UNITED STATES MARINE CORPS
MARINE CORPS DETACHMENT
686 MINNESOTA AVE
FORT LEONARD WOOD, MISSOURI 65473-8963

LESSON PLAN

CONTAINER HANDLER OPERATION

NCOO-B02

ENGINEER EQUIPMENT OPERATOR NCO

A16ACX1

REVISED 01/19/2012

APPROVED BY _____ **DATE** _____

INTRODUCTION **(10 MIN)**

(ON SLIDE # 1)

1. **GAIN ATTENTION**: As a Non Commissioned Officer in the 1345 Engineer Equipment Operator community there are going to be times where you are going to have to make some important decisions. One of which may quite possibly have to do with the RT 240V2 Kalmar. This is one of the largest pieces of equipment on your lot; and it is imperative that you as an NCO are 100% confident and knowledgeable on all the equipment that you may be responsible for, especially when dealing with one of this size and capability. This period of instruction will provide you with that knowledge and confidence.

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(ON SLIDE # 2)

2. **OVERVIEW**: Good morning/afternoon class, my name is_____. The purpose of this period of instruction is to provide you with the knowledge, skills, ability to operate and employ the RT 240V2 Kalmar.

INSTRUCTOR NOTE
Introduce learning objectives.

(ON SLIDE # 3)

3. **LEARNING OBJECTIVE(S):**

a. **TERMINAL LEARNING OBJECTIVE:**

(1) Provided a RT 240V2 Kalmar, engineer equipment records and forms and references, operate the Rough Terrain Container Handler in support of engineer operations to safely meet operational requirements with no injury to personnel or damage to the equipment per the references. (1345-XENG-2003)

b. **ENABLING LEARNING OBJECTIVE(S):**

(1) Without the aid of reference, identify the characteristics of the KALMAR per the TM 11078A-OR. (1345-XENG-2003a)

(2) Provided a KALMAR, engineer equipment records and forms, and with the aid of reference, initiate operator forms and records per the TM 4700-15/1_. (1345-XENG-2003b)

(3) Provided a KALMAR, engineer equipment records and forms, tools, petroleum, oils, and lubricants, and with the aid of reference, perform operation checks (before, during, and after) per the TM 11078A-OR. (1345-XENG-2003c)

(4) Provided a KALMAR, an engineer equipment requirement, engineer equipment records and forms, move the KALMAR to job site per the TM 11078A-OR. (1345-XENG-2003d)

(5) Provided a KALMAR, containers, an engineer equipment, engineer equipment records and forms, and references, stack containers three high per the TM 11078A-OR. (1345-XENG-2003f)

(6) Provided a KALMAR, an engineer equipment requirement, engineer equipment records and forms, and reference, install forklift kit attachment per the TM 11078A-OR. (1345-XENG-2003f)

(7) Provided a KALMAR, an engineer equipment requirement, engineer equipment records and forms, and reference, complete operational records per the TM 4700-15/1_. (1345-XENG-2003g)

(ON SLIDE # 4)

4. **METHOD/MEDIA:** This lesson will be taught by using the lecture method with the aid of computer aided graphics, Instructor Demonstration and Practical Applications.

INSTRUCTOR NOTE
Explain the instructional rating forms to the students.

(ON SLIDE # 5)

5. **EVALUATION:** You will be evaluated by a written exam and a practical application exam at the times indicated on the training schedule.

(ON SLIDE # 6)

6. **SAFETY/CEASE TRAINING (CT) BRIEF:** All instructors and students will use caution when walking around the equipment lot during equipment operations. Sun block should be used to avoid sunburn. Issue students bug spray if required. Encourage students to stay hydrated as temperatures can reach 100 degrees plus during the summer months. In the event of a casualty, emergency services (911) will be called and all students will move to the classroom and await further instruction.

(ON SLIDE # 7)

TRANSITION: Are there any questions on what we will be covering or how you will be evaluated? Then let's first discuss the characteristics of the RT 240v2.

BODY: **(2 HRS 40 MIN)**

(ON SLIDE # 8)

1. **CHARACTERISTICS OF THE RT 240V2:** **(10 MIN)**

(ON SLIDE # 9)

a. The RT 240V2 is the replacement for the current 988B RTCH.

b. The RT 240V2 is designed to lift, move, stack or un-stack 20 and 40 ft by 8 ft wide ISO containers.

c. The RT 240V2 can be utilized as a forklift with an operator installed forklift kit.

d. The RT 240V2 has a lift capacity of 53,000 lbs with the top-handler and 44,000 lbs with the forklift kit. Operates on hard and/or unimproved surfaces, to include beach operations.

e. The RT 240V2 weighs 118,500 lbs and 128,400 lbs with the forklift kit attachment.

f. Maximum speed is 23 mph on level ground with NO LOAD; the maximum speed on level ground LOADED is 15 mph.

g. Maximum fording depth is 60 in.

