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<td>TA300-250</td>
<td>I&amp;M Manual</td>
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TRAILER AIR SUSPENSION

TA-250T SERIES
TOP MOUNT

TA-250U SERIES
UNDER SLUNG

TA-250 SERIES

- 5 Year Warranty
- Maintenance Free with Huck Fasteners
- 25,000 lb. Capacity

LEADERSHIP IN SUSPENSION TECHNOLOGY
TA-250 Series
TRAILER AIR SUSPENSION

TA-250T
TOP MOUNT

TA-250U
UNDER SLUNG

• Axle Travel: 8 in.
• Ride Heights: 14 thru 19 in.

• Axle Travel: 8.5 in.
• Ride Heights: 5.5 thru 14 in.

Capacity: 25,000 lbs. • Factory Pre-Assembled • Compact in Design
HUCK Fasteners • Flush Mount Shocks • Extended Life Bushing • U-bolt Kit
Optional: Restraint Strap Kit, Eccentric Alignment (Requires Maintenance),
Rear Mount Shocks, Lift Kit

Watson Suspension Systems
972.547.6020  800.445.0736
FAX: 972.542.0097
2060 COUCH DRIVE  McKINNEY, TEXAS 75069
www.WatsonSuspensions.com
NOTE: PARENTHESIS () DENOTES REFERENCE DIMENSION

37.50
ARM CL
SEE AXLE WELDMENT

BAG CL
SEE AXLE WELDMENT

WELDMENT
SHOCK
SEE AXLE CL

NOTE 1
NOTE 1
NOTE 6
NOTE 1

NOTE: SHOWN FOR REFERENCE PURPOSES ONLY, PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF INSTALLER.
1. CAPACITY 25,000#. REFER TO INSTRUCTION MANUAL FOR SEAT TO AXLE WELDING INSTRUCTIONS.
2. ECCENTRIC ALIGNMENT SHOWN. FULL UP POSITION WITH BUMPER DEFLECTION.
3. DUE TO LATERAL MOVEMENT, 2.00" CLEARANCE IS REQUIRED BETWEEN INSIDE OF TIRE AND TRAILER FRAME.
4. VARY ACCORDINGLY FOR OTHER TRACKS.
5. COLLAR MUST BE WELDED AFTER ALIGNMENT. (NOT FOR ECCENTRIC COLLARS!)
6. WELD COLLARS MUST BE WELDED AFTER ALIGNMENT. (NOT FOR ECCENTRIC COLLARS!)
7. .75" MIN CLEARANCE MUST BE MAINTAINED AROUND AIR SPRING AT MAX. DIAMETER.
8. 1.0" MIN. CLEARANCE REQUIRED BETWEEN TOP OF TIRE AND BOTTOM OF TRAILER STRUCTURE WHEN AXLE IS IN FULL UP POSITION WITH HUMMER DEFLECTION.
9. DUE TO LATERAL MOVEMENT, 2.00" CLEARANCE REQUIRED BETWEEN INSIDE OF TIRE AND TRAILER FRAME.

ITEM NO. QTY. PART NUMBER DESCRIPTION
1 1 CHART HANGER ASSEMBLY L.H.
2 1 CHART HANGER ASSEMBLY R.H.
3 1 CHART ARM ASSEMBLY UNDERSLUNG L.H.
4 1 CHART ARM ASSEMBLY UNDERSLUNG R.H.
5 1 TA Collar Pack
6 1 CHART UPPER BAG PLATE
7 1 CHART UPPER BAG PLATE
8 2 CHART SHOCK ABSORBER
9 1 16002 VERTICAL SHOCK HARDWARE PACK
10 2 A50061-1G K AIR SPRING
11 1 16104 U-BOLT KIT WITH SPACER
12 1 CHART CRO SURFACE WELD-ON
13 1 92259 LEVEL ROD C CONNECTION BRACKET
14 2 77993-112 MULTIFUNCTION BUSHING (REF ONLY)

NOTE: PARENTHESES () DENOTES REFERENCE DIMENSION

CHANNEL HANGER OPTION TA250/300

BOLT-ON HANGER OPTION TA250/300

ITEM
NO.
1
2
3
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10
11
12
13
14

QTY.
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1
1
1
1
2
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2
1
1
1
2

PART NUMBER
CHART HANGER ASSEMBLY L.H.
CHART HANGER ASSEMBLY R.H.
CHART ARM ASSEMBLY UNDERSLUNG L.H.
CHART ARM ASSEMBLY UNDERSLUNG R.H.
TA Collar Pack
CHART UPPER BAG PLATE
CHART UPPER BAG PLATE
CHART SHOCK ABSORBER
16002 VERTICAL SHOCK HARDWARE PACK
A50061-1G K AIR SPRING
16104 U-BOLT KIT WITH SPACER
CHART CRO SURFACE WELD-ON
92259 LEVEL ROD C CONNECTION BRACKET
77993-112 MULTIFUNCTION BUSHING (REF ONLY)

NOTE: PARENTHESES () DENOTES REFERENCE DIMENSION
LEADERSHIP IN SUSPENSION TECHNOLOGY

TRAILER AIR SUSPENSION

TA-252 SERIES

TA-302 SERIES

TA-252/302 SERIES

- 5 Year Warranty
- Maintenance Free with Huck Fasteners
- 25,000 and 30,000 lb. Capacities

LEADERSHIP IN SUSPENSION TECHNOLOGY
TA-252/302 SERIES
TRAILER AIR SUSPENSION

TA-252
with AL-85 Lift Kit

TA-302

DESIGNED WITH ADDITIONAL AXLE TRAVEL FOR LIFTING

Axle Travel: 9 in.
Ride Heights: 15 thru 19 in.
Capacity 25,000 lbs.

Axle Travel: 9 in.
Ride Heights: 15 thru 19 in.
Capacity 30,000 lbs.

Factory Pre-Assembled • Compact in Design • HUCK Fasteners
Flush Mount Shocks • Extended Life Bushing • U-bolt Kit
Optional: Restraint Strap Kit, Eccentric Alignment (Requires Maintenance), Lift Kit

Watson Suspension Systems
972.547.6020   800.445.0736
FAX: 972.542.0097
2060 COUCH DRIVE  McKINNEY, TEXAS 75069
www.WatsonSuspensions.com
**NOTE 1:** CAPACITY 25,000#K

**NOTE 2:** REFER TO INSTRUCTION MANUAL FOR SEAT WELDING INSTRUCTIONS

**NOTE 3:** HEIGHT AT BUMPER CONTACT. DIMENSION WILL DECREASE BY .50 AT BUMPER DEFLECTION.

**NOTE 4:** ECCENTRIC ALIGNMENT WITH SPIN-OFF NUT AVAILABLE.

**NOTE 5:** SHOWN FOR REFERENCE PURPOSES ONLY. PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF INSTALLER.

**NOTE 6:** MAX ARM CENTERS SHOWN FOR 71.50 TRACK AXLE WITH DUAL 11R 22.5 TIRES. FOR OTHER AXLE TRACKS AND/OR TIRE, VARY MAX CENTER ACCORDINGLY.

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**ITEM NO.** | **QTY** | **PART NO.** | **DESCRIPTION**
---|---|---|---
1 | 1 | 930124-10 | ARM ASSEMBLY
2 | 1 | 930124-20 | ARM ASSEMBLY R.H.
3 | 1 | CHART | HANGER ASSEMBLY L.H.
4 | 1 | CHART | HANGER ASSEMBLY R.H.
5 | 1 | 950172-11 | UPPER BAG ASSEMBLY L.H.
6 | 1 | 950172-21 | UPPER BAG ASSEMBLY R.H.
7 | 2 | AS-0061-1G | AIR SPRING 3R12-534
8 | 2 | 12524 | CROSSBRACE WELD-ON 41" LENGTH
9 | 2 | 17297 | SHOCK ABSORBER
10 | 2 | 17182-01 | PIVOT BUSHING - W/DELRIN LINER
11 | 1 | 16002 | VERTICAL SHOCK HARDWARE PACK
12 | 4 | 17181 | J-BOLT SPACER C ASHING
13 | 4 | 17184 | J-BOLT .875 X 8.00
14 | 8 | 17010 | WASHER .875 HARDENED
15 | 8 | 17364 | HIGHNUT .875-14
16 | 4 | 17183 | HANG. SPACER WASHER (NYLON)
17 | 4 | CHART | COLLAR
18 | 2 | 14165 (CHART) | HUCK PIN/CAPSCREW 1.12-12X10.50
19 | 2 | 11541 (CHART) | HUCK COLLAR/Lock NUT 1.12
20 | 2 | 90026 | 75 LO CK WASHER
21 | 2 | 90025 | 75 HEX HEAD NUT
22 | 4 | 90042 | 50 LO CK WASHER
23 | 4 | 90174 | CAPSCREW 50-13 X 1.25
24 | 1 | 90259 | LEVEL VALVE ROD CONNECTOR

