

**HTT- 8690CE/86100CE Series - Master Keysheet  
(N3 Prefix On Crane Serial Number)****AREA 00 GENERAL INFORMATION**

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SM00- 000- 000.00 Service Manual General Usage &amp; Instructions

**AREA 01 RUBBER TIRE LOWER**

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SM01- 001- 006.00 Boom Rest, R & I  
SM01- 002- 012.00 Front Axle, Recondition  
SM01- 002- 015.00 Front Wheel & Brake Drum, R & I  
SM01- 003- 010.00 Brakes, Recondition (Front Axles)  
SM01- 003- 014.00 Adjusting The Brakes (Front Axles)  
SM01- 003- 019.00 Automatic Slack Adjusters (Front Axles)  
SM01- 004- 014.00 Front Axles & Air Suspension, R & I  
SM01- 005- 027.00 Troubleshooting Sheppard Steering Gears  
SM01- 005- 032.00 Steering Miter Boxes, R & I  
SM01- 005- 033.00 Steering Gears, R & I  
SM01- 005- 034.00 Steering Column, R & I  
SM01- 005- 035.00 Steering Column, Recondition  
SM01- 005- 037.00 Steering Gears, Recondition  
SM01- 006- 037.00 Rear Wheel Alignment & Axle Stop Adjustment  
SM01- 006- 039.00 Front Wheel Alignment & Steer Linkage Adjustment  
SM01- 007- 031.00 Rear Axle Steer Cylinder, R & I  
SM01- 007- 033.00 Rear Axle Steer Cylinder, Recondition  
SM01- 010- 039.00 Power Steering Pump w/Priority Valve, Recondition  
SM01- 010- 043.00 Power Steering Pump, R & I  
SM01- 016- 002.00 Heater Core & A/C Coil, R & I  
SM01- 018- 057.00 Transmission, Recondition  
SM01- 018- 062.00 Transmission And Clutch, R & I  
SM01- 019- 034.00 Transmission Shift Control, R & I  
SM01- 020- 002.00 Suspended Brake Pedal, Recondition  
SM01- 020- 011.00 Suspended Brake Pedal Valve, R & I  
SM01- 022- 004.00 U- Joint Installation - Half Round Yokes  
SM01- 022- 005.00 U- Joint Installation - Full Round Yokes  
SM01- 024- 013.00 Rear Axles, Recondition  
SM01- 025- 011.00 Brakes, Recondition (Rear Steer Axle)  
SM01- 025- 016.00 Antilock Brake System, Troubleshooting (ABS EC- 60)  
SM01- 027- 000.00 Pneumatic System Air Line Identification Code  
SM01- 027- 028.00 Front Air Brake Chamber, Recondition (Front Axles)  
SM01- 027- 054.00 Rear Dual Air Brake Chamber, R & I  
SM01- 027- 062.00 Air Dryer, R & I  
SM01- 027- 063.00 Air Dryer, Recondition  
SM01- 027- 091.00 Front Air Brake Chamber, R & I (Front Axles)  
SM01- 027- 106.00 Caging Dual Air Brake Chambers (Rear Steer Axle)  
SM01- 027- 117.00 Dual Air Brake Chamber, Recondition  
SM01- 027- 143.00 Air System Components, R & I  
SM01- 027- 144.00 Air System Components, R & I (Boom Trailer)  
SM01- 028- 004.00 Rear Wheel Hub & Brake Drum, R & I (Rear Steer Axles)  
SM01- 029- 036.00 Rear Axles & Air Suspension, R & I  
SM01- 039- 003.00 Hydraulic System Cleaning Procedure  
SM01- 039- 005.00 Hydraulic Reservoir Filter Assembly, Recondition  
SM01- 039- 008.00 Hydraulic Reservoir Filter Assembly, R & I  
SM01- 043- 001.00 Solenoid Valves, General Recondition  
SM01- 043- 003.00 Outrigger Solenoid Valve Stack, Recondition (Function)  
SM01- 043- 004.00 Four Way Solenoid Valve, Recondition (Outrigger Directional)