(ON SLIDE # 10)

h. Has a ground clearance of 18 in.

i. Operates in temperatures ranging from -25˚F (-32˚C) to +125˚F (+52˚C), and to -40˚F (-40˚C) with arctic kit installed.

j. Capable of being transported by truck, rail, ship, and air.

(ON SLIDE # 11)

TRANSITION: Now that you have a better understanding of some of the general characteristics. Are there any questions? Then let's look at the major components of the RT240V2.

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_____
_____

(ON SLIDE # 12)

2. MAJOR COMPONENTS: (10 min)

a. Electronically controlled 400 hp @ 2150 RPM, six-cylinder turbocharged, Cummins diesel engine.

(ON SLIDE # 13)

b. Electronic semi-automatic shift controlled transmission with 4 ranges forward and 3 reverse. Operator selects range and the ECM controls the shift points.

(ON SLIDE # 14)

c. Limited slip differentials and multi-disc-wet brakes are an integral part of the axle assemblies. Multi-disc-wet brakes are hydraulically cooled to prevent overheating. Six (6) pressurized accumulators store energy for the emergency braking system.

INSTRUCTOR NOTE:
The emergency steering pump provides sufficient hydraulic pressure to control the RT 240V2 until it is brought to a stop.

d. The steering system is capable of two-wheel, four-wheel, crab, and emergency modes of operation.

(ON SLIDE # 15-16)

e. Equipped with an Automatic Lubrication System. This provides lubrication to front and rear steering knuckles and steering cylinders, rear axle pivot pin, boom folding cylinders, boom support pivot pins, and boom pivot pins. Fill with GAA if the bowl is less than 1/4 full.

(ON SLIDE # 17)

f. There are three types of tires used and all serve a specific purpose.

(1) The front and rear tires: Used for standard operation.

(ON SLIDE # 18)

(2) The Bogie wheels: (Transport Operations) used to evenly displace the weight of the equipment when loaded on aircrafts.

(ON SLIDE # 19)

(3) The dolly wheels: (Top-handler Transport) used to support the top-handler when loading onto aircrafts.

(ON SLIDE # 20)

(4) All tires are 85 psi.

(ON SLIDE # 21)

g. **Electrical System**:

(1) 24 volt, negative ground electrical system.

(2) (4)-12 volt batteries on the left side.

(3) NATO slave receptacles on both sides.

(ON SLIDE # 22)

TRANSITION: Now that now that we have covered some of the major components. Are there any questions? Then let's look at the capacities of the RT240V2.

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_____

3. CAPACITIES: (10 min)

(ON SLIDE # 23)

a. Fuel tank holds 103 gallons of diesel, and the fill point is located in front of the right rear tire.

(ON SLIDE # 24)

b. The hydraulic system holds 180 gallons of 10 wt oil; the sight glass and fill point are located just in front of the fuel tank.

(ON SLIDE # 25)

c. The radiator holds 23.7 gallons of Ethylene Glycol.

(ON SLIDE # 26-27)

d. The transmission operates on 9 gallons of 10 wt. oil.

e. The engine crankcase holds 9.5 gallons of 15/40 engine oil.

(ON SLIDE # 28)

TRANSITION: Now that we talked about the characteristics, major components and capacities of The RT 240V2. Are there any questions at this point? Then I have some for you.

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_____
_____

OPPORTUNITY FOR QUESTIONS:

1. QUESTIONS FROM THE CLASS:

2. QUESTIONS TO THE CLASS:

a What is the range of temperatures the KALMAR is capable of operating in?

Ranges from -25˚F to +125˚F, and to (-40˚F with arctic kit installed).

b. **The Kalmar is Equipped with an Automatic Lubrication System for what major components?**

The system provides lubrication to front and rear steering knuckles and steering cylinders, rear axle pivot pin, boom folding cylinders, boom support pivot pins, and boom pivot pins.

c. The hydraulic system holds 180 gallons of what weight oil?

10 wt

TRANSITION: We have just the covered the characteristics, major components and capacities of The RT 240V2. If there is no further question, let's move on to the Operators Cab and Controls.

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_____
_____

4. **OPERATORS CAB AND CONTROLS: (15 MIN)**

(ON SLIDE # 29)

a. The operator's cab has a fully adjustable operator's seat, fresh air (filtered) ventilation system, heater, defroster and air conditioning systems.

