



# **OPERATION MANUAL AND SPECIFICATION**

**FOR**

## **CONCRETE MAT DUAL RELEASE DEPLOYMENT FRAME**

**MODEL CMDF-40-DR**

# FOREWORD

This Manual provides operation, service and parts ordering information for the Model CMDF-40-DR “Concrete Mat Deployment Frame”.

Information in this Manual has been organized into six (6) Sections. Each Section contains a different category of information of the assemblies and associated equipment.

- Section 1 gives a **GENERAL DESCRIPTION** of the equipment.
- Section 2 contains general **SAFETY INFORMATION** for operating the equipment.
- Section 3 describes the equipment’s **OPERATING PROCEDURES**
- Section 4 provides the **ADJUSTMENT AND MAINTENANCE** procedures for the equipment.
- Section 5 describes the **INSPECTION PROCEDURES** for the equipment.

<b>ANGER</b>	“DANGER” SYMBOL INDICATES A PROCEDURE, CONDITION OR STATEMENT THAT, IF NOT PROPERLY OBSERVED, WILL ABSOLUTELY RESULT IN SERIOUS EQUIPMENT DAMAGE, PHYSICAL INJURY AND/OR POSSIBLE DEATH.
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<b>ARNING</b>	“WARNING” SYMBOL INDICATES A PROCEDURE, CONDITION OR STATEMENT THAT, IF NOT PROPERLY OBSERVED, COULD RESULT IN SERIOUS EQUIPMENT DAMAGE, PHYSICAL INJURY AND/OR POSSIBLE DEATH.
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<b>AUTION</b>	“CAUTION” SYMBOL INDICATES A PROCEDURE, CONDITION OR STATEMENT THAT, IF NOT PROPERLY OBSERVED, MAY RESULT IN POSSIBLE EQUIPMENT DAMAGE, PHYSICAL INJURY AND/OR POSSIBLE DEATH.
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 <b>SAFETY ALERT</b>	“SAFETY ALERT” SYMBOL INDICATES A PRECAUTIONARY STATEMENT. ATTENTION IS REQUIRED IN ORDER TO AVOID POSSIBLE PERSONAL INJURY.
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# SECTION 1

## GENERAL DESCRIPTION

### 1.0 GENERAL DESCRIPTION

#### 1.1 INTRODUCTION

This Section of the Manual provides a general description of the Model CMDF-40-DR Concrete Mat Deployment Frame and associated equipment that includes the following components:

One (1) CMDF-40-DR, forty (40) foot Dual Release Deployment Frame.

The Mat Deployment Frames have been designed to incorporate a dual release system that is capable of deploying two sets of mats in different locations while only making one deployment trip to the drop location. This feature allows two sets of mats to be deployed. Mat quantities for deployment are based upon the size and weight of the selected mats so as not to exceed the safe working load of the frame. This feature has been developed to give our customers versatility and time saving options for their work scope.

