipment.

Notes - Notes will precede text covering an area with the intent to alter normal procedures for unique situations or equipment, or point out areas of special concern.

FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST) Light Expeditionary Module (LEM) BOH FPU Field Pack-up Units

CHAPTER 1

INTRODUCTORY INFORMATION
WITH
THEORY OF OPERATION

INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST) LIGHT EXPEDITIONARY MODULE (LEM) (BOH FPU Field Pack-up Units)

GENERAL INFORMATION

SCOPE

Equipment Covered

This technical manual contains instructions for the operation, preventative maintenance, and recommended Unit/Direct Support corrective maintenance for the BOH Light Expeditionary Module (LEM) system and the associated equipment.

Type of Manual

This is an Operator, Unit and Direct Support, Operation and Maintenance Manual.

LIGHT EXPEDITIONARY MODULE (LEM) Description

The LEM is designed to be locked down on several different platforms and within several types of containers, or it can stand alone in stationary environments using its pallet-like cabinet base for MHE movement. The LEM is available in fifteen 70" high module configurations, which include an 18" and 30" cabinet, two dust covers and 3G security bars, a detachable pallet type cabinet base, drawer sliding trays, and removable drawers with divider sets for small or bulk storage. The 70" LEM has a top cage for overflow material. The drawers are lightweight aluminum and the cabinet hulls are made of steel. The LEM Module comes in one color, grey. There are also five 36" high module configurations that are available, which exclude the 18" cabinet and top cage.



