CONVERSION HOIST

Operation & Installation Manual
| PAGE 4 | OPERATIONS AND SERVICE |
| PAGE 5 | ABOUT THE HYDRAULIC CONTROLS AND PUMP/HOIST CONTROL HANDLE INSTALLATION. |
|        | OPERATION INSTRUCTIONS FOR THE HYDRAULIC SYSTEM |
| PAGE 6 | HYDRAULIC PLUMBING DIAGRAM FOR P21 PUMP, 8C VALVE, AND 15 QUART RESERVOIR. (SINGLE CYLINDER APPLICATION) |
|        | HYDRAULIC PLUMBING DIAGRAM FOR P22 PUMP, 8C VALVE, AND 21 QUART RESERVOIR. (DUAL CYLINDER APPLICATION) |
| PAGE 7 | PUMP ROTATION AND PORTING |
| PAGE 8-9 | ELECTRIC PUMP PLUMBING DIAGRAMS |
| PAGE 10-11 | ELECTRIC PUMP PRIMING PROCEDURES AND TROUBLESHOOTING |
| PAGE 12 - 14 | INSTALLATION PROCEDURES AND LUBRICATION. |
| PAGE 15 | SAFETY PROP INSTALLATION |
| PAGE 16-27 | HOIST RATINGS |
OPERATIONS AND SERVICE INFORMATION

Do not operate this equipment without fully reading and understanding this manual.

Do not allow unauthorized personnel to operate this equipment.
Do not go underneath a loaded raised bed under ANY circumstances.

Be sure to..........

* Follow all Federal, State, Local regulations pertaining to this equipment.
* Keep unit properly maintained and serviced.
* Understand and follow all safety decals and keep them in good condition.
* Check hydraulic oil level each time truck is serviced.
* Add correct hydraulic oil to reservoir as needed.

---

**ELECTRIC PUMP APPLICATIONS**

**CAUTION**

* USE DEXTRON ATF OIL ONLY!
* DEXTRON AUTOMATIC TRANSMISSION FLUID
* ELECTRIC PUMP APPLICATIONS ONLY!!!

---

**PTO PUMP APPLICATIONS**

**CAUTION**

* USE HYDRAULIC OIL ONLY!
* TEXACO RANDO HD 32
* EXXON NUTO HD 32
* SHELL TELLUS HD 32
* OR COMPARABLE

---

When calling for Parts/Service Be Sure To Have....

**Body:** model number  
serial number

---

**Serial Plate Location**

---

**Hoist:** model number  
serial number

---

**Serial Plate Location**
To Operate the Hoist:

(1) With engine running at idle speed, transmission in neutral, and the park brake set.

(2) Depress clutch pedal.

(3) Pull PTO control out until the red PTO light illuminates. Note: if light does not illuminate, and PTO does not engage, slowly release the clutch pedal while pulling on the PTO control.

(4) Once the PTO is engaged, release the clutch pedal to supply power to the pump.

(5) The pump/hoist control should be in the neutral or "hold" position.

(6) Depress the safety button and pull the pump/hoist control to raise the bed. See Detail D below.

(7) When bed raises to desired height push the pump/hoist controls to the center neutral or "hold" position this will stop bed movement up or down.

(8) To lower bed depress the safety button and push pump/hoist control.

(9) Depress clutch pedal, and push PTO control to disengage.

FOR ELECTRIC PUMP APPLICATION
To Operate the push button Hoist:

Press and hold appropriate button.

NOTE: Pump will stop when button is released.
Body Down Relief Port Setting 500-700 PSI
Body Up Relief Port Setting 2800-3000 PSI.

PUMP MAY OCCUR!!

WHEN PLUMBING PUMP, BE SURE TO USE THE PROPER PORT. IF YOU ARE NOT SURE WHICH PORT IS SUCTION & WHICH IS MAIN PRESSURE, LEAVE SHIPPING PLUGS IN PORTS AND OPERATE PUMP NO LONGER THAN 3 SECONDS. THIS WILL POP OUT THE MAIN PRESSURE SHIPPING PLUG. BE SURE IT RUNS NO LONGER THAN 3 SECONDS, OR PERMANENT DAMAGE TO PUMP MAY OCCUR!!

NOTE: SIDE PORTS MAY BE USED IF REAR PORTS ARE OBSTRUCTED.

