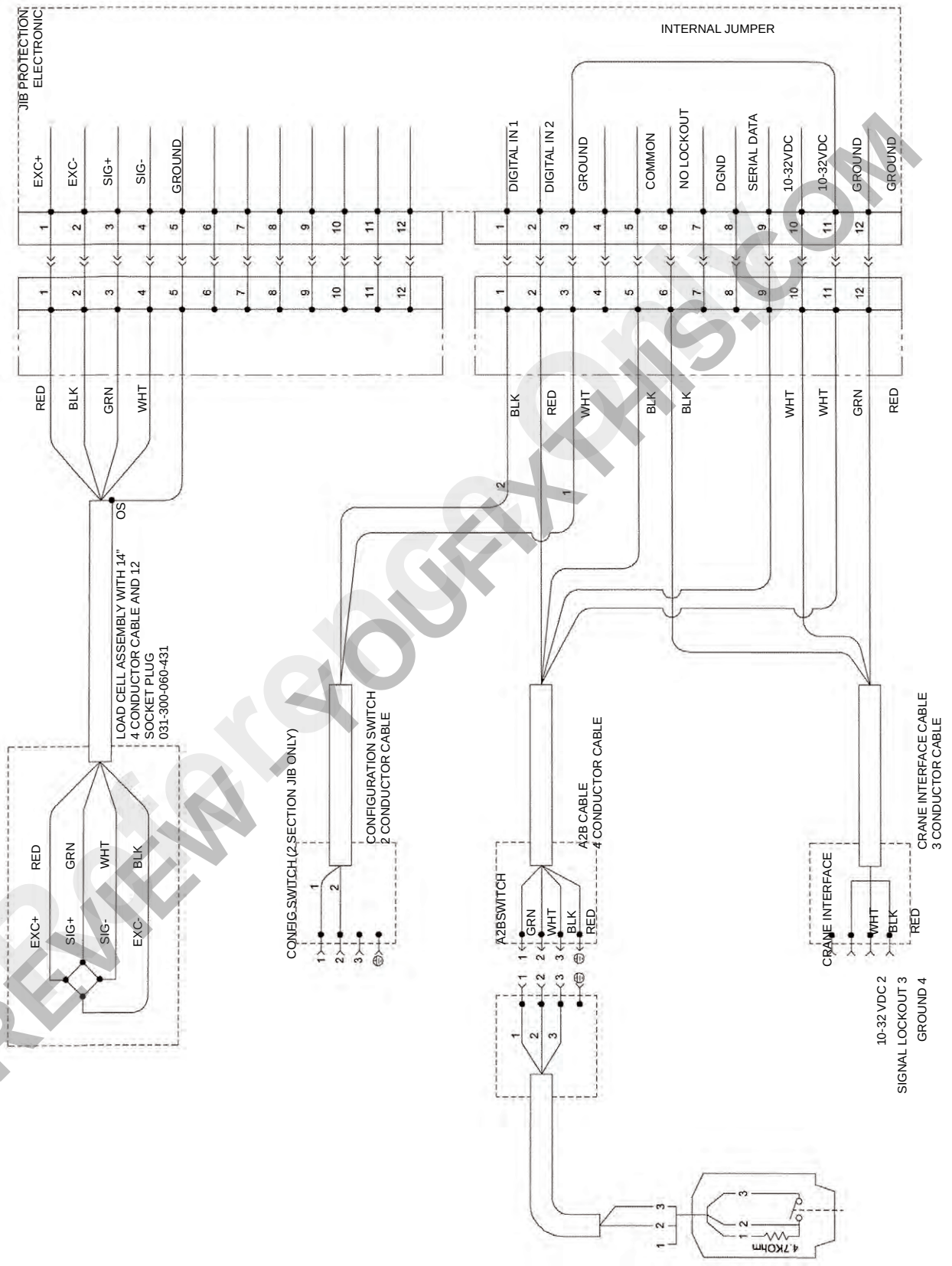
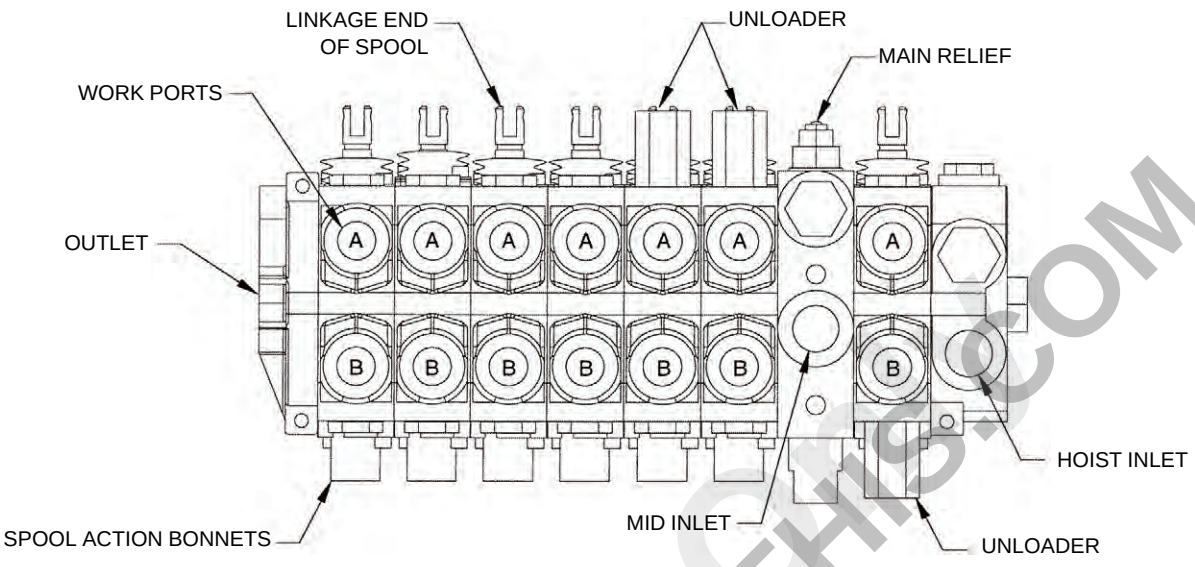
ELECTRICAL SCHEMATIC
(JIB PROTECTION SYSTEM ANGLE/LOAD LIMITER)



