SMARTRISE

MADE STRONG

DRIVE STARTUP MANUAL

Magnetek L1000A Drive

Permanent Magnet Installation

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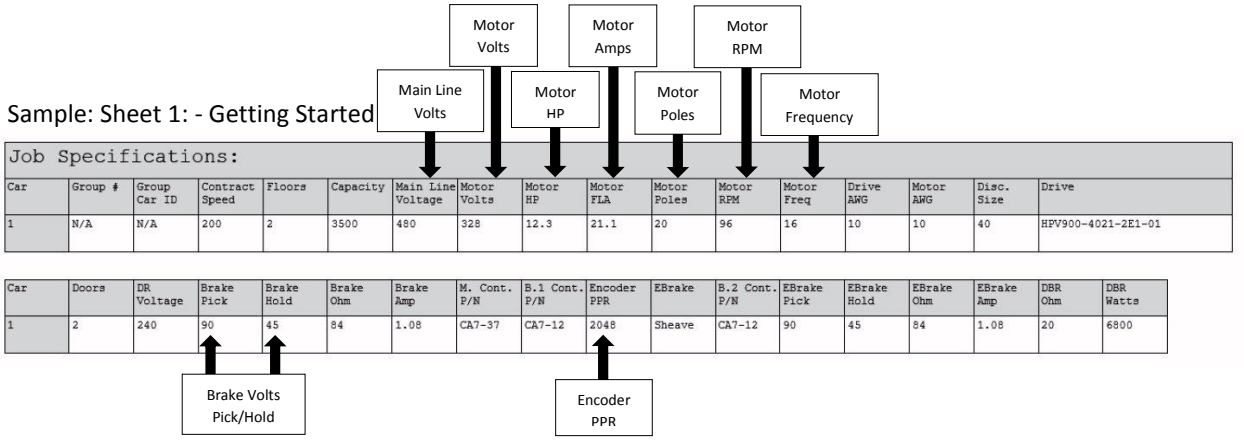
EQUIPMENT/SETTINGS VERIFICATION

Verify that the Job Specification parameter table on the drawings "Sheet 1: Getting Started" matches the actual equipment.

Below is a sample table showing the important values that will affect operation.

Sample: Sheet 1: - Getting Started



Job Specifications:

Car	Group #	Group Car ID	Contract Speed	Floors	Capacity	Main Line Voltage	Motor Volts	Motor HP	Motor FLA	Motor Poles	Motor RPM	Motor Freq	Drive AWG	Motor AWG	Disc. Size	Drive
1	N/A	N/A	200	2	3500	480	328	12.3	21.1	20	96	16	10	10	40	HPV900-4021-2E1-01

Car	Doors	DR Voltage	Brake Pick	Brake Hold	Brake Ohm	Brake Amp	M. Cont. P/N	B.1 Cont. P/N	Encoder PPR	EBrake	B.2 Cont. P/N	EBrake Pick	EBrake Hold	EBrake Ohm	EBrake Amp	DBR Ohm	DBR Watts
1	2	240	90	45	84	1.08	CA7-37	CA7-12	2048	Sheave	CA7-12	90	45	84	1.08	20	6800

CONTROLLER GROUNDING REQUIREMENTS

NOTE – For the controller to function properly it is very important to provide proper building ground connections to the controller.

- Examples of a proper building-to-controller ground connection is to attach the ground cable to:
  - The street side of the incoming water main.
  - To a grounding rod that has been driven into the pit flooring.
- The controller has a common ground bus terminal connection.

- All grounds need to land at this common point including building, motor, transformer, and filter grounds. This prevents ground loops, and will limit the impedance between the grounds and noise will be channeled back to building ground.

Providing a proper ground is mandatory and will improve the performance of the controller.

WIRING – (Check off box when complete)

** Refer to the Appendix for the following connections **

Power – (Sheet 3: Machine Room connections)

- ☐ Connect main line power to terminal block L1/L2/L3.
- ☐ Connect the ground wire to the yellow/green terminal block next to L1-L3.

Brake – (Sheet 5: Brakes)

- ☐ Connect the main brake wiring to terminals K1 / K2 and the secondary brake wiring (if equipped) to terminals J1 / J2 located on the terminal block next to the M contactor.
- ☐ Jump EB to the terminal listed in the Construction box located on “Sheet 01 – Getting Started” and connect either the rope gripper or shieve brake to EBR (if installed).

