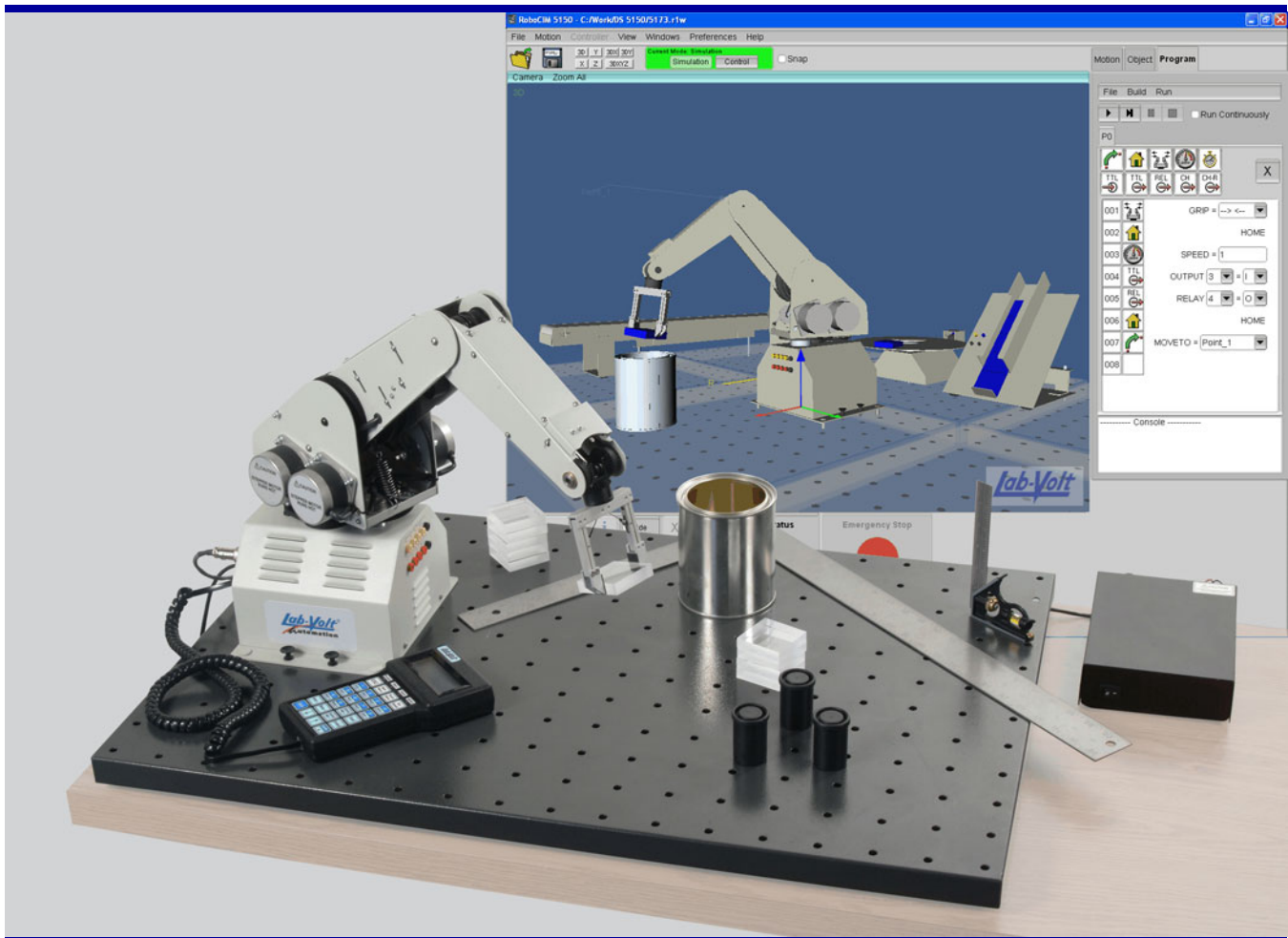




ROBOT SYSTEM SERIES 5150

Automation and Robotics



System shown with optional equipment

GENERAL DESCRIPTION

The Lab-Volt Robot System, Model 5150, provides complete and affordable training in the programming and operation of industrial robots. Through the curriculum and hands-on experience with the Robot System, students learn to create automated work cells.

The precision-built, articulated arm of the Robot represents an important step in automation and handling. A stepper motor, located in the base of the unit, provides horizontal rotation while five additional stepper motors, located in the shoulder, provide precision movements of the articulations and end effector. The Robot has five axes of rotation plus a gripper and is able to use all joints simultaneously to perform a programmed move sequence. Each articulation can be controlled and moved independently. Movements of the joints are accomplished

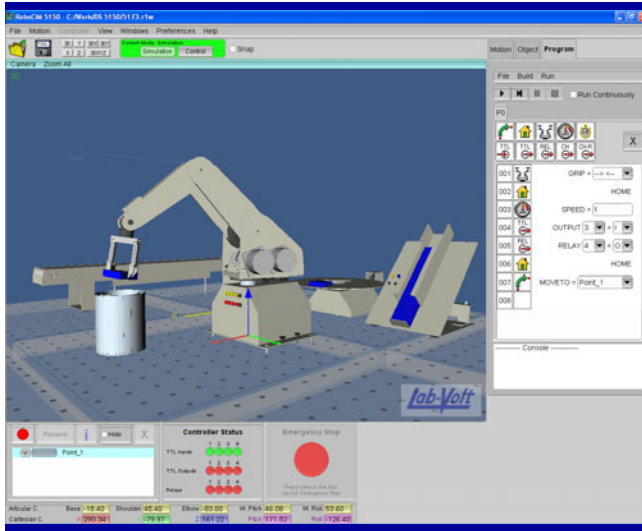
by belts through a series of gears, while the gripper mechanism is activated by cables and belt-driven pulleys.

The base of the unit includes one connector for an external stepper motor which can be used for further experimentation, such as operating the Rotary Carousel. The Robot is equipped with four TTL (Transistor-Transistor Logic) inputs for the monitoring of input devices such as microswitches and four TTL outputs to communicate with other robot units or control external accessories such as a belt conveyor. Additionally, there are four 12 V dc device outputs, one is located in the shoulder and the others in the base unit. The shoulder-mounted output can be used to control end tooling such as the Magnetic Gripper. The I/O capabilities of the Robot allow interaction with external hardware via

ROBOT SYSTEM SERIES 5150

sensors. The Robot is also equipped with a USB port that can be used to connect the Robot System to a computer.

The Robot System comes with the RoboCIM 5150 Software which allows students to control or simulate the motion of the Robot. The software provides a three-dimensional, virtual environment and an easy-to-use interface allowing students to easily learn the fundamentals of robotics. Two programming modes are available: an intuitive icon programming mode and a text programming mode to create more complex tasks.



RoboCIM 5150 Software

The Robot and external devices offered as options with the Robot System are equipped with location pins (or push-lock fasteners). These pins are designed to insert into the perforations of the metallic work surfaces. This easy-to-use mechanism ensures the accurate positioning of the equipment when repeating programs.

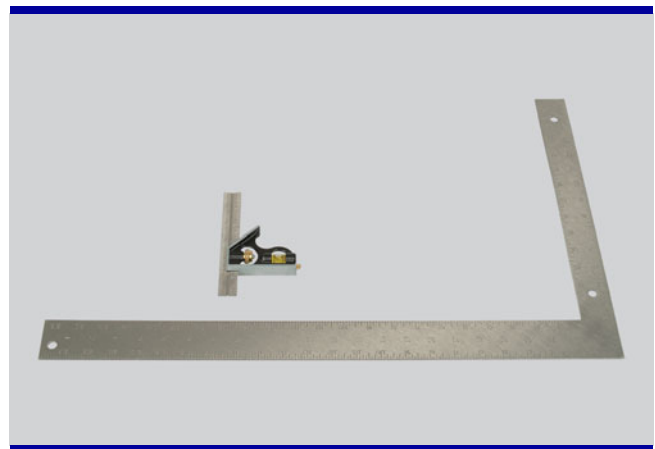


Location pin on a Gravity Feeder

The Robot System is available in two models (Models 5150-1 and 5150-2). The Robot System, Model 5150-1, can be controlled and programmed from a host computer running the RoboCIM 5150 Software. The Robot System (with Teach Pendant), Model 5150-2, comes with all the equipment of the Model 5150-1 plus a Teach Pendant which can be used to control and program the Robot. Programs created with the Teach Pendant can be uploaded from (or downloaded to) a computer using a USB connection. Both models come with student and instructor manuals, user guides, all leads and cables required to operate the system, and a solid-metal perforated Work Surface that can be put atop a regular work table or installed on one of the optional benches.

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General Description	1
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Optional Equipment	5
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Robot Calibration Tools

Many optional devices can be added to the system to perform more complex tasks. The optional devices include a Magnetic Gripper, a Rotary Carousel, Belt Conveyors, Gravity Feeders, Pneumatic Feeders, and a Signal Tower.

Features

Robot

- Stepper motors
- Steel and aluminum construction
- Gears and timing belts transmission
- Easily adjustable belt tension pulleys to maintain positional accuracy
- Oilite bushings for durability, minimum maintenance, and lubrication
- On-board microprocessor
- 4 TTL input ports
- 4 TTL output ports
- 4 12-V dc device outputs
- USB communication port
- Teach Pendant communication port

RoboCIM 5150 Software

- Easy-to-use, menu-driven software
- Simulation and control modes
- Three-dimensional (3D) virtual environment
- Seven predefined layout/camera view settings
- Programming without actual equipment
- Point recorder panel to easily record, rename, view coordinates, hide, and delete points
- Create and run simple task programs using icons and graphical tools (no keyboard input required)
- Create and run simple and complex task programs by entering all necessary commands using the keyboard
- Powerful set of task commands such as: Delay, Do-Until, If-Else, Gosub, Home, Input, Output, While-Repeat, and many others

TABLE OF CONTENTS OF THE STUDENT MANUAL

Introduction to Robotics (39411-00)¹

- Introduction and Familiarization
- Programming
- Program Editing
- Industrial Application 1
- Industrial Application 2
- Industrial Application 3 (Using a Rotary Carousel)
- Industrial Application 4 (Using a Gravity or Pneumatic Feeder)
- Industrial Application 5 (Using a Belt Conveyor)
- Industrial Application 6 (Using a Feeder and a Belt Conveyor)

¹ Industrial Applications 3 through 6 require the use of the following optional equipment (to be bought separately): a Rotary Carousel (model 5113), a Gravity Feeder (model 5119 or 5121) or Pneumatic Feeder (model 5122 or 5142), and a Belt Conveyor (model 5118).

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LISTS OF EQUIPMENT

ROBOT SYSTEM, MODEL 5150-1

QTY	DESCRIPTION	ORDERING NUMBER ²
1	Power Supply	5105-00
1	Robot	5150-A0 ³
1	Introduction to Robotics (Student Manual)	39411-00
1	Introduction to Robotics (Instructor Guide)	39411-10
1	Robot System Model 5150 (User Guide)	39411-E0
1	RoboCIM 5150 Software (User Guide)	39376-E0
1	Work Surface	46604-00

ROBOT SYSTEM (WITH TEACH PENDANT), MODEL 5150-2

QTY	DESCRIPTION	ORDERING NUMBER
1	Power Supply	5105-00
1	Teach Pendant	5106-00
1	Robot	5150-A0 ³
1	Introduction to Robotics (Student Manual)	39411-00
1	Introduction to Robotics (Instructor Guide)	39411-10
1	Robot System Model 5150 (User Guide)	39411-E0
1	RoboCIM 5150 Software (User Guide)	39376-E0
1	Work Surface	46604-00

OPTIONAL KITS

PNEUMATIC FEEDER KIT (SQUARE PARTS), MODEL 5122-A

QTY	DESCRIPTION	ORDERING NUMBER
1	Pneumatic Feeder (Square Parts)	5122-10
1	Pneumatic Feeder Controller	5149-00

PNEUMATIC FEEDER KIT (CYLINDRICAL PARTS), MODEL 5142-A

QTY	DESCRIPTION	ORDERING NUMBER
1	Pneumatic Feeder (Cylindrical Parts)	5142-10
1	Pneumatic Feeder Controller	5149-00

SIGNAL TOWER KIT (WITH CONTROL RELAY), MODEL 5924-B

QTY	DESCRIPTION	ORDERING NUMBER
1	Control Relay	5125-00
1	Connection Leads	5259-C0
1	Signal Tower	5924-00
1	DC Power Supply	6360-00

² The ordering numbers shown apply to the English 120-V version. Other versions are available. Refer to the Ordering Numbers section.