PREVIEW ONLY
Preview Only
YOUFIXTHIS.COM

Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table 1: UNC (Course) Thread: Torque Values for Zinc-Flake Coated and Untreated Fasteners

		Bolt Diameter - Inches												
		Torque Values (Pounds-Foot, Maximum/Minimum)												
	SAE Grade	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/8	1-1/4	1-1/2
Zinc-Flake	**5**	7	14	25	40	61	88	121	213	342	512	636	884	1532
	8	10	20	36	57	86	124	171	301	483	723	1032	1433	2488
Untreated	**5**	9.0	19	32	52	78	114	156	270	416	606	813	1141	2028
		7.7	17	30	48	72	106	144	249	384	560	751	1053	1865
	8	12.5	26	48	73	120	161	234	385	615	929	1342	2043	3276
		11.5	24	44	67	110	143	216	355	567	857	1234	1885	3024

NOTE: Studs shall be torqued using capscrew values when grade is known.

Table 2: UNF (Fine) Thread: Torque Values for Zinc-Flake Coated and Untreated Fasteners

		Bolt Diameter - Inches												
		Torque Values (Pounds-Foot, Maximum/Minimum)												
	SAE Grade	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/8	1-1/4	1-1/2
Zinc-Flake	**5**	8	15	28	44	66	95	132	229	364	543	785	944	1654
	8	11	22	39	61	94	134	186	323	514	766	1109	1530	2682
Untreated	**5**	10	21	36	57	88	126	182	312	458	658	882	1251	2288
		9	19	34	53	81	116	167	287	421	606	814	1155	2105
	8	14.5	26	53	85	125	177	250	425	672	1009	1500	2092	3640
		13.5	24	49	79	115	163	230	393	620	931	1380	1925	3360

NOTE: Studs shall be torqued using capscrew values when grade is known.

PREVIEW ONLY
Before you FIX THIS.com

Download full manual at youfixthis.com

ANTI-TWO-BLOCK INTERNAL WIRE SYSTEM

Operation

The internal anti-two-block wire is routed from the control console to the hoist mount end of the boom, following the path of the extend cables to the rear of the 3rd section boom. This is the length of the wire that proportions in and out with the boom length, similar to the route of the extend cables. At this point at the rear of the 3rd section, the wire loops around and anchors at the anti-two-block cable clamp on the extend cable anchor. The anti-two-block wire, now attached at the rear of the 3rd, runs the length of the section and attaches to the 3rd section sheave case. The wire then loops around the clamp arrangement on the sheave case and routes through access holes in the side plate of the boom. The wire terminates at a quick connect / 2 conductor plug designed for anti-two-block switch or jib interface.

Maintenance

In the event of a break in continuity of the anti-two-block wire routed internally in the boom, the anti-two-block hydraulic system will sense a problem and make certain crane functions inoperative. Before repair or replacement of internal wire, check for continuity loss at the anti-two-block switch, damaged, missing, or corroded connectors and overall system condition. Due to the environmental exposure of the system, a thorough check of the circuit should be performed.

The procedure for removal and reinstallation of the anti-two-block wire can be accomplished using two different methods depending on the severity of the damage. Alternative #1 should be used if the wire has experienced a continuity failure in one or both of the conductors, but the rubber jacket of the wire is still intact. Alternative #2 is to be used if the wire has been completely cut or either end of the wire is inaccessible.

Do not, under any circumstances, work at an elevated height without using proper fall protection as required by local, state or federal regulations.

Alternative #1

This procedure pulls the replacement wire through the boom, following the path of the defective wire.

Special tools or equipment:

