INSTRUCTION MANUAL

XMP-300

MANUAL PICK AND PLACE SYSTEM

FOR ASSEMBLY OF

SURFACE MOUNT TECHNOLOGY BOARDS

P/N X-DOC126
11-27-01
Rev. A

650 Scranton Pocono Hwy
Covington Twp., Pa 18444, USA
Tel: (570) 842-2812 Fax: (570) 842-4290
E-Mail: bokar@bomir.com
www.bokar.com, www.SMT-tool.com,
www.ESDmeters.com, www.SMTreballing.net
www.Assembly-SMT.com, www.No-Stat.com

XMP-300 MANUAL PICK AND PLACE SYSTEM

TABLE OF CONTENTS

I. INTRODUCTION

The Pick and Place Machines offer the user best price/performance ratio and manual placement process improvement. Also unlike other manufacturers' models all subsystems were designed for ESD Safety and are connected in the machines to a common ESD ground.

Typical applications of manual pick and place systems are Low Volume Assembly, Prototyping, Pre-production runs, Repair and Rework. X-KAR XMP-300 Series models have common identical base and arm movement mechanism.

Model XMP-300 is a common base with a board holder, armrest, loose component tray XL-11, pick and place arm and a control console. The console contains a low noise vacuum source and a control circuitry allowing picking-up and releasing the component upon slight movement downward of a control knob.

II. PACKAGING

The XMP-300 have been designed with a detachable base which allows the system to be more manageable for packaging and shipping. Your system should include two boxes: one box containing the base and the second box containing the separate subsystems to be assembled during installation. Each box contains protective packaging materials to ensure the safe arrival of your new Pick and Place/Dispenser System.

The contents of the rectangular box are as follows:

1. XMP-CC1 Control Console Assembly
2. XZ-A301 Pick and Place Arm Assembly
3. Arm Rest Assembly
4. XNS-1 Needle/Cup Set
5. Power Cord
6. User Manual
7. Warranty card

The content of the square flat box is as follows:

1. Base Assembly with Board Holder
2. XL-11 Loose Component Tray Assembly
3. AS3-B ESD grounding wire
4. AML-301A Wireless “+” Wrist strap with coiled cord
5. Assembly/Installation Instruction Sheet
6. Metric Tool Kit

III. UNPACKING AND SYSTEM ASSEMBLY

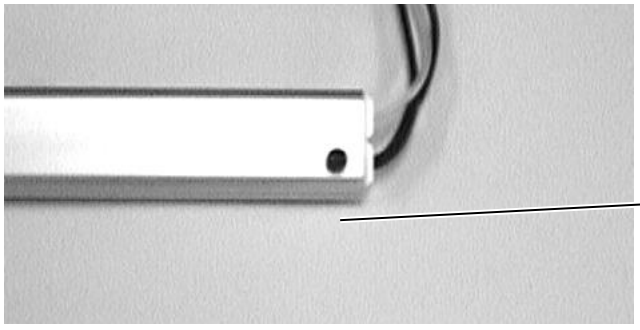
Prior to use of the system, please check if the system is complete. Should you notice that any items are missing, please notify us, giving the details of model number, voltage, date of purchase, where purchased and what is missing.

Attention: When unpacking, please be careful and read the manual prior to turning the system “ON”. Please check that the voltage of the System corresponds with the voltage of your available supply. Connection to incorrect voltage supply may cause damage to the System!

1. The system base should be unpacked first and set-up on the table with the board holder facing the system base.

2. Next, opening the rectangular box and please remove all the small boxes and system components. The largest box inside contains the control console assembly. The control console assembly should be removed carefully. Each side plate of the control console assembly has on the bottom 2 mounting holes. The control console assembly has to be placed carefully (control console assembly facing the assembler) on the 4 corresponding pins protruding upwards on the rear top of the system base. Once the control console assembly is set properly, please secure it in place by tightening the 2 set screws (One on each side of the front panels). The appropriate hex key can be found in the tool kit supplied with the system. Connect banana plug of the arm assembly grounding wire (located at the back of the control console assembly) in the corresponding socket in the system base.

3. Carefully remove the arm assembly from its individual box. Temporarily remove the stop screw at the end of the arm assembly to allow for installation.



Feed the connectors and vacuum and dispenser hose assembly of the arm assembly under the front panel, so that the vacuum line, dispenser hose and aluminum extrusion of the arm assembly pass between the rollers of the carriage. Remount the stop screw at the end of the arm assembly. This will prevent the arm assembly from falling out during full movement forward toward the X-axis. Connect the black conductive tubing from the arm assembly over the fitting marked ”VACUUM PUMP” on the back panel of the control console assembly. Also connect the electrical connector to the appropriate socket next to the vacuum fitting. Connect the connector with the clear tubing of the dispensing line to the fitting marked ”ARM PRESSURE” on the back panel of the control console assembly. Loosen the carriage fixing screw located under the carriage on the right hand side so that the arm assembly carriage is free to move. The arm assembly should move freely across the width of the machine with a minimal effort. Check to see that the movement in both X and Y-axes is smooth and friction fee. If the X and Y movement is either hard or has excessive play, the carriage may need adjustment.

4. Attach the feeder base to the system base.

5. Connect the foot switch plug in the socket marked ”FOOT SWITCH” on the back panel of the control console assembly.

6. Attach syringe-mounting bracket to the head of the arm assembly. Place the syringe in the syringe-mounting bracket and secure it gently. Connect the small piece of dispenser tubing with the dispensing head assembly to the fitting on the side of the arm assembly. The dispensing head assembly will twist lock on the top of any standard 10cc syringe. Attach the dispensing head assembly on the syringe.

7. Install the loose component tray assembly on the supports behind the board holder. Connect the loose component tray assembly grounding cord to the 10mm stud on the system base. Prior to installing the loose component tray assembly, the conductive trays must be checked for proper assembly into the aluminum base. Each conductive tray has two positioning pins; these must be set firmly into the aluminum base. Note that the surface of the loose component tray assembly is flat so that adhesive marking labels can be affixed to the trays as an assembly aid. Further, this surface can be used to set down parts already picked, should they require any subsequent centering. The complete loose component tray assembly can be installed at the back of the system or on the left side of the system (In place of the feeders).

8. Install the feeders onto the feeder base. The front of the feeder fits into the slot in the feeder base right bracket. It needs to be pushed forward gently, placed into the slot in the left bracket of the feeder base and released. The spring-loaded mechanism will hold the feeder in place.

9. Place the armrest assembly on the system base on the right hand side of the system (The arm rest assembly should fit over the board holder and move freely on the rollers from the left to the right side of the board holder). Connect banana plug of the armrest assembly grounding wire to the corresponding banana socket in the board holder right bracket.

Now the XMP-300 Series system is assembled and ready for final set-up and installation.

IV. SET-UP AND INSTALLATION

Important

Please check that the voltage of the system matches the voltage of the power source. Voltage is listed next to the power inlet located on the right hand side of the back panel of the system. The system requires an AC line rated at 0.5Amp(220/240V) or 1.0Amp (110/115V). The system has its own fuse.

Connection to an incorrect power source may cause damage to the system.

1. The system should be located on a solid and stable work surface. Please note that the back of the arm assembly protrudes beyond the back of the system base and requires additional space.

2. Connect ESD grounding wire to the grounding stud on the system base. You can choose the stud located on the left side of the system base (for the operators who wear the wrist strap on the left wrist) or the stud located next to loose component tray grounding point (for the operators who wear the wrist strap on the right wrist). Connect the other grounding stud to the ESD ground (Standard electrical ground is often used as ESD ground).

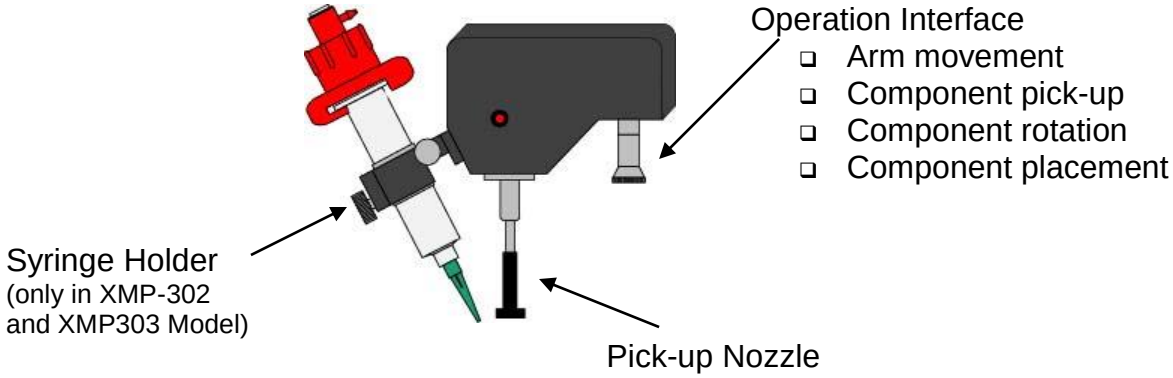
3. The Nozzle Kit XNS-1, provided with the System includes three different nozzles for a variety of applications. The nozzle dimensions are gauge 20, 18 and 14 and ½" each. Also included are 4 suction cups of different diameters to be fitted to the two larger diameter nozzles for heavier components. The smallest nozzle is for use with discrete components, which are small in size. Chose the appropriate for your application nozzle and install it. The nozzles are a friction fit onto the vacuum pipette of the Placement Arm Assembly.

4. The System can now be connected to the AC supply and to an air supply providing at least 70 psi and 1.0 SCFM. Use the enclosed connecting hose to attach to the filter of compressed air source. Connect the power cable to the socket located on the back of the Control Console and plug it into the AC supply. Load the parts into the trays, install rolls of parts on the feeders, place the PCB in the holder, set the Controls to desired positions and you are ready to place or dispense.

V. OPERATION

A. Pick and Place Operation (Mounting)

1. Connect the unit to the AC supply. Turn the ON/OFF switch (”POWER SWITCH”), which is located on the front panel, on the right hand side of the Control Console assembly (See Photo 2) ON. The switch will light up. With the appropriate nozzle fitted, place the nozzle above the component to be lifted and lower the spring loaded head assembly of the arm assembly by pulling down gently using the operation knob. In normal operation, set the vacuum control switch to the ARM position and the vacuum pipette will travel upwards within the head assembly and will toggle the switch controlling the valve, which switches ON and OFF the vacuum to the nozzle. Each time the pipette is lowered the vacuum is switched ON and when lowered again OFF. Vacuum indicator LED lamp of the head assembly lights while the vacuum is ON.
2. Components are assembled onto boards and substrates, which have been prepared with, solder paste. Caution should be exercised to avoid solder paste entering the nozzle and reducing the inside diameter or completely blocking the nozzle. If solder paste does enter the nozzle, it should be cleaned out immediately.



VI. MAINTENANCE and ADJUSTMENT

Regular cleaning of the system will ensure optimum system life and trouble-free operation. The arm assembly should be kept clean and free of any solder paste. All anodized aluminum surfaces can be easily cleaned with proper solvent cleaner.

VII. TECHNICAL SPECIFICATIONS

Max. placement area on PCB	330×260 mm
Number of Feeders	Max. 20 of 8mm feeder LXM-PT8
Number of Component Trays	10 trays (included) Max. 20 trays.
Nozzle Set	Standard
Probe and Pad Set	Standard
Wrist Strap	Standard
Feeder	Standard
Tray Holder	Standard
Power Source	100,110,120,220-240VAC(50/60Hz)
Air Pressure	5~6 kg/cm^2
Dimensions	783×600×305 mm
Weight	23 kg

VIII. TROUBLESHOOTING

1. Problem: The arm assembly has excessive play, leaned and/or oval extrusion becomes displaced out of the roller.
   Cause: Eccentric roller wheels have come off.
   Solution: Reset the roller wheels.
2. Problem: The nozzle is not picking up the components.
   Cause:
   1. No vacuum in the nozzle.
   2. Vacuum pump valve does not turn ON.
   3. Nozzle pump is blocked with solder paste or the tubing is kinked.

   Solution:
   1. Check that all tubes are connected. Also be sure that vacuum path is clear from vacuum pipette to the vacuum tube.
   2. Contact your dealer.
   3. Find the point of blockage. Replace nozzle, pipette or tubing as necessary.

3. Problem: The knob on arm head fails control O rotation.
   Cause: The miniature belt is off.
   Solution: Contact your dealer.

IX. OPTIONS

X-CAR1 Component Carousel

This valuable option is recommended for users who have significant quantities of loose parts. The X-CAR1 is mounted under the Control Console in place of the Loose Component Tray. It has 15 single component trays and 15 bisected trays which gives 45 independent storage compartments for various small parts
For user convenience, X-CAR1 has antistatic, semi-transparent top cover to protect the parts from dust or misplacement during transport. It can be moved one tray at a time or several trays further in both directions.