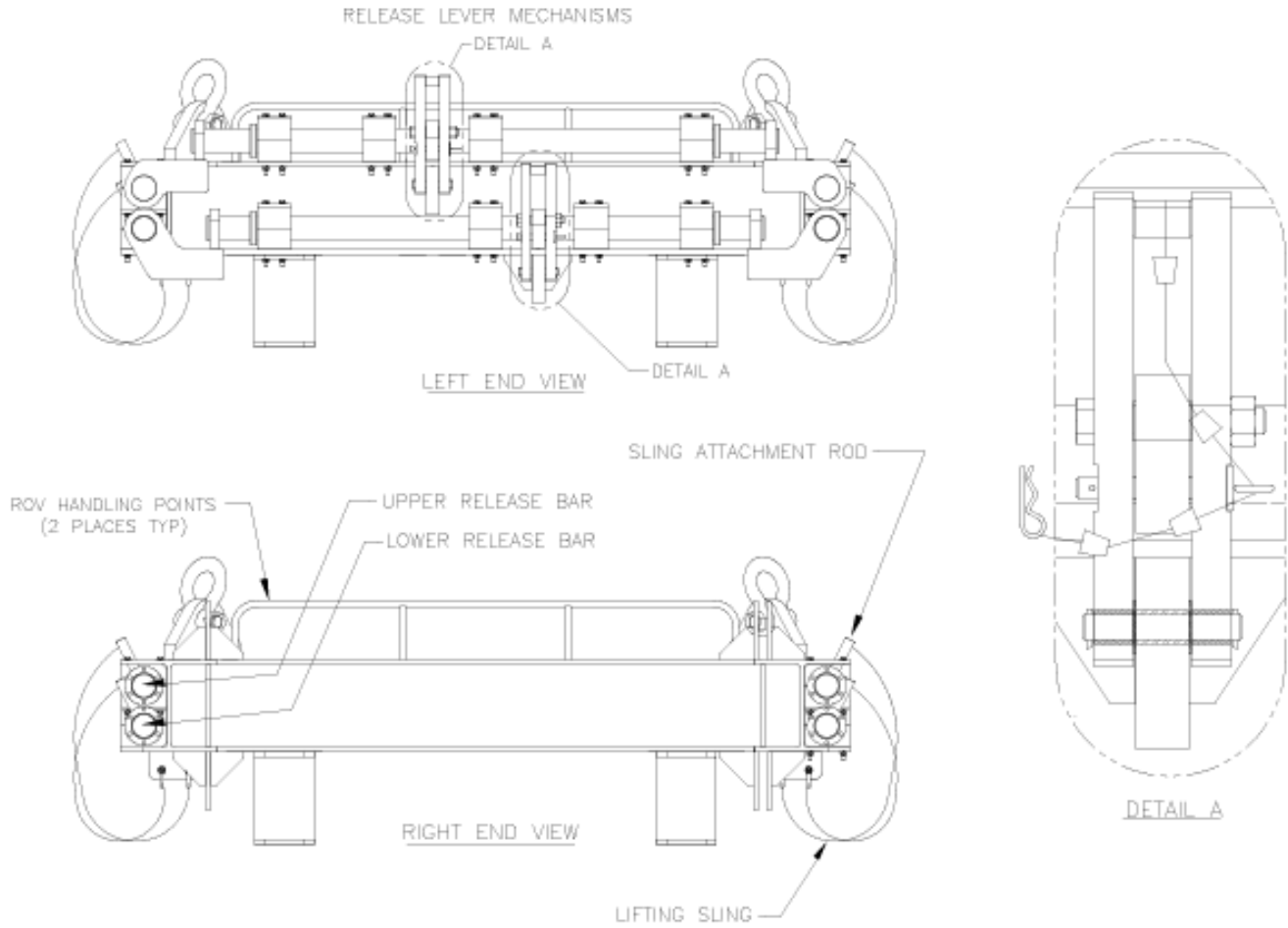
#### 1.2 CMDF-40-DR DEPLOYMENT FRAME

The forty-foot dual release deployment frame has an upper and lower release bar paired on both sides of the frame, each release bar has a row of twenty sling attachment rods perpendicular with the bar. The Mats are lifted by means of nylon slings that have loops on each end. The forty-foot frame can handle two twenty-foot length mats across a given row. One end of the nylon strap is fixed to the frame with shackles while the other end is free to pass through the mat rope loops and then hook to each attachment rod of the release bar, the upper bars using shorter slings than the lower bars. The upper pair of release bars are both activated simultaneously by one release lever mechanism and the lower pair of release bars are both activated in the same manner by a separate release lever giving independent operation between the upper and lower release bars. Provided on each end of the frame are three optional mounting locations per end for a transponder mounting bracket that is included with the frame. Equalization holes are not necessary as the bar is not hollow; therefore the frame does not need to be "flooded" and is rated for subsea for installation at any water depth. Also on each end of the frame are handling rails for Remote Operating Vehicle (ROV) attachment points used for assistance in operating the release levers. See Figure 1-1, CMDF-40-DR Deployment Frame for illustration.

A special Spreader Bar is used to lift the frame. See Section 1.3, Forty-Foot Spreader Bar for further information.

