

MTT20 CAT777(F/G)-4



**GENUINE MEGA**

SPECIALTY HAULAGE SOLUTIONS FOR CONSTRUCTION & MINING

# FIELD INSTALLATION MANUAL



**EQUIPMENT** ➤ **PARTS** ➤ **SUPPORT** ➤



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# SECTION 1

## Definitions and Abbreviations

### Contents

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### MANUAL USAGE

This technical manual only contains information required to safely install the MTT. See the CAT Maintenance and Operators Safety Manual for specific vehicle system information and maintenance procedures. If your system is not covered in this manual please contact MEGA Corp. Product Support at:

1-800-345-8889 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more detailed information.

The exact location of the hazards and description of the hazards are reviewed in this section. All personnel working on or operating the machine must become familiarized with all the safety messages.

#### **WARNING**

Due to the nature of these processes, ensure that all safety information, warnings and instructions are read and understood before any operation or any maintenance procedures are performed. Some procedures take place with heavy components and at moderate heights, ensure proper safety procedures are maintained when performing these actions. Failure to use and maintain proper safety equipment and procedures will cause injury, death or damage to equipment.

### WARNING, CAUTION AND NOTES

The following definitions are found throughout the manual and apply as follows:

#### **WARNING**

Operating procedures and techniques, which could result in personal injury and/or loss of life if not carefully followed.

#### **CAUTION**

Operating procedures and techniques, which could result in damage to equipment if not carefully followed.

#### **NOTE**

Operating procedures and techniques that are considered essential to emphasize.

### USE OF SHALL, WILL, SHOULD AND MAY

**Shall** and **Will** – Used when application of a procedure is mandatory.

**Should** – Used when application of a procedure is recommended.

**May** - Used to indicate an acceptable or suggested means of accomplishment.

## SECTION 1

### Definitions and Abbreviations

#### SAFETY MESSAGES

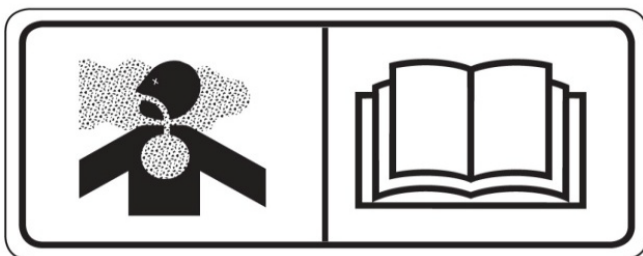
There are several specific safety messages on this machine. The exact location of the hazards and description of the hazards are reviewed in this section. All personnel working on or operating the machine must become familiarized with all the safety messages.

Make sure that all of the safety messages are legible. Clean the safety messages or replace the safety messages if you cannot read the words. Replace the illustrations if the illustrations are not legible. When you clean the safety messages, use a cloth, water and soap. Do not use solvent, gasoline or other harsh chemicals to clean the safety messages. Solvents, gasoline or harsh chemicals could loosen the adhesive that secures the safety messages. Loose adhesive will allow the safety messages to detach.

Replace any safety message that is damaged or missing. If a safety message is attached to a part that is replaced, install a new safety message on the replacement part.

#### TOXIC GAS HAZARD (1)

This safety label is located on the side of the tank and at all water fill entrances.

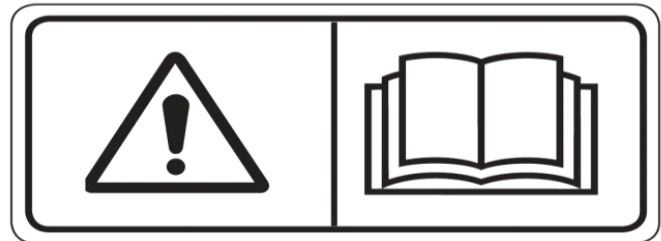


#### ⚠ WARNING

Cutting or welding operation on the inside of the tank can cause the accumulation of toxic gases. Read and understand instructions and warnings in the Maintenance Manual. Failure to provide proper ventilation or breathing apparatus while conducting these operations may result in serious injury or death.

#### DO NOT OPERATE (2)

This safety label is located on the outside of the front and rear control boxes (if equipped).

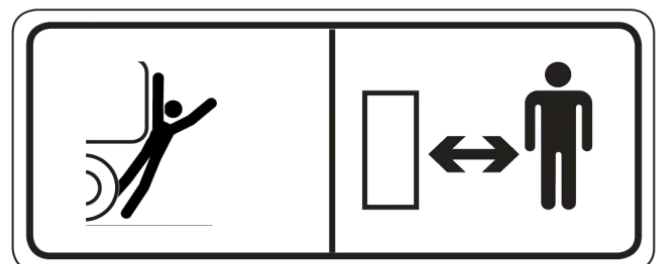


#### ⚠ WARNING

Do not open this control box unless you read and understand the instructions and warnings in the Operator and Maintenance Manual. Failure to follow instructions or heed the warnings could result in serious injury or death.

#### BACKING RUN OVER HAZARD (3)

This safety label is located on the rear of the tank and inside the cab.



#### ⚠ WARNING

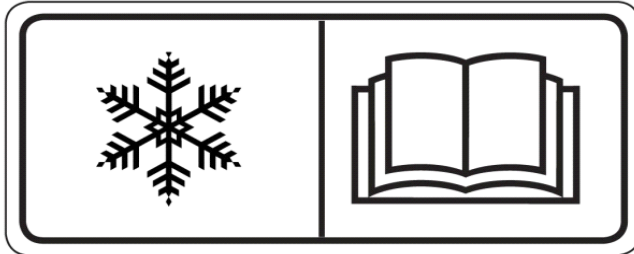
The vehicle is equipped with a back-up alarm. Alarm must sound when operating this vehicle in reverse. Failure to maintain a clear view in the direction of travel could result in serious injury or death.

## SECTION 1

### Definitions and Abbreviations

#### **FREEZING (4)**

This safety label is located on the side of the tank, at the sump drain, and on the pump.

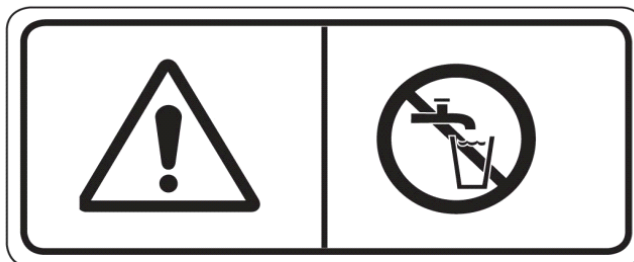


#### **⚠ WARNING**

Drain tank, fill pipe and valve in freezing weather. Refer to the Operator and Maintenance Manual for the procedure to follow.

#### **NON-POTABLE (5)**

This safety label is located on the side of the tank and sump drain.



#### **⚠ WARNING**

Water held within tank is not potable. Do not use tank for transport of water intended for human or animal consumption or serious injury or death may result.

#### **DO NOT HOIST WHILE IN MOTION (6)**

This safety label is located inside the cab.

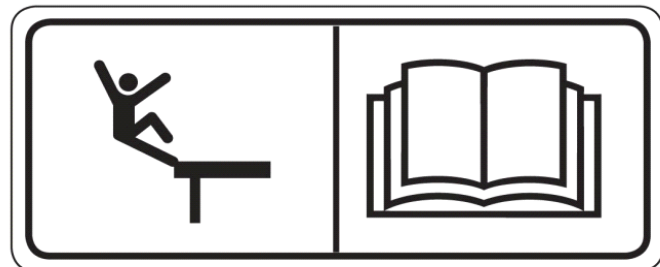


#### **⚠ WARNING**

Do not engage hoist cylinders while vehicle is in motion. Before engaging hoist STOP the vehicle. Do not engage hoisting cylinders unless you read and understand the instructions and warnings in the Operator or Maintenance Manual. Failure to follow instructions or heed the warnings will result in injury or death.

#### **FALL HAZARD (7)**

This safety label is located at the top of the front and rear of the tank.



#### **⚠ WARNING**

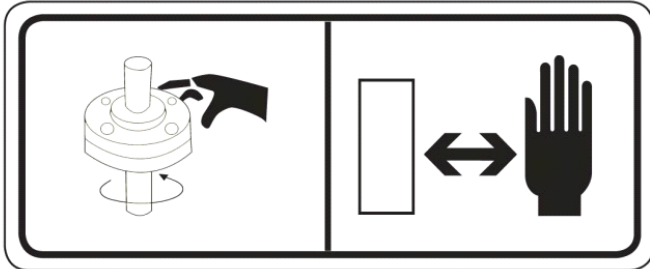
Do not walk on the top of tank without fall arrest PPE. Serious injury or death could occur from a fall.

## SECTION 1

### Definitions and Abbreviations

#### ROTATING SHAFT (8)

This safety label is located on the pump.

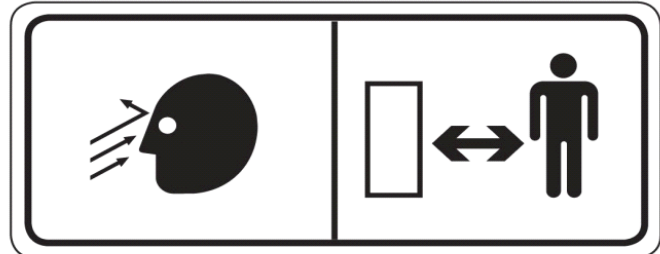


#### **⚠ WARNING**

Do not place your hand or tools within pump bell while pump is rotating and/or pressure held within the motor supply hose. Refer to the Operator and Maintenance Manual for the procedures to operate and maintain the pump. Failure to follow proper procedures could result in serious injury.

#### HIGH PRESSURE WATER CANNON (10)

This safety label is located on top of the cab control box.

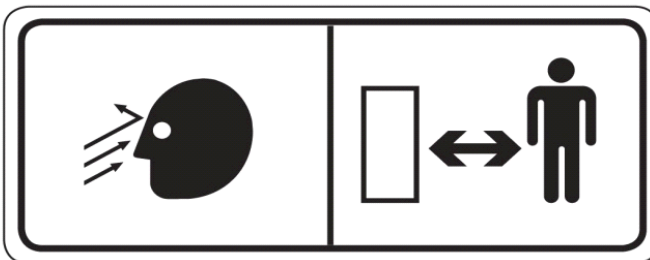


#### **⚠ WARNING**

Do not operate the water cannon until all personnel are a safe distance away from the vehicle.

#### HIGH PRESSURE SPRAY HEADS (9)

This safety label is located on the spray bar.

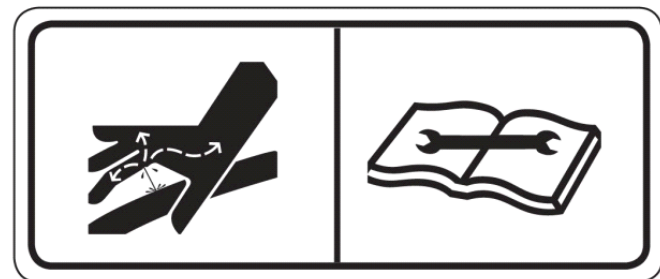


#### **⚠ WARNING**

Do not operate spray heads until all personnel are a safe distance away from the vehicle.

#### HIGH PRESSURE MOTOR (11)

This safety label is located on the hydraulic motor.



#### **⚠ WARNING**

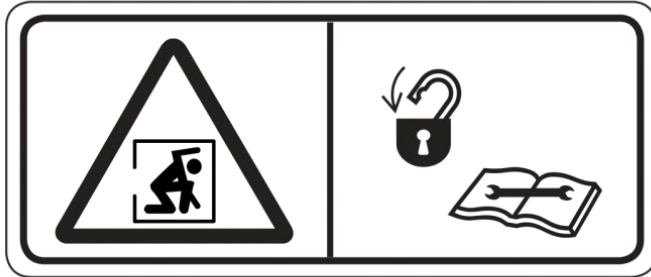
Hydraulic motor and supply lines contain oil under high pressure. Improper removal and repair procedures could cause severe injury. To remove or repair, instructions in the Maintenance Manual must be followed.

## SECTION 1

### Definitions and Abbreviations

#### CONFINED SPACE (12)

This safety label is located near the water tank access and fill ports.



#### **WARNING**

**Do not enter confined spaces without following established site specific procedures. Failure to follow proper safety procedures will result in serious injury or death.**

#### ABBREVIATIONS

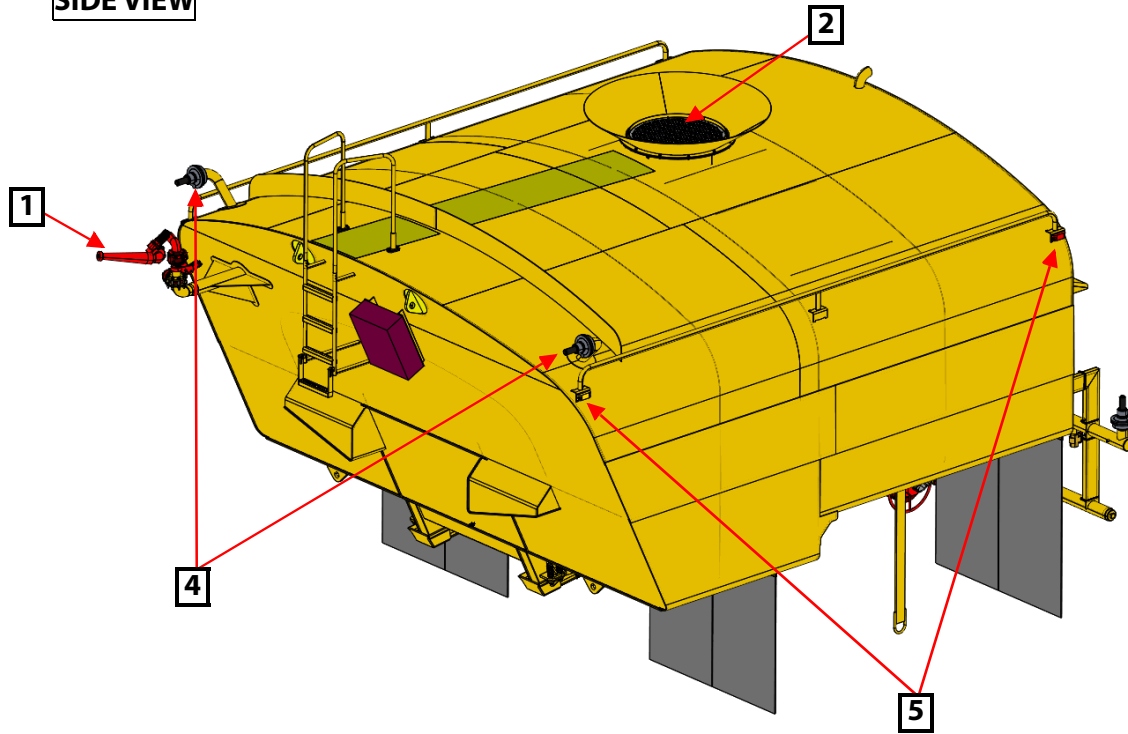
- BFV - Butterfly Valve
- CCW - Counterclockwise
- CW - Clockwise
- EPC - Electric Proportional Control
- FIP - Fault Isolation Procedures
- Ft-lbs - Foot Pounds of Torque
- GPM - Gallons per Minute
- IPB - Illustrated Parts Breakdown
- LT - Left (as viewed from the rear of the vehicle looking forward)
- MTT - MEGA Truck Tank
- n-m - Newton Meters of Torque
- PSI - Pounds per Square Inch
- RT - Right (as viewed from the rear of the vehicle looking forward)
- RPM - Revolutions per minute
- VDC - Volts Direct Current
- VSS - Vertical Side Spray head

# SECTION 1

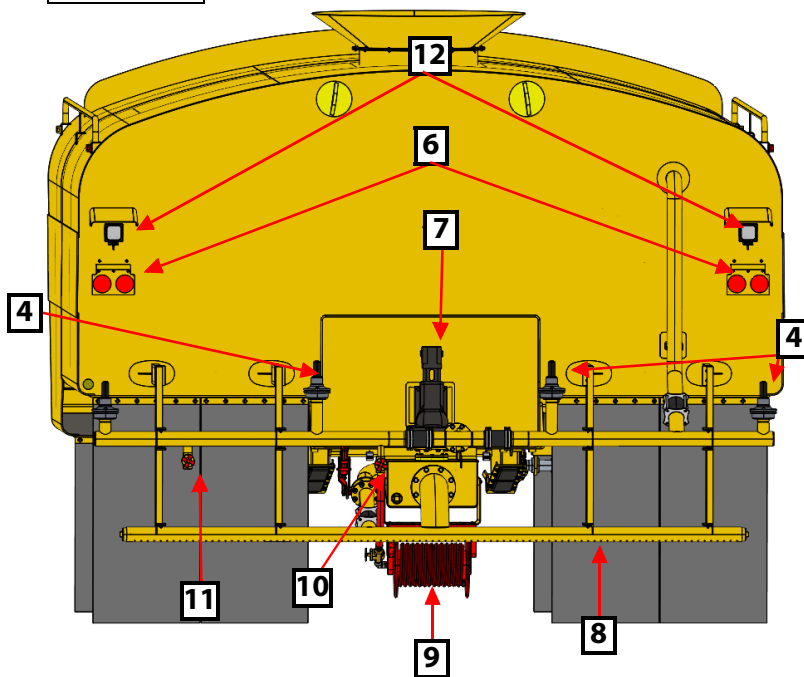
## Definitions and Abbreviations

### MTT OVERVIEW (TYPICAL)

**SIDE VIEW**



**REAR VIEW**



- |    |                             |
|----|-----------------------------|
| 1  | WATER CANNON                |
| 2  | TANK FILL PORT              |
| 3  | SOLENOID CONTROL BOX        |
| 4  | SPRAY HEADS                 |
| 5  | CLEARANCE LIGHTS            |
| 6  | STOP, TURN, AND TAIL LIGHTS |
| 7  | WATER PUMP                  |
| 8  | DUMP BAR                    |
| 9  | HOSE REEL                   |
| 10 | HOSE REEL SHUT-OFF VALVE    |
| 11 | SPRAY BAR DRAIN             |
| 12 | WORK LIGHTS                 |

## SECTION 2

### Support Equipment & Labor Hour Requirements

#### Contents

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Crane Requirements .....	2-1	General Hand Tools And Equipment .....	2-3
Crew Members .....	2-1		

#### **DESCRIPTION**

The following information is provided to assist in the successful installation of the MTT. These guidelines are essential planning tools for both supervision and work crews to complete the entire installation in a timely and safe manner.

