

215 US Rte 42 NE
London, OH 43140
614-921-8866 (Phone)
614-921-8877 (Fax)
866-532-3534 (Toll Free)

FLEX-MATE K500 SERVICE MANUAL WARRANTY

SERVICEABILITY LIMITATIONS

Field service limited to the following areas only:

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06500 Flexmate K500 (domestic)

Primary (input): 120VAC 60Hz 25W

The FLEXMATE K500 is a CLASS 1 device based on its type of protection against electric shock. It is a TYPE B APPLIED PART device based on the degree of protection against electric shock. The degree of protection against ingress of water is ordinary. Its primary mode of use is continuous.

FLEXMATE K500 can be transported and stored in an environment of – 40°F to 158°F (–40°C to 70°C), with a relative humidity between 10% and 100% non-condensing. The FLEXMATE K500 can operate between 50°F to 95°F (10°C to 35°C) under the same humidity levels, and 700 hPa to 1060 hPa atmospheric pressure.

Any service requirements beyond the scope of this service manual must be performed by the factory or an authorized service representative.

FLEX-MATE K500 WARRANTY

KLC Services, Inc. warrants the Flex-Mate K500 to be free from defects in materials and workmanship under normal and proper use under the direct supervision of a licensed health care practitioner during the warranty period of two years, commencing from the date of purchase. Date of Purchase will be the date your payment is processed by our Bank and funds are received by KLC Services, Inc. This warranty extends only to the original purchaser and is not transferable to anyone who subsequently purchases, leases or otherwise obtains the K500 from the original purchaser. This Warranty is void if within the warranty period, the K500 has been serviced, parts removed, tampered with or replaced or any other actions taken beyond the scope of Routine Maintenance and Basic Troubleshooting as specified in the service manual by any party other than KLC. In the event the K500 exhibits a defect in material or workmanship during the warranty period, KLC will at no additional charge repair or replace defective parts or the entire unit at KLC's option.

Except for the warranties and conditions set forth herein, KLC disclaims all other warranties, express or implied, or statutory, including but not limited to the implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by applicable law are limited to the terms of this limited warranty. No other warranties, express or implied, are given and no affirmation of or by KLC by words or action, will constitute a warranty. In no event shall KLC be liable for any incidental, special or consequential damages, including but not limited to loss of business, revenue, profits, data or use, whether in an action in contract or tort or based on a warranty arising out of or in connection with the use or performance of the K500 or any software supplied by KLC that accompanies the K500, even if KLC has been advised of the possibility of such damages. Purchaser understands, acknowledges and agrees that repair or replacement, as applicable; under the warranty services described herein are your sole and exclusive remedies with respect to any breach of the warranty set forth herein.

ROUTINE MAINTENANCE SCHEDULE

	Every Month – <i>To be performed by user or service personnel</i>	Every 3 Months – <i>To be performed by authorized service personnel</i>
Inspections	General condition	Frayed power cord Housing integrity Check belt wear
Grease Lubrication		Grease ¹ the outside edges of Thrust Bearing at lower end of Drive Screw. Use a white lithium based grease
Oil Lubrication NOTE: Never lubricate any belts or pulleys with oil.		Using oil ² provided add three drops to hole on top of Nut Housing and a drop to the Knee Joints, Rod Ends, 'S' Brackets and Clevis connections. The

		bearings are sealed and do not require oiling
Cleaning	Clean housing & leg carriage with a mild soap solution and dry thoroughly	Wipe the belt(s) & both pulleys with clean damp cloth

1. Christo-Lube grease from Lubrication Technology, Inc., 310 Morton Street, Jackson, Ohio 45640, (740) 286-2644.
2. 3-in-1 Oil or equivalent sewing machine oil.

BASIC TROUBLESHOOTING DURING WARRANTY PERIOD

No pendant display.	Check that the wall outlet has power. Check power switch-on.
Pendant displays "Err".	Turn power off, wait 5 seconds, and turn power back on.
Pendant adjustments inoperative, but display is on.	Check all connections at the P.C. Board.
Unit will not start, or it starts then stops.	Check pendant settings. Check belts.
Cannot change pendant settings.	Refer to User's Manual regarding locking feature.
If the above solutions do not work or for other problems not listed, call KLC service. Any actions taken other than those listed above will void the Warranty.	

