INSTALL-MHS/SM: 99903053: 20111129

IMT

MATERIAL HANDLING SYSTEMS

# Crane Installation Manual

*Model 4/29*
*Model 5/35*
*Model 6/45*



**IOWA MOLD TOOLING CO., INC.**
**BOX 189, GARNER, IA 50438-0189**
**641-923-3711**
**TECHNICAL SUPPORT FAX: 641-923-2424**
**MANUAL PART NUMBER: 99903053**

**Iowa Mold Tooling Co., Inc. is an Oshkosh Corporation Company.**

# TABLE OF CONTENTS



**In addition to the information presented in this manual, read and understand the IMT Crane Operator's Safety Manual before operating or performing any maintenance on your crane.**

## REVISIONS LIST

| DATE | LOCATION | DESCRIPTION OF CHANGE |
|---|---|---|
| 20111129 | 10, 18 | ECN 11628 - Update stabilizer wording |

## INTRODUCTION

A truck chassis and hydraulically operated crane (loader) are advanced technical products. When these products are combined into one efficient tool, it is important that the installation of the crane on the chassis, reinforcement of the chassis, and choice of pump and hydraulic connections be performed in a professional and correct manner.

Installation of the crane (loader), and reinforcement of the chassis, must be performed in accordance with the instructions of the carrier vehicle manufacturer and the information provided in this Installation Manual.

**WARNING**

FAILURE TO ADHERE TO THE INSTRUCTIONS PROVIDED BY THE VEHICLE AND CRANE MANUFACTURER CAN RESULT IN EQUIPMENT FAILURE, SERIOUS INJURY, OR DEATH.

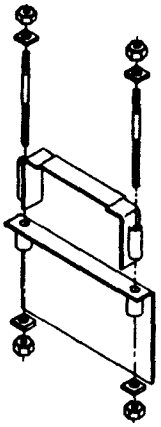
**WARNING**

READ AND UNDERSTAND THE IMT CRANE OPERATORS SAFETY MANUAL AND ALL OTHER APPLICABLE INSTRUCTION MANUALS WHICH ACCOMPANIED YOUR CRANE. FAILURE TO DO SO MANY RESULT IN EQUIPMENT FAILURE, SERIOUS INJURY, OR DEATH.

## MOUNTING COMPONENTS SUPPLIED WITH CRANE

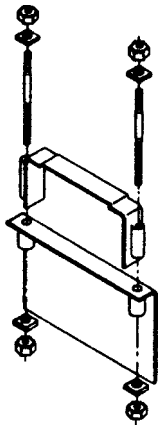
### Series150

| DESCRIPTION | QTY | PART NO. |
|---|---|---|
| LOCK NUT M16 | 4 | 30 892 |
| WASHER | 4 | 12 26 264 |
| BOLT M16X250 | 4 | 66 023 |
| MOUNTING CLAMP | 2 | 12 11 324 |
| MOUNTING BRACKET | 2 | 12 11 784 |
| WASHER | 4 | 12 26 264 |
| LOCK NUT M16 | 4 | 30 892 |
| COMPLETE KIT | REF | 12 10 160 |



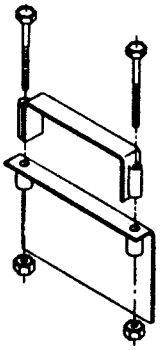
### Series 200

| DESCRIPTION | QTY | PART NO. |
|---|---|---|
| LOCK NUT M16 | 4 | 30 892 |
| WASHER | 4 | 12 26 264 |
| BOLT M16X250 | 4 | 66 023 |
| MOUNTING CLAMP | 1 | 12 26 234 |
| MOUNTING CLAMP | 1 | 12 26 384 |
| MOUNTING BRACKET | 2 | 12 11 784 |
| WASHER | 4 | 12 26 264 |
| LOCK NUT M16 | 4 | 30 892 |
| COMPLETE KIT | REF | 12 29 110 |



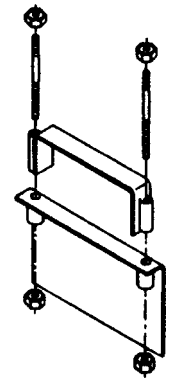
### Series 250

| DESCRIPTION | QTY | PART NO. |
|---|---|---|
| BOLT M20X200 | 4 | 66 027 |
| MOUNTING CLAMP | 2 | 12 31 453 |
| MOUNTING BRACKET | 2 | 12 31 443 |
| LOCK NUT M20 | 4 | 30 894 |
| COMPLETE KIT | REF | 12 30 040 |



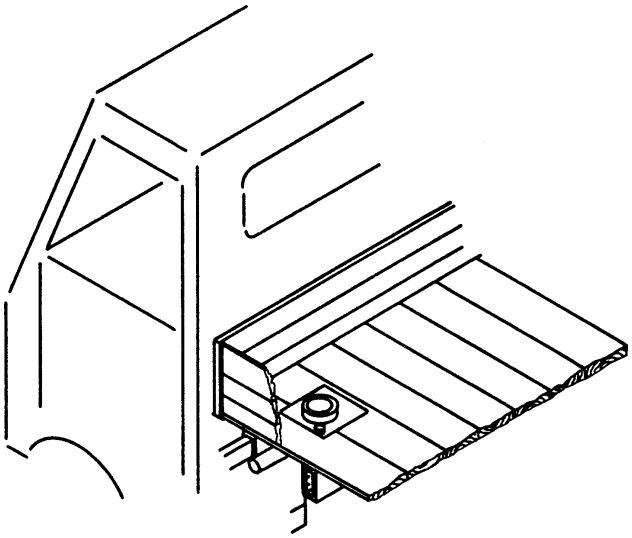
### Series 260

| DESCRIPTION | QTY | PART NO. |
|---|---|---|
| LOCK NUT M20 | 4 | 30 894 |
| BOLT M20X290 | 4 | 66 038 |
| MOUNTING CLAMP | 2 | 12 82 273 |
| MOUNTING BRACKET | 2 | 12 82 303 |
| LOCK NUT M20 | 4 | 30 894 |
| COMPLETE KIT | REF | 12 80 520 |



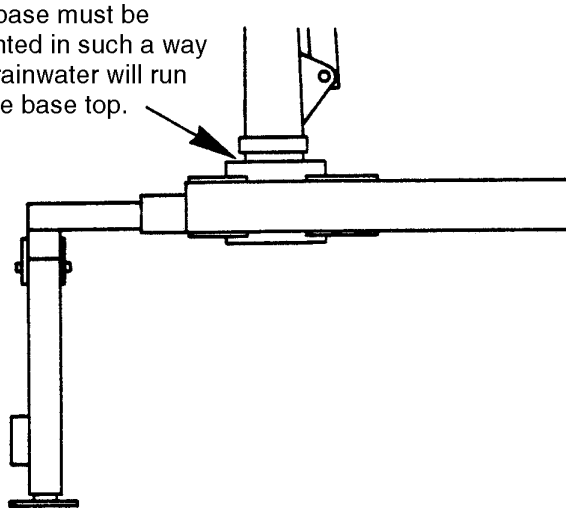
## GENERAL CONSIDERATIONS

Normally the crane is mounted below the deck, which has been cut out to accomodate the base. See drawing below.



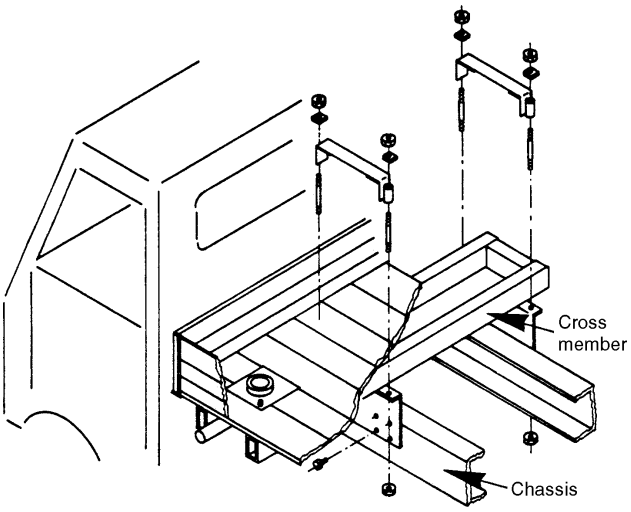
In order to prevent the accumulation of rainwater on top of the base, the upper part of the base must be located either above or level with the deck. See drawing below.

The base must be mounted in such a way that rainwater will run off the base top.