(ON SLIDES # 30-32)

b. **Instrument Panel:**

(1) Fuel Gauge

(2) Hour Meter

(3) Cab Air Circulation Control

(4) 12 Volt Utility Plug

(5) Heater & A/C Controls

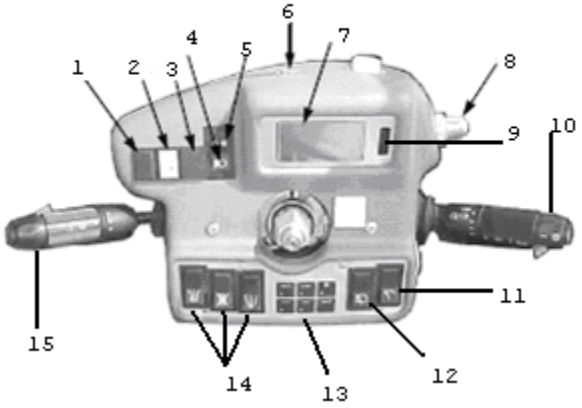
(6) Service Drive, Work, Hazard, Inferred, and Blackout Drive Marker Light Switches.

(7) Either Switch

(8) Auxiliary Pump Switch: Used in the event of an engine failure or shutdown, to lower the boom, unlock twist-locks, and raise/retract the boom. Also utilized to reposition the operator's cab for transport.

(ON SLIDE # 33-35)

c. **Steering Column & Controls:**



(1) Twist LOCKED Indicator Light (Green indicator light is lit when twist-locks are locked).

(2) Twist-locks ALINEMENT Indicator Light (YELLOW indicator light is lit during twist-lock alignment).

(3) Twist-locks UNLOCKED Indicator Light (RED indicator light is lit when twist-locks are unlocked).

(4) High Beam Indicator Light

(5) Turn Signal Indicator Lights

(5) Diagnostic Connector

(6) Electronic Control System (ECS) Display Screen

(7) Ignition Switch

(8) Warning Indicator Light (Red light flashes to notify operator that an abnormal condition or system malfunction has occurred). Operator must refer to ECS display screen for further information.

(9) Accessory Control Lever provides controls for vehicle lights, turn signals, windshield wiper, washer, and horn.

(10) Roof Window Wiper Switch

(l1) Rear Window Wiper Switch

(12) Electronic Control System (ECS) Menu Selection Buttons

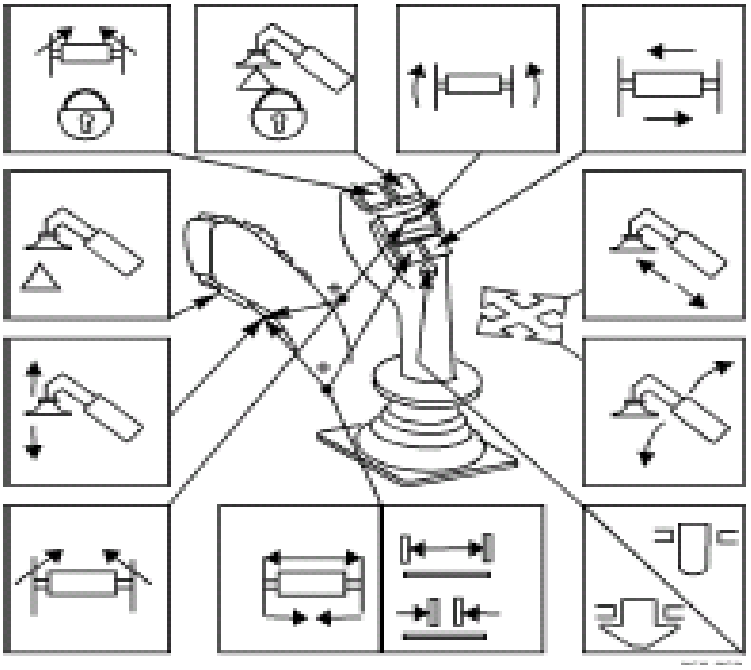
(13) Steering Mode Selectors

(14) Transmission Control Lever

(ON SLIDE # 36)

d. **Joystick Control** buttons and switches on the joystick are used, individually or in conjunction with each other, to fully control all container handling operations. The following decal is located on the cab's right-side window and summarizes all joystick functions.

(ON SLIDES # 37-56)



(1) Rotation: 40° counterclockwise and 105° clockwise.

(2) Side shift: ± 15 in from the center on each side.

(3) Twist-locks

(4) Tilt float lock

(5) Oscillation float lock

(6) Tilt: 12° forward and 8° to the rear.

(7) Oscillation: 7° left and right.

(8) Open & close spreader: 20ft – 40ft.

(9) Lower & rise boom

(10) Extend and retract boom

(11) Vertical lift/ lowering

(ON SLIDES # 57, 58)

e. <u>Override Switch:</u>

(1) Allows the operator to retract and lower the boom after an OVERLOAD lockout.

(2) Provides twist-lock override in the event of incorrect twist-lock alignment.

(3) To engage/disengage, hold override button and twist-lock button until Twist-lock Indicator Lights come on/off.

(ON SLIDE # 59)

f. **Parking Brake** is hydraulically released and spring-applied by disc brake assemblies mounted on the front and rear differentials.