#### **CRANE REQUIREMENTS**

Use a crane with the capacity to lift the tank onto truck chassis. Ensure the crane can move the tank to the required mounting position based on MTT dimensions.

#### **CREW MEMBERS**

Use a minimum of 2 crew members in the hoisting process and 4 crew members for lifting and positioning of all other assembly items.

#### **LABOR HOURS**

Actual installation time may vary greatly due to location of assembly (truck shop or green field). See figure 2-1 for typical labor hour requirements for installation in a large truck shop facility with MEGA factory trained and qualified personnel.

#### **NOTE**

Customers performing MTT installations **MUST** add additional labor hours above and beyond totals contained in figure 2-1.



## SECTION 2

### Support Equipment & Labor Hour Requirements

#### GENERAL HAND TOOLS AND EQUIPMENT

##### LADDER/SCAFFOLDS

Select ladders and/or build scaffolds based on water tank dimensions.

##### WELDING EQUIPMENT

1. FCAW-E71-T1 with 100% CO<sup>2</sup> or 75/25 AR/CO<sup>2</sup> mix.
2. SMAW (stick) E7018 1/8 inch (3.175mm) and 5/32 inch (4mm) diameter.
3. Oxygen/Fuel or Plasma cutter with 1 inch (13mm) of cutting capacity.

##### HANDTOOLS & OTHER EQUIPMENT

1. At least a 10 lbs sledge hammer.(4.5kg)
2. Truck mounted boom crane (optional)
3. Basic hand tools for mechanical assembly and wiring as shown in the following:
  - A. Basic 3/8 inch and 1/2 inch drive Ratchet and Socket Set (Impact, Deep and Shallow sockets)
    - Capacity – 1/4 inch (6mm) to 1 1/2 inch (38mm)



- B. Basic Combination Wrench Set
  - Capacity - 1/4 inch (6mm) to 1 1/4 inch (32mm)



- C. Basic Screwdriver Set

- #0 and #2 Phillips (Crosshead) long and short shank
- 1/8 inch to 3/8 inch Flat tip (Slotted) long and short shank



- D. Basic Nut Driver Set

- Capacity – 3/16 inch to 1/2 inch, 5mm to 13mm



- E. Basic Hex Driver Set (Allen Wrench)

- Capacity – 1/16 inch to 3/8 inch, 1.5mm to 10mm

## SECTION 2

### Support Equipment & Labor Hour Requirements



F. Basic TORX (Star) bit/driver Set

- Capacity - T10 to T50



G. Basic Ball Peen Hammer Set

- Capacity – 16 to 32 ounce (0.5 to 1.0 kg)



H. Soft Face Dead Blow Mallet

- Capacity – 10 to 12 Pounds (4.5 to 5.5 kg)



I. Measuring Tape

- Capacity – 25 feet (about 8 meters)



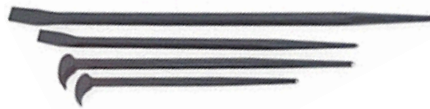
J. Metal File Set

- Capacity – Assorted



K. Basic Pry (Alignment) Bar Set

- 24 and 36 inch (60-90 cm) Alignment Bar
- 12 and 18 inch (30-45 cm) Roll Head Pry Bar



L. Basic Pipe Wrench

- Capacity – (Length) 16 inch (40 cm)



M. Basic Adjustable Wrench Set

- Capacity – (Length) 6 inch through 24 inch (15-60 cm)



N. Basic Torque Wrench Set

- ( $\frac{3}{8}$  inch Drive) 20 to 200 inch/pounds (2.0 to 22.0 nm)
- ( $\frac{3}{8}$  inch Drive) 20 to 150 foot/pounds (27.0 to 200.0 nm)
- ( $\frac{1}{2}$  inch Drive) 50 to 300 foot/pounds (68.0 to 400.0 nm)



O. Hand Hacksaw and/or Powered Chop Saw for field install hoses

## SECTION 2

### Support Equipment & Labor Hour Requirements



P. Basic High Speed Metal Drill Bit Set, Power Drill Motor and Hole Saw set

- High Speed Drill Set to 1/2 inch (14 mm)
- Power Drill Motor to 1/2 inch (14 mm) bit capacity
- Hole Saw set to 1 1/2 inch capacity
- Step Drill Bit to 1 1/8 inch capacity



S. 12/24V DC Test light



T. Electrical connection tools

- Standard wire cutters, Wire stripper, Crimper



- Deutsch Pin and Socket Crimper



Q. Photo Tach (Hand Held shaft rpm measuring tool) and Reflective tape strips



U. Basic Assorted Pliers and Side Cutters



R. Digital Multimeter (Volt/Ohm Meter)

- Capacity: 0 – 600V AC/DC; 0 – 10 Amps AC/DC; 0 – ∞ Ohms; Impedance: 2M Ohms

V. Hydraulic Test Equipment

- Gauges (2.0 to 2.5 inch dial)
  - Capacity: 0 - 160 psi (0 – 1,100 kPa) for Water Pressure, 1 each; 0 – 3,000 psi (0 – 20,000 kPa) for hydraulic oil pressure testing, 2 each

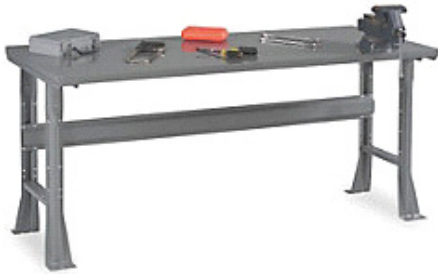
## SECTION 2

### Support Equipment & Labor Hour Requirements



- Hosing and adapter fittings as required

W. Sturdy Work Bench equipped with solid mounted vise with a jaw capacity of 6 inches (15 cm)



X. Pneumatic or Electric hand held grinder and de-burring tools

- Capacity – To remove paint for welding preparation, to enlarge or cut holes in metal panels and to dress finished welds. Assorted Carbide burrs and abrasive discs are required.



Y. Optional Pneumatic drive tools as required.



Z. Welding and Metal Cutting Equipment

- Capacity – Per Appendix requirements

AA. Hose Manufacturing capability

AB. Crane or Hoist

- Capacity – Per Appendix Requirements

AC. Miscellaneous hydraulic adapter fitting, to check and verify hydraulic oil sources and to aide in troubleshooting

AD. Various thread sealants for hydraulic, water and pneumatic connections, thread locking liquid and Anti-seize compounds

- Loctite® 277 (High Strength Thread Locker, Red) Part Number 27731
- Loctite® 242 (Medium Strength, removable Thread Locker, Blue) Part Number 24231
- Loctite® 569 (Hydraulic Pipe Thread Sealant) Part Number 56931
- Loctite® Thread Sealant With PTFE Part Number 1527514
- Loctite® Marine Grade Anti Seize Part Number 34395

## SECTION 3

### Job Site Selection & Preparation

#### Contents

Job Site Selection .....3-1	Site Preparation .....3-1
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#### **JOB SITE SELECTION**

Select a location that requires minimal preparation and provides unobstructed access for all required people and equipment.

Ensure the selected site contains:

1. Level ground.
2. Hard packed surface able to supporting the chassis, MTT and the equipment to install the MTT.
3. Shelter (highly recommended).

#### **SITE PREPARATION**

Prior to bringing the tank and the truck to the assembly location prepare the selected assembly area with the resources required to complete the mating of the tank to the truck.

Prepare the site by:

1. Clear all unneeded equipment from the assembly site.
2. Ensure all required access ways are open to move required equipment and parts in and out of the area.
3. Preposition all required cranes, hand tools, welding equipment, ladders, scaffolds, required electricity and shelter (if available).
4. Preposition the MEGA tank and associated parts boxes.
5. Preposition truck chassis.
6. Remove all parts from the shipping crate and discard excess packing material.

7. Identify each part, annotate packing list and sort parts by hydraulic, electrical, pneumatic and other.
8. Identify any shipping list shortages and obtain required parts.
9. If possible, locate assembly parts close to there intended installation location on the vehicle or MTT.

**SECTION 3**  
**Job Site Selection & Preparation**

# SECTION 4

## Unpacking & Parts Identification

### Contents

Unpacking And Parts Identification .....4-1      Packaging List Key ..... 4-1

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### UNPACKING AND PARTS IDENTIFICATION

1. Remove all parts from the shipping crate and discard excess packing material.
2. Identify each part, annotate packaging list and sort parts by hydraulic, electrical, pneumatic and other.
3. Identify any shipping list shortages and obtain required parts.
4. If possible, locate assembly parts close to their intended installation location on the vehicle or MTT.

### PACKAGING LIST KEY

The following information is provided to assist in reading and understanding the included packaging list. Definitions and descriptions of terms are as follows:

**Step:** A Mega used code for packaging operations.

**Item:** Provides the item’s part number. Attached to the part number is often a suffix that provides information about the part. The base part number can be found in the Bill of Materials (BOM) of the drawing designated.

Suffix	Meaning
<b>K</b>	The <b>K</b> suffix is used to designate either supply items or fabricated sub-assemblies.
<b>H</b>	The <b>H</b> suffix designates a completed hose assembly. The part number is generally the same as the drawing number. The number following the dash identifies the hose assembly on the associated drawing.
<b>BOXK</b>	The <b>BOXK</b> designates a control box assembly.

**Drawing:** The drawing number that the part can be found on. The appendix provided with the manual includes all drawings required for installation.

**Description:** A general description of the part. This description may not always exactly match the description found in the drawing.

**UM:** Unit of Measure.

**EACH** – Individual count of parts

**FEET** – length of a bulk hose or cable in units of feet

**BOX:** This column designates where the parts are packaged inside the shipping container. The box number is written by hand on the individual boxes during packaging.

**LOOSE** – The parts are inside the shipping container but not packaged inside a smaller box.

## SECTION 4 Unpacking & Parts Identification

MACHINERY CORP OF AMERICA		20,000 Gallon Water Tank					
Customer 0002285		Sales Order 0079662					
Step	Item	Drawing	Description	UM	QTY	BOX	
0093	1TMS-CAT777 GK	RTS SHIP TO INSTALI	MANUAL, ENGLISH OPERATION CAT	EACH	1	LOOSE	
0900	302464	045620	ANODE, MAGNESIUM MARINE 8 X 8	EACH	6	LOOSE	
0901	350229K	045527	CAP SCREW 1/2-13 X 1.00"	EACH	8	1	
0903	306165	046151	CABLE ASSY 9 M CONDUIT VERSION	EACH	1	3	
0907	040711K	045543	PUMP ASSEMBLY, M4 PUMP WITH, M	EACH	1	LOOSE	
1	0908	045528-03K	045528	MUD FLAP 54" X 33" HOLES ON 33	EACH	4	LOOSE
	0911	046215H-01K	046215	HOSE ASSY # 6 X 195" #6 ORFS	EACH	1	LOOSE
	0911	047094K	046215	MOUNTING ASSY, WITH JOY STICK	EACH	1	10
2	0911	046215H-02K	046215	HOSE ASSY # 6 X 362" #6 JIC O	EACH	1	LOOSE
	0916	044293BOXK	044306	CONTROL BOX HYD REMOTE MONITOR	EACH	1	15

**Example: 1**

0911	046215H-01K	046215	HOSE ASSY # 6 X 195" #6 ORFS	EACH	1	LOOSE
------	-------------	--------	------------------------------	------	---	-------

The part number describes the complete hose assembly for hose number 1 on drawing 046215. The far right column tells that the hose is packaged loose and not contained in another box.

**Example: 2**

0916	044293BOXK	044306	CONTROL BOX HYD REMOTE MONITOR	EACH	1	15
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The part number describes a fabricated control box, part no. 044293. This part can be found on drawing 044306 and is packaged inside box number 15.

# SECTION 5

## MTT Preparation

### Contents

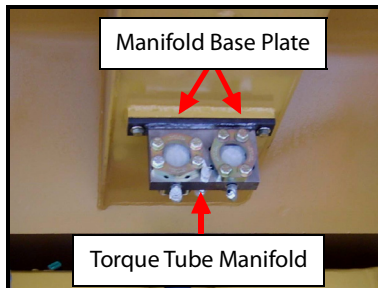
Description .....5-1	Electrical .....5-3
Hydraulics .....5-1	Foam Concentrate Tank (If Equipped) .....5-3
Spray Head Hose Assembly .....5-2	

### DESCRIPTION

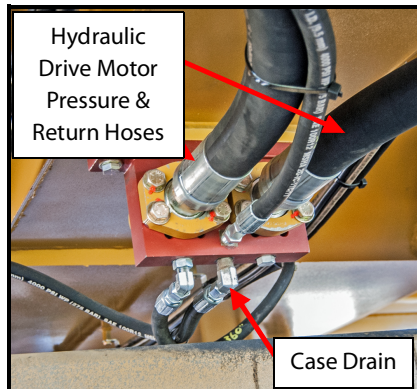
Preparation of the MTT is the first essential element in completing a timely mating of the tank and truck. The time spent preparing the MTT is essential in reducing time delays later in the installation process due to lost parts, support equipment requirements or required sub assembly. Follow the steps listed below to fully prepare the tank for installation. If your system is not covered in this manual or you are having difficulties with the installation please contact The MEGA Corp. Product Support Group at: U.S. Toll Free 1-800-345-8889 or Direct 1-505-345-2661 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more contact information.

### HYDRAULICS

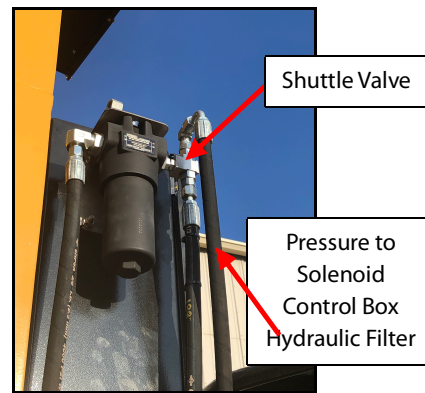
1. Install the torque tube hydraulic manifold to the manifold base plate as shown below.



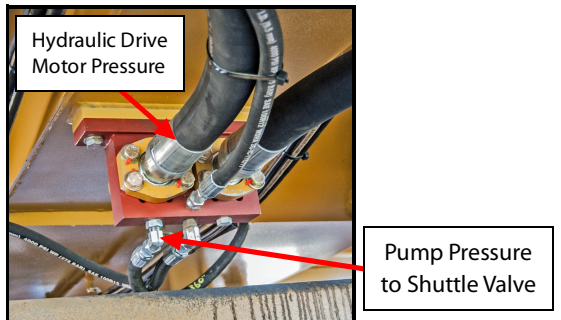
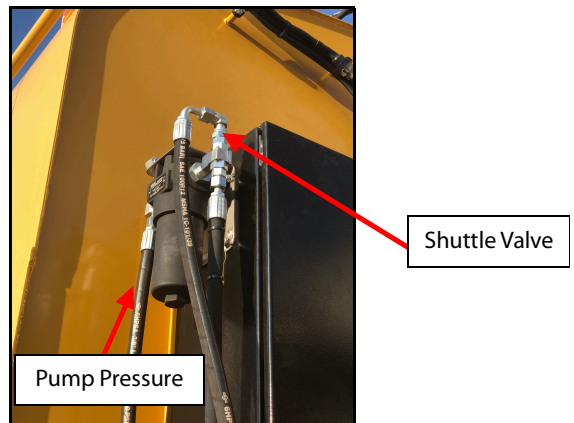
2. Attach the hydraulic hoses (**pressure, return, and case drain**) from the water pump hydraulic drive motor and solenoid box to the rear of the manifold as shown below and in Appendix.



3. (**DiSCS® ONLY**) If not already done by Mega, install the dual source assembly as follows:
  - a. Assemble check valves and shuttle valve, and install hose assembly from the solenoid control box hydraulic filter to shuttle valve outlet as shown below and in Section 10.



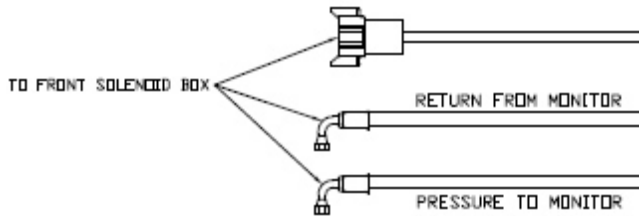
- b. Route, measure, manufacture, and install hose assembly from the shuttle valve to the hoist manifold pressure port as shown below and in Appendix.



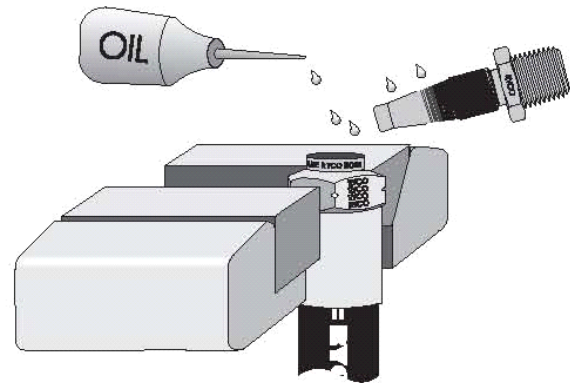
## SECTION 5

### MTT Preparation

4. (If Equipped) Connect water cannon hydraulic control manifold **pressure** and **return** hoses at the front solenoid box as shown below and in Appendix.



5. Lubricate fitting nipple with clean hydraulic oil.

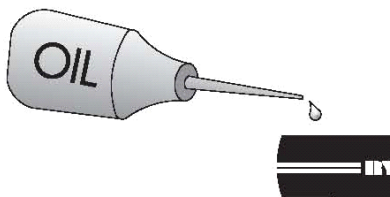


### SPRAY HEAD HOSE ASSEMBLY

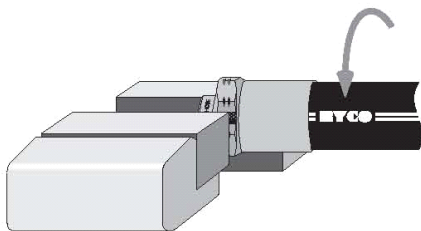
#### NOTE

If spray head hoses are to be field-installed, hose length adjustment is required. Before cutting hoses for assembly, plan the hose routing. Ensure the hose routing does not interfere with moving components. Measure each hose and label function prior to assembly and installation, this will ensure proper hose fit and routing.

