MARKEM®

# SmartTraverse

Operating Manual

Revised: 4:13:04

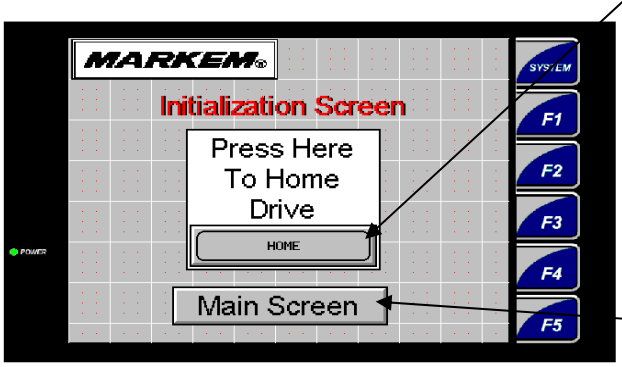
# SMARTMOVE

PRODUCT SPECIFICATIONS

| | |
|---|---|
| PRINT AREA | TRAVERSE ACTUATOR LENGTH MINUS 11 INCHES |
| SUBSTRATE AREA | TRAVERSE ACTUATOR LENGTH MINUS 5 INCHES |
| TRAVERSE SPEED | 12 - 20 Cycles per Minute |
| POWER SUPPLY | 115 /230 VAC, 8 A MAX |
| ENVIRONMENTAL | 32 DEG F TO 95 DEG F |
| TRAVERSE DIMENSIONS | 13.5"H x 14.5"W x "A" DIMENSION W |
| CONTROLLER DIMENSIONS | 12"W x 14"H x 8"D |
| TRAVERSE WEIGHT | 62.4 Lbs @ 26.5" A Dimension |
| CONTROLLER WEIGHT | 32.2 Lbs |
| MACHINE INTERFACE | INPUTS: CYCLE INPUT; OUTPUTS; INTERLOCK OUTPUT |
| OPERATOR INTERFACE | STN; 320 x 240 LCD WITH BACKLIGHT<br>4.6"W x 3.5"H (117 x 88mm) |

| | |
|---|---|
| OPTIONS | ETHERNET NETWORK OPTION |

## *POWER-UP*



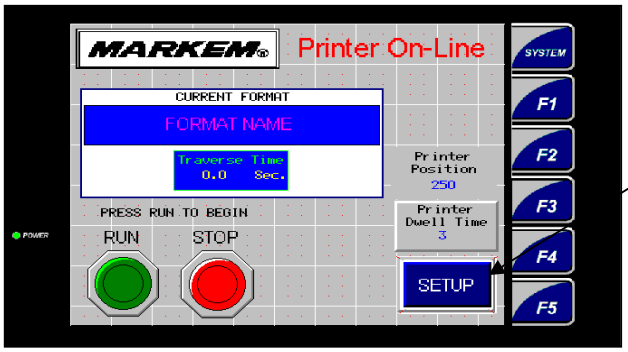

***1.*** *PRESS THE HOME BUTTON*

*THE PRINTER WILL COMMENCE A HOMING MOVE.*

*ONCE THE PRINTER HAS FINISHED THE HOME MOVEMENT……..*

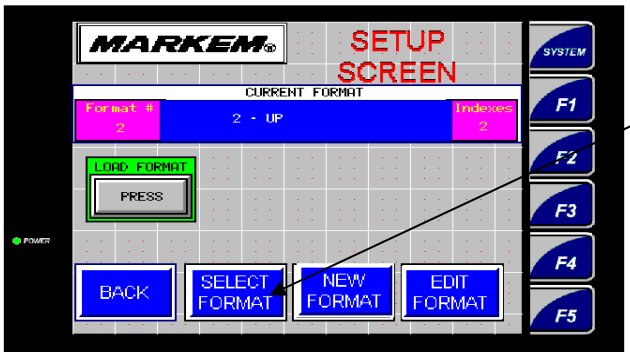
***2.*** *PRESS THE MAIN SCREEN BUTTON*

## *SELECT FORMAT*




***1.*** *PRESS THE SETUP BUTTON*

*THE SCREEN WILL CHANGE TO THE SETUP SCREEN.*

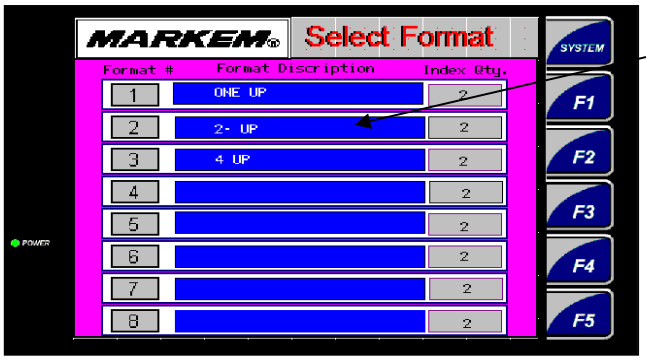



***2.*** *PRESS THE SELECT BUTTON*

*THE SCREEN WILL CHANGE TO THE SELECT FORMAT SCREEN.*

NOTE: DEPENDING ON PASSWORD CONFIGURATION, THE SELECT BUTTON MAY NOT BE ACCESSIBLE.

