

## Precision Linear Motion Platform

### FEATURES

- High capacity
- 600mm Travel
- High torque brushless servo motor drive
- Optical limit switches with home
- High resolution rotary encoder
- Zero backlash, precision ground 5mm lead ball screw
- Recirculating ball linear ways
- Side seals



The LM7-BS series stages are designed for high loading capacities and long travels to suit a variety of applications. This ball screw stage is built for high duty cycles and long life and can attain high velocities for factory automation and semiconductor processing equipment. Recirculating ball linear ways paired with a high torque brushless motor and precision ground ball screw drive offer extremely smooth operation and velocity control. This stage has exceptional levels of accuracy, repeatability, flatness and straightness. Side seals and a hard cover make it an excellent choice for dirty environments. The LM7 Series stages can be stacked to create X, Y and Z motion.



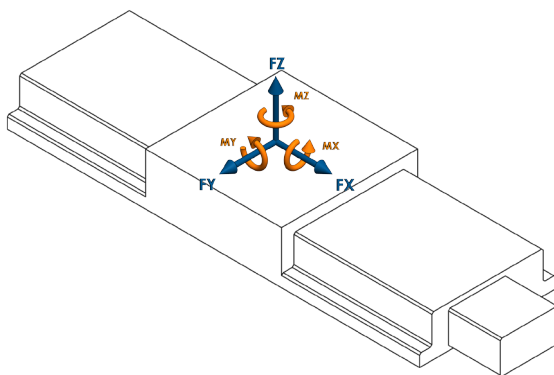
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www.griffinmotion.com

LM7-600-BF-D-W-S-F-00

## Motion Specifications

## Product Specifications

|                                        |                 |
|----------------------------------------|-----------------|
| Encoder Output                         | A quad B, index |
| Force X (N)                            | 400             |
| Force Y (N)                            | 1000            |
| Force Z (N)                            | 1500            |
| Flatness ( $\mu\text{m}$ )             | 14              |
| Height (mm)                            | 86.5            |
| Length (mm)                            | 1055.0          |
| Limit Switches                         | Yes             |
| Linear Accuracy ( $\mu\text{m}$ )      | 54              |
| Encoder Resolution ( $\mu\text{m}$ )   | 0.3125          |
| Linear Repeatability ( $\mu\text{m}$ ) | 2               |
| Linear Velocity (mm/s)                 | 200             |
| Moment X (N-m)                         | 400             |
| Moment Y (N-m)                         | 600             |
| Moment Z (N-m)                         | 200             |
| Moving Mass X (kg)                     | 6.20            |
| Pitch +/- (arc-sec)                    | 20              |
| Screw Lead (mm)                        | 5               |
| Stage Mass (kg)                        | 26.2            |
| Straightness ( $\mu\text{m}$ )         | 14              |
| Width (mm)                             | 200.0           |
| Yaw +/- (arc-sec)                      | 15              |