SM01- 043- 045.00	Outrigger Directional Control Valve, R & I
SM01- 043- 047.00	Fifth Outrigger Directional Control Valve, R & I
SM01- 043- 048.00	Outrigger Function Control Valve, R & I
SM01- 044- 023.00	Fifth Outrigger Lock Valve Cartridge, R & I
SM01- 044- 027.00	Outrigger Lock Valve Cartridge, R & I And Recondition
SM01- 045- 048.00	Bottom Outrigger Beam Cylinder, Recondition
SM01- 045- 049.00	Top Outrigger Beam Cylinder, Recondition
SM01- 045- 059.00	Outrigger Beam Assembly, R & I
SM01- 045- 060.00	Outrigger Beam Cylinder, R & I
SM01- 046- 034.00	Jack Cylinder, Recondition (Fifth Outrigger)
SM01- 046- 047.00	Outrigger Jack Cylinder, R & I (Main)
SM01- 046- 048.00	Outrigger Jack Cylinder, Recondition (Main)
SM01- 046- 049.00	Fifth Outrigger Jack Cylinder, R & I
SM01- 047- 011.00	Relief Valve, Recondition (Hydraulic Oil Cooler)
SM01- 047- 038.00	Pick & Carry Manifold Block, Illustrated (G1)
SM01- 047- 041.00	Emergency Steering Supply Valve, Recon.
SM01- 047- 048.00	Pick & Carry Manifold Block, Illustrated (G2)
SM01- 048- 043.00	Rotating Joint, R & I
SM01- 048- 044.00	Rotating Joint, Recondition
SM01- 050- 004.00	Hydraulic Oil Cooler Assembly, R & I
SM01- 050- 005.00	Oil Cooler Hydraulic Motor, R & I
SM01- 050- 015.00	Hydraulic Oil Cooler Accumulator, R & I
SM01- 050- 016.00	Oil Cooler Hydraulic Motor, Recondition
SM01- 066- 024.00	Battery, R & I
SM01- 069- 014.00	Tire & Rim, R & I
SM01- 069- 016.00	Tire & Rim, & Inspection & Maintenance (Aluminum Disc Rims & Tubeless Tires)
SM01- 071- 004.00	Repair Of Components Made Of Fibrous Composite Materials
SM01- 071- 009.00	Engine Housing, R & I
SM01- 071- 024.00	Engine Housing, R & I (G2)
SM01- 073- 002.00	Electronic Gauge, Troubleshooting
SM01- 075- 050.00	Starter, R & I
SM01- 075- 051.00	Alternator, R & I
SM01- 075- 052.00	Radiator, Charged Air, & Transmission Oil Cooler, R & I
SM01- 076- 050.00	Collector Ring, R & I
SM01- 076- 068.00	Collector Ring, Recondition (37 Rings)
SM01- 076- 073.00	Collector Ring, Recondition (G2 - 37 Rings)
SM01- 076- 076.00	Collector Ring, Recondition (37 Rings)
SM01- 076- 077.00	Heavy Duty Collector Ring, R & I (39 Rings)
SM01- 079- 066.00	Lower Hydraulic Components, R & I (Rear Steer Hydraulics)
SM01- 079- 067.00	Lower Hydraulic Components, R & I (Suction, Pressure, & Return Lines)
SM01- 081- 014.00	Hydraulic Pump, Recondition (Multiple Section Gear Type)
SM01- 081- 040.00	Hydraulic Pump, R & I (Tandem 3- Section)
SM01- 081- 045.00	Radiator Fan Motor, R & I
SM01- 081- 046.00	Hydraulic Gear Pump/Motor, Recondition (Radiator Fan Motor)
SM01- 081- 051.00	Hydraulic Pump, R & I (Outriggers/Pick & Carry 2 or 3- Section)
SM01- 081- 060.00	Hydraulic Vane Pump, R & I (Winches, Radiator Fan, Boom Hoist, Rear Steering)
SM01- 081- 061.00	Hydraulic Vane Pump, Recondition (Multiple Section Vane Type)

## AREA 03

## UPPER REVOLVING FRAME

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SM03- 001- 073.00	Upper Revolving Frame & Turntable Bearing, R & I
SM03- 003- 017.00	Main Fixed Counterweight, R & I
SM03- 010- 039.00	Counterweight Removal Cylinder, R & I
SM03- 010- 041.00	Counterweight Locking Cylinder, R & I
SM03- 010- 042.00	Counterweight Removal Control Valve, R & I
SM03- 010- 043.00	Counterweight Removal Control Valve, Recondition
SM03- 010- 055.00	Counterweight Removal Cylinder, Recondition

**AREA 04 VERTICAL SHAFTS**

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SM04- 005- 034.00 Swing Brake, R & I  
SM04- 005- 035.00 Swing Brake, Recondition  
SM04- 010- 035.00 Swing Reduction Unit, Recondition  
SM04- 010- 036.00 Swing Reduction Unit, R & I

**AREA 05 HORIZONTAL SHAFTS**

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SM05- 006- 026.00 Winch, Troubleshooting  
SM05- 006- 028.00 Winch, Recondition  
SM05- 006- 035.00 Winch Assembly, R & I  
SM05- 018- 006.00 Winch Roller, R & I And Recondition

