

6300 Series Maintenance Manual



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1. Technical Overview

1.1 Introduction

The 6306 and 6312 are high speed, low cost, line impact dot matrix printers. They print a variety of fonts in a number of languages and plot raster graphics and images at a wide range of dot densities.

These printers are compatible with the T6215/T6218 series printers. They support the same interface types, emulations, graphics options, languages, and are software compatible. The fonts in the printers are identical to the fonts in the T6215/T6218 printers. They employ an updated operator control panel with a similar but not identical user interface. They come standard with Serial and Parallel interfaces and support other interfaces through the use of user installable PSIO interface cards. OEM add-in cards are supported via an internal IEEE 1284 connector.

The 6306 and 6312 build on the success of previous generations of TallyGenicom LIDM technology, providing the following features:

- Reduced cost through the introduction of new hammerbank and print mechanism assemblies.
- Improved mechanical design:
 - o A resonant shuttle system that is simpler, quieter, and consumes less power.
 - A direct drive paper system that eliminates the belts and sprockets previously employed.
 - Motorized platen gap adjustment controlled from front panel. Also allows pre-set platen gaps.
- Standard print line width of 13.6 inches.
- Mixed text and graphics at the single shuttle frequency.
- A two-line control panel with added buttons for platen gap adjustment.
- Up to ten separate configurations can be stored in memory. The user can assign alphanumeric names to the configurations to make it easy to associate a configuration to a specific form.
- 6312 Ribbon: The ribbon platform has separate ribbon motion and ribbon re-inking motors for actively controlled re-inking. Includes ribbon motion sensing and "skip over weld" features. These features extend the ribbon life up to 250 million characters while providing more uniform print density over the life of the ribbon. The 6312 may use 40 million non re-inking, 60 million re-inking, or 250 million character re-inking ribbon cartridges.

- 6306 Ribbon: 40 million character life cartridge with ribbon motion sensing but without reinking.
- Serviceability: easy access to the power supply, electronics, and hammerbank.

1.2 Performance

1.2.1 Print Speeds

The table below lists maximum attainable print speeds in LPM (lines per minute) for selected CPI's at 6 or 8 LPI. All number pairs indicate uppercase / lowercase.

6306:

СРІ	Draft CDF	DP CDF	Draft Enhanced	DP Enhanced	Courier / Gothic	OCR-A	OCR-B
5	600/514	450/360	600/514	450/360	189/144	-	-
10	600/514	450/360	600/514	450/360	189/144	360/276	133/92
12	600/514	450/360	327/277	240/189	189/144	-	-
13.3	600/514	450/360	327/277	240/189	189/144	-	-
15	600/514	450/360	327/277	240/189	189/144	-	-
16.7	-	-	327/277	240/189	189/144	-	-
17.1	600/514	450/360	327/277	240/189	189/144	-	-
20	-	-	327/277	240/189	189/144	-	-

6312:

CPI	* Draft	DP	* Draft	DP	Courier /	OCR-A	OCR-B
	CDF	CDF	Enhanced	Enhanced	Gothic		
5	1200/1028	900/720	1200/1028	900/720	378/288	-	-
10	1200/1028	900/720	1200/1028	900/720	378/288	720/552	266/194
12	1200/1028	900/720	654/554	480/378	378/288	-	-
13.3	1200/1028	900/720	654/554	480/378	378/288	-	-
15	1200/1028	900/720	654/554	480/378	378/288	-	-
16.7	-	-	654/554	480/378	378/288	-	-
17.1	1200/1028	900/720	654/554	480/378	378/288	-	-
20	-	-	654/554	480/378	378/288	-	-

* A second, reduced draft print speed may be required to meet the print quality standard in heavy forms applications. This speed reduction shall be invoked by the detection of heavy forms. A control panel option allows this function to be selected as enabled at all times, disabled, or enabled only when heavy forms are detected.

1.2.2 Plot Speeds

The table below lists maximum attainable plot speeds in inches per minute for continuous unmixed full-spaced plot data. Half-spaced plot data may plot faster. Note that plot densities, which are approximated, plot at the speed of the next higher exact density.

Density	Speed	(IPM)
	6306	6312
60 x 48	75	150
60 x 72	50	100
120 x 72	25	50
240 x 288	3	6

Most plot data will plot at the speeds shown in the table above. Certain factors can slow down the effective plot speed:

Plots across wide areas put a large load on the power supply. When this is detected the plot rate is slowed momentarily to maintain proper system voltages and good print quality.

A thermal protection algorithm can slow plot rates if the hammer bank is in danger of overheating due to an extremely heavy printing load.

Complicated graphics patterns can require extra processing which may slow the plot rate.

1.2.3 Application Benchmarks

Application processing/printing throughput is compared against other printers by means of three benchmark tests: the standard Automotive Industry Action Group (AIAG) label, the POSTNET label, and ECMA 132 tests.

The AIAG label benchmark consists of bar codes and block characters inside a box. It can be printed using either the Code V or PGL graphics options, which print at the same speed. This test prints a series of AIAG labels, two across, repeated vertically with 0.1" space between labels. The printing time is measured and translated into the number of labels printed per hour, as in the table below. Two variations of this test are used: Normal AIAG prints 60 DPI bar codes, Dark AIAG, prints 120 DPI bar-codes. Speeds are listed in labels per hour.

The POSTNET label is an address label consisting of one line of POSTNET bar code and four lines of text. The test prints a series of POSTNET labels, four across, repeated vertically with one blank line between labels. The test is run using the Draft font at 6 LPI. Speed is listed in labels per hour.

The ECMA 132 tests are a standard collection of "real world" applications designed to provide realistic comparisons of printer throughput. All tests are begun with the shuttle running in order to provide an accurate indication of long run throughput. Speed is listed in pages per hour.

Application Benchmark	6306	6312
AIAG Labels - Normal Mode [Labels/Hour]	1461	2923
AIAG Labels - Dark Mode [Labels/Hour]	982	1965
POSTNET Labels [Labels/Hour]	25,200	50,160
ECMA 132 Tests [Pages/Hour]		
#2 Letter Performance 10 CPI Draft	825	1455
#3 Letter Performance 10 CPI NLQ	252	491
#5 Spreadsheet Performance 17 CPI Draft	983	1818
#6a Spreadsheet Performance 17 CPI Draft	983	1821
#6b Spreadsheet Performance 17 CPI NLQ	342	664
#7 Graphics Performance	573	806

1.2.4 Paper Advance

The default paper slew speed is 25 IPS (inches per second). If the Fast Slew control panel option is set to Disabled (default is Enabled), then the slew speed is 13 IPS.

Top of Form will be retained within .002" over 1000 printed pages, as long as the printer is not powered-off while printing. Top of form will be maintained if power is turned off while not printing. Paper motion at power-up is less than .010".

1.2.5 Print Quality

The printer meets the print quality requirements specified in TallyGenicom document Q1208.

1.3 Mechanics

1.3.1 Enclosure

The 6306 and 6312 are available in Table Top, Open Pedestal, and Enclosed Pedestal configurations.

The standard color is TallyGenicom 401173-110, Cloud White.