## MOUNTING ON CHASSIS BUILT UP AS A U-SECTION

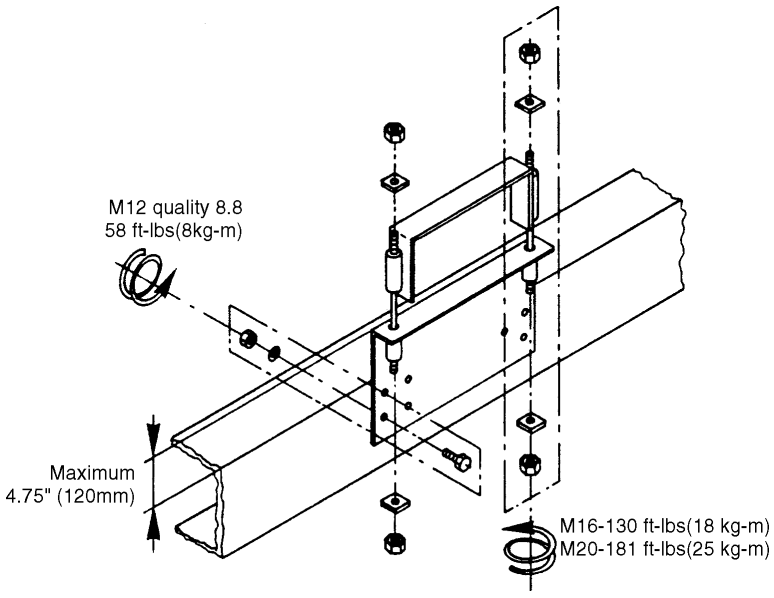
When installing the crane to a wide chassis frame,the left mounting bracket may, on some models, interfere with a 0.2" (5mm) reinforcement plate which has been welded under the cross members. To prevent the crane from leaning to one side, the right mounting bracket is to be mounted 0.2" (5mm) higher than the left. See drawing below.




## INSTALLATION WITH NO REINFORCEMENT OF CHASSIS

Tightening of bolts must be done in stages in order to ensure that the clamp applies pressure evenly against the cross members. See drawing below.

| Number of M12 bolts in mounting bracket | | |
|---|---|---|
| | LOADER SIDE | OPPOSITE SIDE |
| 1.0-1.5tm | 2x3 stk. | 2x2 stk |
| 1.5-2.6 tm | 2x4 stk. | 2x3 stk. |

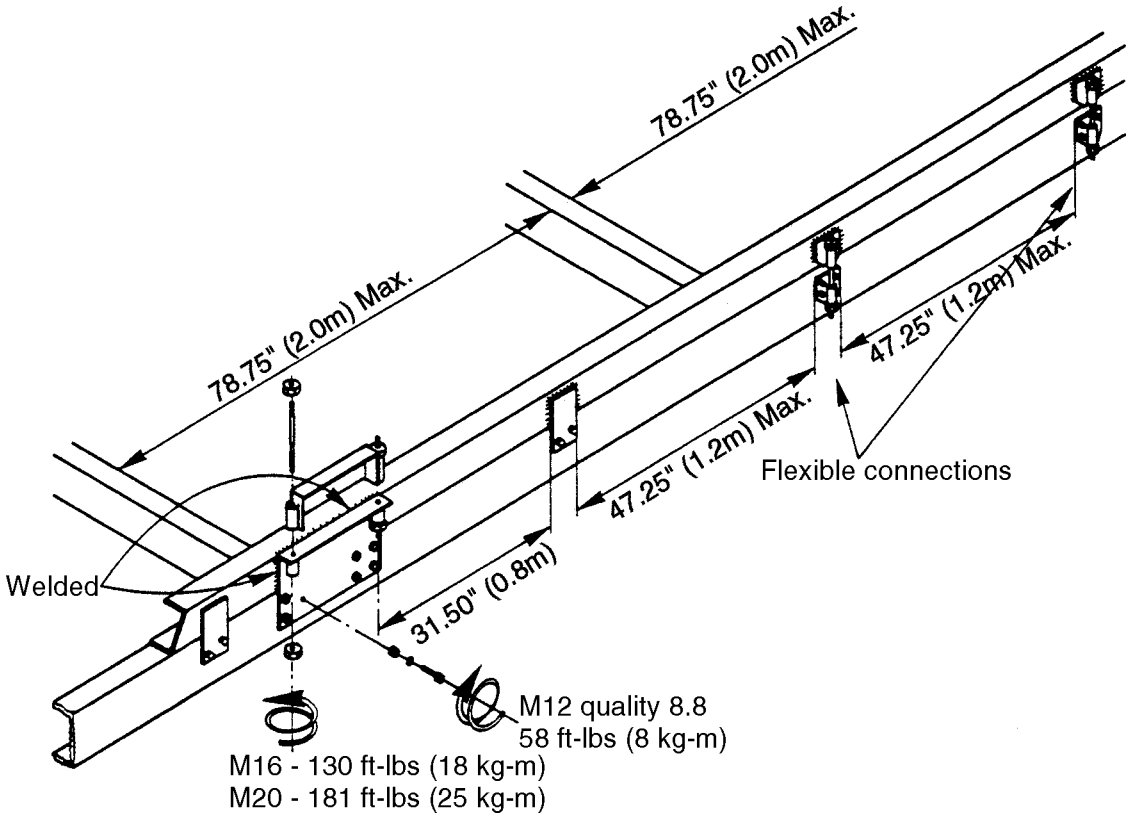


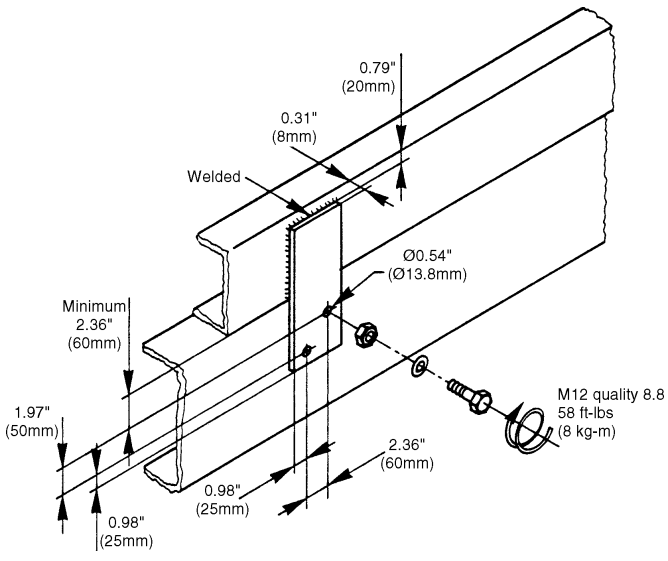
## INSTALLATION WITH REINFORCEMENT OF CHASSIS

The drawing below shows mounting of subframe fastened to the chassis by means of strap plates in front and flexible fasteners at the rear. The subframe is made of U-sections. Another, slightly lower 0.16" (4mm) U-section is welded across the frame and between the frame members and in-line with the front mounting bolts. Aft, the U-sections are placed at a distance of 78.75" (2m) maximum.

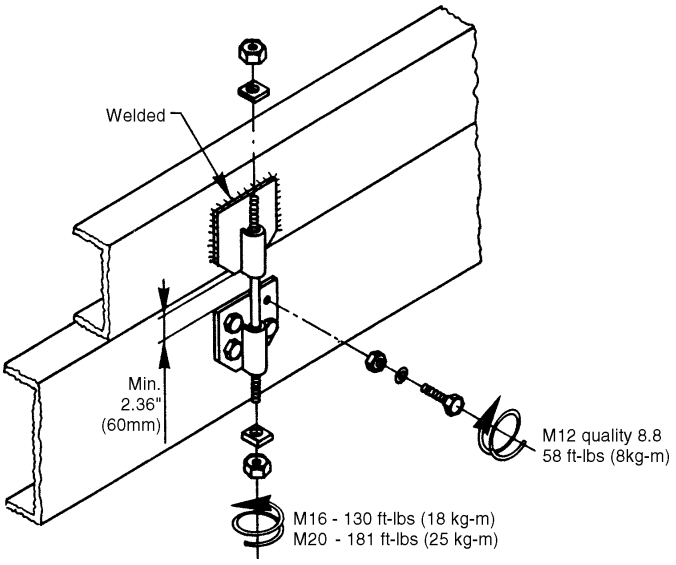
From the rear mounting bolt towards the rear, the subframe is fastened by means of strap-plates at a distance of approximately 31.5" (0.8m), then by means of flexible fasteners at a distance of 47.25" (1.2m) maximum to the rear. See drawing.