**AREA 06 UPPER ENGINE**

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SM06- 008- 009.00 Throttle Treadle Assembly, R & I  
SM06- 025- 019.00 Operator's Cab Water Heater, R & I  
SM06- 025- 022.00 A/C Coil And Heater Core Illustrated  
SM06- 025- 023.00 Upper Cab Water Heater & A/C Evaporator Coil, R & I  
SM06- 025- 026.00 Diesel Coolant Heater, Troubleshooting & Recondition  
SM06- 025- 028.00 Diesel Coolant Heater, R & I  
SM06- 025- 030.00 Upper Cab Heater Water Swivel, R & I And Recondition- Rotating Joint  
SM06- 047- 000.00 Electrical System Wire Identification Code

**AREA 07 HYDRAULIC POWER SUPPLY**

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SM07- 000- 000.00 Hydraulic Schematic Diagram Symbol Legend  
SM07- 001- 027.00 Pilot Control Accumulator, R & I  
Charging The Accumulator  
SM07- 002- 032.00 Relief Valve, Recondition (Upper Air Conditioning)  
SM07- 002- 033.00 Solenoid/Relief Valve, Recondition (Boom Telescope)  
SM07- 003- 006.00 Solenoid Valves, General Recondition  
SM07- 003- 011.00 Directional Relief Valve, Recondition (Boom Telescope)  
SM07- 004- 032.00 Upper Hydraulic Components, R & I- Upper Cab Floor  
SM07- 004- 051.00 Upper Hydraulic Components, R & I- Upper Frame (G1)  
SM07- 004- 064.00 Upper Hydraulic Components, R & I- Single Winch Plumbing  
SM07- 004- 065.00 Upper Hydraulic Components, R & I- Two Winch Plumbing (G1)  
SM07- 004- 086.00 Upper Hydraulic Components, R & I- Two Winch Plumbing (G2)  
SM07- 004- 087.00 Upper Hydraulic Components, R & I- Upper Frame (G2)  
SM07- 004- 088.00 Upper Hydraulic Components, R & I- One Winch Plumbing (G2)  
SM07- 006- 034.00 Swing Motor, Recondition  
SM07- 006- 095.00 Winch Motor, Recondition  
SM07- 006- 107.00 Winch Motor, R & I  
SM07- 006- 113.00 Swing Motor, R & I (w/Needle Valve)  
SM07- 008- 037.00 Pressure Reducing Valve, Recondition (Boom Hoist/Telescope Valve)  
SM07- 008- 101.00 Control Valve, Recondition (Swing)  
SM07- 008- 107.00 Dual Axis Controller Valve, Recondition  
SM07- 008- 108.00 Single Axis Controller Valve, Recondition  
SM07- 008- 112.00 Pressure Reducing Valve, Recondition (Pilot Control Circuit)  
SM07- 008- 116.00 Dual Axis Controller Valve, R & I  
SM07- 008- 117.00 Single Axis Controller Valve, R & I  
SM07- 008- 118.00 Swing Brake Pedal Valve, Recondition  
SM07- 008- 122.00 Winch Counterbalance Valve, Recondition  
SM07- 008- 130.00 Swing Brake Pedal Valve, R & I  
SM07- 008- 132.00 Control Valves, Recondition (Boom Hoist, Telescope, & Winch)  
SM07- 008- 133.00 Boom Hoist/Telescope Control Valve, R & II (Gen 1 With Solenoid Relief Valve)  
SM07- 008- 134.00 Swing Control Valve, R & I

SM07- 008- 135.00 Winch Control Valve, R & I  
SM07- 008- 140.00 Winch Counterbalance Valve, R & I  
SM07- 008- 150.00 Fine Metering Valve, R & I  
SM07- 008- 151.00 Fine Metering Valve, Recondition  
SM07- 008- 200.00 Boom Hoist/Telescope Control Valve, R & I (Gen 2 w/o Solenoid Relief Valve)  
SM07- 010- 006.00 Boom Telescope Electronic Foot Control, R & I  
SM07- 018- 001.00 Hydraulic System Tube Fittings

**AREA 09 TUBULAR BOOM, FLY, & JIB**

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SM09- 001- 002.00 Tubular Boom, Fly, & Jib Repair