1.3.2 Print Mechanism

The print mechanism employs a stored energy dot matrix hammer that is held retracted by a permanent magnet field and released by a pulsed electromagnet. The hammer is based on flexure technology and incorporates a ball type impactor that produces a printed dot of approximately .016" diameter. The 6306 hammerbank has 42 hammers centered 0.325 inches apart and the 6312 has 78 hammers at a spacing of 0.175 inches. The hammerbank is mounted on cantilever springs and the hammerbank/spring system is tuned to a resonant frequency of 30.2 Hz for the 6306 and 60.4 Hz for the 6312. The hammerbank is shuttled horizontally by driving an attached bi-directional solenoid at the appropriate frequency to sustain the hammer bank's resonant motion.

Alphanumeric text and graphic shapes are placed on paper by striking the hammers against inked ribbon to make small dots on the paper. As the hammers are shuttled horizontally across the paper, dots are placed in the appropriate positions. Dots are vertically positioned by moving the paper in small increments through the print station.

1.3.3 Paper Drive

1.3.3.1 Tractors

The paper is moved by means of 2 tractors that are located above the print line. Each tractor has a 6-pin engagement with the paper and has stainless steel pins to extend their wear life. The tractors are adjustable for form width and horizontal forms adjustment.

A scale located on the print mechanism shows where the print columns are (for 10 CPI), to provide for accurate horizontal forms alignment.

1.3.3.2 Paper Advance

The control panel keys provide for vertical adjustment of paper position up and down in small and large increments. Line feed (LF) and Form feed (FF) keys provide quick, controlled paper advance. A **VIEW** key is incorporated that advances the paper such that the last line printed can be viewed through the printer window. The paper is returned to the next print line when the **VIEW** key is pressed a second time.

1.3.3.3 Top of Form Alignment

Top of Form alignment is performed by moving the form with the up/down arrow keys until the indicator on the tractors lies at the desired position for the top of the first printed line. Pressing the TOF key at this point retracts paper so that this position on the form is stationed at Top of Form.

1.3.3.4 Supported Form Sizes

Various form sizes are accommodated. Adjusting the tractor positions accommodates the various form widths. The range of allowable paper/tractor positions are as shown below (dimensions in inches). In addition to various form sizes the printer also supports various form weights. These are usually described as single part up to six part forms (original plus five carbons). The supported form weights are defined more clearly in TallyGenicom specification 608925.



Form Characteristic	Minimum	Maximum
Forms Width "A":		
With Horizontal Vernier	2.8	18.7
Forms Length "B"	3.0	12.0
Horizontal Forms Adjustment "C"		
• With Horizontal Vernier and Forms < 17.6 Wide	0.0	1.10
• With Horizontal Vernier and Forms > 17.6 Wide	18.7 – Form Width	1.10
Tractor Hole to Paper Edge (per ISO 2784) "D"	0.208	0.264

1.3.3.5 Horizontal Vernier

The horizontal vernier will provide up to ± 0.2 inches of horizontal forms travel for adjusting the horizontal position of the printed output on the page.

1.3.3.6 Forms Stacking

The 6306 and 6312 are designed to stack most forms of the specified length and thickness without operator intervention, provided that proper set up of tractor position has been made. Testing is performed per Tally Specification 611740.

Proper set up involves adjusting the tractor position such that there is no deformation in the shape of the sprocket pin-feed holes in the printed stack of fanfold forms. In addition, printing on the form perforation must be avoided.

Paper moves through a guide at the printer rear and then falls through a set of passive paper stacking chains that help to break the column of paper in the proper directions at the form perforations. The paper is stacked at the back of the cabinet.

While this system will usually collect the printed forms in an organized fashion, no universal guarantee can be made for all forms or conditions.

1.3.4 Platen

The platen position in the 6306 and 6312 is controlled by a stepper motor drive. Keys on the front panel allow the platen gap to be increased or decreased as desired. Up to 10 different forms configurations may be stored with the form length, width, and platen gap information included. Thus, on any given form, if the configuration is called up the platen gap will automatically be set to the right value. When not printing, the platen automatically rotates to the open position.

1.3.5 Sensors

The 6306, 6312 incorporate a number of techniques for detecting and correcting faults of all types. Fault recovery is quick, easy, and prevents loss of host data. Paper and printing faults are detected by means of sensors. Electronics faults are detected by a series of self-tests automatically done at power-up. Faults in the print engine, such as a defective hammer drive transistor, are monitored in real time with the printing function halted to avoid damage if a fault condition is detected. Faults in the host interface or host data are detected as they occur. Each fault is typically announced on the Control Panel by displaying a descriptive fault message, lighting the Fault LED, and sounding an audible alarm.

1.3.5.1 Paper Out

The Paper Out sensor detects the end of the last form. The sensor is located below the print station on the left side of the printer, and provides a paper out condition while the last form is printing. This early detection can be overridden to enable printing to the true end-of-form. A Paper Out fault results in an "off line" condition.

1.3.5.2 Paper Motion

The Paper Motion sensor monitors the motion of paper through the tractors by looking for the passage of paper sprocket holes. The sensor is located on the upper left paper tractor. If no paper is present in this tractor, or if paper is present in the tractor but is not moving, a fault is generated. Paper Motion fault results in an "off line" condition.

A proprietary adaptive fuzzy logic algorithm is used in order to provide accurate sensing over a variety of forms. This algorithm is also designed to be tolerant of paper dust build-up.

1.3.5.3 Shuttle

The Shuttle sensor monitors the amplitude and position of the shuttle while printing. If the shuttle fails to stay within the expected range, it is stopped and a shuttle fault is announced. If the shuttle fails during ramp-up a shuttle fault is signaled. A shuttle fault results in an "off line" condition with printing suspended.

1.3.5.4 Temperature

The hardware design, coupled with a scanning software algorithm, allows for direct thermal sensing on every print hammer coil. When a coil temperature is detected to be within a thermal alert range the rate of printing is slowed by forcing additional shuttle cycles to occur for each row of print. When all hammer coil temperatures fall below the alert range, optimal print speed is restored.

1.3.5.5 Ribbon Fault Detect (6306 and 6312)

The ribbon fault detect system senses the motion of the ribbon by monitoring a spinning thin steel disk inside the ribbon cartridge. This disk turns as the ribbon is driven through the hammer bank. A ribbon fault will occur if the ribbon either breaks, jams, or is not installed. A ribbon fault results in an "offline" condition. (Note that this sensor also has black and silver regions and can thus be detected optically. This makes it compatible with earlier generation printers.)

1.3.5.6 Ribbon Skip Over Weld (6312 only)

On re-inking ribbons the ribbon platform incorporates and optical sensor that detects when the weld in the ribbon fabric is about to enter the print line. Printing is momentarily halted while the weld passes through the print line. This feature greatly increases the life of the ribbon, which is usually limited by the life of the fabric weld. It also eliminates the possibility of characters being poorly printed as a result of printing directly on the fabric weld.

1.4 Electronics

The electronic design of the 6306/6312 is implemented on a single controller module.