³ Includes the RoboCIM 5150 Software, Robot calibration tools, and all the leads and cables required to operate the system.

OPTIONAL EQUIPMENT

DESCRIPTION	ORDERING NUMBER
Microswitch	5102-10
Magnetic Gripper	5111-00
Rotary Carousel	5113-10
Belt Conveyor	5118-00
Gravity Feeder (Square Parts)	5119-00
Gravity Feeder (Cylindrical Parts)	5121-00
Storage Case	5167-00
RoboCIM 5150 Software (additional license)	5173-00
Robotics System Software Development Kit	5174-00
Belt Conveyor	5210-00
Storage/Work Surface	6309-00
Air Compressor	6410-C0
Location Tray	38685-00
Spacer	39035-00
Acoustic Alarm ⁴	39303-00
Bench ⁵	46601-10
Bench ⁵	46601-20
Bench ⁵	46601-30
Square Part (Plexiglass)	96474-00
Square Part (Wax)	96942-00

⁴ The Acoustic Alarm must be installed on a fully functional Signal Tower.

⁵ The Work Surfaces are not included with the Bench.

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MODULE DESCRIPTION

Model 5102-1 – Microswitch



The Microswitch is an SPDT switch with a wireform actuator. The Microswitch can be used alone or can be installed on a belt conveyor.

Model 5105 – Power Supply



The Power Supply converts the ac line voltage into a 13.8-V dc voltage that is used to power the Robot, Model 5150-A. The Power Supply has current limiting and overvoltage protection.

Model 5106 – Teach Pendant



The Teach Pendant is a hand-held terminal that can be used to control the Robot instead of using a computer. It has a four-line, 20-character LCD display for feedback to the operator. The programs created with the Teach Pendant can be uploaded from (or downloaded to) a computer through a USB connection using the included 5100/5150 File Server Application.

Model 5111 – Magnetic Gripper



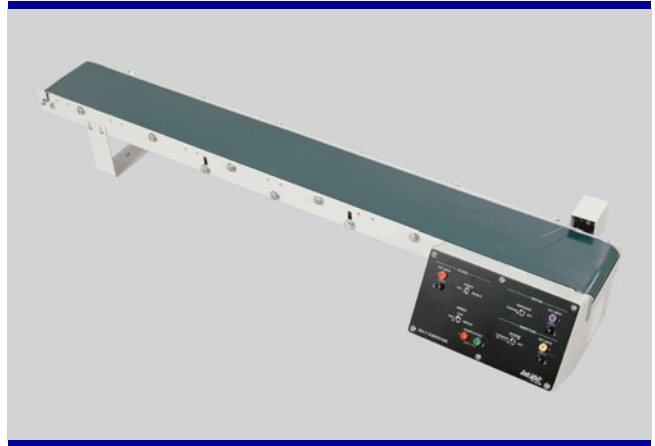
The Magnetic Gripper can be fixed to the wrist of the Robot in place of the two-finger gripper. The electromagnet is powered via the external device output connector mounted on the shoulder of the Robot. The Magnetic Gripper comes with a connection cable and an installation guide.

Model 5113-1 – Rotary Carousel



The Rotary Carousel is used to demonstrate how parts can be transferred to and from a robot in a repetitive, rotational pattern. It has a 298-mm (11.7-in) diameter platter driven by a stepper motor via the accessory output connector on the base of the Robot. A built-in microswitch can be used to detect the presence of parts on the platter.

Model 5118 – Belt Conveyor



The Belt Conveyor is used in material-handling experiments. It has a self-contained power supply and electronic interface. The control panel has inputs for interfacing with the Robot System. The inputs enable the conveyor to be remotely controlled. It can also be used as a stand-alone unit. The Belt Conveyor comes with a microswitch that can be mounted at different locations to detect the presence of parts on the belt. The conveyor belt has a length of 959 mm (37.8 in) and a width of 102 mm (4 in).

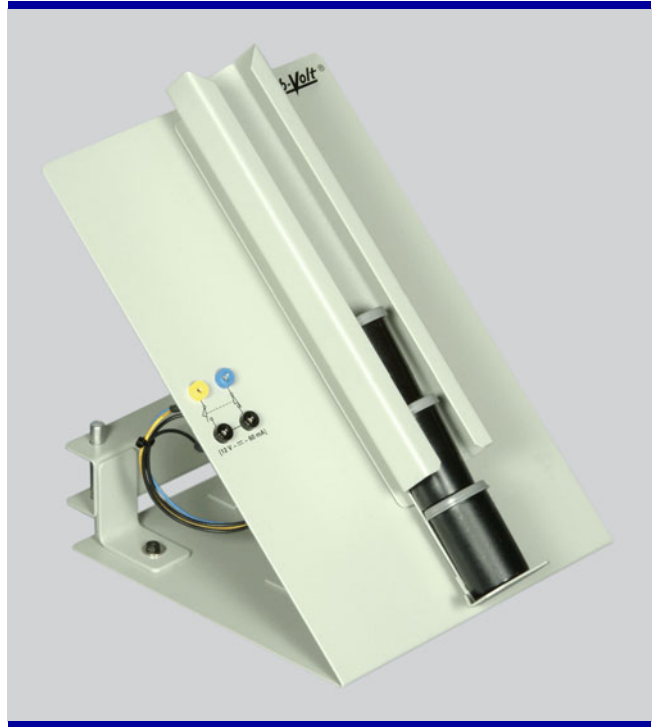
ROBOT SYSTEM SERIES 5150

Model 5119 – Gravity Feeder (Square Parts)



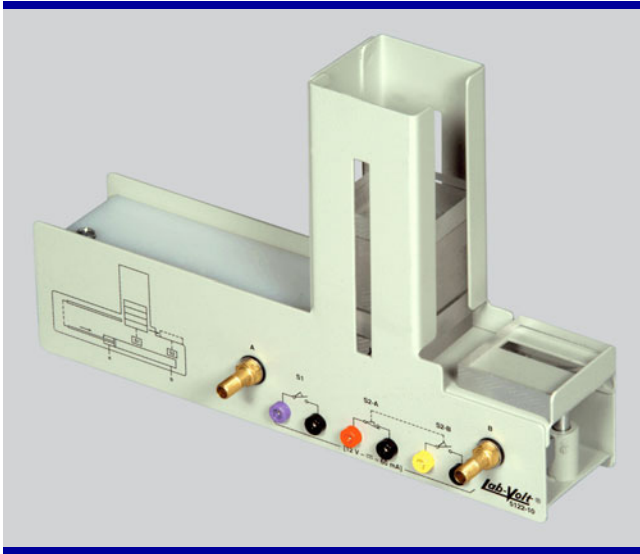
The Gravity Feeder (Square Parts) is designed to feed square parts measuring 51 x 51 mm (2 x 2 in) with a thickness between 13 and 38 mm (0.5 and 1.5 in). It has a microswitch and feedback cables for connection to the Robot Controller.