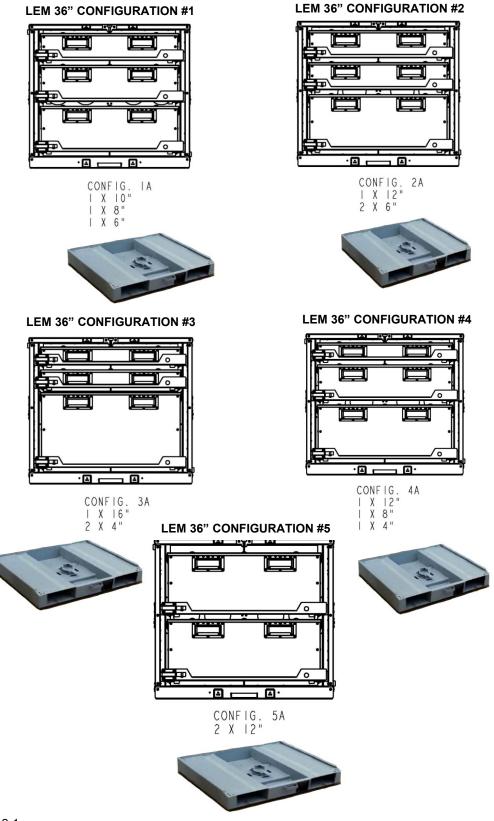


Equipment Name, Part Number and Dimensions

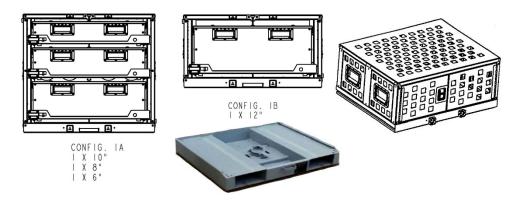
Light Expeditionary Module (LEM) Table

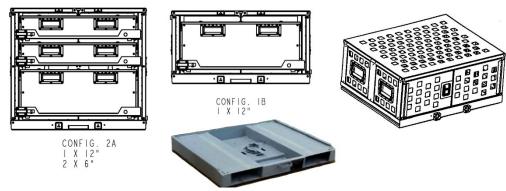
LIGHT EXPEDITIONARY MODULE (LEM)	PART NUMBER	Dimensions		
36 " LEM Height Cabinet Configurations				
LEM 36" Configuration #1	17100001	35" L x 29" W x 36" H		
LEM 36" Configuration #2	17100002	35" L x 29" W x 36" H		
LEM 36" Configuration #3	17100003	35" L x 29" W x 36" H		
LEM 36" Configuration #4	17100004	35" L x 29" W x 36" H		
LEM 36" Configuration #5	17100005	35" L x 29" W x 36" H		
70" LEM Stacked Configurations				
LEM 70" Configuration #1	17000001	35" L x 29" W x 70" H		
LEM 70" Configuration #2	17000002	35" L x 29" W x 70" H		
LEM 70" Configuration #3	17000003	35" L x 29" W x 70" H		
LEM 70" Configuration #4	17000004	35" L x 29" W x 70" H		
LEM 70" Configuration #5	17000005	35" L x 29" W x 70" H		
LEM 70" Configuration #6	17000006	35" L x 29" W x 70" H		
LEM 70" Configuration #7	17000007	35" L x 29" W x 70" H		
LEM 70" Configuration #8	17000008	35" L x 29" W x 70" H		
LEM 70" Configuration #9	17000009	35" L x 29" W x 70" H		
LEM 70" Configuration #10	17000010	35" L x 29" W x 70" H		
LEM 70" Configuration #11	17000011	35" L x 29" W x 70" H		
LEM 70" Configuration #12	17000012	35" L x 29" W x 70" H		
LEM 70" Configuration #13	17000013	35" L x 29" W x 70" H		
LEM 70" Configuration #14	17000014	35" L x 29" W x 70" H		
LEM 70" Configuration #15	17000015	35" L x 29" W x 70" H		
LEM Detachable	LEM Detachable Mounting plates			
LEM 1 position Twist Lock Mounting Plate	17000500	36" L x 28" W x 3" H		
LEM 2 position Twist Lock Mounting Plate	17000501	71" L x 28" W x 3" H		
LEM 3 position Twist Lock Mounting Plate	17000502	107" L x 28" W x 3" H		
End of Table				