NOTE:

WHEN PLUMBING PUMP, BE SURE TO USE THE PROPER PORT. IF YOU ARE NOT SURE WHICH PORT IS SUCTION & WHICH IS MAIN PRESSURE, LEAVE SHIPPING PLUGS IN PORTS AND OPERATE PUMP NO LONGER THAN 3 SECONDS. THIS WILL POP OUT THE MAIN PRESSURE SHIPPING PLUG. BE SURE IT RUNS NO LONGER THAN 3 SECONDS, OR PERMANENT DAMAGE TO PUMP MAY OCCUR!!

Body Down Relief Port Setting 500-700 PSI
Body Up Relief Port Setting 2800-3000 PSI.
THE P21 AND P22 PUMPS ARE BI-DIRECTIONAL AND OFFER SIDE AND REAR (NPT) PORTING. THE PUMPS ARE SHIPPED WITH THE SIDE PORTS PLUGGED. TO UTILIZE SIDE PORTING MOVE THE STEEL PLUGS FROM THE SIDE PORTS TO THE REAR PORTS AND PLUMB ACCORDINGLY.

USE THE ILLUSTRATION ABOVE FOR PORT DESIGNATION BASED ON PUMP ROTATION.

HELPFUL HINT:
TO DETERMINE PUMP ROTATION, DO NOT REMOVE THE PLASTIC SHIPPING PLUGS. TEMPORARILY BOLT PUMP TO THE MOUNTED PTO. START TRUCK ENGINE AND ENGAGE PTO FOR APPROXIMATELY (3) SECONDS AND SHUT-OFF. THE PLASTIC SHIPPING PLUG ON THE PRESSURE PORT SHOULD HAVE POPPED OUT OF THE PUMP HOUSING.
NOTE: Ground Wire is to be ground to valve body.
DO NOT GROUND TO CHASSIS!!.
NOTE: Ground Wire is to be ground to valve body. DO NOT GROUND TO CHASSIS!!.

NOTE: HYDRAULIC PORT FITTINGS ORIENTATION MAY VARY DEPENDING ON CHASSIS TYPE.
Electric Pump Priming Procedure
Single acting (3519) or Double acting (3551)

(A) Be sure hoist and electric pump are completely installed and ready to safely operate. Fill electric pump reservoir with Automatic Transmission Fluid to within 1” of top.

(B) Power the hoist “Up” using the “White” button on the push button controller. NOTE: If hoist does not start to raise within 10 seconds, stop and check that the hydraulic lines are correctly installed. See below:

Monarch 3551 (double acting, yellow) “C1” port = hoist raise (white button) = 3200psi  
“C2” port = hoist lower (black button) = 750psi

Monarch 3519 (single acting, orange) “P” port = hoist raise (white button) = 3200psi  
Must be connected > “S” port = lower/vent to res. (black button) = -0- psi

(C) When powering the hoist “Up” the first time it is imperative that the reservoir NOT run out of fluid. Maintain a half tank of fluid on the first lift by stopping and filling as needed.

(D) As you are fully raising the hoist safely check for leaks, any visual obstructions, etc.

(E) For Double Acting Pump Only - Lower the hoist by pressing the black button. NOTE: Lower the hoist 1/3 and stop for 20 seconds, repeat two more times until hoist is fully lowered. Once the hoist has fully lowered CONTINUE to hold the “black” button until the oil in the reservoir stops moving (turbulence). (about 20 seconds) The turbulence you see in the reservoir during this crucial step is in reality filling the top side (or down side) of the cylinder. This typically has to be done only upon the initial installation or when the unit has run low in oil and is being refilled.

(F) After steps A through E have been done fill the reservoir as needed to maintain 2/3 to ¾ full with bed down.

HELPFUL HINTS:
(1) Perform the above priming steps no more than twice in 30 minutes due to the oil aerating.

(2) If the reservoir overflows when lowering, the following could cause this.
   (a) Aerated oil
   (b) “Hoist lower” line too small or obstructed
   (c) Wrong ports used on pump
   (d) Extremely cold conditions.

(3) Make sure the customer understands that the electric power unit (used when necessary) will have the same lifting capacity but will be slower than a PTO driven unit.

(4) Do not operate pump more than (2) minutes at a time or without truck engine running so as to keep a charge in battery.

Rev. 5/15/09 JrG
MONARCH M-3519 (single acting). M-3551 (double acting)  
ELECTRIC PUMP TROUBLESHOOTING

Motor on pump does not operate.