SEE SECTION XX FOR PASSWORD

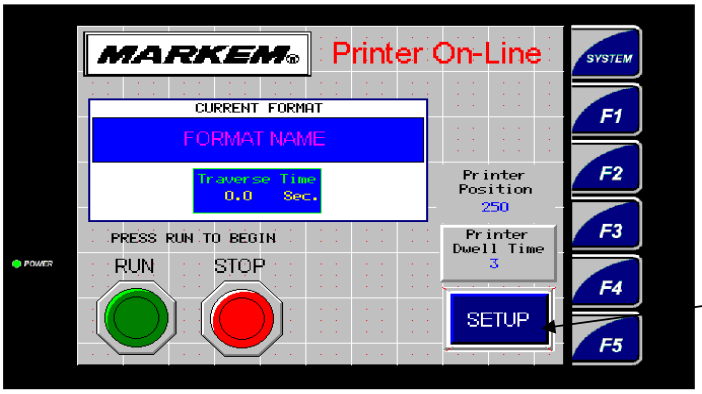



***3.*** *SELECT THE FORMAT BY PRESSING THE FORMAT NAME*

*THE SCREEN WILL CHANGE BACK TO THE SETUP SCREEN.*

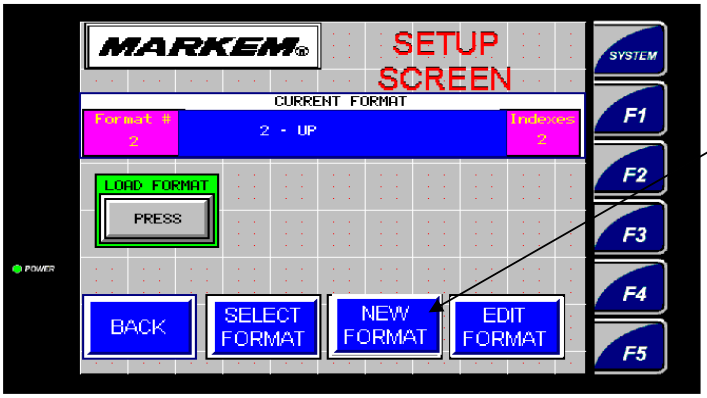
***CONTINUED***

# *CREATING A NEW FORMAT*



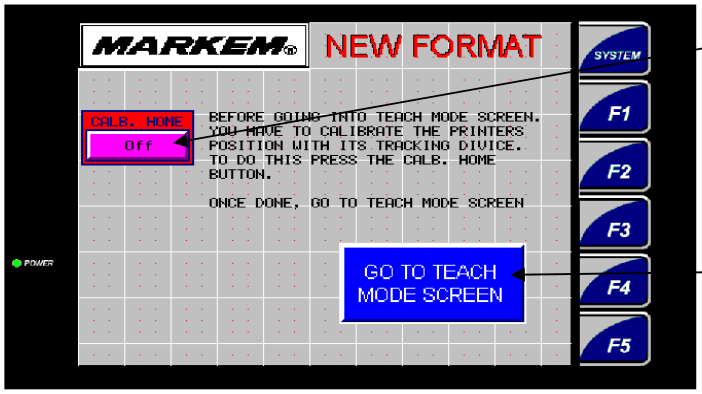

*THE PRINTER MUST BE IN THE STOPPED POSITION TO GO TO THE SETUP SCREEN.*

***1.*** *PRESS THE SETUP BUTTON*




***2.*** *PRESS THE NEW FORMAT BUTTON*

*NOTE: DEPENDING ON PASSWORD CONFIGURATION, THE SELECT BUTTON MAY NOT BE ACCESSIBLE.*

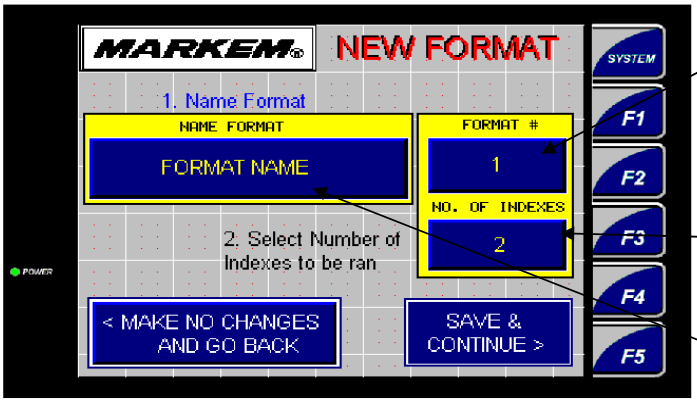



***3.*** *PRESS THE CALIBRATE HOME BUTTON*

*THE PRINTER WILL COMMENCE A HOME MOVE.*

***4.*** *PRESS THE "TEACH MODE" BUTTON.*

***IMPORTANT:*** *FOLLOW THE NEXT STEPS IN THE FOLLOWING ORDER.*




***5.*** *PRESS THE "FORMAT #*

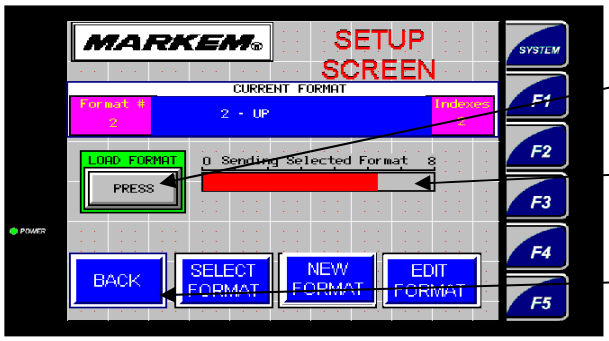
***WARNING:*** *CHOOSING AN EXISTING FORMAT WILL OVERWRITE THE EXISTING DATA.*

***6.*** *SELECT THE NUMBER OF INDEXES*

***7.*** *SELECT THE FORMAT NAME*

***CONTINUED*** →

## CONTINUED

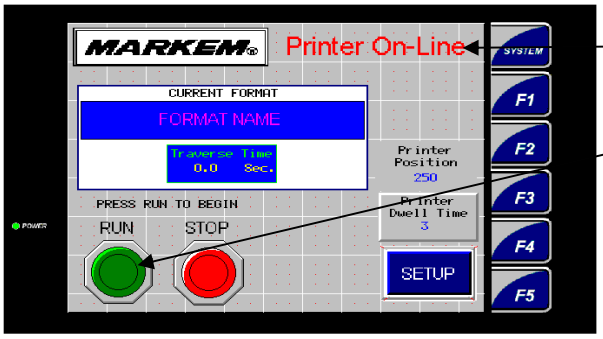



***4.*** *PRESS THE "LOAD FORMAT"*

*THE LOADING BAR WILL BEGIN LOADING THE FORMAT.*

***5.*** *UPON COMPLETION OF THE LOADING BAR, PRESS THE "BACK" BUTTON*

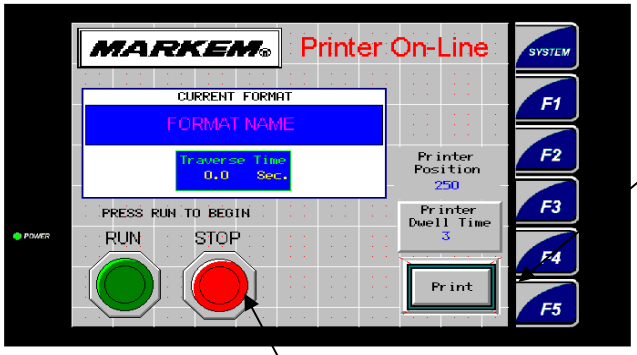
## STARTING THE PRINTER




*THE PRINTER MUST BE "ON-LINE" BEFORE THE PRINTER WILL CYCLE.*

***6.*** *PRESS THE "RUN" BUTTON TO BEGIN.*

*NOTE: THE PRINTER WILL MOVE TO THE FIRST POSITION ONCE THE "START" BUTTON IS PRESSED.*



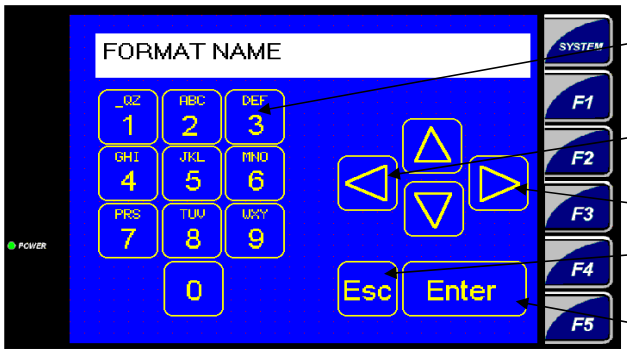

***7.*** *PRESS THE "PRINT" BUTTON TO RUN A TEST PRINT.*

*NOTE: THE TEST PRINT BUTTON MAY NOT BE VISIBLE DEPENDING ON PASSWORD CONFIGURATION.*

## STOPPING THE PRINTER

***8.*** *PRESS THE "STOP" BUTTON TO STOP THE PRINTER FROM CYCLING.*

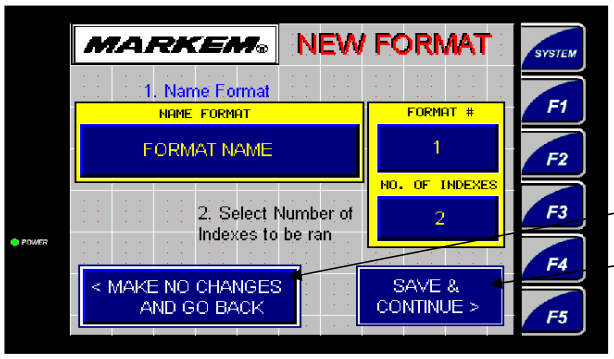
## CONTINUED
## NAMING THE FORMAT




**1.** PRESS THE NUMERIC KEY UNTIL THE DESIRED LETTER OR NUMBER IS DISPLAYED.

**2.** PRESS THE APPROPRIATE ARROW KEYS TO SHIFT LEFT OR RIGHT.

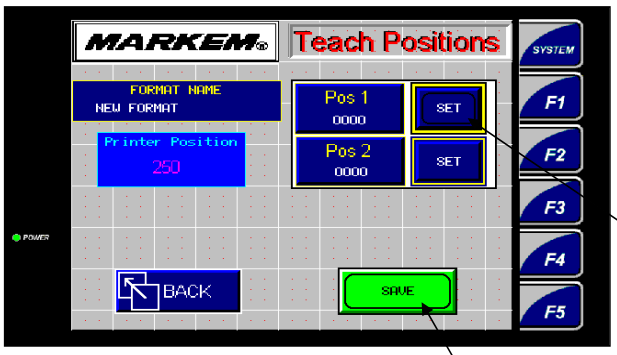
**3.** PRESS THE "ENTER"BUTTON TO SAVE THE ENTERED NAME OR "ESC" TO EXIT WITHOUT SAVING.




