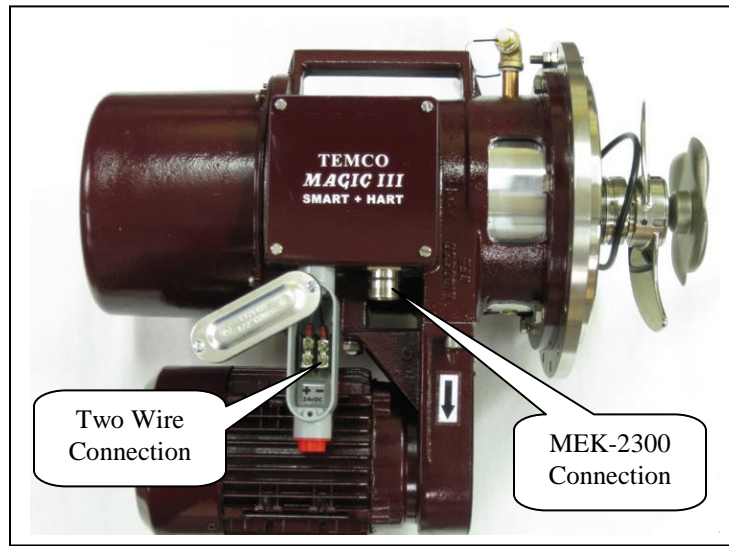


TEMCO Engineering

MAGIC III Installation and Calibration



IMPORTANT NOTES

- The *MAGIC III* can be powered by the MEK-2300 electronic box or a two wire connection.
- To prevent ground loops the shield should be grounded at the computer and not at the consistency meter.
- A new o-ring gasket for the flange is supplied with each consistency meter.

The *MAGIC III* is a sensitive measuring unit – Handle with care!

- ➔ **Do not turn** the measuring shaft by hand using the sensing element. This can overload and **damage** the measuring system.
- ➔ Use the handle when lifting the *MAGIC III*.
- ➔ Be careful not to damage the mechanical seal or the sensing element.
- ➔ Save the protective shipping cover, and install on the unit being removed for repair.

INSTALLATION

- 1) Bolt down with M8 x 25 long screws.
- 2) Remove vent screw on TEMCO Engineering's **Self Contained Cooling System** (see Figure 1). For a DHX **Double Heat Exchange** system, connect cooling water with a flow at least 10-15 gallons per hour.
- 3) Connect motor power and check rotation.
 - Clockwise – Looking from the top of the *MAGIC III* fiberglass cover.
- 4) Connect 24-30 volts **DC** power. Power + to *MAGIC III* +, - to the – leg.
Minimum voltage at 20ma should be at least 16.0VDC at terminal strip.
- 5) Screw on the cable if using the MEK-2300 power supply. No wiring changes required.
- 6) Turn motor **OFF**, remove fiberglass cover over electronics.
- 7) Connect digital voltmeter to test points. Adjust coil with a 9/16" wrench (see Figure 2) to 6.10 volts DC. For DHX model, adjust to 6.00 volts DC.
- 8) Move torque arm, **DC** voltage at test points should swing between 6.0 and about 7.0 volts. (see Figure 2)
- 9) Remove voltmeter, install cover, and turn motor **ON**.

- 10) Use **HART** Communicator to set the Upper Range Value (URV) and Lower Range Value (LRV) to match control rooms settings.
- 11) TEMCO has preset the curve for your consistency application.
- 12) Electronic dampening is factory preset – Do Not Change.

SETTING UPPER & LOWER RANGE VALUE WITH HART COMMUNICATOR

Connect one lead of the communicator to the positive terminal and one lead to the negative terminal, or connect the leads across the dropping resistor.

- 1) Connect with your HART communicator and go to the LRV and URV screen.
- 2) Set the Lower Range Value (LRV) to match control room setting.
- 3) Set the Upper Range Value (URV) to match control room setting.

FIRST TIME ZERO ADJUSTMENT

- 1) Put consistency loop in automatic control.
- 2) Obtain lab sample. Record the **MAGIC III** signal at the time the sample is taken.
- 3) Adjust coil to match lab samples. **Hint: 1%Cs = 0.1 volts at test jacks.**
- 4) For example, 0.5% Cs = 0.05 volt change at test jacks.

OTHER ZERO ADJUSTMENTS

- Make a Zero Adjustment when a **series of lab results** shows a consistent error in the same direction with system in automatic.
- Consistency error **greater** than 0.5% adjust Thermacoil. **Hint: 1%Cs = 0.1 volts at test jacks.**
- Consistency error **less** than 0.5% shift LRV/URV with the Hart.

MAGIC is reading high, ADD the error to the LRV & URV.

