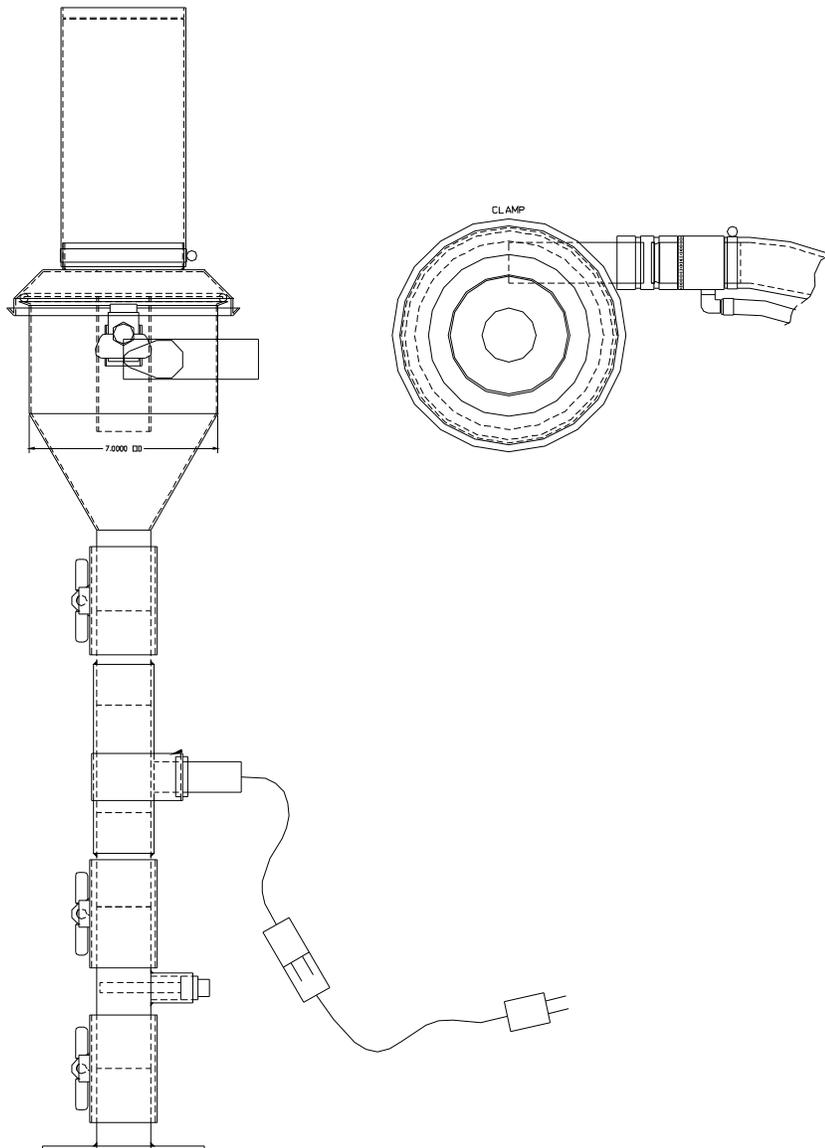


*Thoreson-McCosh Inc.*

# TORNADO COMPRESSED AIR LOADER



**IB199907**

**THORESON-McCOSH INC**  
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# Thoreson-McCosh Inc.

The information contained in this Instruction Manual is provided to you for the maintenance of your Thoreson McCosh equipment.

Also included in this manual are operating instructions, a service parts list, and wiring diagrams. Please file this manual for future use.

For additional information, please contact:

|   |
|---|
| THORESON-McCOSH Inc.<br><br>1885 Thunderbird Street<br><br>Troy, MI 48084<br><br>Phone: (248) 362-0960<br>Facsimile: (248) 362-5270<br><a href="mailto:sales@thoresonmccosh.com">sales@thoresonmccosh.com</a> |
|---|

## CUSTOMER RECORDS

Upon receipt of your Thoreson McCosh equipment, it is very important that you complete the table below. The information will be needed to best serve you when you call the Thoreson McCosh Service Department with questions or to order replacement parts. The information is located on the Serial Tag on the unit and inside the door of the control box.

|                    |       |
|--------------------|-------|
| Model Name         | _____ |
| Serial No.         | _____ |
| Wiring Diagram No. | _____ |
| Program No.        | _____ |
| Layout No.         | _____ |

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## **SECTION 1 THORESON MCCOSH PRODUCT WARRANTY**

Thoreson McCosh warrants each product of its manufacture to be free from defects in material and workmanship for a period of 12 months from the date of delivery to the original purchaser. Thoreson McCosh's obligation under this warranty is limited to repairing or replacing any part returned to the Thoreson McCosh factory with transportation charges prepaid, and which, on examination by Thoreson McCosh, shall disclose to Thoreson McCosh's satisfaction to have been defective.

