

SM KEYSHEET AND GENERAL INFORMATION

Link-Belt
C R A N E S

DATE 10/06/20
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ORDER NO.- H9029 MODEL - HC-238H II SERIAL NO. - H9L0-4456

DISTRIBUTOR: NIXON-EGLI EQUIPMENT CO.
HSC S/N- HC238-5029
CARRIER ENG:
MODEL- CUMMINS ISX11.9
S/N- 75016621
OPERATION- 2883443
UPPER ENGINE:
MODEL- CUMMINS B4.5
S/N- 74557842
OPERATION- 5504281

O/M BOOK- 1374082720
ADDENDUMS - NONE
TECH BULLETINS - NONE
MISCELLANEOUS - HOIST ROPE CAUTION

SALES ORDER: 24456

MAIN TRANS:
MODEL- EATON 16E309AL
S/N- K1065082
OPERATION- NONE
AUX TRANS:
MODEL- EATON AT-1202
S/N- M130712001
OPERATION- NONE
AEM: BOOK- MC-1407
VIDEO- DVD-CR

SM CODE DESCRIPTION

SM00 GENERAL INFORMATION

SM00-000-000.00 HOW TO USE THIS MANUAL, S

SM01 RUBBER TIRE LOWER

SM01-002-012.00 FRONT STEER AXLE, RECON (
SM01-002-015.00 FRONT WHEEL & BRAKE DRUM,
SM01-003-010.00 BRAKE, RECON
SM01-003-014.00 ADJUSTING THE BRAKES
SM01-004-006.00 FRONT AXLES & AIR SUSPENS
SM01-005-018.00 STEERING COLUMN, R & I
SM01-005-023.00 STEERING GEARS, RECON (SH
SM01-005-027.00 TROUBLESHOOTING SHEPPARD
SM01-005-030.00 STEERING MITER BOXES, R &
SM01-005-035.00 STEERING COLUMN, RECON
SM01-006-013.00 TORQUE GENERATOR, RECON
SM01-006-020.00 TORQUE GENERATOR, R & I
SM01-006-026.00 STEERING GEARS, R & I
SM01-006-027.00 FRONT WHEEL ALIGNMENT&STE
SM01-010-023.00 OUTRIGGER/STEER PUMP, R &
SM01-010-024.00 OUTRIGGER/STEER PUMP, REC
SM01-017-009.00 CLUTCH, R & I AND TROUBLE
SM01-018-041.00 TRANSMISSION, RECON (MANU
SM01-018-067.00 TRANSMISSION, R & I
SM01-019-014.00 TRANSMISSION AIR SHIFT CO
SM01-019-021.00 TRANSMISSION MASTER CONTR
SM01-019-022.00 TRANSMISSION SLAVE CONTR
SM01-019-023.00 TRANSMISSION MASTER CONTR
SM01-019-032.00 TRANS SLAVE CONTROL, RECO
SM01-020-002.00 SUSPENDED BRAKE PEDAL, RE
SM01-020-009.00 SUSPENDED BRAKE PEDAL, R
SM01-021-003.00 AUXILIARY TRANSMISSION, R

SM CODE DESCRIPTION

SM01 RUBBER TIRE LOWER

SM01-021-006.00 AUXILIARY TRANSMISSION, R
SM01-021-010.00 AUXILIARY TRANSMISSION, T
SM01-022-005.00 U-JOINT INSTALLATION (FUL
SM01-024-008.00 REAR AXLES, RECON
SM01-025-008.00 BRAKES, RECON
SM01-027-028.00 FRONT AIR BRAKE CHAMBER,
SM01-027-061.00 SPRING BRAKE VALVE, RECON
SM01-027-062.00 AIR DRYER, R & I
SM01-027-063.00 AIR DRYER, RECON
SM01-027-066.00 SHIFT CONTROL VALVE, RECO
SM01-027-067.00 SHIFT CONTROL VALVE, R&I
SM01-027-103.00 DUAL AIR BRAKE CHAMBER, R
SM01-027-105.00 FRONT AXLE BRAKE CHAMBER,
SM01-027-106.00 CAGING DUAL AIR BRAKE CHA
SM01-027-117.00 DUAL AIR BRAKE CHAMBER, R
SM01-027-160.00 CARRIER AIR SYSTEM COMPON
SM01-028-002.00 REAR WHEEL HUB & BRAKE DR
SM01-029-023.00 REAR AXLE & SUSPENSION, R
SM01-039-003.00 HYDRAULIC SYSTEM CLEANING
SM01-039-006.00 HYDRAULIC RESERVOIR FILTE
SM01-039-011.00 HYDRAULIC RESERVOIR FILTE
SM01-043-004.00 4-WAY SOLENOID VALVE, REC
SM01-043-044.00 5TH OUTRIGGER DIRECTIONAL
SM01-044-007.00 LOCK VALVE, RECON
SM01-044-024.00 5TH O/R LOCK CARTRIDGE, R
SM01-044-025.00 LOCK VALVE, R & I
SM01-044-026.00 OUTRIGGER LOCK VALVE, REC
SM01-045-051.00 FRONT OUTRIGGER BEAM ASSE
SM01-045-052.00 REAR OUTRIGGER BEAM ASSEM
SM01-045-053.00 OUTRIGGER BEAM CYLINDER,
SM01-045-071.00 BEAM CYLINDER ASSEMBLY, R