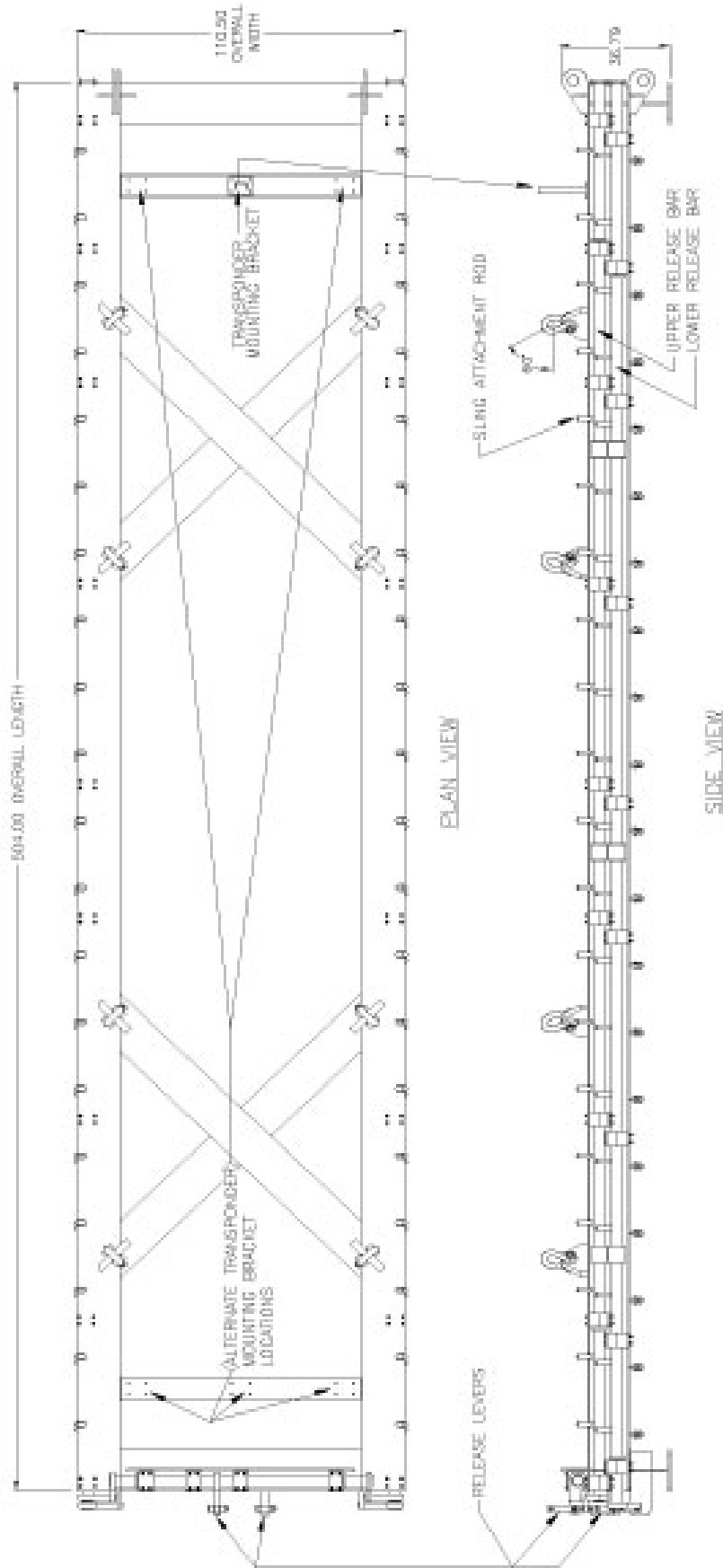
# SECTION 1

Figure 1-1, CMDF-40-DR Deployment Frame



**FRAME SPECIFICATIONS:**  
FRAME WEIGHT ( Gross ) 23,000 lbs  
SAFE WORKING LOAD ( SWL ) 108,800 lbs.  
OVERALL DIMS. ( 504" Lg. ) x ( 111" Wide ) x ( 37" High )