ONCE ALL THE INFORMATION IS CORRECT

**4.** PRESS THE "SAVE" BUTTON TO CONTINUE OR THE "BACK" BUTTON TO EXIT WITHOUT SAVING DATA.

## TEACHING THE POSITIONS




**2 WAYS TO SET THE PRINT POSITIONS**

MANUALLY MOVE THE PRINTER TO THE FIRST PRINT POSITION.

NOTE: THE MOTOR SIDE OF THE MACHINE MUST BE POSITION 1.

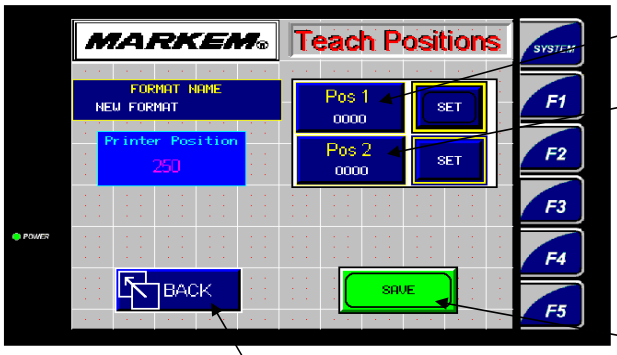
**1.** ONCE THE PRINTER IS IN THE DESIRED PRINT POSITION, PRESS THE "SET" BUTTON ASSOCIATED WITH THE APPROPRIATE POSITION.

REPEAT THIS STEP FOR EACH PRINT INDEX.

**3.** PRESS THE "BACK" BUTTON TO EXIT

**2.** PRESS THE SAVE BUTTON TO STORE THE POSITIONS.

**OR**




**1.** ENTER THE NUMERIC VALUES FOR EACH INDEX BY PRESSING THE POSITION BUTTONS AND KEY THE NUMERIC VALUE FOR EACH POSITION.

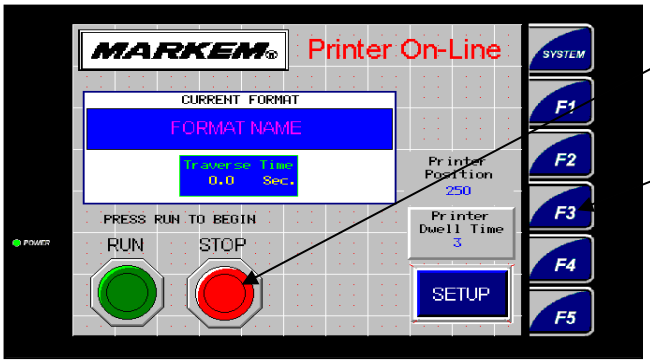
REPEAT THIS STEP FOR EACH PRINT INDEX.

NOTE: MINUMUM AND MAXIMUM VALUES FOR RANGE FROM 0 TO 3800.

**2.** PRESS THE SAVE BUTTON TO STORE THE POSITIONS.

**3.** PRESS THE "BACK" BUTTON TO EXIT

# SPEED SETTINGS

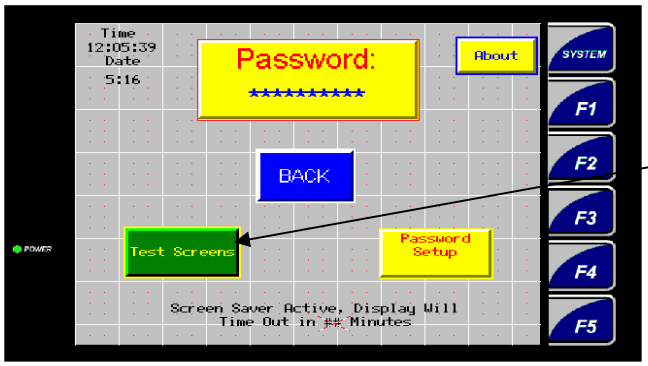



*STOP THE TRAVERSING SYSTEM BY PRESSING THE "STOP" BUTTON.*

***1.*** *PRESS THE "F3" KEY.*

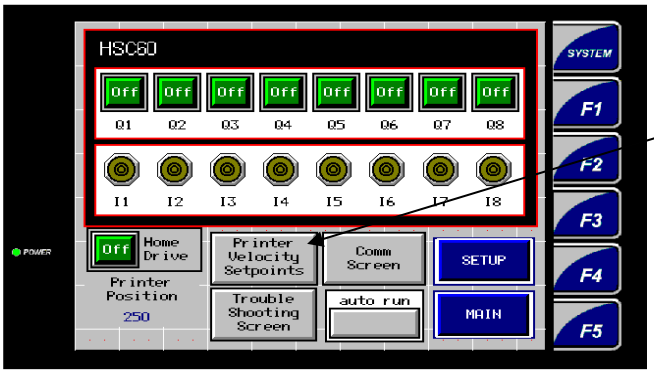
*NOTE: YOU WILL NEED TO HAVE A LEVEL 3 OR HIGHER PASSWORD CLEARANCE TO ACCESS THIS PARAMETER CHANGE.*

# PASSWORD PROMPT



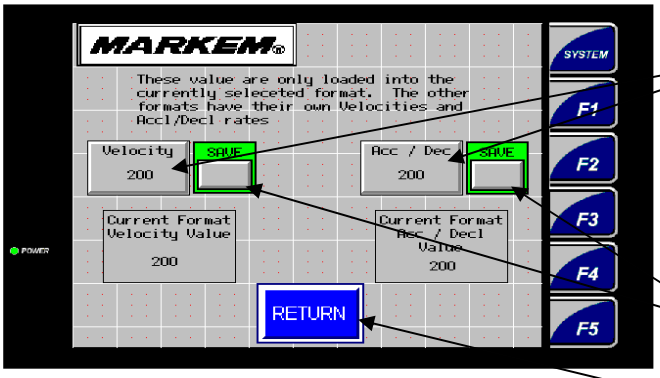

*DEPENDING ON PASSWORD LEVEL. NOT ALL KEYS MAY BE VISABLE*

***1.*** *PRESS THE "TEST SCREENS" BUTTON*




***2.*** *PRESS THE "PRINTER VELOCITY SETPOINTS" BUTTON.*

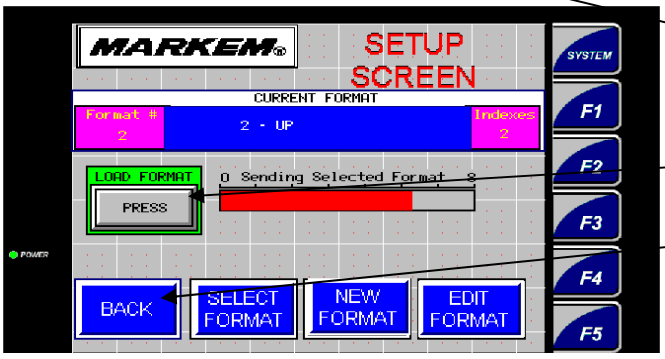
*THE SCREEN WILL CHANGE TO THE VELOCITY SETTINGS SCREEN.*




***3.*** *SELECT THE VELOCITY OR ACC/DEC BUTTONS TO CHANGE SPEED SETTINGS.*

***3.*** *PRESS THE "SAVE" BUTTON TO SAVE CHANGES.*

IMPORTANT: YOU MUST SAVE CHANGES OR ADJUSTMENTS WILL NOT TAKE EFFECT.