**AREA 17 HYDRAULIC CRANE ATTACHMENT**

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SM17- 001- 053.00 Hydraulic Boom Inspection - Formed Sections  
SM17- 001- 066.00 Five Section Latching Boom, R & I (G1)  
SM17- 001- 067.00 Five Section Latching Boom, Recondition (G1)  
SM17- 001- 081.00 Five Section Latching Boom, R & I (G2)  
SM17- 001- 082.00 Five Section Latching Boom, Recondition (G2) - R3 Type Boom  
SM17- 002- 054.00 Boom Telescope Counterbalance Valve, R & I  
SM17- 002- 055.00 Boom Telescope Cylinder, Recondition  
SM17- 002- 057.00 Boom Latching Cylinder, Recondition - Hydraulic Technologies (G2)  
SM17- 002- 059.00 Telescope Cylinder Length Reel, Recondition  
SM17- 002- 064.00 Boom Telescope Cylinder Calibration  
SM17- 002- 065.00 Latching Boom Telescope System, Troubleshooting  
SM17- 002- 066.00 Boom Latching/Pinning Cylinder, R & I  
SM17- 002- 068.00 Telescope Cylinder Length Reel, R & I (G1)  
SM17- 002- 069.00 Boom Latching/Pinning Cylinder, Recondition - Texas Hyd (G1 & 3)  
SM17- 002- 088.00 Hose & Cable Reel, Recondition  
SM17- 002- 089.00 Boom Telescope Cylinder Mechanism, Recondition (G1)  
SM17- 002- 105.00 Boom Pinning Cylinder, R & I (G1)  
SM17- 002- 106.00 Boom Pinning Cylinder, Recondition (G1)  
SM17- 002- 107.00 Boom Latching Cylinder, R & I (G2)  
SM17- 002- 108.00 Latching Boom Telescope System, Troubleshooting (G3)  
SM17- 002- 109.00 Latching Boom Telescope System, Calibration  
SM17- 002- 110.00 Boom Telescope Cylinder Mechanism, Recondition (G2)  
SM17- 002- 111.00 Latching Boom Telescope System, Calibration (G2)  
SM17- 002- 114.00 Hose & Cable Reel, R & I  
SM17- 002- 115.00 Telescope Cylinder Length Encoder Reels, R & I (G2)  
SM17- 002- 117.00 Pin/Latch Valve, Recondition - (G1)  
SM17- 002- 118.00 Pin/Latch Valve, Recondition - (G2) - R3 Type Boom  
SM17- 003- 013.00 Boom Hoist Cylinder, Recondition  
SM17- 003- 039.00 Boom Hoist Cylinder, R & I  
SM17- 003- 040.00 Boom Hoist Counterbalance Valve, R & I - G1  
SM17- 003- 055.00 Boom Hoist Counterbalance Valve, R & I - G2  
SM17- 009- 004.00 Five Sheave Head Machinery, Recondition

**AREA 18 SPECIAL ATTACHMENTS**

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SM18- 000- 001.00 Capscrew Torques  
SM18- 000- 002.00 Bearing, Gear, Shaft, & Housing Inspection  
SM18- 000- 003.00 Crane System Schematics  
SM18- 007- 006.00 Reeling Drum, R & I (Greer)  
SM18- 007- 007.00 Reeling Drum, Recondition (Greer)  
SM18- 007- 016.00 Reeling Drum, Troubleshooting & Recondition (Hirschmann)  
SM18- 007- 018.00 Reeling Drum, R & I (Hirschmann)  
SM18- 007- 021.00 Reeling Drum, R & I (Hirschmann)  
SM18- 018- 001.00 Air Conditioning Service Precautions

SM18- 018- 004.00 Air Conditioning Compressor, Recondition (Carrier & Upper)  
SM18- 018- 013.00 Air Conditioning Compressor, R & I (Upper)  
SM18- 018- 014.00 Air Conditioning Hydraulic Drive Motor, R & I (Upper)  
SM18- 018- 015.00 Air Conditioning Hydraulic Drive Motor, Recondition (Upper)  
SM18- 018- 024.00 Air Conditioning Compressor, R & I (Carrier)

Notes:

## Boom Rest, R & I

This procedure covers the removal and installation of the boom rest. If boom rest extensions are used, see SM Keysheet 01 - 001 for additional information.

### Removal

1. Lower, detach, and secure load, as required.
2. Stabilize the crane for service as follows:
  - a. Park the crane out of the way on a firm and level surface.
  - b. Engage the park brake and/or properly block the tires.
  - c. Engage the swing park brake or travel swing lock, as required.
  - d. Level the crane on fully extended outriggers.
  - e. Fully retract and lower the boom over the rear of the carrier.
3. Shutdown the engine and disengage the main hydraulic pump.



### WARNING

Solvents and cleaning solutions can be hazardous. Serious personal injury may result from misuse of these products. Read and follow all the manufacturer's recommendations concerning solvents and cleaning solutions.

4. Thoroughly clean area to be disassembled with an approved cleaning solvent. Allow the area to air dry.

Refer to Figure 1.

5. Remove the locator caps (2) by removing the cap-screws, washers, and locknuts (5).
6. Remove the engine housing (1). See SM Keysheet Area 01 - 071 for the correct procedure.
7. Support the boom rest assembly with an auxiliary lifting device.

**Note: The boom rest assembly weighs approximately 350 lb (159kg).**

8. Remove the cotter pins (10) and pins (9) which secure the cross tube assembly (8) to the carrier frame (7).

9. Remove the boom rest assembly from the crane.
10. If further disassembly of the boom rest is required, proceed with Steps a and b as needed.
  - a. Remove the nylon pads (3) from the locator caps (2) by removing the screws (4).
  - b. Using an auxiliary lifting device, separate the pivot assembly (6) and cross tube assembly (8) by removing the cotter pins (11) and pin (12).

**Note: The pivot assembly weighs approximately 180 lb (82kg) and the cross tube assembly weighs approximately 75 lb (34kg).**

11. If boom rest is to be removed for an extended period of time, adequately support the boom.

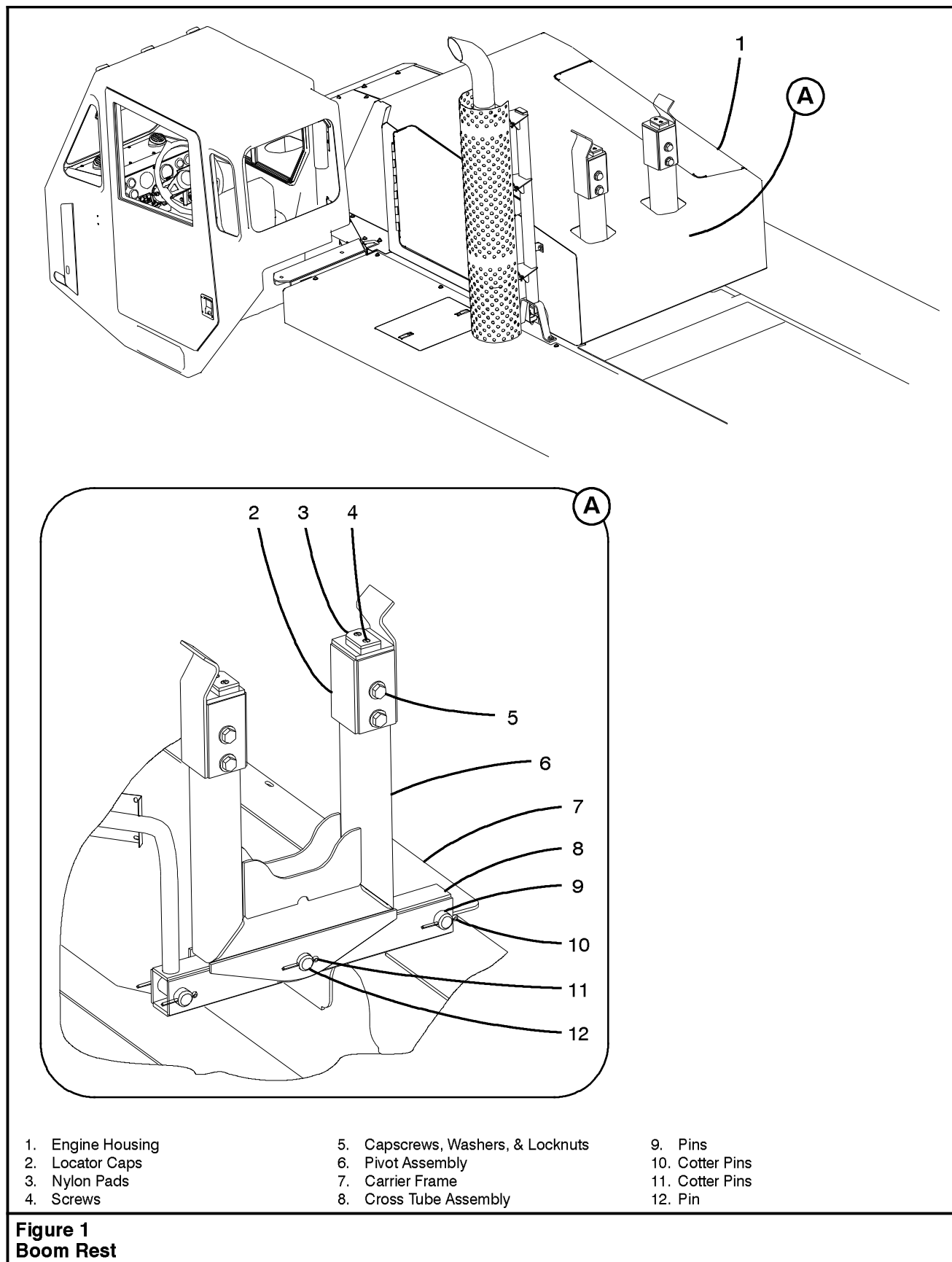
### Cleaning And Inspection



### WARNING

Solvents and cleaning solutions can be hazardous. Serious personal injury may result from misuse of these products. Read and follow all the manufacturer's recommendations concerning solvents and cleaning solutions.