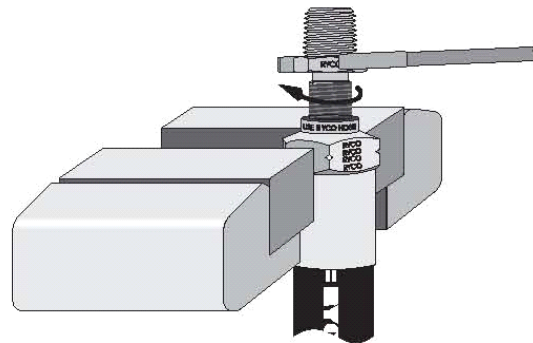
1. Cut hose to length desired using a fine tooth hacksaw or cut-off machine.
2. Clean hose bore.
3. Lubricate hose cover with clean hydraulic oil.



4. Place socket in vice and turn hose into socket counterclockwise until the hose bottoms in socket, back out hose (Clockwise) ¼ turn.



6. Screw nipple into socket and hose in a clockwise direction using continuous motion. Ensure hose does not turn in socket while installing nipple.



7. Do not bottom out nipple in socket, leave 1/32" to 1/16" clearance between nipple and socket.

#### CAUTION

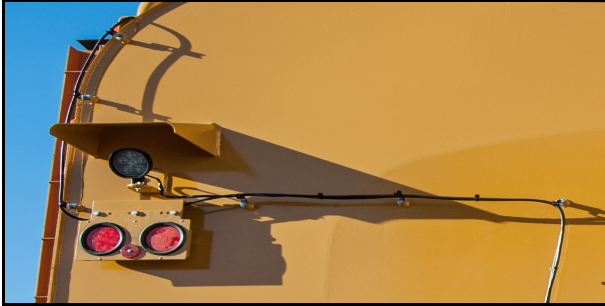
Field install (re-useable) hose ends should only be used for spray head operation. Using the Field installed hose ends for butterfly valve or monitor operation may result in fluid leakage or hose separation causing a loss of hydraulic oil and pressure resulting damage to hydraulic systems or loss of control functions.

## SECTION 5

### MTT Preparation

#### ELECTRICAL

1. If required, relocate LED brake lights, turning signal lights and back-up lights from the truck differential to the MTT aft bulkhead as shown below and contained in Appendix.



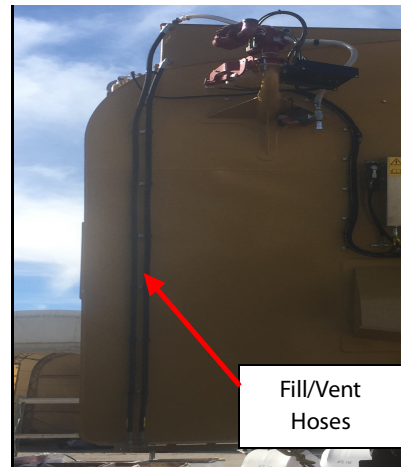
2. If included in the kit, connect pre-wired turn signal, brake light and back-up light cable harness to the LED assemblies. Splice the clearance lights into the red power cable contained in the harness as shown in Appendix.
3. If the chassis is equipped with load sensors on the rear struts, additional wiring may need to occur to integrate the load sensors to the wiring harness.
4. If required, wire MTT brake, clearance, turn signal lights and back-up alarm at the MTT light junction box as shown Appendix.
5. If required, wire MTT rear solenoid box terminal as shown in appendix. If required, wire the 2 conductor hoist pump activation cable to the MTT forward junction box as shown Appendix.
6. Install the water level sensor and cable as shown in Appendix.

#### FOAM CONCENTRATE TANK (IF EQUIPPED)

1. Install foam concentrate shut-off valve and foam supply hose as shown in Appendix.



2. Install foam concentrate supply hose from the foam shut-off valve to the water cannon as shown in Appendix.



3. Install hose extensions on foam fill/vent hoses as shown in Appendix.
4. Hose attached to bottom of foam concentrate tank is fill hose, hose attached to top of tank is 90% full vent hose.
5. Attach filling apparatus to fill hose, open ball valves and begin filling foam concentrate tank. When foam agent is discharged from vent hose the tank indicates 90% full.

**SECTION 5**  
**MTT Preparation**

6. When tank reaches 90% capacity turn off filling apparatus and close ball valves. Disconnect filling apparatus.

**NOTE**

Ensure foam concentrate hose slack is kept to a minimum to prevent hose collapse during water cannon/foam operation.

**NOTE**

Ensure foam concentrate hose length is sufficient to allow the water cannon to operate through full range of motion without kinking the hose.

# SECTION 6

## Truck Preparation

### Contents

Description .....	6-1	Cab Controls (Digital) .....	6-4
Unit Preparation .....	6-1	Cab Controls (Analog) .....	6-11
Hydraulics .....	6-1	Modifications .....	6-14
Case Drain .....	6-4		

### DESCRIPTION

Preparation of the truck is the second essential element in completing a timely mating of the tank and truck. The time spent preparing the truck is essential in reducing time delays later in the installation process due to lost parts, support equipment requirements or required sub assembly. If your system is not covered in this manual or you are having difficulties with the installation please contact The MEGA Corp. Product Support Group at: U.S. Toll Free 1-800-345-888, Direct 1-505-345-2661 or visit our website at: [www.megacorpinc.com](http://www.megacorpinc.com) for more contact information.

#### **WARNING**

Ensure that the hoist lever is physically disconnected, disabled and secured from hoist valve to isolate the potential for accidentally hoisting tank while configured as a water tanker. Failure to disconnect, disable and secure the hoist valve linkage may result in the tank being hoisted while filled with water, resulting in serious personal injury or death.

#### **CAUTION**

Truck ECMs will be damaged when arc welding is performed while ECMs are connected to truck systems. Ensure ECMs are disconnected from wiring harnesses before welding begins.

#### **NOTE**

Hose routing differs between F and G models and may vary from the pictures shown in this section. Some F models utilize solid tubes, whereas G models are equipped with soft hoses.

### UNIT PREPARATION

1. Ensure electric and hydraulic power are removed from unit
2. Follow proper lock out procedures to ensure unit is safe to work on (refer to site specific safety policies).
3. Take an oil sample to establish a base.

### HYDRAULICS

Review the following definitions to ensure hydraulic components are configured properly:

- **Hoist Compatible** – Truck lift cylinders remain installed and can lift the MTT. This type of configuration is accomplished by using a blanking plate system or a pilot operated diversion valve to control hydraulic pressure to the water pump drive motor.
  - **Non-Hoist Compatible** – Truck lift cylinders are removed and the MTT must be raised by a crane. Hydraulic pressure is routed directly from the chassis to the water pump drive motor.
  - **Case Drain** - Free to tank, unrestricted oil flow path directly back to hydraulic tank.
  - **Pilot Oil** – Constant oil pressure supply to hydraulic control valves. Hoist valve actuator pilot oil is used on CAT E hoist valve equipped trucks.
1. Depressurize hydraulic system per CAT SIS.

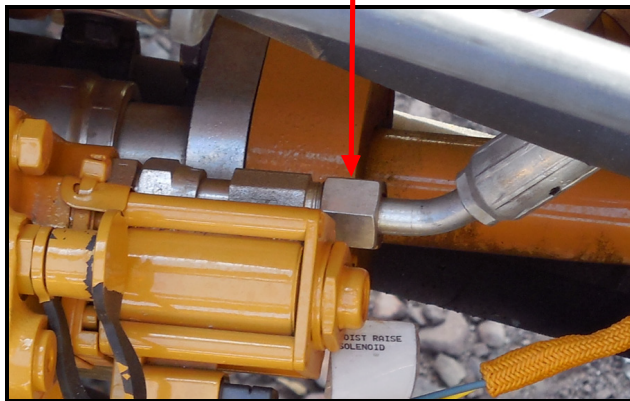
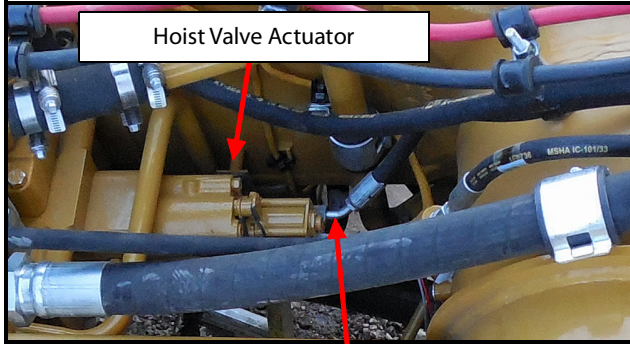
#### **WARNING**

Hydraulic motor and supply lines contain oil under high pressure. Improper removal and repair procedures could cause severe injury. To remove or repair, instructions in the CAT SIS must be followed.

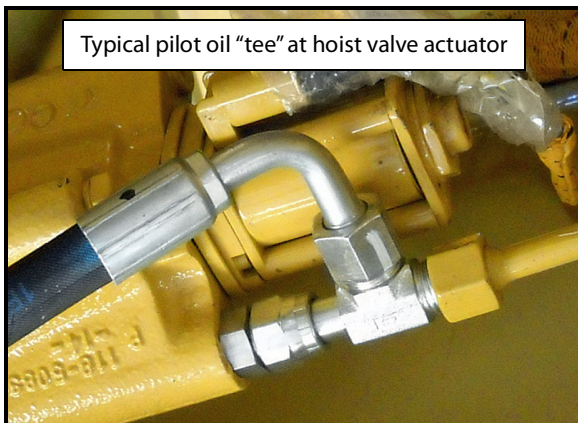
## SECTION 6 Truck Preparation

### PILOT OIL SOURCE

1. Locate hoist valve actuator pilot oil connections at actuators, as shown below.



2. Locate pilot oil Tee (refer to Appendix for part identification).
3. Install Tee in pilot oil circuit. Use the aft actuator for this connection. Access can be gained from below the frame.

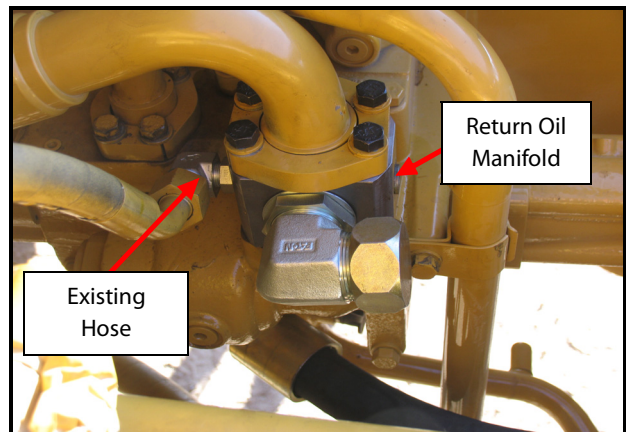


4. Connect Spray system pilot oil hose to tee.

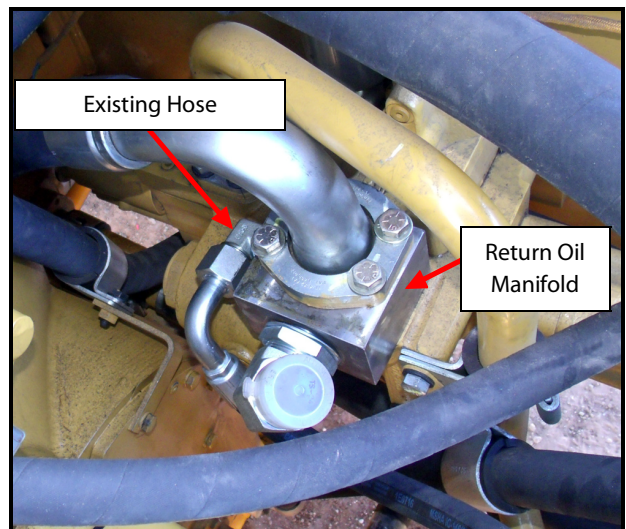
### **⚠ WARNING**

Ensure hose has a metal plug installed in the open end if the unit must be started. Failure to ensure hose is plugged will cause high pressure oil to discharge when engine is started resulting in serious personal injury and damage to the hydraulic system.

5. Replace existing manifold for brake cooling on the hoist valve. Install and secure the MEGA return oil manifold with fittings on the hoist valve. Reconnect the park brake return oil hose to the manifold with the fitting provided as shown below and in Appendix.



Typical CAT 777 F chassis

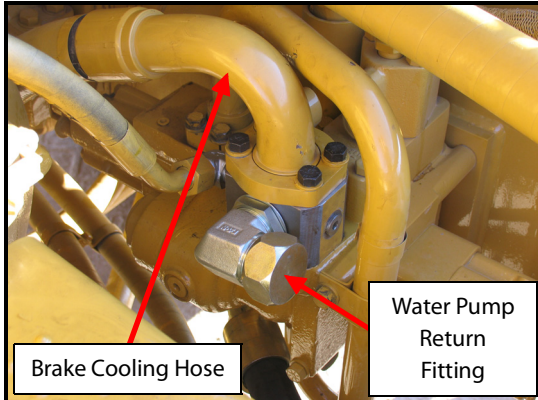


CAT 777 G chassis

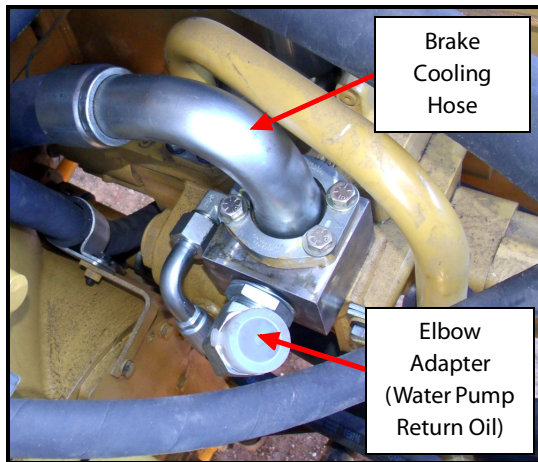
## SECTION 6

### Truck Preparation

6. Reroute the brake cooling line to the MEGA return oil manifold and cap off water pump return fitting as shown below.



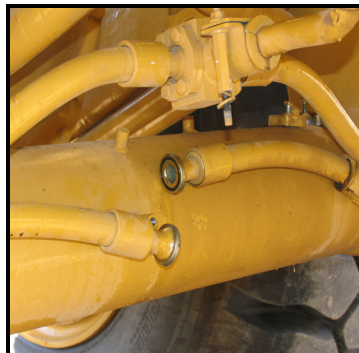
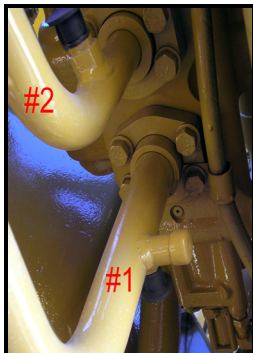
Typical CAT 777 F chassis



CAT 777 G chassis

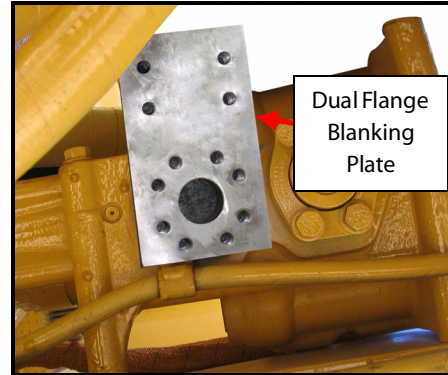
#### DUAL FLANGE BLANKING PLATE (Hoist Compatible Units Only)

7. (For 777F chassis with solid pipe hosing ONLY) Remove the existing hoist valve solid tube (#1-raise) as indicated in the figure below and in Appendix.

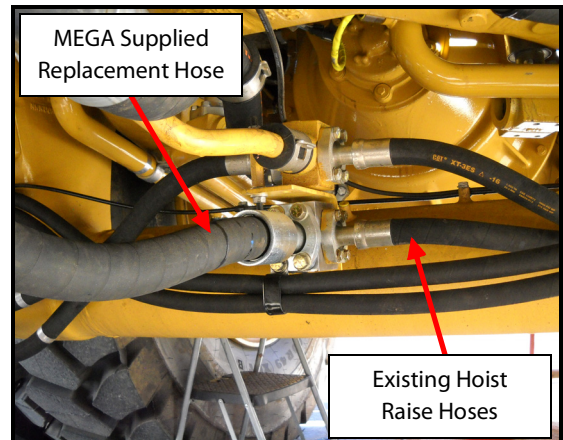
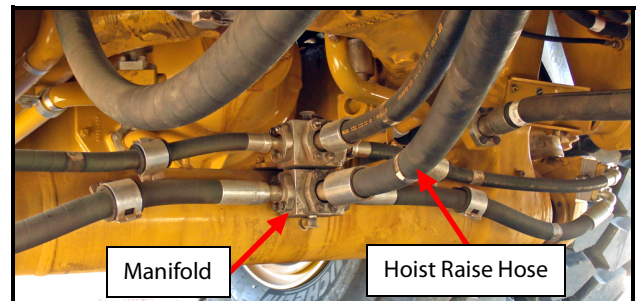


Hoist Raise Tube Removed

8. Locate and install Dual flange blanking plate to the hoist raise port on the hoist valve as shown below and in Appendix.



9. Install the MEGA provided manifold bracket assembly as shown below and in Appendix. Connect the hoist raise cylinder hoses and reposition clamps as required.



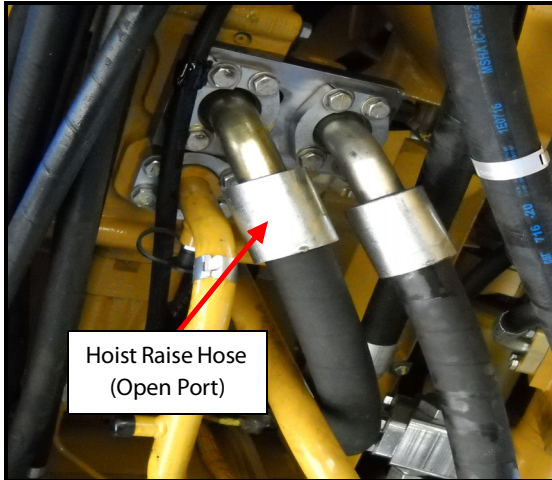
CAT 777 F ONLY

10. Locate, test fit and clock the ends of the hoist tube replacement hose.
11. Mark hose for proper hose end alignment, remove and install hose ends to hose.

## SECTION 6

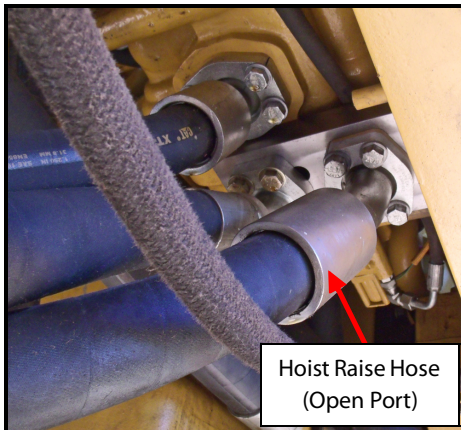
### Truck Preparation

12. Install manufactured hose and secure ends of hose to the open port on the Dual Flange Blanking Plate and to the hoist raise manifold.