Model 5121 – Gravity Feeder (Cylindrical Parts)



The Gravity Feeder (Cylindrical Parts) is designed to feed cylindrical parts similar in form and dimensions to film canisters. It has a microswitch and feedback cables for connection to the Robot Controller.

Model 5122-1 – Pneumatic Feeder (Square Parts)



The Pneumatic Feeder (Square Parts) is designed to feed square parts measuring 50 x 50 x 12.5 mm (2 x 2 x 0.5 in). It consists of storage and feeder sections and a pneumatic cylinder. Both sections have microswitches to send feedback to the Pneumatic Feeder Controller. When the Pneumatic Feeder Controller detects that the feeder section is empty, it supplies compressed air to the pneumatic cylinder to push a part from the storage section into the feeder section. This module requires a Pneumatic Feeder Controller.

The Pneumatic Feeder (Square Parts), Model 5122-A, includes the Pneumatic Feeder Controller.

Model 5125 – Control Relay



The Control Relay module is used to control external devices. It consists of a relay (12-V dc solenoid and DPDT contacts) and connecting cables.

Model 5142-1 – Pneumatic Feeder (Cylindrical Parts)



The Pneumatic Feeder (Cylindrical Parts) is designed to feed cylindrical parts having a diameter of 19 mm (0.75 in) and a length of 63.5 mm (2.5 in). It consists of a storage and feeder sections, and a pneumatic cylinder. Both sections have microswitches to send feedback to the Pneumatic Feeder Controller. When the Pneumatic Feeder Controller detects that the feeder section is empty, it supplies compressed air to the pneumatic cylinder to push a part from the storage section into the feeder section. This module requires a Pneumatic Feeder Controller.

The Pneumatic Feeder (Cylindrical Parts), Model 5142-A, includes the Pneumatic Feeder Controller.

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Model 5149 – Pneumatic Feeder Controller



The Pneumatic Feeder Controller is used to control the Pneumatic Feeders, Models 5122 and 5142. It includes a pneumatic valve, which supplies compressed air to the Pneumatic Feeders. The operation of the Pneumatic Feeder Controller is controlled by the microswitches in the feeder and storage sections of the Pneumatic Feeders. This module requires a compressed-air supply (available from a local air supply or from the optional Air Compressor, Model 6410-C).

Model 5150-A – Robot



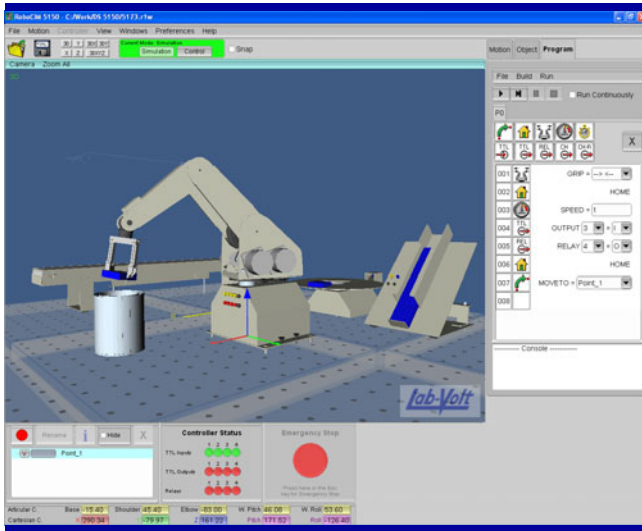
The Robot has five axes of rotation plus a gripper. It is driven by stepper motors that provide precision movements of the articulations. All joints can be used simultaneously to perform a programmed move sequence. Movements of the joints are accomplished by belts through a series of gears, while the gripper mechanism is activated by cables and belt-driven pulleys. The Robot comes with a large base which allows it to be placed on a regular work table.

Model 5167 – Storage Case



The Storage Case is a molded case designed to transport and protect the Robot System. The Storage Case is impact-resistant and its interior is padded with foam specially cut to match the Robot shape.

Model 5173 – RoboCIM 5150 Software

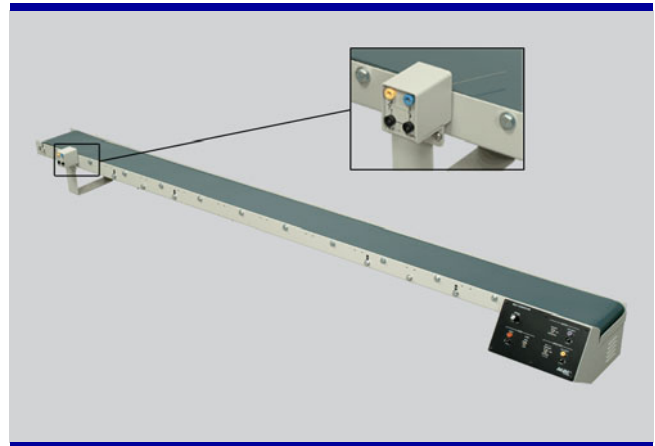


The RoboCIM 5150 Software is used to simulate and control the operation of the Robot System, Model 5150, and optional external devices such as Gravity Feeders or Belt Conveyors. One of the key features of the RoboCIM 5150 Software is that it simulates the actual equipment with three-dimensional representations. Sophisticated mathematical models accurately simulate the mechanical and electrical characteristics of the equipment. The RoboCIM 5150 Software allows users to interactively control and view the motion of the system. Programs can be created with the RoboCIM 5150 Software to control the equipment using either the text programming mode or the icon programming mode.