If the distance from the front mounting bolt to the front edge of the subframe is more than 7.9" (200mm), a strap-plate should be mounted.




MOUNTING STRAP-PLATES




FLEXIBLE CONNECTION

## MOUNTING BOLT PRECAUTIONS

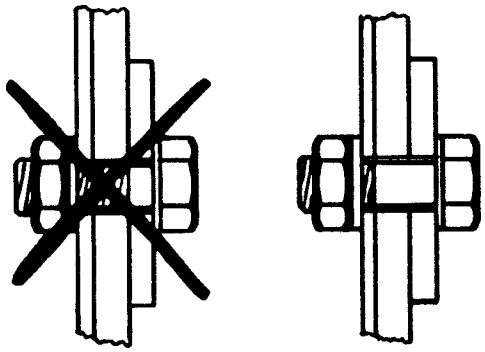
Note that the mounting bolts are made of heat-treated steel of high quality, and that under no circumstances should they be bent or heated. The threads have been rolled and must not be lengthened by means of cutting. Doing so will weaken the bolts.

Nuts must never be secured by tack welding.

The mounting fittings are bolted onto the chassis frame by means of driven bolt connections. It is very important that special bolts are used, on which the smooth part of the bolt shaft is able to reach almost through the mounting bracket and the chassis.

Drilling diameter for a .12mm bolt is 11.8mm (.465").

A hard washer (HB 200) must be placed under the head of the bolt and nut.



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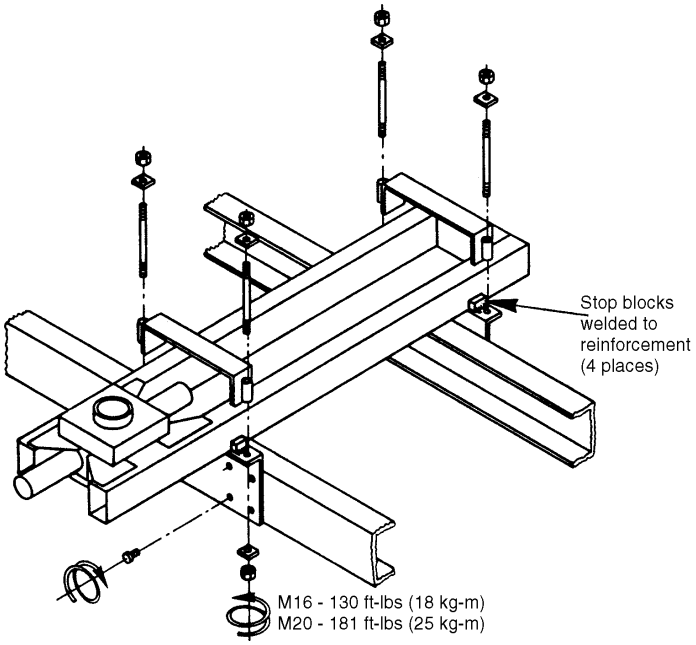
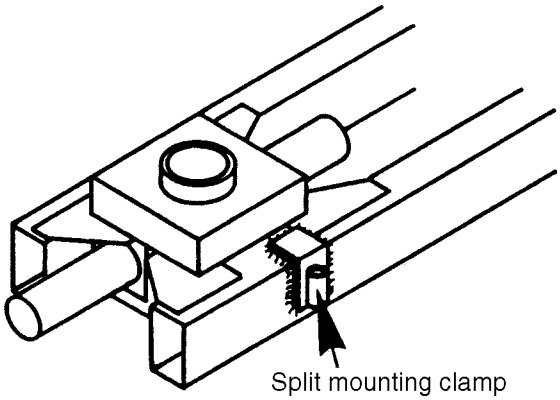
## MOUNTING ON CHASSIS BUILT UP AS A U-SECTION - CONTINUED



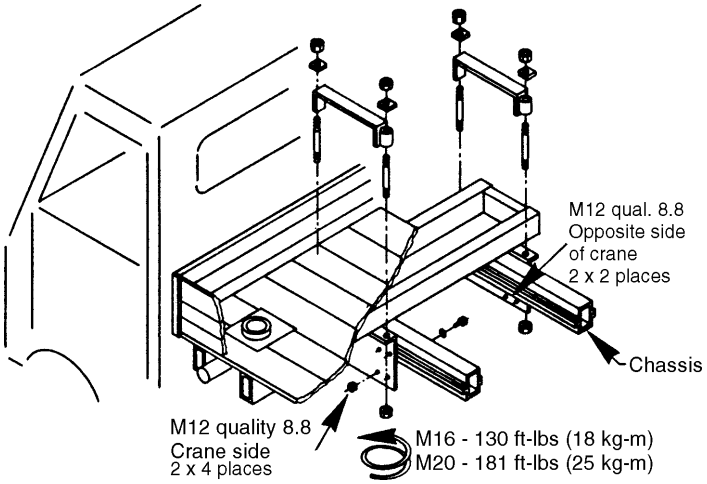

If the rotation system is blocking the mounting clamp, the mounting clamp must be split and welded to the base. See drawing below.

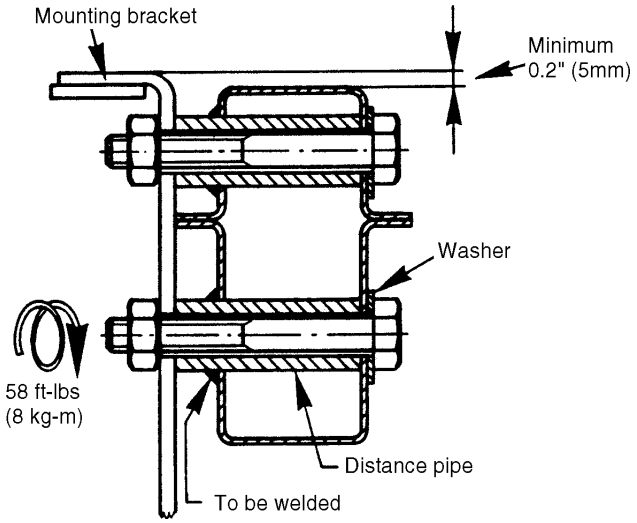


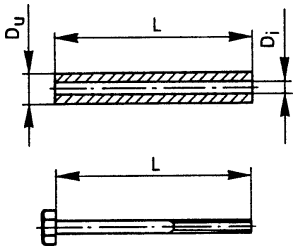

On very wide chassis frames, it may be necessary to place the mounting clamps (or one part of it) on the inside of the chassis frame.

# MOUNTING ON CHASSIS BUILT UP AS DOUBLE HAT SECTION

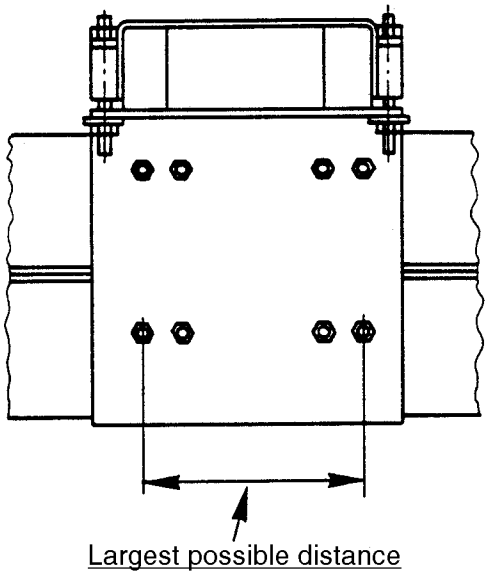
**Proposal A**



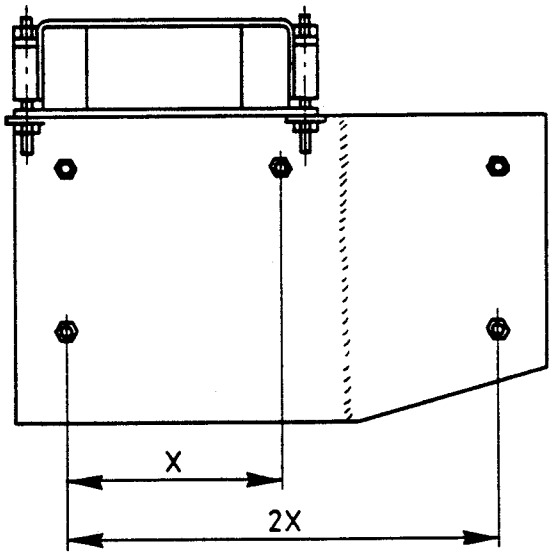




| DESCRIPTION | DIMENSION | PART NO. |
|---|---|---|
| Distance pipe | $D_u$ =20mm (.8")<br>$D_i$ =12.5mm (.5")<br>L =140mm (5.5") | 12 13 824 |
| Steel bolt | M12x150 (5.9")<br>M12x130 (5.1") | 30 195<br>30 198 |
| Lock nut | M12 | 30 890 |
| Facet washer | Ø24/Ø13x2.5 | 31 131 |



Largest possible distance




The mounting bracket can be extended, thus spreading the strain on the chassis. If necessary, only on the loader side.