The primary components are:

- Main Processor Freescale ColdFire 5307
- Flash Memory 4 Mbytes
- SDRAM 32 Mbytes
- CPLD Xilinx XC95144XL-TQ100
- Interface specific devices
- Control Processor Intel 87C196KC
- Sensor Inputs
- Motor logic and drive
- Solenoid shuttle drive
- Hammer drive shift registers and FET coil drive transistors
- Cold drive energy damping diodes
- EEPROM M24C64

1.4.1 Control Processor

- 20 Mhz clock
- High speed outputs for driving the paper motor, solenoid and hammer firing
- High speed inputs for synchronizing timing of the shuttle position
- 8 channel 10bit Analog to Digital Converter for sensor readings (paper out, paper motion, shuttle motion, ribbon motion, platen gap sensor, hammer current, power supply voltage)
- Serial channel for communication (38.4K bps) with Main CPU (5307)
- Port control of ribbon drive motor, ribbon ink pump drive motor, platen gap motor, control panel and hammer loading

1.4.2 Sensor Inputs

- Paper motion optical
- Paper out optical
- Platen gap potentiometer
- Shuttle motion optical picket-fence sensor
- Power supply voltage resistor divider
- Ribbon motion Hall-Effect
- Ribbon weld detect optical

1.4.3 Motor logic and drive

- H bridge motor drive chips (2 for ribbon, 2 for ribbon ink pump (6312), 2 for paper, 2 for platen gap)
- FET drive for solenoid shuttle

1.4.4 EEPROM

Stores engine calibration and printer configuration settings

1.4.5 Serial and Parallel Interfaces

1.4.5.1 Serial

- Maxim MAX238 chip is used for the RS-232 drivers and receivers
- Both DTR/Busy and XON/XOFF is supported
- Standard secondary RTS on pins 11 and 19. Primary RTS is capable of being jumpered to pin 4.

1.4.5.2 Parallel

 Xilinx XC95144 and 74LS244/74LCX244 – supports IEEE-1284 compatibility and nibble mode.

1.4.6 Main Processor

1.4.6.1 Freescale ColdFire 5307

- 66 Mhz clock using a spread-spectrum clock generator
- 32-bit CPU bus
- Two DMA channels- one for hammer loading, and one for the IEEE-1284 parallel interface
- Two serial channels one for communication with the Control Processor and one for the external serial interface
- Internal single data rate SDRAM controller

1.4.6.2 Xilinx XC95144

- Logic for IEEE-1284 Parallel interface
- Logic for PSIO interface

The following table shows host interface configuration options:

Personality Module	Standard Ser/Par	LANPlex	FourPlex
Host I/Os	IEEE 1284	IEEE 1284	IEEE 1284
	RS-232-C	RS-232-C	RS-232-C
		Ethernet	Twinax
			Coax
Optional Configurations		IPDS	IPDS

1.5 Consumables

1.5.1 Ribbons

The 6300 Series uses a ribbon cartridge that is incompatible with some previous Tally products (Reference Tally Specification 613184). This cartridge is designed to significantly increase the life of the ribbon, reducing the cost of ownership of the product. This ribbon also has increased reliability due to the incorporation of ribbon fault detect and skip over weld. The ribbon also maintains much more uniform print density over its useful life due to the incorporation of a pump re-inking system. This system supplies ink to the ribbon based on the amount of printing that has taken place, and separates the re-inking and ribbon motion functions. This results in more controllable and predictable re-inking, with attendant improvements in print quality and reliability.

The 6312 may use the 60 or 250 million character pump re-inking ribbon cartridges. The 40 million non re-inking ribbon may also be used.

The 6306 uses a standard 40 million character non re-inking ribbon cartridge without the skip over weld feature.

All cartridges are designed for easy access and loading. Ribbon lifetimes are based on printing a 7 X 5 upper case rolling ASCII pattern at 40% density on 18-pound bond paper

1.5.2 Forms

The printer is designed to use continuous sprocket feed type paper, with 2.8 to 18.7 inches (71 to 475 mm) total width and 3 to 12 inches (76 to 305 mm) in length. One to six part paper may be used. Maximum form pack thickness shall be .025 inches. Reference specifications: ISO 2784, DIN 9771, DIN 6721, Tally 604561 and 608925.

1.6 Accessories

The following accessories are available:

- Service Tool Kit
- Power Cords

See 614087 Product Features Index for part numbers.

1.7 Safety Features

Tally stresses personal safety in both operating and maintenance related aspects. Hazard areas have restricted access with applicable warning labels. Catastrophic failures are inhibited with protective functions in major areas of overload potential. Some specifics:

Moving parts and areas of electrical shock hazard are covered to guard against inadvertent or accidental operator contact.

The flexible fault handling system disables printing functions when normal operation cannot continue, or when continued operation could harm the printer.

The power supply input is internally fused to protect against short-circuit and overload.

1.8 Maintainability

1.8.1 MTTR

Mean Time to Repair (MTTR) is predicted to be less than 20 minutes when repaired by a properly trained technician utilizing replacement assemblies as recommended by TallyGenicom.

1.8.2 Preventive Maintenance

The printers have been designed to eliminate the requirement of scheduled maintenance such as alignment adjustments and lubrication. It is recommended that occasionally the accumulated paper dust be vacuumed out of operator accessible areas of the printer.

1.9 Agency Approvals

The 6300 series is designed to meet the requirements of the following industry and government agency standards.

1.9.1 Electro-Magnetic Emissions

EMI:	FCC part 15, subpart J, Class A and EN55022 Class B
Harmonics:	EN 61000-3-2
Flicker:	EN 61000-3-3

1.9.2 Electro-Magnetic Immunity

ESD:	EN 61000-4-2
RF EMF:	EN 61000-4-3
EFT/B:	EN 61000-4-4
Surge:	EN 61000-4-5
RF CM:	EN 61000-4-6
PF MF:	EN 61000-4-8
V Dips/Int:	EN 61000-4-11

1.9.3 Energy Conservation

Energy Star compliant.

1.9.4 Safety

IEC 60950: 1991 plus Amendment 1, 2, 3, and 4, and National Deviations AT, AU, BE, CA, CH, CZ, DE, DK, ES, FI, FR, GB, GR, HU, IE, IT, JP, KR, NL, NO, SE, SG, SL, US and Group Differences per CB Bulletin 94AI (Mar 99).

ANSI UL 1990-95, CAN/CSA-C22.2 No. 950-95, and EN 60950:1992, including Amd 1, 2, 3, and 4 safety requirements.

1.9.5 Acoustic

These printers have been tested according to the procedure defined by ISO #7779:1999(E) and ISO 9296:1988(E). The acoustic noise level is established by measuring maximum sound pressure levels at maximum print speed. The method of testing used is average sound pressure level.

1.9.6 Marking

The printers comply with the CE mark requirements, per the European norms.

1.10 Site Specifications

The printers are available in a Floor standing cabinet configuration with an optional Quick Forms Access cover assembly.

1.10.1 Weight

Unit	Unit Weight (lbs)
6306 Table Top	115.4
6306 Pedestal	159.9
6312 Table Top	124.1
6312 Pedestal	168.6

1.10.2 Dimensions

6306 and 6312	Table Top	Pedestal
Height	13.0 in.	39.7 in.
Width	28.3 in.	28.3 in.
Depth	14.4 in.	23.4 in.
Depth w/ paper exit guide assembly	23/4 in.	29.4 in.
Depth w/paper tray		29.5 in.