- Two end-to-end electrical butt connectors
- Shrink tube or electrical tape

1. Retract boom completely.
2. Loosen and remove capscrew and cable clamp arrangement from sheave case attachment point of anti-two-block wire. Remove quick connect plug on anti-two-block wire by unscrewing base of plug and disconnecting individual wires from connections. Note pigtail length at this time and wire/terminal number location for proper reassembly.
3. Pull end of anti-two-block wire through side plates of 3rd section boom to gain in-line wire path.
4. Attach replacement anti-two-block wire to damaged wire with a “temporary splice”, securing the conductors with end to end butt connectors and shrink tube or electrical tape. This connection must be secured well enough to pull the new wire through the boom.
5. At the hoist mount end, reach into the rear of the boom and loosen the capscrew on the anti-two-block cable clamp enough to let the cable run around it with minimal effort. This clamp is located on the extend cable anchor.
6. Disassemble spade bolt anchor attaching anti-two-block wire to the extend cable plate on the hoist mount end of the boom.
7. Pull wire from hoist mount end. Replacement wire “temporary splice” may need assistance reeving around anti-two-block cable clamp in rear of 3rd section. If excessive force is needed to pull wire through, observe wire routing and make adjustments as needed to avoid breaking “temporary splice”. If splice fails at this point, wire routing Alternative #2 should be used.
8. Pull wire through boom, leaving enough wire on sheave case end to properly attach and terminate wire.
9. Tighten anti-two-block wire clamp located in rear of 3rd section.
10. Route sheave case end of anti-two-block wire around clamp in sheave case, and through holes in side plates. Pulling on this end will tension the static length of anti-two-block wire clamped in the 3rd. Approximately 15-25 lb (6-11 kg) will be sufficient to provide proper operation. Tighten sheave case anti-two-block wire clamp.
11. Reassemble quick disconnect plug to anti-two-block wire. Proper wire attachment is critical for proper anti-two-block system operation. Consult electrical schematic in this book for proper connector wiring.
12. “Temporary splice” should now be approximately 10 ft (3 m) past the hoist mount end of the boom. Break “splice” and slide strain relief/cord grip onto wire, into approximate position inside the boom.
13. Assemble spring and spade bolt to cord grip and reassemble anchor components to extend cable anchor plate on the hoist mount. Slide cord grip up

PREVIEW ONLY
Download full manual at youfixthis.com

TROUBLE DIAGNOSIS

The following chart lists malfunctions which may occur during equipment operation, followed immediately by possible cause and possible solution. These are not all inclusive but are designed to help isolate the problem and should be checked before calling the factory Service Department.

CONDITION	POSSIBLE CAUSE	POSSIBLE SOLUTION
No response to control	• Overload system inoperative.	• Insure overload system is working properly and Anti-Two-Block/Overload solenoid is powered.
	• Load too heavy.	• Check Capacity Chart.
	• PTO not engaged.	• Engage PTO.
	• Low hydraulic fluid supply.	• Check and fill as required.
	• Suction line blocked.	• Drain tank and hose and remove blockage.
	• Broken hydraulic pressure line.	• Replace as required.
	• Defective hydraulic pump.	• See Pump Service Manual.
	• Incorrect relief valve setting.	• Adjust relief.
	• Relief valve sticking.	• Clean relief.
Poor hydraulic system performance	• Pump not operating at proper speed.	• Check PTO ratio, pump size and engine speed for proper oil flow.
	• Low hydraulic fluid supply.	• Check and fill as required.
	• Relief valve sticking.	• Remove and clean.
	• Relief setting too low.	• Readjust to proper setting.
	• Worn pump, motor or cylinder.	• Replace bad part.
	• Plugged filter.	• Change filter.
	• Valve spools not fully open.	• Adjust linkage so valve has full throw.
	• Boom holding valves out of adjustment.	• Adjust or clean as required.
	• Oil temperature too high.	• Reduce engine speed, slow cycle time to cool oil or add oil cooler option.
	• Hydraulic oil too cold or dirty.	• Warm oil or use less viscous oil.
	• Line restricted.	• Check lines; clean and repair as necessary.
	• Internal control valve crack.	• Replace valve.
	• Load too heavy.	• Check Capacity Chart and reduce load.
Swing moves erratic or loosely (Standard system)	• Loose turntable bearing.	• Torque bearing mounting bolts.
	• Loose swing gearbox mounting bolts.	• Tighten bolts.
	• Worn gears or bearing.	• Replace worn parts or adjust gearbox spacing.
	• Operator control of lever too erratic.	• Operate controls smoothly.
	• Motor counterbalance valves dirty or not set properly.	• Clean or replace counterbalance valves not set at 300 psi.

PREVIEW ONLY youfixthis.com

Download full manual at youfixthis.com

SECTION 6
SPECIFICATIONS

Dimensional specifications

NOTE:

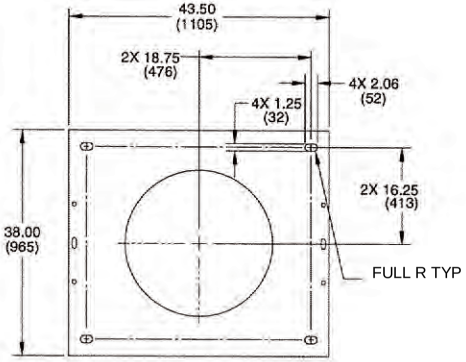
DIMENSIONS ARE IN inches (mm) UNLESS OTHERWISE SPECIFIED.

STANDARD SUBBASE WEIGHT: 1150 lb (520 kg)
CG IS 1 03 in (2617 mm) FROM CENTERLINE
SUBBASE DIMENSION:
35 in W (889 mm) x 254 in L (6452 mm) X 8 in H (203 mm)

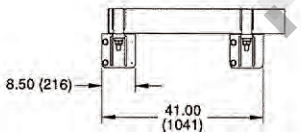
STANDARD SUBBASE SPACER WEIGHT: 230 lb (104 kg)
CG IS 0 in (0 mm) FROM CENTERLINE
SPACER DIMENSION:
35 in W X 37.50 in L x 8 in H

G CENTER OF GRAVITY			
SERIES	G	DRY WEIGHT'	W/OIL WEIGHT'
456B	47 in (1194 mm)	8100 lb (3675 kg)	8425 lb (3825 kg)
446B	36 in (914mm)	7775 lb (3525 kg)	8100 lb (3675 kg)
437B	29 in (737 mm)	7450 lb (3375 kg)	7775 lb (3525 kg)
428B	22 in (559 mm)	7150 lb (3250 kg)	7475 lb (3400 kg)