LIGHT EXPEDITIONARY MODULE (LEM) 36" CABINET CONFIGURATIONS

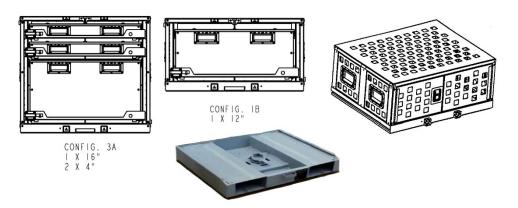


LEM 70" CONFIGURATION #1

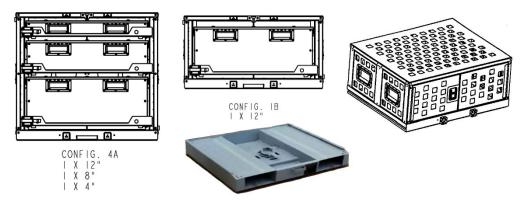




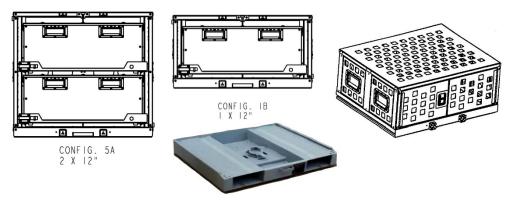
LEM 70" CONFIGURATION #3

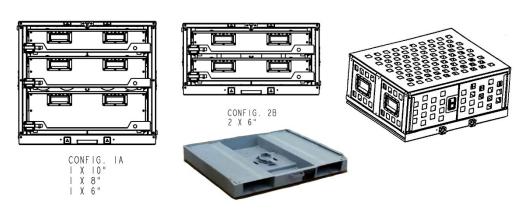


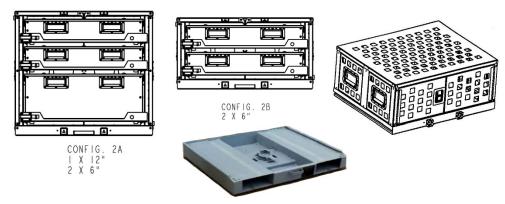
LEM 70" CONFIGURATION #4



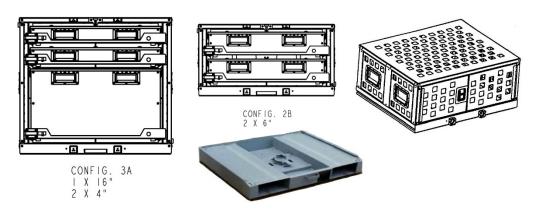
LEM 70" CONFIGURATION #5



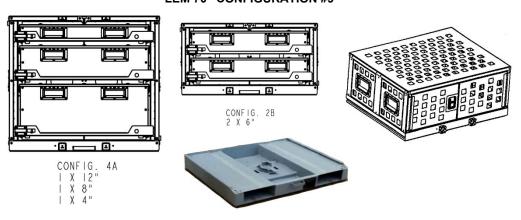


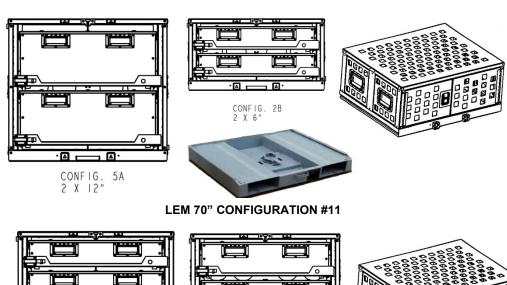


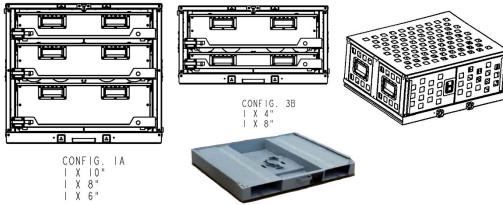
LEM 70" CONFIGURATION #8



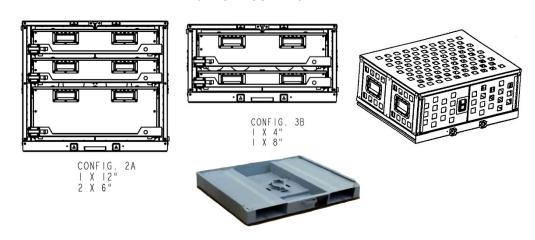
LEM 70" CONFIGURATION #9



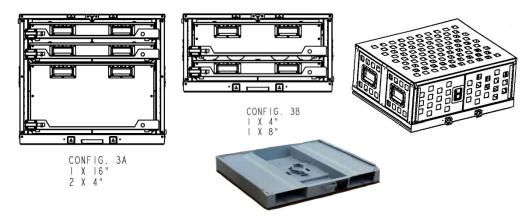




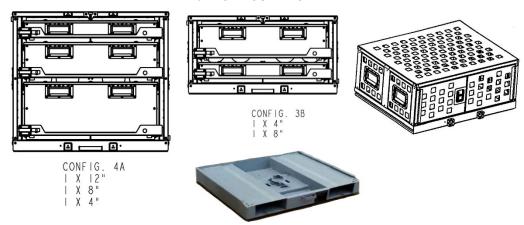
LEM 70" CONFIGURATION #12

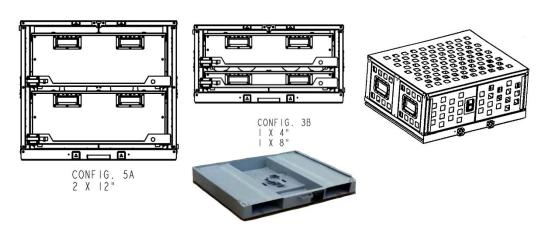


LEM 70" CONFIGURATION #13

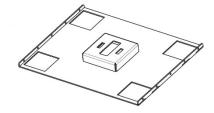


LEM 70" CONFIGURATION #14

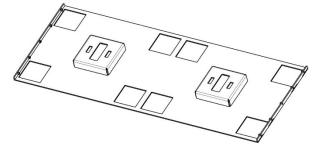




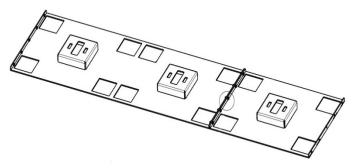
LIGHT EXPEDITIONARY MODULE (LEM) BASE PLATES



One Position Module Plate 36" L x 28" W x 3" H



Two Position Module Plate 71" L x 28" W x 3" H



Three Position Mounting plate
One Position and Two Position Combined

Three Position Module Plate 107" L x 28" W x 3" H

END OF WORK PACKAGE

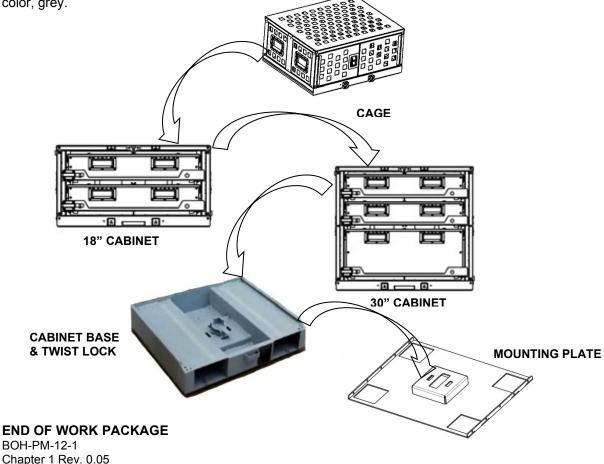
INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST) LIGHT EXPEDITIONARY MODULE (LEM) BOH FPU Field Pack-up Units

THEORY OF OPERATION

LIGHT EXPEDITIONARY MODULE (LEM) Description