*4. PRESS "RETURN" TO EXIT SCREEN.*

IMPORTANT: YOU MUST RELOAD FORMAT FOR CHANGESTO TAKE EFFECT.

*5. LOAD FORMAT.*

***6.*** *PRESS THE "BACK" BUTTON TO RETURN TO THE MAIN SCREEN.*

*SPEED SETTINGS HAVE*

**TRAVERSING VELOCITY / ACCEL / DECEL SETTINGS.**

The SmartMove 1 Plus traversing system speed setting are fully adjustable. Access to these parameters are password protected and restricted access to these settings is extremely important. Changing the settings requires a password of level 4 or higher.

**Recommended Settings:** *Most applications can be accomplished using these settings.*
**Velocity**: 125
**Accel/Decel**: 125

**Speed settings related to periodic maintenance:**
Settings higher than:
Velocity: 250
Accel/Decel: 250
will required daily maintenance requiring adjustment to belt tension bearing fit up and the possible addition of an enclosure cooler to operate in ambient temperatures above 80 deg F.

**Speed setting related to shorter life of wear components:**
Settings higher than:
Velocity: 250
Accel/Decel: 250
will shorten the expected life of the drive components. (ie: bearings, V rails, gear motor, etc.

A good rule of thumb: Run the system as slow as possible to complete the cycle within the allowable dwell time.

Important: Changes made to Velocity and Accel / Decel settings are associated with the current selected format. Each format contains speed parameters reducing the need to change these settings.

Viewing the speed settings can be accessed through the Edit Format procedure.

## Lubrication

Lubrication is the key to maximizing the life of a V-Bearing linear guide. Internally, V-Bearing guide wheels are lubricated for life with an extreme pressure, corrosion resistant grease. However, lubrication of the wheel/track interface is the responsibility of the user. A light machine oil or an extreme pressure grease will serve well in minimizing wear, stick slip, and corrosion on the guide ways in a V-Bearing-based design.

Lubrication will maximize the load capacity of an individual bearing element. As such, for any specific application loading condition, the presence of lubrication on the guide ways will significantly increase the service life over a non-lubricated configuration under the same loads.

Lubrication will also increase the maximum linear velocity that a V-Bearing bearing arrangement can endure. In applications where high speed or high acceleration rates are present, lubrication of the wheel/track interface is highly recommended.

Lastly, lubrication will reduce the overall coefficient of friction of the guide, which, depending on the level of preload, can fall anywhere from 0.008 to 0.15. Replenishment or replacement of the lubrication wiper assembly should take place on a monthly basis or more often as necessary depending on environment.

## Fit-Up

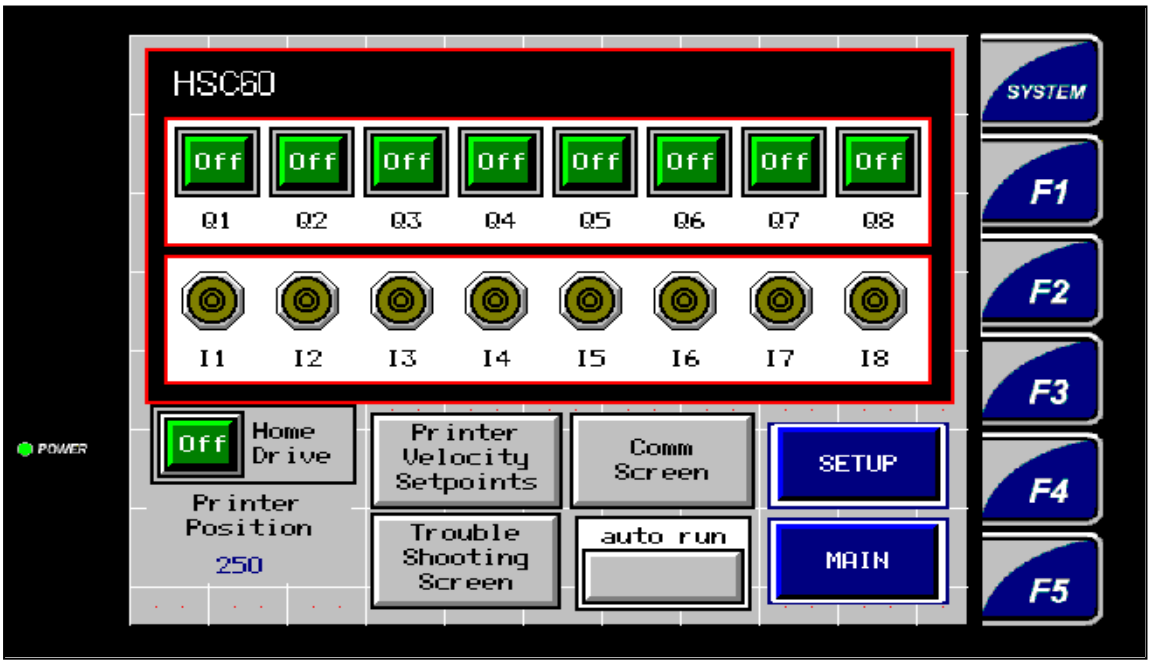
Normal adjustment is obtained by rotating the eccentric bushings until all free play is removed from the carriage assembly. When the eccentrics are adjusted and the carriage plate is held firmly in place, one should be able to rotate, by hand, any of the four guide wheels in the system against its mating track. If rotation is not possible, preload on the wheels should be reduced accordingly. Overtightening of the eccentric adjustment could result in premature bearing failure. Such a condition can exert a force greater than the load rating of the wheel. The fit-up procedure should be checked on a weekly basis to insure proper fit and extended bearing life.

**TRAVERSING SYSTEM TROUBLE SHOOTING GUIDE**

| TROUBLE | POSSIBLE CAUSE | RECOMMENDED ACTION |
|---|---|---|
| **POWER** | MAIN POWER<br>CHECK DRIVE POWER | VALIDATE INCOMING POWER<br>RESET BREAKER<br>LOOSE WIRE CONNECTION |
| **DRIVE STATUS** | DRIVE ERRORS<br><br><br>TRAVEL LIMITS EXCEEDED | CYCLE POWER ON DRIVE<br>CHECK SERVO MOTOR CONNECTIONS<br><br>CHECK LIMIT SWITCH ADJUSTMENT<br>ADJUST POSITION SETTINGS TO STAY WITHIN LIMITS |
| **FORMAT PARAMETERS** | <br>VELOCITY SETTING<br>POSITION SETTINGS | <br>CHANGE VELOCITY SETTINGS<br>CHANGE POSITION SETTINGS |
| **CABLE CONNECTION** | | <br>PLACE IN LASER MODE<br>PLACE IN AUTO RUN MODE<br>EXTEND SERVICE LOOP IN TRAVERSING CABLES |
| **PLC STATUS** | <br>PLC NOT IN RUN MODE | <br>PLACE PLC IN RUN MODE |
| **HOMING ERROR** | MAGNET MISSING<br>DAMAGE TO SENSOR<br>CHECK WIRING / SOLDER CONNECTIONS | REPLACE MAGNET<br>REPLACE SENSOR<br>CHECK WIRING / SOLDER CONNECTIONS |
| **COMMUNICATION ERROR** | CABLE DAMAGED<br>EXCESS NOISE OR FLOATING GROUND | REPLACE COMM CABLE<br>CHECK EARTH GROUND |

# SmartMove 1+ IO Screen

**OUTPUTS**




**INPUTS**

**OUTPUT ASSOCIATION**

| | |
|---|---|
| Q1 | PRINT COMMAND |
| Q2 | INDEX DRIVE ZERO |
| Q3 | INDEX DRIVE ONE |
| Q4 | INDEX INITIATE |
| Q5 | POWER INDEXER |
| Q6 | POWER INDEXER |
| Q7 | HOME COMMAND |
| Q8 | ENABLE DRIVE |