LOAD DIRECTIONS

## Part Number Description

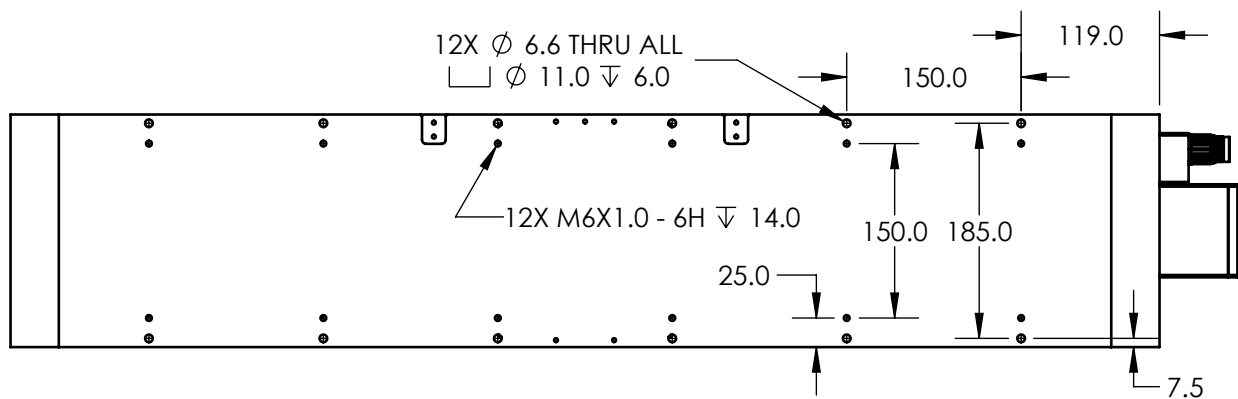
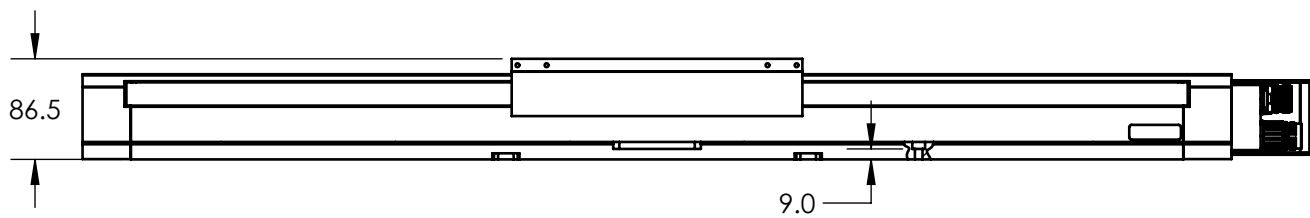
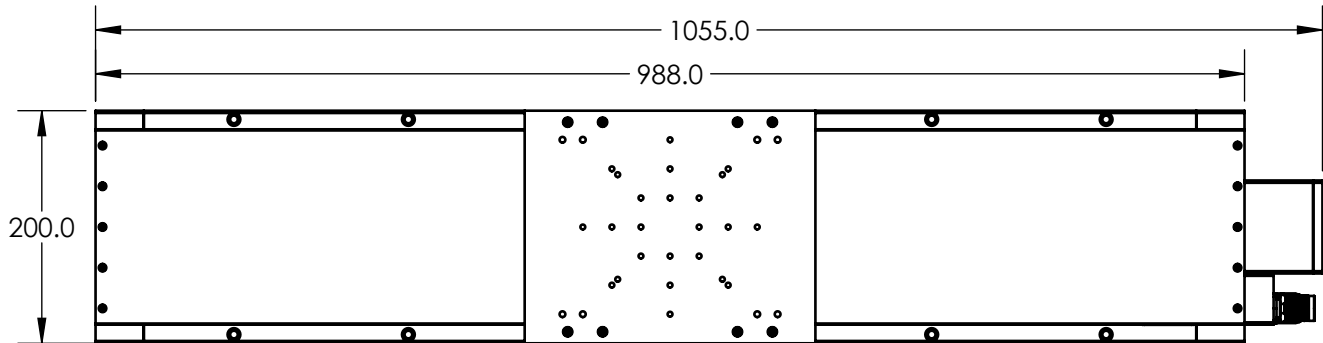
|     |                                    |
|-----|------------------------------------|
| LM7 | LM7 Series                         |
| 600 | 600mm Travel                       |
| BF  | 5mm Lead Ball Screw Drive          |
| D   | High Torque Brushless Servo Motor  |
| W   | 0.125 $\mu\text{m}$ Rotary         |
| S   | Standard Precision                 |
| F   | Side Seals                         |
| 00  | Standard Product (Call for custom) |