Model 5174 – Robotics System Software Development Kit

The Robotics System Software Development Kit is intended for developers who are interested in developing their own applications for the Robot System. It includes a CD-ROM with all the files required to use the dynamic-link library (DLL) as an abstraction layer between the end-user application and the low-level communication protocol from and to the USB Controller. The Robotics System Software Development Kit comes with a User Guide giving the details of each function of the library. However, since the Robotics System Software Development Kit is intended for developers, no instructional material is provided.

Model 5210 – Belt Conveyor



The Belt Conveyor is used in material-handling experiments. It has a self-contained power supply and electronic interface. The control panel has inputs for interfacing with the Robot System. The inputs enable the conveyor to be remotely controlled. It can also be used as a stand-alone unit. The Belt Conveyor is provided with a microswitch that can be mounted at different locations to detect the presence of parts on the belt. The conveyor belt has a length of 1880 mm (74 in) and a width of 127 mm (5 in).

Model 5259-C – Connection Leads



The Connection Leads consist of extra-flexible electrical leads terminated with stacking banana plugs. They are supplied in three different lengths.

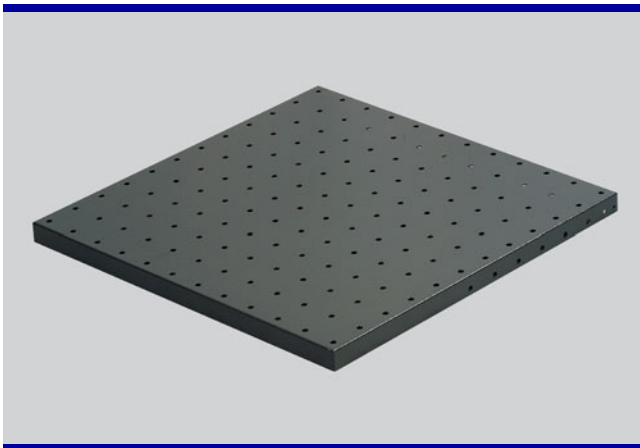
ROBOT SYSTEM SERIES 5150

Model 5924 – Signal Tower



The Signal Tower consists of three lights providing visual signals of the Robot Controller states. Lights are stacked one upon another, up to five modules. Each module is easily programmable without any special wiring or tools. An Acoustic Alarm, Model 39303, is available as an option. A Control Relay, Model 5125, DC Power Supply, Model 6360, and Connection Leads, Model 5259-C are required to operate the Signal Tower. They are provided in the Signal Tower Kit (with Control Relay), Model 5924-B.

Model 6309 – Storage/Work Surface



The Storage/Work Surface is a perforated metal plate, 38 x 584 x 584 mm (1.5 x 23 X 23 in), on which the equipment is placed. Two work surfaces can be joined using Spacers, Model 39035.

Model 6360 – DC Power Supply



The DC Power Supply converts the ac line voltage into a 24-V dc voltage that is used to power the Signal Tower, Model 5924. It is protected against short-circuits by an automatic current/limit foldback circuit.

Model 6410-C – Air Compressor

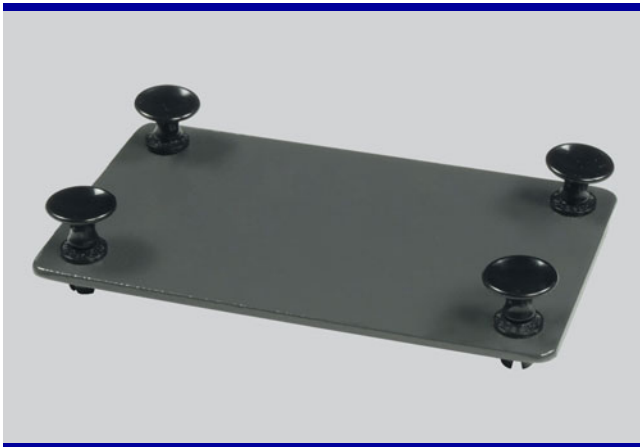
The Air Compressor consists of motor, compressor, tank, pressure regulator, and pressure gauge. The discharge line of the Air Compressor is connected to an air conductor hose ended by a quick-connect fitting that plugs directly into the inlet port of the Pneumatic Feeder Controller, Model 5149. This quiet air compressor is ideal for class room and school laboratories usage.

Model 38685 – Location Tray



The Location Tray is a solid-metal apparatus designed to help position square parts manipulated with the Servo Robot. When a part is dropped on the Location Tray, it automatically aligns in the square-stamped center. The Location Tray is equipped with push-lock fasteners allowing it to be clamped to the work surface.

Model 39035 – Spacer



The Spacer is a small, solid-metal piece with four push-lock fasteners that can be used to join two perforated work surfaces.

Model 39303 – Acoustic Alarm



The Acoustic Alarm is a single module for the Signal Tower, Model 5924, that produces an audible signal when activated. The module stacks over the regular modules of the Signal Tower and connects easily using the bayonet fitting.

Models 46601-1, 46601-2, and 46601-3 – Benches

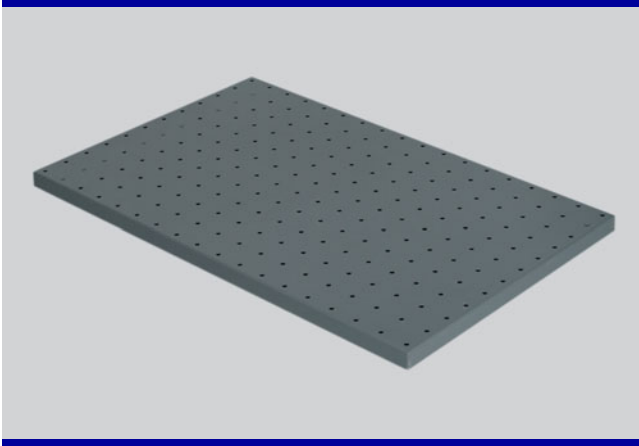


The Work Surfaces are not included with the Benches.

The Benches, Models 46601-1, 46601-2, and 46601-3, are solid metal benches that can accommodate one, two, and three work surfaces respectively. The Work Surfaces are not included with the Benches. Each bench is mounted on four heavy-duty, swivelling, lockable castors. Optional equipment is available for each bench. Refer to the datasheet for Models 46601-10, 46601-20, and 46601-30 for more information.