(ON SLIDE # 60)

g. **Emergency Stop Button:**

(1) Stops all hydraulic functions to the boom and top-handler.

(2) Activation will cause the engine to de-rate to 1000 RPMs. Turn off the engine and restart to clear the de-rate.

(ON SLIDE # 61)

h. **Pedals:**

(1) Accelerator

(2) Service Brakes (2)

(3) Transmission Disconnect Brake Pedal

(ON SLIDE # 62)

TRANSITION: Now that we talked about the operators cab and controls of The RT 240V2. Are there any questions at this point? Then I have some for you, and then we will take a break.

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_____
_____

OPPORTUNITY FOR QUESTIONS:

1. QUESTIONS FROM THE CLASS:

2. <u>QUESTIONS TO THE CLASS:</u>

a. **Auxiliary Pump Switch is used in the event of what?**

Engine failure or shutdown, to lower the boom, unlock twist-locks, and raise/retract the boom. It is also utilized to reposition the operator's cab for transport.

b. **How are the buttons and switches on the joystick used?**

They are used individually or in conjunction with each other, to fully control all container handling operations.

(ON SLIDE # 63)

(BREAK 10 min)

<u>TRANSITION</u>: We have just the covered the operators cab and controls of The RT 240V2. If there is no further question, let's move on to the Remote Hydraulic Controls.

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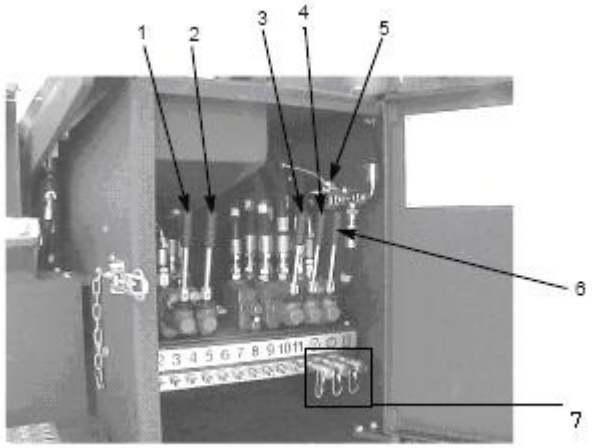
(SLIDE # 64, 65)

5. **<u>Remote Hydraulic Controls:</u> (10 min)**



a. Cab lift/lower lever: Used to move cab to transport position. Pull lever to raise cab. Push lever to lower cab.

b. Cab Side Movement Lever: Used to move cab to transport position. Pull lever to move cab to the left. Push lever to move cab to the right.

c. Locking Pins Lever: Pull lever to hydraulically extend/install boom support locking pins. Push lever to hydraulically retract locking pins.

d. Folding Boom Support Lever: Pull lever to hydraulically raise boom support. Push lever to hydraulically lower boom support.

c. Bogie Wheel Pressure Valve: Supplies constant pressure to bogie wheels during air transport.

e. Bogie Wheels Lever: Used to lower and raise bogie wheels. Pull lever to raise bogie wheels. Push lever to lower bogie wheels.

f. JOAP Sampling valves: Retrieves samples of Engine Oil, Transmission Oil, and Hydraulic Oil.

(SLIDE # 66)

TRANSITION: Now that we talked about the Remote Hydraulic Controls of The RT 240V2. Are there any questions at this point? Then I have some for you.

OPPORTUNITY FOR QUESTIONS:

1. **QUESTIONS FROM THE CLASS:**

2. **QUESTIONS TO THE CLASS:**

a. The cal lift/lower lever is used to do what?

It is used to move the cab into the transport position.

b. The locking pins lever controls what function?

The lever hydraulically extends/installs the boom support locking pins.

TRANSITION: We have just the covered the Remote Hydraulic Controls of The RT 240V2. If there is no further question, let's move on to the Starting and Operating Procedures.

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(ON SLIDE # 67)

6. **STARTING AND OPERATING PROCEDURES: (10 MIN)**

a. **Before starting** turn the master battery switch on. Perform before operation PMCS. Ensure that the parking brake is applied, transmission is in Neutral, and all accessory switches and controls are in the off position. Turn ignition switch to on position. System warning light will illuminate briefly, and then go out. Start the engine with throttle at IDLE. Increase engine RPMs slowly to provide adequate lubrication to the bearings and allow the oil pressure to stabilize. Run engine at idle for 3 to 5 minutes before operating with a load. Monitor fuel gauge and indicators for any signs of abnormal temperatures or pressures. Shut down engine at first sign of a problem.

INSTRUCTOR NOTE
IF ENGINE DOES NOT START AFTER 30 SECONDS LET THE STARTER COOL FOR TWO MINUTES THEN TRY AGAIN.