The LEM is designed to be locked down on several different platforms and within several types of containers, or it can stand alone in stationary environments using its pallet-like cabinet base for MHE movement. The LEM is available in fifteen 70" high module configurations, which include an 18" and 30" cabinet, two dust covers and 3G security bars, a detachable pallet type cabinet base, drawer sliding trays, and removable drawers with divider sets for small or bulk storage. The 70" LEM has a top cage for overflow material. The drawers are lightweight aluminum and the cabinet hulls are made of steel. There are also seven 36" high module configurations that are available, which exclude the 18" cabinet and top cage. Each unit can be tailored to meet individual Supply/Maintenance/ Logistical Support needs. The system has the ability to operate in fixed facilities, MIL VANs, M-129 VANs, ISO Containers or Military Ships or in a warehouse environment in its stacked or separated configuration. The LEM Module provides flexible transportability for supply support activities. LEM Module is designed to stand alone with a pallet like cabinet base for MHE movement. The LEM mounting plates are designed to be secured within Mil Van M129 ISO containers or on military ships to retain the LEM modules. The LEM Module comes in one color, grey.



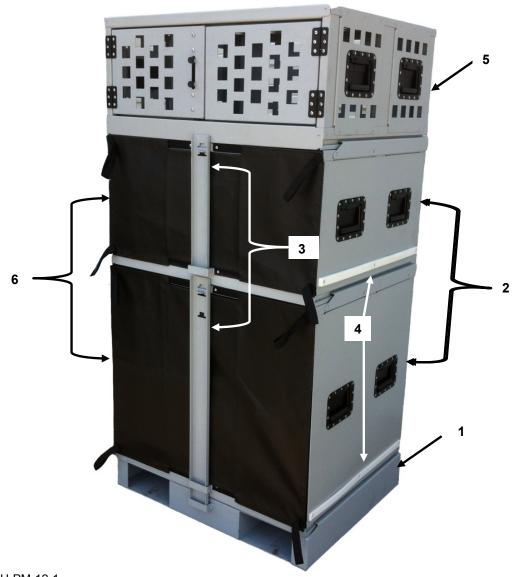
INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST) LIGHT EXPEDITIONARY MODULE (LEM) (BOH FPU Field Pack-up Units)

Equipment Characteristics, Components and Accessories

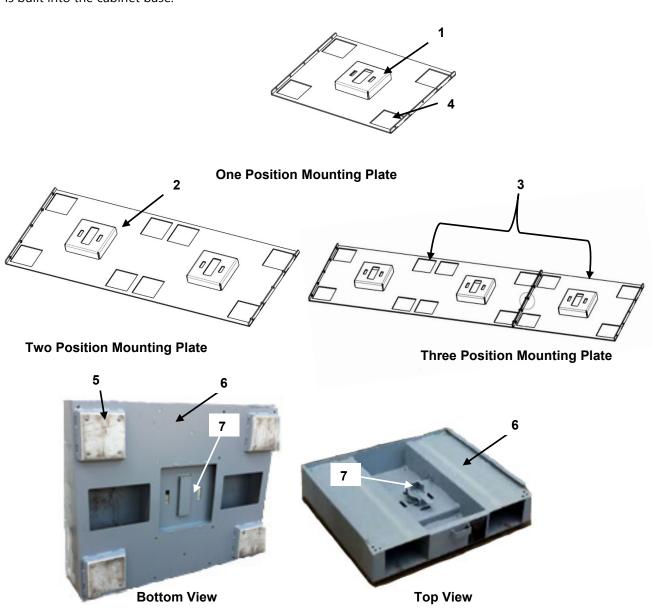
Assembled LEM Unit

The assembled LEM unit consists of a cabinet base (1), two prescribed cabinet drawer configurations (2), two security bars (3), bumper strips (4) and top cage (5) and a two piece dust cover (6). There are three different mounting plates that one, two or three LEM modules can be mechanically locked down on.