The purchaser must notify Thoreson McCosh of such defects and promptly deliver the defective part(s) in accordance with Thoreson McCosh's shipping instructions, delivery prepaid. Parts will be replaced F.O.B. Thoreson McCosh factory, by Thoreson McCosh, and will be invoiced to the purchaser with "credit on return of defective part", if the part is returned within fifteen (15) days after shipment of replacement part. Thoreson McCosh is not liable for installation or cost to install the replacement part or removal of the defective part.

Thoreson McCosh is not responsible for any failure of its product due to improper use, installation, or operation. Thoreson McCosh shall not assume any expense or liability for repairs made to any Thoreson McCosh unit or equipment outside Thoreson McCosh's own factory unless specifically agreed to in writing by Thoreson McCosh.

Equipment and accessories furnished by us, but manufactured by others, are guaranteed to the extent of the original manufacturer's guarantee to Thoreson McCosh, if that guarantee exceeds one (1) year.

It is expressly understood that Thoreson McCosh is not responsible for damage and/or injury caused to buildings, contents, products, or persons by reason of installation or use of any of our products. Thoreson McCosh shall not be liable for loss, damage or expenses arising directly or indirectly from, or being consequential or incidental to, the use of its products or from any other cause.

The above warranty supersedes, and is in lieu of all other warranties expressed or implied; and no person, agent, representative or dealer is authorized to give any warranties on behalf of Thoreson McCosh, not to assume for Thoreson McCosh any other liability in connection with Thoreson McCosh products.

## SECTION 2: TORNADO COMPRESSED AIR LOADER INSTRUCTIONS

### 2.1 INTRODUCTION

The Thoreson-McCosh Tornado allows economical, maintenance-free loading of granular materials and typical thermoplastic regrinds.

### 2.2 METHOD OF OPERATION

The operation of the Tornado is quite simple. The compressed air enters the takeoff and entrains up to 25 times the amount of compressed air used. The entrained air pulls the material from the collection box to the hopper. The Venturi action of the hopper and the filter separate the material from the air. The compressed air solenoid is turned on and off by the proximity switch mounted on the side of the tube below the hopper. The level of material can be varied by varying the height of the proximity switch.

### 2.3 INSTALLATION AND SETUP

The Tornado should be mounted and fastened to the base plate on the machine throat. The takeoff tube should be mounted and fastened to the collection box, The 1.25" dia. Material line can now be connected between the material inlet of the Tornado and the outlet of the takeoff. Also connect the quarter inch air line between the solenoid outlet on the Tornado to the takeoff tube. The Tornado will perform best when the material lines are connected in the most direct manner with a minimum of bends. Care should be taken to insure that all connections are sealed. Connect the power cord to a 120 V.A.C. source. Connect the prox. switch plug to the 4" x 4" box mounted on the Tornado. Provide a minimum of 60 p.s.i. clean shop air to the solenoid inlet, maximum 150 p.s.i.

## SECTION 3: FILTER MAINTENANCE

Filter specifications:

Filter Bag

Thoreson-McCosh part number 413249

It is recommended that filters be checked periodically for material residue accumulation, and cleaned before the loader's performance is reduced.

Replacement filters are available from **Thoreson-McCosh, Inc.**

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## SECTION 4: PROXIMITY SWITCH INSTRUCTIONS

### SECTION 4.1: MOUNTING INSTRUCTIONS

This 30 mm threaded unit is easy to mount with the two flat nuts provided. Or, use the optional accessories. When mounting using the threaded section/jam nuts, be sure to mount the unit well back of the center of the threaded area, towards rear, leaving side clearance to other objects/metal presence on the front half of the switch.

If sensing product through a non-metallic container, mount the switch flush to the hopper/side sight glass, ect., so that no air gap exists where possible.