(ON SLIDE # 68)

(1) **Starting the Engine – below 32 degrees Fahrenheit:**

(a) Try to start the engine without ether. If engine does not start then use ether. With ignition switch in the on position, push the starting aid button and hold for three seconds and release. Then attempt to start the engine.

b. **Stopping Operating Procedures:**

(ON SLIDE # 69)

(1) **Parking the RT 240V2 Kalmar:**

(a) Stop the vehicle. Move transmission range selector to NEUTRAL. Push parking brake control lever forward to engage. Retract and lower top handler all the way.

(ON SLIDE # 70)

(2) **Stopping the engine:**

(a) Park vehicle on level ground. Operate engine at low idle for 3 to 5 minutes. Turn power switch off. Lock steering column in the stored position. Allow the computer controlled engine to cool down. Turn the main disconnect switch off.

INSTRUCTOR NOTE
NEVER TURN MAIN DISCONNECT SWITCH OFF WHEN ENGINE IS RUNNING. IF VEHICLE NEEDS TO BE PARKED ON A SLOPED, BLOCK THE WHEELS.

(ON SLIDE # 71)

c. **Electronic Control System (ECS) Display Screen:**

(1) **Operational Screen** comes on every time the ignition is turned on and displays the following data.

(a) Weight of the load.

(ON SLIDE # 72)

(b) Load center inches. Distance from the front of the tires to the center of the load.

(c) Indicator bar graph, raise as the load is extended from the vehicle.

INSRUCTOR NOTE
The RT 240V2 is equipped with a load chart. The solid line represents the lifting capacity with the top handler. The dotted line represents the lifting capacity with the forklift.

(ON SLIDE # 73)

(2) **Transmission Status:** The directional letter (F N R) and the number (1 2 3 or 4) is located on the top left of the operational screen with the current gear selected.

(a) Miles per hour (MPH) is located in the center of the operational screen.

(b) Revolutions per minute (RPM) is located at the bottom of the operational screen.

(ON SLIDE # 74)

(3) **Engine Monitoring Screen:**

(a) Engine coolant temperature: Normal range 175-210°F.

(b) Oil pressure: Normal range 15-35 PSI.

(ON SLIDE # 75)

(c) Temperature Monitoring Screen: Displaying the water temperature and the oil pressure.

(d) Ambient (outside) temperature

(e) Transmission temperature: Normal range 175°-220°F

(f) Hydraulic temperature: Normal range below 160°F

(ON SLIDE # 76)

(4) **Boom Extension Screen:**

(a) Shows boom extension in inches.

(b) This screen is used to set up the 110 in. extension in preparation for boom support folding.

(5) **Overall boom height:**

(ON SLIDE # 77)

(a) 340 in. (28.3 ft) loaded.

(b) 240 in. (20 ft) unloaded.

(6) **Tilt and Boom angle:**

(ON SLIDE # 78)

(a) Helps operator keep the load level by displaying tilt angle in degrees.

(c) Boom angle in degrees. (19° is used to prepare for boom support folding).

(ON SLIDE # 79)

(7) **ECS Icon Screen:** Used to access the Service and Maintenance Screen that is utilized by maintenance personnel for fault identification, setup, and calibration procedures.

INSTUCTOR NOTE:
In the event of a defect within the RT 240V2, the ECS Screen also displays; error codes, operator action required, fault icons, and function icons. TM 11078A-OR pg. 0019 00-1 describes and identifies all icons and error codes.

(ON SLIDE # 80)

TRANSITION: Now that we talked about the Starting and Operating Procedures of The RT 240V2. Are there any questions at this point? Then I have a few for you.

OPPORTUNITY FOR QUESTIONS:

1. QUESTIONS FROM THE CLASS:

2. QUESTIONS TO THE CLASS:

a. **What is the Transmissions Normal operating temperature range?**

175°-220°F

b. **What are the proper steps for park lining the KALMAR?**

Stop the vehicle. Move transmission range selector to NEUTRAL. Push parking brake control lever forward to engage. Retract and lower top handler all the way.

TRANSITION: We have just the covered the Starting and Operating Procedures of The RT 240V2. If there are no further question let's move on to the employment of the KALMAR.

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_____

(ON SLIDE # 81-82)

7. **EMPLOYMENT: (15 MIN)**

a. **Top-handler:**

(1) Stack or un-stack 8 ft high ISO containers stacked three high with a gross weight of 53,000 lb in the first row.

(2) Stack or un-stack 8 ft high ISO containers stacked three high with a gross weight of 27,500 lb in the second row.

(ON SLIDE # 71)

(3) Stack or un-stack 4.3 ft high ISO containers stacked seven high.

(ON SLIDE # 83)

b. **Forklift Kit:**

(1) Forklift kit attaches to the top-handler. (This requires a minimum of two personnel to install).