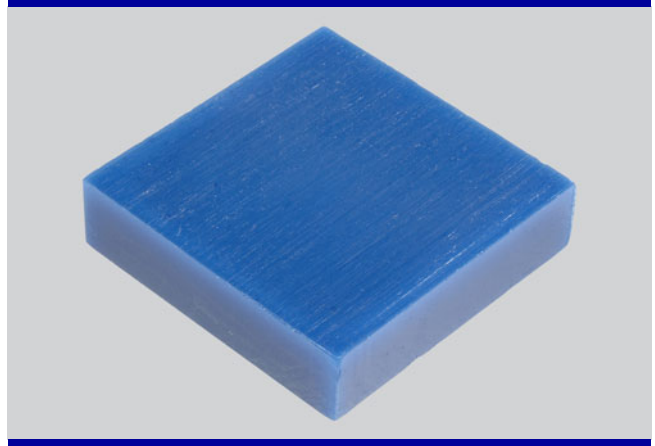
ROBOT SYSTEM SERIES 5150

Model 46604 – Work Surface



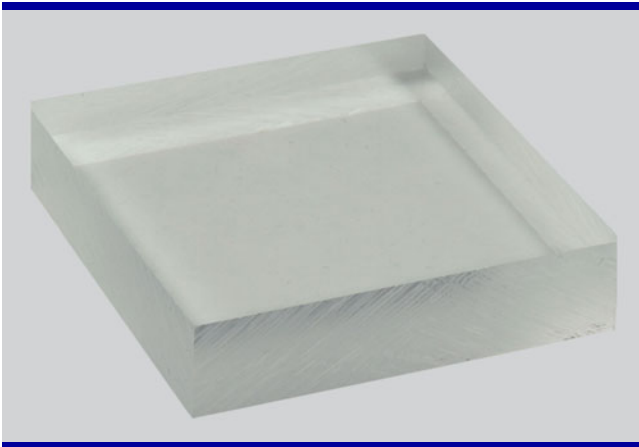
The Work Surface is a perforated metal surface, 883 x 584 x 32 mm (34.75 x 23 x 1.25 in), on which the equipment is placed. The Work Surface can be put atop a regular work table or installed on one of the optional benches.

Model 96942 – Square Part (Wax)



The Square Part (Wax) is a 13 x 51 x 51 mm (0.5 x 2 x 2 in) block of blue File-A-Wax used for various manipulations with the Servo Robot.

Model 96474 – Square Part (Plexiglass)



The Square Part (Plexiglass) is a 13 x 51 x 51 mm (0.5 x 2 x 2 in) block of clear plexiglass used for various manipulations with the Servo Robot.

SPECIFICATIONS

Model 5102-1 – Microswitch			
Switch	Type	Momentary	
	Actuator	Wireform	
	Contacts	SPDT, 12 V – 0.06 A – DC	
Model 5105 – Power Supply		120 V – 60 Hz	220 V – 50 Hz
Power Requirement	Current	3 A	2 A
Output		13.8 V – 10 A – DC	
Protection		Current limiting/overvoltage	
Physical Characteristics	Dimensions (H x W x D)	57 x 152 x 248 mm (2.3 x 6.0 x 9.8 in)	
	Net Weight	1.2 kg (2.7 lb)	
Certification		CE Compliant	
Model 5106 – Teach Pendant			
Physical Characteristics	Dimensions (H x W x D)	35 x 103 x 194 mm (1.4 x 4.1 x 7.6 in)	
	Net Weight	0.4 kg (0.8 lb)	
Model 5111 – Magnetic Gripper			
Physical Characteristics	Magnet Diameter	19 mm (0.75 in)	
	Net Weight	0.3 kg (0.7 lb)	
Holding Force		2.7 kg (6 lb)	
Model 5113-1 – Rotary Carousel			
Platter Diameter		298 mm (11.7 in)	
Motor		DC stepper motor	
Switch	Type	Momentary	
	Actuator	Wireform	
	Contacts	SPDT, 12 V – 0.06 A – DC	
Physical Characteristics	Dimensions (H x W x D)	114 x 350 x 298 mm (4.5 x 13.8 x 11.7 in)	
	Net Weight	3.2 kg (7.1 lb)	
Model 5118 – Belt Conveyor			
Motor		DC stepper motor	
Inputs	Number	3 (to control motor operation, engage/disengage motors, direction)	
	Type	TTL input	
Switch (movable)	Type	Momentary	
	Actuator	Wireform	
	Contacts	SPDT, 12 V – 0.06 A – DC	
Physical Characteristics	Dimensions (H x W x D)	165 x 965 x 260 mm (6.5 x 38 x 10.3 in)	
	Net Weight	8.4 kg (18.6 lb)	
Model 5119 – Gravity Feeder (Square Parts)			
Storage Capacity		6 parts	
Part Characteristics	Dimensions	51 x 51 mm (2 x 2 in), thickness between 13 and 38 mm (0.5 and 1.5 in)	
Switch	Type	Momentary	
	Actuator	Wireform	
	Contacts	SPDT, 12 V – 0.06 A – DC	
Physical Characteristics	Dimensions (H x W x D)	279 x 203 x 241 mm (11 x 8 x 9.5 in)	
	Net Weight	2.1 kg (4.7 lb)	
Model 5121 – Gravity Feeder (Cylindrical Parts)			
Storage Capacity		8 parts	
Part Characteristics	Dimensions (Length x Diameter)	51 x 35 mm (2 x 1.375 in)	
Switch	Type	Momentary	
	Actuator	Wireform	
	Contacts	SPDT, 12 V – 0.06 A – DC	
Physical Characteristics	Dimensions (H x W x D)	279 x 203 x 241 mm (11 x 8 x 9.5 in)	
	Net Weight	2.1 kg (4.7 lb)	
Model 5122-1 – Pneumatic Feeder (Square Parts)			
Storage Capacity		10 parts	
Part Characteristics	Dimensions (H x W x D)	51 x 51 x 13 mm (2 x 2 x 0.5 in)	
Switch	Type	Momentary	
	Actuator	Standard type integral hinged lever	
	Contacts	SPDT, 12 V – 0.06 A – DC	

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Model 5122-1 – Pneumatic Feeder (Square Parts) (cont'd)		
Pneumatic Cylinder	Type	Double acting cylinder
	Stroke	76 mm (3 in)
	Bore size	19 mm (0.75 in)
Physical Characteristics	Dimensions (H x W x D)	190 x 292 x 60 mm (7.5 x 11.5 x 2.375 in)
	Net Weight	1.4 kg (3.1 lb)
Model 5125 – Control Relay		
Contacts		NO (2), NC (2), 30 V – 10 A – DC, Resistive
Physical Characteristics	Dimensions (H x W x D)	81 x 114 x 115 mm (3.2 x 4.5 x 4.5 in)
Model 5142-1 – Pneumatic Feeder (Cylindrical Parts)		
Storage Capacity		8 parts
Part Characteristics	Dimensions (Length x Diameter)	63.5 x 19 mm (2.5 x 0.75 in)
Switch	Type	Momentary
	Actuator	Standard type integral hinged lever
	Contacts	SPDT, 12 V – 0.06 A – DC
Pneumatic Cylinder	Type	Double acting cylinder
	Stroke	76 mm (3 in)
	Bore size	19 mm (0.75 in)
Physical Characteristics	Dimensions (H x W x D)	241 x 292 x 70 mm (9.5 x 11.5 x 2.75 in)
	Net Weight	1.4 kg (3.1 lb)
Model 5149 – Pneumatic Feeder Controller		
Recommended Compressed Air Supply		276 kPa (40 psi), less than 3 l/min (0.1 SCFM)
Number of Compressed Air Outputs		2 (controllable)
Physical Characteristics	Dimensions (H x W x D)	83 x 229 x 216 mm (3.25 x 9 x 8.5 in)
	Net Weight	2.2 kg (4.9 lb)
Model 5150-A – Robot		
Load Capacity		0.44 kg (15.6 oz)
Number of Axes of Rotational Freedom		5
Reach		432 mm (17 in)
Repeatability		3.2 mm (0.125 in)
Maximum Speed		152 mm/s (6 in/s)
Actuators	Type	DC stepper motor
	Number of steps per revolution	200
Transmission		gears and timing belts
Working Envelope	Base	338°
	Shoulder Joint	181°
	Elbow Joint	198°
	Pitch Joint	185°
	Roll Joint	360°
Power Input	Voltage	13.8 V – DC
Device Outputs	Number	4
	Voltage	12 V – DC
	Maximum Current	0.6 A
TTL Outputs	Number	4
	Level	0-5 V – DC, TTL compatible
	Maximum Current	0.02 A
End Effector		two-finger gripper
Physical Characteristics	Net Weight	9.3 kg (20.6 lb)
Certification		CE Compliant
Model 5167 – Storage Case		
Physical Characteristics	Inside Dimensions (H x W x D)	241 x 673 x 381 mm (9.5 x 26.5 x 15 in)
	Overall Dimensions (H x W x D)	254 x 699 x 406 mm (10 x 27.5 x 16 in)
	Net Weight	6.4 kg (14.2 lb)

Model 5173 – RoboCIM 5150 Software			
Personal Computer Requirements	Processor	Pentium IV	
	Operating System	Microsoft Windows XP or later	
	Memory	128 MB RAM	
	3D Graphic Card	Open GL compatible highly recommended	
Model 5174 – Robotics System Software Development Kit			
Personal Computer Requirements	Microsoft Windows operating system		
Model 5210 – Belt Conveyor			
Motor	Type	DC servo motor with closed loop control	
	Encoder	Optical	
Inputs	Number	3 (to control motor operation, engage/disengage motors, direction)	
	Type	TTL input	
Switch (movable)	Type	Momentary	
	Actuator	Wireform	
	Contacts	SPDT, 12 V – 0.06 A – DC	
Physical Characteristics	Dimensions (H x W x D)	165 x 1892 x 279 mm (6.5 x 74.5 x 11 in)	
	Net Weight	14.4 kg (31.8 lb)	
Model 5259-C – Connection Leads			
Electrical Leads	Quantity and Color, Length	One black, five red, 3 white; 60 cm (24 in)	
	Connectors	2-mm banana plugs	
	Current Rating	10 A	
Model 5924 – Signal Tower			
Lights	3 (green, red, and yellow)		
Inputs (6)	24 V dc		
Physical Characteristics	Dimensions (H x W x D)	368 x 170 x 170 mm (14.5 x 6.7 x 6.7 in)	
	Net Weight	1.3 kg (2.8 lb)	
Model 6309 – Storage/Work Surface			
Physical Characteristics	Dimensions (H x W x D)	30 x 590 x 590 mm (1 x 23 x 23 in)	
	Net Weight	5 kg (11 lb)	
Model 6360 – DC Power Supply			
Power Requirement	Current	120 V – 60 Hz	220 V – 50 Hz
		1.25 A	0.75 A
Output	24 V – 2.4 A – DC		
Short-Circuit Protection	Automatic current/limit foldback		
Physical Characteristics	Dimensions (H x W x D)	105 x 135 x 220 mm (4.1 x 5.3 x 8.7 in)	
	Net Weight	3.6 kg (7.9 lb)	
Model 38685 – Location Tray			
Physical Characteristics	Dimensions (H x W x D)	12.3 x 120 x 120 mm (0.5 x 4.7 x 4.7 in)	
	Net Weight	49 g (1.7 oz)	
Model 39035 – Spacer			
Physical Characteristics	Dimensions (H x W x D)	20 x 120 x 70 mm (0.8 x 4.7 x 2.8 in)	
	Net Weight	169 g (6 oz)	
Model 39303 – Acoustic Alarm			
Physical Characteristics	Dimensions (Length x Diameter)	73 x 68 mm (2.9 x 2.7 in)	
	Net Weight	103 g (3.6 oz)	
Model 46604 – Work Surface			
Physical Characteristics	Dimensions (H x W x D)	41 x 883 x 584 mm (1.6 x 34.75 x 23 in)	
	Net Weight	7.3 kg (16.2 lb)	
Model 96474 – Square Part (Plexiglass)			
Physical Characteristics	Dimensions (H x W x D)	13 x 51 x 51 mm (0.5 x 2 x 2 in)	
	Net Weight	39 g (1.4 oz)	
Model 96942 – Square Part (Wax)			
Physical Characteristics	Dimensions (H x W x D)	13 x 51 x 51 mm (0.5 x 2 x 2 in)	
	Net Weight	31 g (1.1 oz)	

