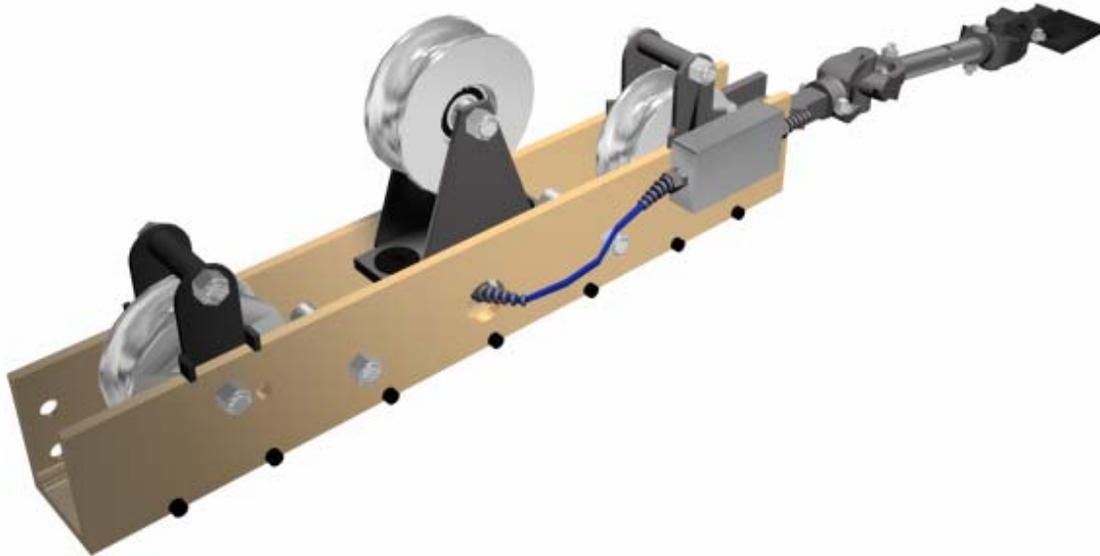


The Floater 2000
(with M2000 display)



**Crane Scale
Manual**

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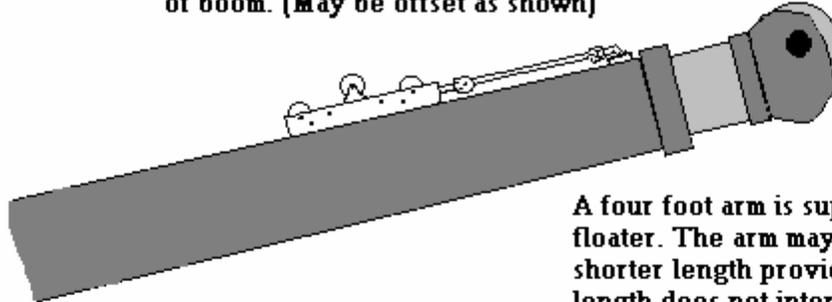


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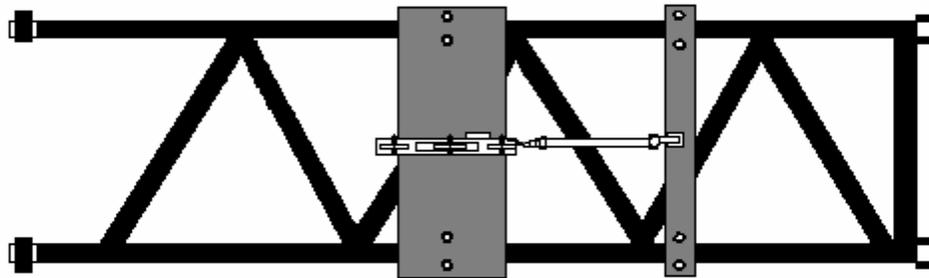


Arm mount secured to stationary section of boom. (May be offset as shown)



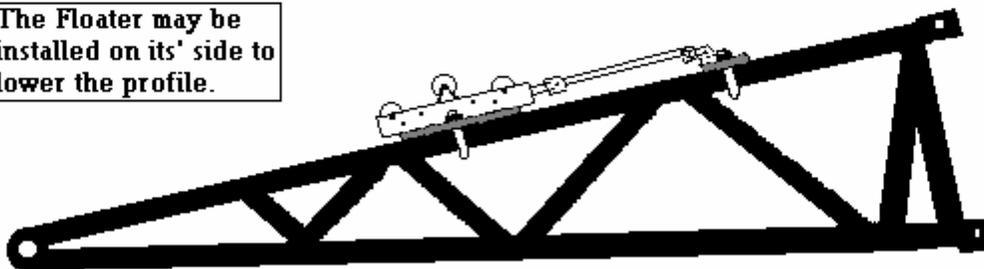
A four foot arm is supplied with this floater. The arm may be cut down to a shorter length providing the resultant length does not interfere with the normal path of the wire rope.

