

Servo JOGBOX

HARDWARE AND USER GUIDE

3600-4215



Original Instructions - English

Translations will be supplied in other community languages as required by customers

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2 HEALTH AND SAFETY REGULATIONS

Read through the applicable sections of the manual before the equipment is unpacked, installed or operated. Pay attention to all of the dangers, warnings, cautions and notes stated in the manual.

Serious injury to persons or damage to the equipment may result if the information in the manual is not followed.

2.1 SAFETY SYMBOLS

Items that are specifically marked DANGER!, WARNING!, CAUTION! or NOTE! are arranged in a hierarchical system and have the following meaning:



DANGER!

Indicates a very hazardous situation which, if not avoided, could result in death or serious injury. This signal word is limited to the most extreme situations.



WARNING!

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION!

Indicates a potentially hazardous situation which, if not avoided, may result in property damage, minor or moderate injury.



CAUTION!

Indicates hot surfaces. Avoid contact.

NOTE!

Information that requires special attention is stated here.



WARNING!

The manufacturer takes no responsibility whatsoever if the equipment is modified or if the equipment is used in any way beyond performance specifications. Unauthorized modifications or changes to the equipment are strictly forbidden and void all warranties.

2.2 EMC WIRING GUIDELINES

When plugging in the device, verify that the electrical outlet that the power adapter is plugged in to is earth grounded. Also verify that the servo motor being controlled is also tied to the same common earth ground as the electrical outlet. The shield on the motor cable will connect earth ground from the electrical outlet to the motor via the cable shield.

2.3 HANDLING AND UNPACKING

When unpacking and handling, care should be taken not to drop the device with the lid of the enclosure open. This can damage the controls and connectors on the unit. Also secure the device when cables are connected. Unsecured cables can pose tripping hazards.

2.4 PRODUCT WARNINGS

The following precautions should be observed to prevent erratic behavior or damage:

- Do not reverse bias the 24V DC Input
- Do not apply voltages above the maximum rated voltage
- Do not expose device to moisture or excessive temperature
- Do not disassemble or modify the device
- Do not plug and/or unplug cables when the device is powered
- Do not apply 90 volts to a 24 volt brake
- Do not operate Servo JogBox while robot cell is occupied by personnel
- Keep hands away from moving actuator.

3 PRODUCT OVERVIEW

3.1 THE SERVO JOGBOX

The Servo JogBox is an electrical manual override service tool that allows simple motion in two directions of a servo motor without the need for feedback. The tool continuously modifies the electrical angles of three phase UVW to slowly spin a motor in a given direction. This tool allows for simple setup and installation of an axis without the need to power on a high voltage controller. Instead, this device operates using power directly from a standard outlet to power a low voltage internal drive.



3.2 MODES OF OPERATION

- AC Power: The device can be powered using standard outlet power (120 60Hz/230 50Hz)
- 24V DC Power: The device can be powered using 24V DC input power
- Brake Output: The device can disable 24VDC and 90VDC integrated brakes
- Jogging: The device can jog in the forward and reverse directions, each with two speeds
- Low/High Force: The device can be run at a limited higher force mode if the user needs to be able to move tooling or unjam the actuator

3.3 HOW TO USE

- Ensure:
 - Emergency stop is engaged (fully depressed)

- Input power toggle to the right of the Emergency stop is set to 'OFF'
- Motor power cable is securely connected to the actuator and Servo JogBox prior to installing the Servo JogBox input power cable.
- Drive switch above green motion buttons is set to 'Disable'
- 'Low Force' is selected for initial setup. If higher force is later required depending upon setup, the drive may be switched to 'High Force' mode.
- Select appropriate brake voltage corresponding to the brake type in the actuator (24 or 90VDC). Contact Tolomatic if you need help identifying.
- Once all auxiliary cables are connected, connect either the 24VDC or AC input power cable of the JogBox to an appropriate power supply.
 - Once power has been connected, select corresponding input power on the Servo JogBox.
- To make motion:
 - Reset the Emergency Stop switch by twisting the large red button clockwise.
 - Select 'Enable' on the Servo JogBox.
 - Press '>' button for forward motion and '>>' for faster forward motion
 - Press '<' button for reverse motion and '<<' for faster reverse motion