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**MODEL NO.** | **APPLICATION** | **ITEM #9** | **ITEM #3** | **ITEM #4** | **ITEM #17** | **ITEM #18** | **ITEM #19**
---|---|---|---|---|---|---|---
TA-252T07-15WSF | STANDARD | 17297 | 920245-1WS5 | 920245-2WS5 | 20203 | 14165 | 11541
TA-252T07H-15WSF | HD SHOCK | 17297 | 920245-1WS5 | 920245-2WS5 | 20203 | 14165 | 11541
TA-252T07-15WEF | STANDARD | 17297 | 920245-1WE5 | 920245-2WE5 | 17234 | 17269 | 17267
TA-252T07H-15WEF | HD SHOCK | 17297 | 920245-1WE5 | 920245-2WE5 | 17234 | 17269 | 17267

---

**DESCRIPTION:**

**MAIN ASSEMBLY TA 252**

**WEIGHT:**

**DIMENSIONS:**

**SCALE:** 1:18

**NOTE 4:** ADJUSTABLE ALIGNMENT COLLARS

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**SECTION A-A**

**SCALE 1:8**

**STANDARD WELD ON COLLAR**

**SECTION A-A**

**ADJUSTABLE ALIGNMENT COLLARS**

---

**NOTE 2:** CAPACITY 25,000#K

**NOTE 3:** REFER TO INSTRUCTION MANUAL FOR SEAT WELDING INSTRUCTIONS

**NOTE 4:** HEIGHT AT BUMPER CONTACT. DIMENSION WILL DECREASE BY .50 AT BUMPER DEFLECTION.

**NOTE 5:** ECCENTRIC ALIGNMENT WITH SPIN-OFF NUT AVAILABLE.

**NOTE 6:** SHOWN FOR REFERENCE PURPOSES ONLY. PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF INSTALLER.

**NOTE 7:** MAX ARM CENTERS SHOWN FOR 71.50 TRACK AXLE WITH DUAL 11R 22.5 TIRES. FOR OTHER AXLE TRACKS AND/OR TIRE, VARY MAX CENTER ACCORDINGLY.
NOTE 1: SHOWN FOR REFERENCE PURPOSES ONLY, PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF INSTALLER.

1. SHOWN FOR REFERENCE PURPOSES ONLY, PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF INSTALLER.

2. CAPACITY 25,000#.

3. REFER TO INSTRUCTION MANUAL FOR SEAT TO AXLE WELDING INSTRUCTIONS.

4. AND BOTTOM OF TRAILER STRUCTURE WHEN AXLE IS IN REQUIRED BETWEEN INSIDE OF TIRE AND TRAILER FRAME.

5. DIMENSIONS SHOWN FOR 71.50" TRACK AXLE, 35" ARM, AND 9" CHAMBER CENTERS.

6. CLEARANCE OF 2.00" NECESSARY BETWEEN FRAME AND INSIDE OF TIRE. VARY ACCORDINGLY FOR OTHER TRACKS.

7. WELD COLLARS MUST BE WELDED AFTER ALIGNMENT. (NOT FOR ECCENTRIC COLLARS!)

8. .75" MIN CLEARANCE MUST BE MAINTAINED AROUND AIR CLEARANCE SPECS.

9. .75" MIN CLEARANCE REQUIRED BETWEEN TOP OF TIRE SPRING AT ITS MAX. DIAMETER.

10. DUE TO LATERAL MOVEMENT, 2.00" CLEARANCE IS DUE TO LATERAL MOVEMENT, 2.00" CLEARANCE IS REQUIRED BETWEEN INSIDE OF TIRE AND TRAILER FRAME.

NOTE 2: COLLAR TYPE CODES - A PAGE 2

COLLAR FACTORY INSTALLED ONLY.

COLLARS MUST BE WELDED AFTER ALIGNMENT TO HANDLES. NUT MUST BE PROPERLY TORQUED TO SPECS. SEE MANUAL.

COLLAR TYPE CODES ARE NOT TO BE WELDED TO HANDLES. NUT MUST BE PROPERLY TORQUED TO SPECS. SEE MANUAL.
YOKE MOUNT TRAILER AIR SUSPENSION

TY-250 SERIES  TY-300 SERIES

TY-250/300 SERIES

- 5 Year Warranty
- Maintenance Free with Huck Fasteners
- 25,000 and 30,000 lb. Capacities

LEADERSHIP IN SUSPENSION TECHNOLOGY
TY-250/300 SERIES
TRAILER AIR SUSPENSION

TY-250
TY-300
YOKE MOUNT DESIGN FOR DROP DECK TRAILERS

- Axle Travel: 8.5 in.
- Ride Heights: 6.5 thru 9 in.
- Capacity: 25,000 lbs.

- Axle Travel: 9 in.
- Ride Heights: 6.5 thru 9 in.
- Capacity: 30,000 lbs.

Factory Pre-Assembled • Compact in Design
Extended Life Bushing • U-bolt Kit

Watson Suspension Systems
972.547.6020  800.445.0736
FAX: 972.542.0097
2060 COUCH DRIVE  McKINNEY, TEXAS 75069
www.WatsonSuspensions.com
1. CENTER ITEM 3 IN TRAILER FRAME INSURE THAT SLEEVE IS PERPENDICULAR TO FRAME

II. CENTER ITEM 4 (WITH BUSHING) INTO ITEM 3 WITH BUSHING LOCATOR MARK IN HORIZONTAL POSITION. APPLY (4) 25" WELDS (SINGLE PASS) 1.00" LONG ON THE OUTSIDE OF ITEM 4. ALTERNATE ENDS TO ALLOW COOLING BETWEEN WELDS.

SEE NOTE I

SEE NOTE II

SEE NOTE III

SEE NOTE IV

SEE NOTE V

NOTE 3

49.00 MIN L.S. TIMES

MINIMUM .25 FILLET.

NOTES:
1. EACH SHOCK ABSORBER MAY INITIATE AN 8000 LB. FORCE IN THE DOWN DIRECTION
2. CUSTOMER FURNISHED CROSSMEMBERS
3. 35.00 SUSPENSION CENTERS FOR 71.50 TRACK AXLE AND 49.00 MINIMUM I.S. TIRES.
4. IMPORTANT - WELD 360° (4) COLLARS AFTER ALIGNMENT. MINIMUM .25 FILLET.
TRAILER AIR SUSPENSION

TA-300T SERIES
TOP MOUNT

TA-300U SERIES
UNDER SLUNG

TA-300 SERIES

- 5 Year Warranty
- Maintenance Free with Huck Fasteners
- 30,000 lb. Capacity

LEADERSHIP IN SUSPENSION TECHNOLOGY
TA-300 SERIES
TRAILER AIR SUSPENSION

TA-300T
TOP MOUNT

- Axle Travel: 8 in.
- Ride Heights: 15 thru 24 in.

TA-300U
UNDER SLUNG

- Axle Travel: 9 in.
- Ride Heights: 6.5 thru 17 in.

Capacity: 30,000 lbs. • Factory Pre-Assembled
Compact in Design • HUCK Fasteners • Flush Mount Shocks
Extended Life Bushing • U-bolt Kit
Optional: Restraint Strap Kit, Eccentric Alignment *(Requires Maintenance)*,
Rear Mount Shocks, Lift Kit

Watson Suspension Systems
972.547.6020  800.445.0736
FAX: 972.542.0097
2060 COUCH DRIVE  McKINNEY, TEXAS 75069
www.WatsonSuspensions.com
NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION

NOTE 1

1. SHOWN FOR REFERENCE PURPOSES ONLY, PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREAS IS THE RESPONSIBILITY OF INSTALLER.
2. CAPACITY 25,000#.
3. REFER TO INSTRUCTION MANUAL FOR SEAT TO AXLE WELDING INSTRUCTIONS.
4. ECCENTRIC ALIGNMENT SHOWN.
5. DIMENSIONS SHOWN FOR 71.50" TRACK AXLE, 35" ARM, AND 9" CHAMBER CENTERS.
6. VARY ACCORDINGLY FOR OTHER TRACKS.
7. CLEARANCE OF 2.00" NECESSARY BETWEEN FRAME AND INSIDE OF TIRE.
8. WELD COLLARS MUST BE WELDED AFTER ALIGNMENT. (NOT FOR ECCENTRIC COLLARS!)
9. AIRSPRING CAN BE ROTATED @ 45 DEGREE INCREMENTS TO FIT A VARIETY OF APPLICATIONS.