**INPUT ASSOCIATION**

| | |
|---|---|
| I1 | CHANNEL A |
| I2 | CHANNEL B |
| I3 | PRINTER BUSY |
| I4 | INDEX COMPLETE |
| I5 | HOME COMPLETE |
| I6 | MACHINE INPUT |
| I7 | PRINTER READY |
| I8 | DRIVE FAULT |

# PASSWORD SETTINGS

Open
- Start Stop System

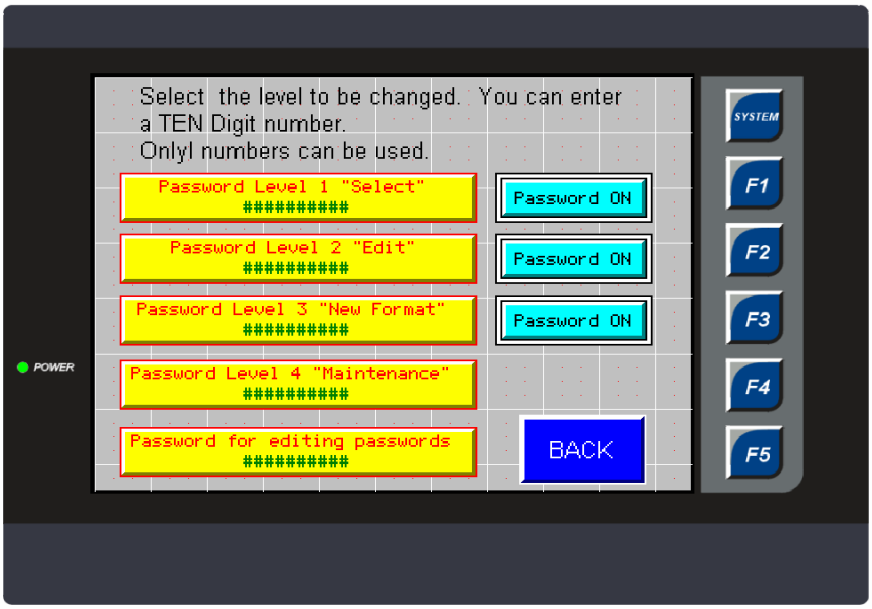
Level 1
- Select Formats
- Start Stop System

Level 2
- Select Formats
- Start Stop System
- Edit Print Positions

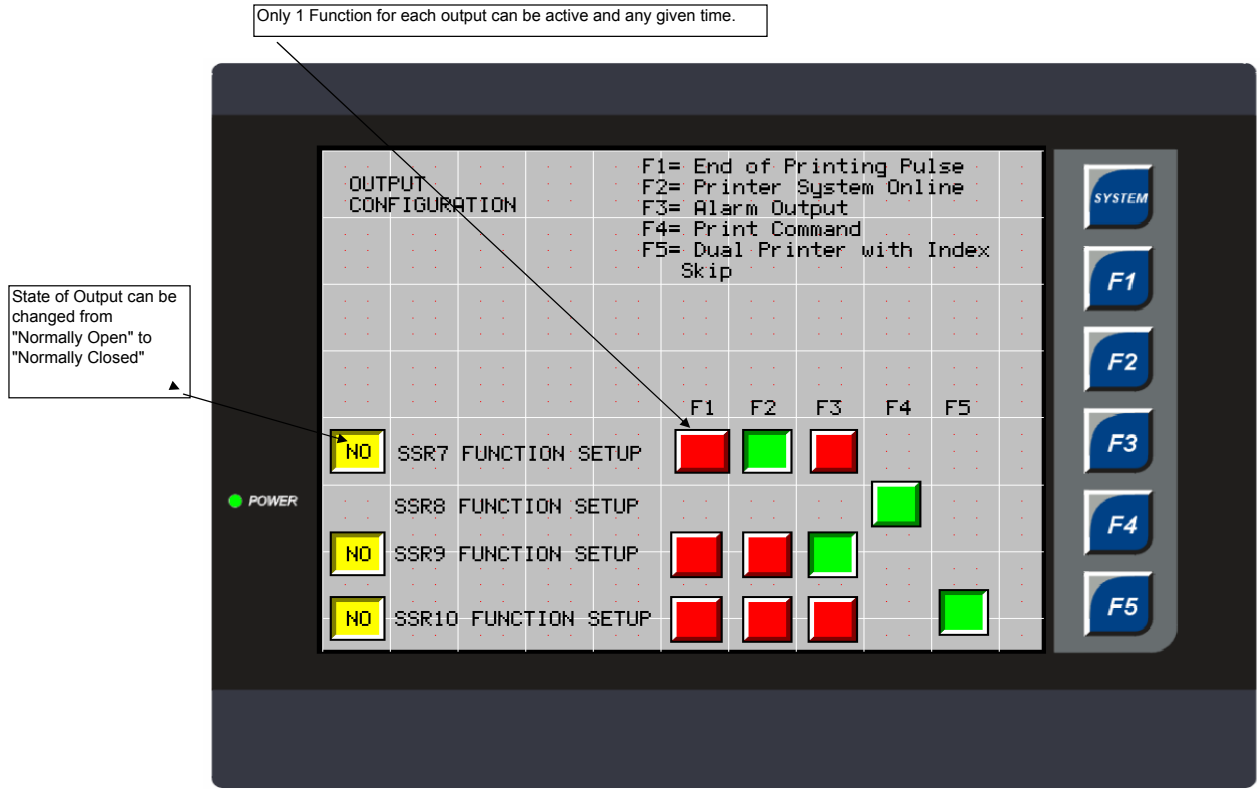
Level 3
- Select Formats
- Start Stop System
- Edit Print Positions
- Creat New Positions

Level 4
- Select Formats
- Start Stop System
- Edit Print Positions
- Creat New Positions
- Edit Speed Settings
- Edit Debounce Setting

Master
- Select Formats
- Start Stop System
- Edit Print Positions
- Creat New Positions
- Edit Speed Settings
- Edit Debounce Setting
- Password Setup
- System Setup



## OUTPUT CONFIGURATION SCREEN



# PASSWORD SETTINGS

Open
- Start Stop System

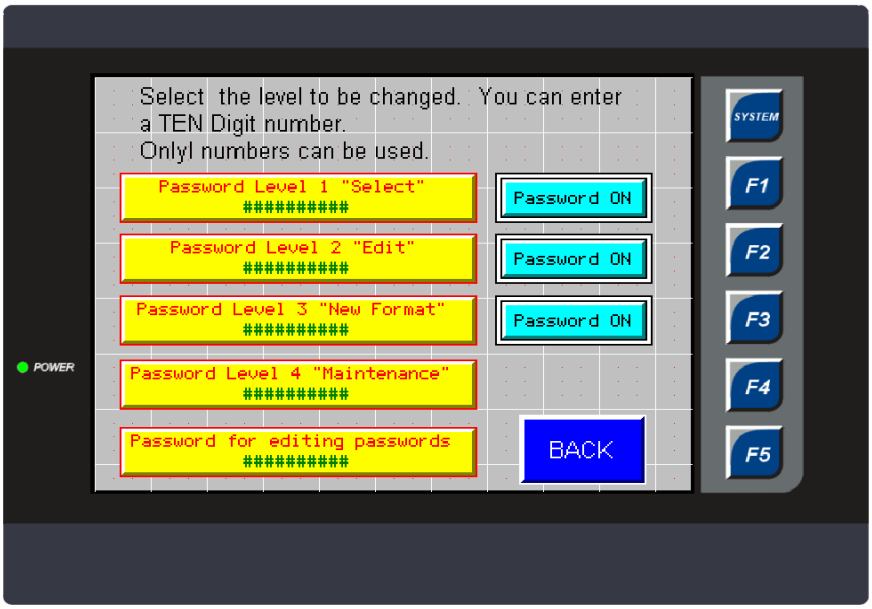
Level 1
- Select Formats
- Start Stop System

Level 2
- Select Formats
- Start Stop System
- Edit Print Positions

Level 3
- Select Formats
- Start Stop System
- Edit Print Positions
- Creat New Positions

Level 4
- Select Formats
- Start Stop System
- Edit Print Positions
- Creat New Positions
- Edit Speed Settings
- Edit Debounce Setting

Master
- Select Formats
- Start Stop System
- Edit Print Positions
- Creat New Positions
- Edit Speed Settings
- Edit Debounce Setting
- Password Setup
- System Setup



# Diagnostics and Troubleshooting

## Diagnostic Display

The diagnostic display on the front of the drive shows drive and FM-2 Module status and fault codes. When a fault condition occurs, the drive will display the fault code, overriding the status code.