Motor / Encoder – (Sheet 4: Drive and Motor)

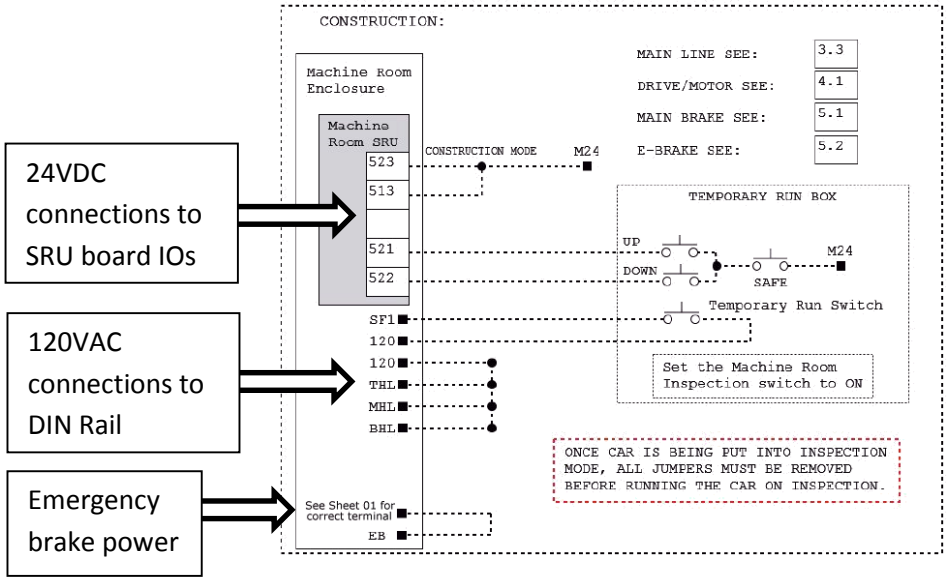
- ☐ Connect motor leads to the M contactor at T1/T2/T3.
- ☐ Connect the encoder cable to the PG Card located under the top cover. The following table contains wiring references for common encoders.

ENCODER	DRIVE	HOLLISTER WHITNEY	HEIDENHAIN	TORIN ECN413	ZEIHL
PWR	**IP**	BROWN	GREEN/BLUE + BROWN	RED/PINK	GRAY/GREEN
COM	**IG**	WHITE	GREEN/WHITE + WHITE	BLACK + RED/WHITE	PINK/YELLOW
A	**A+**	GREEN	GREEN/BLACK	GREEN + BLACK	GRAY/PINK
/A	**A-**	YELLOW	YELLOW/BLACK	YELLOW + BLACK	RED/BLUE
B	**B+**	BLUE	BLUE/BLACK	BLUE + BLACK	BLUE
/B	**B-**	RED	RED/BLACK	RED + BLACK	RED
Z	-	-	-	-	-
/Z	-	-	-	-	-
CLK+	**CK**	BLACK	GRAY	GRAY	WHITE
CLK-	**$\overline{CK}$**	VIOLET	PINK	CLEAR OR SILVER	BROWN
DAT+	**DT**	GRAY	VIOLET	PURPLE	VIOLET
DAT-	**$\overline{DT}$**	PINK	YELLOW	WHITE	BLACK
SHIELD	**FE**	SHIELD	SHIELD	LARGE RED	SHIELD

CONSTRUCTION – (Sheet 1: Construction)

The following instructions are from the job drawings: “Sheet 1 – Construction”. Refer to the job’s specific drawings for connections.

Construction Box (Sample)



24v DC connections

- ☐ Install jumpers between M24 and the IOs listed on “Sheet 1: Getting Started – Construction”.
- ☐ Install jumpers between M24 any additional IO’s (if required):
  - * Pre-Transfer
  - * Emergency Power
  - * Governor
- ☐ IMPORTANT! REMOVE FACTORY WIRES ON INPUTS 521/522
  - ○ Install the Run Bug Up/Down Switch to IO’s 521/522
- ☐ Install the Run Bug Up/Down Enable switch to M24