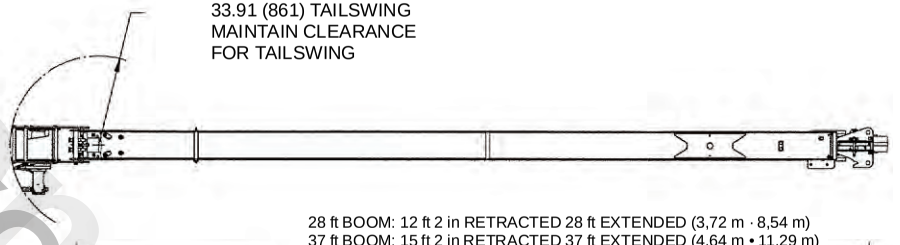
' ABOVE WEIGHTS DO NOT INCLUDE SUBBASE, REAR STABILIZERS, JIBS, PTO, PUMP, BOOM RESTS OR OPTIONS.



FRAME BASE PLATE

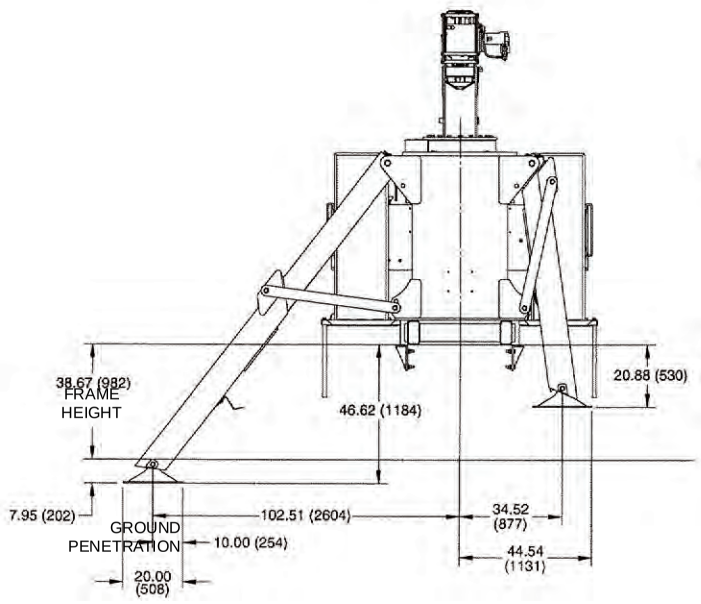


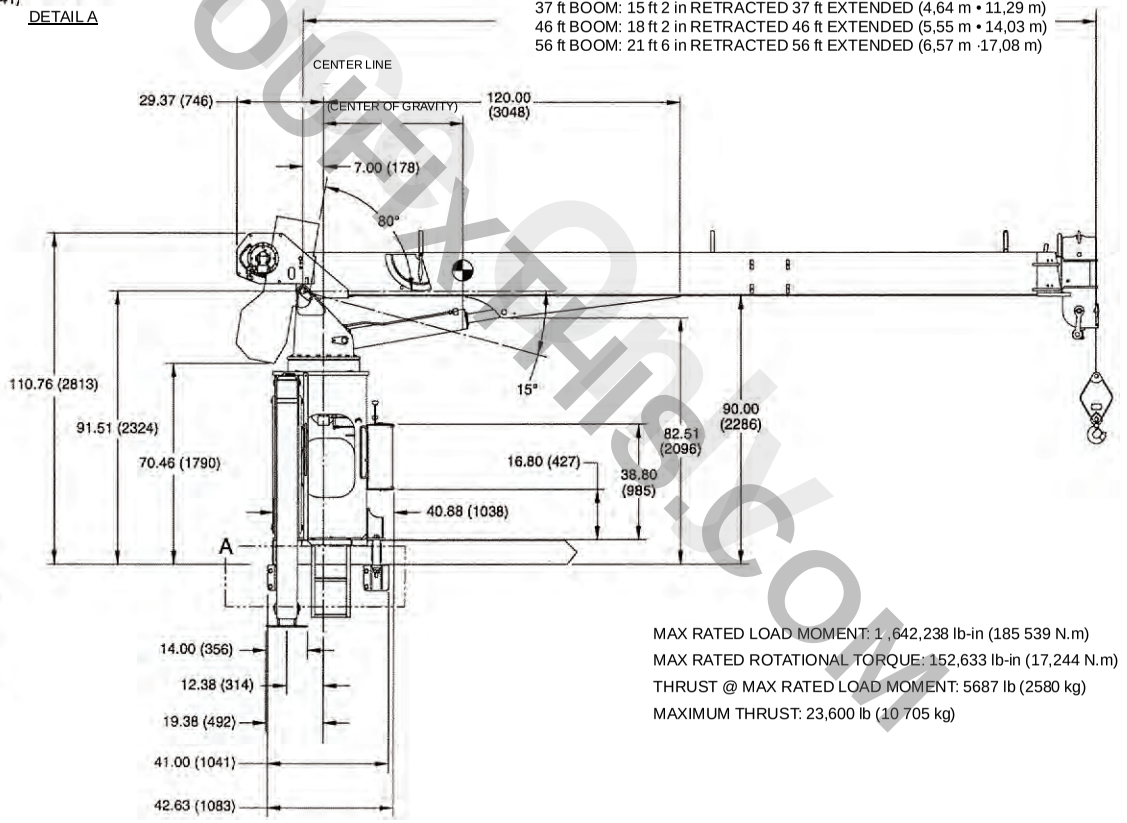
DETAIL A



33.91 (861) TAILSWING
MAINTAIN CLEARANCE
FOR TAILSWING

28 ft BOOM: 12 ft 2 in RETRACTED 28 ft EXTENDED (3,72 m · 8,54 m)
37 ft BOOM: 15 ft 2 in RETRACTED 37 ft EXTENDED (4,64 m • 11,29 m)
46 ft BOOM: 18 ft 2 in RETRACTED 46 ft EXTENDED (5,55 m • 14,03 m)
56 ft BOOM: 21 ft 6 in RETRACTED 56 ft EXTENDED (6,57 m ·17,08 m)





MAX RATED LOAD MOMENT: 1 ,642,238 lb-in (185 539 N.m)
MAX RATED ROTATIONAL TORQUE: 152,633 lb-in (17,244 N.m)
THRUST @ MAX RATED LOAD MOMENT: 5687 lb (2580 kg)
MAXIMUM THRUST: 23,600 lb (10 705 kg)

PREVIEW. For your EXTRA Protection
Download full manual at youfixthis.com

SECTION 3
MAINTENANCE

INSPECTION AND MAINTENANCE

A regular schedule of inspection and maintenance is essential to keep your unit in peak operating efficiency. Operators or service personnel responsible for the care of the unit must be completely familiar with the type and frequency of inspections and maintenance operations. The following pages outline the inspections and maintenance required to keep the crane in proper operating condition.

Inspection

The following pages list inspections which are to be conducted on your unit to help assure it is operating properly and safely. Check all items listed at the frequency listed and make necessary repairs prior to operating. Use applicable torque table requirements for missing or loose fasteners.

The inspections are separated into the following frequency classifications:

- ***Daily Inspections*** - These items should be visually inspected each day by the operator prior to using the unit.
- ***Weekly Inspections*** - These items should be visually inspected weekly by the operator.
- ***Monthly Inspections*** - These inspections are to be performed monthly by the personnel responsible for maintenance and service of the crane.
- ***Periodic Inspections*** - This inspection is a thorough inspection conducted at least every three months and includes all items listed under Daily, Weekly, and Monthly Inspection in addition to those items listed under periodic inspection. Federal Laws through OSHA and ANSI B30.5 require that dated and signed records of these periodic inspections be kept. A crane inspection log book is available from National Crane to assist you in keeping records.

Daily inspections

Check the following items:

1. Engine oil level.
2. Hydraulic oil level.
3. Radiator coolant level.
4. Loose parts or damage to structures or welds.
5. Operation of lights, safety equipment and gauges.
6. Condition of tires and suspension.