(2) Lifting capacity is 44,000 lb and a maximum lifting height of 21.8 ft.

(ON SLIDE # 84)

(3) The fork tines are adjustable from 24 in. center-to-center to 81.5 in. center-to-center. The controls for spreading the top-handler 20/40 become the fork spreading controls.

(ON SLIDE # 85)

(4) Total weight of the forklift kit is 11,000 lbs.

(5) The forklift kit is folded when it is not in use or being stored.

INSTRUCTOR NOTE
We will look at a separate power point presentation and install and use the forklift kit after we are familiar with the RT240V2.

(ON SLIDE # 86)

c. **Self Deployment:**

(ON SLIDE # 87)

(1) Extend boom 150 in. load center (load weight screen).

(2) Rotate top-handler 90° clockwise to longitudinal position.

(3) Fully lower the boom to the lowest position and tilt the top-handler to a level position parallel with the ground.

(4) Right side shift top-handler to position clamp 3 under the cross member to balance top-handler.

(ON SLIDE # 88)

(5) Place float locks in the lock position.

(6) Retract boom until top-handler is in close proximity to front tires.

(7) Select two-wheel steer mode.

(8) Turn on lights and flashers, as required.

INSTRUCTOR NOTE
The RT 240V2 can be deployed with the forklift kit attached only when moving between remote areas, NOT on highways or streets. The forklift kit may only be deployed with top-handler oriented in the normal operational position.

(ON SLIDE # 89)

d. **Placing Cab in Transport Position**: The RT240V2 must be placed in the Transport Position in order to be transported by truck, rail, ship, or air. APPENDIX A is a detailed diagram of the steps required to do this.

INSTRUCTOR NOTE
The Instructor will play a video and give a demonstration of placing the RT240V2 into the Transport Position.

(ON SLIDE # 90)

TRANSITION: Now that we talked about the employment of The RT 240V2. Are there any questions at this point? Then I have a few for you.

OPPORTUNITY FOR QUESTIONS:

1. QUESTIONS FROM THE CLASS:

2. QUESTIONS TO THE CLASS:

a. **What is the lifting capacity of the fork attachment?**

The lifting capacity is 44,000 lb with a maximum lifting height of 21.8 ft.

b. **What is the total weight of the forklift kit is?**

11,000 lbs

TRANSITION: We have just the covered the employment of The RT 240V2. If there are no further question let's move on to the PMCS of the KALMAR.

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_____
_____

(ON SLIDE # 91)

8. PMCS: (10 MIN)

(ON SLIDE # 92)

a. **Before Operations:**

(1) 360° walk around, look for leaks or damage.
(2) Inspect cylinders and hoses.

(3) Check the cab exterior.

(4) Inspect the boom locking pins.

(5) Check the hydraulic reservoir sight gage.

(6) Inspect top-handler cylinders and hoses.

(7) Inspect the twist-lock hydraulics and wiring.

(8) Check engine oil level.

(ON SLIDE # 93)

(9) Inspect forklift kit, if installed.

(10) Inspect instruments, gauges and switches.

(11) Check the fire extinguisher.

(12) Check and adjust the seat and seat belt.

(13) Check and adjust the steering wheel and column.

(14) Check condition and adjustment of mirrors.

(ON SLIDE # 94)

b. **During Operations:**

(1) Start the engine; verify all indicators and warning lights.

(2) Check the air cleaner restriction indicator.

(3) Perform operational check of the hydraulic functions.

(4) Check the twist-lock indicator lights on the boom.

(5) Monitor the ECS display screen and indicators for proper pressures and temperatures.

(ON SLIDE # 95)

(6) Check parking and service brake operation.
(7) Check steering operation.

(8) Check transmission operation.

(9) Be alert for any hydraulic leakage during operation.

(ON SLIDE # 96)

c. **After Operations:**

(1) 360° walk around, look for leaks or damage.

(2) Inspect fenders and light assemblies for damage.

(3) Open and check inside battery compartment for damage.

(4) Check the tires for damage or missing lug nuts.

(5) Inspect folding stepladder for damage.

(6) Inspect fuel tank and filler cap for damage.

(ON SLIDE # 97)

(7) Check coolant level in expansion tank and for damage.

(8) Check the transmission fluid level.

(9) Inspect boom and top-handler hydraulics.

(10) Inspect boom and top-handler work lights.

(11) Inspect the twist-locks hydraulics and wiring for damage.

(12) Inspect forklift kit, if installed.

(ON SLIDE # 98)

d. **Weekly PMCS:**

(1) Service the air cleaner.

INSTRUCTOR NOTE
KALMAR recommends not removing the air cleaner until the filter indicator is tripped.

(2) Check the engine drive belts for loose, missing or damaged.

(3) Drain the fuel / water separator.

(4) Check the ether start system for damage.

(5) Service the starting batteries - water level, connections, corrosion.

(6) Check and adjust the tire pressure, tightness of lug nuts.

(7) Inspect dolly and bogie wheels and storage compartment.

(ON SLIDE # 99)

(8) Check operation and condition of cab.

(9) Inspect exhaust system for looseness, corrosion and damage.

(10) Check operation of air conditioning (run at least five minutes).

(11) Check fluid levels in top-handler slewing motors.

(ON SLIDE # 100)

e. **Monthly PMCS:**

(1) Check operation of the IR lights with night vision goggles.

(2) Check operation of arctic heater (run at least five minutes).

(3) Check NATO slave receptacles for damage.

(ON SLIDE # 101)

TRANSITION: We have just the covered the PMCS for the RT 240V2. If there are no further question let's move on to the safety procedures.

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_____

9. **SAFETY PROCEDURES: (10 min)**

(SLIDE # 102)

a. Do not allow riders on the vehicle.

b. Keep a safe distance from and stay clear of overhangs, electrical wires, and other dangerous areas.

c. To avoid tipping over, be careful when crossing or working on hills, banks or slopes.

d. Look behind the vehicle before backing up.

(ON SLIDE # 103)

e. Always wear your seat belt.

f. Knowing the stopping distance of your vehicle at any speed. Then adjust speed.

g. During operations top-handler should be 240” (20”) off the ground when unloaded and 340” (28.3’) off the ground when loaded.

(ON SLIDE # 104)

TRANSITION: Now that we talked about PMCS and the safety precautions for the RT 240V2. Are there any questions? Then I have a few for you.

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_____
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OPERTUNITY FOR QUESTIONS:

1. QUESTIONS FROM THE CLASS:

2. QUESTIONS TO THE CLASS:

a. What are the three monthly PMCS checks?

(1) Check the IR lights.

(2) Check arctic heater (run for five minutes).

(3) Check NATO slave for damage.

b. During operations the top-handler should be _____ off the ground when unloaded and _____ off the ground when loaded?

240” (20’) unloaded / 340” (28.3’) loaded

INTERIM TRANSITION: Are there any questions on what we have covered? If not let's **take a break and then** move onto the demonstration of operating the RT 240V2 KALMAR.

(ON SLIDE # 105)

(BREAK 10 min)

INTERIM TRANSITION: Are there any questions before we go into the demonstration?

INSTRUCTOR NOTE

Perform the following demonstration.

1. DEMONSTRATION: (20 min) The purpose of this demonstration is to show the students how to operate the 240V2 KALMAR. Before the demonstration the Instructor will have one 240V2 KALMAR prepared. One instructor is required.

STUDENT ROLE: The students will gather around the KALMAR with student handouts and observe the instructors demonstration. Students will be encouraged to ask questions.

INSTRUCTOR(S) ROLE: The instructor will conduct a detailed demonstration of how to operate the 240V2 KALMAR.
1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In case of mishap students will move to the classroom and instructor will call emergency personnel.
2. Supervision and Guidance: The instructor will demonstrate the following.

(1) Introduction to the RT 240V2 KALMAR.
(2) 360 walk around.
(3) Pre Op checks.
(4) Stacking ISO containers three high.
(5) During operations checks.
(6) Un-stack.
(7) Post ops checks.

3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the demonstration.

INTERIM TRANSITION: Are there any questions on what we just covered? If not let's take a break before moving onto the demonstration for installing the forklift kit attachment on the RT 240V2 KALMAR.

(BREAK 10min)

INTERIM TRANSITION: Are there any more questions before the demonstration for installing the forklift kit attachment on the RT 240V2 KALMAR.

INSTRUCTOR NOTE

Perform the following demonstration.

2. DEMONSTRATION: (20 min) The purpose of this demonstration is to show the students how to install and remove the fork kit. Before the demonstration the Instructor will have one 240V2 KALMAR prepared. Two instructors are required for this demonstration.

STUDENT ROLE: The students will gather around the KALMAR with student handouts and observe the instructors demonstration. Students will be encouraged to ask questions.

INSTRUCTOR(S) ROLE: The instructor will conduct a detailed demonstration of how to install and remove the fork kit. The alternate instructor will assist the primary instructor.
1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In case of mishap students will move to the classroom and instructor will call emergency personnel.
2. Supervision and Guidance: The instructor will demonstrate the following.

(1) Introduction to the forklift kit attachment for the RT 240V2 KALMAR.

(2) Tool requirements.
(3) Instillation of the fork kit.
(4) Removal of fork kit.

3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the demonstration.

INSTRUCTOR NOTE

Instructor will reiterate the safety brief prior to the students Practical Application.

INTERIM TRANSITION: Are there any questions on either of the demonstrations that we have just covered? If not let's take a break before moving onto the Practical Application for the RT 240V2 KALMAR.