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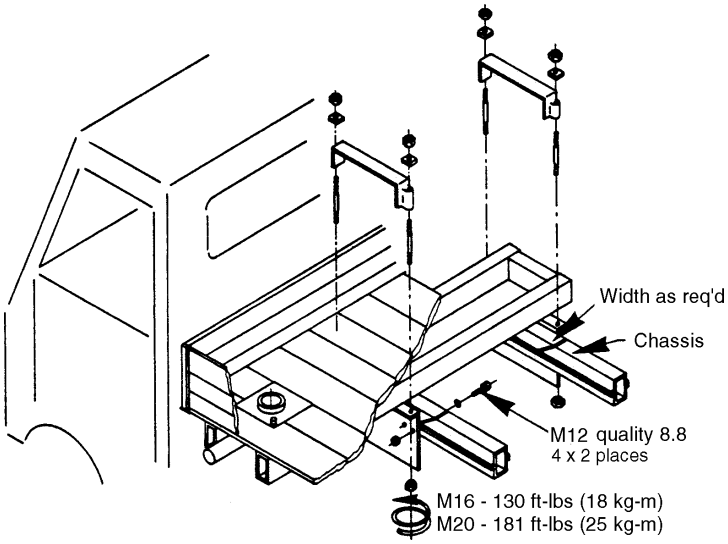
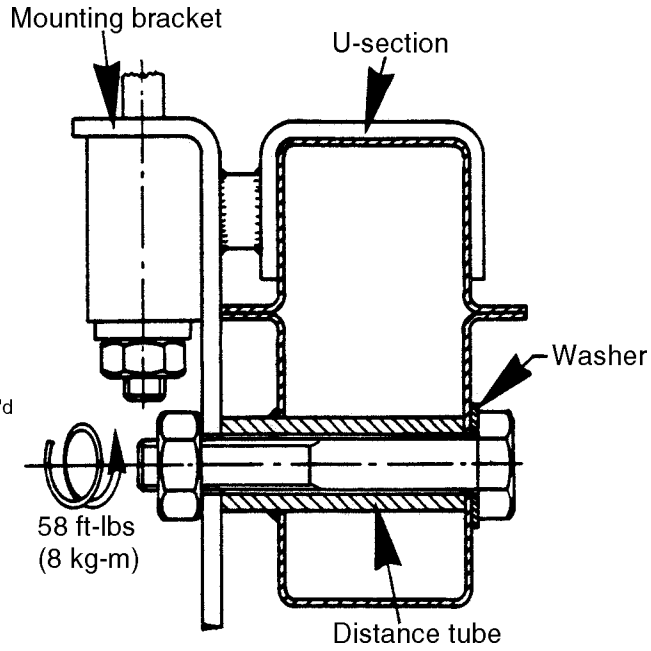
PARTS-8

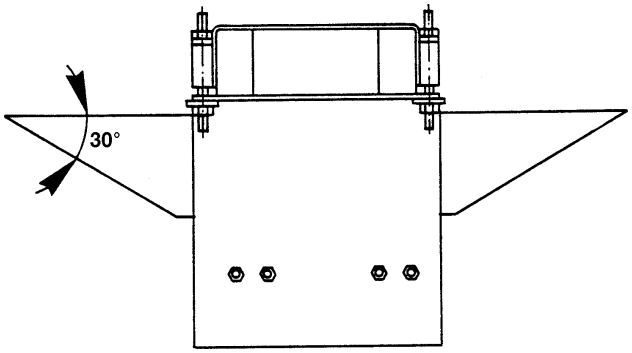
If the chassis requires reinforcement, the following method of installation may be employed.

**Proposal B**

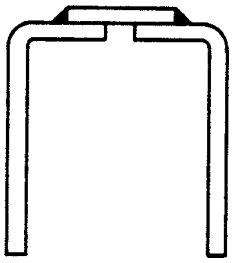



The base of the crane must rest directly on both, mounting bracket and U-section. The U-section may be clasped across the subframe and then welded onto the frame.



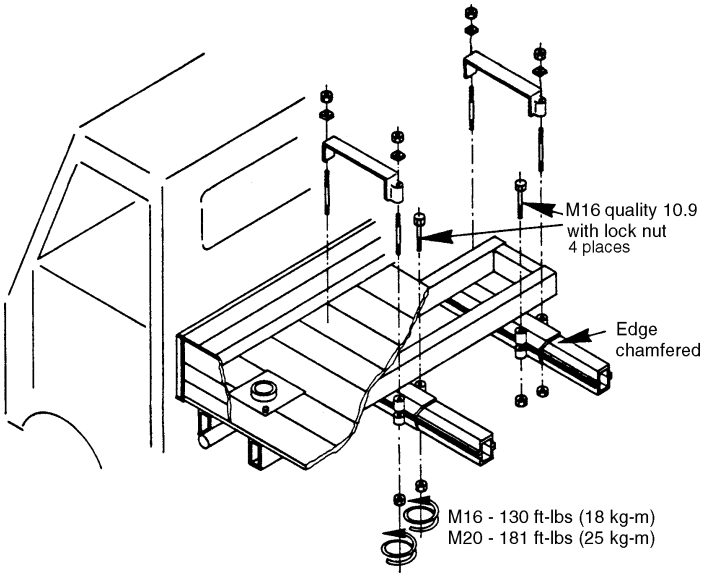

The U-section may be made of 2 angular sections welded together, as shown below.



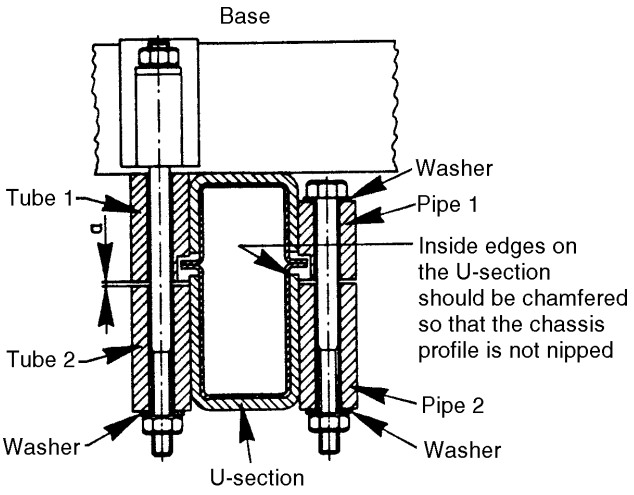
**NOTE**

See information in Proposal A for information on distance tube, bolt, lock nut and washer.

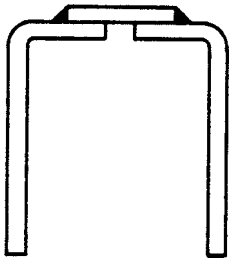
**Proposal C**

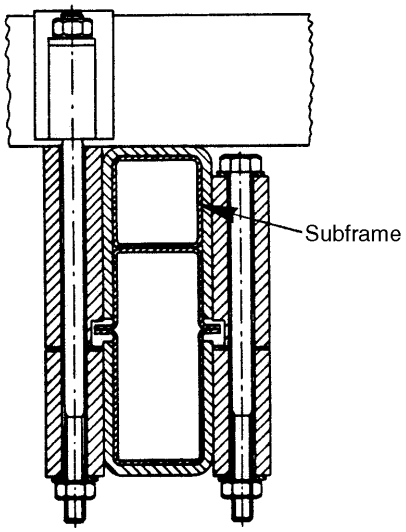



To avoid deformation of the chassis, the length of tube 1 and 2 should be adjusted in such a manner that the distance (a) is approximately 0.04" (1mm) when the fittings have been loosely placed around the chassis. See drawing below.



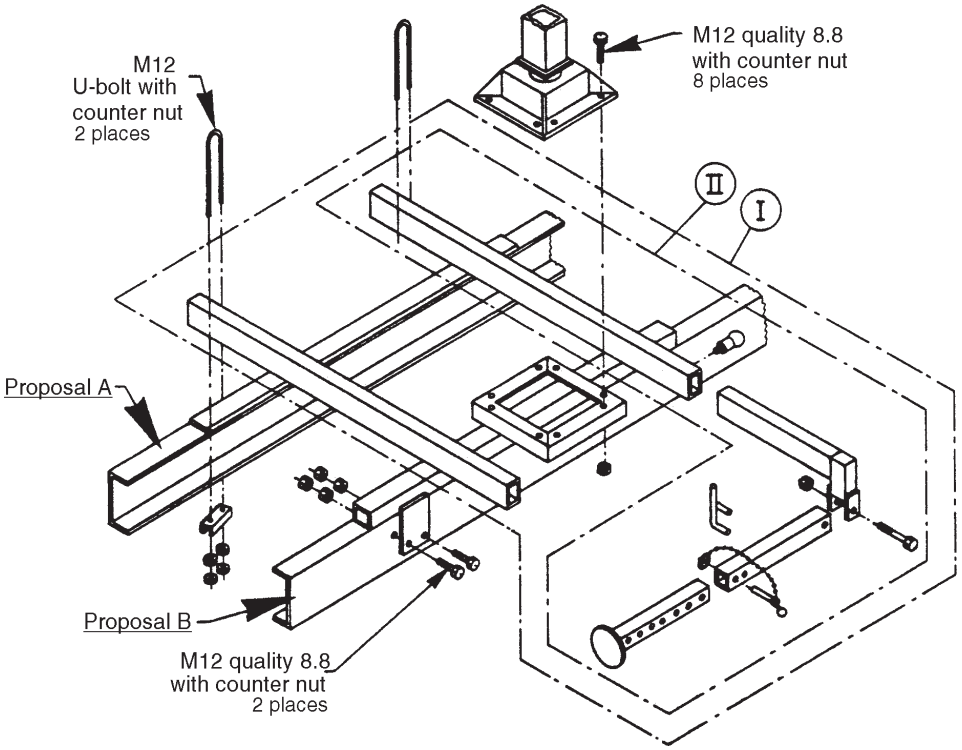

The U-section may be made of 2 angular sections welded together, as shown below.





# MOUNTING OF M-BASE (SERIES 150)

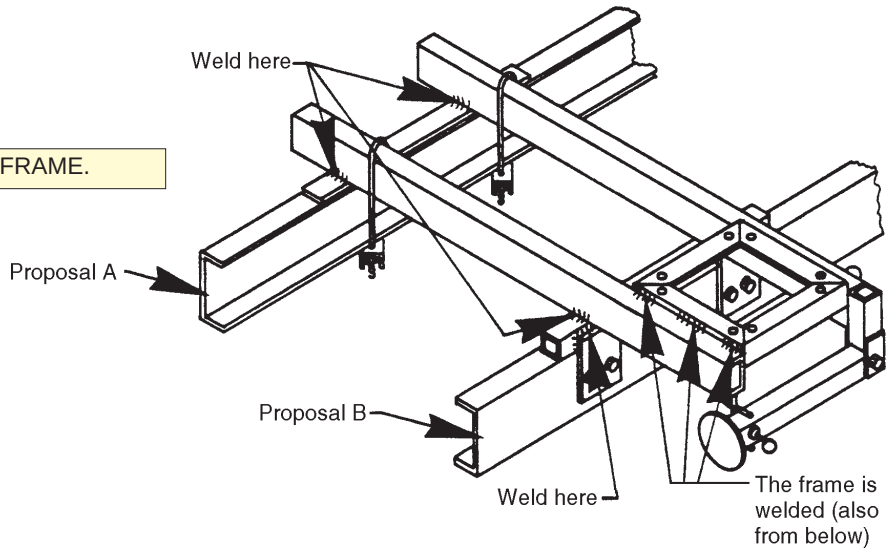
The drawing below shows two alternatives (A & B) which may be used depending on chassis space available.




| DESCRIPTION | PART NO. |
|---|---|
| STABILIZER SET, INCL. FRAME | 12 12 430 |
| STABILIZER SET, EXCL. FRAME | 12 12 420 |

**CAUTION**

DO NOT WELD ON THE CHASSIS FRAME.

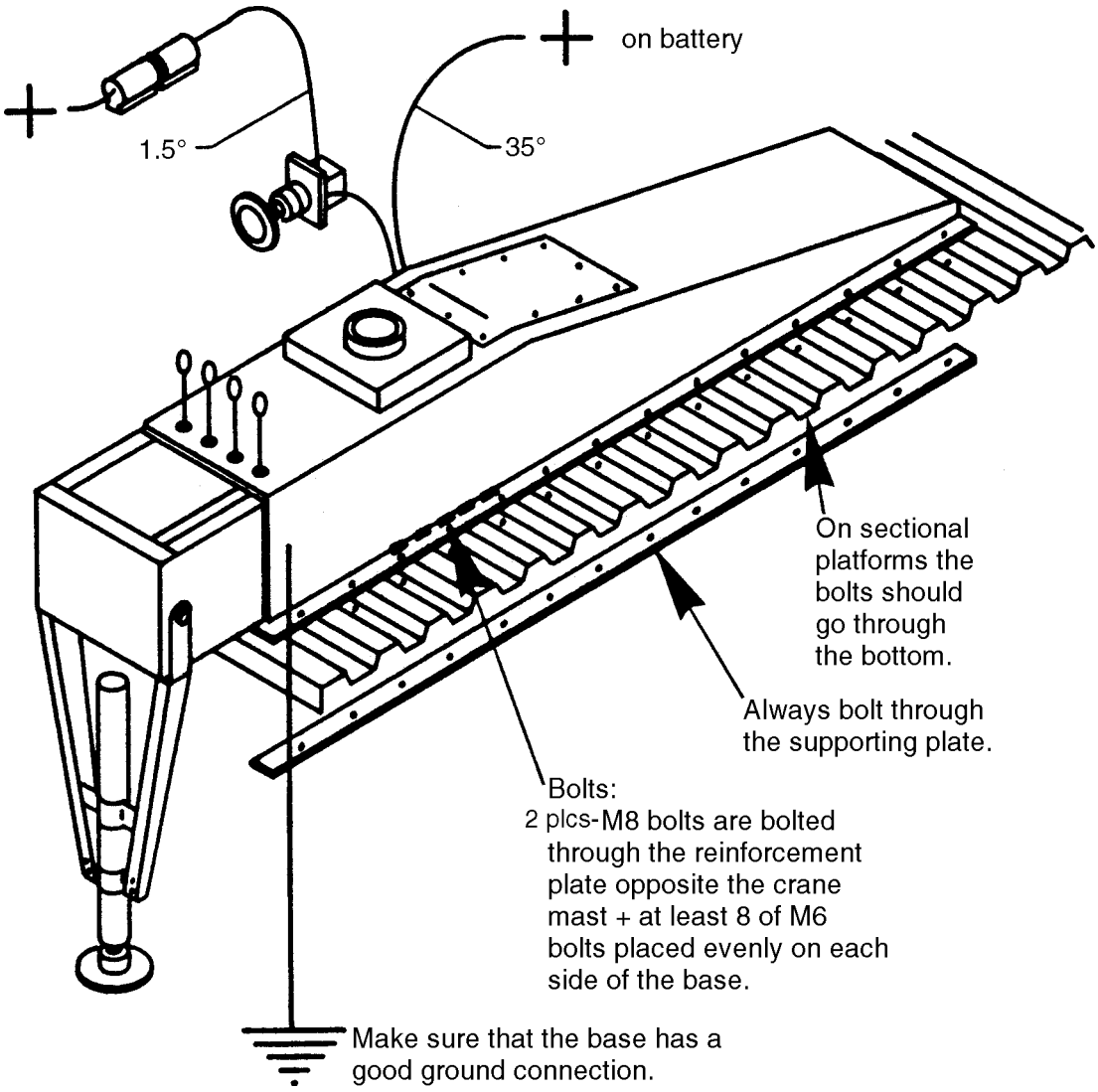


# MOUNTING OF P-BASE (SERIES 150)

The P-base has been designed in such a manner that it does not have to be connected to the chassis frame. It is bolted directly to the deck.