7. Condition of loadline and end attachment for corrosion, severe kinking, crushing, cutting, or slippage of cable clamps or wedge socket.
8. Loose parts or damage to loadline centering blocks.
9. Position of loadline with guides and on sheaves.
10. Free turning of sheaves.
11. Lubrication of points required by Lubrication Chart.
12. Evidence of oil leak from hoses, gearboxes or swivel.
13. Hand and foot controls for malfunction or misadjustment.
14. Truck parking brake operation.
15. Boom proportioning to insure that all boom sections extend and retract equally.
16. All securing hardware such as cotter pins, snap rings, hairpins, pin keepers and capscrews for proper installations.
17. Proper condition and operation of overload and anti-two-block operator aid system to include switch, weight and chain at boom tip (and jib tip if equipped), power cords and indicator lights on console. Cycle slowly to check for proper operation.
18. Presence and proper operation of load hook safety latch.
19. All drain holes at rear of first section boom are clear of all obstructions.
20. All fasteners retaining loadline centering block are in place and tight.
21. All safety covers for proper installation.

Weekly inspections

Check the following items:

1. Battery water level.
2. Tire pressure.
3. Lubrication of points required by Lubrication Chart.
4. Boom lift and outrigger holding valves for proper operation.
5. Torque mounting bolts during first month of operation of machine and then during periodic inspections thereafter.

PREVIEW ONLY YOUFIXTHIS.COM

Download full manual at youfixthis.com

SECTION 2
OPERATION

CONTROLS

Truck cab controls

Crane Power

Electrical power to the crane is provided through a relay that is interconnected with the Power Take-Off control. Power is supplied to the crane only when the PTO control has been engaged.

Power Take-Off

Manual Shift Control – The PTO's are engaged when the knobs on dash or floor are pulled out and disengaged when the knobs are pushed in. The truck gear shift lever must be in neutral and the clutch depressed whenever the knobs are moved.

Air Shift Control – The PTO is engaged when the switch is moved to apply air to PTO and disengaged when switch is in off position. The truck gear shift lever must be in neutral and clutch depressed when switch is moved. The transmission selector lever must be returned to "N" for stationary vehicle operation. The power take-off may be disengaged while in any transmission range provided that the load has first been removed from the PTO.

Electric Shift Control – Full torque electric shift PTO's are controlled by a switch. To operate, disengage the clutch, shift to fourth or fifth gear, and operate the switch down to engage the PTO or up to disengage the PTO. Return the gear shift to neutral and engage the clutch.