ITEM NO. QTY PART NUMBER DESCRIPTION

1 1 C HART HANG ER ASSY, TA-TI LH
2 1 C HART HANG ER ASSY, TA-TI RH
3 1 930202-10 UNDERSLUNG ARM ASSEMBLY LH
4 1 930202-20 UNDERSLUNG ARM ASSEMBLY RH
5 1 C HART Ti COLLAR PACK
6 1 C HART UPPER BAG PLATE
7 1 C HART UPPER BAG PLATE
8 2 C HART SHOCK ABSORBER
9 1 16002 VERTICAL SHOCK HARDWARE PACK
10 2 C HART BAG CONFIGURATION ASSEMBLY
11 1 106798-01 U-BOLT KIT
12 1 2524 C-RUB SURFAC.E WELD-ON 41" LENG TH
13 1 30259 LEVEL RD C ONN EC T ION BRACKET
14 2 17993-112 MULTIFUNCTION BUSHING (REF ONLY)

NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION
NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION

ITEM NO. QTY PART NUMBER DESCRIPTION
1 1 CHART HANGER ASSY. L.H.
2 1 CHART HANGER ASSY. R.H.
3 1 CHART TA300 ARM ASSEMBLY L.H.
4 1 CHART TA300 ARM ASSEMBLY R.H.
5 1 CHART TI/TA COLLAR PACK
6 2 CHART UPPER BAG PLATE ASSEMBLY
7 2 CHART SHOCK ABSORBER
8 1 16002 VERTICAL SHOCK HARDWARE PACK
9 2 CHART BAG CONFIGURATION ASSEMBLY
10 1 16106 U-BOLT KIT
11 1 CHART C RO SUBRACE WELD-ON
12 1 30259 LEVEL ROD CONNECTION BRACKET
13 2 17993-112 MULTIFUNCTION BUSHING (REF ONLY)

NOTE:
1. SHOWN FOR REFERENCE PURPOSES ONLY, PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF INSTALLER.
2. SUSPENSION CAPACITY 30,000#.
3. REFER TO INSTRUCTION MANUAL FOR SEAT TO AXLE WELDING INSTRUCTIONS.
4. ECCENTRIC ALIGNMENT SHOWN.
5. DIMENSIONS SHOWN FOR 71.50" TRACK AXLE, 35" ARM, AND 9" CHAMBER CENTERS.
6. ECCENTRIC ALIGNMENT SHOWN.
7. VARIOUS CLEARANCE OF 2.00" NECESSARY BETWEEN FRAME AND INSIDE OF TIRE.
8. CLEARANCE OF MINIMUM 1.00" NECESSARY BETWEEN TOP OF TIRE & TRAILER COMPONENTS.

COLLAR TYPE CODES-A PAGE 2
COLLARS MUST BE WELDED AFTER ALIGNMENT - COLLAR FACTORY INSTALLED ONLY.
ECCENTRIC COLLARS ARE NOT TO BE WELDED TO HANGER. NUT MUST BE PROPERLY TORKED TO SPECS. SEE MANUAL.

DEPARTS

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<td>± 1/16</td>
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NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION
** Bumper contact, suspension will travel up another .75" during full bumper compression
STA-250/300 Series

- Top Mount or Underslung
- Includes Reverse Lock-Out
- 5 Year Warranty
- Maintenance Free with Huck Fasteners
- 25,000 and 30,000 lb. Capacity

LEADERSHIP IN SUSPENSION TECHNOLOGY
STA-250/300 SERIES
STEERABLE PRIMARY TRAILER AIR RIDE

STA-250U/STA-300U
UNDERSLUNG

STA-250T/STA-300T
TOP MOUNT

- Axle Travel: 8 in.
- Capacity: 25,000 and 30,000 lbs.
- Ride Heights: 7 thru 24 in.
- Maintenance Free HUCK Fasteners

Optional:
- Eccentric Alignment (Requires Maintenance)
- Lift Kit

- Factory Pre-Assembled
- Compact Design
- Flush Mount Shocks
- Extended Life Bushings

Watson Suspension Systems
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FAX: 972.542.0097
2060 COUCH DRIVE  McKinney, Texas 75069
www.WatsonSuspensions.com
NOTE: ( ) DENOTES REFERENCE DIMENSION
LIGHT WEIGHT TRAILER-AIR/AIR-LIFT

TL-9100

- 3 Year Warranty
- 19 - 21 in. Ride Height
- 13,200 lb. Capacity

LEADERSHIP IN SUSPENSION TECHNOLOGY
TL-9100 SERIES
LIGHT WEIGHT TRAILER-AIR/AIR-LIFT

RIDE HEIGHT: 19 - 21 IN.

- Axle Travel: 12.0 in.
- Air Ride-Air Lift
- Capacity: 13,200 lbs.
- Hardware HUCK Fasteners or Optional Eccentric Alignment
- Pre-Assembled - From Factory
- Compact in Design
- Positive Axle Stop
- Two Pin Axle Connection - Rubber Bushed

Watson Suspension Systems
972.547.6020  800.445.0736
FAX: 972.542.0097
725 E. UNIVERSITY DR.  McKinney, Texas 75069
www.WatsonSuspensions.com
NOTE:
1. CAPACITY: 14,000# FOR 19"-20" RUN HEIGHT
13,200# FOR 21" RUN HEIGHT
2. REFER TO INSTALLATION MANUAL FOR SEAT TO AXLE WELDING INSTRUCTIONS.
3. ECCENTRIC ALIGNMENT WITH SPIN-OFF NUT AVAILABLE.
4. SHOWN FOR REFERENCE PURPOSES ONLY. PROPER FRAME DESIGN AT SUSPENSION ATTACHMENT AREA IS THE RESPONSIBILITY OF THE INSTALLER.
5. MAX ARM/HANGER CENTERS SHOWN FOR 71.50" TRACK AXLE. ADJUST ACCORDING TO AXLE WIDTH.
6. SEE "TA" INSTALLATION MANUAL FOR INFORMATION REGARDING ASSEMBLY, WELDING PROCEDURE, ALIGNMENT AND MAINTENANCE PROCEDURES.
7. REMOVE LOWER BAG GIRDLE HOOPS BEFORE INSTALLING AND PACKAGING.
TL-2200 Series

- **5 Year Warranty**
- **Maintenance Free with Huck Fasteners**
- **25,000 lb. Capacity**

**TL-2200**

**NON-STEERABLE LIFT AXLE SUSPENSION**

**TL-2200 SERIES NON-STEERABLE LIFT AXLE**

- Axle Travel: 10 in.
- Capacity: 25,000 lbs.
- Positive Axle Stop
- Ride Heights: 8 thru 19 in.
- Maintenance Free HUCK Fasteners
- Available as Kit or Complete with Axle
- Compact Design
- Air Ride-Air Lift
- Two Pin Axle Connection-Rubber Bushed

Optional: *Eccentric Alignment* (Requires Maintenance)
LEADERSHIP IN SUSPENSION TECHNOLOGY

Watson Suspension Systems

STL-2200
STEERABLE TRAILER LIFT AXLE SUSPENSION

STL-2200 Series

- Dual or Single Tires
- 5 Year Warranty
- Maintenance Free with Huck Fasteners
- 25,000 lb. Capacity

LEADERSHIP IN SUSPENSION TECHNOLOGY
STL-2200 SERIES
STEERABLE TRAILER LIFT AXLE SUSPENSION

- Axle Travel: 10 in.
- Capacity: 25,000 lbs.
- Ride Heights: 8 thru 19 in.
- Maintenance Free HUCK Fasteners
- Two Pin Axle Connection-Rubber Bushed

Optional: Eccentric Alignment *(Requires Maintenance)*
17.5" X 6.0" WHEEL NUT TORQUE VALUES:

- STEEL WHEELS - 220 - 260 Lbf.ft (300 - 350 N.m.)
- ALUMINUM WHEELS - 235 - 286 Lbf.ft (320 - 390 N.m.)

NOTE:
1. REFER TO "SL SERIES INSTALLATION AND OPERATION MANUAL.
2. CAPACITY 8,000# - ACHIEVED BY USE OF 17.5" X 6.0" WHEEL WITH OFFSET TOWARD ENBOARD SIDE. USE OF OTHER WHEELS AND/OR MOUNTING WHEELS WITH OFFSET TO THE OUTSIDE IS NOT RECOMMENDED AND WILL SIGNIFICANTLY LOWER RATING.
3. MINIMUM 8" LIFT REQUIRED IN LOADED CONDITION.
**SECTION E-E**

Scale 1:6

**CENTER OF VEHICLE**

- **33.50" HANGER CENTER**
  - Both washers outside

- **34.00" HANGER CENTER**
  - One washer each side

- **34.50" & 35.00" HANGER CENTER**
  - Both washers inside

**SECTION F-F**

Scale 1:6

**CENTERS OF VEHICLE**

- **34.00" HANGER CENTER**
  - Both washers outside

- **ONE WASHER EACH SIDE**

- **BOTH WASHERS INSIDE**

**DETAIL G**

Scale 1:8

- **ONE WASHER EACH SIDE**

- **BOTH WASHERS INSIDE**

- **BOTH WASHERS OUTSIDE**
### CONFIGURATOR - STL0891

#### PART NUMBER
- **MODEL NO.** STL0891
- **A BB - CC - DD GG H**

#### HUB OIL CODE
- **DD**
  - **OIL TYPE**
  - **PART NUMBER**
    - **01** NON-SYNTHETIC: P1001-01F8
    - **02** SYNTHETIC: P1001-02F8