TROUBLESHOOTING OUT OF WARRANTY PERIOD

No pendant display.	Check that the wall outlet has power. Check power switch-on. Use a multi-meter to check voltage before and after
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	<p>switch: If no voltage before switch, replace transformer. If voltage before but not after switch, replace switch. If voltage after switch, check all P.C. Board and pendant connections. If still no display, replace pendant. If still no display, replace P.C. Board. (Note: If this solves the problem, test the original pendant; it may be okay.)</p>
Pendant adjustments inoperative, but display is on.	<p>Check all connections at the P.C. Board. Replace pendant. If still no display, replace P.C. Board. (Note: If this solves the problem, test the original pendant; it may be okay.)</p>
Unit will not start, or it starts then stops.	<p>Check pendant settings. Check belts. Rotate pulleys by hand with power off and verify motor moves. Remove the Motor Connector from J3 on the Motor PCB. Using a knife blade carefully push the red and black wires deeper into the connector. Reattach connector and turn on power. Use a multi-meter to test voltage at motor after pressing the Start/Stop button. If there is voltage to the motor, but the motor is not running, replace motor. If there is no voltage to the motor, replace P.C. Board. If still no voltage to the motor, replace the pendant. (Note: If this solves the problem, test the original P.C. Board, it may be okay.)</p>
Cannot change pendant settings.	<p>Refer to Operating Instructions regarding locking feature. If unlocking does not work, replace pendant. If this still does not work, replace the P.C. Board (Note: If this solves the problem, test the original pendant; it may be okay.)</p>
Angle does not appear to read correctly on pendant.	<p>Start unit. Set extension limit to 0°. Stop unit when 0° is displayed on the pendant. Visually check to see that the Leg Carriage is perfectly straight. If not, calibrate the range of motion.</p>
All other problems.	<p>Call KLC service.</p>

REMOVAL OF DRIVE HOUSING:

Follow the instructions provided with the Housing. See HOUSING REPLACEMENT INSTRUCTIONS FOR THE FLEXMATE K500. Instruction sheet P/N 1.09420.

BELT REPLACEMENT:

Remove Drive Housing. Remove the three round belts first. Then remove the motor belt(s), clean the pulleys with a damp cloth and replace the old belt(s). Check the round belts for wear and replace if necessary.

MOTOR REPLACEMENT:

Follow the instructions provided with the motor. See MOTOR REPLACEMENT INSTRUCTIONS FOR THE FLEXMATE K500. Instruction sheet P/N 1.14930.

CONTROL PENDANT REPLACEMENT:

Follow the instructions provided with the Controller. See CONTROLLER REPLACEMENT INSTRUCTIONS FOR THE FLEXMATE K500. Instruction sheet P/N 1.14950.

P.C. BOARD REPLACEMENT:

Follow the instructions provided with the PC Board. See PC BOARD DRIVE REPLACEMENT INSTRUCTIONS FOR THE FLEXMATE K500. Instruction sheet P/N 1.14970.

POWER SWITCH REPLACEMENT:

Follow the instructions provided with the Power Switch. See POWER SWITCH REPLACEMENT INSTRUCTIONS FOR THE FLEXMATE K500. Instruction sheet P/N 1.14960.

TRANSFORMER REPLACEMENT:

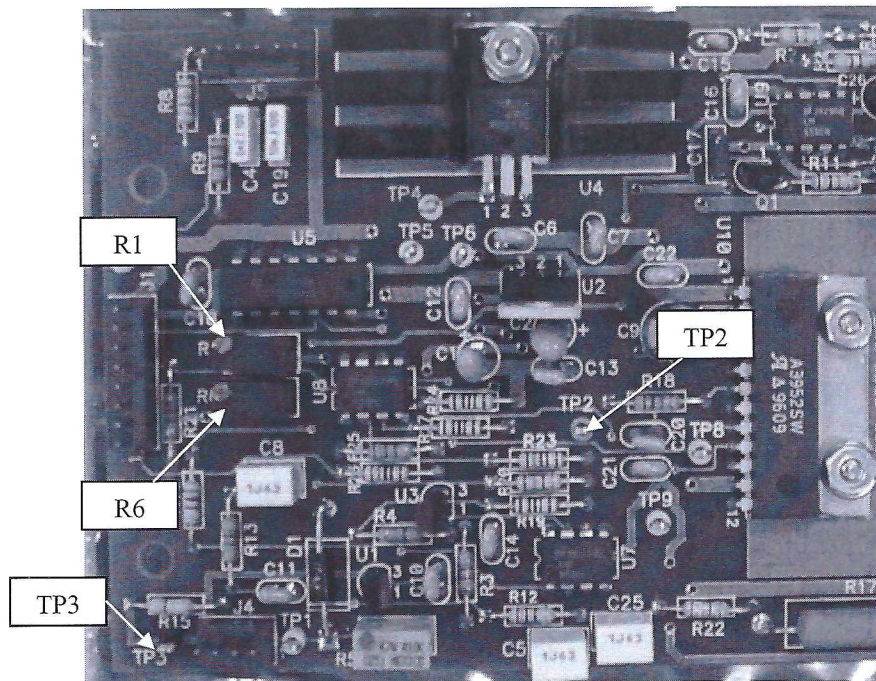
Follow the instructions provided with the Transformer. See TRANSFORMER REPLACEMENT INSTRUCTIONS FOR THE FLEXMATE K500. Instruction sheet P/N 1.14940.

REVERSING LOAD/RANGE OF MOTION CALIBRATION:

The power must be turned on to perform these calibrations.

1) LIMITS OF REVERSING LOAD

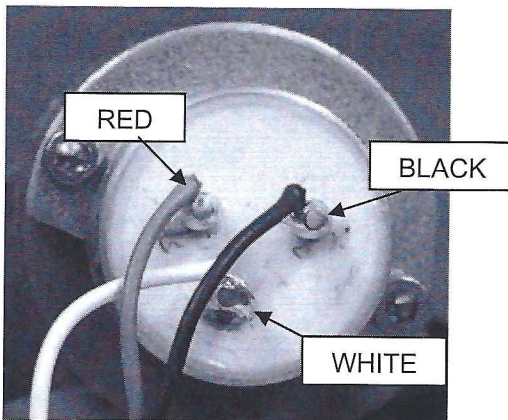
- A) Set the Extension Limit at -10° position and Flexion Limit at 120° position.
- B) Find TP2, TP3, R1, and R6 on the Motor PCB.



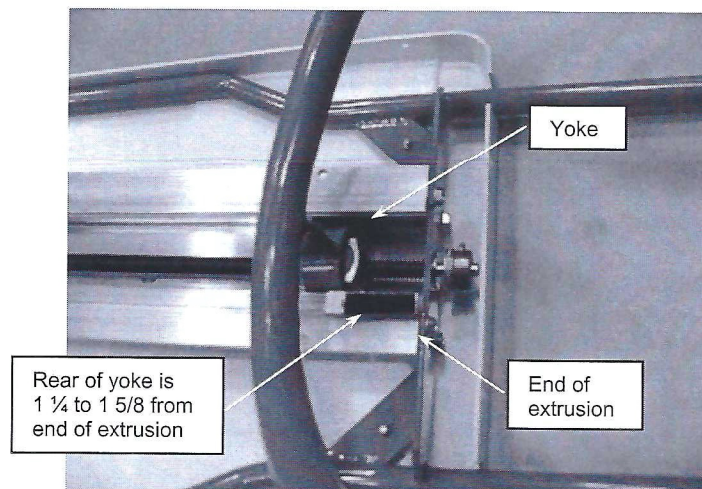
- C) Attach the positive lead of a Voltmeter to TP2 and the negative lead to TP3.
- D) Press the Start/Stop key on the keypad to start the motor.
- E) Stop the unit by pressing the Start/Stop key when the unit is extending and -8° has been reached. Adjust R6 so that the voltage on the Voltmeter reads 0.125 ± 0.002 Volt.
- F) Press Start/Stop button again to turn on the motor. The unit will start flexing. Stop the motor and start again. The unit will start extending and when it reaches -10° it will reverse and begin flexing. When the unit is flexing and -8° appears on the keypad, stop the motor. Adjust R1 so that the Voltmeter shows a reading of 0.425 ± 0.002 Volt.
- G) With these adjustments, CPM must cycle without reversal when loaded with a 40 pound weight.
- H) Do not re-adjust these limits if reversal occurs. Be sure the unit is properly aligned since misalignment would cause excessive surge currents during start-ups and result in motor reversal. Also, make sure the track is properly oiled. Excessive friction may also cause motor reversal.