Power Shift Control – If the vehicle is equipped with automatic transmission, the power take-off must be engaged with the engine at idle. Refer to transmission manufacturer's instructions for special procedures.

Park Brake

The truck brake must be firmly set before leaving cab to begin operation. If the ground surface is icy or slick or is sloped, you may be required to help immobilize the truck with wheel chocks.

Cold Weather Operation

The following recommendations are for operating National cranes in very low (i.e., sub-zero) temperatures.

Cranes should have appropriate hydraulic oil, lubricants, and other auxiliary items required for operation in sub-zero temperatures. Operate individual crane functions to ensure they are sufficiently warmed prior to performing a lift.

Operation of cranes at full rated capacities in temperatures between -18°C (0°F) and -40°C (-40°F) or operators who possess the skill, experience, and dexterity to ensure smooth operation. Shock loading shall be avoided.

Operation Below -40°C

For crane operation below -40°C, capacities shall be derated 3.67% of the rated load shown on the capacity charts for each degree below -40°C

Operation Below -40°F

For crane operation below -40°F, capacities shall be derated 2% of the rated load shown on the capacity charts for each degree below -40°F.

Crane Controls

The unit is equipped with control stations on each side of the main frame. Placards on the control knobs or next to the lever indicate the direction to actuate the controls for the various unit functions. Each station is complete and provides complete control of boom rotation, boom elevation, boom extension, hoist, outriggers, engine foot throttle, the engine emergency stop switch and a horn switch. All control handles except the outrigger controls are positioned in the same order at both control stations. The hydraulic system pressure gauge is located at only one operator's station.

Control Functions

Turn – Operate the lever to **RIGHT** to rotate the boom in a clockwise direction. Operate the lever to **LEFT** to rotate the boom in a counterclockwise direction as viewed from the top of the crane.

A mechanical rotation stop pulls the turn control lever back to the center position when engaged. The boom rotation is stopped over the front of the chassis. On rear mounted cranes, rotate the boom over the passenger side of the chassis when stowing and unstowing to prevent immediate contact with the mechanical rotation stop.

Boom – Operate the lever to **DOWN** to lower the boom. Operate the lever to **UP** to raise the boom.

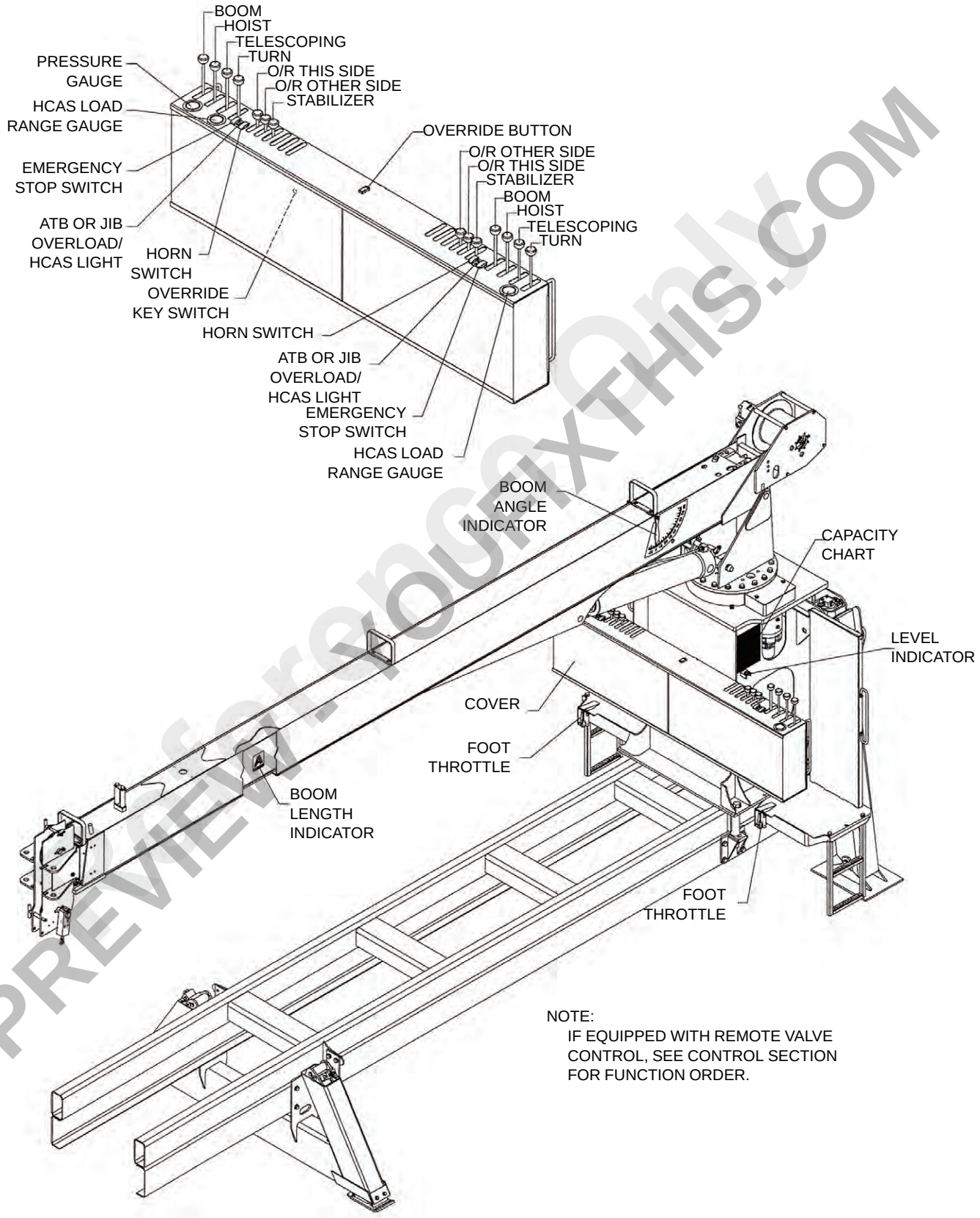
Boom Telescope – Operate the lever to **OUT** to extend the boom. Operate the lever to IN to retract the boom.