1.10.3 Environment

1.10.3.1 Operating

6306 / 6312	
Temperature	10°C to 40°C (50°F to 104°F)
Humidity	10 to 90% non-condensing with a maximum wet bulb temperature of 28°C (82°F) and minimum dew point of 2°C (36°F)
Altitude	To 8,000 ft.
Thermal Shock	16°C (29°F) per minute

1.10.3.2 Non-operating (as packaged by TallyGenicom)

6306 / 6312	
Temperature	-40°C to 66°C (-40°F to 151°F)
Humidity	5 to 95% non-condensing
Altitude	To 10,000 ft.
Thermal Shock	16°C (29°F) per minute
Mechanical Shock and Vibration	The unit complies with ISTA Programs 1 and 2 as packaged by Tally for shipment

The printer must be allowed to reach room temperature before operating. Three hours out of the shipping container is usually enough time for stabilization.

1.10.4 Acoustics

Configuration	Sound Power per ISO 7779-C
6306 Open Pedestal	55 dB(A)
6306 Enclosed Pedestal	52 dB(A)
6312 Open Pedestal	60 dB(A)
6312 Enclosed Pedestal	57 dB(A)

1.10.5 Site, Power, and Space Requirements

To achieve optimum reliability and operation, proper site planning is necessary. Appropriate space, temperature, humidity control, system interconnects, and main power source integrity are points for consideration. Although the printers are designed with wide margins, optimum trouble-free operation will be achieved when the environment is within the nominal specification range.

1.10.5.1 Main Power

The printers adjust automatically to the various worldwide power requirements, $110 \pm 20V$ or 220 $\pm 40V$ at either 60 ± 3 Hz or 50 ± 3 Hz. All voltages in the following table are single phase; all listed currents are at nominal voltage and frequency.

External Power		Current/Wattage Requirements @ Normal Voltage			
AC Volts (RMS)	Frequency (Hz)	Average Operating	Peak Operating	Average Idle (<5 min.)	Average Idle (>5 min.)
110	50	1.0A/105W	2.3A/250W	0.3A/35W	0.2A/19W
110	60	1.0A/105W	2.3A/250W	0.3A/35W	0.2A/19W
220	50	0.5A/105W	1.2A/250W	0.2A/35W	0.1A/19W

6306:

6312:

External Power		Current/Wattage Requirements @ Normal Voltage			
AC Volts (RMS)	Frequency (Hz)	Average Operating	Peak Operating	Average Idle (<5 min.)	Average Idle (>5 min.)
110	50	2.2A/250W	4.6A/510W	0.4A/36W	0.2A/18W
110	60	2.2A/250W	4.6A/510W	0.4A/36W	0.2A/18W
220	50	1.1A/250W	2.3A/510W	0.2A/36W	0.1A/18W

"Peak Operating" is 100% Black page, 60x72 dpi

"Average Operating" is 40% ASCII, draft font

1.10.5.2 Space Requirements

Adequate space must be provided to permit the operator access to the operator panel, and to the forms input/output at the front and rear of the printer.

1.10.5.3 Heat Load Contribution

The 6306/6212 printers generate heat depending upon their print load, as described below. For site planning, a conservative average, based on 40% ASCII Draft character coverage, is 355 BTU/Hr. (104W).

6306:

Printing Conditions (110V/60Hz)	Wattage	BTU/Hr
Power on, not printing	36	123
100% Uppercase rolling ASCII	150	512
Black Page Plot	249	850

6312:

Printing Conditions (110V/60Hz)	Wattage	BTU/Hr
Power on, not printing	55	188
100% Uppercase rolling ASCII	400	1371
Black Page Plot	600	2050



2. Menu Operations

The Test menu contains procedures for calibrating sensors, turning motors on and off, changing hammer lead time, running various printer tests, etc. These procedures are located in the Config and Test menus and can be accessed through the Control Panel.

2.1 Technician Access Mode

Technician (Tech) Access Mode is provided for the repair technician. It allows you to access tests, calibration, and diagnostic procedures, unavailable in normal menu operations, for use in troubleshooting. Once Tech Access is enabled, these menu items appear on the Control Panel Selections Printout (the Help menu printout).



2.1.1 How to Enter Tech Access Mode

Place the printer Offline. Press **LF** and **ENTER** simultaneously and hold for 3 seconds. Release the keys when the alarm sounds and "Tech Access On" displays.

2.1.2 How to Exit Tech Access Mode

There are two methods for leaving Tech Access Mode.

1. Place the printer Offline. Press **LF** and **ENTER** simultaneously. Release the keys when the alarm sounds.

OR

2. Cycle power.

2.2 Troubleshooting and Reports

The printer is equipped with the following types of Printer Tests, Hex Dumps, and Printer Information Printouts.

2.2.1 Printer Tests

Printer tests appear in both normal menu operations and in Tech Access Mode. These tests consist of the following patterns and types:

- ASCII print patterns
- Plot Mode patterns
- Calibration routines
- Electronic hardware tests

Detailed explanations of the print tests follow in the Test Menu section of this chapter.

2.2.2 Hex Dumps

Use Hex Dumps to check printer functions and data processing operations. They may also be helpful in resolving printer performance. These dumps are located in the Configuration menu, Printer category, under the Dump Mode parameter in normal menu operations. There are three styles of Dump Modes on the printer:

- **Style 1** Text, spaces, and control codes print out in hexadecimal format.
- **Style 2** Control codes print out in hexadecimal format while text and spaces print out in their original form.
- **Style 3** Control codes and spaces print in hexadecimal format, while text prints out in its original form.

CAUTION: Make sure that wide paper (136 columns — 13+ inches of printable width) is loaded on the printer before running a Style 1 Hex Dump.

2.2.3 Printer Information Printouts and Displays

There are fifteen printouts and displays accessible through the printer control panel. The first printout is the Help menu and the rest are Printer Reports (Current Config, All Configs, Configs 1-10, Calibrations, Last Fault, and Version). These reports can be accessed via the Configuration menu, Printer category, under the Report parameter.

2.2.3.1 Help Menu

The Help menu is a printout that lists selections that are available for each parameter in the multilevel menus on the printer and indicates with an asterisk (*) which ones are currently active.

CAUTION: Before printing out the Help menu, make sure that there are at least 13 inches of printable width on the installed paper.

Printing a HELP Menu In Tech Access Mode

- **Step 1.** Place the printer Offline.
- **Step 2.** Press the **LF** and **ENTER** keys simultaneously until the printer alarm sounds, then release them to place the printer in Tech Access Mode.
- Step 3. Press the MENU Key to ENTER the multilevel menu system, then scroll (▲ Keys) to the Help menu.
- **Step 4.** Press **ENTER** to begin printing the Help menu.

This printout will end when the entire Help menu is printed out.

2.2.3.2 Report

This parameter has fifteen selections. The selections Current Config, All Configs, Configs 1-10 and Calibrations generate printouts. The second pair of reports (LastFault and Version) are displays. The Report Parameter is located in the Config Menu, under the Printer Category.

Report selections

Configs	Prints a report showing the setups of the configurations.
Calibrations	Prints a report showing the current values of the Paper Out and Paper Motion sensors and the hammer lead time and shuttle amplitude.
Last Fault	The Control Panel Display shows the Last Fault that occurred.
Version	The Control Panel Display shows the version number of the currently installed firmware.

To clear the displays, depress any key on the printer control panel.