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ORDER NO.- H9029

MODEL - HC-238H II

SERIAL NO. - H9L0-4456

SM CODE DESCRIPTION

SM01 RUBBER TIRE LOWER

SM01-046-012.00 JACK CYLINDER, RECON
SM01-046-016.00 JACK CYLINDER, RECON
SM01-046-042.00 5TH OUTRIGGER JACK CYLIND
SM01-046-043.00 JACK CYLINDER, R & I
SM01-047-008.00 OUTRIGGER CONTROL VALVE,
SM01-047-012.00 DECELERATION VALVE, RECON
SM01-047-013.00 FLOW CONTROL VALVE, RECON
SM01-047-014.00 OUTRIGGER BEAM DECELERATI
SM01-047-025.00 FLOW CONTROL VALVE, R & I
SM01-047-026.00 FRONT OUTRIGGER CONTROL V
SM01-047-027.00 REAR OUTRIGGER CONTROL VA
SM01-047-028.00 DECELERATION VALVE, R & I
SM01-047-031.00 PRIORITY FLOW CONTROL VAL
SM01-047-033.00 PRIORITY FLOW CONTROL VAL
SM01-050-020.00 HYDRAULIC OIL COOLER ASSY
SM01-050-021.00 HYDRAULIC OIL COOLER ASSY
SM01-066-000.00 ELECTRICAL SYSTEM WIRE ID
SM01-066-028.00 BATTERY, R & I
SM01-069-011.00 FRONT TIRE & RIM, R & I (
SM01-069-012.00 DUAL REAR TIRES & RIMS, R
SM01-073-002.00 ELECTRONIC GAUGES, TROUBL
SM01-075-059.00 RADIATOR AND CHARGED AIR
SM01-075-063.00 STARTER, R & I
SM01-075-064.00 ALTERNATOR, R & I
SM01-076-079.00 HEAVY DUTY COLLECTOR RING
SM01-076-080.00 HEAVY DUTY COLLECTOR RING
SM01-079-033.00 LOWER HYDRAULIC COMPONENT
SM01-081-046.00 HYD GEAR PUMP/MOTOR, RECO
SM01-081-056.00 RADIATOR FAN MOTOR, R & I
SM01-082-007.00 REAR OUTRIGGER BOX PIN
SM01-082-008.00 REAR OUTRIGGER BOX PIN

SM03 UPPER FRAME & MACHY

SM03-001-059.00 UPPER REVOLVING FRAME & T
SM03-001-060.00 UPPER REVOLVING FRAME & T

SM07 UPPER HYDRAULICS & AIR

SM07-000-000.00 HYDRAULIC SCHEMATIC DIAGR
SM07-004-057.00 UPPER HYD COMPS, R&I (SWI
SM07-018-001.00 HYDRAULIC SYSTEM TUBE FIT

SM CODE DESCRIPTION

SM18 SPECIAL ATTACHMENTS

SM18-000-001.00 CAPSCREW TORQUES
SM18-000-002.00 BEARING, GEAR, SHAFT, & H
SM18-000-003.00 CRANE SYSTEM SCHEMATICS
SM18-018-001.00 AIR CONDITIONING SERVICE

SMKEYSHEET AND GENERAL INFORMATION



MODEL - HC-238H II

BOOKS - #860/953/1050/1073

SERIAL NUMBERS - HC238-3000~ (H9 Prefix Serial Numbers)

SM CODE AREA ES00	DESCRIPTION GENERAL	SERIAL NUMBER BREAKS		
		HC238- 3000~3011	HC238- 4012~4014	HC238- 5015~
ES00-003-0050-10	EQUIPMENT LAYOUT	X		
ES00-003-0050-20	EQUIPMENT LAYOUT		X	
ES00-003-0076-00	EQUIPMENT LAYOUT			X
AREA ES01	UPPER MECHANISM			
ES01-001-0050-00	POWER TRANSMISSION SYSTEM	X		
ES01-001-0080-00	POWER TRANSMISSION SYSTEM		X	
ES01-001-0085-00	POWER TRANSMISSION SYSTEM			X
ES01-010-0050-00	FRONT AND REAR DRUM SHAFT STRUCTURE AND OUTLINE	X	X	X
ES01-010-2050-00	FRONT AND REAR DRUM SHAFTS MAINTENANCE CHART	X	X	X
ES01-010-6050-00	FRONT AND REAR DRUM SHAFT DISASSEMBLY AND REASSEMBLY	X	X	X
ES01-015-0050-00	BOOM HOIST DRUM SHAFT STRUCTURE AND OUTLINE	X	X	X
ES01-015-2050-00	BOOM HOIST DRUM SHAFT MAINTENANCE CHART	X		
ES01-015-2051-00	BOOM HOIST DRUM SHAFT MAINTENANCE CHART		X	X
ES01-015-6050-00	BOOM HOIST DRUM SHAFT DISASSEMBLY AND REASSEMBLY	X	X	X
ES01-017-0050-00	CLUTCH STRUCTURE & OUTLINE (1- CYLINDER TYPE)	X		
ES01-017-0055-01	OVERVIEW AND STRUCTURE OF CLUTCH (1- CYLINDER TYPE)		X	X
ES01-017-2050-00	CLUTCH MAINTENANCE CHART (1-CYLINDER TYPE)	X	X	
ES01-017-2077-00	CLUTCH MAINTENANCE CHART (1-CYLINDER TYPE)			X
ES01-017-4023-00	CLUTCH TROUBLESHOOTING	X	X	X
ES01-017-6040-20	CLUTCH DISASSEMBLY AND REASSEMBLY (1- CYLINDER TYPE)		X	X
ES01-017-6050-00	CLUTCH DISASSEMBLY & REASSEMBLY (1- CYLINDER TYPE)	X		
ES01-029-2050-00	SWING MECHANISM MAINTENANCE CHART	X	X	
ES01-029-2053-00	SWING MECHANISM MAINTENANCE CHART			X
ES01-030-2030-01	TURNTABLE BEARING MAINTENANCE CHART	X		
ES01-030-2030-30	TURNTABLE BEARING MAINTENANCE CHART		X	X
ES01-030-5050-00	TURNTABLE BEARING INSPECTION AND ADJUSTMENT	X		