Hoist—Operate the lever to **DOWN** to payout and lower the loadline. Operate the lever to **UP** to reel in and raise the loadline. Refer to hoist system operation section for additional information.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Crane nomenclature



NOTE:
IF EQUIPPED WITH REMOTE VALVE CONTROL, SEE CONTROL SECTION FOR FUNCTION ORDER.

PREVIEW - for 400B Only youfixthis.com

Download full manual at youfixthis.com

TABLE OF CONTENTS

. . . . . SUPPLEMENT
Introduction . . . . . -c
General . . . . . -c
Supplemental Information . . . . . -c
Safety Information . . . . . -c
New Owner . . . . . -d
General Maintenance . . . . . -e
Cleanliness . . . . . -e
Removal and Installation . . . . . -e
Disassembly And Assembly . . . . . -e
Pressing Parts . . . . . -e
Locks . . . . . -e
Shims . . . . . -e
Bearings . . . . . -f
Gaskets . . . . . -f
Hydraulic Systems . . . . . -f
Electrical . . . . . -g
Fatigue Of Welded Structures . . . . . -h
Loctite . . . . . -h
Fasteners And Torque Values . . . . . -h
Weld Studs . . . . . -l
Wire Rope . . . . . -m
General . . . . . -m
Environmental Conditions . . . . . -m
Dynamic Shock Loads . . . . . -m
Lubrication . . . . . -m
Recommendations for Servicing Wire Rope . . . . . -n
Wire Rope Inspection . . . . . -n
Boom Extension and Retraction Cables . . . . . -n
Wire Rope Replacement (All Wire Rope) . . . . . -o
Seizing Wire Rope . . . . . -o
Set-Up . . . . . -p
Outrigger Setup . . . . . -p
Proper Leveling of the Crane . . . . . -p
Bubble Level Adjustment . . . . . -p
Site Selection . . . . . -p
Setting the Outriggers . . . . . -q
Installing Cable on the Hoist . . . . . -q
Wedge Sockets . . . . . -r
Terminator Wedge Installation . . . . . -r
Wedge Socket Installation . . . . . -s
Outrigger Monitoring System (OMS) (Optional—Standard in North America) . . . . . -t
Operation . . . . . -t
400B . . . . . -t
400B HO with Rear Stabilizer Hydraulic (RSH) . . . . . -u
400B HO with Angled Stabilizer Hydraulic (ASH) . . . . . -u
Maintenance . . . . . -w
Outrigger Cylinder Length Sensor — 400B . . . . . -w
Outrigger Proximity Switch — 400B HO . . . . . -w
Stabilizer Proximity Switch — 400B and 400B HO with Angled Stabilizer Hydraulic (ASH) . . . . . -x
Side Folding Swing-Around Jib Operation . . . . . -x

SECTION 1 . . . . . Safety Information
Safety Messages 1-1

PREVIEW ONLY - YOUFIXTHIS.COM

Download full manual at youfixthis.com

SECTION 1
SAFETY INFORMATION

SAFETY MESSAGES

General

The importance of safe operation and maintenance cannot be overemphasized. Carelessness or neglect on the part of operators, job supervisors and planners, rigging personnel, and job site workers can result in their death or injury and costly damage to the crane and property.

To alert personnel to hazardous operating practices and maintenance procedures, safety messages are used throughout the manual. Each safety message contains a safety alert symbol and a signal word to identify the hazard's degree of seriousness.

Safety Alert Symbol

This safety alert symbol means **ATTENTION! Become alert - your safety is involved!** Obey all safety messages that follow this symbol to avoid possible death or injury.

Signal Words

DANGER

Identifies **hazards** that will result in death or serious injury if the message is ignored**.**

WARNING

Identifies **hazards** that may result in death or serious injury if the message is ignored**.**

CAUTION

Identifies **hazards** that could result in minor or moderate injury if the message is ignored.

CAUTION

Without the safety alert symbol, identifies **hazards** that could result in property damage if the message is ignored.

NOTE: Emphasizes operation or maintenance procedures.

GENERAL

It is impossible to compile a list of safety precautions covering all situations. However, there are basic principles that **must** be followed during your daily routine. Safety is **your primary responsibility**, since any piece of equipment is only as safe **as the person at the controls**.

Read and follow the information located in *Model Specific Information* near the end of this section.

This information has been provided to assist in promoting a safe working atmosphere for yourself and those around you. It is not meant to cover every conceivable circumstance which could arise. It is intended to present basic safety precautions that should be followed in daily operation.

Because you are the only part of the crane that can think and reason, your responsibility is not lessened by the addition of operational aids or warning devices. Indeed, you must guard against acquiring a false sense of security when using them. They are there to assist, not direct the operation. Operational aids or warning devices can be mechanical, electrical, electronic, or a combination thereof. They are subject to failure or misuse and should not be relied upon in place of good operating practices.