Selecting a Printer Report

- **Step 1.** Take the printer Offline.
- Step 2. Depress the MENU key to enter the multilevel menu system, then scroll (▲ Key) to the Config menu. Press ENTER
- **Step 3.** Scroll (▲ Key) until the Printer Category displays. Press **ENTER**.
- **Step 4.** Scroll (▲ Key) until the Report Parameter is displayed. Press **ENTER**.
- **Step 5.** Scroll (\blacktriangle Key) to the desired selection.
- **Step 6.** Press **ENTER** to begin the report printout or display.

2.3 TEST Menu

The Test menu contains the parameters for testing printer operation, adjusting print quality, and controlling fault reporting. There are three categories in this menu: Pattern, Diagnostics, and Fault Override.

2.3.1 Pattern Category

The Pattern Category contains several predefined print patterns used to test basic printer functionality. There are three parameters in this category: **Print**, **Print2**, and **Plot**.

To stop any of the below tests, press **ENTER** or **CLEAR**.

2.3.1.1 Print

This parameter is also available in normal menu operations.

2.3.1.1.1 Upper

Prints a rolling pattern of 63 UPPERCASE ASCII characters.

2.3.1.1.2 All Characters

Prints all Character Sets available on your printer.

2.3.1.1.3 63/69

Prints rolling ASCII with spaces.

2.3.1.1.4 ECMA

Prints a pattern designed to produce a specific audible noise pattern specified by European Computer Manufacturers Association used for acoustics testing.

2.3.1.1.5 Columns

This test labels each column in the current print line. The line length used is based on the current margin settings.

2.3.1.1.6 Test Page

Prints various text and graphics patterns used to gauge print quality.

2.3.1.2 Print2

This parameter is available in Tech Access only.

Except for the **1** Line test all of the tests below run continuously. They will continue to run until you depress either the **ENTER** key or the **CLEAR** key.

2.3.1.2.1 Paper Save

This option provides a means of completing long-term testing of the printer without wasting large amounts of paper. It prints a pattern of all uppercase characters that is advanced by one character on each line. Each pass is four lines long. The printer then backs up three lines and prints another four line pass. The printer then continues printing in this fashion until it makes 30 passes. On the 30th pass the printer does not back up.

2.3.1.2.2 Paper Save 2

A more efficient version of Paper Save intended to reduce wear and tear on the platen mechanics by reducing the reverse motion.

2.3.1.2.3 Burn-In1

This is a burn-in test for Production, designed for testing with Mylar. This test prints 28 inches of 240 x 288 DPI plot data, backs up to top of form, and repeats the process. The plot data is designed to print in 4 sweeps per line, 3 dots per hammer per sweep.

2.3.1.2.4 Burn-In2

This is a burn-in test for Production, designed for testing with paper and ribbon. This test prints 10.5 inches of 240 x 288 DPI plot data, backs up to top of form, and repeats once before moving to the next page. The plot data is designed to print in 4 sweeps per line, 3 dots per hammer per sweep.

2.3.1.2.5 Lower

This option prints a rolling pattern of all 95 lowercase ASCII characters.

2.3.1.2.6 1 Line

This option prints one line only of upper- and lowercase characters.

2.3.1.2.7 All H's

This option prints lines composed of the uppercase letter H.

2.3.1.2.8 All E's

This option prints lines composed of the uppercase letter E.

2.3.1.2.9 All #'s

This option prints lines composed of the **#** symbol.

2.3.1.2.10 All +'s

This option prints lines composed of the + sign.

2.3.1.2.11 Parens

This option prints lines composed of the left parenthesis followed by a vertical bar followed by the right parenthesis.

2.3.1.2.12 Rubout

This option prints lines composed of the currently selected fill character.

2.3.1.2.13 Ribbon

This option prints lines composed of rolling ASCII uppercase characters.

2.3.1.3 Plot

This parameter is available in Tech Access only and it contains selections of plot patterns used to test such things as hammer ball alignment and dot placement. There are five selections for this parameter.

After you have started one of the tests below, it will run continuously until you depress either the **ENTER** Key or the **CLEAR** Key.

2.3.1.3.1 Grid

This option prints a grid pattern that can be used to check hammer ball alignment. Proper alignment of the hammer bank components is indicated by clean lines and uniform patterns.

2.3.1.3.2 Cross

This option prints a crosshatch pattern of diagonal lines that can be used to check linearity of dot placement. Clean lines and uniform pattern are used to indicate linear shuttle action.

2.3.1.3.3 Gray

This option prints a grayscale pattern at 60 x 72 DPI (effectively 30 DPI horizontal). This test fires all hammers (printing every other dot vertically and horizontally), which should lay down an even gray tone across the page. Any change in the gray tone indicates a variation in the gap between the hammer module and the platen, most commonly indicating either a worn hammer module or a replacement module in need of alignment.

2.3.1.3.4 Black

This option prints a solid black page at 60 x 72 DPI matrix. The Black Page Print Mode is the most dense print test that can be run for verifying the proper operation of the printer's power supply. This test places the greatest electrical current load on the power supply as well as increasing the thermal load on the electronics. When performing this test, it is considered normal for the print rate to slow as the current and thermal limits are reached. If the power supply shuts down, rather than simply slowing down, the power supply may need replacement.

2.3.1.3.5 Block

This option prints alternating bars at 60 x 72 DPI matrix. Each bar is offset from the previous bar in order to check on dot placement. This pattern is used to test the printer at its maximum sustainable graphics rate without exceeding the boundaries of thermal change or electrical current overload. This test is useful in examining the capabilities of the print mechanism, for checking proper hammer alignment/spacing, and print quality. The output in the printed areas should have uniform shading. If not, parameters such as individual hammer module heights and alignments should be checked.

Selecting and Running a Print Test

- **Step 1.** Take the printer Offline and place it in Tech Access Mode.
- Step 2. Access the TEST menu with the **MENU** key, then scroll until it displays.
- **Step 3.** Scroll (▲ Key) until the **Pattern** Category is displayed. Press **ENTER**.
- Step 4. Scroll (▲ Key) until the desired Print Test parameter (Print, Print2, or Plot) is displayed. Press ENTER.
- **Step 5.** Scroll (\blacktriangle Key) to the desired test pattern.
- **Step 6.** Press **ENTER** to begin the Print Test.

With the exception of the **1 Line** print test, the print tests are continuous and will continue to print until you depress the **CLEAR** key or the **ENTER** key.

2.3.2 Fault Override Category

This category provides you with a means of controlling fault reporting from the Engine Manager to the Control Processor. Each of the following parameters has two selections: OFF and ON.

When these parameters are set to OFF, faults are reported as they happen (Fault Override is disabled). When these parameters are set to ON, faults are not reported on the display (Fault Override is Enabled).

2.3.2.1 Paper Out

This parameter provides fault override for Paper Out Faults.

2.3.2.2 Shuttle

This parameter provides fault override for Shuttle Fault reporting.

2.3.2.3 Temp

The Temp Parameter provides fault override for Temperature Threshold fault reporting.

2.3.2.4 Control

This parameter provides fault override for the control processor fault reporting status.

2.3.2.5 Link

This parameter provides fault override for control processor to main processor communications.

2.3.2.6 Sync

This parameter provides fault override for the "Lost Sync (28)" error in Twinax Interface Mode. Check printer cable connection.

2.3.3 Diagnostic Category

This category contains parameters for testing various printer components, for setting operational thresholds, and for calibrating certain sensors. You are guided through these diagnostic procedures by instructions on the Control Panel Display. There are 12 diagnostic parameters.

2.3.3.1 Cal-Engine

The following panel options contain print engine calibration procedures.

2.3.3.1.1 Hammer

This procedure generates a test pattern consisting of an assortment of characters and character shapes while stepping through a range of lead times during this hammer timing calibration. The lead times are measured in clock cycles and are printed along the left side of the paper. The tests are run at one shuttle frequency and then repeated for other frequencies.

136 OH TAXI! #+__! #+3E)(OH TAXI! #+3E)(OH TAXI! #+3L 140 OH TAXI! #+3[)(OH TAXI! #+3E)(OH TAXI! #+3E)(OH TAXI! #+3E) DH TAXI! #+3[)(OH TAXI! #+3[)(OH TAXI! #+3[)(OH TAXI! #+3[144 OH TAXI! #+3C)(OH TAXI! #+3C)(OH TAXI! #+3C)(OH TAXI! #+3C 148 OH TAXI! #+30)(OH TAXI! #+30)(OH TAXI! #+30)(OH TAXI! #+30 152OH TAXI! #+3E)(OH TAXI! #+3E)(OH TAXI! #+3E)(OH TAXI! #+3E) 156 OH TAXI! #+JE)(OH TAXI! #+JE)(OH TAXI! #+JE)(OH TAXI! #+JE) 160 OH TAXI! #+JC)(OH TAXI! #+3C)(OH TAXI! #+3C)(OH TAXI! #+3C 164 168 OH TAXI! #+3E)(OH TAXI! #+3E)(OH TAXI! #+3E)(OH TAXI! #+3E OH TAXI! #+3[)(OH TAXI! #+3[)(OH TAXI! #+3[)(OH TAXI! #+3[172 OH TAXI! #+3C)(OH TAXI! #+3C)(OH TAXI! #+3C)(OH TAXI! #+3C) 176 180 OH TAXI! #+30)(OH TAXI! #+30)(OH TAXI! #+30)(OH TAXI! #+30) 184 OH TAXI! #+JE)(OH TAXI! #+JC)(OH TAXI! #+JC)(OH TAXI! #+JC OH TAXI! #+30)(OH TAXI! #+30)(OH TAXI! #+30)(OH TAXI! #+31 168

- **Step 1.** Take the printer Offline and place it in Tech Access Mode.
- **Step 2.** Access the **TEST** menu.
- **Step 3.** Scroll (▲ Key) until the **Diag** Category is displayed. Press **ENTER**.
- **Step 4.** Scroll (▲ Key) until the **Calibration** Parameter is displayed. Press **ENTER**.
- **Step 5.** Scroll (▲ Key) until the **Hammer** selection is displayed.
- **Step 6.** Depress the **ENTER** key to begin the Hammer Calibration Routine.

The printer generates coarse test patterns using hammer lead times from several shuttle frequencies (sample printout above).

Step 7. Examine each line of the printed output for each lead time and select the one that has the best dot placement, then scroll to that setting on the Control Panel and depress the ENTER key to select it.

After you make the last selection (for 45Hz) the printer prints out the settings for the various lead times and the calibration routine is over.

NOTE: Repeat the Print calibration routine with "Heavy Forms" turned on and with heavy forms installed on the printer.

2.3.3.1.2 Shuttle Stroke

Guides the operator through a procedure used to calibrate the shuttle stroke so that the space between hammers is optimal.

2.3.3.1.3 Gap Verify

This option allows the technician to verify that the correct gap setting has been set.

Before this operation is run, paper and ribbon are removed and a sheet of plastic shim stock is inserted into the print zone area. The platen will close down onto the sheet and display the value of the crush point. Using a conversion table, this crush point value can be changed to a print gap distance in inches. If the gap is set correctly, this print gap distance should be very close to the actual thickness of the plastic shim sheet.

2.3.3.1.4 Print Gap

This option allows the platen to be aligned to the hammer bank. When the enter key is pressed the platen goes to a value of 54. At this point, the technician will align and distance by approximately 13 mils the platen from the hammer tips. This is achieved by turning the screws on the adjust side plates. Once this is complete, the enter key is pressed again and the platen returns to the fully open position.

The print gap calibration and the platen sensor calibration need only be run during final assembly of the printer and anytime a platen is replaced. If a hammer bank is replaced, only the print gap option needs to be run.

2.3.3.1.5 Platen

This option calibrates the platen sensor to the platen motor. When the enter key is pressed the platen motor will step through its entire rotational range. At each step the sensor reading will be recorded. This process takes approximately 30 seconds and its progress is indicated by an increasing bar graph on the control panel. Once completed the platen will return to the fully open position. If errors are found in the table after the calibration has completed, the table is erased and "Platen Sensor Fault" is displayed on the front panel.

In order for the platen sensor calibration to work properly, paper and the ribbon cartridge must be removed. The software, however, checks for the presence of these items and will display an error message and not start the calibration until they have been removed.

2.3.3.2 Cal-Paper

The only paper sensor that can be calibrated is the Paper Out sensor.

2.3.3.2.1 Paper Out

This parameter allows users to calibrate the paper-out detection sensor if the factory default settings fail to detect when the paper really is out, or when false paper-out faults occur. Pressing **ENTER** will initiate a series of messages instructing the operator to calibrate the detection sensor:

- Remove the paper from the printer, close the tractor door, and press **ENTER**. A numeric value will be displayed briefly. A new message appears instructing the user to load the printer with paper.
- Press **ENTER** . A new numeric value is displayed briefly, ending the calibration sequence.
2.3.3.3 Meter

The Meter Parameter provides real-time dynamic measurements of various sensor readings within the printer. They can be used to adjust the sensor for optimum performance or to test sensors to ensure that they are operating properly. These test measurements are displayed directly on the Control Panel Display. There are several selections for Meter: **Paper Out, Paper Motion, Shuttle, Ribbon Weld, Supply Voltage, Hambus1, Hambus2,** and **Keypad.**

Accessing the Meter Measurement Tests:

- **Step 1.** Take the printer offline and place it in Tech Access Mode.
- Step 2. With the printer display reading OFFLINE, depress the MENU key and use the ▲/▼ keys to scroll to Test
- **Step 3.** Press **ENTER** and scroll (\blacktriangle Key) to **Diag**.
- **Step 4.** Press **ENTER** and scroll (\blacktriangle Key) to **Meter**.
- Step 5. Press ENTER and scroll (▲ Key) to one of the following measurement tests at Level3. Each Meter Test is initiated by pressing the ENTER key when the desired selection displays.

2.3.3.3.1 Paper Out

The Paper Out Sensor should read less than .2 volts with paper removed and tractor door closed, and greater than 4 volts with paper installed. No other operator actions are required during this test.

2.3.3.3.2 Paper Motion

The Paper Motion Sensor only needs to have a differential of greater than 2 volts between the high and low reading to function properly. No other operator actions are required during this test.

2.3.3.3.3 Shuttle

Displays the output of the shuttle position sensor.

2.3.3.3.4 Ribbon Weld

The Ribbon Weld Sensor is read by sliding a piece of white paper between the ribbon and the sensor. The readings should be greater than 4 volts uncovered and less than .2 volts covered.

2.3.3.3.5 Supply Voltage

Displays the voltage level of the power supply.