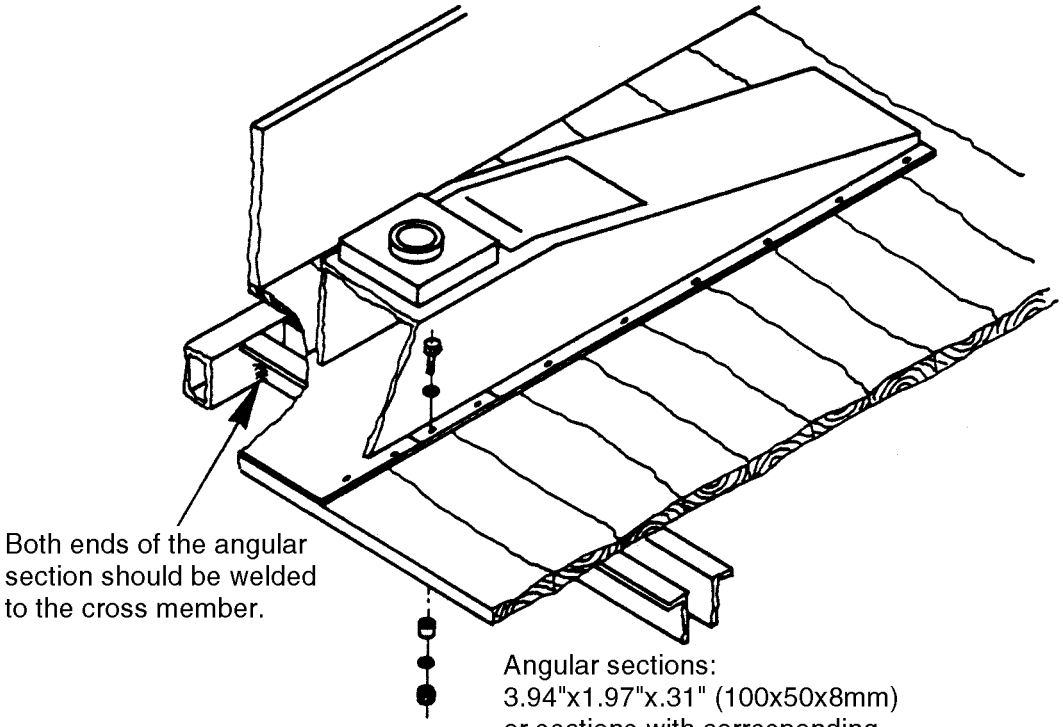
**CAUTION**

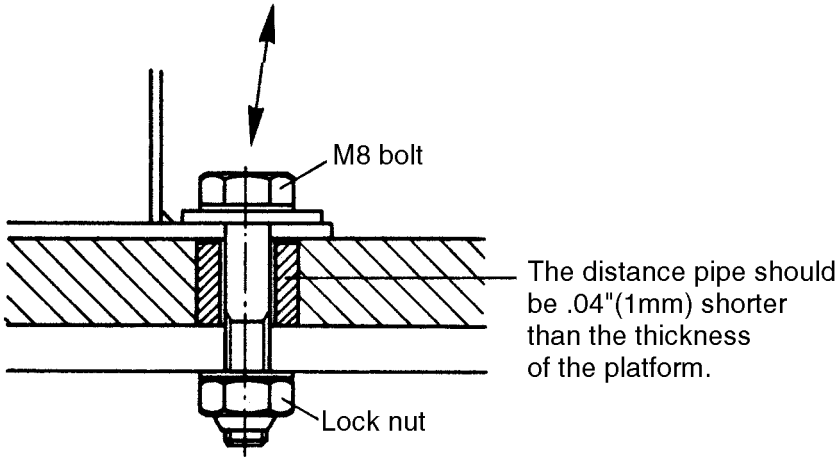
IF THE VEHICLE HAS A WOODEN DECK OR IF THE SECTIONAL PLATFORM IS TOO SOFT, IT SHOULD BE REINFORCED UNDER THE CRANE MAST AS SHOWN ON THE FOLLOWING PAGE.



**CAUTION**

THE FRONT OF THE PLATFORM SHOULD BE FASTENED TO THE CHASSIS SECURELY ENOUGH THAT THE CRANE CANNOT LIFT THE PLATFORM FROM THE CHASSIS.



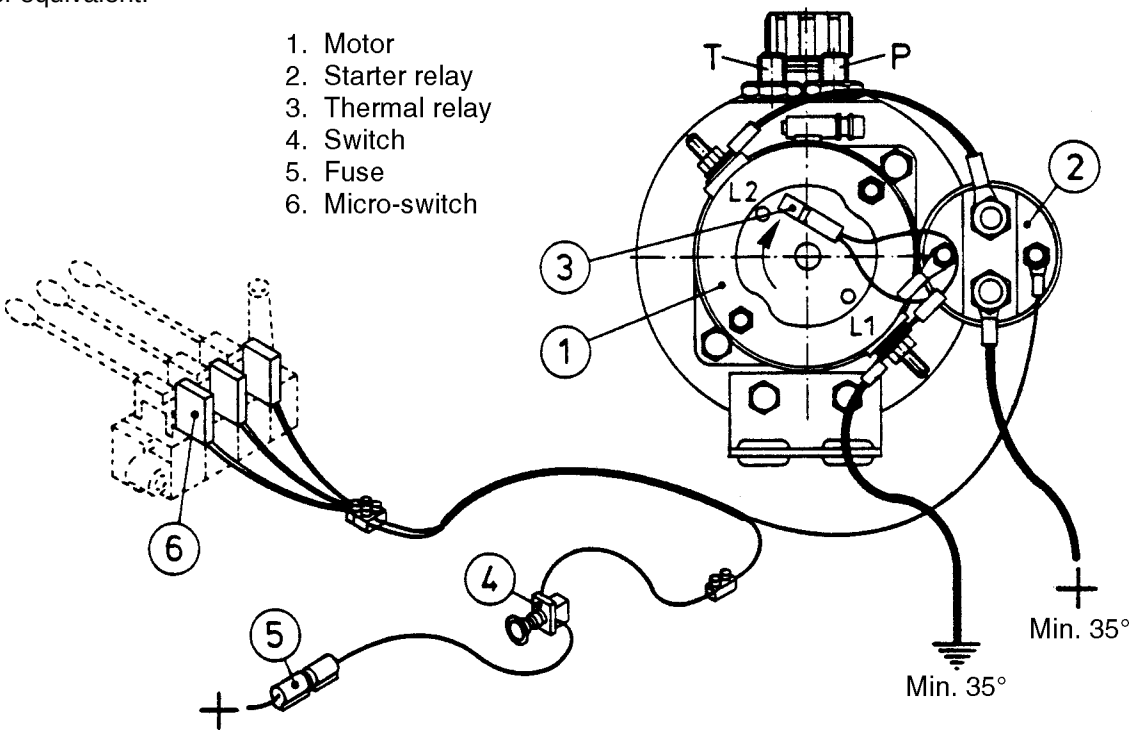



# ELECTRO-HYDRAULIC SYSTEM

## ELECTRO-HYDRAULIC POWER PACK

Electric connections are protected against corrosion using Tectyl 894, or equivalent.

1. Motor
2. Starter relay
3. Thermal relay
4. Switch
5. Fuse
6. Micro-switch




## PUMP CODE

**SERIES 150 AND 200**

CODE - stamped on pump housing: - - V - - - D - - - - - -

VOLTAGE — 12 volt, 24 volt

PUMP CAPACITY — 050 = 0.48³ S.150, 130 = 0.97³ S.200

MONTH

YEAR

SEIAL NUMBER

## RECOMMENDED BATTERY CAPACITY

| | Power consumption | | Recommended battery capacity | |
|---|---|---|---|---|
| **SERIES** | **12V** | **24V** | **12V** | **24V** |
| Series 150 | 115 amp | 55 amp | 83 amp-hr | 60 amp-hr |
| Series 200 | 155 amp | 80 amp | 120 amp-hr | 60 amp-hr |
| Series 250 | 280 amp | 140 amp | 143 amp-hr | 84 amp-hr |
| Series 260 | 280 amp | 140 amp | 143 amp-hr | 84 amp-hr |