You are the only one who can be relied upon to assure the safety of yourself and those around you. Be a **professional** and follow the **rules of safety**.

Remember, failure to follow just one safety precaution could cause an accident that results in death or serious injury to personnel or damage to equipment. You are responsible for the safety of yourself and those around you.

ACCIDENTS

Following any accident or damage to equipment, the Manitowoc distributor must be immediately advised of the incident and consulted on necessary inspections and repairs. Should the distributor not be immediately available, contact should be made directly with Manitowoc Product Safety at the address below. The crane must not be returned to service until it is thoroughly inspected for any evidence of damage. All damaged parts must be repaired or replaced as authorized by your Manitowoc distributor and/or Manitowoc Crane Care.

If this crane becomes involved in a property damage and/or personal injury accident, **immediately** contact your Manitowoc distributor. If the distributor is unknown and/or cannot be reached, contact Product Safety at:

PREVIEW ONLY - youfixthis.com
Download full manual at youfixthis.com

6. 543 retract cables.

Four section boom with two stage cylinder.

Cable tensioning to be in the following order:

1. 321 retract cables
2. 123 extend (synchronizing) cables.
3. 234 extend cables
4. 432 retract cables.

Four section boom with one stage cylinder.

Cable tensioning to be in the following order:

1. 123 extend cables.
2. 321 retract cables.
3. 234 extend cables.
4. 432 retract cables.

Three section boom with one stage cylinder.

Cable tensioning to be in the following order:

1. 123 extend cables.
2. 321 retract cables.

5 - Section Boom w/ 2 Stage Cylinder Cable Positioning

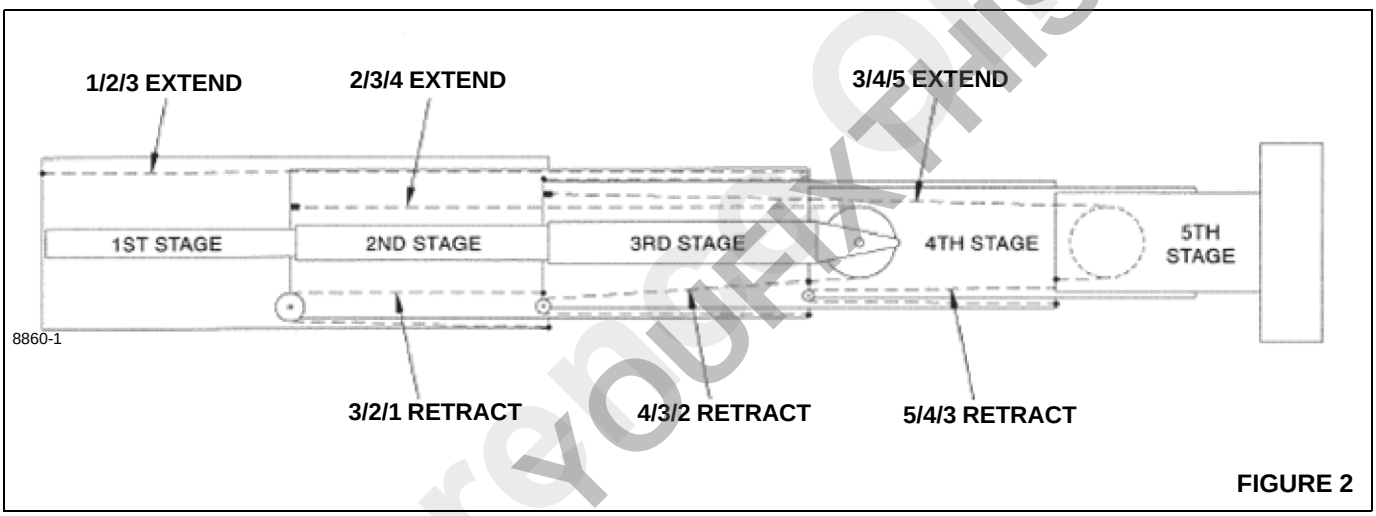


FIGURE 2

Cable Tightening Sequence 5 Section Boom with Two Stage Extend Cylinder

Boom must be in horizontal position when adjusting cable tension (See Figure 2.) Retract boom fully ensuring sections are bottomed out on section stops and do not spring back. (Reference Tensioning Setup Procedure)

321 and 123 cable balancing

Extension

1. Measure the extension gaps between the first and second section and the second and third section.

If the extension gap between first and second section is less than the extension gap between the second and third section;

2. Tighten **321** retract cable located at the front bottom of the base section the difference in the extension gap measurements.
3. Extend and retract the boom a few times and then repeat measuring the extension gaps.

The second section should have moved out.

4. Tightening until the extension gap between the first and second section and the extension gap between the second and the third are equal.

If when tightening the **321** retract cable the third section starts to go out with the second section the **123** synchronizing cable located at the top back of the base section may need to be loosened.

Retraction

1. Measure the retraction gaps between the first and second section and the second and third section.

If the retraction gap is greater between the first and second section than the retraction gap between the second and third section;

2. Tighten the **123** synchronizing cable located at the back of the base section the difference in the retraction gap measurements.
3. Extend and retract the boom a few times and then repeat measuring the retraction gaps.

The third section should have moved out.

PREVIEW ONLY youfixthis.com

Published 03-23-2017, Control# 641-01

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 214 pages

The full manual includes:

- All 214 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

National Crane 400B Operator and Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual