

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

SM00- 000- 000.00 Service Manual General Usage & Instructions

AREA 01 RUBBER TIRE LOWER

SM01- 001- 006.00 Boom Rest, R & I
SM01- 001- 008.00 Boom Rest Extension, 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
SM01- 003- 014.00 Adjusting The Brakes
SM01- 003- 019.00 Automatic Slack Adjusters
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- 036.00 Front Wheel Alignment & Steer Linkage Adjustment
SM01- 010- 025.00 Power Steering Pump, Recondition (CAT C13 Engine)
SM01- 010- 039.00 Power Steering Pump w/Priority Valve, Recondition (Cummins QSX Tier 3 Engine)
SM01- 010- 042.00 Power Steering Pump, R & I (CAT C13 Engine)
SM01- 010- 043.00 Power Steering Pump, R & I (Cummins QSX Tier 3 Engine)
SM01- 016- 002.00 Heater Core & A/C Coil, R & I
SM01- 018- 056.00 Transmission And Clutch, R & I (CAT C13 Engine)
SM01- 018- 057.00 Transmission, Recondition
SM01- 018- 062.00 Transmission And Clutch, R & I (Cummins QSX Tier 3 Engine)
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 (Kessler)
SM01- 024- 015.00 Rear Axles, Recondition (Dana)
SM01- 024- 016.00 Rear Axles, Recondition (XP only)
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
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
SM01- 027- 092.00 Rear Dual Air Brake Chamber, R & I
SM01- 027- 106.00 Caging Dual Air Brake Chambers
SM01- 027- 117.00 Dual Air Brake Chamber, Recondition
SM01- 027- 146.00 Carrier Air System Components, R & I (G1)
SM01- 027- 150.00 Air System Components, R & I (Rear Lift Axle)
SM01- 027- 158.00 Carrier Air System Components, R & I (G2)
SM01- 028- 002.00 Rear Wheel Hub & Brake Drum, R & I
SM01- 029- 027.00 Suspension Lift Cylinder, R & I
SM01- 029- 028.00 Suspension Lift Cylinder, Recondition
SM01- 029- 030.00 Rear Axles & Air Suspension, R & I
SM01- 029- 031.00 Axle Lift Manifold Illustrated

SM01 - 029- 039.00	Rear Axles & 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- 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- 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 - 050- 018.00	Hydraulic Oil Cooler Assembly, R & I (G2)
SM01 - 066- 024.00	Battery, R & I
SM01 - 069- 009.00	Tires & Rims, 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 (Cummins QSX Tier 3 Engine)
SM01 - 075- 051.00	Alternator, R & I (Cummins QSX Tier 3 Engine)
SM01 - 075- 052.00	Radiator, Charged Air, & Transmission Oil Cooler, R & I (QSX Tier 3 Engine)
SM01 - 076- 050.00	Collector Ring, R & I
SM01 - 076- 059.00	Collector Ring, Recondition (32 Ring) - G1
SM01 - 076- 090.00	Collector Ring, Recondition (35 Rings) - G2
SM01 - 077- 008.00	Starter, R & I (CAT C13 Engine)
SM01 - 077- 021.00	Radiator, Charged Air & Transmission Oil Cooler, R & I (CAT C13 Engine)
SM01 - 077- 033.00	Alternator, R & I (CAT C13 Engine)
SM01 - 079- 064.00	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)

AREA 03**UPPER REVOLVING FRAME**

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

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

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

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- 024.00 Upper Cab Heater Water Swivel, R & I And Recondition- Rotating Joint (Gen 1)
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 (Gen 2)
SM06- 047- 000.00 Electrical System Wire Identification Code

AREA 07 HYDRAULIC POWER SUPPLY

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 (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- 018.00 Upper Hydraulic Components, R & I- Single Winch Plumbing
SM07- 004- 019.00 Upper Hydraulic Components, R & I- Two Winch Plumbing
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- 085.00 Upper Hydraulic Components, R & I- Upper Frame (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 & I (G1 with Solenoid Relief)
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- 197.00	Boom Hoist/Telescope Control Valve, R & I (G2 w/o Solenoid Relief)
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

SM09- 001- 002.00	Tubular Boom, Fly, & Jib Repair
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AREA 17 HYDRAULIC CRANE ATTACHMENT

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
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 (G1)
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
SM17- 002- 118.00	Pin/Latch Valve, Recondition - R3 Type Boom (G2)
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

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- 021.00	Air Conditioning Compressor, R & I (CAT C13 Engine)
SM18- 018- 024.00	Air Conditioning Compressor, R & I (Cummins QSX Tier 3 Carrier Engine)

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.