MAGIC is reading low, SUBTRACT the error from the LRV & URV.

LRV and URV Change EXAMPLE

MAGIC = 3.5 % Con.; Labs Av. = 3.7 % Con.; Error = -0.2%

MAGIC is reading low, so subtract error from LRV and URV

LRV = 2 % - Adjust to 1.8% **URV** = 5 % - Adjust to 4.8%

Output at the Control Room will go up .2% to a 3.7% Con. output.

- ❖ After the First Time Zero Adjustment, output adjustments should be one half the error shown between the labs and the meter.

MAGIC CURVE SELECTION

Furnish	MAGIC III Curves
Unbleached Stock	9
Bleached Softwood	8
Unbleached Hardwood	7
OCC	7
Bleached Hardwood	6
Recycle Newsprint	6

❖ *The curve is factory preset for your application.*

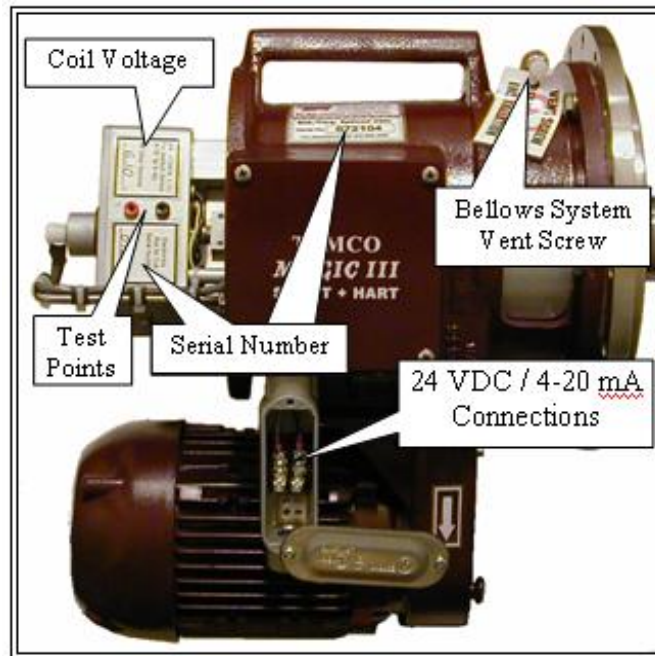


Figure # 1

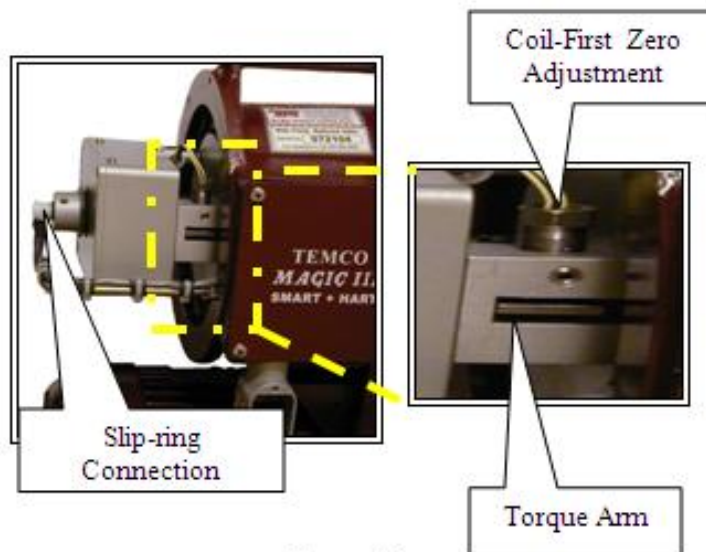


Figure # 2

TROUBLE SHOOTING TIPS

Constant error between MAGIC and labs	Check coil voltage setting * – if okay refer to Output Adjustments to change zero
Varying error with changes in consistency	Refer to Output Adjustments to change sensitivity with the Curve Number
MAGIC output does not change	<ul style="list-style-type: none"> ▪ Check power supply for a min of 16.0 VDC @20mA output ▪ Verify that the Box and Coil are working by pushing the torque arm to simulate the full DC range at the test points.

TROUBLE SHOOTING PROCEDURE

1. Transmitter Serial Number	
2. Rotate unit by hand to insure it is free to move and is not obstructed by DRIED stock.	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. What is the supply voltage at terminals inside conduit box? Minimum of 16.0 vdc @ 20mA. Push torque arm to simulate 100% output.	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Check test point Voltage with <u>MOTOR OFF</u> .	___VDC
5. Does test point Voltage go <u>UP</u> when torque arm is pushed toward the coil and <u>DOWN</u> when pushed away from the coil?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7. Does Current Output follow the test point voltage changes?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Independent Consistency Experts since 1985



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