# SECTION 1



**SECTION 1**

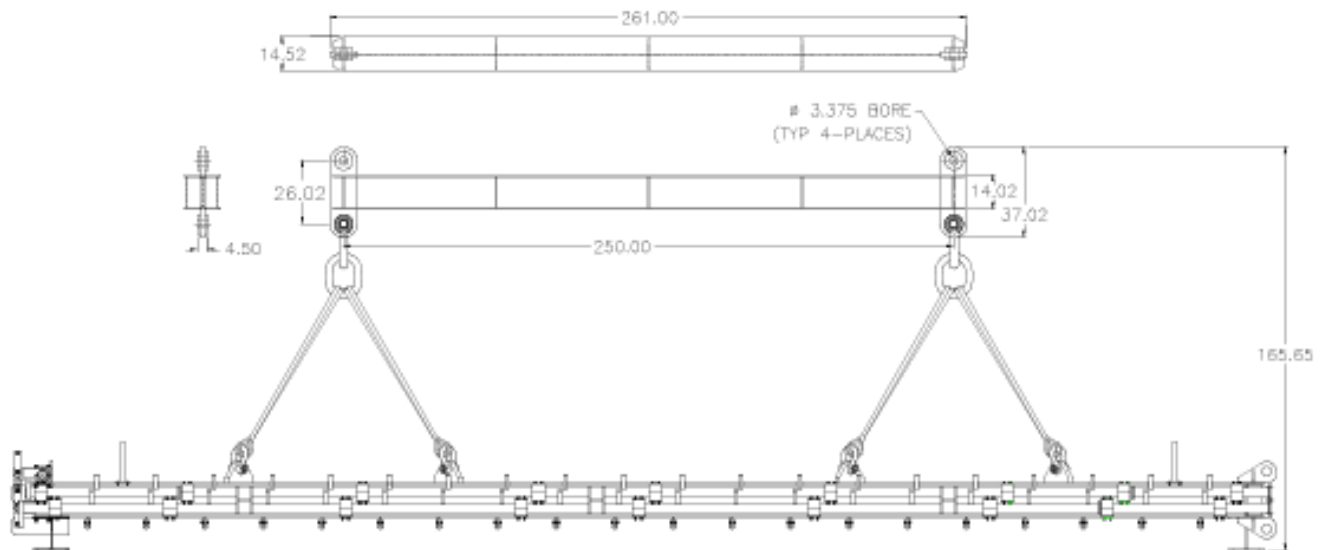


# SECTION 1

## 1.3 FORTY-FOOT SPREADER BEAM

The forty-foot spreader beam has been specially designed for use when lifting the CMDR-40-DR deployment frame. The spreader beam is attached to the deployment frame by means of a matched set of four part slings. The spreader beam, slings, and shackles needed for the spreader beam to attach to the frame are provided with the frame. See Figure 1-2, Forty-Foot Spreader Beam for Illustration.

**Figure 1-2, Forty Foot Spreader Beam**



## SECTION 2

### SAFETY INFORMATION

#### 2.0 SAFETY INFORMATION

##### 2.1 INTRODUCTION

This Section contains a listing of general safety rules that should be followed when operating the mat deployment equipment. Safety is the prime responsibility of the Operator -- the desire to avoid accidents.

Safety must NOT be limited to the practices listed here only. The work situation may require additional safety precautions. Always take the necessary steps needed to prevent injury to yourself or others during operations. Avoid careless habits, which could cause injury or accident.

##### 2.2 OPERATING SAFETY REQUIREMENTS

The safety precautions listed here are general in nature and will apply to most operating situations. Local authorities may require additional safety measures. The additional safety measures may have a higher priority than those listed in this Manual and must be followed first.

##### 2.3 GENERAL SAFETY PRECAUTIONS

The following general safety precautions will help in operating the equipment safely:



READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING THE DEPLOYMENT EQUIPMENT.



NEVER CLIMB ON THE MAT DEPLOYMENT FRAMES WHEN LIFTING.



"IF ATTACHED" ALWAYS SHUT DOWN AND SECURE THE LIFTING MACHINE DURING FRAME INSPECTION.



CLEAN GREASY OR SLIPPERY AREAS AROUND THE DEPLOYMENT WORK AREA.  
Slippery footing causes accidents.



## SECTION 2

### SAFETY INFORMATION



#### INSPECT THE DEPLOYMENT EQUIPMENT AT REGULAR INTERVALS.

Establish and maintain a regular inspection program. Refer to Section 5 of this Manual for inspection requirements.



#### DURING DEPLOYMENT OPERATION, CONCENTRATE ON OPERATING THE LIFTING MACHINE.

A moment of inattention can allow accidents to happen.



#### STAY CLEAR OF THE DEPLOYMENT FRAMES DURING OPERATION.

Do not operate the lifting machine with people to close the deployment frames.