TYPICAL INSTALLATIONS



Riding plate and arm mount plates "U" clamped to lattice work. Secure arm mount to arm mount plate.

The Floater may be installed on its' side to lower the profile.



This floater is normally equipped with an eight foot arm. It may also be shortened, but measurements must be taken before doing so. The floater must not interfere with the path of the cable from the boom tip to the cable spool.

UNDERSTANDING THE SYSTEM

The Massload Floater is a cable tension monitor and is designed as a safety device not a “Legal For Trade” device. It is most critical that this unit functions best when reaching the rated capacity of the crane. The number of “parts of line” that the crane is rigged to has a direct bearing on performance. **Too many “parts” for the load being lifted will not produce accurate readings!**

The reason **Massload insists on single line calibration** is that this creates the most severe cable tension that the floater will encounter. The calibration weight, (referred to as “known load”), must be as close to single line capacity as possible to ensure the most accurate calibration of the system.

Inaccuracies can occur, (or seem to occur), for a number of reasons:

- Improper installation - It is critical that the center roller height be set properly as explained later in the manual.
- Improper programming.
- Improper calibration: - Done with more than single line.
- Done with inadequate known load.
- Wear of components, i.e. old or worn wire rope.

- Too many parts of line used for the load being lifted. If accuracy is of the utmost importance, care should be taken to determine the minimum “parts of line” needed to lift that payload safely. This will ensure that the floater will have sufficient cable tension to measure accurately which in turn translates to a more accurate weight display.

- Remember that the floater is measuring all the weight that is between the Floater and the hook. If the crane is rigged to a number of “parts of line” a substantial length of wire rope can be spooled in and out when lifting and lowering. (As an example, if a crane is rigged to “six parts”, and by lifting the load one extra foot, six feet of rope needs to be retracted). This can deceive the operator into thinking that the display is unstable or inaccurate when in fact it may not be.

Note: Periodic checks of the calibration are recommended.

This Floater 2000 Manual is used for the entire Massload Floater family. This family consists of :

- Floater 3/4 (rope size from 1/2” to 3/4”) -unit weight 35 lbs.
- Floater 1-1/4 (rope size from 7/8” to 1 1/4”) -unit weight 44 lbs.
- Floater 1-1/2 (rope size from 1 1/4” to 1 1/2”) -unit weight 38 lbs.

The programming and wiring procedures for all are the same. The only difference between these units is the roller size and the positioning of the center roller. The diameter of the wire rope determines this positioning. See “ROPE SIZE” section for details.

ROPE SIZE

The center roller saddle on all these models bolts directly to the load cell with two 3/4" flat head bolts. Below the saddle are 1/8" spacers (standard 3/4" SAE flat washers). Refer to the table below for the correct number of spacers for the wire rope diameter that the Floater is being installed on.

A 1/2" Allan wrench will be required to remove the center roller saddle if spacers need to be removed. (If needed, you can make an Allan wrench by using the head of a 5/16" bolt)

WIRE ROPE DIAMETER	# OF SPACERS (under each end of the saddle)
Floater 3/4:	
1/2"	3
9/16"	3
5/8"	4
3/4"	5
Floater 1 1/4:	
7/8"	0
1"	1
1 1/8"	2
1 1/4"	3
Floater 1 1/2:	
1 1/2"	3