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BOOKS - #860/953/1050/1073

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ES01-030-5051-00	TURNTABLE BEARING INSPECTION AND ADJUSTMENT		X	X
ES01-030-6050-00	TURNTABLE BEARING DISASSEMBLY AND REASSEMBLY	X		
ES01-040-2050-00	POWER DIVIDER (PUMP SPLITTER) MAINTENANCE CHART	X		
ES01-040-6050-00	POWER DIVIDER (PUMP SPLITTER) DISASSEMBLY AND REASSEMBLY	X		
ES01-050-4001-10	DRUM INDICATOR TROUBLESHOOTING		X	X
AREA ES03 CONTROL SYSTEM				
ES03-005-2050-00	FRONT AND REAR DRUM MAINTENANCE CHART	X		
ES03-005-2070-00	FRONT AND REAR DRUM BRAKE CONTROL MAINTENANCE CHART		X	X
ES03-005-5050-00	FRONT AND REAR DRUM BRAKES CONTROL INSPECTION AND ADJUSTMENT	X		
ES03-005-5066-00	FRONT AND REAR DRUM BRAKE CONTROL INSPECTION AND ADJUSTMENT		X	
ES03-005-5067-00	FRONT AND REAR DRUM BRAKE CONTROL INSPECTION AND ADJUSTMENT			X
ES03-005-6050-00	FRONT AND REAR DRUM BRAKES CONTROL DISASSEMBLY AND REASSEMBLY	X		
ES03-005-6067-00	FRONT AND REAR DRUM BRAKE CONTROL DISASSEMBLY AND REASSEMBLY		X	
ES03-005-6071-00	FRONT AND REAR DRUM BRAKE CONTROL DISASSEMBLY AND REASSEMBLY			X
ES03-010-2050-00	FRONT, REAR AND BOOM HOIST DRUM LOCK PAWL CONTROL MAINTENANCE CHART	X		
ES03-010-2050-10	FRONT, REAR AND BOOM HOIST DRUM PAWL LOCK MAINTENANCE CHART		X	X
AREA ES04 HYDRAULIC SYSTEM				
ES04-001-0050-30	HYDRAULIC CIRCUIT OUTLINE	X		
ES04-001-0050-40	HYDRAULIC CIRCUIT OUTLINE		X	
ES04-001-0089-00	HYDRAULIC CIRCUIT OUTLINE			X
ES04-001-5050-20	HYDRAULIC CIRCUIT PRESSURE ADJUSTMENT	X		
ES04-001-5086-00	HYDRAULIC CIRCUIT PRESSURE ADJUSTMENT		X	
ES04-001-5086-10	HYDRAULIC CIRCUIT PRESSURE ADJUSTMENT			X

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AREA ES05	HYDRAULIC UNIT			
ES05-002-0050-00	VARIABLE PUMP STRUCTURE AND OUTLINE	X		
ES05-002-0066-00	VARIABLE DELIVERY PUMP OUTLINE AND STRUCTURE		X	
ES05-002-0070-00	VARIABLE PUMP STRUCTURE AND OUTLINE			X
ES05-002-2050-00	VARIABLE DELIVERY PUMP MAINTENANCE CHART	X		
ES05-002-2052-00	VARIABLE DELIVERY PUMP MAINTENANCE CHART		X	
ES05-002-4009-00	VARIABLE DELIVERY PUMP TROUBLESHOOTING	X	X	X
ES05-002-6034-00	VARIABLE DELIVERY PUMP DISASSEMBLY & REASSEMBLY		X	
ES05-002-6039-00	VARIABLE DELIVERY PUMP DISASSEMBLY & REASSEMBLY			X
ES05-003-4023-00	GEAR PUMP TROUBLESHOOTING (SINGLE TYPE)	X	X	X
ES05-003-4050-00	GEAR PUMP TROUBLESHOOTING (3-SERIES TYPE)	X		
ES05-003-6023-00	GEAR PUMP DISASSEMBLY AND REASSEMBLY (SINGLE TYPE)	X		
ES05-003-6050-00	GEAR PUMP DISASSEMBLY AND REASSEMBLY (SINGLE TYPE)	X		
ES05-003-6054-00	GEAR PUMP DISASSEMBLY AND REASSEMBLY (2-SERIES TYPE)		X	X
ES05-005-0009-20	ACCUMULATOR STRUCTURE AND WORKING	X		
ES05-005-0035-10	ACCUMULATOR STRUCTURE		X	X
ES05-005-5009-10	ACCUMULATOR INSPECTION AND ADJUSTMENT	X		
ES05-005-5032-10	ACCUMULATOR INSPECTION		X	X
ES05-005-6009-20	ACCUMULATOR DISASSEMBLY AND REASSEMBLY	X		
ES05-005-6046-10	ACCUMULATOR DISASSEMBLY AND REASSEMBLY		X	X
ES05-009-0023-00	MOTOR STRUCTURE AND OUTLINE (FRONT & REAR DRUM)		X	X
ES05-009-0034-00	MOTOR STRUCTURE AND OUTLINE (FRONT & REAR DRUM)		X	
ES05-009-0047-00	FRONT AND REAR DRUM MOTOR STRUCTURE AND OUTLINE			X
ES05-009-2025-00	MOTOR MAINTENANCE CHART (FRONT & REAR DRUM)		X	X
ES05-009-4011-00	MOTOR TROUBLESHOOTING (FRONT & REAR DRUM)		X	X
ES05-009-6023-00	MOTOR DISASSEMBLY AND REASSEMBLY (BOOM HOIST DRUM)		X	X