Hoist Raise Hose  
(Open Port)

CAT 777 F ONLY

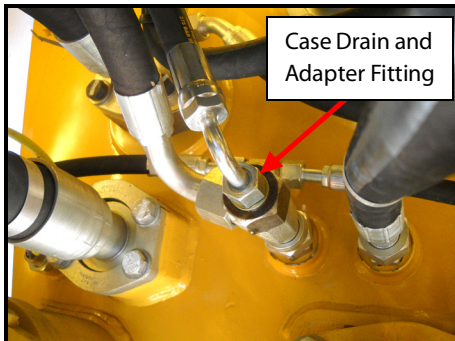


Hoist Raise Hose  
(Open Port)

CAT 777 G ONLY

#### CASE DRAIN

1. Locate a free to tank port on the hydraulic tank (hoist oil side).
2. Locate and install provided fitting to adapt to the case drain.



Case Drain and  
Adapter Fitting

#### CAB CONTROLS (DIGITAL) (CAT777 (F) CAB ONLY)

Units equipped with DiSCS® require re-positioning of the hoist lever and gear shift lever.

#### ⚠ WARNING

The actual wiring of your chassis may differ from the example shown. Be sure to mark the locations of all wire connections and re-assemble with wires in the correct, original positions. Failure to preserve correct wiring will result in incorrect hoist/gear shift lever functionality, which may lead to severe injury or death.

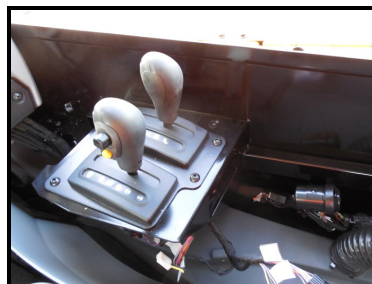
#### CAUTION

Hydraulic hosing must be moved and isolated to prevent accidental hoisting of the water tank. On CAT units the HOIST valve must be "**UNINSTALLED**" from the ECM using CAT E.T before it is released in the water truck application.

#### NOTE

When placing cab control, ensure placement does not interfere with operational controls or operators view of mirrors and monitor panels.

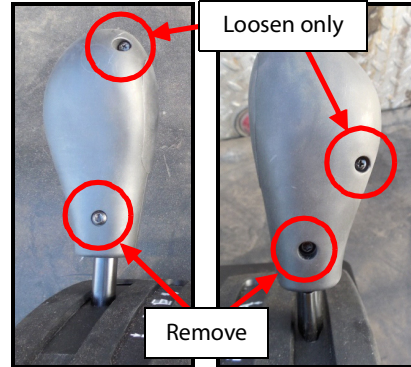
1. Locate cab control boxes, mount, and cabling.
2. Install cab control boxes to mounts.
3. Ensure vehicle is safe for servicing.
4. Disconnect and isolate battery power.
5. Remove shift console plastic cover. Removing this cover will entail disconnecting the power point, window, throttle lock switches, and 12 Volt power socket.



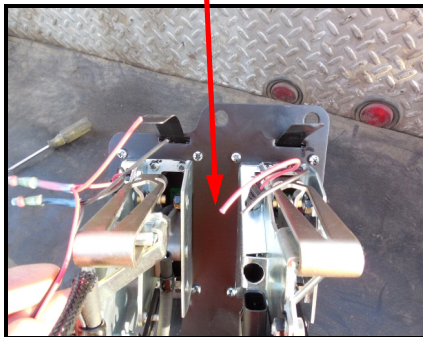
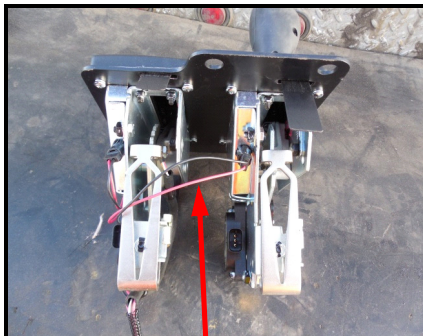
## SECTION 6

### Truck Preparation

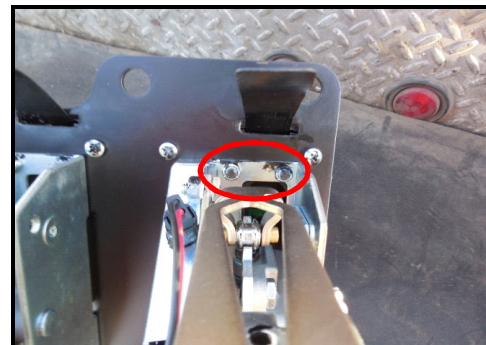
6. Remove the plastic covers in the rear of the cab that cover the ECM's and fuse box.
7. Disconnect and remove the hoist/shift lever assembly from console.
9. Loosen the four (4) screws that hold the hoist lever handle grip together. Only remove the bottom two (2) screws. Remove the handle grip.



8. On a clean bench, cut the **black** and **red** wires used for the position indicator lamp on the hoist lever as shown below.
10. Remove four (4) mounting screws from hoist lever position indicator and remove indicator.



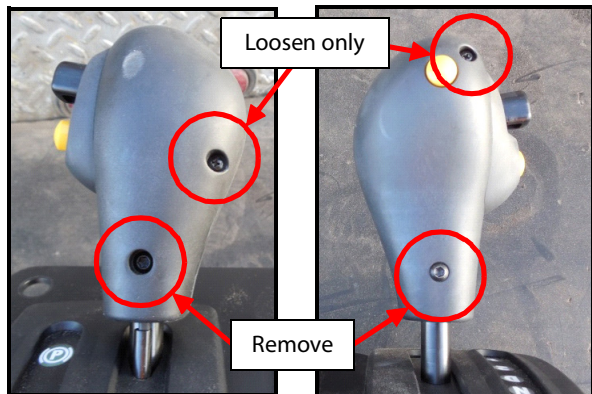
11. Remove four (4) hoist lever mounting screws.



12. Remove the hoist lever from the mounting plate.

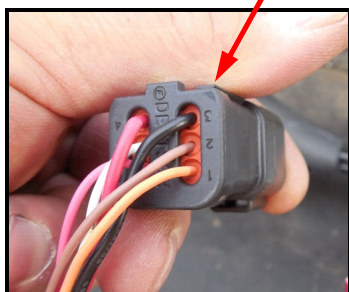
## SECTION 6 Truck Preparation

13. Loosen the four (4) screws that secure the gear shift lever head to the shaft. Only remove the bottom two (2) screws.

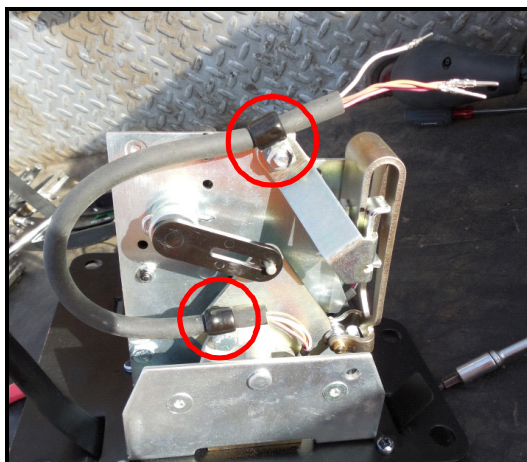


14. Separate gear shift lever head. Use caution to not misplace detent spring or push rod in assembly.

15. Identify and note wire color and pin locations prior to removal. Wire color and pin locations may vary between chassis.



16. Loosen 2 "P" clamps to allow removal of four gear shift lever head wires from the rubber tube.



17. Do not remove tube or "P" clamps. Carefully pull the wires from the side of the head to remove them from the rubber tube and lever.



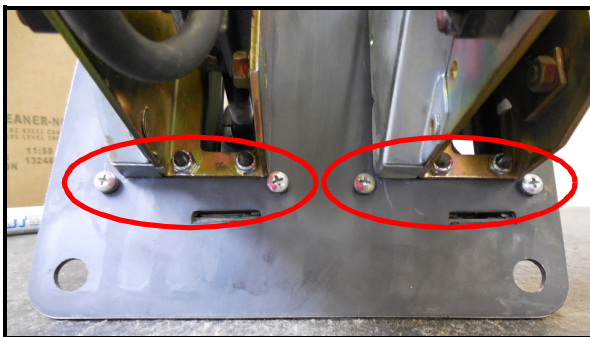
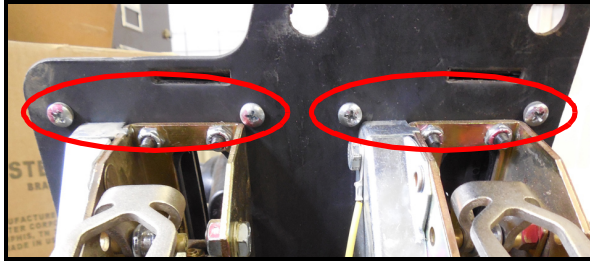
### NOTE

There are several different types of CAT/Deutsch connectors for this assembly. Connector types may vary between chassis.

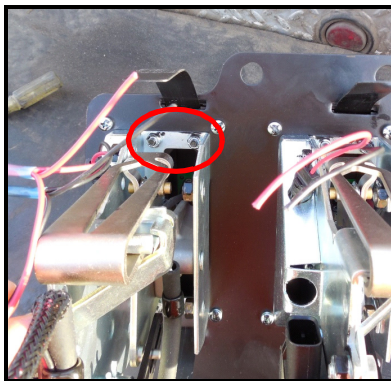
## SECTION 6

### Truck Preparation

18. Remove the four (4) screws for gear shift lever indicator and the four (4) screws for the hoist lever indicator. Remove both indicators.



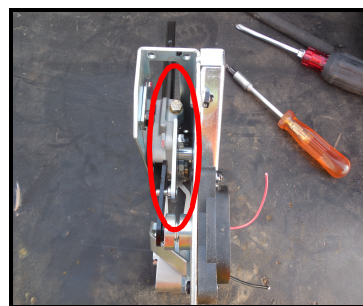
19. Remove four (4) screws that secure the gear shift lever to the mounting plate.



20. Install the gear shift lever in the opening where the hoist lever was.



21. Install gear shift lever position indicator.
22. Carefully thread the gear shift lever head wires through tube in shift lever and through rubber tube.
23. Ensure gear shift lever head spring and detent rod are in place and reinstall head.
24. Install head to lever.
25. Splice red and black wires.
26. Insert head wires in correct positions of receptacle as noted in step 15.
27. Secure "P" clamps.
28. Place the hoist lever mechanism in FLOAT position.
29. Loosen the hoist lever shaft clamp screw and remove the shaft. Reinstall the handle on the shaft and secure the lever in the cab storage compartment or behind the cab seat.



30. Reinstall the hoist and shift lever mechanisms and position indicators to the hoist/shift lever cover plate.

## SECTION 6

### Truck Preparation

31. Place small pieces of heat shrink tube over the red and black wires for the position indicator lamps and seal to prevent electrical shorting.



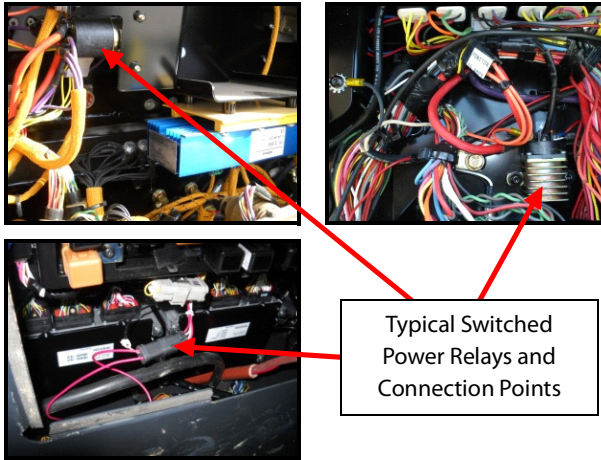
32. Place modified lever mount plate on console. Do not install bolts at this time.
33. Reconnect hoist and shift lever sensor wiring.
34. Place plastic console cover over hoist/shift lever assembly.
35. Locate the MEGA DiSCS® switch box and mounting plate.
36. Place switch box mount plate over the hoist/shift lever mounting plate. The switch box mount plate holes are the same as the shift/hoist lever mount holes. Align, match, and drill four holes for the mounting bolts that were supplied with the switch box mount.
37. Identify and mark location for 2 additional holes in plastic cover in locations illustrated in Appendix for routing of the CAN cables. Ensure that the holes are large enough to pass the 4 pin CAN cable connectors through.
38. Mount splitter behind the drivers seat with supplied hook and loop fastener as shown below.



39. Route terminated end of long CAN cable and P/G/I cable through the forward hole on console cover. Route unterminated end of the CAN cable to the fuse box area where it will exit through a grommet, following the chassis electrical cables that are routed into the compartment behind the cab.
40. Route Joystick Box CAN cable to the splitter.
41. Install and secure plastic console cover, connect power point, window switch and throttle lock switch connectors to switches, install MEGA switch box mount and use supplied bolts to secure shift lever and switch box mount console.
42. Use "P" clamps to secure CAN cables out of the way of the operator, use supplied 'Zip-Loom or rubber grommet' to line the holes drilled for cable access to prevent cable damage.
43. Set Joystick box mount tube in cup holder and connect joystick CAN cable.
44. Ensure all hoisting requirements are fulfilled.
45. Ensure hydraulic configuration is for water tanker operation.
46. Gain access to ECM by way of CAT E.T.
47. Locate "HOIST VALVE" in menu; it is typically in the transmission ECM.
48. Select "**NOT INSTALLED**". This will disable the hoist lever and body position switch to eliminate trouble codes and allow the hoist valve wiring harness to be disconnected and isolated to prevent accidental hoisting without trouble codes.
49. Locate a 24 VDC switched power source in the cab capable of handling a 10 amp load (usually at the location shown below).

## SECTION 6

### Truck Preparation

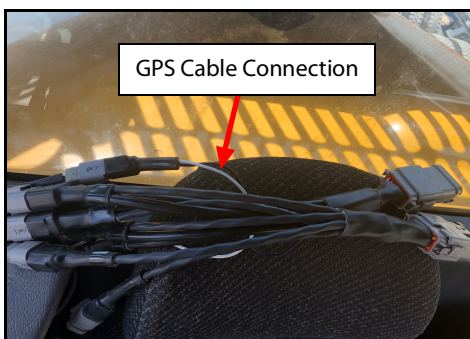


Typical Switched  
Power Relays and  
Connection Points

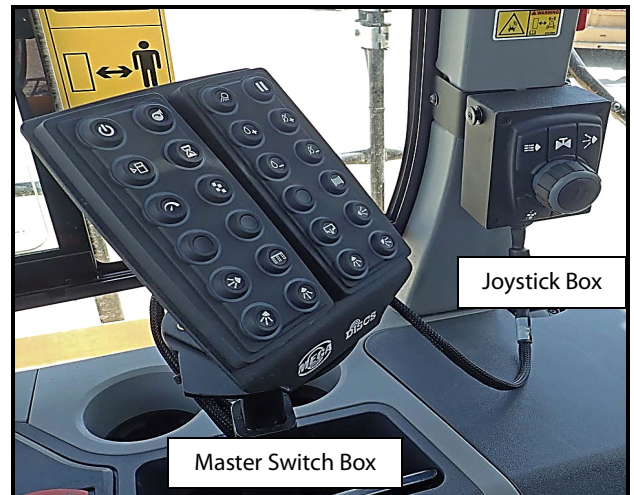
50. Route the 2 conductor power cable from the cab controls to the power source. Connect the appropriate power wire to the switched power source, and the ground wire to a main reliable grounding bus or junction. Check to ensure DC Power is on power cable #1 pin.

51. Locate a suitable location for routing the cab control CAN and P/G/I cable in and out of the cab. Ensure that the selected location will not result in chafing or damage to the cable due to sharp edges. Protect cable as required. Route the cab control CAN cable out the cab through the hole, then to the rear of the cab.

52. Route GPS cable as follows:
- a. Unpin the end of the GPS cable. *Identify and records wire color and pin locations prior to removal.* Route the now-unterminated end of the GPS cable into the cab.
  - b. Re-pin GPS cable and connect to the harness as shown below:



53. Reinstall and secure all removed panels in and on cab. Secure cab control mount on top of dash cover, above the shifter mounting plate as required. Match drilled holes that were placed in Step 36. through dash cover and use supplied fasteners to mount cab control plate.



**(CAT 777(G) NEW STYLE CAB ONLY)**

### CAUTION

Hydraulic hosing must be moved and isolated to prevent accidental hoisting of the water tank. On CAT units the HOIST valve must be "**UNINSTALLED**" from the ECM using CAT E.T before it is released in the water truck application.

### NOTE

When placing cab control, ensure placement does not interfere with operational controls or operators view of mirrors and monitor panels.

1. Locate cab control boxes, mount, and cabling.
2. Ensure vehicle is safe for servicing.
3. Disconnect and isolate battery power.

## SECTION 6 Truck Preparation

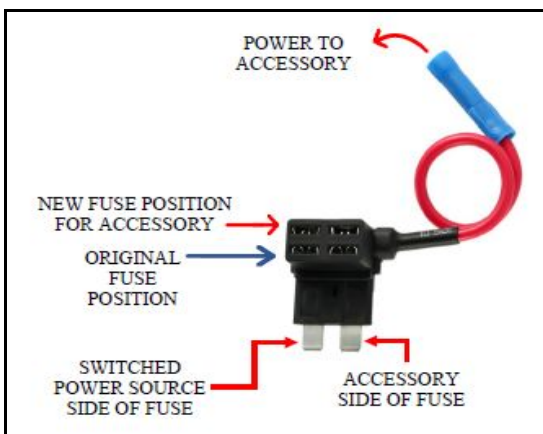
4. Locate and install P/G/I-CAN harness assembly as detailed in Appendix.



5. Locate and install switch panels to application specific mount assembly as shown in Appendix.



6. Route the 2 conductor power cable towards the jump seat.
7. Identify and locate the correct fuse tap for the style fuse in fuse box.
- a. ATC or Mini style fuses.
8. Identify fuse position to be used for switched power source.