The decimal point is "On" when the drive is enabled and the stop input is not active. This indicates that the drive is ready to run and any motion command will cause motion. Motion commands will not cause motion unless you are Ready (R) and the decimal point is "On".

| Display Indication | Status | Description |
|---|---|---|
|  | Brake Engaged (Output "Off") | Motor brake is mechanically engaged. This character will only appear if the Brake output function is assigned to an output line. |
|  | Disabled | Power Stage is disabled. |
|  | Ready | The Epsilon Ei or FM-2 and E Series drive system is functioning normally and is ready to execute a motion command. |
|  | Indexing | Index in progress. Other motion commands do not function. |
|  | Jogging | Jog function in progress. Other motion commands do not function. |
|  | Homing | Home cycle in progress. Other motion commands do not function. |
|  | Stop or Travel Limit Decel | *Stop* or *Travel Limit Decel* in progress. |

| Display Indication | Status | Description |
|---|---|---|
|  | RMS Foldback | Motor torque is limited to 80 percent. |
|  | Stall Foldback<br>(E Series drive only) | Drive output current is limited to 80 percent of drive stall current. |
|  | Ready to Run | Drive enabled, no *Stop* input. |

# Fault Codes

A number of diagnostic and fault detection circuits are incorporated to protect the drive. Some faults, like high DC bus and amplifier or motor over temperature, can be reset with the Reset button on the front of the drive or the Reset input function. Other faults, such as encoder faults, can only be reset by cycling power "Off" (wait until the diagnostics display turns "Off"), then power "On".

The drive accurately tracks motor position during fault conditions. For example, if there is a "Low DC Bus" fault where the power stage is disabled, the drive will continue to track the motor's position provided the logic power is not interrupted.

The +/- Limit faults are automatically cleared when the fault condition is removed. The table below lists all the fault codes in priority order from highest to lowest. This means that if two faults are active, only the higher priority fault will be displayed.

| Display | Fault | Action to Reset | Bridge Disabled |
|---|---|---|---|
|  | Flash Invalid | Reprogram the FM's Flash | Yes |
|  | Drive Overtemp<br>(Epsilon drive only) | Cool down,<br>Cycle Power | Yes |
|  | Power Up Test | Power | Yes |

| Display | Fault | Action to Reset | Bridge Disabled |
|---|---|---|---|
|  | NVM Invalid | Button or Input | Yes |
|  | Invalid Configuration | Button or Input | Yes |
|  | Power Module | Button or Input | Yes |
|  | High DC Bus | Button or Input | Yes |
|  | Low DC Bus | Button or Input | Yes |
|  | Encoder State | Power | Yes |
|  | Encoder Hardware | Power | Yes |
|  | Motor Overtemp | Button or Input | Yes |
|  | RMS Shunt Power | Button or Input | Yes |
|  | Overspeed | Button or Input | Yes |

| Display | Fault | Action to Reset | Bridge Disabled |
|---|---|---|---|
| F | Max Following Error (Position mode) | Button or Input | Yes |
| L | Travel Limit +/- | Auto | No |
|  | All "On" | Normally on for one second during power up | Yes |

## Fault Descriptions

### Flash Invalid

This fault indicates that the firmware checksum has failed. Use the Tools|Program Flash menu item from PowerTools FM to reprogram/upgrade the firmware stored in flash memory. If this problem persists, call Control Techniques. A common cause would be an interrupted F/W Flash upgrade (cable disconnected in the middle of an upgrade process).

### Drive Overtemp

Indicates the drive IGBT temperature has reached 100ºC (212ºF).

### Power Up Test

This fault indicates that the power-up self-test has failed. This fault cannot be reset with the reset command or reset button.

### NVM Invalid

At power-up the drive tests the integrity of the non-volatile memory. This fault is generated if the contents of the non-volatile memory are invalid.

### Invalid Configuration

**Epsilon Only**

If this occurs call Technical Support at Control Techniques.

**⚠ CAUTION**

Damage may occur to the drive, motor or both if the fault is cleared using the Reset button when the setup data in the FM does not match the current drive and motor.

### Z Power Module

This fault is generated when a power stage over-temperature, over-current or loss of power stage logic supply occurs. This can be the result of a motor short to ground, a short in the motor windings, a motor cable short or the failure of a switching transistor.

It can also occur if the drive enable input is cycled "Off" and "On" rapidly (>10 Hz).

### H High DC Bus

This fault will occur whenever the voltage on the DC bus exceeds 440 VDC. The most likely cause of this fault would be an open shunt fuse, a high AC line condition or an application that requires an external shunt (e.g., a large load with rapid deceleration).

### L Low DC Bus

This fault will occur whenever the voltage on the DC bus drops below 60 volts. The most likely cause of this fault is a reduction (or loss) of AC power. A 50 ms debounce time is used with this fault to avoid faults caused by intermittent power disruption. For some types of custom motors it may be necessary to disable this fault. Refer to the Advanced Tab section of Setting Up Parameters for more information.

### E Encoder State

Certain encoder states and state transitions are invalid and will cause the drive to report an encoder state fault. This is usually the result of noisy encoder feedback caused by poor shielding.

### E Encoder Hardware

If any pair of encoder lines are in the same state, an encoder line fault is generated. The most likely cause is a missing or bad encoder connection.

### M Motor Overtemp

This fault is generated when the motor thermal switch is open due to motor over-temperature or incorrect wiring.

| | |
|---|---|
| □ | **Overspeed** |

This fault occurs when the actual motor speed exceeds the Overspeed Velocity Limit parameter. This parameter can be accessed with PowerTools-FM software.

| | |
|---|---|
| F | **Max Following Error** |

This fault is generated when the following error exceeds the following error limit (default following error limit is 0.2 revs). With PowerTools-FM you can change the Following Error Limit value or disable it on the Position tab.