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ES05-009-6034-00	MOTOR DISASSEMBLY AND REASSEMBLY (BOOM HOIST DRUM)		X	
ES05-009-6042-00	FRONT AND REAR DRUM MOTOR DISASSEMBLY AND REASSEMBLY			X
ES05-011-2025-00	MOTOR MAINTENANCE CHART (BOOM HOIST DRUM)		X	X
ES05-011-4002-00	MOTOR TROUBLESHOOTING (BOOM HOIST DRUM)		X	X
ES05-014-6029-10	ROTATING JOINT DISASSEMBLY AND REASSEMBLY	X		
ES05-014-6029-22	ROTATING JOINT DISASSEMBLY AND REASSEMBLY		X	X
ES05-016-0011-00	BRAKE BOOSTER FUNCTION AND OPERATION	X		
ES05-016-0016-01	BRAKE BOOSTER STRUCTURE AND WORKING		X	X
ES05-016-6005-01	BRAKE BOOSTER DISASSEMBLY AND REASSEMBLY		X	X
ES05-017-0009-10	REMOTE CONTROL VALVE STRUCTURE AND OPERATION	X		
ES05-017-0036-00	REMOTE CONTROL VALVE STRUCTURE AND OPERATION		X	X
ES05-017-4009-00	REMOTE CONTROL VALVE TROUBLESHOOTING	X		
ES05-017-4028-00	REMOTE CONTROL VALVE TROUBLESHOOTING		X	X
ES05-017-6009-10	REMOTE CONTROL VALVE DISASSEMBLY AND REASSEMBLY	X		
ES05-018-6050-00	CLUTCH CYLINDER DISASSEMBLY AND REASSEMBLY (1-CYLINDER TYPE)	X		
ES05-018-6050-10	CLUTCH CYLINDER DISASSEMBLY AND REASSEMBLY (1-CYLINDER TYPE)		X	
ES05-018-6074-00	CLUTCH CYLINDER DISASSEMBLY AND REASSEMBLY (1-CYLINDER TYPE)			X
ES05-019-6032-00	AUTOMATIC BRAKE CYLINDER DISASSEMBLY AND REASSEMBLY	X		
ES05-019-6032-10	AUTOMATIC BRAKE CYLINDER DISASSEMBLY AND REASSEMBLY		X	X
ES05-023-4001-10	HYDRAULIC CYLINDER TROUBLESHOOTING		X	X
ES05-027-6050-00	BOOM FOOT PIN CYLINDER DISASSEMBLY AND REASSEMBLY	X		
ES05-027-6052-00	BOOM FOOT PIN CYLINDER DISASSEMBLY AND REASSEMBLY		X	X
ES05-030-5061-00	LINE FILTER INSPECTION	X		
ES05-030-5061-11	LINE FILTER INSPECTION		X	X
ES05-030-6061-00	LINE FILTER DISASSEMBLY AND REASSEMBLY	X		
ES05-030-6061-11	LINE FILTER DISASSEMBLY AND REASSEMBLY		X	X