### SECTION 4.2: SENSITIVITY SETTING

As received, the KI is set for maximum permissible detection range of 15mm (6") based on a water target. The maximum range can be safely *reduced* by the built in sensitivity adjust. Do not use it to extend the range beyond the spec or non-stability will result.

Step 1: Mount the switch in the actual application and establish the worst case conditions that can cause a false "ON" signal (For example, if sensing liquid level through a sight glass, fill the glass and then reduce the level so moisture and residue clings to the inside of the glass) If the LED is on, turn the pot CCW until it just goes off. If the LED is off turn the pot CW until it turns on, then back off just enough to make it go off

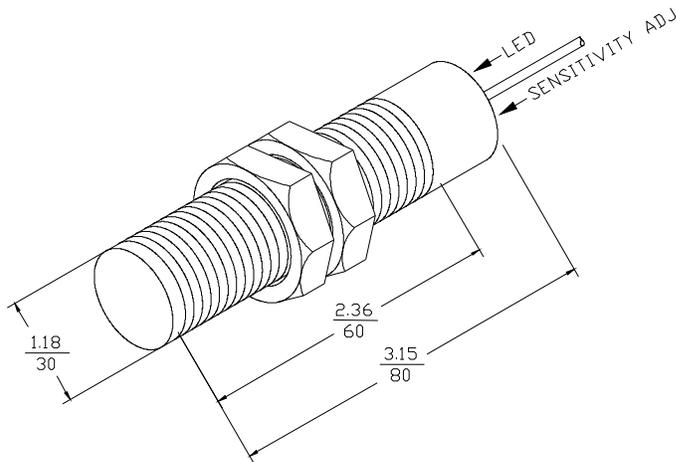
Step 2: Bring the target into position (In the example, bring the liquid level above the switch). The LED should now be on. Turn the pot CCW and count the number of turns until it goes off.

Step 3: Turn the pot CW for  $\frac{1}{2}$  the number of the turns from Step 2. (In the example, if it took 4 turns to go from on to off, rotate the pot 2 turns CW) The switch is not set in the midpoint of sensitivity range for maximum stability.

Note: If you have trouble during Step 2 (for example, when sensing lightweight materials) consult the factory for proper sensitivity adjustment

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## SECTION 4.3: DIMENSIONS



## SECTION 4.4: TECHNICAL DATA AT + 20 DEGREE F

|                                  |  |
|----------------------------------|--|
| Operating Voltage                | 20-250 VAC<br>45-65 Hz                                       |
| Maximum Load Current, Continuous | 500mA to + 50 degree C<br>300mA to + 80 degree C             |
| Inrush Current                   | I: 2.2A/20ms at f: 0.5 Hz                                    |
| Voltage Drop                     | <5.5V at maximum load  |
| Leakage Current                  | <2.5 mA  |
| Minimum Load Current             | 5 mA   |
| Maximum Switching Rate           | 20 Hz  |
| Switching Status Indication      | LED  |
| Housing Rating                   | IP 65 NEMA 3, 4, 12, 13                                      |
| Ambient Temperature              | -25 degree C to +80 degree C (-13 degree F to +176 degree F) |