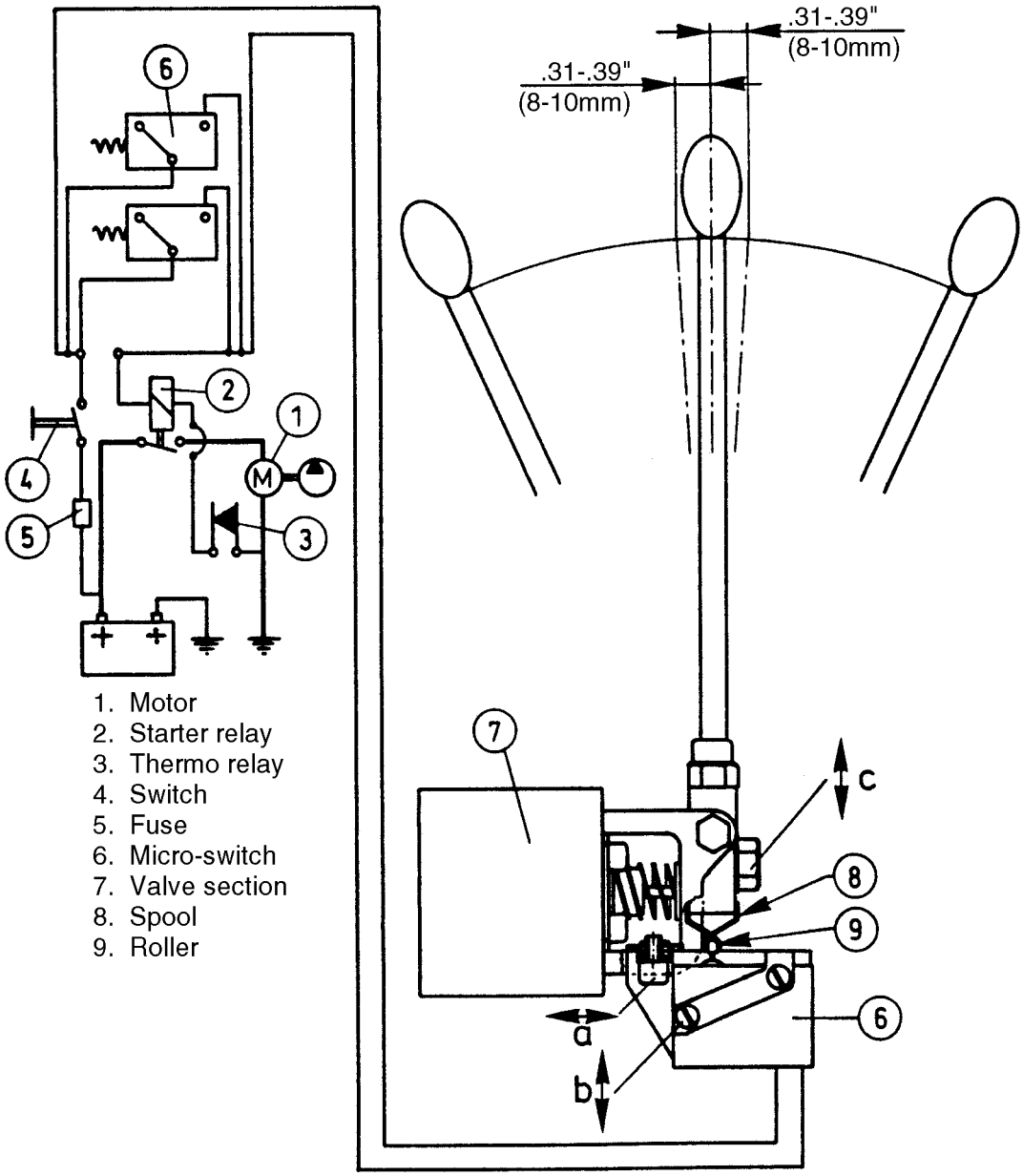
## MICRO-SWITCH ADJUSTMENT

The micro-switch must be adjusted in such a manner that the motor starts at 0.31" - 0.39" (8-10mm) of lever travel. The switch is cut off when the spool presses on the roller.

Method of adjustment:

1. Unfasten the screw (a) and place the micro-switch in such a manner that the roller is placed precisely under the top of the spool.

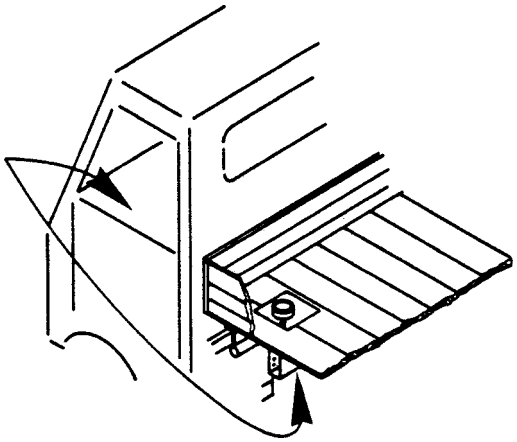
2. The travel of the lever 0.31" - 0.39" (8-10mm) is adjusted by unfastening the screw (b or c) and removing the spool or the micro-switch.




1. Motor
2. Starter relay
3. Thermo relay
4. Switch
5. Fuse
6. Micro-switch
7. Valve section
8. Spool
9. Roller

# POWER PACK INSTALLATION

The electro-hydraulic power pack is normally placed behind the driver's seat in the cab, but may also be placed between the side members. If it is placed between the side members, the power pack should be protected using a protection plate.



**NOTE**

ALWAYS REFILL THE TANK AFTER BLEEDING OF THE CYLINDERS.

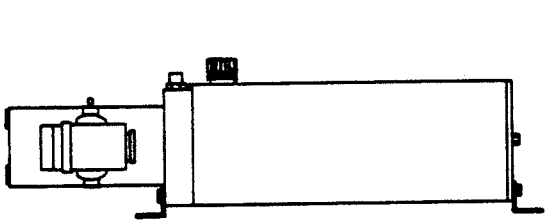
When employing a separate power pack, the base of the crane must be filled with oil in order to protect the rotation system against corrosion.

**OIL CAPACITY**

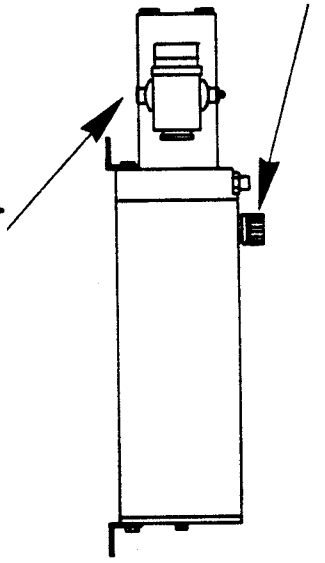
Series 150: 0.79 gallons (3 liters)

Series 200: 2.11 gallons (8 liters)

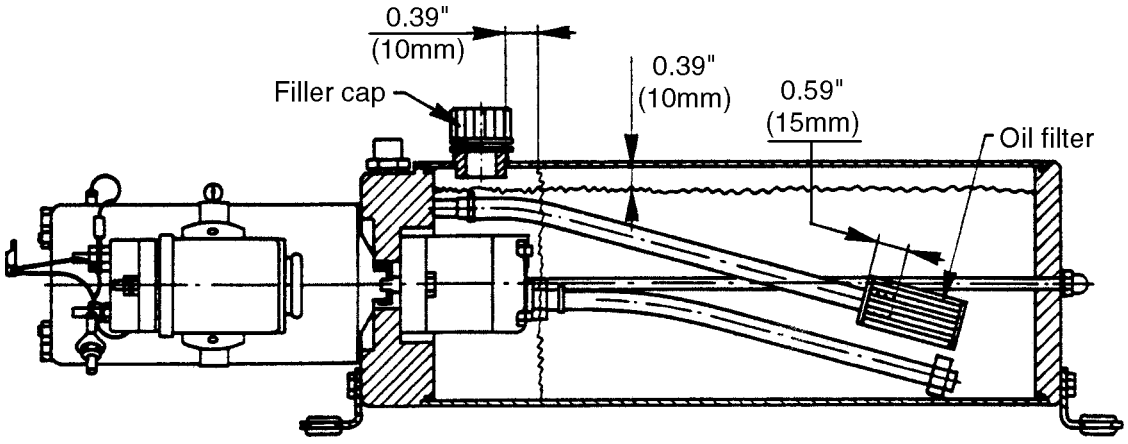
If necessary, the tank may be turned so the filler cap is placed differently.



The power pack is mounted either horizontally or vertically.



When mounted vertically, the motor must be up.