#### CONTROL PANEL CODE
- **TYPE**
- **VALVE**
- **PANEL**
- **CONTROL PANEL**
  - **0** NO CONTROL PANEL
  - **1** CONTROL PANEL W/12V SOLENOID
  - **2** CONTROL PANEL WITH SEPARATE PUSHPULL
  - **3** CONTROL PANEL WITH INTEGRATED PUSHPULL
  - **4** NO CONTROL PANEL: WITH 12V SOLENOID AND REGULATOR

#### OIL TYPE
- **STL0891 A BB - CC - DD GG H**

#### SPECIAL APPLICATION RIDE HEIGHT

### PLUMBING CODE
- **TYPE**
- **PLUMBING KIT**
- **PPAK50 WITH STEEL TANK INSTALLED**
  - **01** NO PPAK (PRL-PUMBER) AIR KIT (STD UPPER BAG PLATE): N/A
  - **12** PPAK50 WITH STEEL TANK INSTALLED: PPAK50-00-05

### DIMENSIONS
- **DIM A**
- **RUN**
- **DOWN**
- **UP**
- **DIM B**
- **ITEM 12**
- **ITEM 13**
- **ITEM 15**
- **ITEM 16**
- **ITEM 17**
- **ITEM 18**
- **ITEM 19**
- **ITEM 30**

### FRAME WIDTH
- **ITEM 16**
- **ITEM 17**
- **ITEM 18**
- **ITEM 19**

### HANGER CENTER CODE
- **FRAME WIDTH**
- **ITEM #8**
- **40** 34.00 160092
- **50** 35.00 160092-01
1. REFER TO "STL SERIES INSTALLATION AND OPERATION MANUAL.
2. CAPACITY 13,200# - ACHIEVED BY USE OF 22.5" X 8.25" WHEEL WITH OFFSET TOWARD INBOARD SIDE. USE OF OTHER WHEELS AND/OR MOUNTING WHEELS WITH OFFSET TO THE OUTSIDE IS NOT RECOMMENDED AND WILL SIGNIFICANTLY LOWER RATING.
SECTION E-E
SCALE 1:6

ONE WASHER EACH SIDE

CENTER OF VEHICLE

SECTION F-F
SCALE 1:6

ONE WASHER EACH SIDE

KING PIN CAP HELD WITH 3 CAPSCREWS

KING PIN CAP THREADED & SCREWS IN

MERITOR KNUCKLE OLD STYLE

WESTPORT KNUCKLE NEW STYLE

BOLT-ON HANGER HOLE PATTERN

DETAIL H
SCALE 1:6
# STL1191 Assembly Option Chart

## STL1191W Configurator

### MODEL NO. - STL1191 CC DD EE - F - HH - II - JJ - KK

### STL1191 Assembly Option Chart

#### DESCRIPTION:
SIL1191 ASSEMBLY OPTION CHART

#### SHEET:
Sheet 3 of 3

#### NOTES:
- **SCALE:** 1:10
- **DRAWN BY:** TEG
- **STAMPED BY:**
  - DRAWN: 06/05/07
  - STAMPED: 12/22/2010  9:25 AM

#### ITEM #1
- HANGER/UPPER BAG PLATE CODE
- CODE: DD
- RIDE HEIGHT CODES 15 THRU 19

#### ITEM #2
- UPPER BAG PLATE CODE

#### ITEM #3
- ARM CODE

#### ITEM #4
- CONTROL PANEL CODE

#### ITEM #5
- HUB & DRUM CODE

#### ITEM #6
- PLUMBING CODE

#### ITEM #7
- PPAAK (PRE-PLUMBED AIR KIT) - UPPER BAG PLATE WITH COUPLER

#### CONFIGURATOR STL1191W

### RUN HEIGHT CODES

<table>
<thead>
<tr>
<th>CC</th>
<th>MODEL NUMBER</th>
<th>ITEM #11</th>
<th>ITEM #12</th>
<th>ITEM #13</th>
<th>RUN DOWN</th>
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<tbody>
<tr>
<td>15</td>
<td>STL1191XX X-15 950246-11 950246-21 980158-20</td>
<td>1.00</td>
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<td>23.20</td>
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<tr>
<td>16</td>
<td>STL1191XX X-16 950246-12 950246-22 980158-21</td>
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<td>6.00</td>
<td>23.38</td>
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<td>17</td>
<td>STL1191XX X-17 950246-13 950246-23 980158-22</td>
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<td>7.00</td>
<td>23.54</td>
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<tr>
<td>18</td>
<td>STL1191XX X-18 950246-14 950246-24 980158-23</td>
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<td>8.00</td>
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<td>19</td>
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<td>22</td>
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<td>11.81</td>
<td>12.00</td>
<td>23.33</td>
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### ITEM #6
- FLUSHING CODE
- TYPE: 92 HF TO HF
- SIZE: 92.00 HUB FACE TO HUB FACE

### ITEM #7
- PPAAK (PRE-PLUMBED AIR KIT) - UPPER BAG PLATE WITH COUPLER
- CODE: 91766-01
- TYPE: 12524-00-05
- DESCRIPTION: PPAK50-00-05
NOTE:
1. REFER TO "STL SERIES INSTALLATION AND OPERATION MANUAL.
2. CAPACITY 13,200# - ACHIEVED BY USE OF 22.5 X 8.25 WHEEL WITH OFFSET TOWARD INBOARD SIDE. USE OF OTHER WHEELS AND/OR MOUNTING WHEELS WITH OFFSET TO THE OUTSIDE IS NOT RECOMMENDED AND WILL SIGNIFICANTLY LOWER RATING.
SECTION E-E
SCALE 1:6

SECTION F-F
SCALE 1:6

BOLT-ON HANGER HOLE PATTERN

ONE WASHER EACH SIDE

CENTER OF VEHICLE
## Configurator STL1195W

### D Arm Code

<table>
<thead>
<tr>
<th>Item #4</th>
<th>Item #5</th>
<th>Dim A</th>
<th>Dim B</th>
<th>Dim C</th>
<th>Dim E</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>92</td>
<td>160108</td>
<td>12524-08</td>
<td>19613</td>
<td>69.00</td>
<td>30.81</td>
<td>33.88</td>
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<td>97</td>
<td>160116</td>
<td>12524</td>
<td>19613-07</td>
<td>74.00</td>
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### E Hanger Style Code

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<tr>
<td>W</td>
<td>920612-11</td>
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<tr>
<td>B</td>
<td>920741-10</td>
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### JJ Lock-Out Code

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<thead>
<tr>
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</thead>
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<tr>
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<td>NO STEER LOCK-OUT</td>
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<tr>
<td>1</td>
<td>V-BAR STEER LOCK-OUT</td>
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### FF Run Height Code

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Item #7</th>
<th>Item #8</th>
<th>Dim A</th>
<th>Dim B</th>
<th>Run Range</th>
<th>Dim B Range</th>
<th>Dim B</th>
</tr>
</thead>
<tbody>
<tr>
<td>STL1195XX X-11</td>
<td>950246-11</td>
<td>950246-21</td>
<td>980158-20</td>
<td>1.00</td>
<td>1.00</td>
<td>1.19</td>
<td>23.20</td>
</tr>
<tr>
<td>STL1195XX X-12</td>
<td>950246-12</td>
<td>950246-22</td>
<td>980158-21</td>
<td>2.00</td>
<td>1.81</td>
<td>2.00</td>
<td>23.88</td>
</tr>
<tr>
<td>STL1195XX X-13</td>
<td>950246-13</td>
<td>950246-23</td>
<td>980158-21</td>
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<td>2.81</td>
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<td>4.81</td>
<td>5.00</td>
<td>23.70</td>
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### HH Plumbing Code

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<th>Plumbing Kit</th>
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<tr>
<td>01</td>
<td>NO PPAK (PRE-PLUMB AIR KIT) - UPPER BAG PLATE WITH COUPLER</td>
</tr>
<tr>
<td>12</td>
<td>PPAK50 WITH STEEL TANK INSTALLED</td>
</tr>
</tbody>
</table>

### Description

STL1195 Assembly Option Chart
20K TRAILER TRU-TRACK
SELF-STEERING AXLE & SUSPENSION SYSTEM

STL-2095/2096

- 5 Year Warranty
- Parallelogram Design
- 20,000 lb. Capacity

LEADERSHIP IN SUSPENSION TECHNOLOGY
INTEGRATED SUSPENSION AND AXLE ASSEMBLY

- Parallelogram Design
- Capacity: 20,000 lbs.
- Axle Lift: 8 in.
- Lightweight: 1,475 lbs.
- STL-2095 91” HF/HF
- STL-2096 95” HF/HF

- 25° Wheel Cut
- 5 Year Warranty
- Ride Heights: 9.5 thru 20 in.
- Reverse Lock Optional
- Fabricated axle, Meritor Components
TIRE OUTSIDE DIMENSIONS AND CHAMBER INSIDE DIMENSIONS FOR
STL-2095 AND STL-2096 (INCHES).