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ES05-032-5011-00	RETURN FILTER INSPECTION	X	X	X
ES05-032-6011-00	RETURN FILTER DISASSEMBLY AND REASSEMBLY	X	X	
ES05-032-6011-10	RETURN FILTER DISASSEMBLY AND REASSEMBLY			X
ES05-035-0011-00	SWING CONTROL VALVE OUTLINE AND OPERATION	X		
ES05-035-0055-00	SWING CONTROL VALVE STRUCTURE AND OPERATION		X	X
ES05-037-0050-00	3-SERIES CONTROL VALVE STRUCTURE AND WORKING	X		
ES05-037-0054-00	3-SERIES CONTROL VALVE STRUCTURE AND OPERATION		X	X
ES05-049-0011-00	CHECK BLOCK STRUCTURE AND OUTLINE	X		
ES05-049-0015-00	CHECK BLOCK STRUCTURE AND OUTLINE		X	
ES05-049-0019-00	CHECK BLOCK STRUCTURE AND OUTLINE			X
ES05-058-6061-00	BACKSTOP CYLINDER DISASSEMBLY AND REASSEMBLY	X		
ES05-058-6061-01	BACKSTOP CYLINDER DISASSEMBLY AND REASSEMBLY		X	
ES05-058-6061-11	BACKSTOP CYLINDER DISASSEMBLY AND REASSEMBLY			X
ES05-059-6050-00	COUNTERWEIGHT CYLINDER DISASSEMBLY AND REASSEMBLY	X		
ES05-059-6051-00	COUNTERWEIGHT CYLINDER DISASSEMBLY AND REASSEMBLY		X	
ES05-059-6051-10	COUNTERWEIGHT CYLINDER DISASSEMBLY AND REASSEMBLY			X
AREA ES13 ELECTRICAL SYSTEM				
ES13-001-0050-10	ELECTRICAL DIAGRAM	X		
ES13-001-0050-20	ELECTRICAL DIAGRAM		X	
ES13-001-0074-00	ELECTRICAL DIAGRAM			X
ES13-001-9032-00	ELECTRICAL SYSTEM STANDARDIZATION	X		
ES13-001-9033-01	ELECTRICAL SYSTEM STANDARDIZATION		X	X
ES13-004-5003-00	STORAGE BATTERY SERVICING AND INSTALLATION	X		
ES13-004-5004-00	STORAGE BATTERY SERVICING AND INSTALLATION		X	X
AREA ES14 TIGHTENING TORQUE TABLE				
ES14-002-0001-01	GENERAL PURPOSE TIGHTENING TORQUES	X		
ES14-002-0004-01	BOLT TIGHTENING TORQUES		X	X

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AREA SM00	GENERAL INFORMATION
SM00-000-003.00	HOW TO USE THIS MANUAL, GENERAL SERVICE INSTRUCTIONS, AND SAFETY PROCEDURES
AREA SM01	RUBBER TIRE LOWER
SM01-002-012.00	FRONT AXLE, RECON. (EATON)
SM01-002-015.00	FRONT WHEEL & BRAKE DRUM, R & I
SM01-003-010.00	BRAKES, RECON. (EATON EB & ES TYPE)
SM01-003-014.00	ADJUSTING THE BRAKES (EATON EB, ES, & ROCKWELL "P,Q,T")
SM01-004-006.00	FRONT AXLE & AIR SUSPENSION, R & I
SM01-005-015.00	STEERING COLUMN, RECON.
SM01-005-018.00	STEERING COLUMN, R & I
SM01-005-023.00	STEERING GEARS, RECON. ("M" SERIES)
SM01-005-027.00	TROUBLESHOOTING STEERING GEARS ("M" SERIES)
SM01-005-030.00	STEERING MITER BOXES, R & I
SM01-005-035.00	STEERING COLUMN, RECON (DOUGLAS AUTOTECH)
SM01-006-013.00	TORQUE GENERATOR, RECON.
SM01-006-020.00	TORQUE GENERATOR, R & I
SM01-006-026.00	STEERING GEARS, R & I
SM01-006-027.00	FRONT WHEEL ALIGNMENT & STEERING LINKAGE ADJUSTMENT
SM01-010-023.00	OUTRIGGER/STEER PUMP, R & I (SERIES 60 & CUMMINS)
SM01-010-024.00	OUTRIGGER/STEER PUMP, RECON. (COMMERCIAL INTERTECH)
SM01-010-029.00	POWER STEERING PUMP PRIORITY VALVE, RECON. (COM-INTERTECH)
SM01-017-008.00	CLUTCH, R & I AND TROUBLESHOOTING
SM01-017-009.00	CLUTCH, R & I AND TROUBLESHOOTING
SM01-018-041.00	TRANSMISSION, RECON. (EATON MANUAL)
SM01-018-052.00	TRANSMISSION, R & I (SERIES 60 W/MANUAL)
SM01-018-067.00	TRANSMISSION, R & I
SM01-018-067.00	TRANSMISSION, R & I
SM01-019-014.00	TRANSMISSION AIR SHIFT CONTROL, RECON. (MAIN TRANS.)
SM01-019-021.00	TRANSMISSION MASTER CONTROL, R & I
SM01-019-022.00	TRANSMISSION SLAVE CONTROL, R & I
SM01-019-023.00	TRANSMISSION MASTER CONTROL, RECON.
SM01-019-032.00	TRANSMISSION SLAVE CONTROL, RECON.
SM01-020-002.00	SUSPENDED BRAKE PEDAL, RECON.
SM01-020-007.00	SUSPENDED BRAKE PEDAL, R & I
SM01-020-009.00	SUSPENDED BRAKE PEDAL, R & I
SM01-021-003.00	AUXILIARY TRANSMISSION, RECON

