



OPERATION AND SERVICE MANUAL

This Manual has been prepared for and is considered part of -

N80A Series Articulating Crane

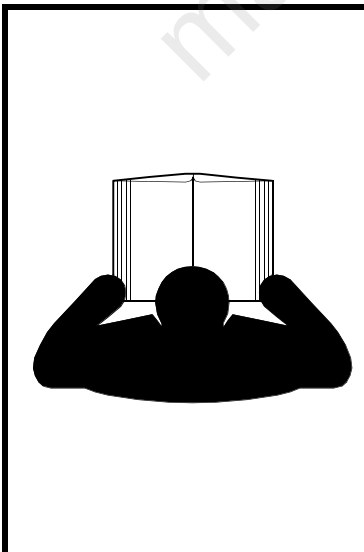
This Manual is Divided into the following Sections:

SAFETY AND OPERATION
SERVICE AND MAINTENANCE
SPECIFICATIONS
CRANE INSTALLATION

NOTICE

The crane serial number is the only method your distributor or the factory has of providing you with correct parts and service information.

The crane serial number is identified on the builder's decal attached to the crane frame. **Always furnish crane serial number** when ordering parts or communicating service problems with your distributor or the factory.



WARNING

To prevent death or serious injury:

- Avoid unsafe operation and maintenance.
- This crane must be operated and maintained by trained and experienced personnel. National Crane is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Rating Plate supplied with crane.
- If Operator's Manual or Capacity Charts are missing from crane, contact your distributor for new ones.

BOOM UNSTOWING PROCEDURE

1. Unstow and stow the boom from the control station closest to the hydraulic control valve. This position is on the opposite side of the moving boom and will reduce exposure to moving components and pinch points.
2. With the engine at idle, push the fold control lever down, raise the outer boom as high as it will go.
3. Raise the lift control lever which will cause the inner boom to lift. Raise it to a position that will allow the load hook to swing free from its stored position and the outer boom to unfold.
4. Raise the fold control lever and unfold the outer boom.

MANUAL JIB DEPLOYMENT/STOW



1. Extend the outer boom to full hydraulic extension and lower the end of the boom to eye level.
2. Remove the spring clip from the manual extend stow pin.
3. Push the manual extension in slightly to unload the stow pin and remove.
4. Carefully slide the manual extension out of the last hydraulic section. Do not allow the manual extension to slide out uncontrolled.
5. Replace pin between last hydraulic extension and manual extension and install spring clip.
6. Manual extension stow procedure is the reverse of the deployment procedure.

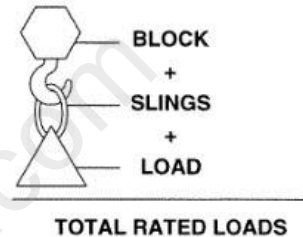
BEFORE MAKING THE LIFT

1. Check all controls for proper operation by operating each system through one complete cycle. This is particularly important after the unit has been serviced or repaired. If any abnormal operations are detected, correct the condition before continuing.
2. During all operations, the controls shall be metered when beginning or terminating a movement to prevent sudden starting or stopping which imposes undue shock loads on the equipment. This metering can be performed by metering the control lever.
3. Check the operating area for electric power lines and thoroughly plan the lift to maintain the minimum required safe distance to any energized power line.

READING AND UNDERSTANDING THE CAPACITY CHART.

The structures and components of your unit are designed to provide satisfactory service if the unit is not loaded in excess of the maximum capacities specified on the capacity chart. Overloading can create serious potential safety hazards and can also shorten the service life of your unit. It is important that you know the weight of any load that you are attempting to handle. This shall be done by use of a dynamometer or by contacting your supervisor.

Overloading a crane can cause many types of failures depending on the configuration and working position of the crane, i.e. structural damage to almost any part of the crane, winch or cable failure and tipping over the unit.

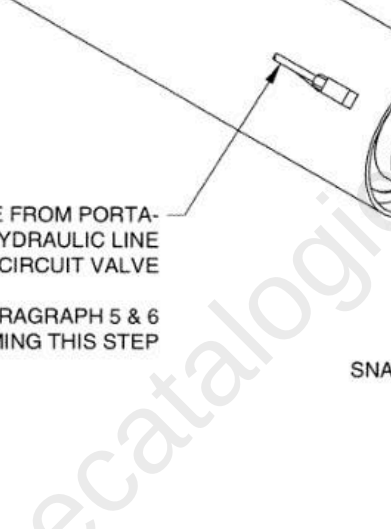


The capacity chart shows the maximum rated loads including load (weight being lifted), load handling equipment such as slings, buckets, and downhaul weights, etc. which can be handled by the crane and the winch. The weight of the load handling equipment and boom attachments and contents must be deducted from the maximum load rating shown on the capacity chart to determine the payload which can be lifted. Additional reduction may be necessary to make allowance for such factors as the effects of freely suspended loads, wind, ground conditions, out of level conditions and operating speeds.

The ratings shown on the capacity chart are based on the structural integrity of the crane and winch and represent a stability tipping factor of 85% when:

1. All horizontal outrigger beams are fully extended and all outrigger legs are extended with positive contact on firm, level surface.
2. The proper amount of counterweight has been installed, if required.
3. The unit is mounted in accordance with factory instructions on a vehicle with proper specifications.
4. Tires are inflated to the proper pressure.
5. The weight of load handling devices is considered as a part of the load being lifted.
6. Adverse environmental conditions such as wind are not present.
7. The operator controls the loads smoothly.

A stability test should have been performed on this crane. If you are in doubt or have any hesitation about the crane's stability, you must perform a stability test as outlined in the Installation Section of this manual.