3.4 OPTIONAL ACCESSORIES

Part Number	Description
Motor Cable*	CABLE,MTR/BRK,5M
36041666	AC Input Power Cable, 3 Prong, US with 5-15P and C13 connectors UL and RoHS approved
36042271	AC Input Power Cable, European 3 pin with CE 7/7 and C13 connectors UL and RoHS approved
36042295	CABLE ASSY, 5P, 24VDC PUSH-PULL (24VDC Input Power Cable)
27331468	Electric Manual Override JogBox
27331458	Electric Manual Override JogBox w/E1 Cam Lock
-	0.25 amp fuse for 90 volt break (Littlefuse Inc. # 0216.250MXP)

*Contact Tolomatic for help identifying which cable to order for your device(s)

4 ENVIRONMENT, DIMENSIONS, AND MOUNTING

4.1 OPERATING ENVIRONMENT



WARNING!

Do not expose the enclosure to pressurized wash-downs or exceed temperature ratings.

The Servo JogBox is designed to be operated in ambient conditions from 0° - 40°C (32° - 104°F), and humidity from 0-90% non-condensing.

Operating Conditions	
Ambient Temperature	77°F, 25°C Nominal
Operating Temperature	32° to 104°F, 0° to 40°C
Storage Temperature	-4° to 140°F, -20° to 60° C
Humidity	0 to 90% Non-Condensing
Voltage (AC)	90~264 VAC 50/60 Hz 1.0A
Voltage (DC)	24VDC 3.5A

4.2 ENCLOSURE SPECIFICATIONS AND DIMENSIONS

The Servo JogBox utilizes a rugged enclosure to house the electronics necessary for operation.

Enclosure Specifications	
Material	HPX High Performance Resin
Weight	27 lbs., 12.2 Kg
Exterior Dimensions	22" x 17" x 12" (L x W x H)
Baggage Allowance	Check only

4.3 PHYSICAL SETUP

The tool should be set up on a flat surface. The cables should be run in such a way as to mitigate any trip hazards that they could introduce to the working environment.

5 SERVO JOGBOX BASIC SETUP



Please contact Tolomatic for cable part numbers specific to your actuator. Connector part numbers and wiring diagrams can be found in Section 6 if a custom cable is required.

The Servo JogBox is a portable tool that allows for low voltage, feedback-less control of high voltage servo motors for setup and initial positioning. Because the tool does not have position feedback, it is possible to run the tooling into hard stops. Care should be taken when setting up and running the motors using this tool.

During operation, the users should always have one hand on the Estop button. Pressing down on the Estop will kill power to the servo motor, immediately stopping the motion.



CAUTION!

Because the tool does not have position feedback, it is possible to run the tooling into hard stops. Care should be taken when setting up and running the motors using this tool.

6 CONNECTIONS AND CABLES

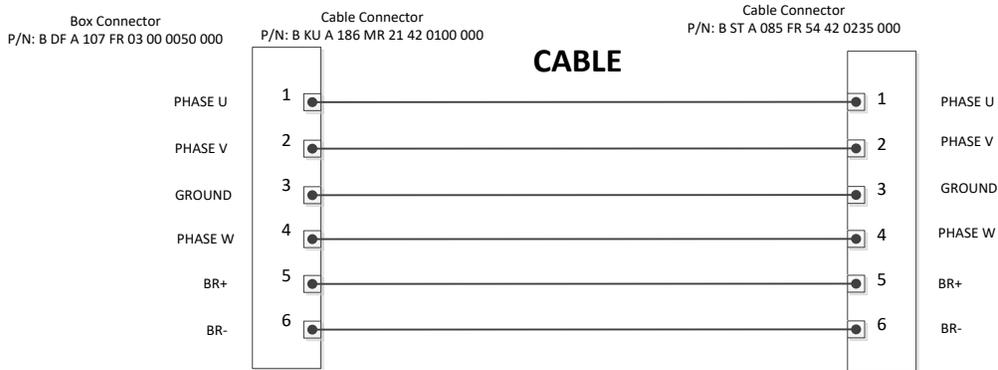
6.1 MOTOR POWER CONNECTOR

The motor power cables utilize Intercontec 923 Power connectors. The bulkhead connector on the tool is P/N BDFA107FR03000050000.