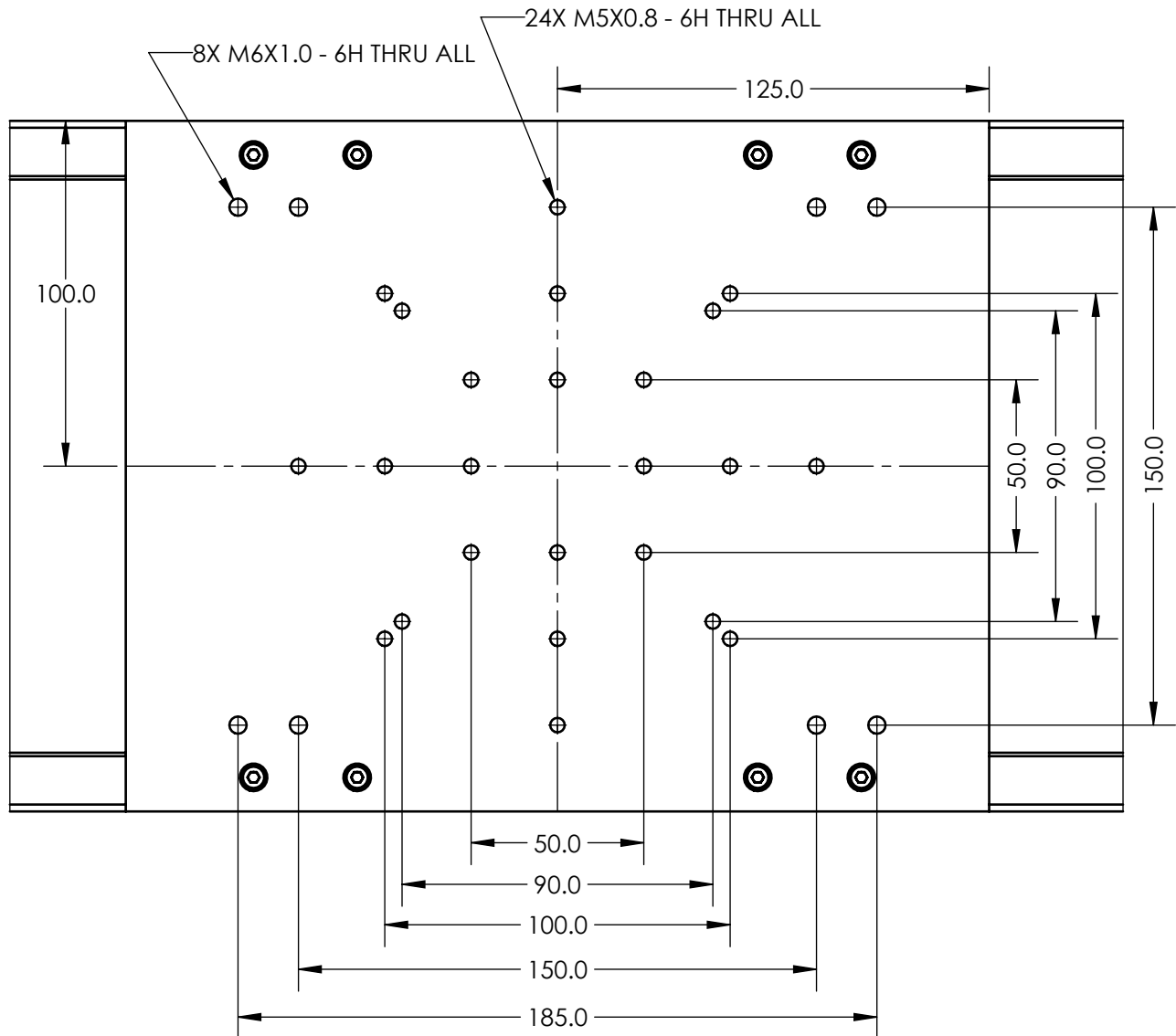
LM7-600-BF-D-W-S-F-00

Rev 0

**LM7-600-BF-D-W-S-F-00**

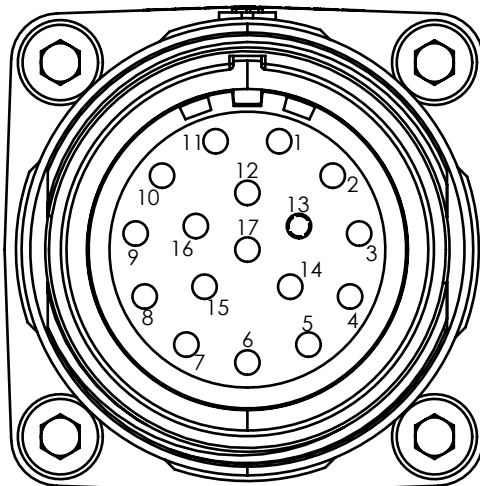
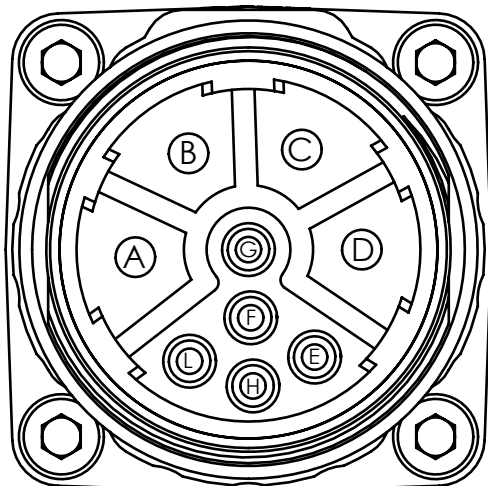
**Mechanical Specifications**





LM7-600-BF-D-W-S-F-00

## Electrical Pinout



View of stage connectors from outside of stage

POWER CONNECTOR  
(MOTOR)