#### NEVER LEAVE THE LIFTING MACHINE UNATTENDED WHEN THE DEPLOYMENT FRAME IS SUSPENDED.



#### USE ONLY THE SPECIFIED SIZE WIRE ROPE FOR DEPLOYMENT OPERATIONS

Check the Specification for the proper rated wire rope size needed for the specific lift to be made.



#### DO NOT EXCEED THE DEPLOYMENT FRAME LOAD RATING.

Check the load rating in Section I of this Manual. Exceeding the load rating can damage the Deployment Frame and cause accidents.



#### COMPENSATE FOR ENVIRONMENTAL CONDITIONS DURING DEPLOYMENT OPERATION.

Temperature, wind speed, vessel conditions, and variation in load can affect the deployment frame capabilities. Operator experience is required to compensate.

## SECTION 2

### SAFETY INFORMATION



MAINTAIN GOOD COMMUNICATION DURING DEPLOYMENT OPERATION.

Loss of communication with the Operator can cause accidents. Always maintain a backup communication system.



WEAR APPROPRIATE SAFETY EQUIPMENT DURING DEPLOYMENT OPERATION.



FOLLOW COMPANY WORK RULES WHEN PERFORMING MAINTENANCE TO THE EQUIPMENT.

## SECTION 3

# OPERATING PROCEDURES

### 3.0 OPERATING PROCEDURES

#### 3.1 INTRODUCTION

This Section of the Manual provides the operating instructions for the CMDR-40-DR Concrete Mat Deployment Frames. Mat deployment strategy is the operators' prerogative and is not included in this Manual.

The following Procedures given are based upon that the concrete mats have been already uniformly stacked as required for deployment pick-up with the frame.

Operator personnel should become thoroughly familiar with the information in this Section, before attempting mat deployment operation.



BEFORE MAT DEPLOYMENT OPERATIONS, OPERATORS SHOULD BECOME THOROUGHLY FAMILIAR WITH THE PROCEDURES DESCRIBED IN THIS SECTION.

#### 3.2 ATTACHING THE CONCRETE MATS TO THE FRAME

It is the operator's responsibility to assess proper performance of the operating perimeters. To attach the concrete mats to the frame for deployment perform the following:

**NOTE:** THE BOTTOM MAT ON EACH SET OF MATS (UPPER AND LOWER) CARRY THE LOAD OF THE ABOVE MATS WHEN LIFTED WITH THE SLINGS.

- a. **Follow the Pre-Deployment Checks.** Refer to Pre-Deployment Checks in Section 5.2 of this Manual.
- b. **Position The Frame.** Position the frame over the concrete mats to be deployed, make sure the frame is centered fore and aft along with left and right and of the mats and the frame are resting completely on top of the mats.
- c. **Set the Release Levers.** Make sure that both upper and lower release latch levers are in the locked position, check that the release latch locking pins are installed and secured in place with the safety pins.
- d. **Attach the Nylon Slings.** Pass each of the nylon slings that are fixed to the frame downward and through its respective rope loop of each concrete mat for the upper release bar and back up to the sling attachment rod then attach the open nylon sling loop to the attachment rod (take special care not to have any twist in the nylon slings during this procedure). Follow the same process for the lower release bar.
- e. **Raise the Frame and Mats.** Slowly raise the frame and mats until there is approximately 8-12 inches clearance under the lowest part of the bottom mat. Check that all slings have the loops fully over the attachment rods and are touching the release bars. Check that there is no twist in any of the nylon slings. Check that each sling passes through each mats rope loop and that the mats are level with the frame.
- f. **Transponder.** Check that the transponder is working properly before beginning the deployment trip.