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SM01-021-006.00	AUXILIARY TRANSMISSION (P1241-C & D), R & I
SM01-022-005.00	U-JOINT INSTALLATION - FULL ROUND YOKES
SM01-024-008.00	REAR AXLES, RECON. (ROCKWELL)
SM01-025-008.00	BRAKES, RECON. (ROCKWELL "P,Q, & T" SERIES)
SM01-025-010.00	BRAKES, RECON. (LIFT AXLE)
SM01-027-000.00	PNEUMATIC SYSTEM AIR LINE IDENTIFICATION CODE
SM01-027-009.00	AIR DRYER, RECON. (SYCON)
SM01-027-028.00	FRONT AIR BRAKE CHAMBERS, RECON.
SM01-027-061.00	SPRING BRAKE VALVE, RECON.
SM01-027-062.00	AIR DRYER, R & I (BENDIX)
SM01-027-063.00	AIR DRYER, RECON. (BENDIX)
SM01-027-066.00	SHIFT CONTROL VALVE, RECON. (AUX. TRANS)
SM01-027-067.00	SHIFT CONTROL VALVE, R & I (AUX. TRANS)
SM01-027-068.00	CAGING DUAL AIR BRAKE CHAMBER (MIDLAND)
SM01-027-069.00	DUAL AIR BRAKE CHAMBER, RECON. (MIDLAND)
SM01-027-072.00	AIR DRYER, R & I (SYCON)
SM01-027-102.00	AIR SYSTEM COMPONENTS, R & I - W/DUAL AIR DRYERS
SM01-027-103.00	DUAL AIR BRAKE CHAMBER, R & I (MIDLAND)
SM01-027-104.00	LIFT AXLE BRAKE CHAMBER, R & I
SM01-027-105.00	FRONT AXLE BRAKE CHAMBER, R & I
SM01-027-106.00	CAGING DUAL AIR BRAKE CHAMBERS (KESSLER)
SM01-027-116.00	AIR SYSTEM SCHEMATIC DIAGRAM (W/DUO AIR DRYERS)
SM01-027-119.00	AIR SYSTEM SCHEMATIC DIAGRAM (LIFT AXLE W/DUAL AIR DRYERS)
SM01-027-120.00	AIR SYSTEM SCHEMATIC DIAGRAM (LIFT AXLE W/SOLO AIR DRYERS)
SM01-027-121.00	AIR SYSTEM SCHEMATIC DIAGRAM
SM01-027-122.00	AIR SYSTEM COMPONENTS, R & I - W/SOLO AIR DRYER
SM01-027-160.00	CARRIER AIR SYSTEM COMPONENTS, R & I
SM01-028-002.00	REAR WHEEL HUB & BRAKE DRUM, R & I
SM01-028-003.00	REAR WHEEL HUB & BRAKE DRUM, R & I (LIFT AXLE)
SM01-029-014.00	LIFT AXLE, R & I
SM01-029-023.00	REAR AXLES & SUSPENSION, R & I
SM01-036-001.00	SELECTOR VALVE, RECON.
SM01-036-002.00	OUTRIGGER BY-PASS VALVE, R & I

SMKEYSHEET AND GENERAL INFORMATION



MODEL - HC-238H II

BOOKS - #860/953/1050/1073

SERIAL NUMBERS - HC238-3000~ (H9 Prefix Serial Numbers)

SM01-039-003.00	HYDRAULIC SYSTEM CLEANING PROCEDURE
SM01-039-006.00	HYDRAULIC RESERVOIR FILTER, R & I (INTERNAL TO RES TYPE)
SM01-039-007.00	HYDRAULIC RESERVOIR FILTER, RECON (INTERNAL TO RES TYPE)
SM01-039-011.00	HYDRAULIC RESERVOIR FILTER, RECON
SM01-043-004.00	FOUR WAY SOLENOID VALVE, RECON. (5TH OR W/SWITCH)
SM01-043-044.00	FIFTH OR DIRECTIONAL CONTROL VALVE, R & I (SOLENOID TYPE)
SM01-044-003.00	LOCK VALVE, RECON.
SM01-044-007.00	LOCK VALVE, RECON. (FIFTH OUTRIGGER)
SM01-044-013.00	LOCK VALVE, R & I
SM01-044-021.00	FIFTH OUTRIGGER LOCK VALVE, R & I (W/LEVER CONTROL)
SM01-044-024.00	FIFTH OUTRIGGER LOCK VALVE, R & I (W/SWITCH CONTROL)
SM01-044-025.00	OUTRIGGER LOCK VALVE, R & I
SM01-044-026.00	OUTRIGGER LOCK VALVE, RECON.
SM01-045-007.00	OUTRIGGER BEAM CYLINDER, RECON.
SM01-045-035.00	OUTRIGGER BEAM CYLINDER, R & I
SM01-045-045.00	REAR OUTRIGGER BEAM ASSEMBLY, R & I (GENERATION 1)
SM01-045-046.00	FRONT OUTRIGGER BEAM ASSEMBLY, R & I (GENERATION 1)
SM01-045-051.00	FRONT OUTRIGGER BEAM ASSEMBLY, R & I (GENERATION 2)
SM01-045-052.00	REAR OUTRIGGER BEAM ASSEMBLY, R & I (GENERATION 2)
SM01-045-053.00	OUTRIGGER BEAM CYLINDER, R & I
SM01-045-069.00	BEAM CYLINDER ASSY, RECON.
SM01-045-071.00	BEAM CYLINDER ASSY, RECON.
SM01-046-012.00	JACK CYLINDER, RECON.
SM01-046-016.00	JACK CYLINDER, RECON. (FIFTH OUTRIGGER)
SM01-046-029.00	JACK CYLINDER, R & I (GENERATION 1)
SM01-046-038.00	FIFTH OUTRIGGER JACK CYLINDER, R & I (W/LEVER CONTROL)
SM01-046-042.00	FIFTH OUTRIGGER JACK CYLINDER, R & I (W/SWITCH CONTROL)
SM01-046-043.00	JACK CYLINDER, R & I
SM01-047-008.00	OUTRIGGER CONTROL VALVE, RECON.
SM01-047-012.00	DECELERATION VALVE, RECON.
SM01-047-013.00	FLOW CONTROL VALVE, RECON.
SM01-047-014.00	OUTRIGGER BEAM DECELERATION VALVE, R & I
SM01-047-016.00	FIFTH OUTRIGGER CONTROL VALVE, R & I
SM01-047-019.00	FRONT OUTRIGGER CONTROL VALVES, R & I (GENERATION 1)