(BREAK 10min)

INTERIM TRANSITION: Are there any more questions before moving onto the Practical Application for the RT 240V2 KALMAR.

INSTRUCTOR NOTE

Perform the following Practical Application. Allow students to take breaks as needed

1. PRACTICAL APPLICATION: (33 HRS) The purpose of this Practical Application is to allow the students the opportunity to practice operating the RT 240V2 KALMAR. Before the practical application the Instructor will have all 240V2 KALMARs prepared. One instructor is required.

PRACTICE: Each student will be assigned a piece of equipment to operate; an additional student will be assigned to that piece of equipment as a ground guide for the student operating. Students are allowed to use hand outs and ask questions. The students will practice the following task.

(1) Initiate trip ticket.
(2) 360 walk around.
(3) Pre Op checks.

(4) Stacking ISO containers three high.
(5) During operations checks.
(6) Un-stack.
(7) Post ops checks.
(8) Complete trip ticket.

PROVIDE-HELP: The Instructor will assist students throughout the practical application and will ensure the students are properly operating the equipment.
1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In case of mishap students will move to the classroom and instructor will call emergency personnel.
2. Supervision and Guidance: Brief the students of their responsibilities during the practical application. The Instructor will be on the lot observing operations, assisting students and answering questions.
3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the Practical Application.

INTERIM TRANSITION: Are there any questions on the Practical application of operating the equipment? If not let's move onto the Practical Application for installing and removing the fork kit.

INSTRUCTOR NOTE

Perform the following Practical Application.

2. PRACTICAL APPLICATION: (2 HRS) The purpose of this Practical Application is to allow the students the opportunity to practice installing and removing the fork kit. Before the practical application the Instructor will have all 240V2 KALMARs prepared. One instructor is required.

PRACTICE: Each group of students will be assigned a piece of equipment. Students are allowed to use hand outs and ask questions. The students will practice the following task.

(1) Instillation of the fork kit.
(2) Removal of fork kit.

PROVIDE-HELP: The Instructor will assist students throughout the practical application and will ensure the students are properly installing and removing the fork kits.
1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In case of mishap students will move to the classroom and instructor will call emergency personnel.
2. Supervision and Guidance: Brief the students of their responsibilities during the practical application. The Instructor will be on the lot observing operations, assisting students and answering questions.
3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the Practical Application.

INTERIM TRANSITION: Are there any questions on the practical application portion of installing and removing the fork kit? If not let's move onto the demonstration of preparing to transport.

INSTRUCTOR NOTE

Perform the following Practical Application.

3. DEMONSTRATION: (20 min) The purpose of this demonstration is to show the students how to **prepare the 240V2 KALMAR for transport.** Before the demonstration the Instructor will have one 240V2 KALMAR prepared. One instructor is required.

STUDENT ROLE: The students will gather around the KALMAR with student handouts and observe the instructors demonstration. Students will be encouraged to ask questions.

INSTRUCTOR(S) ROLE: The instructor will conduct a detailed demonstration of how to prepare for transport on the 240V2 KALMAR.
1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the

equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In case of mishap students will move to the classroom and instructor will call emergency personnel.
2. Supervision and Guidance: The instructor will demonstrate the following.

(1) Introduction to the RT 240V2 KALMAR transportation process.
(2) 360 walk around.
(3) Pre Op checks.
(4) Configure for transport.
(5) During operations checks.
(6) Configure for operation.
(7) Post ops checks.

3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the demonstration.

TRANSITION: Now that we covered the RT 240V2 in detail. Are there any questions? Then I have a few for you.

_____
_____
_____

(ON SLIDE # 106)

OPERTUNITY FOR QUESTIONS:

1. QUESTIONS FROM THE CLASS:

2. QUESTIONS TO THE CLASS:

a. **The RT 240V2 KALMAR's overall mission is?**

To lift, move, stack or un-stack 20 and 40 ft by 8 ft wide ISO containers.

b. **The RT 240V2 has a lift capacity of _____ lbs with the top-handler and _____ lbs with the forklift kit. Operates on hard and/or unimproved surfaces, to include beach operations?**

53,000 lbs / 44,000 lbs

(ON SLIDE # 107)

SUMMARY **(10 MIN)**

During this period of instruction we have covered the characteristics, major components, capacities, operator cab and controls, remote hydraulic controls, starting and operating procedures, employment, PMCS, and safety procedures. You should now posses the knowledge and confidence to effectively employ the RT 240v2 KALMAR.

(ON SLIDE # 93)

INSTRUCTOR NOTE
Ensure to collect all IRF's and safety questioners handed out.

(BREAK: 10 MIN)

REFERENCES:

Ground Equipment Record Procedures TM 4700-15/1_

Rough Terrain Container Handler (RTCH) RT 240 V2; 53,000LB Capacity; 4X4 TM 11078A-OR