1. All components should be thoroughly cleaned with an approved cleaning solvent, air dried, and carefully inspected.
2. All Loctite<sup>®</sup>, Permatex<sup>®</sup>, or other sealant residue should be removed from threads of hardware and the mounting surfaces of parts that are going to be reused. Prior to applying new thread locking compounds or sealants, clean threads and surfaces with Loctite<sup>®</sup> 7070 Cleaner to ensure best performance of products.
3. Thoroughly inspect all related parts for damage, wear, fatigue or stress fractures, and corrosion. Repair or replace as required.
4. In the event of severe defects, contact factory personnel for directions whether to repair or replace any major component.



## Installation



### WARNING

Lubricants, sealants, joint and thread locking compounds, etc. can be hazardous. Serious personal injury may result from misuse of these products. Read and follow all manufacturer's recommendations concerning these products.

Refer to Figure 1.

1. If assembly of the boom rest is required, proceed with Steps a and b as needed.

- a. Using an auxiliary lifting device, position the pivot assembly (6) to the cross tube assembly (8) and install the pin (12) and cotter pins (11). Bend cotter pins (11) only slightly.

**Note: The pivot assembly weighs approximately 180 lb (82kg) and the cross tube assembly weighs approximately 75 lb (34kg).**

- b. Position the nylon pads (3) on the locator caps (2) and install the screws (4).

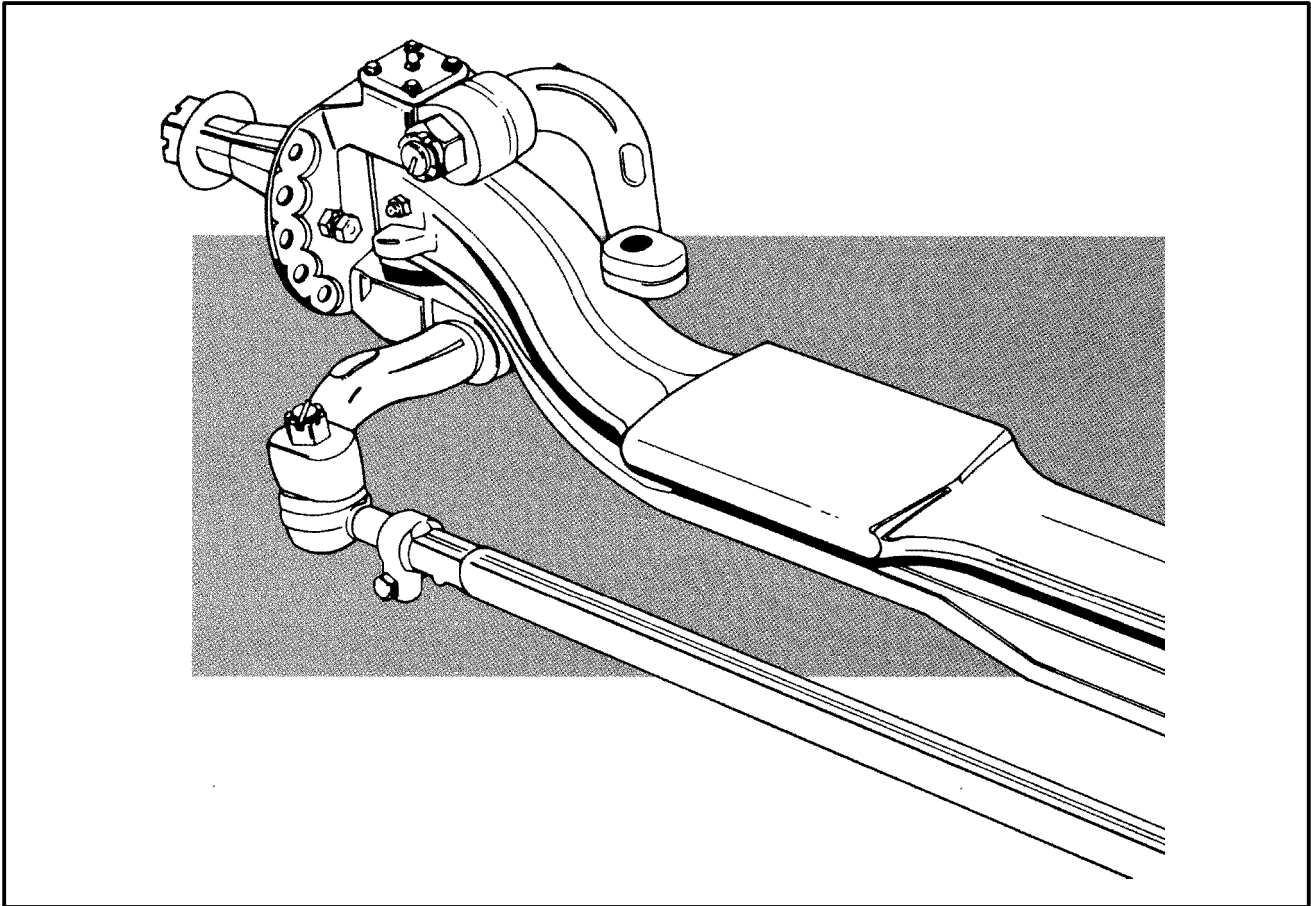
2. Using an auxiliary lifting device, align boom rest assembly to the carrier frame (7).