SMKEYSHEET AND GENERAL INFORMATION



MODEL - HC-238H II

BOOKS - #860/953/1050/1073

SERIAL NUMBERS - HC238-3000~ (H9 Prefix Serial Numbers)

SM01-047-020.00	REAR OUTRIGGER CONTROL VALVES, R & I (GENERATION 1)
SM01-047-025.00	FLOW CONTROL VALVE, R & I (CRANES W/HYD RADIATOR FAN)
SM01-047-026.00	FRONT OUTRIGGER CONTROL VALVES, R & I (GENERATION 2)
SM01-047-027.00	REAR OUTRIGGER CONTROL VALVES, R & I (GENERATION 2)
SM01-047-028.00	OUTRIGGER BEAM DECELERATION VALVE, R & I
SM01-047-031.00	PRIORITY FLOW CONTROL VALVE, R & I
SM01-047-033.00	PRIORITY FLOW CONTROL VALVE, RECON
SM01-050-020.00	HYDRAULIC OIL COOLER, R & I
SM01-050-021.00	HYDRAULIC OIL COOLER, RECONDITION
SM01-063-092.00	RADIATOR FAN CLUTCH, RECON.
SM01-063-098.00	RADIATOR, R & I (SERIES 60)
SM01-063-099.00	RADIATOR FAN CLUTCH, R & I (SERIES 60)
SM01-063-101.00	ALTERNATOR, R & I (SERIES 60)
SM01-063-102.00	STARTER, R & I (SERIES 60)
SM01-063-104.00	RADIATOR, R & I
SM01-063-109.00	ALTERNATOR, R & I (SERIES 60 ENGINE WITHOUT A/C)
SM01-063-112.00	ALTERNATOR, R & I (SERIES 60 ENGINE WITH A/C)
SM01-063-113.00	RADIATOR & CHARGED AIR COOLER, R & I (DDEC VI)
SM01-066-000.00	ELECTRICAL SYSTEM WIRE IDENTIFICATION CODE
SM01-066-022.00	CARRIER ELECT SYS SCHEM DIA-SERIES 60 W/DDEC III
SM01-066-025.00	CARRIER ELECT SYS SCHEM DIA-SERIES 60 W/DDEC III
SM01-066-028.00	BATTERY, R & I
SM01-069-011.00	FRONT TIRE & RIM, R & I
SM01-069-012.00	DUAL REAR TIRES & RIMS, R & I
SM01-071-001.00	THROTTLE TREADLE ASSEMBLY, R & I
SM01-071-002.00	THROTTLE TREADLE ASSEMBLY, RECON.
SM01-073-001.00	ELECTRONIC GAUGES, TROUBLESHOOTING (INTERLINK)
SM01-073-002.00	ELECTRONIC GAUGES, TROUBLESHOOTING
SM01-075-059.00	RADIATOR AND CHARGED AIR COOLER, R & I
SM01-075-063.00	STARTER, R & I
SM01-075-064.00	ALTERNATOR, R & I
SM01-076-079.00	HEAVY DUTY COLLECTOR RING ASSY, R & I
SM01-076-080.00	HEAVY DUTY COLLECTOR RING ASSY, RECON.
SM01-079-017.00	LOWER HYDRAULIC COMPONENTS, R & I

SMKEYSHEET AND GENERAL INFORMATION



MODEL - HC-238H II

BOOKS - #860/953/1050/1073

SERIAL NUMBERS - HC238-3000~ (H9 Prefix Serial Numbers)

SM01-079-018.00	CARRIER HYDRAULIC SYSTEM SCHEMATIC DIAGRAM
SM01-079-032.00	HYDRAULIC OIL COOLER, R & I
SM01-079-033.00	LOWER HYDRAULIC COMPONENTS, R & I (W/HYD RAD FAN)
SM01-081-035.00	RADIATOR FAN MOTOR, R & I
SM01-081-036.00	RADIATOR FAN MOTOR, RECON (PGM520 SERIES)
SM01-081-046.00	HYDRAULIC GEAR PUMP/MOTOR, RECON - ALUMINUM (RADIATOR FAN MOTOR)
SM01-081-056.00	RADIATOR FAN MOTOR, R & I (DDEC VI)
SM01-082-005.00	FRONT OUTRIGGER BOX PIN CYLINDER, R & I
SM01-082-006.00	FRONT OUTRIGGER BOX PIN CYLINDER, RECON.
SM01-082-007.00	REAR OUTRIGGER BOX PIN CYLINDER, R & I
SM01-082-008.00	REAR OUTRIGGER BOX PIN CYLINDER, RECON.
AREA SM03	UPPER FRAME & MACHINERY
SM03-001-059.00	UPPER FRAME & TURNTABLE BEARING, R & I
SM03-001-060.00	UPPER FRAME & TURNTABLE BEARING, R & I
AREA SM05	HORIZONTAL SHAFTS
SM05-005-016.00	WINCH, RECON. (THIRD DRUM - L & S)
SM05-005-017.00	THIRD DRUM WINCH, R & I