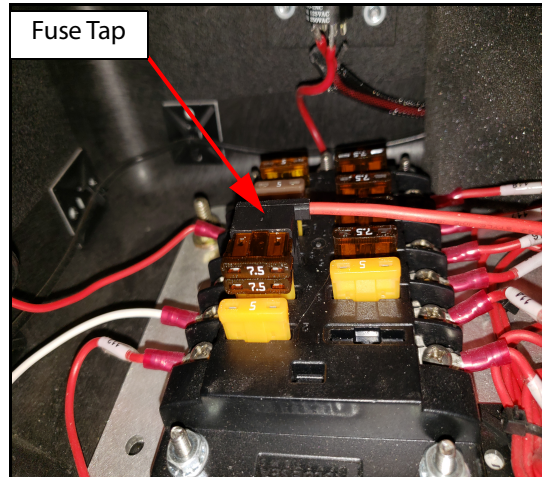


9. Remove fuse from slot that will be used.

10. Insert 3 amp fuse in top slot of fuse tap.

- a. This will be used for the spray system switched ignition power feed

11. Insert fuse tap into original fuse location



### NOTE

An alternate in-line fuse may be used.

12. Connect switched ignition power.

13. Heat shrink, seal, or tape as necessary.

14. Route switch panel cables (4) to harness assembly, connect and secure.

15. For installation instructions and drawings see Appendix.

## SECTION 6

### Truck Preparation

16. Route GPS cable as follows:

- a. Route GPS cable to adapter harness and connect to splitter harness inside the cab as shown in the Appendix.
- b. Mount GPS antenna where there wont be any obstructions causing loss of signal.



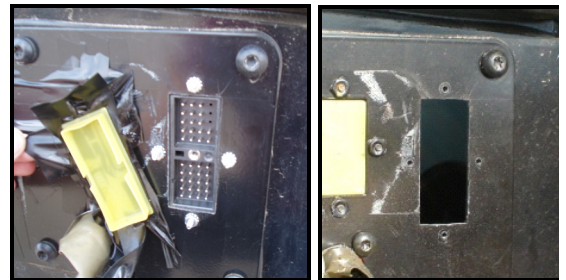
#### CAB CONTROLS (ANALOG)

This section covers both the F & G model 777 water tank analog control installation. Determine which installation procedure applies to your specific chassis application.

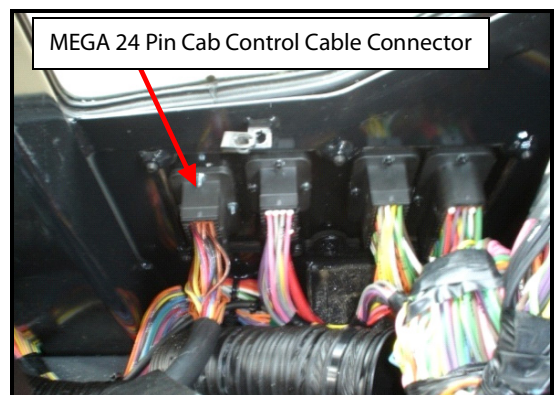
1. **(CAT 777(F) cab only)** Install 24 pin cable as follows.
  - a. Remove right and rear console covers.



- b. Using the Mega provided lay-out plate, make the appropriate cut-out in the electrical panel on the right side of the cab as shown below and in Appendix.

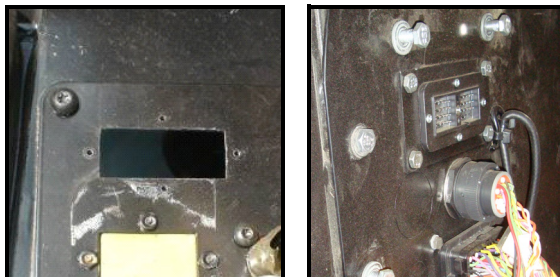


- c. Secure the MEGA 24 pin bulkhead connector to the panel with #6 x 32 x 1" screws and nuts as shown below.

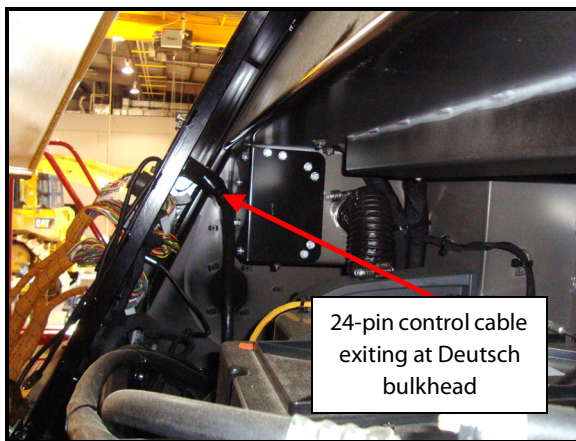


## SECTION 6 Truck Preparation

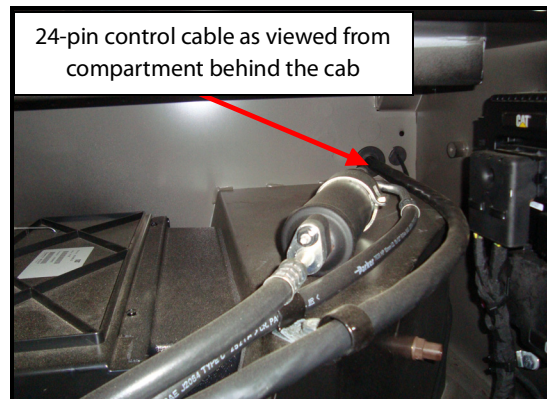
2. **(CAT 777(G) cab only)** Install 24 pin cable as follows.
  - a. Remove the cover from the electrical compartment on the rear of the cab.
  - b. Using the Mega provided lay-out plate, make the appropriate cut-out in the electrical panel on the left rear of the cab as shown below and in Appendix.



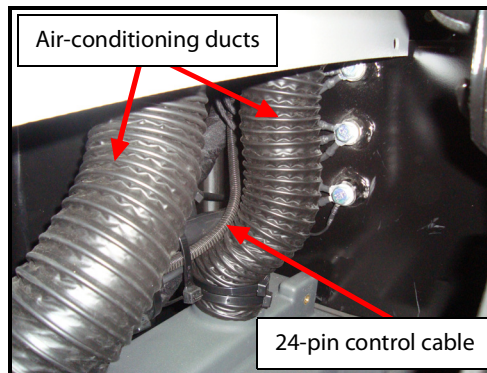
- c. Secure the MEGA 24 pin bulkhead connector to the panel with #6 x 32 x 1 inch screws and nuts.



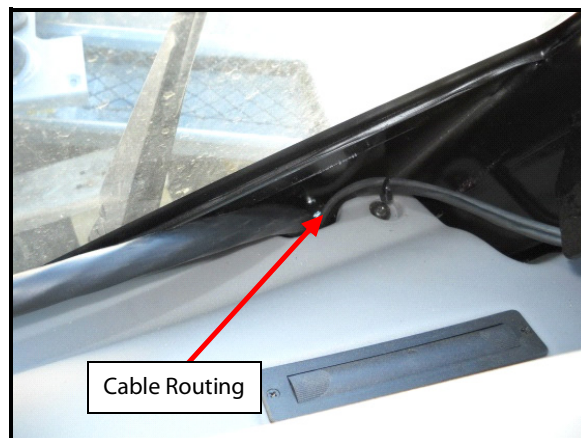
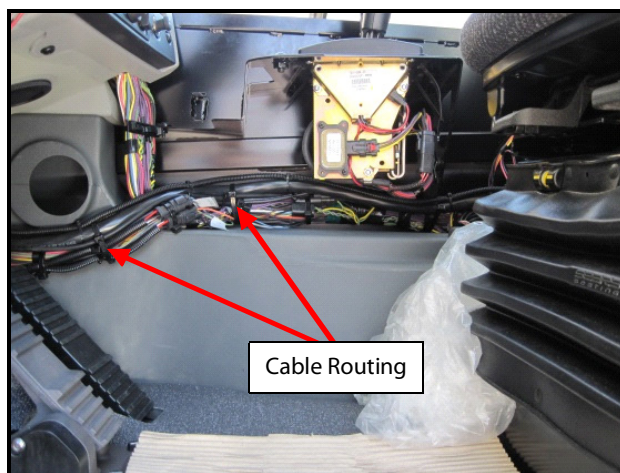
- d. Route the 24 pin cable from the electrical panel to the knockout located at the lower right side of the electrical compartment.



- e. Insert 24-pin control cable with a grommet through the knockout located at lower right side of cab behind the air conditioning ducts.



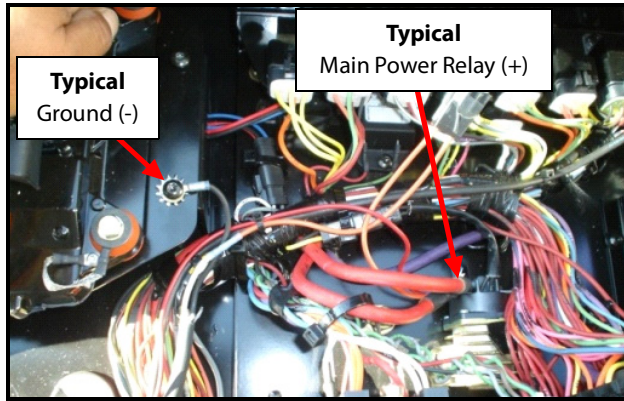
3. Remove steering column and lower right console covers.
4. Route 24 pin control cable along lower right portion of the console and out of the existing hole to the front, right of the dashboard.



## SECTION 6

### Truck Preparation

5. Connect the cab control cable **RED** power wires to a vehicle +24 VDC switched power source.
8. Connect the 24 pin control cable to the cab control box and secure cable as needed.



### NOTE

Typical CAT 777F cab used in photo above.

6. Connect the cab control cable **BLACK** wire to a reliable grounding cluster.
7. Following the provided pin-layout diagram shown here and in Appendix, assemble the 24-pin Deutsch plug connector on the end of the cab control cable.

24 PIN COMPACT CAB CONTROL WIRING			
WIRE/P IN#	WIRE COLOR	STRIPE	FUNCTION
1	BLACK		PUMP SOLENOID -
2	RED		PUMP SOLENOID +
3	BLUE		WORK LIGHT
4	ORANGE		LEFT VSS
5	YELLOW		LEFT REAR
6	BROWN		LEFT REAR CENTER
7	RED	BLACK	RIGHT REAR CENTER
8	BLUE	BLACK	RIGHT REAR
9	ORANGE	BLACK	RIGHT VSS
10	YELLOW	BLACK	DUMP BAR BFV
11	BROWN	BLACK	DRAIN BFV
12	BLACK	RED	AUX (REGULATED)
13	BLUE	RED	WATER LEVEL (POWER)
14	ORANGE	RED	WATER LEVEL (SIGNAL)
15	YELLOW	RED	MONITOR RIGHT
16	BROWN	RED	MONITOR DOWN
17	BLACK	BLUE	MONITOR LEFT
18	RED	BLUE	MONITOR UP
19	ORANGE	BLUE	MONITOR BFV OPEN
20	YELLOW	BLUE	MONITOR BFV CLOSE
21	BROWN	BLUE	ADJ NOZZLE STREAM
22	BLACK	ORANGE	ADJ NOZZLE FOG/FAN
23	RED	ORANGE	FOAM OPEN
24	BLUE	ORANGE	FOAM CLOSE
12 PIN CONNECTOR FOR JOY STICK			
1	RED		POWER (24VDC+)
2	BROWN	RED	MONITOR DOWN
3	BLACK	BLUE	MONITOR LEFT
4	RED	BLUE	MONITOR UP
5	BROWN	BLUE	ADJ NOZZLE STREAM
6	BLACK	ORANGE	ADJ NOZZLE FOG/FAN
7	RED	ORANGE	FOAM OPEN
8	BLUE	ORANGE	FOAM CLOSE
9	YELLOW	RED	MONITOR RIGHT
10	BLACK		GROUND
11	BLANK	BLANK	N/A
12	BLANK	BLANK	N/A

9. Reinstall all panels and covers that were removed.

## SECTION 6 Truck Preparation

### MODIFICATIONS

#### Auto-Lube Tank Relocation

If unit is equipped with an OEM frame mounted auto-lube tank and pump, it will be required to remove and relocate the system to an alternate location on the tractor.



Existing OEM Auto Lube Location

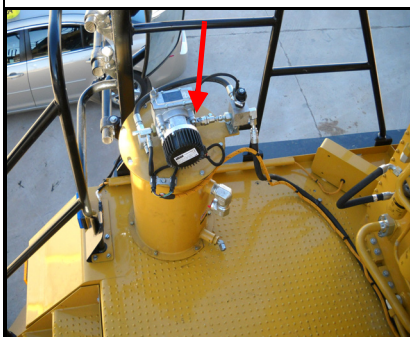
The OEM lube tank will interfere with the main tunnel of the MTT 20 when left in original location. Customer is responsible for removal, relocation and hook up of lube tank in these applications.

#### **New location suggestion:**

Right hand deck of 777F/G models as shown below, additional adjustments to existing components maybe necessary.



Suggested Auto-Lube Tank Location



# SECTION 7

## MTT to Truck Mating

### Contents

Lifting The MTT .....7-1 Pinning The MTT .....7-1 Safe Hoisting .....7-2 Tank Shimming .....7-2 Forward Mounting .....7-4	Hydraulics .....7-4 Hoist Cylinder Pressure Reducing Manifolds .....7-6 Hoist System Operational Check .....7-8 Hoist Valve Reconfiguration .....7-10
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### DESCRIPTION

This section contains instructions and steps required to successfully mate the MTT to the CAT777 truck. If your system is not covered in this manual or you are experiencing difficulties with the installation, please contact MEGA Corp. Product Support Group at: US toll free: 1-800-345-8889  
 Direct: 1-505-345-2661 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more detailed contact information.

### LIFTING THE MTT

1. Move the selected crane into position for the lifting of the MTT.
2. Rig a 4-point lifting harness that will span the MTT for lifting.
3. Clean and lubricate the MTT and truck mounting bores.



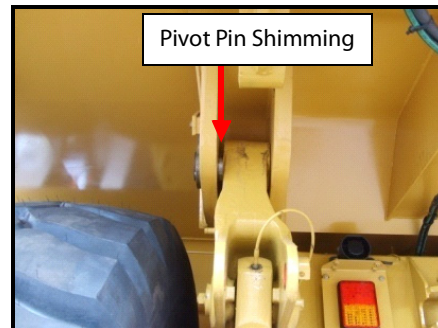
4. Locate and identify the following parts as shown in the Appendix.
  - a. Main Pins
  - b. Pin Shims
  - c. Pin Keepers
  - d. Fasteners
  - e. Lock Back Pins
  - f. MTT and Truck forward mounts.
  - g. Body Pads
  - h. Body Shims

5. Install body pads without shims onto the MTT mounting rails leaving retaining bolts loose.

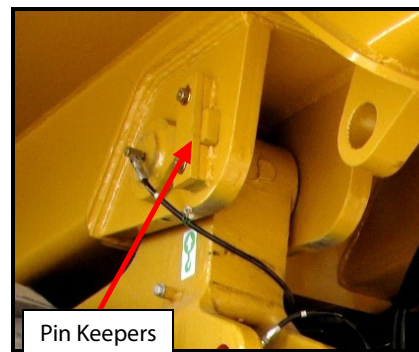
6. Lift MTT to ensure the tank is hanging level. Adjust harness setup as required.
7. Once tank is level when lifted, raise MTT to the required height to clear truck chassis.
8. Move MTT over the truck and lower to allow MTT mounting holes to align with truck mounting bores.

### PINNING THE MTT

1. With MTT positioned over the chassis pivot bores, determine chassis bore shimming requirements. Distribute shims equally between pivot bores.



2. Align one pivot bore mount, position shims, and start one pin.
3. Align the other side of the pivot bore mount, position shims and start the second pin.
4. Drive the pins until fully seated and install pin keepers.



## SECTION 7

### MTT to Truck Mating

5. **(Hoist Compatible Units Only)** Remove cylinder block-off plates from the hoist cylinders.
6. Connect hoist cylinders to MTT mounts and install pins and keepers as shown in Appendix.

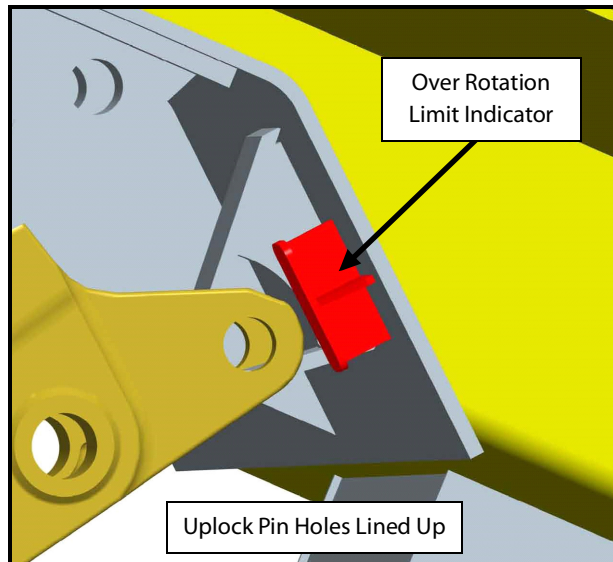
#### SAFE HOISTING

### CAUTION

Tank is equipped with an Over Rotation Limit Indicator. Use caution when hoisting tank to prevent direct contact of Limit Indicator with frame. Over Rotation Limit Indicator is not intended to stop tank travel when hoisting, it is a limit indicator. If tank is hoisted and limit indicators contact frame, damage to tank, limit indicators, frame and body up lock ears will occur.

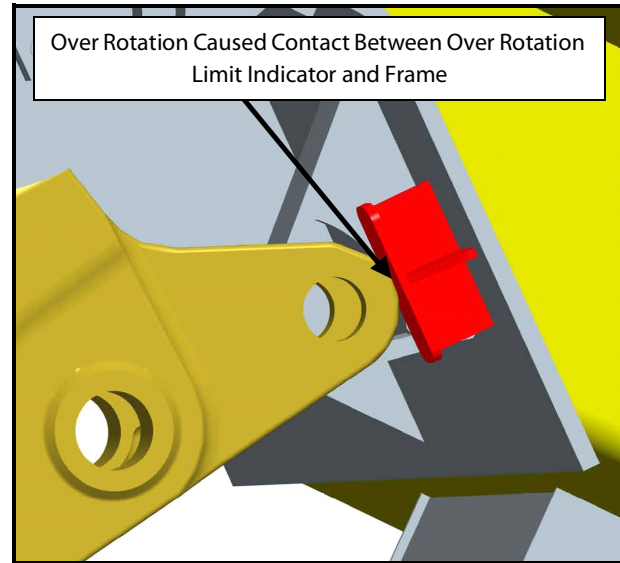
### CAUTION

Ensure all applicable tank mounted accessories suspended below the MTT sump are removed before raising the tank. These items may interfere with the truck differential, tires or suspension when tank is raised causing damage to the truck or accessories. Always use a spotter when raising or lowering MTT to check and ensure proper clearance when raising or lowering the tank.