**Electric pump Solenoid does not click.**
(A) Bad hot(+) or ground(-) cable(s) from battery to pump. Be sure to use both cables and connect directly to battery. It is advisable to install a 250amp Mega fuse at the positive battery connection. *Note: On newer trucks the ground cable from battery to chassis is too small to carry the load of the electric pump unit. This is why you need (2) individual positive and ground cables from battery to electric pump unit.*

(B) Check for 12v signal at small post of solenoid when pressing the “up” button of the control. If voltage is below 12 volts it may be a sign of an alternator or battery issue. If no voltage it may be the switch or a broken or corroded wire

**Electric pump Solenoid clicks but motor does not operate.**
(A) Check battery connection between solenoid and motor.

(B) Contacts in solenoid could be burned. (Check this by shorting the two large posts on the solenoid, if motor turns replace solenoid assembly)

(C) Motor could be bad.

(D) Pump could be seized.

**Motor/pump turns but hoist will not work.**
(A) Check for 12 volts at valve coil(s). Could be bad switch or broken wire.

(B) Is/are coil(s) magnetized when button is pressed? Could be bad coil/ or connector.

(C) Cartridge stem could be bent. With bed down, remove cartridge and roll on table to check for alignment.

(D) Check pump unit pressure. Up should be 3200psi and down (on double acting units) should be 750psi.

**Hoist stuck in up position, will not come down.**
(A) Check for 12 volts at “down” coil.

(B) Bent stem on “down” cartridge. Call for service technician. DO NOT ATTEMPT TO REPAIR!

Rev. 5/15/09 JrG
PROCEDURE I - HOIST LOCATION ON TRUCK CHASSIS

**Procedure Steps:**

1. **Locate and Mark Centerlines for Rear Hinge Pivot.** (This dimension is usually 6” behind the rear spring hanger bracket but may vary on certain chassis models.)

2. **Based on the Hoist Model,** select the “G” dimension from the table above. Mark the centerline of the lower mounting bracket.

3. **Place the Hoist on the Chassis** and check for crossmember interference.

---

### "G" Dimension Table

<table>
<thead>
<tr>
<th>Model</th>
<th>45° Tilt</th>
<th>50° Tilt</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS 415</td>
<td>76&quot;</td>
<td>68.5&quot;</td>
</tr>
<tr>
<td>GS 515</td>
<td>76&quot;</td>
<td>68.5&quot;</td>
</tr>
<tr>
<td>GS 615</td>
<td>76&quot;</td>
<td>68.5&quot;</td>
</tr>
<tr>
<td>GS 615 HD</td>
<td>82&quot;</td>
<td>74&quot;</td>
</tr>
<tr>
<td>GS 6615</td>
<td>82&quot;</td>
<td>74&quot;</td>
</tr>
<tr>
<td>GS 615 LS</td>
<td>90&quot;</td>
<td>81&quot;</td>
</tr>
<tr>
<td>GS 620 HD</td>
<td>105.5&quot;</td>
<td>95.5&quot;</td>
</tr>
<tr>
<td>GS 628</td>
<td>132&quot;</td>
<td>119.5&quot;</td>
</tr>
<tr>
<td>GS 6620</td>
<td>106.5&quot;</td>
<td>96.5&quot;</td>
</tr>
<tr>
<td>GS 5530</td>
<td>138&quot;</td>
<td>125&quot;</td>
</tr>
<tr>
<td>GS 6630</td>
<td>138&quot;</td>
<td>125&quot;</td>
</tr>
</tbody>
</table>

---

**Recommended Bed Lengths:***

- 8,000 - 10,000 LBS: GS415 - 10 – 12 FT.
- 11,000 - 15,000 LBS: GS615 - 10 – 12 FT.
- 14,000 - 18,000 LBS: GS615 HD - 10 – 12 FT.
- 18,000 - 24,000 LBS: GS6615 - 12 – 14 FT.
- 24,000 - 28,000 LBS: GS628 - 12 – 16 FT.
- 24,000 - 28,000 LBS: GS6620 - 14 – 16 FT.
- 28,000 - 35,000 LBS: GS5530 - 18 – 22 FT.
- 35,000 - 50,000 LBS: GS6630 - 18 – 24 FT.

---

**Notes:**

- All Champion hoists bolt to the truck chassis. Do not weld!
- Lower bracket mounting hardware:
  - (6) 1/2-13 x 2" LG. HEX HEAD BOLT (GRADE 8)
  - (6) 1/2-13 UNC HEX NUT - (GRADE 8)
  - (6) 1/2" LOCK WASHER

---

**Procedure Steps Continued:**

- Trim chassis rail on both sides to clear body as it tilts.
- Weld all around using 1/2" fillet welds.
- Bracket must fit flush against chassis web.
- Hoist support angles used to hold unit parallel with chassis. Do not remove.