SMKEYSHEET AND GENERAL INFORMATION



MODEL - HC-238H II

BOOKS - #860/953/1050/1073

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AREA SM06	UPPER ENGINE & ELECTRICAL
SM06-044-002.00	GENERATOR & LIGHT PLANT SCHEMATIC DIAGRAM
AREA SM07	UPPER HYDRAULICS & AIR
SM07-000-000.00	HYDRAULIC SCHEMATIC DIAGRAM SYMBOL LEGEND
SM07-004-057.00	UPPER HYDRAULIC COMPONENTS, R & I (SWING BRAKE LOCKOUT)
SM07-006-066.00	HYDRAULIC MOTOR, RECON. (REXROTH SERIES 61)
SM07-006-090.00	THIRD DRUM WINCH MOTOR, R & I
SM07-018-001.00	HYDRAULIC SYSTEM TUBE FITTINGS
AREA SM09	TUBULAR BOOM
SM09-001-002.00	TUBULAR BOOM, FLY, & JIB REPAIR
AREA SM18	SPECIAL ATTACHMENTS
SM18-000-001.00	CAPSCREW TORQUES
SM18-000-002.00	GEAR, SHAFT, BEARING, & HOUSING INSPECTION
SM18-000-003.00	CRANE SYSTEM SCHEMATICS
SM18-018-001.00	AIR CONDITIONING SERVICE INSTRUCTIONS
SM18-018-004.00	AIR CONDITIONING COMPRESSOR, RECON.
SM18-018-019.00	AIR CONDITIONING COMPRESSOR, R & I (CARRIER)

SMKEYSHEET AND GENERAL INFORMATION



MODEL - HC-238H II

BOOKS - #860/953/1050/1073

SERIAL NUMBERS - HC238-3000~ (H9 Prefix Serial Numbers)

How To Use This Manual, General Service Instructions, And Safety Procedures

The following information is provided to help guide the user of this manual. An explanation of how this manual is organized, as well as general information and safety considerations which should be understood when performing any service or maintenance procedure, is given. This information is general in nature and should supplement any of the specific procedures in this manual along with a constant awareness of safety and common sense.

How To Use This Manual

This Service Manual is a collection of written procedures which are used to service and maintain a specific crane model. The index, which is called a "Keysheet", is used to organize the procedures within this manual and serve as a Table Of Contents as well. Each procedure, in this manual, is written so that it can stand alone and typically covers only one procedure. Procedures are given a numerical designation, or "SM Code" Number, (Example: SM01—005—034.00) which is unique to that procedure and that procedure only. The following is a listing of the general area definitions which are designated by the first digits in the SM Code Number sequence:

General Area Descriptions

- SM01 — Rubber Tire Lower
- SM02 — Crawler Lower
- SM03 — Upper Revolving Frame & Machinery
- SM04 — Vertical Shafts
- SM05 — Horizontal Shafts
- SM06 — Upper Engine
- SM07 — Hydraulic Power Supply
- SM08 — Angle Boom
- SM09 — Tubular Boom
- SM10 — Tagline Winder
- SM11 — Fairleader
- SM12 — Shovel Attachment
- SM13 — Trench Hoe, Logger & Scraper Attachment & Prop Handler
- SM14 — Cab & House Assembly
- SM15 — Rotascope Attachment (Discontinued)
- SM16 — Wire Rope Requirements
- SM17 — Hydraulic Boom And Attachments
- SM18 — Special Attachments
- SM19 — Diesel Pile Hammer (Discontinued)
- SM20 — Tower, Climbing Assembly, Traveling Base & Gantry (Discontinued)
- SM21 — Log Skidder (Discontinued)
- SM22 — Hydraulic Hammer (Discontinued)

The procedures in this manual are collated by SM Code Number sequence. Use the Keysheet in the front of this manual, the general area descriptions shown previously, and the SM Code title shown on the

Keysheet to find the specific procedure required to service the crane.

Throughout this manual, reference is made to the left, right, front, and rear, pertaining to directions and locations. These reference directions are relative to the operator, sitting in the operator's seat, with the upper directly over the front of the carrier, unless otherwise stated. (Crawler mounted cranes: upper over the front of the crane with travel motors to the rear.)

Danger, warning, and caution captions as well as special notes are used throughout this manual and on the crane to emphasize important and critical instructions. **If any instruction, caution, warning, or danger labels, decals, or plates become lost, damaged, or unreadable, they must be replaced.** Information contained on such labels, decals, and plates is important and failure to follow the information they contain could result in an accident. Replacement labels, decals, and plates can be ordered through a Link-Belt Distributor. For the purpose of this manual, danger, warning, and caution captions and notes are defined as follows:



DANGER

An operating procedure, practice, etc. which, if not correctly followed, may result in severe personal injury, dismemberment, or loss of life.



WARNING

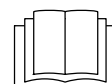
An operating procedure, practice, etc. which, if not correctly followed, may result in personal injury.

CAUTION

An operating procedure, practice, etc. which, if not correctly followed, may result in damage to, or destruction of, equipment or property.

NOTES

Note: An operating procedure step, condition, etc. which is essential in order for the process to be completed properly.



This symbol may appear in manuals or on a label on the crane to alert personnel that additional instructions are included in the crane Operator's Manual.