### CORRECT

Insert Uplock pin when hole align, do not over rotate and make contact with frame.

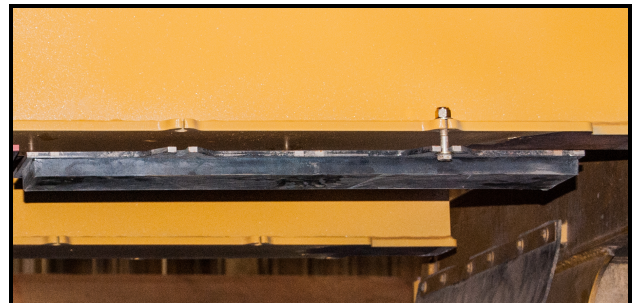


### INCORRECT

Over rotation limit indicator made contact with frame. Damage will occur.

#### TANK SHIMMING

1. Install body pads on frame mounting rails. Do not add shims at this time. Leave pad mounting bolts loose with the Nylock nuts on top to ease the installation and tightening process.



2. MTT in the raised position with hoist cylinder pins installed (if equipped) and body lock back device installed.

### CAUTION

Ensure all applicable tank mounted accessories suspended below the MTT sump are removed before raising the tank. These items may interfere with the truck differential, tires or suspension when tank is raised causing damage to the truck or accessories. Always use a spotter when raising or lowering MTT to check and ensure proper clearance when raising or lowering the tank.

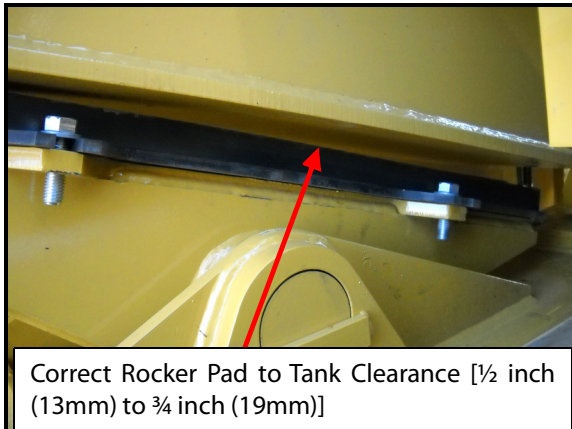
## SECTION 7

### MTT to Truck Mating

3. Remove front rocker pad shims leaving the pads only attached to the rockers.
4. Lower tank, noting any breathers, hoses, fenders, mufflers or other truck component that may come into contact with the tank. Relocate or adjust as necessary.
5. Step back from the MTT/truck assembly and observe the alignment of the tank to chassis. Make sure the tank appearance is correct. The tank should roughly align at the same angle as the chassis.
7. After all shimming is complete, torque body pad fasteners properly (75 – 90 ft/lbs or 102-122N/m).

#### NOTE

When tank is lowered, front rockers should be approximately  $\frac{1}{2}$  inch (13mm) to  $\frac{3}{4}$  inch (19mm) from the front rocker pads. **DO NOT** apply tank weight to front rocker pads.



6. After alignment of tank to chassis is acquired, shim main body pads as required. The amount of shims required may vary greatly. Shims should be installed to distribute the entire weight of the tank evenly between chassis main body pads only.

#### CAUTION

Ensure front rocker pads experience **NO CONTACT** ( $\frac{1}{2}$  inch (13mm) to  $\frac{3}{4}$  inch (19mm) clearance is required). If weight is distributed to the front rocker pads or the frame rail body pads are not loaded evenly structural damage to the tank will occur.

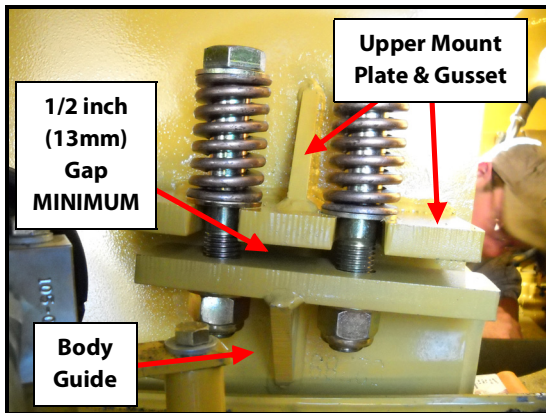
## SECTION 7

### MTT to Truck Mating

#### FORWARD MOUNTING

##### MTT/Frame Rail Weld-On Style

1. Ensure fender and hand rail modifications have been completed per Appendix. Ensure no interference issues exist on the MTT.
2. Position body guide assembly under MTT front mounting rail. Align the upper mounting bar directly above body guide assembly and maintain a minimum 1/2 inch (13mm) gap as shown below and in Section 10. Ensure all components are clear of body guide before final placement of guide assembly.



3. Tack weld the body position, upper mount plate and gusset in place.

#### CAUTION

Truck ECMs will be damaged when arc welding is performed while ECMs are connected to truck systems. Ensure ECMs are disconnected from wiring harnesses before welding begins.

4. Raise the MTT to ensure proper fender and hand rail clearances exist. Block the MTT to allow access for welding.

#### CAUTION

Ensure all applicable tank mounted accessories suspended below the MTT sump are removed before raising the tank. These items may interfere with the truck differential, tires or suspension when tank is raised causing damage to the truck or accessories. Always use a spotter when raising MTT to check for proper clearance when raising or lowering the tank.

5. Weld body guides, upper mounting plates and gussets in place as detailed in the Appendix.



6. Raise tank to check for proper lock back pin or restraining device fit. Lock or restrain tank in full up position.

#### CAUTION

Do not install body mount bolts at this time. The MTT will be damaged with mount bolts installed during hoisting and pump operational check. Installation of mount bolts will be completed after final hoist and initial pump operational checks.

#### HYDRAULICS

#### CAUTION

Some MEGA kits contain bulk hose and loose fittings. **DO NOT** use Appendix drawing measurements to fabricate hoses. Failure to perform actual measurements on the unit for hose fabrication will result in unusable hose assemblies. All hose lengths must be determined by using bulk hose and fittings "mocked up" on the actual machine. Perform on-machine mock-ups to determine correct lengths, fitting clocking and routing for your specific configuration. The MEGA kit only contains enough bulk hose and fittings to fabricate hoses once.

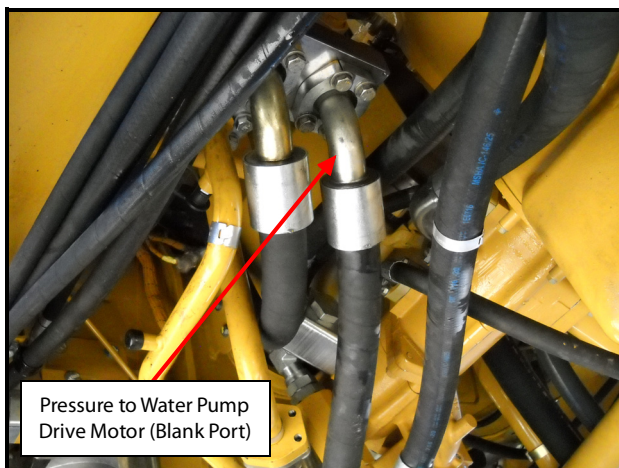
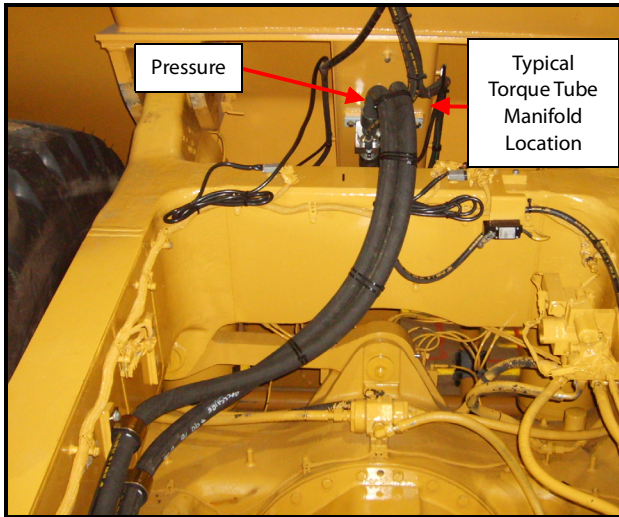
MEGA kits contain bulk hose and the required fittings to fabricate hose assemblies. Once major components are installed on the chassis hoses can then be measured and assembled to fit as required.

## SECTION 7

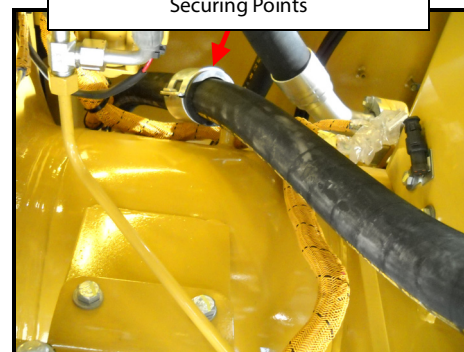
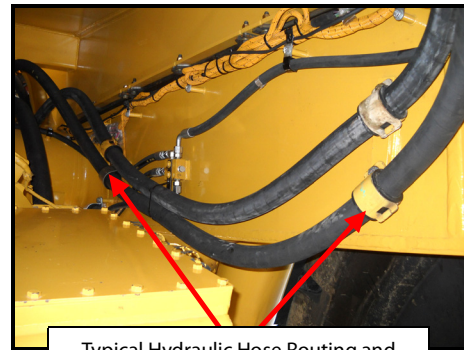
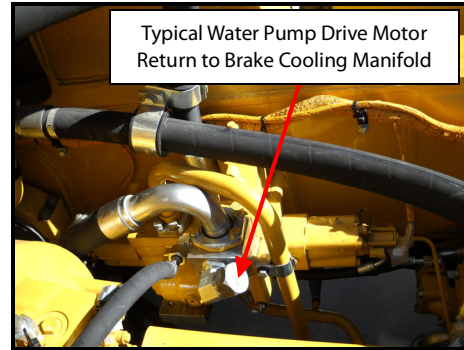
### MTT to Truck Mating

#### HOSING

1. Route and measure water pump pressure hose from the blank side of the Dual Flange Blanking Plate to the pressure side of the torque tube manifold mounted to the bottom of the torque tube near the pivot pin bores as shown below and in Appendix.
2. Remove and manufacture hose.
3. Install and secure manufactured **pressure hose** from blank port on the dual port blanking plate to the pressure side of the torque tube manifold.



6. Install and secure manufactured return hose to brake cooling manifold from the return side of the torque tube manifold.



4. Route and measure the water pump drive motor **return hose** from the brake cooling manifold to the torque tube manifold return port.
5. Remove and manufacture hose.

#### PILOT OIL

**⚠ WARNING**

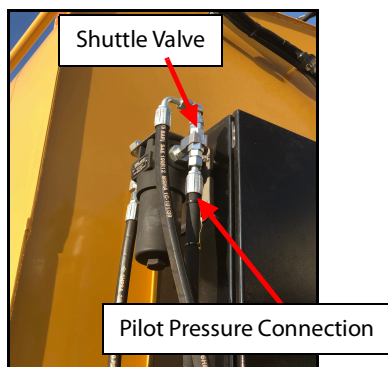
Ensure hose has a metal plug installed in the open end if the unit must be started. Failure to ensure hose is plugged will cause high pressure oil to discharge when engine is started resulting in serious personal injury and damage to the hydraulic system.

1. Route hoist valve activation and pilot oil hose forward in the chassis to follow the control cabling to the solenoid control box at the front of the tank.

## SECTION 7

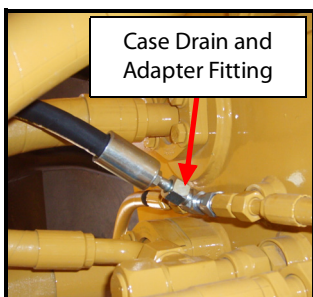
### MTT to Truck Mating

- Secure hose and cable to prevent any damage from heat or chaffing.
- When tank is in the full down position and the hoist valve has been 'Un-Installed', connect pilot oil to the shuttle valve as shown below and in Appendix:

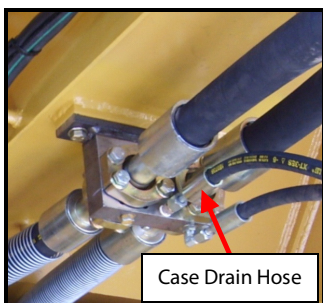


#### CASE DRAIN

- Locate a free to tank port on the hydraulic tank (hoist oil side).
- Locate and install provided fitting to adapt to for the case drain.
- Cap adapter fitting to prevent oil leakage.



- Route and measure case drain hose from free to tank port to the case drain port on the torque tube manifold as shown below and in Appendix.



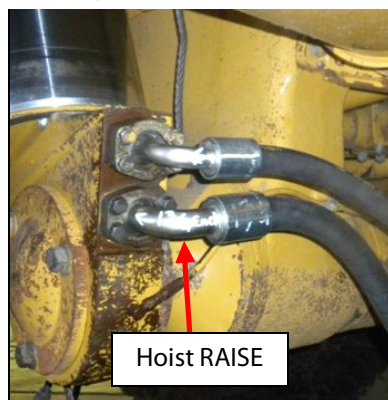
Typical Torque Tube Manifold

- Remove and manufacture hose.
- Install and secure manufactured hose for case drain hose to hydraulic oil tank adapter fitting from the case drain fitting on the torque tube manifold.

#### HOIST CYLINDER PRESSURE REDUCING MANIFOLDS

*(If Hoist Compatible)*

- Ensure water tank is empty and unit is safe for maintenance.
- Relieve pressure from hoist cylinder hydraulic circuit per CAT S.I.S.



- Reconfigure hoist valve hydraulic plumbing for hoisting.

#### CAUTION

If reconfiguration information is not clear, the technical manual is unavailable or there is doubt the hydraulic configuration is correct contact the MEGA Corp Product Support Group immediately with the tank serial number at: US toll free: 1-800-345-8889 or Direct 1-505-345-2661. Continued operation with a incorrectly configured hydraulic circuit may cause damage to the chassis or the water tank hydraulic systems.

- Ensure water tank is safe for hoisting by removing or disconnecting all body retaining spring bolts, control cables and hoses that may be damaged if tank is raised. Also remove components mounted below water tank sump that may be damaged if tank is raised.
- Remove hoist cylinder hoses from cylinder.

## SECTION 7

### MTT to Truck Mating

6. Remove and retain hoist LOWER restrictor plate between the manifold and the hose end.
7. Install pressure reducing manifold as shown below.



LEFT Hoist Cylinder

#### NOTE

Both pressure reducing valves are identical, the orientation will have the test ports pointed to the LEFT side of the chassis as viewed from behind the chassis.

8. Reinstall hoist cylinder RAISE hose.
9. Reinstall hoist LOWER hose with hoist lower restrictor plate installed.
10. Repeat manifold installation on OTHER cylinder as per steps 6 thru 10.
11. Install 0-600 psi (4,500 kPa) pressure gauge on bottom port of pressure reducing manifold (Hoist RAISE side, stamped "R").
12. Disconnect MEGA control cable from hoist valve and reconnect CAT OEM hoist valve wiring.
13. Using CAT E.T. reconfigure ECM to activate hoist valve from CAT hoist lever or CAT Automatic Water Distribution water cannon controls.

14. Use 3 people (1 in cab to operate control, 1 as signal relay and to observe pressure gauge, 1 to spot tank as it is hoisted) to observe and correct any potential interference with objects that may cause damage to tank, chassis or personnel.

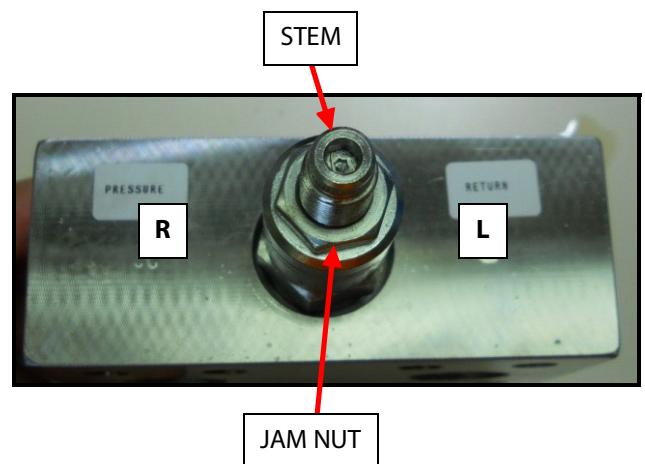
#### CAUTION

Ensure all proper hoisting procedures are followed. Failure to use a spotter to observe, correct and prevent any clearance issues will result in damage to MTT or chassis while hoisting. Pay particular attention to the up lock area of the chassis and tank.

15. Start engine.
16. At LOW IDLE, raise the water tank using hoist controls. Observe and note RAISE pressure as the water tank begins to lift off the chassis rails. Pressures observed should be between 300 and 350 psi (2,070 and 2,400 kPa) on CAT 777's.

#### NOTE

If tank fails to **RAISE**, loosen pressure reducing valve stem nut (Counterclockwise). Tighten stem ¼ turn (Clockwise) ONLY, on each valve. Tighten jam nuts and repeat hoist procedure. Observe and note pressure.



## SECTION 7

### MTT to Truck Mating

17. If tank fails to raise, **STOP** hoisting operation. Contact MEGA Corp Product Support Group at: US Toll Free 1-800-345-8889 or Direct: 1-505345-2661 and report water tank serial number, any observed pressures and any conditions noted during the operation.

#### CAUTION

Do not continue to increasing hoisting cylinder operating pressure after an additional ¼ turn adjustment from initial setting. Continued adjustments will increase hoist circuit operating pressure and potentially damage chassis up-lock castings and water tank rotation indicators when the tank is raised past water tank maximum rotation indicators.

18. If tank is raising normally, continue raising tank until second stage of hoist cylinder is reached. Observe and note pressure as hoist cylinder transitions to second stage extension.

19. Lower tank.

20. Repeat hoisting of tank while observing and noting pressures. Pressures should be the same as observed during the first hoisting operation.