**(Mats Are Now Ready For The Deployment Trip)**

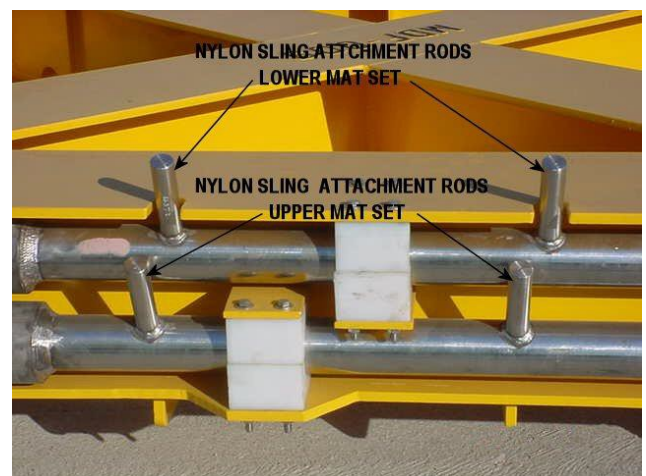
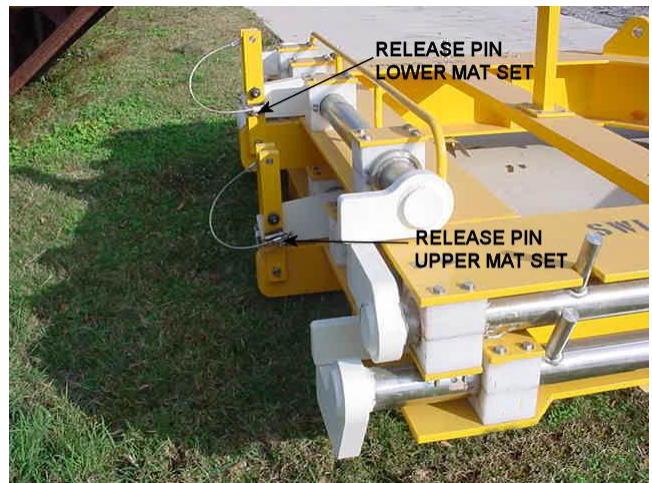
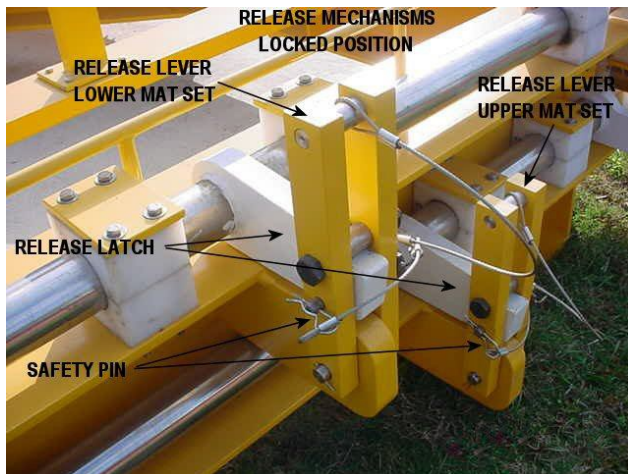
# SECTION 3 OPERATING PROCEDURES

## 3.3 DEPLOYMENT

Once the concrete mats have been positioned and the lower set of mats are ready for deployment pull the safety pin from the release bar latch locking pin, then pull the pin from the latch lever, then pull the latch lever fully outward until the release bars are able to rotate to the released position and the slings are allowed to slide from the attachment rods. When the upper set of mats are ready for deployment follow the same procedure to release the upper set of mats. See Figure 3-1, Nylon Sling Attachment Rods and Lever Mechanisms.

**NOTE:** IT MAY BE NECESSARY TO RAISE SLIGHTLY ON THE FRAME TO ASSIST THE RELEASE BAR IN ROTATING TO THE RELEASE POSITION.

**Figure 3-1, Nylon Sling Attachment Rods and Lever Mechanisms**



## SECTION 4 ADJUSTMENTS AND MAINTENANCE

### 4.0 ADJUSTMENT AND MAINTENANCE

#### 4.1 INTRODUCTION

This Section contains preventive and corrective maintenance instructions for the CMDR-40-Concrete Mat Deployment Frames.

A maintenance program that includes a regular adjustment and service schedule will keep the Deployment Frames operating safely for a long time. Several places within this Section describe adjustments and preventive maintenance that should be checked regularly. As part of maintenance, inspections should be followed on a scheduled basis and are outlined in Section 5 of this Manual.