2) RANGE OF MOTION (CONTROLLER DISPLAY READS LESS THAN -10°)

- A) Remove the 3 Goniometer cover screws and cover.
- B) Check the rear of the Goniometer for any broken wires.



- C) On the joint coupling, remove the first setscrew and tighten the second one, then replace the first setscrew. This will insure the coupling is tight to the shaft.
- D) Using the control pendant, move the leg carriage until the thigh and calf support bars on either side of the hinges align in a straight line. This can be checked visually or with a straight edge.
- E) Loosen the 2 screws, using a 3/32" Allen wrench that hold the Goniometer in position. Rotate the Goniometer until the control pendant displays reads 0°. Tighten the 2 screws.
- F) Start the CPM in flexion and stop it when the rear of the calf support nut yoke is between 1 1/4" and 1 5/8" from the rear end of the extrusion.



- G) Check the control pendant display, if it does not read 120° then adjust R5 on the Motor PCB with a small screwdriver until it does.
- H) Make sure all screws and set screws are tight and replace the Goniometer cover.
- I) Check -10° again, if it does not read -10° change the Motor PCB.

SPARE PARTS LIST:

03555	HOSPITAL BED CLAMP
06490	SOFT GOODS, PAD SET
70004	FOOT PLATE HARDWARE KIT
70005	MALE KNOB REPLACEMENT KIT
70006	BELT REPLACEMENT KIT
70007	OLD BELT REPLACEMENT KIT
70016	LARGE PULLEY ASSY
70034	HOSPITAL BED STRAP
70039	CPM OILER LUBRICANT
70077	CABLE, CONTROLLER, K500 UL (Molded)
70078	CABLE, CONTROLLER, K500 NON UL (Heyco)
71160	TIMING PULLEY / BELT ASSY KIT
71170	BEARING ASSY REPLACEMENT KIT
71180	PUSH RIVET KIT (24 QTY)
71190	POTENTIOMETER ASSY KIT (NON UL) (Heyco)
71200	LEAD SCREW W/NUT ASSY KIT
71205	NUT HOUSING ASSY
71206	LEAD SCREW NUT ONLY
71210	BOX W/CUSTOM PACKING FOAM
71220	MEMBRANE SWITCH KIT
71230	ROD END BALL JOINT KIT
71240	BRUSH / ROD ASSY KIT
71250	FLEXMATE HANDLE ASSY KIT
71270	OPTICAL SENSOR ASSY KIT
71280	MOTOR ASSY KIT
71290	TRANSFORMER REPLACEMENT KIT (Heyco)
71300	CONTROLLER ASSY REPL KIT (Heyco)
71310	POWER SWITCH REPLACEMENT KIT
71330	FOOT PLATE ASSY REPLACEMENT KIT
71480	CPM HOUSING REPLACEMENT KIT (Heyco)

71485	HOUSING REPLACEMENT KIT (TOP COVER ONLY) - Heyco
71490	HOUSING REPLACEMENT KIT (TOP COVER ONLY) - Molded
73616	ELECTRONICS UPGRADE KIT
76520	TRANSFORMER REPL KIT K500 (Molded)
76521	HOUSING REPL KIT K500 (Molded)
76522	CONTROLLER ASSY REPL KIT K500 (Molded)
76523	MOTOR PCB REPL KIT K500
76524	POTENTIOMETER REPL KIT K500 (Molded)
76525	NON SKID PAD KIT (10 ea.)
76526	MAIN PCB REPLACEMENT KIT
78463	POTENTIOMETER CAP (QTY. 6/ea.)