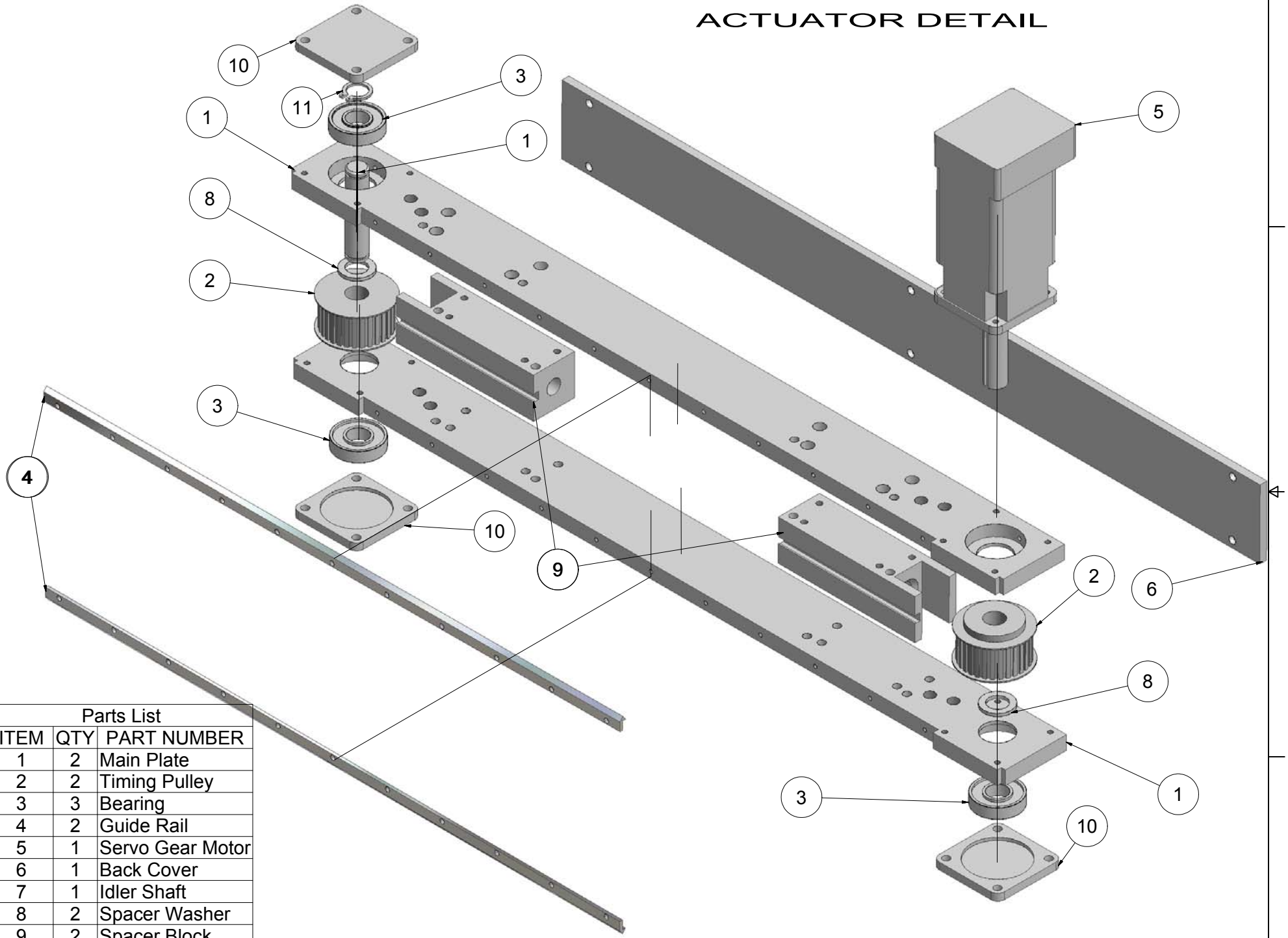
| | |
|---|---|
| L | **Travel Limit +/-** |

This fault is caused when either the + or - Travel Limit input function is active.

| | |
|---|---|
|  | **All "On"** |

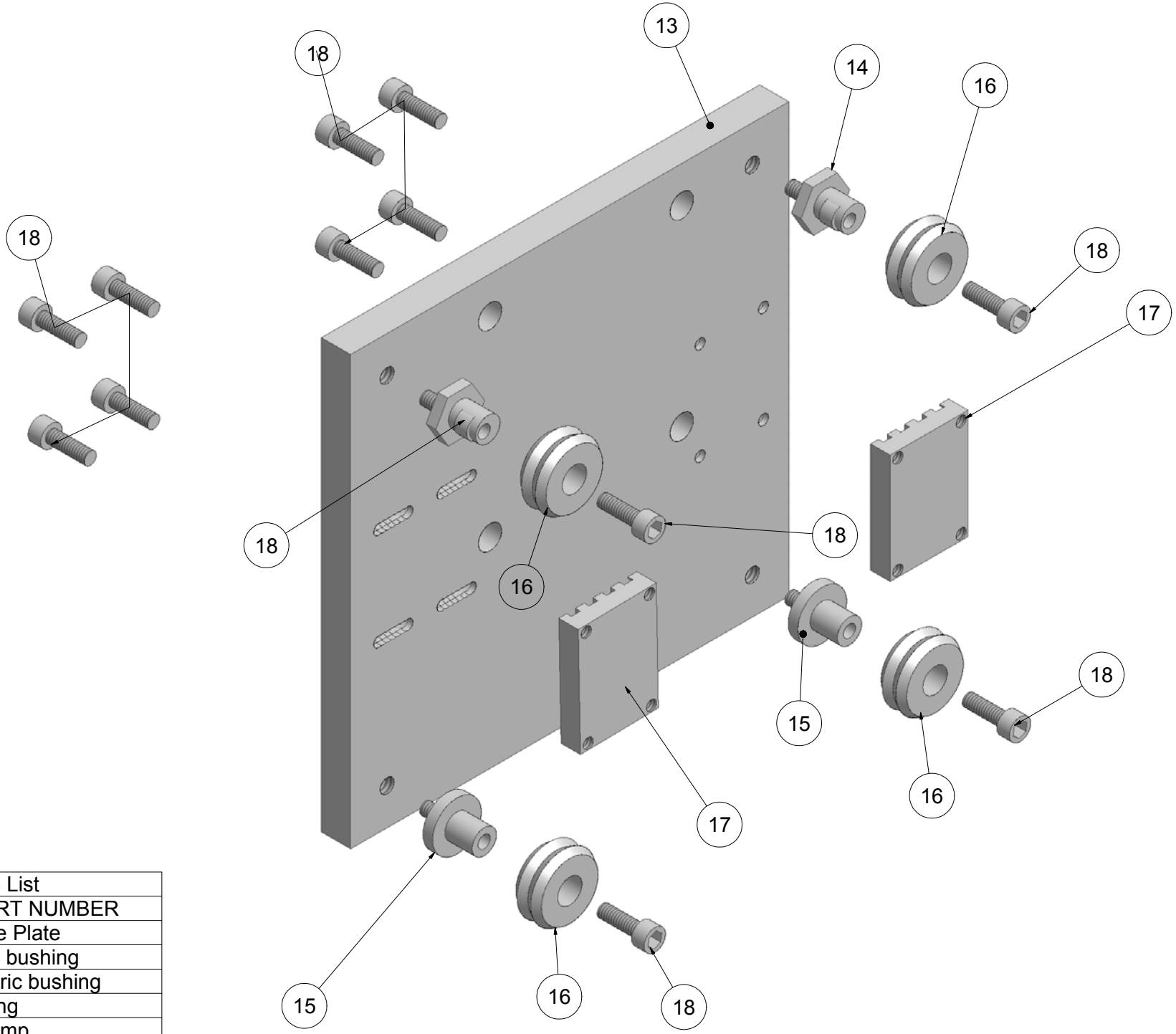
This is a normal condition during power up of the drive. It will last for less than 1 second. If this display persists, call Technical Support at Control Techniques.