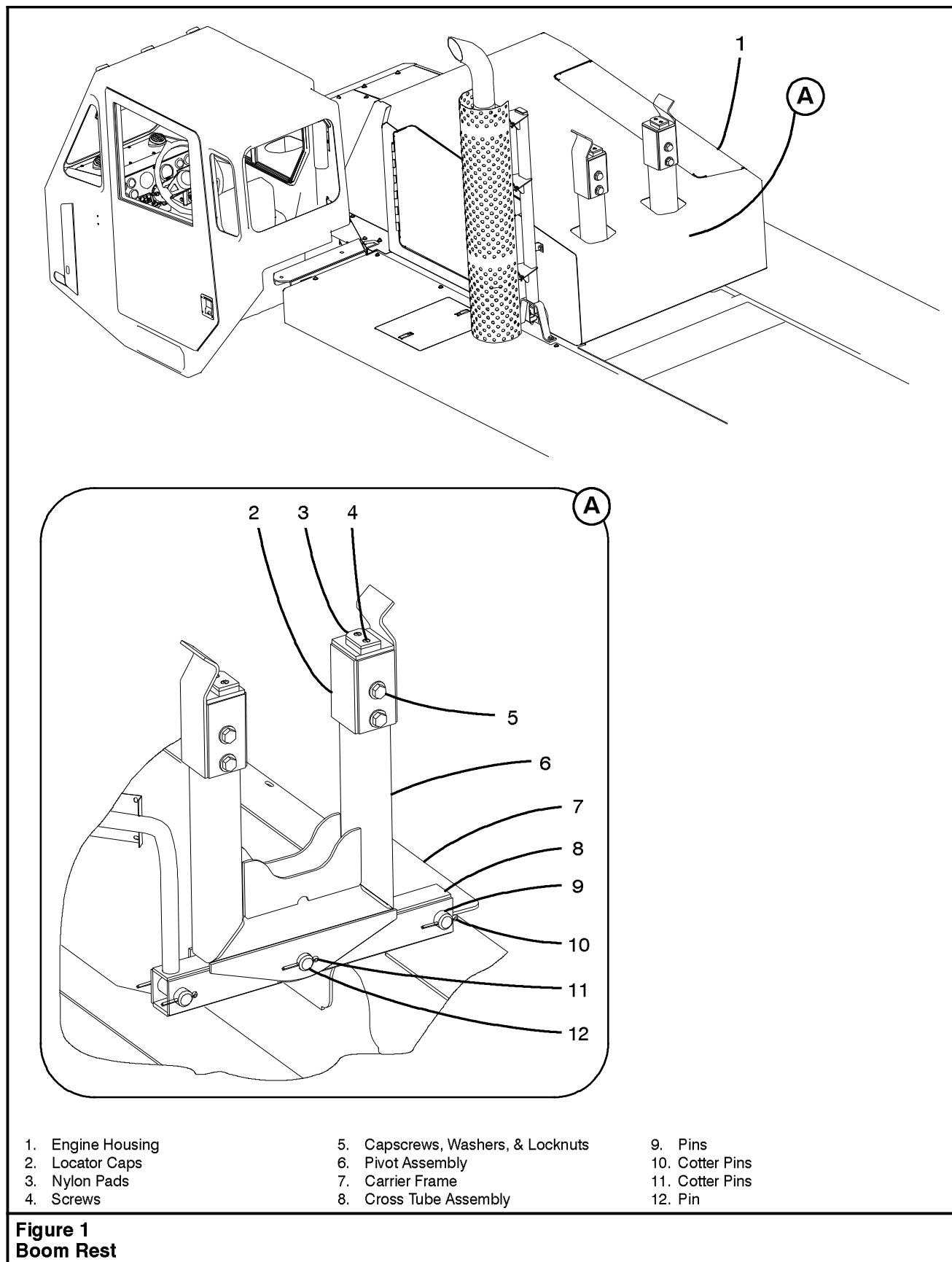
Cleaning And Inspection



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[®], Permatex[®], 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[®] 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).