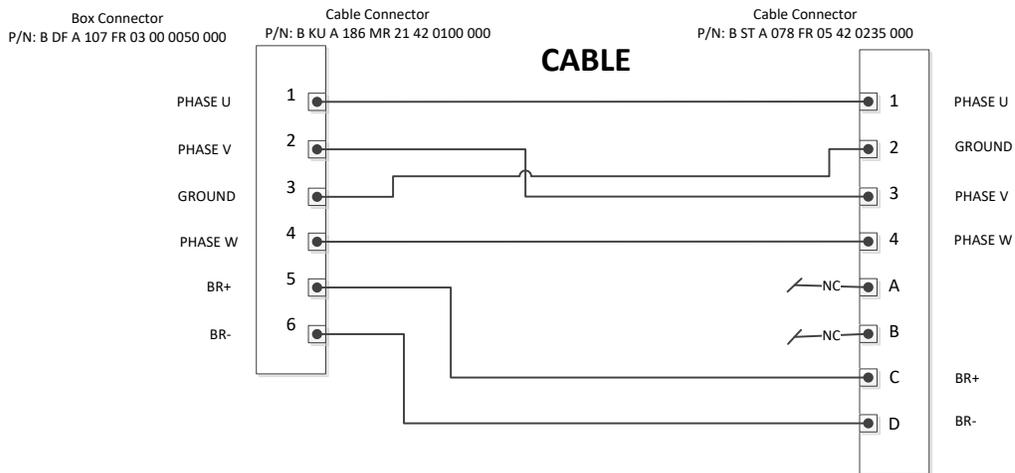
POWER CONNECTOR PINOUT	
PIN	DESCRIPTION
1	PHASE U
2	PHASE V
3	GROUND
4	PHASE W
5	BRAKE +
6	BRAKE -



6.2 CABLE, MOTOR/BRAKE, F3K3 WIRING 36042286



6.3 CABLE, MOTOR/BRAKE, A3 WIRING 36042285



6.4 24VDC INPUT WIRING

The tool is designed to be run off of AC line power (90-264 VAC) or from a 24VDC source. Tolomatic part number for the 24VDC cable is 36042295.

The tool supports a 24VDC input for portable operation. The tool uses a MSTB panel mounting frame, Phoenix Contact PN: VS-PPC-F2-MSTB-MNNA-1C-SPSA5.

The mating power connector is Phoenix Contact PN: 1421785 CUC-PPC-C2ZNI-SS/24FKP5.

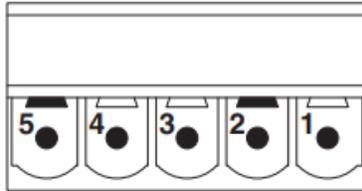


Figure 1 24VDC Connector Schematic Diagram

24VDC Input Wiring	
Pin No.	Assignment
1	+V (Brown)
2	-V (Black)
3	N/C
4	N/C
5	Earth ground (Blue)

7 PRODUCT WARRANTY

Tolomatic, Inc. warrants all products manufactured by Tolomatic to be free from defects in material and workmanship for a period of one year from date of shipment by Tolomatic. If, within this period, any product is proven to be defective by Tolomatic, the product will either be repaired or replaced at Tolomatic's discretion.

This warranty shall not apply to:

1. Products not manufactured by Tolomatic. Warranty of these products will conform and be limited to the warranty actually extended to Tolomatic by its supplier.
2. Damage to the product caused by circumstances beyond the control of Tolomatic, such as negligence, improper maintenance, or storage.
3. This warranty shall be void in the case of: any repairs or alterations made to the product by parties other than Tolomatic.

The foregoing warranties are exclusive and in lieu of all other express and implied warranties. Tolomatic is not subject to any other obligations or liabilities for consequential damages.

7.1 CE COMPLIANCE CERTIFICATE

		
<h3>EU Declaration of Conformity</h3> <p>No: 36004701_02</p>		
<p>We the manufacturer,</p> <p>Tolomatic 3800 County Road 116 Hamel, MN 55340 USA</p>		
<p>declare under our sole responsibility that the product(s),</p> <p><i>Electric Manual Override JogBox</i></p> <p><i>All Models</i></p>		
<p>Fulfills the essential requirements of the following directives:</p> <p>LVD Directive (2014/35/EU) EN 61010-1 Safety requirements for electrical equipment</p> <p>RoHS Directive (2011/65/EU, as amended by (EU) 2015/863)</p> <p>REACH (Regulation (EC) No 1907/2006)</p>		
<p>Assumption of conformity is based on the application of the harmonized or applicable technical standards and, when applicable or required, a European community notified body certification.</p>		
 _____ Gary Rosengren Director of Engineering	<p>13.05.2021</p> _____ Date (dd.mm.yyyy)	

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