#### 4.2 RELEASE BAR SHAFTS AND BEARING BLOCKS

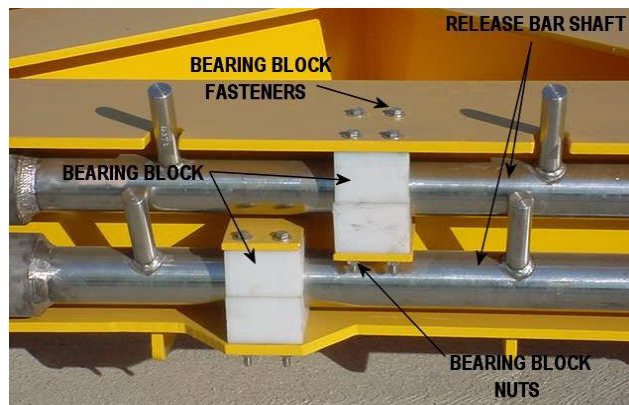
The release bar shafts have no adjustment, but they do require that the bearing block fasteners maintain their torque value of 45 foot lbs. and the nuts stay secured with locktite number 262 thread locker and locktite 7649 primer.

The rotating surface area between the release bar shafts and bearing blocks should be free from contaminants that would cause the release shafts not to rotate freely (the release bar shafts should rotate by hand without the use of tools or mechanical leverage). If contaminants are present then the bearing blocks should be removed and the release bar shaft and bearing block area be cleaned, then reassembled (reassemble dry do not use any lubricants on the rotating surfaces). See Figure 4-1, Bearing Block and Release Bar Shaft for illustration.

#### 4.3 RELEASE LEVER MECHANISMS

The release lever mechanisms also do not require any adjustments, however the safety pin for the release lever pin should pull out easily by hand along with the release lever pin. The release lever should move freely by hand throughout its pivotal rotation range. See Figure 3-1, Nylon Sling Attachment Rods and Lever Mechanisms for illustration.

**Figure 3-1, Bearing Block and Release Bar Shaft**



# SECTION 5

## INSPECTIONS

### 5.0 INSPECTIONS

#### 5.1 INTRODUCTION

This Section provides guidelines for inspection at set intervals to keep the Deployment Frames operating safely and correctly.



IF THE DEPLOYMENT FRAME IS ATTACHED TO THE LIFTING MACHINE, ALWAYS SHUT DOWN, SECURE AND TAG THE CONTROL CONSOLE OF THE MACHINE TO PREVENT INADVERTENT OPERATION DURING INSPECTION

#### 5.2 PRE-DEPLOYMENT CHECKS

Before using the concrete mat deployment frame thorough “Pre-Deployment Checks” must be made prior to each deployment trip. The “Pre-Deployment Checks” will assure that the deployment frame is in good operating condition before mat deployment begins. This will help eliminate any problems with deployment of the mats at the drop location. It is extremely important that all checks listed below be made as a minimum. Any deficiencies found should be corrected prior to deployment.

Additional checks or inspections may be required by local agencies or owners and must be made before deployment of the concrete mats. To prepare the Deployment Frame for operation:

- a. Visually inspect the frame for any evidence of structural damage in the form of bent members or cracked paint around welded areas.
- b. Visually inspect the sling release attachment rods for straightness, nicks or sharp edges that may cause sling damage or hamper the release of the sling(s).
- c. Check that all the fixed end sling attachment shackle bolts are tight and the shackles are in good condition.
- d. Physically check that all release bar shafts turn as described in Section 4, Adjustments and Maintenance.
- e. Physically check that both upper and lower release lever mechanisms are working properly as described in Section 4, Adjustments and Maintenance (check that the lanyard for the safety pin and release pin are in place and in good condition).
- f. Check that the transponder and mounting bracket are secure to the frame.
- g. Visually inspect all lifting equipment such as slings shackles and spreader bar, etc. for integrity
- h. Physically check that all release bar shaft bearing block fasteners are tight and have no missing bolts, nuts or washers.
- i. Visually check that all nylon slings used for mat deployment have identity tags and are in conformance to the required work load, Also inspect the slings for damage.

### **5.3 ANNUAL LOAD TEST**

The following Load Test is to be done on an annual basis:

- a. Use Load Test Procedure Document No. TA-CMDF-40-DR-4046 for the Model CMDF-40-DR deployment frame.

All test documents are to be filed with Quality Control Department and a test certificate is to be inserted into each manual for the deployment frames.