**Note: The boom rest assembly weighs approximately 350 lb (159kg).**

3. Install the pins (9) and cotter pins (10) which secure the cross tube assembly (8) to the carrier frame (7). Bend cotter pins (10) only slightly.
4. Install the engine housing (1). See SM Keysheet Area 01- 071 for the correct procedure.
5. Install the locator caps (2) on the pivot assembly (6) and secure with the capscrews, washers, and locknuts (5).
6. Complete the installation by testing the boom rest for proper alignment. The boom should rest evenly on the pads. Adjust as required.

**SM01 - 001 - 006.00** 0813

# Service Manual



## Front Steer Axle, Recondition

This procedure covers the recondition of the front steer axle. For removal and installation procedures, see SM Keysheet Area 1-4.

The following pages are taken directly from Dana® Spicer® Service Manual AXSM-0037 dated March 1992. Axle models 12F3/F4, 13F3/F5, 18F3, 20F4, 22T2/T5, and 24T2/T5 are covered by this information. Pay particular attention to Section 1 of this procedure to correctly identify the specific axle being serviced. Proper identification of the axle is crucial to obtain the correct information to follow from the charted specifications included in this procedure.

Based on the specific application of this axle, Link-Belt literature will supersede any discrepancies in operation, lubrication, maintenance, or service, implied by the axle manufacturer. Any concerns regarding such inconsistencies should be reviewed with a Link-Belt distributor.

If parts are hard to disassemble and assemble, do not use a hammer unless it has a soft face, do not force parts together, they must be free to turn and not bind.

It is a good practice when disassembling complex components to lay the parts out in the order that they were disassembled. Keeping the parts in this order during disassembly, cleaning, and inspection will aid in the assembly process.



### WARNING

**Solvents and cleaning solutions can be hazardous. Serious personal injury may result from misuse of these products. Read and follow all the manufacturer's recommendations concerning solvents and cleaning solutions.**

Thoroughly clean the exterior surface of the axle before beginning the disassembly process.

The description, testing procedures, and specifications contained in this service publication were current at the time of printing.

Eaton Corporation reserves the right to discontinue or modify its models and/or procedures and to change specifications at any time without notice and without incurring obligation.

The recommendations of the vehicle manufacturer should be considered as the primary source of service

information regarding this Eaton product. This manual is intended to be used as a supplement to such information.

Any reference to brand names in this publication is made simply as an example of the types of tools and materials recommended for use and, as such, should not be considered as an endorsement. Equivalents, if available, may be used.

## IMPORTANT NOTICE

The symbol shown below is used throughout this publication to call your attention to areas in which carelessness or failure to follow specific procedures may result in personal injury and/or component malfunction or damage.

Anyone departing from the instructions contained in this publication through procedures used or choice of tools, materials, and parts may jeopardize his personal safety and/or the safety of the vehicle user.



**WARNINGS:** Used in areas where failure to follow listed procedures creates a **high probability of personal injury** to the **servicing technician**.

**CAUTIONS:** Used in areas where failure to follow listed procedures **may cause personal injury due to component damage or subsequent malfunction**.

## SPECIAL NOTICE ON FASTENER TORQUE



THIS SYMBOL IS USED THROUGHOUT THIS MANUAL TO CALL YOUR ATTENTION TO FASTENERS REQUIRING A SPECIAL INSTALLATION TORQUE.

## Section 1: General Information

Axle Identification  
Parts Nomenclature

## Section 2: Periodic Service

### Inspection

- Recommendations and Intervals
- Knuckle Vertical Play Inspection
- Knuckle Pin Fit Inspection
- Tie Rod Inspection
- Wheel Bearing Inspection
- Wheel Alignment Inspection
- Camber

### Inspection (Cont'd)

- Caster
- Toe Setting

### Maintenance / Adjustment

- Knuckle Vertical Play Adjustment
- Wheel Bearing Adjustment
- Steering Stop Adjustment

## Section 3: Axle Overhaul

### Removal / Disassembly

- Steering Knuckle Disassembly
- Knuckle Pin Removal

### Cleaning

### Component Repair/Replacement

- Tie Rod End Replacement
- Ackermann or Steering Arm Replacement
- Knuckle Pin Bushing and Seal Replacement

### Installation / Assembly

- Steering Knuckle Assembly
- Final Assembly
- Fastener Torque Specifications

**PARTS IDENTIFICATION/NOMENCLATURE****General Information**

The service procedures and specifications in this publication cover six basic Eaton Steer Axles. Their design is common with major differences in the beam type and capacity. Refer to chart below.