<table>
<thead>
<tr>
<th>TIRE SIZE</th>
<th>WHEEL INSET (INCHES)</th>
<th>STL-2095 (91.00&quot; HUB FACE TO HUB FACE)*2</th>
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</thead>
<tbody>
<tr>
<td>385</td>
<td>4.68 5.12 5.30 *1 5.75</td>
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</tr>
<tr>
<td>425</td>
<td>96.54 95.65 94.40</td>
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</tr>
<tr>
<td>445</td>
<td>97.74 96.85 95.60</td>
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</tr>
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</table>

*3 INSIDE OF CHAMBERS (TYPE 30) = 45.25"

<table>
<thead>
<tr>
<th>TIRE SIZE</th>
<th>WHEEL INSET (INCHES)</th>
<th>STL-2096 (95.00&quot; HUB FACE TO HUB FACE)*2</th>
</tr>
</thead>
<tbody>
<tr>
<td>385</td>
<td>4.68 5.12 5.30 *1 5.75</td>
<td></td>
</tr>
<tr>
<td>425</td>
<td>100.54 99.65 98.40</td>
<td></td>
</tr>
<tr>
<td>445</td>
<td>101.74 100.85 99.60</td>
<td></td>
</tr>
</tbody>
</table>

*3 INSIDE OF CHAMBERS (TYPE 30) = 49.25"

BOTH CHARTS BASED ON:

22.5 X 11.75 WHEEL FOR 385 TIRE SIZE
22.5 X 12.25 WHEEL FOR 425 TIRE SIZE
**22.5 X 13.00 WHEEL FOR 445 TIRE SIZE

14.90" TIRE WIDTH FOR 385/65R 22.5 TIRE
16.10" TIRE WIDTH FOR 425/65R 22.5 TIRE
**17.30" TIRE WIDTH FOR 445/65R 22.5 TIRE

**USE ONLY WITH LONG CAM BRAKES PN's: 17400-11 & -21
CHAMBER CENTERS WILL DECREASE BY 5.5.

*1 5.30 INSET FOR 22.5 X 13.00 RIM SIZE

*2 DIMENSION WITH STANDARD 10 STUD HUB PILOT, HUB AND 16½ X 6 CAST DRUM.

*3 TRAILER FRAME OUTSIDE TO CHAMBER CLEARANCE NEEDS TO BE A MINIMUM OF 1.0".
NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION

SYMBOL LEGEND

NAVISTAR/INTERNATIONAL

FREIGHTLINER

MACK TRUCKS

DESIGNATES A ± .125 TOL. W/C CRITICAL DIM

KEY CUSTOMER DESIGNATES A KEY CUSTOMER CHARACTERISTIC

SPECIAL CHARACTERISTICS

PACCAR

PACCAR

THIS DRAWING HAS BEEN ISSUED AS A PRELIMINARY VERSION FOR APPROVAL PURPOSES ONLY. IT IS NOT INTENDED FOR PRODUCTION.

REV. DESCRIPTION ECN DATE BY
A NEW PRELIMINARY DRAWING 7403 2/22/2010 HDH

REV. DESCRIPTION ECN DATE BY
A NEW PRELIMINARY DRAWING 7403 2/22/2010 HDH

NOTE: PARENTHESES () DENOTES REFERENCE DIMENSION

MANUFACTURER

WATSON SCHALIN

ENGINEERING SERVICES

STL2055

SCALE

1:16

DRAWN BY: DATE:

02/22/2010

DESCRIPTION:

DRAWING NO: SIZE:

STL2055 5/18/2010  11:16 AM

STL2055

MAIN ASSEMBLY

SUSPENSION MODEL:

STL2055

PREVIOUS ASSY:

1

1 OF 1

STL2055.SLDDRW 5/18/2010  11:16 AM

TOLERANCES (EXCEPT AS NOTED)

MAIN ASSEMBLY

DEPART

1 OF 1

STL2055

SCALE

1:16

ANGULAR

± 1” 02/22/2010 HDH B

FRACTIONAL

± 1/16 STL2055

DECIMAL

.06
DO NOT EXCEED 100 PSI IN AIRBAG!

INSTALLATION INSTRUCTIONS:

1. REMOVE EXISTING CROSSMEMBER. MOUNT NEW CROSSMEMBER ASSY (ITEM #1) TO FRONT OF THE HANGERS.
2. ATTACH UPPER LIFTING ASSEMBLY (#1) TO THE CROSSMEMBER LOWER SUB ASSY WITH 3/4" BOLTS.
3. ATTACH STRAP PROTECTIVE SLEEVE (#7) TO THE LIFT ARM (#1) WITH 7/8" BOLTS (REF SHEET 2 FOR DETAILS).
4. INSTALL AIR SPRING (#5) TO UPPER AND LOWER BAG PLATES USING 3/8" BOLTS & HARDWARE.
5. KIT REQUIRES CUTTING TUBE TO LENGTH & WELDING TUBE TO END CAP BRACKETS.
6. MAXIMUM DIMENSION AT LIFT 9.50/ TYPICAL 9.00.

UNIT SHOWN IN UP POSITION

NOTES:

1. MAXIMUM DIMENSION AT LIFT 9.50/ TYPICAL 9.00
2. TORQUE 7/8" CAPSCREWS TO 150 FT LBS.
3. TORQUE 3/8" CAPSCREWS TO 95 FT LBS.
4. REFER 190047W FOR PROCEDURE.
5. SHIP ITEMS #8, #9 LOOSE.
6. SEE 190047W FOR WELD ON PROCEDURES.
### Table: Strap Routing

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Strap Routing</th>
<th>Item #</th>
<th>Applications</th>
<th>Item # 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL86-1A-01-XX</td>
<td>1A</td>
<td>17550-27.63</td>
<td>11250/1020/1021-7.75&quot; TRACK ONLY</td>
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</tr>
<tr>
<td>AL86-1A-02-XX</td>
<td>1B</td>
<td>17550-31.75</td>
<td>11250/1025/1020/1021-14,15,17,19,21,22</td>
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<tr>
<td>AL86-1B-02-XX</td>
<td>1C</td>
<td>17550-31.75</td>
<td>11250/1025/1020/1021-16,18,20</td>
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<tr>
<td>AL86-1C-02-XX</td>
<td>1A</td>
<td>17550-34.75</td>
<td>1A250/300/104-14,15,16,17,19,21,27/252/302/107-14,15,17,19,21,23,24</td>
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<tr>
<td>AL86-1B-03-XX</td>
<td>1B</td>
<td>17550-34.75</td>
<td>1A250/300/104-23,24</td>
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</tbody>
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### Diagrams:

- **1A Strap Routing**
- **1B Strap Routing**
- **1C Strap Routing**

**Model No.:** AL86-1X-X-0X-X

**Minimum Arm Centers:** 33"

**Hanger Centers Chart:**

- 35 Centers: 990440-35
- 41 Centers: 990440-41

**Regulator Install:**

- 1-Installed
- 2-Ship Loose

**Description:**

AL86 Lift Assembly

**Date:** 01/12/09

**Scale:** 1:4

**Drawn By:** TEG

**Drawing No.:** 190181
DO NOT EXCEED 100 PSI IN AIRBAG!

NOTE: CHAMBER BRACKETS MOST BE SPACED WIDER THAN THE WIDTH OF THE STRAP.

NOTE: FOR USE ON 5" DIA AXLES 11R-22.5 TIRES AND BELOW.

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DIM A</th>
<th>HOLE DETAIL</th>
<th>ITEM #</th>
<th>ITEM # 11</th>
<th>QTY #</th>
<th>QTY # 12, # 13</th>
<th>SUSPENSIONS</th>
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<tbody>
<tr>
<td>AL95-01-1A</td>
<td>2.38&quot;</td>
<td>UP</td>
<td>03</td>
<td>17424-01</td>
<td>3A</td>
<td>4.00</td>
<td>TA250U09-5.5/6.5 SEE DETAIL E</td>
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<tr>
<td>AL95-01-4A</td>
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<td>UP</td>
<td>03</td>
<td>17424-01</td>
<td>1A</td>
<td>2.00</td>
<td>TA250U09-7.5/9.0 SEE DETAIL E</td>
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<td>AL95-01-5A</td>
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<td>17424-01</td>
<td>2A</td>
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<td>TA250U09-12/14 TA300U09-12/14/17 T250U01-7.5/9.0</td>
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<td>17424-01</td>
<td>1A</td>
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</table>

INSTALL STRAP OVER PIN IN HOLE 1 AS SHOWN.