---

**Illustration:**

- See illustration left
PROCEDURE II - BED SPACER AND REAR HINGE INSTALLATION

PROCEDURE STEPS:
(SEE ILLUSTRATIONS LEFT)

CUT SPACER BLOCKS (1" x 3" x 4" LG).

POSITION BLOCKS ON TOP OF THE TRUCK CHASSIS RAIL ON EITHER SIDE OF THE LOWER HOIST MOUNTING BRACKETS APPROXIMATELY 48" APART. THE 1" THICK SIDE SHOULD FACE UP ON LONG SILL.

PLACE BODY ON CHASSIS APPROXIMATELY 2-1/2" FROM CAB. THE BODY MUST BE PARALLEL WITH THE CHASSIS RAILS.

WELD REAR HINGE FLIPPERS TO LONG SILLS. USING 1/2" CONTINUOUS FILLET WELDS AROUND ALL CONTACT AREAS.

WELD BODY SPACERS TO LONG SILLS OF BODY.

CAUTION: FAILURE TO PERFORM THIS PROCEDURE AS SPECIFIED COULD CAUSE HOIST FAILURE AND THEREFORE VOIDS ASSOCIATED WARRANTY.
PROCEDURE III - REMOVING SLACK FROM HOIST AND REAR HINGE

PROCEDURE STEPS:
(SEE ILLUSTRATION LEFT)

- SIT THE BODY FLUSH ONTO THE TRUCK CHASSIS.
- WELD LIFT ARMS TO LONG SILLS USING 1/2" CONTINUOUS FILLET WELD. (SEE BELOW)
- MAKE SURE HOIST IS CENTERED WITHIN THE TRUCK CHASSIS RAILS.
- SLIDE THE HOIST SET COLLARS FIRMLY AGAINST THE LIFT ARM SHOULDERS AND TIGHTEN THE SQUARE HEADED SCREWS.

NOTE: MAKE SURE TO GREASE ALL LUBRICATION FITTINGS BEFORE OPERATING. REFER TO PAGE (8) FOR FITTING LOCATIONS.

CAUTION: FAILURE TO PERFORM THIS PROCEDURE AS SPECIFIED COULD CAUSE HOIST FAILURE AND THEREFORE VOIDS ASSOCIATED WARRANTY.
**DETAIL "A"**

**BODY CROSS MEMBER**

SAFETY PROP CUP

3/8” WELD AT ALL POINTS OF CONTACT

LOCATE SAFETY PROP CUPS ON BODY MAIN RUNNER SO THAT THE SAFETY PROP IS ANGLED SLIGHTLY TO THE REAR. ALSO, BE SURE CUPS ARE SUPPORTED BY A BODY CROSS CHANNEL.

---

**DETAIL "B"**

WELD SAFETY PROP U-BRACKET TO MOUNTING ANGLE

SAFETY PROP MOUNTING ANGLE BOLTED TO CHASSIS (2) PLACES

DO NOT WELD TO CHASSIS!
CHAMPION HOIST RATINGS

<table>
<thead>
<tr>
<th>Hoist</th>
<th>NTEA Class</th>
<th>System Pressure</th>
<th>Capacity (TONS) - Truck Bed Length (FT) - 18 inches Overhang</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS 415</td>
<td></td>
<td>3,000</td>
<td>5.9  4.6</td>
</tr>
<tr>
<td>GS 515</td>
<td>C</td>
<td>3,000</td>
<td>9.2  7.2</td>
</tr>
<tr>
<td>GS 615</td>
<td>C</td>
<td>3,000</td>
<td>13.2 10.3</td>
</tr>
<tr>
<td>GS 615 HD</td>
<td>C</td>
<td>3,000</td>
<td>13.9 10.8</td>
</tr>
<tr>
<td>GS 615 LS</td>
<td>C</td>
<td>3,000</td>
<td>12.2  9.5</td>
</tr>
<tr>
<td>GS 620 HD</td>
<td>D</td>
<td>3,000</td>
<td>14.4 11.8 10.0</td>
</tr>
<tr>
<td>GS 6615</td>
<td>E</td>
<td>3,000</td>
<td>21.8 17.8</td>
</tr>
<tr>
<td>GS 628</td>
<td>G</td>
<td>3,000</td>
<td>19.5 16.0 13.5</td>
</tr>
<tr>
<td>GS 5530</td>
<td>G</td>
<td>3,000</td>
<td>14.2 12.6 11.3</td>
</tr>
<tr>
<td>GS 6620</td>
<td>G</td>
<td>3,000</td>
<td>18.6 15.9</td>
</tr>
<tr>
<td>GS 6630</td>
<td>H</td>
<td>3,000</td>
<td>20.4 18.1 16.3 14.8</td>
</tr>
</tbody>
</table>