LEM MOUNTING PLATES

The LEM system has three variations of module mounting plates (1, 2 and 3) for retaining the LEM modules in MIL VANs, M-129 VANs, ISO Containers or Military Ships. The selected module mounting plates (1, 2 and 3) are placed in the Mil Van M129 container floor or aboard ship, then bolted or welded in place. The module mounting plate cutout segments (4) are designed to accept the feet (5) of the cabinet base (6). The LEM module is then locked down onto the mounting plate with the twist lock device (7) that is built into the cabinet base.



END OF WORK PACKAGE

INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

FPU® SYSTEMS OPERATION MANUAL (INCLUDING REPAIR PARTS & SPECIAL TOOL LIST) LIGHT EXPEDITIONARY MODULE (LEM) BOH FPU Field Pack-up Units

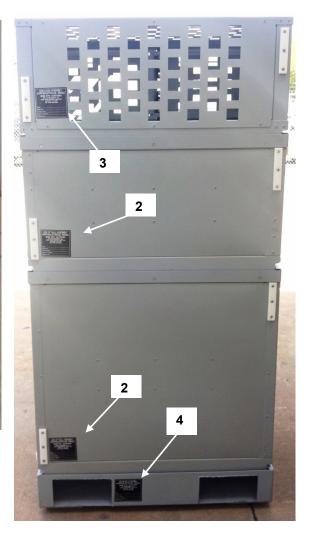
EQUIPMENT DATA LABELS, IDENTIFICATIONS, MARKINGS

LIGHT EXPEDITIONARY MODULE (LEM) DATA TAGS

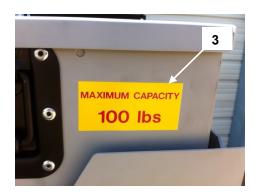
Data labels are located on each component of the LEM. The module labels (1) are located on the front of the cabinet base. The hull labels (2) are located on the rear left side of each hull. The cage label (3) is located on the rear left side of the cage. The cabinet base label (4) is located on the rear of the cabinet base.







The Light Expeditionary Module (LEM) hull data labels (1) are located on the rear next to the bottom bumper strips, of each hull. The drawer assembly data labels are on the right side of each drawer. On the front of each drawer there is a 100 lb. maximum capacity label (3). On the right side face of each drawer tray there is a slide button instruction label (4). On each 3G security bar below the appropriate transport notch, there is a transport position label (5).





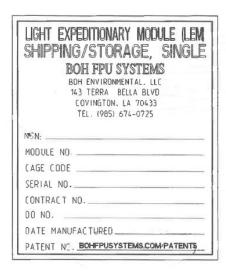




BOH-PM-12-1 Chapter 1 Rev. 0.05



LEM Data Plate



REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Light Expeditionary Module (LEM) needs improvements in design and/or performance, let us know. Send us a description of the recommended change to dcresap@bohfpusystems.com.

CORROSION PREVENTION AND CONTROL (CPC)

It is our understanding that Corrosion Prevention and Control (CPC) is a continuing concern for the military. While corrosion is typically associated with rusting of metals, it can also include deterioration of other material, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

All units must adhere to their specific corrosion maintenance plan. At a minimum, equipment should be inspected for corrosion on a quarterly basis (monthly if equipment is operated/stored in a high salt air environment). If corrosion is discovered, consult your unit/installation corrosion control manager to schedule repair. It is important that any corrosion problem with the FPU be reported so that the problem can be corrected and improvements can be made to prevent the problem in the future.

PREPARATION FOR STORAGE OR SHIPMENT

All preventative maintenance checks and services should be performed on the FPU and its components prior to any storage or shipment.

RECEIVING THE FPU INVENTORY

Unpacking and Inventory of Light Expeditionary Module (LEM) Components upon Initial Receipt

With the LEM modules unloaded, check the equipment against the packing list. Report any discrepancy to your supervisor and Boh Environmental at dcresap@bohfpusystems.com.

END OF WORK PACKAGE