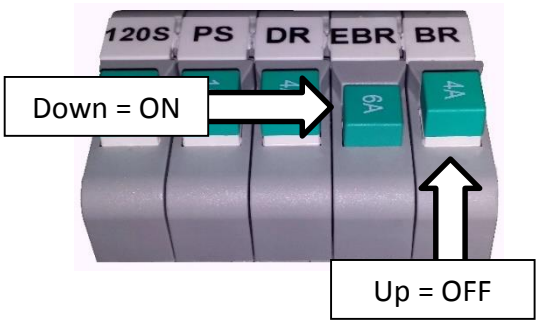
120v AC connections

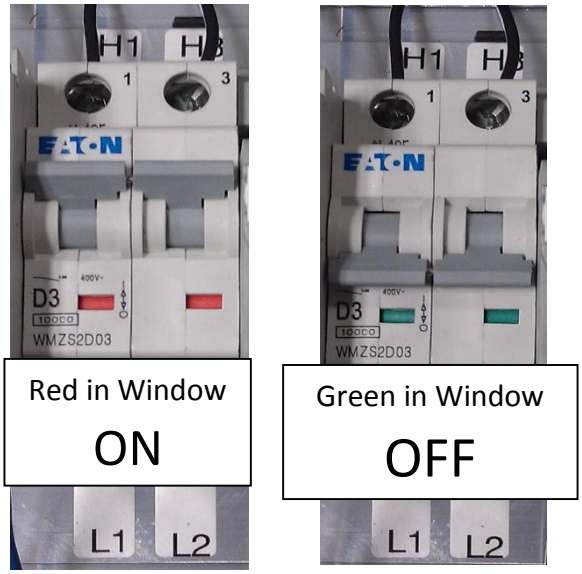
- ☐ Install the temporary run switch between 120 and terminal SF1 and 120 to THL/MHL/BHL terminals on the DIN rail.
- ☐ Install a jumper between EB and the terminal listed on the drawings on “Sheet 1: Getting Started – Construction”.

POWERING UP

(Check off box when complete)

- ☐ Apply external power by closing the main disconnect.
- ☐ Close the L1/L2 breaker, the M24, PS, BR and EBR breakers.
- ☐ Verify that the LCD on the Smartrise board and the Magnetek Drive come on.





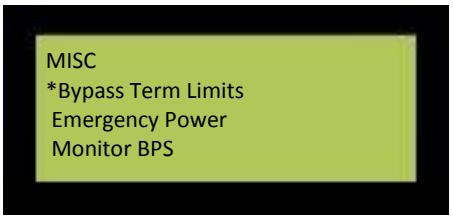
FINAL SETUP

(Check off box when complete)

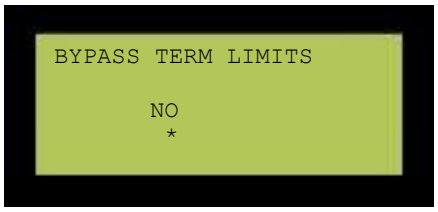
- ☐ Toggle the Inspection/Normal switch to the “INSP” position.
- ☐ Set **BYPASS TERM LIMITS** to **YES**:
  - On the Smartrise Machine Room controller board, press the Left Arrow (ESC) button several times to get to the **MAIN SCREEN**.
  - Press the Right Arrow to go to **MAIN MENU.** Use the Up / Down Arrow keys and move the asterix to **SETUP** and press the enter key.

- Use the Up / Down Arrow keys and move the asterix to **MISC** and press the enter key.

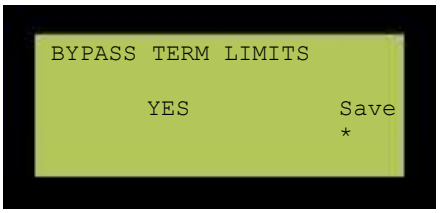
- **BYPASS TERM LIMITS** should be the first item listed. If it's not there use the Up / Down Arrow keys and move the asterix to **BYPASS TERM LIMITS** and press the enter key.



- Use the Up / Down Arrow keys to change the word **"NO"** to "**YES**".



- Use the RIGHT Arrow key and move the asterix under the word "SAVE" and press enter.



- Hit the LEFT Arrow (ESC) button several times to get to the **MAIN SCREEN**.

- Verify the LCD displays "Construction" Mode on the **MAIN SCREEN**.

STATIONARY PM AUTO TUNING

The auto tune function must be performed for a PM motor to properly operate. The three "Auto Tunes" required are: Motor Tuning, 1st Phase of Encoder Tuning and 2nd Phase of Encoder Tuning.

** During the alignment process the Smartrise SRU board will display several faults. These are normal and won't affect the alignment procedure. **

Stationary Motor Auto-Tuning

1) Install a temporary jumper between H1 on the drive and REF on the DIN rail.
2) Turn on the power to the drive. The initial display appears.
3) Press **UP** or **DOWN** arrow key until the Auto-Tuning display appears.
4) Press **ENTER** key to begin setting parameters.

a) Press **ENTER** key to select the value for T2-01. Set to "1"

5) Save the setting by pressing **ENTER**.
6) The display automatically returns to the display shown in Step 3.