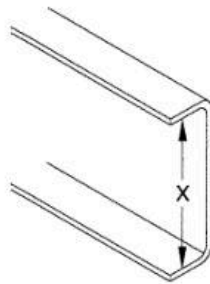
Plugged ports in the back of the
It be removed unless all hydraulic

6. Operate hand pump or crane circuit valve, preferably the boom extension circuit, to force packing gland out of barrel.
7. Remove counterbalance cartridge.
8. Remove the shaft and piston assembly by hand.
9. Disassemble the piston set by removing nut, replace worn or damaged parts. Note: Loctite 680 is used during original assembly to secure nut to shaft. If necessary, heat nut to 400 – 500°F (200-260°C) to facilitate removal. If heat is necessary for removal, discard nut and replace with new equivalent nut as well as worn or damaged parts.
10. Wipe and inspect cylinder barrel for internal damage.
11. Wipe and inspect cylinder shaft for damage.
12. Clean and inspect sealing O' rings and backup rings of counterbalance cartridge.
13. Remove shaft packing by removal of internal snap ring from packing gland. Replace parts as required.

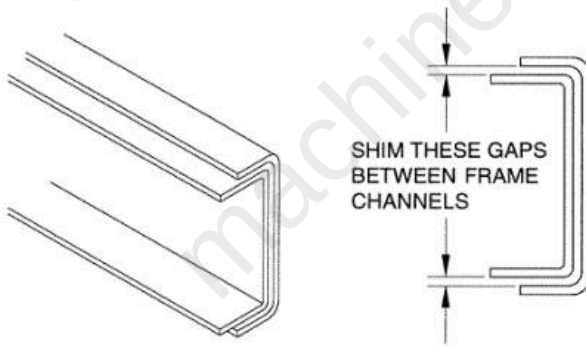
5. Select and install the PTO in accordance with the PTO manufacturer's instructions. Install the PTO shifting mechanism. (See PTO Selection discussed in detail later in this section.) The pump rotates counterclockwise when viewed from the shaft end. If PTO selection requires clockwise rotation of the pump, refer to the pump reversal procedure in the Vickers Pump Overhaul Manual.

Note: If PTO has a reverse gear, it must be blocked so that shifting into reverse is impossible.

6. Center crane frame on chassis using outrigger housing as reference (mast is offset). Assemble the clamp bolts and plates as shown in the parts pages with the thinner spacer plate between the crane frame and the truck frame. Measure the inside height of the truck frame ("X") and cut the spacer assemblies off until they can be driven inside of the frame without spreading the frame flanges.



Insert the spacer assemblies inside of the truck frame so that they do not extend outside of the flange of the truck frame. Make sure the spacer assembly does not interfere with the truck's air or electrical routing.



If the crane is being mounted on a truck with a double channel frame, the gap that exists between the inner and outer channel must be shimmed to prevent the channel from collapsing.

Be sure to maintain a constant clearance between the truck frame and the outer stud, top to bottom. Install the studs so that the excess threads are above the crane frame mounting anchors. Tighten the bottom nuts so that the bottom plate is level and 1/2 inch (13 mm) of threaded stud is below the bottom nuts. Alternately tighten inner and outer nuts,

on the top, one-fourth turn each until they are torqued to Grade 8 torque specifications for the 7/8" diameter stud.

Note: Do not use a cutting torch to shorten the mounting studs. If studs must be shortened, they must be cut off with a saw.

7. Determine best installation position for the pump. The pump may be rotated 90° or 180° in either direction for suction or pressure line clearance.
8. If a PTO adapter flange is available, installation of the pump can be simplified by mounting directly to the PTO. Direct mount pumps require lubrication of the spline shaft coupling. See Service and Maintenance Section for lubrication information. If pump must be located elsewhere, it shall be less than 42 inches (1100 mm) from PTO and such that drive line does not exceed 15° angle. Ample clearance must be maintained between pump and truck drive shaft or exhaust system. Pump shall be situated so that hydraulic lines can be connected without sharp bends. Make sure that the pump shaft rotates in the proper direction. If pump rotation is wrong, it may be changed by following directions in the Service Manual.

9. Install pump mounting bracket securely to frame if the pump is not directly mounted to the PTO. Attach pump to pump mounting plate using 1/2 x 2 NC Grade 5 capscrews.

Note: Some of the pipe fittings used are sealed by means of two threaded tapered sections, one male and one female. When these two tapers meet, you will note a sudden increase in the force required to screw the fittings together. This is true of all tapered threads. Further tightening will not only fail to increase the pressure tightness of the joint, but may ruin the connections and make correct assembly impossible.

Other fittings are of the O'ring boss type. These are installed by first screwing the locknut flush to the upper thread land and installing fitting into port until the nut contacts the surface of the port. Adjust fitting to desired direction. Tighten locknut.

10. Remove dust cover from pump outlet. Install flange fitting on outlet port.

Note: Be sure spotface on pump is free of dirt before installing fitting. Grease O'ring thoroughly and seat carefully against pump face.

11. Remove dust cover from pump inlet and install flange fitting. Again clean spotface of dirt before assembly.
12. Connect PTO drive shaft to pump. (Drive shafts are not furnished by National Crane Corporation unless on special order.) Lock drive shaft universal joints securely to pump and PTO.

Note: "U" joint yokes on both ends of the drive shaft must be parallel with each other.

Full Version Available

National Crane N80A Articulating Crane Service Manual

National Crane N80A articulating crane service manual with repair procedures, adjustments and troubleshooting for the main systems. Instant PDF download.

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