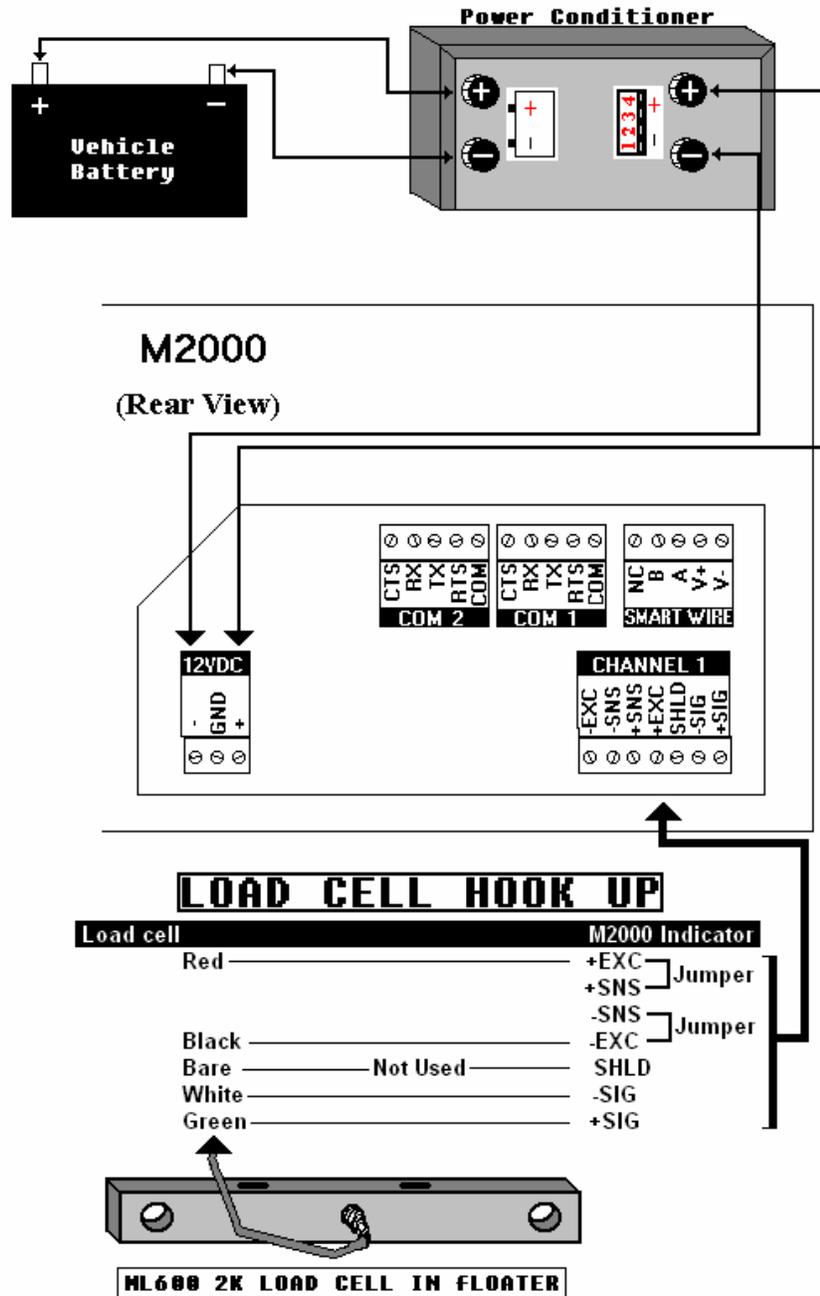
Wiring

The M2000 weight indicator used with the Floater is capable of displaying up to 12 parts of line.

A 60 foot length of four conductor cable is supplied by Massload to connect the Floater to the M2000. One end of this cable is brought into the box on the side of the Floater. Strip the wires and connect them to the terminal strip inside. Match color to color. Tighten the strain relief connector on the side of the box. Run a bead of silicone around the box cover and close it up. As a note here all precautions to prevent moisture from getting into this box will help eliminate possible down-time in the future.

Strap the four conductor cable down the entire length of the arm (round tube). Care should be taken to leave a small amount of slack at all swivel points. This cable should not be pulled stretched or abused. At the secured end, (where the arm attaches to the crane), the four conductor wire makes the turn and is then routed back down the side of the boom. Again, make sure to leave slack at any swivel points to allow for directional or elevation changes.

FLOATER 2000 WIRING DIAGRAM





The cable is then brought to the location of the M2000. The four conductor wire can be cut now, but it is a good idea to leave a small amount of extra wire coiled up under the dash or inside the indicator case.

Strip the wires and tie them into the terminal strip at the back of the indicator as follows: (**NOTE: Jumper wires MUST be installed**)

-EXC -SNS +SNS +EXC SHLD -SIG +SIG
Black---Jumper Jumper---Red not used White Green
(see diagram on previous page of the board on the back of indicator)

The remaining wire from the 60 foot length may be used to connect the power to the indicator, or a larger gauge (automotive type) wire may be used.