FEEDBACK CONNECTOR  
(ENCODER, LS, HALLS)

| POWER CONNECTOR |             |
|-----------------|-------------|
| PIN             | NAME        |
| A               | PHASE A (U) |
| B               | PHASE B (V) |
| C               | PHASE C (W) |
| D               | GROUND      |
| E               | *           |
| F               | *           |
| G               | *           |
| H               | *           |
| L               | *           |
| *               | Reserved    |

| FEEDBACK CONNECTOR |          |
|--------------------|----------|
| PIN                | NAME     |
| 1                  | A +      |
| 2                  | A -      |
| 3                  | B +      |
| 4                  | B -      |
| 5                  | Z +      |
| 6                  | Z -      |
| 7                  | LIM +    |
| 8                  | LIM -    |
| 9                  | +5VDC    |
| 10                 | GND      |
| 11                 | HOME     |
| 12                 | *        |
| 13                 | *        |
| 14                 | *        |
| 15                 | HALL A   |
| 16                 | HALL B   |
| 17                 | HALL C   |
| *                  | Reserved |

| Connectors on Stage |            |                          |
|---------------------|------------|--------------------------|
| Manufacturer        | Part No.   | Description              |
| Amphenol            | MA1LAE1700 | Connector, REC, 17POS    |
| Amphenol            | MB1LLN0900 | Connector, REC, 9POS     |
| Amphenol            | SC000035   | Connector Pin, Male, 1mm |
| Amphenol            | SC000036   | Connector Pin, Male, 2mm |



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Electrical Specifications

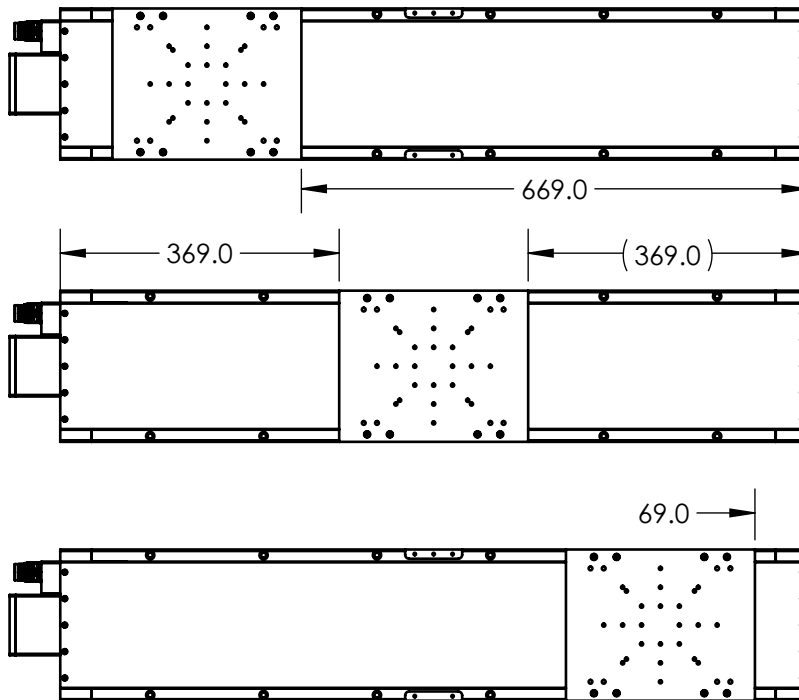
| Motor Specifications          |                       |
|-------------------------------|-----------------------|
| Motor Type                    | 3 $\Phi$ Brushless DC |
| BEMF Constant (V/KRPM)        | 5.0                   |
| Electrical Time Constant (ms) | 0.94                  |
| Max Bus Voltage (VDC)         | 120                   |
| Max Continuous Current (A)    | 7.5                   |
| Motor Torque Constant (Nm/A)  | 0.048                 |
| Peak Current (A)              | 15.0                  |
| Pin to Pin Inductance (mH)    | 0.38                  |
| Pin to Pin Resistance (ohm)   | 0.40                  |
| Poles per Revolution          | 6                     |

| Feedback Specifications          |                                                                      |
|----------------------------------|----------------------------------------------------------------------|
| Supply Voltage (V)               | 5.0 $\pm$ 10%                                                        |
| Supply Current (mA)              | 250                                                                  |
| Encoder Feedback                 | Yes                                                                  |
| Encoder Type                     | Incremental                                                          |
| Encoder Output                   | Square Wave Quadrature, RS-422 compatible, A,B,Z, Differential Pairs |
| Encoder Resolution               | 3200 cts/mm                                                          |
| Hall Switch Output               | CMOS                                                                 |
| Hall Switch max current (mA)     | $\pm$ 20.0                                                           |
| Limit Switches                   | Yes                                                                  |
| Limit Switch Output Type         | CMOS                                                                 |
| Limit Switch Output current (mA) | $\pm$ 20.0                                                           |
| Home Switch                      | Yes                                                                  |
| Home Switch Output Type          | CMOS                                                                 |
| Home Switch Output current (mA)  | $\pm$ 20.0                                                           |

**LM7-600-BF-D-W-S-F-00**

**End of Travel Locations**

Positive Motion →



Negative Limit Switch

Home Position

Positive Limit Switch