21. Lower tank to chassis.

22. Inspect hose connections and relief manifold for leaks.

23. Turn engine OFF.

#### CAUTION

If this information is not clear, the technical manual is unavailable or there is an issue with ensuring the tank is reconfigured properly. Contact the MEGA Corp Product Support Group immediately with the tank serial number at: US toll free:1-800-345-8889 or Direct: 1-505-345-2661

24. Relieve pressure from hoist cylinder hydraulic circuit per CAT S.I.S.

25. Reconfigure hoist valve hydraulic plumbing for water pump operations.

#### CAUTION

If reconfiguration information is not clear, the technical manual is unavailable or there is doubt the hydraulic configuration is correct contact the MEGA Corp Product Support Group immediately with the tank serial number at:

US toll free: 1-800-345-8889 or

Direct: 1-505-345-2661.

Continued operation with an incorrectly configured hydraulic circuit may cause damage to the chassis or the water tank hydraulic systems.

26. Disconnect CAT OEM hoist valve wiring and reconnect MEGA control cable to the hoist valve.

27. Using CAT E.T. reconfigure ECM to deactivate hoist valve control from CAT hoist lever or CAT Automatic Water Distribution monitor controls.

28. Service chassis hydraulic system as required.

#### HOIST SYSTEM OPERATIONAL CHECK

##### (Hoist-Compatible Units Only)

##### Preparation and hoisting tank

1. Place unit on solid, level work area with proper clearance to accommodate the MTT when hoisted.
2. Ensure unit contains no water. Remove sump access cover to ensure tank is free from water.
3. Remove electrical and hydraulic power from unit.
4. Remove components (e.g. drain bar, hose reel...) bolted to the bottom of the water pump sump that may be damaged when tank is hoisted.

#### CAUTION

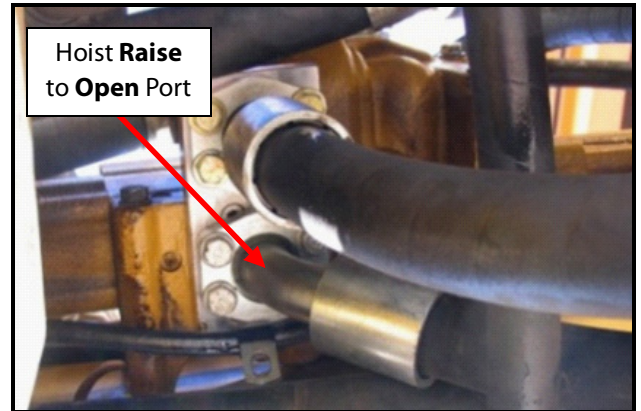
Ensure all components that may cause interference with chassis to tank when tank is hoisted are disconnected and/or removed from tank or chassis. Failure to remove components will cause damage to MTT and/or chassis.

5. Disconnect and plug pilot oil supply hose.

## SECTION 7

### MTT to Truck Mating

6. Disconnect ALL control wiring that may be damaged when tank is hoisted.
7. Locate and secure tank lock back pins or restraining device.
8. Ensure the 40 pin electrical cable connector (truck to forward MTT junction box) is disconnected and removed from the forward junction box and MTT.
9. Ensure the 2 conductor hoist valve control cable (MTT forward junction box to hoist valve) is disconnected and removed from the hoist valve and MTT.
10. Ensure the OEM hoist control wiring is connected to hoist valve.
11. Ensure the MTT water pump **pressure** hydraulic hose is connected to the **blank** port of the dual flange blanking plate as shown below.
12. Ensure the hoist cylinder **raise** supply hose is connected to the **open** port of the dual flange blanking plate on the hoist valve.
13. Restore electrical power to chassis.
14. Gain access to ECM and reconfigure hoist control to **"ENABLE"**, refer to Section 8 Final Assembly, Software.
15. Remove the switch box from the switch box mounting plate and insert the hoist shaft and handle into the hoist lever mechanism.
16. Start engine and perform operational check of the gear shift lever and hoist lever as per CAT SIS. Ensure that the gear shift lever parking brake, transmission hold, and reverse disable function properly. Also ensure that the hoist lever raise, hold, float, and lower functions operate properly.

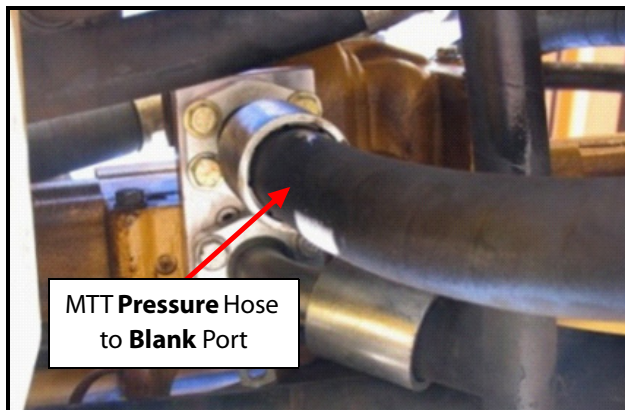


#### ⚠ WARNING

Ensure all hydraulic pressure has been removed from hydraulic circuit prior to removing hoses. Removing pressurized hoses may result in personnel injury or death.

#### CAUTION

Use care when removing and installing hoses. Unclean handling will induce dirt and debris resulting in possible damage to hydraulic components.



#### CAUTION

Ensure all proper hoisting procedures are followed. Failure to use a spotter to observe and correct any clearance issues may result in damage to MTT or truck while hoisting.

#### ⚠ WARNING

Gear shift lever & hoist lever controls must be checked to ensure proper functionality. **Incorrect functionality may cause serious injury or death.**

17. Raise tank slowly until tank lock back holes align.

## SECTION 7

### MTT to Truck Mating

18. Insert and secure lock back pins or restraining devices in the provided holes or fixtures.

19. Remove electrical and hydraulic power from unit.

#### Lowering

20. Restore electrical and hydraulic power to unit.

21. Raise MTT to remove lock back pins or restraining devices.

22. Lower MTT to chassis.

#### CAUTION

Ensure all proper hoisting procedures are followed. Failure to use a spotter to observe and correct any clearance issues may result in damage to MTT or truck while hoisting.

23. When tank is lowered and resting on chassis frame rails, remove electrical and hydraulic power from unit.

24. Place lock back pins or restraining devices in proper holding fixtures.

#### HOIST VALVE RECONFIGURATION

##### Reconfiguration

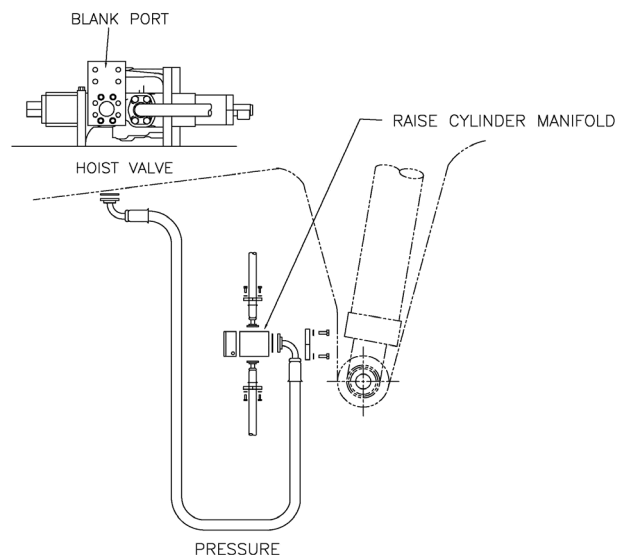
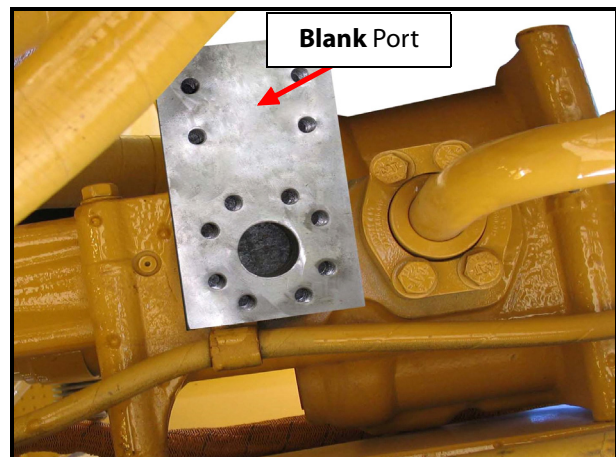
1. Reposition and secure the hoist cylinder **raise** hose to the **blank** port of the dual flange blanking plate as shown below and in Appendix.

#### WARNING

Ensure all hydraulic pressure has been removed from hydraulic circuit prior to removing hoses. Removing pressurized hoses may result in personnel injury or death.

#### CAUTION

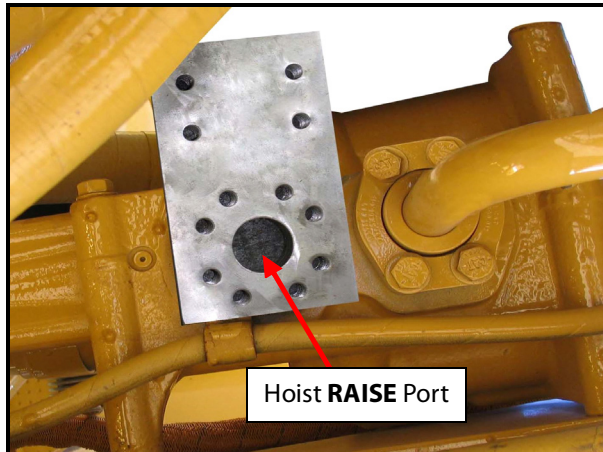
Use care when removing and installing hoses. Unclean handling will induce dirt and debris resulting in possible damage to hydraulic components.



## SECTION 7

### MTT to Truck Mating

2. Reposition and secure the MTT water pump **pressure** hose to the **raise** port of the dual flange blanking plate as shown below and in Appendix.



3. Reinstall MTT accessories that were removed prior to hoisting of MTT because of interference.
4. Reinstall and secure the 40 pin control cable to forward junction box and tank.
5. Disconnect and cap OEM hoist valve control wiring from hoist valve.
6. Reinstall pilot oil supply hose to solenoid control box oil filter.
7. Reconnect any control cabling that was disconnected prior to hoisting.
8. Reconnect MTT 2 conductor hoist valve control cable to hoist raise solenoid of hoist valve and secure to tank and chassis.
9. Restore electrical power to unit.
10. Gain access to ECM and change hoist control to **"NOT INSTALLED"** Refer to Section 8 Final Assembly, Software.
11. Place the hoist lever mechanism in FLOAT position.
12. Loosen the bolt shown below and remove hoist lever shaft and handle from hoist lever mechanism and secure inside of cab.

13. Re-install the switch box to the switch box mounting plate.

#### **Mandatory Water Pump Operational Check after Reconfiguration**

14. Startup vehicle and turn on the MTT control system.
15. Turn the Cab Control PUMP Switch ON.

#### **CAUTION**

Only operate the water pump low idle for no longer than 2.5 minutes without water in tank. Running the water pump longer than 2.5 minutes without water in the MTT will result in water pump shaft/seal damage or complete failure.

16. Check to ensure water pump is spinning CW and all hydraulic components are free of oil leaks.
17. Refer to CAT Service and Maintenance Manual for proper fluid levels and types. Ensure hydraulic fluid level is at the correct level.
18. Install body retaining bolts.

#### **CAUTION**

When tightening body retaining bolts, ensure that the springs are compressed only 1/2" as referred to in Section 8 Final Assembly. Over tightening will cause damage to MTT or front mounting.

19. Perform a full MTT operational check as outlined in **Section 9 Functional Check Procedures** before releasing and returning the unit to service.

**SECTION 7**  
**MTT to Truck Mating**

# SECTION 8

## Final Assembly

### Contents

Electrical .....8-1	Ladders (if equipped) ..... 8-4
Software .....8-2	Hose Reels (if equipped) ..... 8-4
Water Cannon Assembly (if Equipped) .....8-2	Spray Bar (if equipped) ..... 8-4
Forward Mount Bolts .....8-3	Dump Bar (if equipped) ..... 8-4
Mud Flaps (if equipped) .....8-3	Conical Fill (if equipped) ..... 8-4
Decals (if equipped) .....8-4	Work Lights (if equipped) ..... 8-5
Rock Ejectors (if equipped) .....8-4	Quick Drain (if equipped) ..... 8-5

### DESCRIPTION

This section contains steps necessary for final assembly of the MTT water truck. If your system is not covered in this manual or you are experiencing difficulties with the installation, please contact MEGA Corp. Product Support Group at:  
 US toll free: 1-800-345-8889  
 Direct: 1-505-345-2661 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more detailed contact information.

### ELECTRICAL

#### Solenoid Control Box

Complete the wiring of the solenoid control box normally mounted on the front of the tank as shown in Appendix.

#### Water Level Sensor

Connect water level sensor cabling as shown in Appendix.

#### Hoist Valve

Connect and route 2 conductor (pump) cable from the spray head control box to the hoist valve RAISE solenoid as shown in Appendix. Ensure vehicle hoist valve wiring harness (**raise** and **lower**) Deutsch connectors are disconnected and blank plugs and receptacles are installed.



Typical Hoist Valve Wiring

#### Fire Suppression

Connect foam concentrate shut-off valve cabling as shown in Appendix.

#### Lights and Backup Alarm

Wire tail lights, backup alarm and clearance lights as shown in Appendix.

#### Tank Grounding Cable

Install tank grounding cable from a known good chassis grounding point to a threaded boss located on the MTT. Ensure a good ground is achieved.

#### DiSCS® CAN Cable

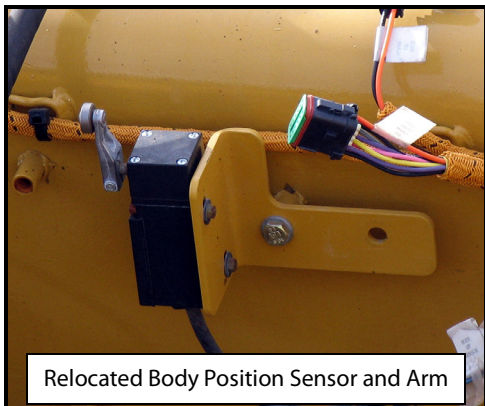
Route the unterminated end of the P/G/I-CAN cable from the switch box through the cab to the CAN cable receptacle at the spray system solenoid box mounted on the front bulkhead of the tank. Cut for desired length and install plug on the cable as shown in Appendix. Connect the cable to the solenoid control box as shown below and in Appendix.



#### Body Position Sensor

## SECTION 8 Final Assembly

Move body position sensor to a location inside the frame and secure body position sensor arm to indicate body down.



### SOFTWARE (Electric Hoist Valve)

#### CAUTION

The hoist lever function must be disabled before securing the MTT forward mount bolts and springs. Failure to disable the hoist controls will cause severe damage to the MTT tank structure if the hoist is activated.

1. Gain access to ECM on board software.
2. Locate HOIST VALVE menu and select **"NOT INSTALLED"**

If **BED UP** advisory lights illuminate or **Fault Codes** are latched contact MEGA Product Support Group for assistance at:

U.S. Toll free: 1-800-345-8889,

Direct at: 1-505-345-2661 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more detailed contact information.

### WATER CANNON ASSEMBLY (IF EQUIPPED)



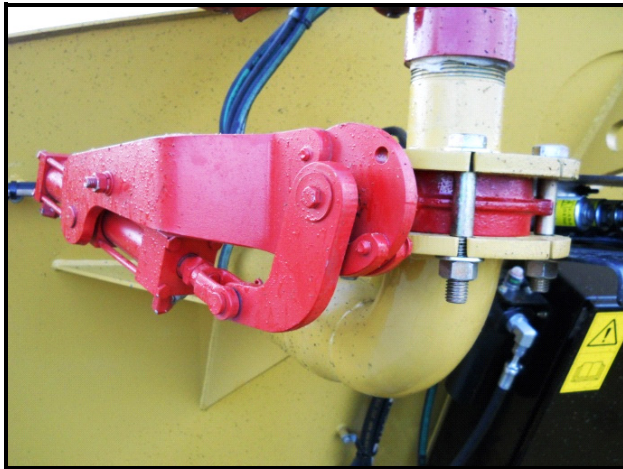
1. Remove all electrical and hydraulic power from unit and make sure unit is safe for maintenance.
2. Ensure lower weld flange has been welded in proper location and weld is complete.
3. Locate and install butterfly valve and adapter flange to mount. Ensure that the 4 bolts are evenly spaced. Do not tighten yet.
4. Using 2 holes on hydraulic control valve bracket, secure to bottom side of the LOWER flange as shown below. Ensure butterfly valve shaft is oriented as shown below. Tighten the 4 bolts evenly to prevent flange distortion.



## SECTION 8

### Final Assembly

5. Apply liquid pipe sealant to threaded nipple on adapter flange.



6. Thread water cannon on adapter until tight.

#### CAUTION

Use proper size wrench to tighten water cannon on adapter. Using a pipe wrench on water cannon inlet pipe will result in damage to water cannon and the flange adapter.

7. Ensure water cannon has sufficient travel to the RIGHT (95°) to not spray water on any item that may be damaged by the discharge of the water cannon when activated.

#### NOTE

MEGA Water Cannons are clocked to the full LEFT stop. When tightening the water cannon it may be necessary to unbolt the adapter flange and re-clock the water cannon adapter flange to prevent water spray on cab, mirrors or tank when using water cannon.

8. Connect wiring harness Deutsch connector to the forward junction box Deutsch connector.
9. Connect hydraulic control hoses as shown in Appendix.

#### FORWARD MOUNT BOLTS

#### CAUTION

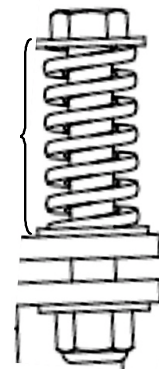
Prior to installing body mounting bolts ensure Hoist System and Mandatory Water Pump Operational Checks. An incorrect hydraulic configuration of the hoist or water pump system may result in damage to the forward mountings and MTT.

#### CAUTION

Ensure all hoist cylinder and water pump functional checks are completed and that the hoist lever functions are completed prior to installing body mounting bolts. The hoist lever function must be **NOT INSTALLED** before installing and securing the MTT forward mount bolts and springs. Failure to disable the hoist controls will cause severe damage to the MTT tank structure if hoist is activated with cylinders installed.

1. Install mounting bolts and springs as shown below and in appendix. Torque mounting bolts until springs are compressed 1/2 inch (13 mm) from the relaxed length.