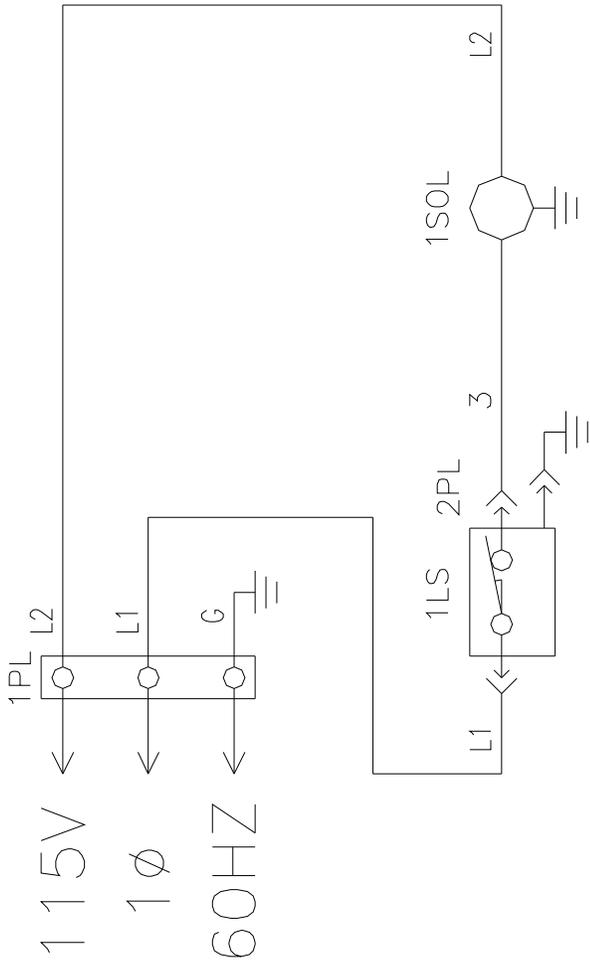
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|                                   |   |
|-----------------------------------|---|
| Nominal Sensing Range             | 15 mm, non-flush mountable  |
| Real Sensing Range                | from 3 to 15 mm adjustable  |
| Switching Hysteresis              | 3% - 15% of the sensing range   |
| Correction Factors (approx.)      | ???   |
| Switch Point, Drift/Repeatability | <+15% of Sensing Range, Over Entire Temperature Range and Voltage Range/<1% |
|                                   | Plastic: Polybutyleneterphthalate   |

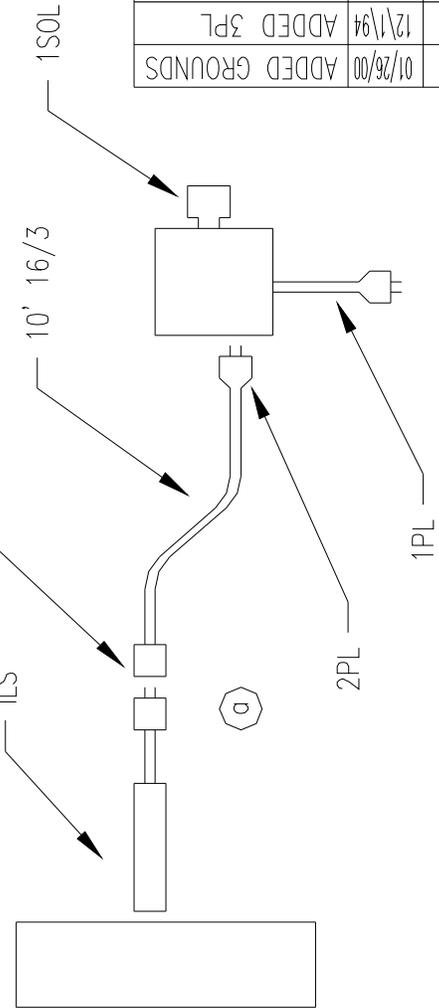
**Table 4.5: Conversion Factors**

|         |   |                                     |
|---------|---|-------------------------------------|
| Water   | = | 1.00                                |
| Glass   | = | 40                                  |
| Ceramic | = | .20                                 |
| PVC     | = | .20                                 |
| Wood    | = | .2 to 1 (Based on Moisture Content) |

412997 A



ⓐ



| REVISION | DATE    | DESCRIPTION   |
|----------|---------|---------------|
| 0        | 12/1/94 | ADDED 3PL     |
| 01/26/00 |         | ADDED GROUNDS |

| SYM. | AM'T | DESCRIPTION       | PART NO. |
|------|------|-------------------|----------|
| 1PL  | 1    | POWER CORD 16/3   | 404222   |
| 2PL  | 1    | REC, 7487         | 406494   |
| 2PL  | 1    | PLUG, 7485 VBLK   | 406480   |
| 3PL  | 1    | 7484 INLINE       | 406491   |
| 3PL  | 1    | PLUG, 7485 VBLK   | 406480   |
| 1LS  | 1    | PROX. SWITCH N.C. | 412076   |
| 1SOL | 1    | SOL. VALVE 3/8    | 406783   |
| ENCL | 1    | BOX, A404CH       | 404125   |

TORNADO LOADER

115V

THORESON McCOSH

1885 THUNDERBIRD ST. TROY, MICHIGAN

| SCALE | DATE   | DR. BY | DRAWING NO. |
|-------|--------|--------|-------------|
| ~     | 7-5-94 | GLK    | 412997-A    |