RATED CAPACITY
18 INCHES OVERHANG

BED LENGTH (FT)

TONS

- GS 415
- GS 515
- GS 615 LS
- GS 615
- GS 615 HD
- GS 620 HD
- GS 6615
- GS 628
- GS 5530
- GS 6620
- GS 6630
"G" DIMENSION

- GREASE FITTING LOCATIONS

45° TILT  76 inches
50° TILT  68.5 inches

Truck bed lengths -10 - 12 feet
GVW -  8000 - 10000 lbs

CHAMPION Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
GS515

45° TILT 76 inches
50° TILT 68.5 inches

Truck bed lengths -10 - 12 feet
GVW - 8000 - 10000 lbs

C H A M P I O N
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
GS615

Grease Fitting Locations

"G" Dimension

<table>
<thead>
<tr>
<th>Tilt Angle</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>45° Tilt</td>
<td>76 inches</td>
</tr>
<tr>
<td>50° Tilt</td>
<td>68.5 inches</td>
</tr>
</tbody>
</table>

Truck bed lengths -10 - 12 feet
GVW - 11000 - 14000 lbs

C H A M P I O N
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
GS615LS

"G" DIMENSION

<table>
<thead>
<tr>
<th>45° TILT</th>
<th>90 inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>50° TILT</td>
<td>81 inches</td>
</tr>
</tbody>
</table>

- GREASE FITTING LOCATIONS

Truck bed lengths -10 - 12 feet
GVW - 11000 - 15000 lbs
GS6615

4 - GREASE FITTING LOCATIONS

"G" DIMENSION

<table>
<thead>
<tr>
<th>Tilt Angle</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>45° TILT</td>
<td>82 inches</td>
</tr>
<tr>
<td>50° TILT</td>
<td>74 inches</td>
</tr>
</tbody>
</table>

Truck bed lengths -12 - 14 feet
GVW - 18000 - 24000 lbs

C H A M P I O N
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
GS615HD

"G" DIMENSION

45° TILT  82 inches
50° TILT  74 inches

- GREASE FITTING LOCATIONS

Truck bed lengths -10 - 12 feet
GVW - 14000 - 18000 lbs
"G" DIMENSION

<table>
<thead>
<tr>
<th>Angle</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>45° TILT</td>
<td>105.5 inches</td>
</tr>
<tr>
<td>50° TILT</td>
<td>95.5 inches</td>
</tr>
</tbody>
</table>

- GREASE FITTING LOCATIONS

Truck bed lengths - 12 - 16 feet
GVW - 14000 - 18000 lbs
"G" DIMENSION

<table>
<thead>
<tr>
<th>Tilt Angle</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>45° TILT</td>
<td>106.5 inches</td>
</tr>
<tr>
<td>50° TILT</td>
<td>96.5 inches</td>
</tr>
</tbody>
</table>

- GREASE FITTING LOCATIONS

Truck bed lengths - 14 - 16 feet
GVW - 24000 - 28000 lbs

CHAMPION
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
GS628

<table>
<thead>
<tr>
<th>&quot;G&quot; DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>45° TILT</td>
</tr>
<tr>
<td>132 inches</td>
</tr>
<tr>
<td>50° TILT</td>
</tr>
<tr>
<td>119.5 inches</td>
</tr>
</tbody>
</table>

- GREASE FITTING LOCATIONS

Truck bed lengths - 14 - 16 feet
GVW - 24000 - 28000 lbs

C H A M P I O N
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
G DIMENSION

- GREASE FITTING LOCATIONS

"G" DIMENSION

45° TILT  138 inches
50° TILT  125 inches

Truck bed lengths - 18 - 20 feet
GVW -  28000 - 35000 lbs

C H A M P I O N
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822
27

"G" DIMENSION

<table>
<thead>
<tr>
<th>Tilt Angle</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>45° TILT</td>
<td>138</td>
</tr>
<tr>
<td>50° TILT</td>
<td>125</td>
</tr>
</tbody>
</table>

- GREASE FITTING LOCATIONS

Truck bed lengths - 18 - 24 feet
GVWR - 35000 - 50000 lbs

CHAMPION
Hoist and Equipment
Dunn, North Carolina, U.S.A.
910 - 897 - 4995
Fax 910 - 897 - 6822