Tighten spring only 1/2 inch  
(13mm) from relaxed length



#### MUD FLAPS (IF EQUIPPED)

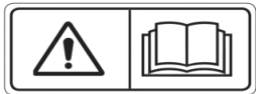
1. Remove mounting bar bracket and mount bolts.
2. Install mud flap and mounting bar bracket as shown in Appendix.

## SECTION 8 Final Assembly

### DECALS (IF EQUIPPED)

1. Install decals as described below and in Appendix.

a. MTT forward solenoid box.



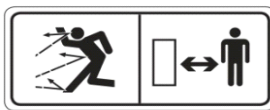
b. Cab windshield



c. Near hoist controls



d. On top of cab control near water cannon joystick



### ROCK EJECTORS (IF EQUIPPED)

1. Locate rock ejector and mounting hardware.
2. Mount rock ejectors as shown in Appendix.

### LADDERS (IF EQUIPPED)



1. Locate ladders and mounting hardware.
2. Mount ladders as shown in Appendix.

### SPRAY BAR (IF EQUIPPED)



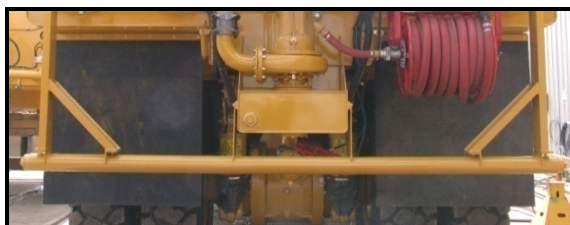
1. Locate spray bar, couplings and mounting hardware.
2. Mount spray bar assembly as shown in Appendix.

### HOSE REELS (IF EQUIPPED)



1. Locate hose reel, mounting hardware, adapters, soft hosing and clamps.
2. Install the hose reel and route water supply as shown in Appendix.

### DUMP BAR (IF EQUIPPED)



1. Locate dump bar and mounting hardware.
2. Mount dump bar assembly as shown in Appendix.

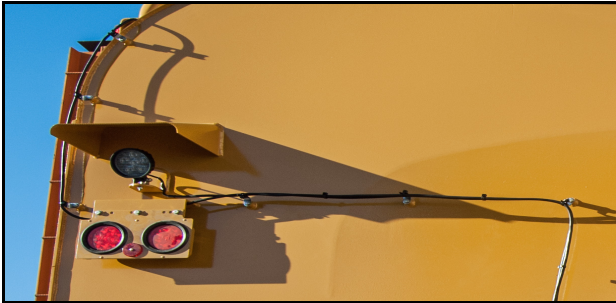
### CONICAL FILL (IF EQUIPPED)

1. Locate conical fill and mounting hardware.
2. Mount conical fill assembly as shown in Appendix.

## SECTION 8

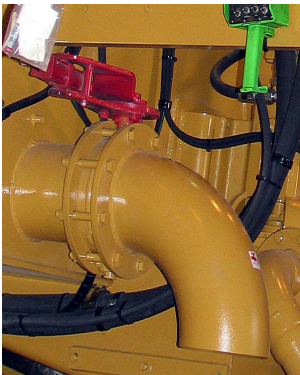
### Final Assembly

#### WORK LIGHTS (IF EQUIPPED)



1. Locate work lights and wiring.
2. Mount work lights to work light brackets at rear of tank.
3. Route wiring to forward junction box.
4. Secure wiring to tank.
5. Install wiring in forward junction box as shown in Appendix.

#### QUICK DRAIN (IF EQUIPPED)



1. Locate quick drain, butterfly valve and hardware.
2. Mount quick drain assembly as shown in appendix.

**SECTION 8**  
**Final Assembly**

# SECTION 9

## Commissioning


### Contents

Commissioning Guidelines .....	9-1	Electrical Power ON, Engine ON (Low Idle) .....	9-2
Before Operations .....	9-1	Water Pump Tuning .....	9-4
Electrical Power ON Engine OFF .....	9-2	Commissioning Worksheet .....	9-6


### COMMISSIONING GUIDELINES

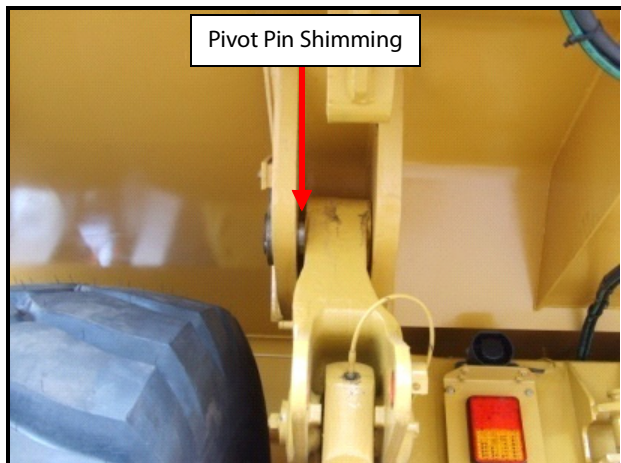
The commissioning of the newly assembled MTT is designed to perform static checks of all systems then move to dynamic checks of all systems under loaded conditions and finally perform required system adjustments. If your system is not covered in this manual or you are having difficulties with the installation please contact The MEGA Corp. Product Support Group at: U.S. Toll Free 1-800-345-8889, Direct at: 1-505-345-2661 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more contact information.


### NOTE

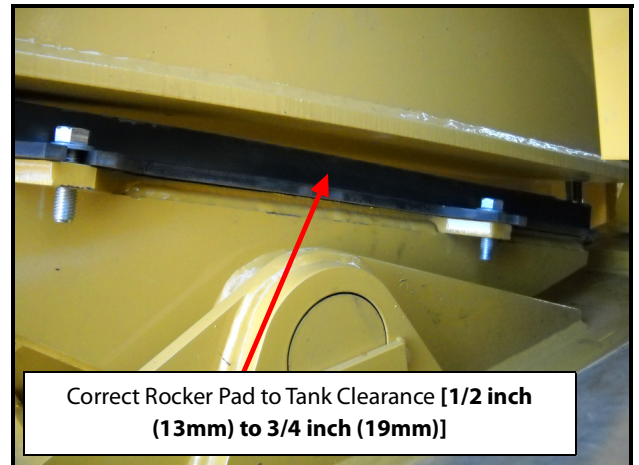
 The appearance of a notepad and pencil icon at the beginning of a step indicates that during the step, a measurement must be taken and recorded in the **Commissioning Worksheet** at the end of Section 9.


### BEFORE OPERATIONS

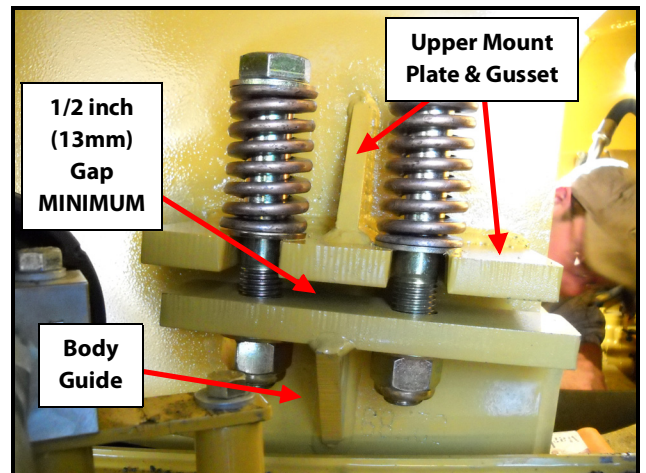
-  Record the width of all pivot pin shimming (inside and outside on the left and right sides of the machine) in the Section 9 Commissioning Worksheet.



-  Record the Rocker Pad to Tank clearance gap in the Section 9 Commissioning Worksheet.



-  Record the gap between the upper mounting bar and the body guide assembly (Forward Frame Rail Mounts gap) in the Section 9 Commissioning Worksheet.



- Install hydraulic test gauges on the water pump hydraulic drive motor test ports.
- Adapt a water pressure gauge to the spray bar gate valve.

## SECTION 9

### Commissioning

6. Fill water tank to maximum capacity for static and dynamic check of the entire spray system.

#### CAUTION

Operating the water pump in a dry sump will result in shaft seal damage.


7. Once tank is full, check pump couplings for static water leaks.
8. Adjust all spray head adjustment rings for full flow and maximum pattern width to allow free flow of metal contaminants from the MTT during flow testing.
9. Ensure all cab control switches are OFF.

#### ELECTRICAL POWER ON ENGINE OFF

1. Ensure vehicle battery power is connected.
2. Turn vehicle key switch ON (engine off). Ensure the vehicle cycles through recommended ECM functions per CAT Operators Manual and all warning and advisory lights extinguish.
3. Turn the cab control SYSTEM/POWER Switch ON and allow the water level system to warm up for 2 minutes. Ensure the water level gauge indicates full.



#### NOTE

If the water level gauge upper and lower indicator lights flash alternately, the water level indicating circuit is open. Ensure all water level cables and connectors are securely attached.



4.  **(Electric Water Cannon Only)** Turn MONITOR/BFV Switch ON and operate water cannon through full range of motion (up/down/left/right). Point the water cannon in a safe direction for upcoming checks with actual water flow.
5. **(Electric Adjustable Nozzle Only)** Operate the adjustable nozzle from FOG/FAN to STREAM to ensure the outer barrel of the nozzle moves in and out.

6. Turn MONITOR/BFV Switch OFF.

#### ELECTRICAL POWER ON, ENGINE ON (LOW IDLE)


1. Ensure wheels are chocked and parking brake is set.
2. Ensure the area around the vehicle is well clear and ample space is available to operate spray heads and water cannon.
3. Ensure all spray heads, dump bar, drain valve, MONITOR/BFV, and foam switches are OFF.
4.  Start up the vehicle and ensure all required warning and advisory lights extinguish per Operator's Manual.
5.  While the vehicle is running inspect all installed hydraulic components (hydraulic tank, hoist valve, diversion valve, torque tube manifold, water pump hydraulic drive motor, and rear solenoid box) connections and hoses for leaks.

#### CAUTION

6.  Ensure all fluid levels are acceptable, and a walk around inspection is completed to identify possible leaks, loose or missing components, and clearance issues prior to functional check.
7.  Turn the cab control box SYSTEM/POWER and PUMP switch ON. Inspect all installed hydraulic components (hydraulic tank, hoist valve, diversion valve, torque tube manifold, water pump hydraulic drive motor and rear solenoid box) connections and hoses for leaks. Ensure hydraulic oil level is safe for operation.




#### CAUTION

Engaging/disengaging the water pump above LOW IDLE will result in water pump component damage and reduced service life.

7.  Ensure water pump shaft is turning in a CW rotation.


## SECTION 9

### Commissioning

8.  **(Hydraulic Water Cannon Only)** Turn MONITOR/BFV switch ON and operate the water cannon through full range of motion (up/down/left/right).
9.  Activate each spray head control switch one a time and ensure spray head is operating normally.
10.  Operate all remaining cab control box functions and check for proper operation.
11. Once all cab control functions are checked, turn PUMP switch OFF and SYSTEM switch OFF.

#### CAUTION

Engaging/disengaging the water pump above LOW IDLE will result in water pump component damage and reduced service life.

12.  With the vehicle still running, perform a walk around inspection of the entire vehicle and inspect all hydraulic system components, hosing for leaks and for proper oil levels.
13. Shutdown the vehicle and service hydraulic system as required.
14. Ensure all panels and covers are closed and secured.

15. Restart vehicle and operate all cab control systems at HIGH IDLE to flow large volumes of water through all tank piping and components.

#### CAUTION

Operate each spray head and the water cannon individually for a minimum of 15 seconds to expel all metal contaminants that could damage spray head diaphragms and butterfly valves.

#### CAUTION

Engaging/disengaging the water pump above LOW IDLE will result in water pump component damage and reduced service life.

16. Shut off all spray heads and the water cannon at HIGH IDLE then do a walk around for any leaks from spray heads or the water cannon.
17. Reduce engine speed to LOW IDLE.
18. Walk around unit, checking for leaks from spray heads or the water cannon.
19. Turn water pump OFF.

#### CAUTION

Engaging/disengaging the water pump above LOW IDLE will result in water pump component damage and reduced service life.

20. Walk around unit, checking for any leaks from sprays heads or water cannon.
21. Turn system OFF.
22. Shutdown vehicle.

## SECTION 9



### Commissioning

#### WATER PUMP TUNING

1. Clean water pump shaft and install reflective tape.
2. Ready a hand-held or install a photo tachometer to sense water pump shaft speed.
3. Adapt a water pressure gauge to the rear spray bar ball or gate valve.
4. Start up vehicle.
5. At LOW IDLE, turn the cab control SYSTEM/POWER switch ON. Ensure that all spray heads and other pressure discharge functions are OFF.
6. Turn the Cab Control PUMP switch ON.

#### CAUTION

Engaging/disengaging the water pump above LOW IDLE will result in water pump component damage and reduced service life.

7.  Ensure the water pump is turning in a CW rotation. At LOW IDLE, note water pump RPM and spray bar water pressure.
8.  Operate vehicle at HIGH IDLE. Note water pump RPM and water pressure. Water pump RPM should be set to:

**M4 PUMP:** 1900 ± 50 RPM

**M4B PUMP:** 1,950 ± 50 RPM

#### CAUTION

Water pump RPM must not exceed the above specifications with engine at high idle. Failure to ensure water pump speed is at or below specifications will result in reduced spray system component service life.

9. If water pump RPM is outside of the specified range, adjust the water pump hydraulic drive motor flow control valve to obtain specified RPM.

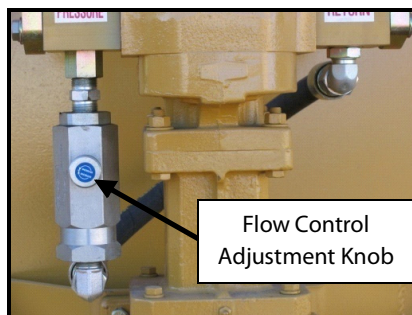
Typically, the label on the knob refers to the amount of oil being bypassed, **not** motor speed. By turning the adjustment knob **CLOCKWISE (BLUE ARROW)** the oil being bypassed is *reduced*, *increasing* the speed of the pump. By turning the adjustment knob **COUNTER-CLOCKWISE (RED ARROW)** the oil being bypassed is *increased*, *reducing* the speed of the water pump.

#### ⚠ WARNING

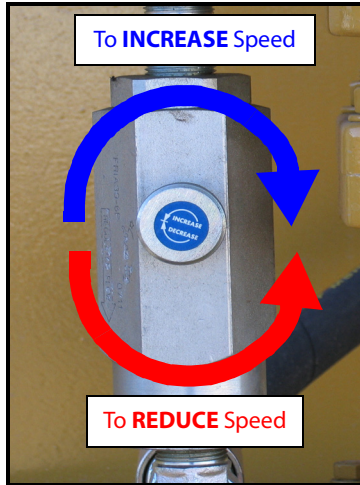
Do not place your hand or tools within pump bell while pump is rotating and/or pressure held within the motor supply hose. Refer to the Operator and Maintenance Manual for the procedures to operate and maintain the pump. Failure to follow proper procedures will result in serious personal injury.

#### NOTE

The flow control valve can control as much as 35 gpm or about 700 RPM.



## SECTION 9 Commissioning



Alternate flow control adjustment knob could be used:



10. Once specified RPM is obtained, tighten flow control jam nut.

11. Cab Control Pump Switch - OFF.

### CAUTION

Engaging/disengaging the water pump above LOW IDLE will result in water pump component damage and reduced service life.

12. Cab Control SYSTEM/POWER Switch – OFF.

13. Shutdown vehicle.

14. Remove photo tachometer, hydraulic gauges, and water pressure gauge.

15. Finish recording Commission Worksheet form and submit with In Service Report to Mega Corp.

## SECTION 9 Commissioning

### COMMISSIONING WORKSHEET

Use Information gathered from Sections 7, 8, and 9 to fill out the tables below. This worksheet is designed to aid in collecting all data necessary for filling out the Mega Warranty In-Service Report.

#### Mega Tank Installation Commissioning Data

See sections 7 and 8 for additional information on the locations and procedures for acquiring the required data. Shimming is as necessary and may or may not be required.

	Left Side From Operators Perspective		Right Side From Operators Perspective	
	Inside:	Outside:	Inside:	Outside:
Width of Pivot Pin Shimming (mm)				
Rocker Pad to Tank Clearance Gap (mm)				
Gap in Forward Frame Rail Mounts (mm)				
Amount of Body Pad Shimming (mm)				

#### Functional Testing Data

Refer to Section 9 for functional testing procedures.

No error codes at start up <input type="checkbox"/>	Fluid levels are acceptable <input type="checkbox"/>	Clockwise water pump shaft rotation <input type="checkbox"/>
All installed functions operate properly <input type="checkbox"/>	Proper water cannon operation (if present) <input type="checkbox"/>	Sprayer controls operate properly <input type="checkbox"/>
No hydraulic component leaks <input type="checkbox"/>	Proper clearance for all cables and hoses <input type="checkbox"/>	

For the procedures and tooling required for collecting the data below, reference Section 9.

	Suction Load Pump	Water Discharge Pump
Approximate Pump Flow Bypass (turns open)		
Pump Shaft RPMs		

	At Low Idle All Sprayers Closed	At High Idle All Sprayers Closed
Water Discharge Pump Motor Pressure (kPa)		
Water Discharge Pump Motor Return (kPa)		
Water Pressure At Spray Bar (kPa)		

If your system is not covered here, or you are having difficulties, please contact the MEGA Corp. Product Support Group at:

U.S. Toll Free: 1-800-345-8889, Direct: 1-505-345-2661 or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more contact information.

# Appendix

## Installation Drawings

### DESCRIPTION

This section contains all the drawings required to assemble and install the MTT on the prime mover. These drawings are MTT serial number specific and designed to be used in conjunction with previous section information to successfully produce a fully operational MTT system.

Appendix is organized in the following sequence:

### **1 - MOUNTING**

### **2 - WELD-ON**

### **3 - BOLT ON**

### **4 - HYDRAULICS**

### **5 - CONTROLS**

### **6 - LIGHTING**

### **7 - FIRE SUPPRESSION**

### **8 - DECALS**

If your system is not covered in this manual, you are having difficulties with the installation or need additional information or assistance, please contact The MEGA Corp. Product Support Group at:  
U.S. Toll Free: 1-800-345-8889  
Direct: 1-505-345-2661  
or visit our website at [www.megacorpinc.com](http://www.megacorpinc.com) for more contact information.

**MTT20-CAT777(F/G)-4**

**2 Sept 2020**

# **Appendix**

## **Installation Drawings**