POWER

Find a GOOD 12 Volt DC power source on or in the vehicle but don't tie into it yet. First run the wires to be used from the power source to the side of the power conditioner with the "battery" decal. Red = + 12 volts, Black = Ground (or -12 volts). This end can be connected, then connect it to the vehicle. **MAKE SURE OF PROPER POLARITY.** (The power conditioner contains a small rechargeable 12 volt battery and a circuit board. This can be damaged if hooked up wrong.) If at all possible the conditioner should be kept out of the elements. i.e. inside a moisture proof box or in the cab. Run wires of a suitable length to reach from the power conditioner to the circuit board at the back of the indicator. Connect the wires to the indicator first, then to the conditioner. This connection is to the side of the conditioner with the "1234" decal and is as follows:

-V	CG	+V
Ground (-12v)(Black post)	not used	+12Volts DC (Red post)



PROGRAMMING AND CALIBRATION **(For all Floater Models with M2000)**

Turn the M2000 on. **The indicator comes loaded with factory values and until all of your programming and calibration is complete any information displayed on the M2000 will not be valid. Prior to accessing the programming mode make sure that the “Parts of Line” is set to 1. To do this press <5><SELECT><1><SELECT>.**

TO ENTER PROGRAMMING AND CALIBRATION MODE:

Press <5> <SELECT> <1> <SELECT>

Press <19> <SELECT> ---- “pass”, will start flashing on the display.

Press <1111>

If you were successful there should be a flashing “C” at the left side of the display. This flashing ‘C’ means the indicator is capable of being programmed and calibrated.

***Notes:** - Never interrupt power to the indicator when there is a flashing “C” or “A” on the display. The ON/OFF button performs another function when in calibrate mode. If you wish to exit the calibration mode, Press <99><SELECT>. Now the ON/OFF button is functional.

- In the following procedure, “0” means the digit “0” on the right keypad (NOT the “->0<-” beside the On/Off key). Where “ZERO” does appear, press the ->0<- button.

- If a mistake is made while entering numbers etc., press the <Clear> button and start again from the beginning of that line.

PROGRAMMING:

* The flashing “C” must be at the left side of the display.

** All programming should be done with the indicator reading in lbs. If the display is reading in Kgs then press <7><SELECT> to toggle to lbs.

- Press <1> <SELECT> <1> <T> <1111> ---- (this will reload factory values)
- Press <7> <SELECT> to set the display to lbs.
- Press <3> <SELECT> <50> <T> - (scale will count by 50 pounds)
- Press <6> <SELECT> <0> <T>
- Press <22> <SELECT> <0> <T>
- Press <21> <SELECT> <10> <T>
- Press <11> <SELECT> <2> <T>
- Press <28> <SELECT> <3> <T>
- Press <29> <SELECT> <1> <T>

This is the point where the maximum capacity of the crane must be programmed. (The below example is for a 30 ton crane.)

- Press <4> <SELECT>, then
- Press <60,000> <T>



DEADLOAD PROCEDURE: (rough zeroing of the system)

*** With no load on the crane.**

Press <12> <SELECT> <1> <T> -- The display should flash “deadload”. Wait for the flashing “C” to return.

**** The programming is now complete but the scale still needs to be calibrated.**

CALIBRATION PROCEDURE:

Notes: * **Reminder, this must be done with single line!**

** The indicator will round off the number to the nearest 50 lbs.

*** For calibration purposes only the ball or block is zeroed off and only the weight of the known load is entered.

**** When a load is lifted for calibration or calibration result check purposes, a note should be made as to how high it was lifted and what method was used to lift it (winch or boom). Always lift to the same height and use the same method to check calibration results.

- **Press the ->0<- button below the display.**
- **Hook on to the known load and lift it clear of the ground. [Remember that any information on the display is not valid until all programming and calibration has been performed.] Wait for the load to stabilize somewhat before entering the correct weight.**
- **To enter the weight of the known load:**
 - * **As an example, the known load is 5840 lbs.**
- **Press <15> <SELECT> <1> <T>**
- **Press <13> <SELECT> <5840> <T> --The indicator will round off to 5850 lbs.**
- **Set the known load down, unhook and press ->0<- button.**
- **Lift the known load to the same height again. If the weight reading is the same as that entered above, (within 50 to 100 lbs), the scale is now calibrated. If not, re-enter as above.**
- **Press <99> <SELECT> will exit from the calibration mode and save all setting changes made to the indicator.**

***** Programming and calibration are now complete and the system is ready to use. All the above information has been written to memory and power can be disconnected without losing any data.



USER GUIDE AND TROUBLE SHOOTING

Turn indicator on and allow it to warm up. Especially so in cold weather!