HOLE DETAIL 1A

HOLE DETAIL 3A

HOLE DETAIL 2A
NOTES:
1. USE HOLES SHOWN FOR 7.5 RUN.
2. REF C RO SSTUBE 3X6X3/8 MIN.
3. REF AXLE, 5" DIA.

NOTE 2
(TUBE LENGTH)/2

NOTE 1

NOTE- PARENTHESES () DENOTES REFERENCE DIMENSION

ITEM NO. | QTY | PART NUMBER | DESCRIPTION
---|---|---|---
1 | 1 | 990091 | LIFT ASSEMBLY ARM REAR MOUNT
2 | 1 | 990292 | LIFT ARM FRONT ASSEMBLY
3 | 1 | 19204 | BUSHING POLY FLANGE
4 | 1 | 91031 | BUSHING SLEEVE
5 | 4 | 10033 | CAPSCREW .75X5.00 UNF GR8
6 | 4 | 10028 | NUT LOCK .75 UNF GR C
7 | 1 | AS018BF | LIFT BAG 2812-425 CT #
8 | 4 | 10041 | 38 LOCK WASHER
9 | 4 | 10038 | CAPSCREW 3/8 X 1 UNC
10 | 3 | 90313-03 | DELRIN LINER 8K
11 | 1 | 17336 | STRAP 2.00" X 34.00" LONG

NOTES:
1. USE HOLES SHOWN FOR 7.5 RUN.
2. REF C RO SSTUBE 3X6X3/8 MIN.
3. REF AXLE, 5" DIA.
CROSS CHANNEL TO BE RELOCATED ABOVE ITEM #1

WELD GUSSET AFTER WELDING ITEM #1.

NOTES:
1. ALL WELDS MUST COMPLY WITH AWS D1.1
2. ALL TACK WELDS SHOULD BE INCORPORATED INTO FINAL WELD
3. 19 TYP. WELD UNLESS OTHERWISE STATED
NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION

**EXAMPLE**

**KEY CUSTOMER DESIGNATES A KEY CUSTOMER CHARACTERISTIC**

**SPECIAL CHARACTERISTICS**

**PACCAR SYMBOL LEGEND**

**NAVISTAR/INTERNATIONAL**

**FREIGHTLINER**

**MACK TRUCKS**

**DESCRIPTIVE SYMBOLS**

**CHARACTERISTICS SYMBOLS**

**NOTE: PARENTHESES ( ) DENOTES REFERENCE DIMENSION**

**REFERENCES**

**1 OF 2 SHEET:**

**DEPARTMENTS (EXCEPT AS NOTED)**

**REMARKS**

**REMOVE CROSS CHANNEL & INSTALL GUSSETS.**

**APPLICATIONS:**

**T250-302L02 14-19 RUNS ONLY.**

**TI250U01 12 RUN ONLY.**

**DIMENSIONS:**

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**DESCRIPTION:**

**DRAWING NO:** 190136

**DATE:** 5/6/2011

**SCALE:** 1:4

**NOTE: PARENTHESES ( ) DENOTES REFERENCE DIMENSION**

**APPROVED DRAWING**

**BUL91 FRONT LIFT ASSEMBLY TI-T02/TA250U09 SUSPENSION MODEL:**

**PREVIOUS ASSY:**

1. **NEW OR AMEND C-4657 5/21/2007 TEG**
2. **B REMOVED CHART C-4953 9/12/2007 TEG**
3. **C ADDED GUSSETS TO BOM C-4953 10/19/2007 TEG**
4. **D ADDED DIMENSION FOR TA250U C-4874 9/12/2007 TEG**
5. **E ADDED TI250-302L02 14-19 RUN C-4953 10/18/2007 TEG**
6. **F ADDED TI250U01 12 RUN C-5238 3/11/2008 TEG**
7. **G ADDED TI250-302L02 14-19 RUN C-5659 7/25/2008 TEG**
8. **H ADDED TI250U01 12 RUN C-5714 5/5/2008 TEG**

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**DATE 190136.SLDDRW 5/6/2011 1:25 PM**

**DETAIL A**

**SCALE 1:4**

**NOTE: PARENTHESES ( ) DENOTES REFERENCE DIMENSION**

**PART NO. HANGER HEIGHT ITEM # 5 ITEM # 6 ITEM # 7 DIM A TI TOP MOUNT DIM A TA250U09 DIM A TA250 302L02 DIM A TI250U01**

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<th>ITEM # 6</th>
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1. ALL WELDS MUST COMPLY WITH AWS D1.1
2. ALL TACK WELDS SHOULD BE INCORPORATED INTO FINAL WELD
3. .19 TYP. WELD UNLESS OTHERWISE STATED
REV. DESCRIPTION ECN DATE BY
A NEW DRAWING C-6669 7/30/2008 TEG

PARTS ARE CONNECTED BY CAPSCREWS TO BE ABLE TO REMOVE TO CHANGE BRAKE CHAMBERS.

SIDES MUST BE FLUSH WHEN ASSEMBLED.

CROSS CHANNEL TO BE RELOCATED ABOVE ITEM #1.

APPLICATIONS: TI250-302T03 & TI300T05 HD.

NOTES:
1. INSTALLATION IS THE SAME FOR ALL RIDE HEIGHTS.
2. MIN DISTANCE BETWEEN AXLES WHEN ADDITIONAL SUSPENSION IS FORWARD OF LIFT IS TI250/302T-53.00".
3. PLUMBING IS RESPONSIBILITY OF INSTALLER.

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NOTE: PARENTHESIS ( ) DENOTES REFERENCE DIMENSION

SPECIAL CHARACTERISTICS SYMBOL LEGEND
KCC KEY CUSTOMER DESIGNATES A KEY CUSTOMER CHARACTERISTIC
SYMBOLS

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TA-250 & TA-300

Installation and Manual
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  - Important notes

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  - Weld preparation
  - Setup for welding
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**Introduction**

**Considerations**
Things needed to insure proper installation:
- Assembly drawing from Watson & Chalin that matches the suspension being installed.
- Location of axle center.
- Ride Height of the suspension.
- Suspension / Hanger Centers (usually determined by axle track and or tire size).
- Brake Chamber / Cam Orientation (camshaft location recommendations are usually shown on the assembly drawing). Brake chamber orientation should be planned out before welding axle to suspension.

**Figure 1**

**Important Notes:**
These are the primary goals of a good installation (Refer to Figure 1):

1. The Axle to Arm Pivot Centers are Parallel (See Figure 3).
2. The Suspension Arms are Parallel to one another. The arm centers should not vary more than 1/8 inch from front to rear.
3. The Axle is perpendicular to the Suspension Arms and Suspension Arms are square.
Welding Axle to Suspension

Weld Specifications

Caution!
The welding procedures must be followed carefully to avoid damage to the axle and suspension which could cause an accident and or serious personal injury.

Standard Electrode: E-7018 (Oven Dried)
Determine diameter by fillet size needed.

Standard Wire: ER-70S-X
Determine diameter by fillet size needed.

Preparation

1. The surface must be free of paint, water, and other contaminants where welding is to occur.

2. Suspension parts must be at least 60°. *

   * Note: Some axle manufacturers recommend preheating the axle before it is welded. Consult the axle manufacturer for recommended guidelines on welding to the axle.

3. Welding needs to be done in a flat horizontal position.

---

Figure 2

D A C

Alignment Collars

B
Setup for welding

1. Layout suspension arms and axle on a level surface.
2. Make sure axle camshafts are indexed (rotated) properly.
3. Mark or locate center mark on axle.
4. Mark arm centers from center of axle and move arms to their proper location.
5. Make sure arms are centered on axle properly.
6. Check to make sure arms are parallel within 1/8” front to rear. (Figure 2) Dimension A = B, and dimension C = D.
7. Make sure arms are perpendicular to axle.
8. Verify that Pivots of arms are concentric to prevent the trailer from leaning. (Figure 3)
9. Clamp arms to axle to hold in the correct position and verify measurements before tacking.

Note: Arms do not need be clamped so tight to the axle that the arms appear to be twisting the pivots out of parallel. At least one side of the arm in the axle seat area must be touching the axle firmly, but the other side may have up to a 1/16” gap to allow the pivots to remain parallel. (Figure 4)

Tacking for preliminary placement

1. Tack arms to axle with (4) 1/2” tacks near the center (2 Front, 2 Rear) of the axle seat connection. (Figure 5)

Make sure tacks are within the weld area and not at the ends of the welds.

Checking setup

Check measurements before proceeding to welding.

Figure 3

Shown Incorrect
Arm Pivots Out of Vertical Parallel
Gap to be no more than 1/16” on one side of the arm only

Figure 4

Arm Centers

(4) 1/2” tacks required

Figure 5

Weld Pass Details

1st Pass

2nd Pass

3rd Pass

Figure 6
Welding Procedures

Warning! Clean welds between passes and incorporate tacks into the first pass on the tacked side. Fill weld craters and avoid undercuts and cold laps over welds.