Basic instructions are the same unless specified otherwise.

For Eaton Brake service information, refer to EB–31 Service Manual for EB and ES–150 Brakes or EB–32 Service Manual for EB and ES–165, EB–180 Brakes.

**Eaton® Steer Axle Models and Specifications**

	EFA–12F3/F4	EFA–13F3/F5	EFA–18F3	EFA–20F4	EFA–22T2/T5	EFA–24T2/T5
Nominal Load Ratings	12,000–13,200 lb (5 433–5 987kg)	12,000–13,200 lb (5 433–5 987kg)	18,000 lb (8 163kg)	16,000–20,000 lb (7 257–9 072kg)	20,000 lb (9 070kg)	22,000 lb (9 977kg)
Beam Type	Forged Steel I–Beam	Forged Steel I–Beam	Forged Steel I–Beam	Forged Steel I–Beam	Tubular Beam	Tubular Beam
Beam Drop	F3 –3.50" (89mm) F4 –3.50" (89mm)	F3 –3.50" (89mm) F5 –5.00" (127mm)	3.50" (89mm)	3.50" (89mm)	T2 –1.50" (38mm) T5 –5.12" (130mm)	T2 –1.50" (38mm) T5 –5.12" (130mm)
Eaton Standard Brake Model & Size	EB–150* (15" x 4") (381 x 102mm)	EB–150 (15" x 4") (381 x 102mm)	EB–165 (16.5" x 6") (419 x 152mm)	EB–165 (16.5" x 6") (419 x 152mm)	EB–165 (16.5" x 6") (419 x 152mm)	EB–165 (16.5" x 6") (419 x 152mm)

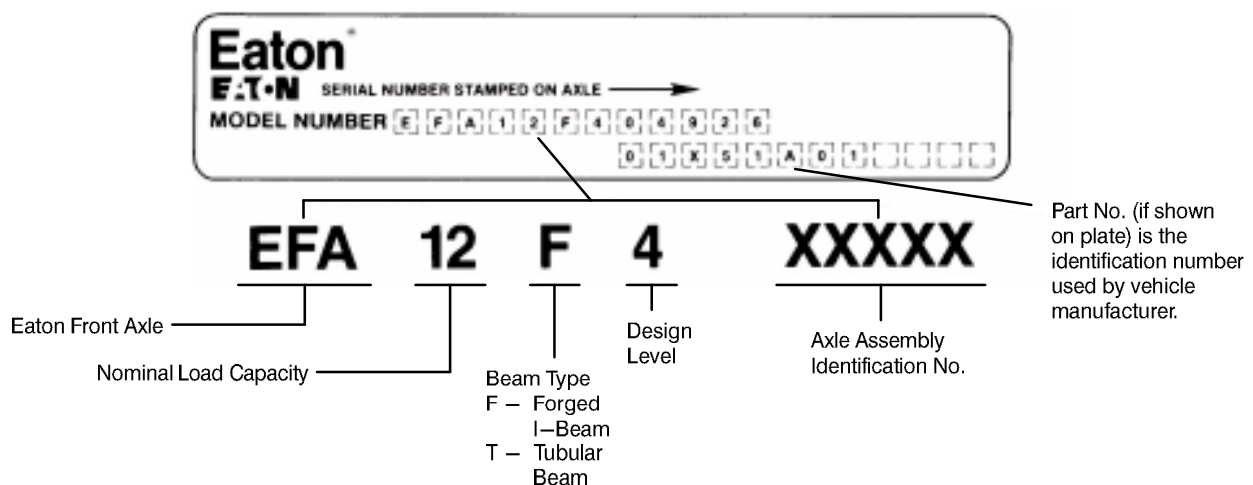
\* Note EB–165 Brake is optional on EFA–12F4 Steer Axle.

Wheel Alignment: For specifications, refer to vehicle manufacturer's instructions.

**Axle Identification**

The *Model and Part Numbers* are stamped on a plate that is attached to the front of the axle beam. The *Serial Number* is stamped in the beam. The *Serial Number* is used by Eaton for control purposes. The *Model*

*Number* describes the axle specifications. If difficulty is experienced in parts replacement identification, furnish Model No. and Serial No. only.

**Steer Axle Identification Plate**

## General Information

## PARTS IDENTIFICATION/NOMENCLATURE

## Section 1

Eaton EFA-12F3/F4, 13F3/F5 Steer Axles