Verifying/Entering Data from Motor Nameplate

1) The drive comes pre-set with the customer's motor data. When performing the motor Auto-Tune, verify the following parameters match current equipment and change if needed, otherwise, leave the defaults:

T2-01	"1" – Selects Stationary Auto-Tune for PM Motor
T2-04	Motor Rated Power (kW) = (Motor HP x .74)
T2-05	Motor Rated Voltage (VAC)
T2-06	Motor Rated Current (AMPS)
T2-08	Number of Motor Poles (See Specification Table – Sheet: 01)
T2-09	Motor Speed (RPM)
T2-16	Encoder Pulses (PPR)

INPUTTING MOTOR DATA SAMPLE

1) If the data in the drive doesn't match the existing equipment, use the following procedures to correct the values:
    a) Press **UP** arrow key to access the motor output power parameter T2-04.
    b) Press **ENTER** key to view the default setting.
    c) Press **F1** (left), **F2** (right), **RESET**, **UP** and **DOWN** arrow keys to enter the motor power nameplate data in kW – (kW) = (Motor HP) x (.74)
        i) ***Example: 12 HP x .74 = 8.88 kW*** (in this example T2-04 would be 8.88)
    d) Press **ENTER** key to save the setting
    e) The display automatically returns to the display in Step 2.
2) After verifying the data listed on the motor nameplate, press **UP** arrow key to confirm and get to "Tuning Ready" message.
3) Press and hold down the M Contactor during the duration of the Auto-Tune.
4) Press **RUN** to activate Auto-Tuning.

Auto-Tuning finishes in approximately one to two minutes

Encoder Auto-Tuning

1st Phase Encoder Auto-Tuning

1) Press **ENTER** key to select the value for T2-01.
2) Set T2-01 to "**3**" and save the setting by pressing **ENTER**.
3) Press and hold down the M Contactor.
4) Press **RUN** to activate Auto-Tuning.

2nd Phase Encoder Auto-Tuning

1) Press **ENTER** key to select the value for T2-01.
2) Set T2-01 to "**4**" and save the setting by pressing **ENTER**.
3) Press and hold down the M Contactor.
4) Press **RUN** to activate Auto-Tuning.

**** Remove the temporary jumper from drive H1 to REF. ****

The Two-Phase Encoder Auto-Tunings finish very fast

OPERATION

(Check off box when complete)

Run the car and verify the following:

No Faults

- ☐ Make sure the car is moving without triggering a fault either on the Smartrise SRU or the drive. If the SRU board displays a "Drive Fault" on the SRU, look at the drive to see what the fault is.
    - Go to "***Troubleshooting* – PG Encoder Rotation Direction**" for corrective actions.

Proper Direction

- ☐ Make sure the car is moving in the same direction as the control switch on the Run Bug.
    - Go to "***Troubleshooting – Wrong Direction***" for corrective actions.

At Speed

- ☐ Make sure that the car is moving at the proper inspection speed (approx. 50 FPM).
    - Go to "***Troubleshooting – Car Moving Too Slow or Rough***" for corrective actions.

Under Control

- ☐ Make sure that the car is moving under full control. The car should stop when commanded from the Run Bug. Verify that the car runs with no faults for 10 seconds or more.
    - Go to "***Troubleshooting – Brake Not Lifting***" for corrective actions.

TROUBLESHOOTING

PG ENCODER ROTATION DIRECTION

Perform the following steps to make sure the PG encoder rotation direction is set up correctly in the drive:

1. Turn the motor manually or run the elevator in the up direction while checking the value of monitor U1-05.
    a. If the value in U1-05 is positive, no adjustment is needed.
    b. If the value in U1-05 is negative, change the setting of parameter F1-05 between “0” & “1” to match change it to positive.

BRAKE NOT LIFTING

1. If the brake is not picking make sure that it is wired according to Sheet 5 – Brakes and verify that the EB terminal is jumped to the terminal listed on “Sheet 01 – Getting Started”. If it has the proper voltage check the following:
    a. During a run command, check for DC voltage between points K1 / K2 and J1 / J2 (if 2nd brake installed). Verify the voltages are also at the Brake Coil(s) when commanded to pick.
    b. Verify that the voltages match the Brake Coil voltages shown on “Sheet 1: Getting Started” table.

WRONG DIRECTION

1. If the car is moving in the wrong direction:
    a. On the Smartrise controller board make sure that IO 521 comes on when commanding the **UP** direction and IO 522 comes on when commanding the **DOWN** direction.
    b. Swap two of the motor leads (T1 with T2).
    c. Check drive parameter b1-14 and toggle between “0” & “1”.

CAR MOVING TOO SLOW OR ROUGH

1. Swap the encoder wires A+ and A- on EnDat card terminal TB2.
    a. After swapping A+ / A-, run both of the encoder auto tunes (T2-01 = 3 / T2-01 = 4).
2. Verify the brakes are lifting fully.

APPENDIX

Terminal Locations