1. Three passes are required on each area where the axle is welded to the arms. Figure 6 shows the size of the weld of each pass.
2. Start welding in the sequence shown in Figure 7 at the rear side where the axle and seat meet. Make all first pass welds at all areas before proceeding to the second pass. Welds should not be started or stopped at the end of the weld pass. They should stopped and started away from the ends as shown in Figure 7.
3. Figure 7 also shows the length of weld for both overslung and underslung models. Do not wrap the corners of the axle seat while welding.

Figure 7
U-Bolt Installation

Note: Allow Welds to cool before installing U-bolts

1. Install U-bolt spacers, washers, and nuts on the U-bolts and snug up the nuts with a wrench. *Special welds may not use spacers.
2. Make sure U-bolt spacers are evenly spaced from the axle seats on both sides of the axle. See Figure 8.
3. Tighten the U-bolts by alternately tightening opposing corners of the clamp assembly. Torque U-bolts in a “X” pattern to 400 - 450 ft-lbs. See Figure 19.
4. The U-bolts should have an equal amount of thread showing above the nuts.

Figure 8

U-bolt Torque Instructions
To torque or re-torque u-bolts:
1. Partially tighten bolts #1 and #2 according to figure 1.

Figure 19: U-Bolt Torque Pattern
2. Partially tighten bolts #3 and #4.
3. Using the same sequence, torque to the proper torque as specified below.
**Attaching suspension to frame**

**Note!** The suspension installer is responsible for ensuring the beams, crossmembers, and suspension attachment are adequate for the suspension. The following methods are common practices, but individual installations may vary.

Weld Note: It is important **not to weld** within .50 inch of any intersection of flange to flange between the Hangers and the frame components.

---

**Preferred hanger to frame location**

Crossmembers should be over front and rear of Hangers as shown.

![Diagram](image)

Shim needed if crossmembers are not flush with bottom of frame.

Some units do not require crossmember here. Refer to assembly drawing for use.

**Figure 9**
Optional outset orientation

Note: Figure 10 shows a common method, other methods may be necessary.

Gussets may be required if hanger extends past the center of the main beam of the trailer. Gussets are furnished by the installer.

The outer edge must be supported.

Figure 10
Optional Stiffener Mount
Figure 11

TA-250 Hanger with Gusset
Figure 12
**Attaching upper bag plate / spacer to frame**

**Note!** The suspension installer is responsible for ensuring the beams, crossmembers, and suspension attachment are adequate for the suspension. The following methods are common practices, but individual installations may vary.

**Weld Note:** It is important **not to weld** within .50 inch of any intersection of flange to flange between the Upper bag plates and the frame components as shown below.

The bag plates need to be supported properly to ensure proper operation. The illustrations in **Figure 13** and **Figure 14** show the most common methods. Some installations may require additional bracing that is not shown due to the many different

---

**Figure 13**

Bag plate without spacer

---

**Figure 14**
trailer styles and frame types. **Figure 13** shows a typical upper bag plate with no spacer. **Figure 14** shows a typical bag plate with spacer.
Final alignment for Weld Collar Type

**Note!** The suspension installer is responsible for ensuring correct alignment and that all (4) collars on each suspension are welded completely.

**Caution!** Failure to weld the collars voids the warranty and can cause severe suspension damage or failure and erratic trailer operation!

Final Alignment of the axle, if done properly, will provide a maintenance free connection at the pivot of the suspension until bushing replacement. After several years of wear, it is normal to replace the bushing. If the original installation of the suspension is correct, the bushings can be replaced without the need to realign the suspension. **However, if the alignment is not correct, the bushing can wear prematurely and/or make the trailer track out causing tire wear.**

**Sequence for alignment:**

1. Tires must be the same size, diameter, and inflation pressure.
2. The suspension must be at the correct ride height to align properly. This can be done by adjust landing gear or using jacks to support the trailer. If trailer is upside down to mount suspension, the axles may be blocked to the proper ride height. Trailer and axles must be level. Refer to **Figure 15** and make sure ride height is the same on both sides of trailer frame.
3. Move one of the suspension arms to the middle of the adjustment slot and tack weld where shown in **Figure 16**.
4. Move the other arm on the suspension forward or backward to allow the distance from center of spindle to kingpin (**Figure 18** Dimension A & B) to be equal distance within 1/8”.
5. Tack weld the other arm collars into place before welding.
6. Re-Check alignment before welding.
7. Make sure axles protrude evenly on both sides from frame. **Figure 18** dimensions E and F must be within 1/4” of each other.
8. Weld all (4) collars with a .25 fillet completely around collars per **Figure 17**.
9. Additional suspensions should be aligned per **Figure 18** using the C & D dimensions with only 1/16” maximum variations.
Final Alignment of the axle is very important. If done properly, will provide a low maintenance connection at the pivot of the suspension. After several years of wear, it is normal to replace the bushing. If the alignment is not correct, the bushing can wear prematurely and/or make the trailer track out causing tire wear.

Caution! Adjusting or rotating the two collars independently of each other can cause the pivot joint to loosen after being put into service. Both collars on a single hanger must be rotated and adjusted at the same time and in the same direction. Failure to adjust them together can lead to misalignment, tire wear, and bushing failure.

Sequence for alignment for Eccentric Collars:
1. Tires must be the same size, diameter, and inflation pressure.
2. The suspension must be at the correct ride height to align properly. This can be done by adjust landing gear or using jacks to support the trailer. If trailer is upside down to mount suspension, the axles may be blocked to the proper ride height. Trailer and axles must be level. Refer to Figure 15 and make sure ride height is true on both sides of trailer frame.
3. Start out with the Adjustment-Square vertically aligned with pivot as shown in Figure 20.
4. Snug up one side so that the collars cannot rotate.
5. Using a 1/2” break over or ratchet, rotate the other two collars on the other hanger so the suspension moves forward or backward to allow the distance from center of spindle to kingpin (Figure 18 Dimension A & B) to be equal distance within 1/8”. Rotate inside and outside Eccentric Collar together and the same.
6. Snug up pivot bolt so the collar cannot move.
7. Re-Check alignment before proceeding. If more suspension movement is needed to align, loosen the centered collar (unadjusted hanger) and rotate it to allow for more movement. Again, move inside and outside Eccentric Collars together.
8. Make sure axles protrude evenly on both sides from frame. Figure 18 dimensions E and F must be within 1/4” of each other.
9. Tighten fasteners to 800 - 900 ft-lbs. Weldment not required.
10. Additional suspensions should be aligned per Figure 18 using the C & D dimensions with only 1/16” maximum variations.
Figure 15

Ride Height

Figure 16

Tack weld

Alignment Collar

Center collar in slot 1 arm only

Slot for alignment

Figure 17

Weld around collar with .25 fillet

Weld all (4) collars after alignment
Align Adjustment - Square vertically with pivot

Figure 20

Figure 18

1/2" Breakover

Alignment Adjustment Requirements –
When adjusting collars during the alignment of the axle, BOTH collars must be rotated at the same time.

- Use (2) ½" square-drive breakover bars to make the adjustments
- The square Adjustment Hole must line up from side to side.

CAUTION
Adjusting or rotating the two collars independently of each other can cause the pivot joint to loosen after being put into service. Both collars on a single hanger must be rotated and adjusted at the same time and in the same direction. Failure to adjust them together can lead to misalignment, tire wear, and bushing failure.
Leveling Valve requirements

Caution! Air lines are pressurized and may blow debris, USE EYE PROTECTION.

Major functions of the leveling valve:
The leveling valve (Figure 21) in conjunction with the air control kit is responsible for maintaining the proper ride height of the suspension. When the trailer is loaded, the leveling valve fills the airsprings with more air to bring the trailer back to proper ride height. When the trailer is emptied, the leveling valve releases air through the exhaust tube and lowers the suspension back to proper run height.

Watson and Chalin Mfg offers a variety of Air Control Kits to suit the most popular needs. The ACK203, -2 (Figure 22) is the most popular Air Control Kit. It provides the basic features that are needed to run an air suspension properly. Other Air Control Kits are available, such as the ACK201, (Figure 23) that provides a popular feature: dual leveling valves. Call Watson and Chalin Mfg for other specific needs.

Where to install the leveling valve:
Typically the leveling valve is located on the rear axle on a tandem or on the middle axle on a tridem.

Special considerations for spread tandems:
A spread tandem (over 50") may require special consideration about ride height adjustment. Aluminum or lightweight trailers that have a lot of camber (arc, rise) in the main deck need special consideration when determining proper ride height. The leveling valve (if placed on the rear axle) may have to be intentionally set to run at a slightly lower run height when the trailer is empty to keep the front suspension from running taller than it’s intended run range. It is recommended that ride height adjustments be checked in fully loaded and unloaded conditions to find an average run height that does not force a suspension to run past its maximum run range.