2.3.3.3.6 Hambus1 and Hambus2

Displays the voltage level of the hammer drive busses for odd and even hammers. These parameters are used for advanced hammer circuit debugging.

2.3.3.3.7 Keypad

This test verifies that the logic board can receive a signal from each key on the control panel. Once you have entered the Keypad Test, depressing each key should make its label appear on the Control Panel Display (i.e., **MODE**, **VIEW**, **LF**, etc.). Exit the Keypad Test by depressing the **CLEAR** key three times.

2.3.3.4 Motors

This parameter provides a means for testing individual motor circuits by turning them on or off.

Accessing the Motor Tests:

- **Step 1.** Take the printer offline and place it in Tech Access Mode.
- Step 2. With the printer display reading OFFLINE, depress the MENU Key and use the ▲/▼ keys to scroll to TEST.
- **Step 3.** Press **ENTER** and scroll (▲ Key) to **Diag**.
- **Step 4.** Press **ENTER** and scroll (\blacktriangle Key) to **Motor**.
- **Step 5.** Press **ENTER** and scroll (▲ Key) to either Ribbon or Shuttle. Each Motor Test is initiated by depressing the **ENTER** key when the desired selection is displayed.

Motor selections:

Ribbon Shuttle Ribbon Pump Blower Print Gap

CAUTION: Remove the ribbon before performing the Ribbon Pump test!

The selected test is initiated by depressing the **ENTER** Key. After the motor reaches its assigned speed the test can be stopped by depressing the **ENTER** Key again. This sequence may be repeated until you are satisfied with the operation of the motor. (The Paper Feed Motor may be tested using the **LF** (line feed) or **FF** (form feed) functions.).

2.3.3.5 Ribbon Speed

Provides a means to vary the Ribbon Motor speed for a Ribbon Motor Test.

Speed selections: 1–250, Default.

2.3.3.6 Paper Out Thold

This parameter allows you to set the Paper Out Threshold value for the Paper Out Sensor. By using this, you can compensate for the reflectivity of different types of paper.

Selections are 1-255.

2.3.3.7 Clear

This parameter provides you with a means of clearing portions of NVRAM to factory default settings.

2.3.3.7.1 Counts

Clears the count information from NVRAM, and clears the Fault Log.

2.3.3.7.2 Calibrations

Clears the calibration data from NVRAM. When CalData is selected you must perform Hammer and Paper Calibration routines before using the printer.

2.3.3.7.3 NVRAM

Clears the application configuration portion of NVRAM.

2.3.3.8 Shuttle Off

This parameter allows you to set the amount of time the shuttle remains at speed after the last printed data.

Options are 10 Sec, 20 Sec, 30 Sec, and 60 Sec.

2.3.3.9 Serial Dump

When this parameter is enabled, the data the printer receives from the parallel port of PSIO cards is replicated and sent out from the serial port. This allows you to connect a serial cable from the printer to a computer and capture the data using a serial capture utility.

2.3.3.10 Serial Number

This parameter provides for the entry of a unique printer serial number. Each digit is entered in the same manner as that used to enter a configuration name.

2.4 Quick Fault Overrides

In addition to being able to use the above parameters to set up individual fault overrides, you may also use three different key sequences to set up fault overrides. You may set up all fault overrides, four specific overrides, or just Paper Out Fault override.

NOTE: To use these overrides, the printer must first be in Tech Access Mode.

2.4.1 ALL Fault Reporting

To turn **all** fault reporting OFF, place the printer Offline and depress the **FORM FEED** Key and **ENTER** Key simultaneously until the printer alarm sounds. To turn ALL fault reporting back ON, hold down the same two keys when the printer is Offline until the printer alarm sounds.

2.4.2 Four Faults Only

To turn fault reporting OFF for Paper Motion, Paper Out, Ribbon Fault, and platen position sensors, hold down the **ENTER** Key and **TOF** Key simultaneously until the printer alarm sounds. To toggle them back ON, hold down the same two keys until the printer alarm sounds.

CAUTION: When you turn on fault overrides you are losing fault protection.

3. Faults and Troubleshooting

This chapter deals with troubleshooting problems on a 6300 Series printer. Messages that indicate printer faults and errors are explained and corrective action given. The few paper handling and print quality problems that may occur are also explained.

Messages on the Control Panel Display report both normal operation and fault situations. In the table below is presented a listing of the messages that need explanation or action on the part of the operator or repair person. Each message listing includes causes and corrective actions where necessary.

3.1 Faults

When a fault occurs, it will cause the printer to cease operation and go Offline. The printer alarm will sound, the Fault Indicator will illuminate, and the display will report a fault message.

In some cases it is possible to clear an error message and continue using the printer by depressing the **CLEAR** key. However, the quality of the print may be questionable and collateral damage to other parts may result. If the fault message returns, perform the required corrective action.

If a nondestructive fault occurs in the middle of printing a document, one line of text may be lost after the error condition is corrected and the printer put back Online.

If the fault is in the control panel or interprocessor link, the fault message may not be displayed, and the beeper and Fault LED may not operate.

3.2 Fault Correction Procedure

- **Step 1.** First check the fault message on the Control Panel Display and look it up in the Fault Message tables provided here.
- Step 2. Perform the required corrective action. Some Fault and Error messages will automatically clear as soon as the problem is corrected (for example, the Paper Out message will clear when a new stack of paper is loaded).
- **Step 3.** If a faulty piece of hardware is indicated, call your Customer Service Representative for repair.
- Step 4. If any other faults appear on the display after you have corrected the original problem, go back to Step 1 and perform required corrective actions for the new problem. Otherwise place the printer back Online and test it during normal print operations.

3.3 Control Panel Messages

ATTENTION	The host has sent the Bell Command. Corrective action depends on the reason the Bell Command was sent. Contact your system operator.	
Bad Packet	This message indicates that a fault has occurred in the communications between the I/O processor and the main processor. Cycle power and try again. If the problem returns, remove and replace the Controller Board. If the problem returns, download new printer firmware.	
Bad TWICO Int.	The Twinax PSIO is damaged or corrupted. Cycle power and try again. If this does not clear the problem, remove and replace the Twinax PSIO Assembly.	
Bad VFU Channel	A VFU channel command has been received from the host requesting an illegal channel.	
	1. Correct data from host and retransmit.	
	2. Ensure the integrity of the printer ground connection.	
Bad VFU Count	An incorrect number of bytes has been detected in a VFU download. Correct data from host and retransmit.	
Buffer Overflow	A buffer overflow has been detected on the currently active host interface. This is most likely caused by a host failure to respond to a busy signal.	
	1. Ensure correct protocol has been selected.	
	2. Check wiring of I/O cable between host and printer. (See the <i>Applications Manual</i> for a detailed explanation.)	
Chnl Not Found	VFU Channel requested by the host computer cannot be found.	
	1. Correct data from host, then retransmit it to the printer.	
	2. Ensure the integrity of the printer ground connection.	
Ctrl Fault	This message indicates that a fatal fault has occurred in the control processor. Replace the Controller Board.	
Ctrl Link Flt	The Control Processor has detected a fault in the Main Processor to Control Processor link. Replace the Controller Board.	
Data Overrun	A data overrun has been detected on the currently active host interface. This is most likely caused by an incorrectly configured serial baud rate, data bits, or parity. Check setting on Serial Baud Rate, Data Bits, and Parity parameters through the printer control panel.	
Flash Memory Fault	Related to platen faults is the flash memory fault because it may occur during the platen calibration process if the calibration table cannot be written to flash memory.	
Font Dnld Error	An error has been detected during a font download. Correct data and retransmit from host.	