# HYDRAULIC SYSTEM PTO

**NOTE**

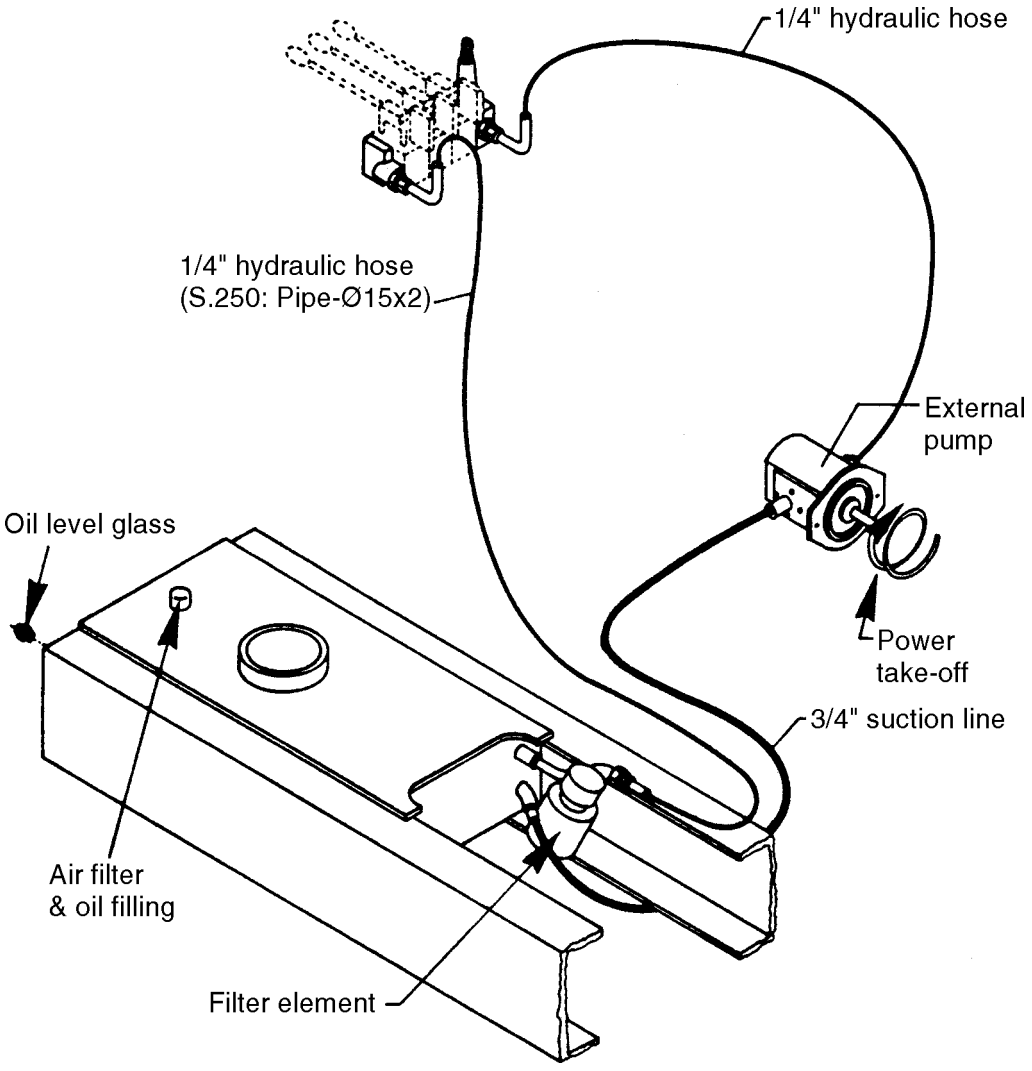
IN GENERAL, THE EXTERNAL PUMP IS NOT SUPPLIED WITH THE CRANE, BUT CAN BE ORDERED SEPARATELY.

The electric system is connected as shown in the drawing below (or see hydraulic diagram in the Instruction Manual).

Choose type of oil according to the table in the Instruction Manual, and fill tank with oil to the level stated on the level-glass or oil pin.

**NOTE**

ALWAYS REFILL THE OIL TANK AFTER HAVING BLED THE CYLINDERS.



## CHANGE OF ROTATION AREA

1. Position the crane so that the rotation to both sides is exactly the same (neutral position).

2. Empty the base of oil through the drain plug (5).

3. If the crane has two rotation cylinders (1), one is removed. If the crane has four rotation cylinders (1), two are removed.

4. Pull out the slide block (4) by the threaded hole (M8).

5. Pull out the rack (3).

6. Manually turn the crane mast to the required "C" position ("C" indicates the middle of the rotation area - see Fig II).

7. Place the rack (3) in the rotation housing so that the distance shown in Figure II is observed, depending on the mutual mesh of the teeth.

8. Place the slide block (4) behind the rack (3) and remount the rotation cylinder (1)

9. The bolts (2) are lubricated using Loctite Normal or Loctite No. 242, and then remounted.

10. The drain plug (5) is remounted and the base refilled with oil at the air filter (6).

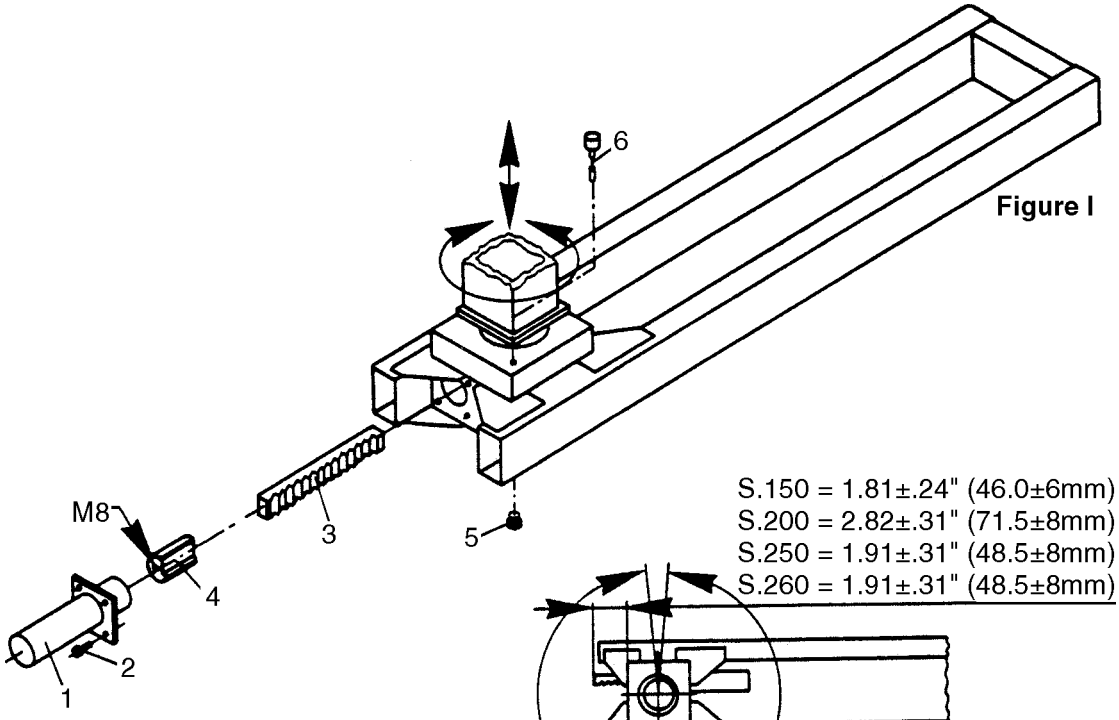



Figure I

S.150 = 1.81±.24" (46.0±6mm)
S.200 = 2.82±.31" (71.5±8mm)
S.250 = 1.91±.31" (48.5±8mm)
S.260 = 1.91±.31" (48.5±8mm)

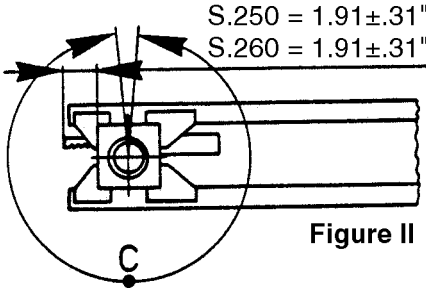



Figure II

## FINAL TESTING AND DELIVERY

When the crane has been mounted, the following should be done:

1. Fill the base of the crane with the specified amount of oil and lubricate the crane.

2. All functions of the crane should be bled.

3. Check the pressure setting with a pressure gauge.

4. Check that all adjustment screws are sealed.

5. Check, and if necessary, tighten all connections.

6. Check that all hydraulic hoses are free of twists, not stuck and are of the proper length to permit free movement throughout the range of the crane.

7. Load and function test. Check that the micro-switches are correctly adjusted (see Micro-switch information previously discussed).

8. Top up the hydraulic oil.



When the crane is delivered, the following should be demonstrated:

1. Use of stabilizer leg.

2. Operation of the loader.

3. Maintenance procedures.

An explanation of the above points can be found in the Instruction Manual for each specific crane.

# IMT

## MATERIAL HANDLING SYSTEMS

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