XL-1 Illumination Subsystem

This one of a kind option has been designed to illuminate the small working area around the pick-up probe. Unlike other types of illumination systems, IL-1 mounts directly on the arm assembly behind the placement head and travels together with the arm to the point of pick-up (trays or feeders) and to the point of placement.
The 2 lamps, which are used to minimize the shadowing, are adjustable in all directions (including z axis). This allows the user to set up the illumination tailored to his individual preference. The set-up of the IL-1 on the arm is easy and takes no longer than 30 sec.

ADDITIONAL FEEDERS

Feeders for taped components on 8,12,16 & 24mm tape are available. These are mounted onto the feeder-mounting bracket supplied with the System and have push-fix mounting.
Feeders for stick-packaged components are also available. All popular sizes can be accommodated. Special sizes not covered.

ADITIONAL TRAY HOLDERS and CONDUCTIVE TRAYS

Tray holders XL-11 to pre-kit the parts are available. They can be stored with prepared for assembly components and quickly exchanged during assembly operation. XT-1/15 (Pack of 15 Conductive Trays) and XT-2/15 (Pack of 15 Conductive Bisected Trays) are also available.

REPLACEMENT ESD VACUUM CUPS

XCS-1 ESD Silicone Vacuum Cup Set (2 pcs of four popular sizes: 3/32”(2,4mm), 1/8”(3,2mm), ¼”(6,4mm) and 3/8”(9,5mm) is always in stock and can be ordered at any time.

X. SPARE PARTS LIST

ITEM NO.	DESCRIPTION	PART NO.
1	**ARMREST**	XZ-AR-1
2	**FEEDER 8 mm**	XPT-8
3	**FEEDER 12 mm**	XPT-12
4	**FEEDER 16 mm**	XPT-16
5	**FEEDER 24 mm**	XPT-24
6	**LOOSE COMPONENT TRAY with 10 trays**	XL-11
7	**PACK OF 15 CONDUCTIVE TRAYS**	XT-1/15
8	**PACK OF 15 CONDUCTIVE BISECTED TRAYS**	XT-1/15
9	**NEEDLE / CUP SET**	XNS-1
10	**ESD SILICONE VACUUM CUP KIT**	XCS-1
11	**DISPENSING NEEDLE TIP KIT**	XNS-2
12	**DISPENSING HEAD**	XDS-1
13	**ARM ASSEMBLY, COMPLETE XMP-300/301**	XZ-A301
14	**ARM ASSEMBLY, COMPLETE XMP-302**	XZ-A302
15	**CARRIAGE ASSEMBLY, COMPLETE**	XZ-CA300
16	**CONTROLLER PCB, XMP-300 SERIES**	XZ-CON300
17	**DISPENSER CONTROLLER, XMP-302D**	XZ-DIS302D
18	**REPLACEMENT SWITCH, ON/OFF**	XZ-S1
19	**CONTROL CONSOLE TOP COVER**	XZ-COV300
20	**MICROSWITCH**	XZ-MS1
21	**DISPENSING TAPERED NEEDLE, 14G (25)**	XT-14-25
22	**DISPENSING TAPERED NEEDLE, 14G (100)**	XT-14-100
23	**DISPENSING TAPERED NEEDLE, 16G (25)**	XT-16-25
24	**DISPENSING TAPERED NEEDLE, 16G (100)**	XT-16-100
25	**SYRINGE MOUNTING ADAPTOR**	XZ-SMA1
26	**DISPENSER TIME SET KNOB**	XZ-KN1
27	**AIR GAUGE**	XZ-AG1
28	**AIR REGULATOR**	XZ-AREG1
29	**VACUUM PUMP**	XZ-VP1
30	**PIPETTE WITH SET SCREW**	XZ-PP1
31	**TRANSFORMER 100/115V**	XZ-TR1
32	**TRANSFORMER 230V**	XZ-TR2
33	**ESD GROUNDING WIRE**	AS3-B
34	**WIRELESS WRIST STRAP**	AML-301A

Bokar International would like to thank you for purchasing of our high performance equipment. We are looking forward to further business with you.

If you have any questions regarding our equipment or would like to obtain some advice regarding SMT Technology or Static Protection please do not hesitate to contact us

BOKAR International
650 Scranton Pocono Hwy.,
Covington Twp. PA 18444, USA
Tel: (570) 842-2812 Fax: (570) 842-4290
E-mail: bokar@bomir.com
www.bokar.com US Master Distributor: www.bomir.com