PARTS OF LINE FUNCTION:

- **To zero the display use the ->0<- key, not the 0**
- **To view how many parts of line the indicator is set to, (maximum of 12), Press “5” “SELECT”.** The number of parts will briefly be displayed then the indicator will return to the weight reading. This should be checked, (and adjusted if necessary), prior to any lift.

- **To change the number of parts of line:**
Press <5><SELECT><NUMBER OF PARTS RIGGED><SELECT>
***Note: Whenever the indicator is turned off, or power is interrupted the number of parts of line that the indicator is set to should be checked or adjusted.**

OTHER FUNCTIONS:

- To accumulate a number of lifts: Press the <PRINT> key (once) each time a lift is suspended. To view the total accumulated press <10><SELECT> or <4><SELECT>. The total will stay on the screen for 5 seconds before going back to the weighing mode. To clear a total from the memory press <11><SELECT>.

- To toggle from lbs. to Kg or Kg to lbs., Press <7> <SELECT>. --The indicator will always power up to lbs. when turned on. A small arrow below the display will indicate what unit of measurement is on the display.

TROUBLE SHOOTING:

Power (General)

The single most common problem with a vehicle mounted scale is the availability of an adequate and constant power supply. The indicator requires a minimum of 11 volts DC to operate properly. In most cases the lack of proper voltage, (low voltage), WILL cause problems. Below is a list of some error messages that may come up on the display.

To properly measure the voltage, a volt meter must be used. A test light will not give you the information required. Measurements should be taken at two places. At the vehicle power source and at the “To Readout” side of the power conditioner.

- * Inadequate power may:
 - Cause the display to lock up with no response to keypad.
 - Cause inaccurate or unstable readings.
 - Display “uuuuuu”s

“EEEE”s - Programming of the indicator not complete or improperly programmed.

- System not wired correctly or moisture has gotten into the system causing a short.
- Defective load cell.
- If displayed when lifting a load known to be below capacity, adjustments in programming and calibration may be necessary. Check all programming. Contact dealer for assistance if programming is correct.

“RRRRR”s - Programming and or calibration not complete.

“uuuuuu”s - System not wired properly.

- Programming incomplete or not done properly.
- System has moisture causing a short.
- Defective load cell.
- If this happens when doing the calibration, (see Error 10 below).

POWER CONDITIONER:

The power conditioner is intended to filter out dangerous power spikes or momentary drops in voltage. This voltage must be at least 11 volts DC. It can be checked on the “To Readout” side with a **volt meter**. If the voltage is below 11 volts DC, there is either a problem with the voltage being supplied to the conditioner or there is a problem with the conditioner itself

If a crane has been left idle for an extended period of time, (especially in freezing weather), the power conditioner may need charging and warm up time to function normally. The conditioner contains a small rechargeable 12 V DC gel cell battery. This battery can be affected by extended periods of cold or non use in the same manner as any vehicle battery.

If there is a question of the power conditioners worthiness, a simple test is to remove the wires from the “To Readout” side and place them with the “Power In” wires. In other words bypassing the conditioner. If the system now operates the conditioner should be replaced. Replacement conditioners can be purchased from your dealer.

INACCURATE OR UNSTABLE READINGS:

- Was the scale calibrated with enough weight?
- Crane rigged to too many “parts of line” for too small of payload?
- Spooling in or out while taking reading?
- Did you start with a zero on the display?
- Intermittent power. (see power section)
- Defective or cut cable from the Floater to the M2000 readout.
- Moisture in the box on the side of the Floater?



HOW TO CHECK LOAD CELL:

*** With the M2000 turned **on**.

- Using a volt meter check DC voltage between the RED(+Ex) and BLACK(-Ex). This should measure around 7.5 volts DC.
- Switch volt meter to the millivolt range. Measure voltage between the GREEN(+Sig) and WHITE(-Sig). This should measure around 0 millivolts with the crane in no load condition. The millivolt reading should not exceed 23 at full crane capacity. Any other readings could indicate a problem with the load cell.

*With the M2000 **off**.

- Disconnect all load cell wires.
- Using the resistance setting on the volt meter, measure the resistance between wires.

* These values are approximate.

RED ----- BLACK	750 ohms
GREEN – WHITE	750 ohms
RED ----- GREEN	550 ohms
RED ----- WHITE	550 ohms
BLACK – GREEN	550 ohms
BLACK – WHITE	550 ohms
ANY COLORED WIRE TO THE CRANE BODY = OPEN CIRCUIT (no reading)	

INDICATOR:

If the indicator does not respond to the keypad, the keypad will need to be replaced.