# ACTUATOR DETAIL

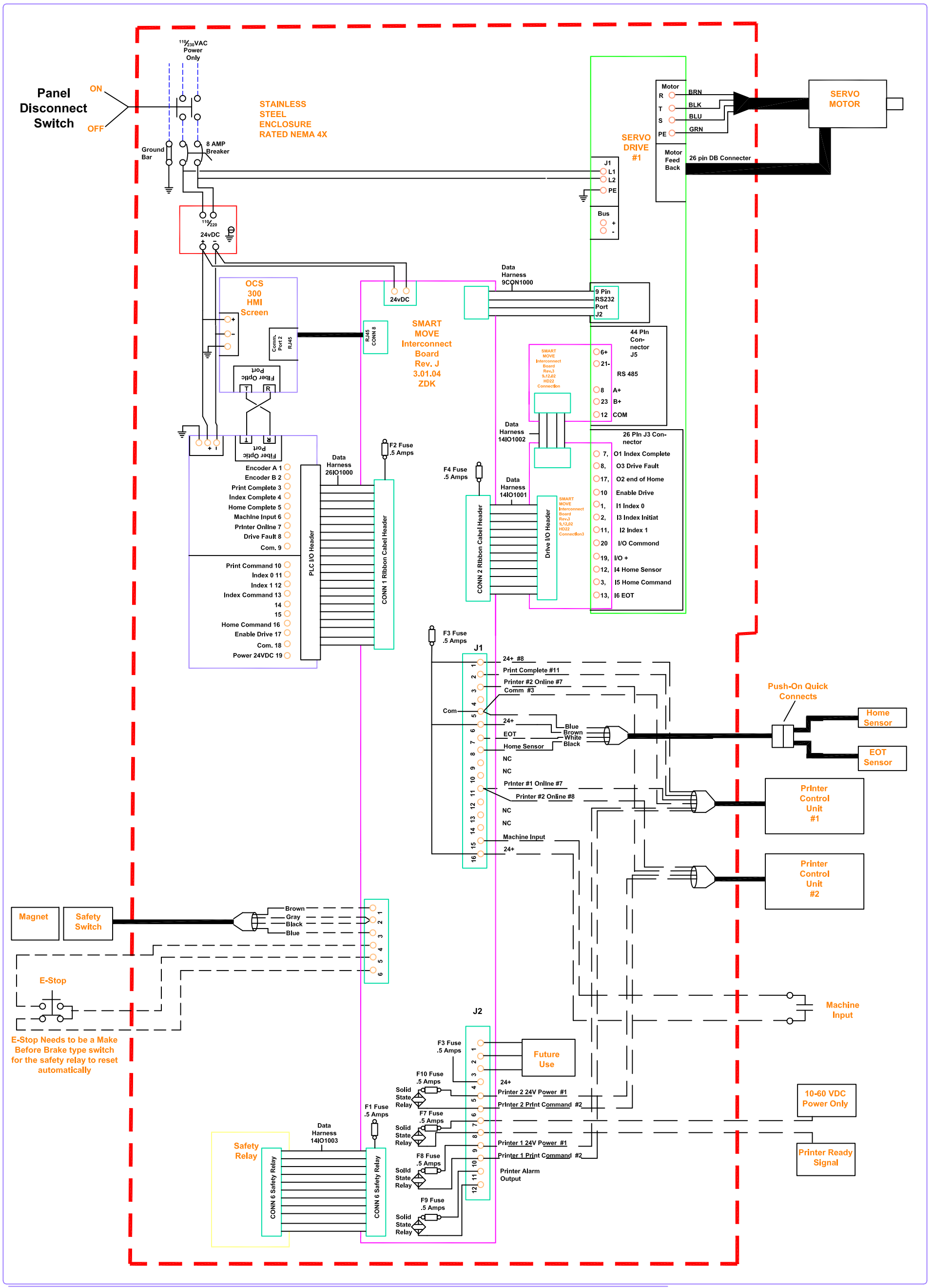



| Parts List | | |
|---|---|---|
| ITEM | QTY | PART NUMBER |
| 1 | 2 | Main Plate |
| 2 | 2 | Timing Pulley |
| 3 | 3 | Bearing |
| 4 | 2 | Guide Rail |
| 5 | 1 | Servo Gear Motor |
| 6 | 1 | Back Cover |
| 7 | 1 | Idler Shaft |
| 8 | 2 | Spacer Washer |
| 9 | 2 | Spacer Block |
| 10 | 3 | Bearing Cover |
| 11 | 2 | Snap Ring |

# Carriage Assembly




| Parts List | | |
|---|---|---|
| ITE | QT | PART NUMBER |
| 13 | 1 | Carriage Plate |
| 14 | 2 | ecentric bushing |
| 15 | 2 | concentric bushing |
| 16 | 4 | V Bearing |
| 17 | 2 | Belt Clamp |
| 18 | 16 | Cap Screw |




SMART MOVE
MOTION CONTROL ENGINEERING

1501 WEST 10 St
SIOUX FALLS, SD 57104

TEL. (605) 336-6624



Project & Sheet Title

SCHEMATIC WIRING DIAGRAM FOR SMART MOVE PLUS

Project Number:
TX2L–S1D2R31–UNI–SPCL
1–017–03 Date:
ZDK Drawn By:
DS Checked By:
01–15–03T 

Ref. Plan: REFPLAN
Ref. P&ID: REFP&ID

**120EI203-072502-XXXXX**

| MKM P/N | Qty | Description |
|---|---|---|
| 0672635 | 1 | Color Controller |
| 0672633 | 1 | FOX I/O Base |
| 0672634 | 1 | High Speed Counter |
| 0672637 | 1 | Digital IO |
| 0251130 | 1 | Servo Motor 5:1 |
| 0251131 | 1 | Servo Motor 10:1 |
| 0672638 | 1 | Indexing Drive 2 amp |
| 0672646 | 1 | Indexing Drive 3 amp |
| 0688523 | 1 | Cable Motor |
| 0688524 | 1 | Cable Encoder |
| 0688525 | 1 | Cable Comnd |
| 0672639 | 1 | Breakout Board |
| 0672640 | 1 | Circuit Board Main |
| 0672641 | 1 | Circuit Board Lite |
| 0672642 | 1 | 1.3A DC Power Supply |
| 0672647 | 1 | 0.3A DC Power Supply |
| 0688536 | 1 | DIN Rail |
| 0688526 | 1 | Ribbon Cable |
| 0688527 | 1 | Fuse Circuit Brd |
| 0688528 | 1 | 2 Pole, 8A Circuit Bkr |
| 0242235 | 1 | E-Stop w/ 1NC Contact |
| 0242236 | 1 | Disconnect Kit |
| 0672643 | 1 | Circuit Board Drv |
| 0672644 | 1 | Circuit Board Enc |
| 0672645 | 1 | Circuit Board EIO |
| 0211358 | 3 | Bearings |
| 0221301 | 2 | Timing Pulley |
| 0630899 | 1 | Timing Belt |
| 0947799 | 1 | Idler Shaft |
| 0960831 | 2 | 36.5" SS Single Edge Track |
| 0960832 | 2 | 24.5" SS Single Edge Track |
| 0211359 | 2 | ECC Bearing SS |
| 0211360 | 2 | Con Bearing SS |
| 0211362 | 4 | Size 1 SS Guide Wheel |
| 0960833 | 1 | 35" Utilitrak Rail |
| 1283831 | 1 | SS Utilitrak Carriage |
| 1531979 | 1 | Size 1 Adjuster Wrench |
| 1283805 | 1 | Carriage Plate Std |
| 1283806 | 1 | Carriage Plate Extd |
| 1010153 | 1 | Magnet |
| 1283807 | 2 | Timing Belt Clamp |
| 1283808 | 1 | Actuator Back Cover |
| 1283809 | 2 | Cable Clamps |
| 1283810 | 1 | Linear Stabilizer |
| 1283811 | 1 | Stabilizer Sup Bracket |
| 1283812 | 1 | Print Platen |
| 0422382 | 1 | Print Platen Pad |
| 2170549 | 1 | VB Connector |
| 0242234 | 1 | Limit Switch |
| 0688537 | 1 | Bulkhead Receptacle |
| 0688538 | 1 | MultiPort Blkhd Passthru |
| 1283813 | 1 | Mount Plate Motor |
| 0688529 | 1 | Strain Relief Con L |
| 0688530 | 1 | Strain Relief Con S |
| 0688531 | 1 | Serial Cable |
| 0688532 | 2 | Fiber Optic Cable |
| 0490954 | 1 | Safety Gate Relay |
| 0242237 | 1 | Magnet Sensor |
| 1010154 | 1 | Coded Magnet |
| 1283814 | 1 | Top Plate |
| 1283815 | 1 | Bottom Plate |
| 1283816 | 2 | Spacer Block |
| 1283828 | 2 | Low Profile Lubricator |
| 1020258 | 2 | Lubrication Felt Pad |
| 0688535 | 5 | Fuse |
| 0829009 | 1 | Fuse Kit |
| 0829010 | 1 | Spare Parts Kit |
| 0688541 | 1 | Optional SS Enclosure |
| 0688540 | 1 | Standard Enclosure |
| 1283851 | 1 | Actuator Assembly |