**ROBOT SYSTEM
SERIES 5150**

ORDERING NUMBERS

120 V – 60 Hz			220 V – 50 Hz			240 V – 50 Hz
ENGLISH	FRENCH	SPANISH	ENGLISH	FRENCH	SPANISH	ENGLISH
5102-10	5102-10	5102-10	5102-10	5102-10	5102-10	5102-10
5105-00	5105-00	5105-00	5105-05	5105-05	5105-05	5105-0A
5106-00	5106-00	5106-00	5106-00	5106-00	5106-00	5106-00
5111-00	5111-00	5111-00	5111-00	5111-00	5111-00	5111-00
5113-10	5113-10	5113-10	5113-10	5113-10	5113-10	5113-10
5118-00	5118-01	5118-02	5118-05	5118-06	5118-07	5118-0A
5119-00	5119-00	5119-00	5119-00	5119-00	5119-00	5119-00
5121-00	5121-00	5121-00	5121-00	5121-00	5121-00	5121-00
5122-10	5122-10	5122-10	5122-10	5122-10	5122-10	5122-10
5122-A0	5122-A1	5122-A2	5122-A5	5122-A6	5122-A7	5122-AA
5125-00	5125-00	5125-00	5125-00	5125-00	5125-00	5125-00
5142-10	5142-10	5142-10	5142-10	5142-10	5142-10	5142-10
5142-A0	5142-A1	5142-A2	5142-A5	5142-A6	5142-A7	5142-AA
5149-00	5149-01	5149-02	5149-05	5149-06	5149-07	5149-0A
5150-10	5150-11	5150-12	5150-15	5150-16	5150-17	5150-1A
5150-20	5150-21	5150-22	5150-25	5150-26	5150-27	5150-2A
5150-A0	5150-A0	5150-A0	5150-A0	5150-A0	5150-A0	5150-A0
5167-00	5167-00	5167-00	5167-00	5167-00	5167-00	5167-00
5210-00	5210-01	5210-02	5210-05	5210-06	5210-07	5210-0A
5259-C0	5259-C0	5259-C0	5259-C0	5259-C0	5259-C0	5259-C0
5924-00	5924-00	5924-00	5924-00	5924-00	5924-00	5924-00
6309-00	6309-00	6309-00	6309-00	6309-00	6309-00	6309-00
6360-00	6360-00	6360-00	6360-05	6360-05	6360-05	6360-0A
6410-C0	6410-C0	6410-C0	6410-C5	6410-C5	6410-C5	6410-C5
38685-00	38685-00	38685-00	38685-00	38685-00	38685-00	38685-00
39035-00	39035-00	39035-00	39035-00	39035-00	39035-00	39035-00
39303-00	39303-00	39303-00	39303-00	39303-00	39303-00	39303-00
39411-00	39411-01	39411-02	39411-00	39411-01	39411-02	39411-00
39411-10	39411-11	39411-12	39411-10	39411-11	39411-12	39411-10
39411-E0	39411-E1	39411-E2	39411-E0	39411-E1	39411-E2	394E1-10
39376-E0	39376-E1	39376-E2	39376-E0	39376-E1	39376-E2	39376-E0
46601-10	46601-10	46601-10	46601-10	46601-10	46601-10	46601-10
46601-20	46601-20	46601-20	46601-20	46601-20	46601-20	46601-20
46601-30	46601-30	46601-30	46601-30	46601-30	46601-30	46601-30
46604-00	46604-00	46604-00	46604-00	46604-00	46604-00	46604-00
96474-00	96474-00	96474-00	96474-00	96474-00	96474-00	96474-00
96942-00	96942-00	96942-00	96942-00	96942-00	96942-00	96942-00

Table 1. Equipment Ordering Numbers

NUMBER OF USERS	120 V – 60 Hz			220 V – 50 Hz			240 V – 50 Hz
	ENGLISH	FRENCH	SPANISH	ENGLISH	FRENCH	SPANISH	ENGLISH
Domestic Market (US and Canada)							
1	5173-00	5173-01	5173-02	5173-00	5173-01	5173-02	5173-00
5	5173-A0	5173-A1	5173-A2	5173-A0	5173-A1	5173-A2	5173-A0
10	5173-B0	5173-B1	5173-B2	5173-B0	5173-B1	5173-B2	5173-B0
15	5173-C0	5173-C1	5173-C2	5173-C0	5173-C1	5173-C2	5173-C0
20	5173-D0	5173-D1	5173-D2	5173-D0	5173-D1	5173-D2	5173-D0
25	5173-E0	5173-E1	5173-E2	5173-E0	5173-E1	5173-E2	5173-E0
30	5173-F0	5173-F1	5173-F2	5173-F0	5173-F1	5173-F2	5173-F0
35	5173-G0	5173-G1	5173-G2	5173-G0	5173-G1	5173-G2	5173-G0
40	5173-H0	5173-H1	5173-H2	5173-H0	5173-H1	5173-H2	5173-H0
1	5174-00	TBE	TBE	5174-00	TBE	TBE	5174-00
International Market							
1	5173-P0	5173-P1	5173-P2	5173-P0	5173-P1	5173-P2	5173-P0
5	5173-Q0	5173-Q1	5173-Q2	5173-Q0	5173-Q1	5173-Q2	5173-Q0
10	5173-R0	5173-R1	5173-R2	5173-R0	5173-R1	5173-R2	5173-R0
15	5173-S0	5173-S1	5173-S2	5173-S0	5173-S1	5173-S2	5173-S0
20	5173-T0	5173-T1	5173-T2	5173-T0	5173-T1	5173-T2	5173-T0
25	5173-U0	5173-U1	5173-U2	5173-U0	5173-U1	5173-U2	5173-U0
30	5173-V0	5173-V1	5173-V2	5173-V0	5173-V1	5173-V2	5173-V0
35	5173-W0	5173-W1	5173-W2	5173-W0	5173-W1	5173-W2	5173-W0
1	5174-00	TBE	TBE	5174-00	TBE	TBE	5174-00

Table 2. Software Ordering Numbers

Reflecting Lab-Volt's commitment to high quality standards in product, design, development, production, installation and service, our manufacturing and distribution facility has received the ISO 9001 certification.

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