Suspensions that run outside their intended run range can cause excessive wear on the shock absorbers and airsprings, plus cause increased stress at the axle connection.

Note: Consult separate Leveling Valve instructions that come in leveling valve box for specifics on installation.
Figure 23

3/8 O.D. NYLON TUBING

NOTES:
1. NYLON TUBING AND FITTINGS
   FURNISHED BY CUSTOMER.
2. DIAGRAM IS SHOWN FOR TANDEM SUSPENSION.
   FOR SINGLE SUSPENSION, OMIT FRONT AIR SPRINGS.
3. INSTALL BRACKETS TO ORIENT LEVELING VALVE
   AS SHOWN IN DETAIL 1
4. ALL EXTERNAL EXHAUST PORTS MUST USE MINIMUM
   6.00 LONG DRAIN TUBE FACING DOWN

* ONE 30259 IS INCLUDED IN SUSPENSION KIT
**Maintenance Procedures**  
**Literature Number: WC-M-1000**

**Torque Requirement Procedures**  
All fasteners should be re-torqued according to the following schedule.  
- after 30 days  
- every 6 months thereafter

**Capscrew/Bolt (Grade 8 UNF) Torque Requirements**

<table>
<thead>
<tr>
<th>Capscrew/Bolt Size</th>
<th>3/8&quot;</th>
<th>1/2&quot;</th>
<th>5/8&quot;</th>
<th>3/4&quot;</th>
<th>3/4&quot; (Stabilizer Shock Stud)</th>
<th>7/8&quot;</th>
<th>1&quot;</th>
<th>1 1/8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque minimum ft/lbs.</td>
<td>25</td>
<td>50</td>
<td>150</td>
<td>300</td>
<td>150</td>
<td>500</td>
<td>700</td>
<td>900</td>
</tr>
<tr>
<td>Torque maximum ft/lbs.</td>
<td>35</td>
<td>75</td>
<td>200</td>
<td>350</td>
<td>175</td>
<td>550</td>
<td>800</td>
<td>1000</td>
</tr>
</tbody>
</table>

**NOTE:** Torque Values do not apply to air springs or lower grade fasteners.

**U-bolt Torque Instructions**  
To torque or re-torque u-bolts:  
1. Partially tighten bolts #1 and #2 according to figure 1.  

![Figure 1: U-Bolt Torque Pattern](image)

2. Partially tighten bolts #3 and #4.  
3. Using the same sequence, torque to the proper torque as specified below.

**U-Bolt (Non-Plated Clean Lubricated Thread) Torque Requirements**

<table>
<thead>
<tr>
<th>UNF Grade 8 Size</th>
<th>3/8&quot;</th>
<th>1/2&quot;</th>
<th>5/8&quot;</th>
<th>3/4&quot;</th>
<th>7/8&quot;</th>
<th>1&quot;</th>
<th>1 1/8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-bolt minimum ft/lbs.</td>
<td>15</td>
<td>40</td>
<td>120</td>
<td>200</td>
<td>400</td>
<td>650</td>
<td>800</td>
</tr>
<tr>
<td>U-bolt maximum ft/lbs.</td>
<td>20</td>
<td>60</td>
<td>150</td>
<td>250</td>
<td>450</td>
<td>750</td>
<td>900</td>
</tr>
</tbody>
</table>

**Airspring Torque Requirements**

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
<th>Max Torque Requirement (ft/lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>UNC Blind Nuts</td>
<td>50</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>UNC Bolt or Stud</td>
<td>25</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>UNC Stud</td>
<td>55</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>UNF Combo Stud</td>
<td>50</td>
</tr>
</tbody>
</table>

**Air Fitting Torque Requirements**

<table>
<thead>
<tr>
<th>Size</th>
<th>Max Torque Requirement (ft./lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; NPTF</td>
<td>20</td>
</tr>
<tr>
<td>1/2&quot; NPTF</td>
<td>20</td>
</tr>
<tr>
<td>3/4&quot; NPTF</td>
<td>20</td>
</tr>
</tbody>
</table>
Final Inspection

Caution! Be careful when inspecting trailer, especially if manually adjusting or cycling leveling valve, because the trailer will go up and down and this could cause serious injury.

1. Check welds to determine if they are placed correctly and make sure they are the right size for the following:
   - Axle seats to Axles to make sure the correct procedures on pages 5-8 were followed.
   - Check to make sure all (4) alignment collars were welded completely.
   - Check hangers and upper bag plates to make sure they are welded and positioned properly, and sufficient frame supports are in place.

2. Make sure the suspension can go through it’s full range of motion without interfering with frame components, brake devices, valves, airtanks, or other such components.

3. Make sure the airspring has at least a 1” clearance all the way around it while it is fully inflated. This should be checked through the full range of motion to determine if possible contact may occur.

4. Through turns the suspensions may track out before returning to its proper position in a straight path, so make sure no interference will exist with tires and other suspension components.

5. Be sure the Ride-height of the suspension is in accordance with the assembly drawing from Watson and Chalin Mfg. Refer to page 18 for notes on ride height variations on spread tandems.

6. Check leveling valve to verify that the lever does not exceed 45° of movement in full up or down positions. Exceeding 45° can break the leveling valve.


8. Make sure tire has at least 1” of clearance when suspension is dumped or in it’s full up position.

9. Recheck alignment per pages 14 or 15. It is recommended that the trailer be pulled down the highway for a couple of miles to ensure proper tracking after inspection is finished.
## General Troubleshooting

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE CAUSE</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer not tracking properly</td>
<td>Front alignment collars not welded</td>
<td>Align unit and weld alignment collars (refer to page 14)</td>
</tr>
<tr>
<td>Axle misalignment</td>
<td></td>
<td>Cut loose front alignment collars &amp; reweld collars (refer to page 14 for welded or 15 for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>eccentric non-weld type</td>
</tr>
<tr>
<td>Axle seats not properly</td>
<td></td>
<td>Check axle seat location refer to page 5. If improperly installed cut loose and install</td>
</tr>
<tr>
<td>installed to axle</td>
<td></td>
<td>properly as shown and realign.</td>
</tr>
<tr>
<td>Not getting the desired load on</td>
<td>Leveling valve incorrectly adjusted</td>
<td>Adjust the leveling valve per leveling valve instructions</td>
</tr>
<tr>
<td>axle</td>
<td>Air Control Kit not properly installed</td>
<td>Check piping of air system Check for kinks in hoses</td>
</tr>
<tr>
<td></td>
<td>Suspension out of recommended travel range</td>
<td>Leveling valve needs adjustment (page 18) to proper run height</td>
</tr>
<tr>
<td>Insufficient air pressure to</td>
<td>Defective brake protection valve</td>
<td>Replace brake protection valve and check air compressor</td>
</tr>
<tr>
<td>system</td>
<td>Interference with Trailer frame components</td>
<td>Inspect for interference And correct if needed</td>
</tr>
<tr>
<td></td>
<td>Not installed properly</td>
<td>Check installation with factory installation drawing</td>
</tr>
<tr>
<td>Leveling valve incorrectly</td>
<td></td>
<td>Adjust the leveling valve per leveling valve instructions or refer to leveling valve</td>
</tr>
<tr>
<td>adjusted</td>
<td></td>
<td>troubleshooting on page 22</td>
</tr>
</tbody>
</table>
# Leveling Valve Troubleshooting and Testing

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airsprings flat</td>
<td>Obstruction in air line&lt;br&gt;Defective Pressure Protection Valve&lt;br&gt;Defective leveling valve-see test procedure&lt;br&gt;Air leak in system</td>
</tr>
<tr>
<td>Air springs raise to full height but do not exhaust</td>
<td>Leveling valve linkage slipping (if clamped boot type)&lt;br&gt;Obstructed air line&lt;br&gt;Defective leveling valve-see test procedure&lt;br&gt;Make sure any valves between leveling valve and airsprings are not one way valves</td>
</tr>
<tr>
<td>Air springs deflate when parked</td>
<td>Leak in air system-check with soapy water&lt;br&gt;Defective leveling valve-see test procedure</td>
</tr>
<tr>
<td>Suspension will not maintain proper height</td>
<td>Leveling valve linkage slipping (if clamped boot type)&lt;br&gt;Obstructed air line&lt;br&gt;Defective leveling valve-see test procedure</td>
</tr>
</tbody>
</table>

## Leveling valve test procedure

1. With a minimum of 90 psi at the supply port, rotate the lever up (as indicated on the side of the valve) 30° to 45°. Air should begin to flow into the air springs within seconds.
2. Rotate the lever to the neutral position. Air flow should stop.
3. Rotate the lever down 30° to 45°. Air should begin to exhaust from the air springs within seconds.
4. Rotate the lever to the neutral position. Air flow should stop.
5. If the valve fails to flow air or shut off as specified, replace leveling valve.

## Reasons to replace leveling valve
- Did not pass the test procedure.
- Air leaks from the leveling valve.
- Leveling valve is damaged.