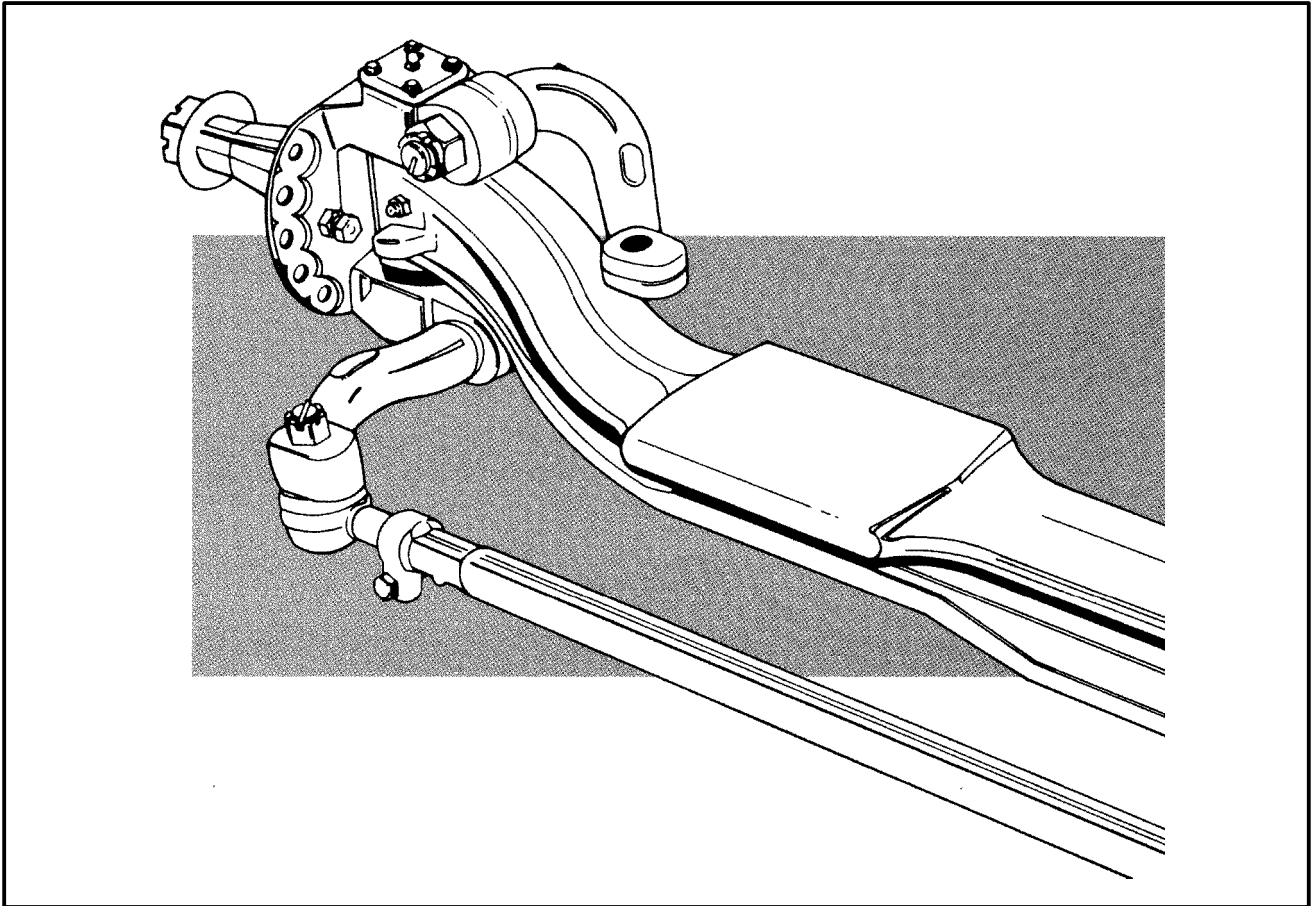
2. Using an auxiliary lifting device, align boom rest assembly to the carrier frame (7).

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)

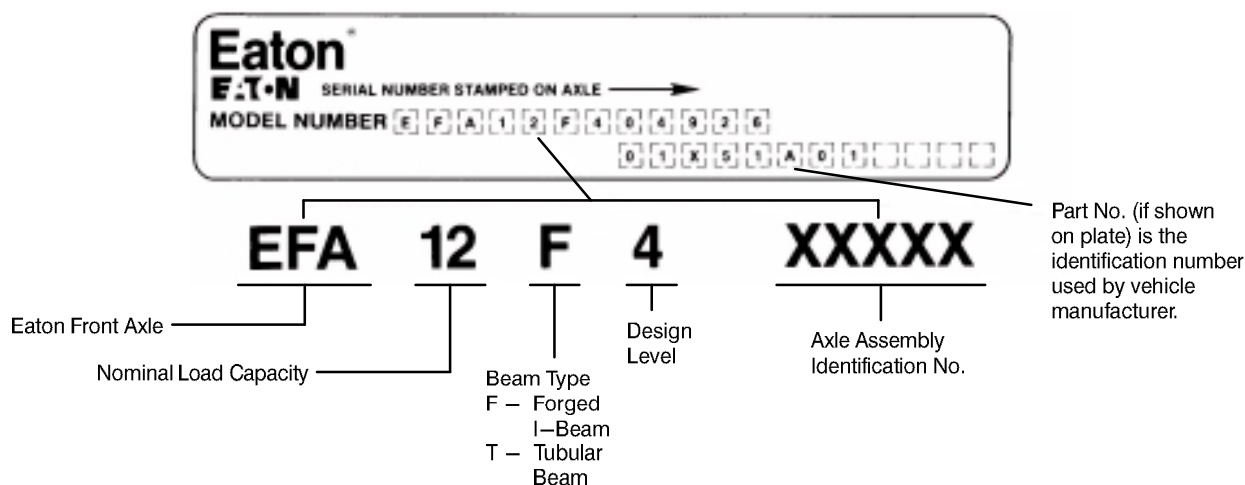
* Note EB–165 Brake is optional on EFA–12F4 Steer Axle.

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