Graphic Check	This message indicates that the printer has received an unprintable graphic. This message only appears if the Set Graphic Error Action Command has been set properly. Clear the message (Clear key), then place the printer back Online. Confirm with host why Graphic Check message was sent.	
HammerTime	The software controlling the print hammer timing has detected an internal inconsistency. Press the Clear key. If it faults repeatedly, skip to the next print job, and replace the Controller Board.	
HammerVoltage1	One of the hammer drive circuits was turned on when it shouldn't have been, so all printing has been disabled. The usual cause is a failed drive transistor. Replace the Controller Board.	
HammerVoltage2	A high resistance coil fault has likely occurred in one or more of the hammer coils. Note: this fault message will have been preceded by printing slow-down attempts associated with On- The-Fly thermal monitoring of hammer bank temperature. Check the hammer bank for defective coils. Replace the Controller Board.	
Heap Overflow	Graphics memory space is full and the printer cannot accept or process data. Printer will reset and data will be lost. Insert line terminators in data stream so the printer will process the data, then retransmit the data.	
LostAdrs (27)	Certain communication signals have been lost between the printer and the host computer. Check cable connection, setup of host, and printer address setting.	
Lost Sync (28)	The host is not communicating with the printer. Verify address of computer and host setup. Check I/O cables. When this message is displayed during printer installation, you may continue to test the printer by placing the printer Offline and entering Menu mode to select print tests or calibration routines.	
NoVFU Loaded	A VFU command was received from the host before a VFU was downloaded. Download the required VFU information, then retransmit the data.	
NVRAM Fault	 The nonvolatile data checksum has failed because of one of the following conditions: (1) A new RAM has been installed. (2) New software with different nonvolatile variables has been installed. (3) The variable values have been altered in a destructive manner. Depress the Clear key. If the message does not clear, cycle printer power. If the message still does not clear, replace the Controller Board 	

Offline Data In	The printer is in Offline condition and unprinted data is in the buffer. There is no corrective action required. Under normal conditions, the printer continues to print when it is placed back Online. If you do not want the buffered data to print, enter the Clear menu by depressing the Clear key before going back Online and select the Clear Buffers entry to clear the buffered data.		
Offline Dump On	The printer is in Offline condition and Dump Mode is enabled. No corrective action is necessary. Place the printer back Online when you are ready to print.		
Online Download	The printer is receiving downloaded fonts or VFU information. This message will clear when the download is complete.		
Online Dump On	The printer is ready to accept and print data from the host through Dump Mode. All data received from the host will be printed in hexadecimal format.		
OverflowVFU	An excessive number of bytes has been sent by the host in a VFU download. Correct data and retransmit from host.		
Paper Motion Flt	The control processor has detected that the paper has failed to move the required distance after sending a command to the Paper Drive Motor. Check for paper feed problems. If there are any paper feed problems, correct them, then press the Clear key to clear the fault. If there are no paper feed problems and the condition does not clear, clean or replace the paper motion sensor. If the message still does not clear, replace the Controller Board.		
Paper Out	Paper is not being detected by the Paper Out sensor. If this message is correct, refer to the Paper Loading sections in Chapter 2 of the Operator Manual, then load paper. If the fault does not clear, clean or replace the paper out sensor. If the message still does not clear, replace the Controller Board.		
Parity Error	Parity is enabled and a mismatch on Bit 8, between the computer and the printer, has been detected on the currently active host interface. If there is a mismatch between the setting of the printer and the setting of he host, you can change printer parity (see the Config Menu section in Chapter 3 of the Operator Manual). If there is no mismatch between the printer and host settings, then the data sent from the host has been corrupted. Retransmit the data from the host. If the condition repeats, set up the printer for Dump Mode (see the Config Menu section in Chapter 3), and retransmit the data again. If you find no errors in the Dump Mode data, replace the Controller Board.		
Platen Calibration Required	This message occurs on power up if the platen sensor has never been calibrated or the calibration table is found to be invalid. A valid calibration table adheres to the following rules: Successive entries in the table must have increasing sensor values. And the difference between fully open and fully closed sensor values must be greater than 100.		

Platen Motion Fault	This fault occurs when the platen is unable to reach its requested destination. The platen must either be attempting to open (currently in any position) or close with the current platen position in the Open Gap Zone (191-255). This fault may be overridden in tech access mode.	
Platen Sensor Fault	During the calibration process, if the calibration table is found to be invalid (see Platen Calibration Required), this fault is reported. This fault is also reported if the platen control code stops receiving replies to requests for the current platen sensor value.	
Print Fault	Faulty communication between the main and control processor has occurred causing a dot row to misprint. The printer automatically recovers from this condition. Under normal circumstances there is no corrective action other than to depress the Clear key to remove the fault message from the display. If, however, this problem persists, replace the Controller Board.	
Print Gap Fault	This fault occurs only in auto gap mode when the platen is unable to reach the requested destination. The platen must be attempting to close and the current platen position must be in the Printable Gap Zone (0-190). A typical scenario where this fault will occur is the closing of the platen on a form which has become crumpled below the paper tractors. Under no circumstances will this fault be reported during an auto gap detection process, because the stalling of the platen motor is a necessary part of forms thickness detection.	
Print Gap Adjusted To ###	This user fault is handled as a warning to the user. This fault occurs only in manual mode when the user has loaded forms that are too thick for the current print gap setting. To avoid locking the platen, we auto adjust the print gap and inform the user of the new setting. The message is only displayed for 2 seconds.	
Replace Rbn	Caused when Ribbon Monitor has reached its set level. Check/Replace the ribbon then reset the Ribbon Monitor.	
Ribbon Fault	The Ribbon Fault Detector is not reading any movement in the printer ink-ribbon. Depress the Clear key and try to print again. If the fault returns, try to turn the Ribbon Knob. If the Ribbon Knob will not turn, check to see if the ribbon is caught on the hammer bank or one of the other mechanisms through which the ribbon moves. If the Ribbon Knob does not turn and the ribbon is not caught somewhere, install a new ribbon cartridge. If the Ribbon Knob turns and the fault does not clear, replace the ribbon motor.	
SetupAddress	The printer address has not been set up or a configuration with address set to UNDEFIN has been loaded. Set up the printer address using the multilevel menus on the printer. See the Config Menu in Chapter 3 of the Operator Manual.	

Shuttle Fault	If the control processor detects the shuttle operating either above or below the proper frequency, it shuts down the shuttle and attempts to restart it. If the shuttle still operates incorrectly after three consecutive attempts, the Control Processor goes Offline, and the Shuttle Fault message is displayed. Depress the Clear key, then put the printer back Online. If this doesn't work, turn the power switch off, then back on again. If the error condition persists after performing the above actions, begin replacing shuttle control components.
Testing Hardware	The printer is performing internal diagnostic tests when the printer is powered up. If this message does not clear after a few seconds, then the Main CPU is dead. Under normal circumstances there is no corrective action. If the message does not clear automatically, replace the Controller Board.

3.4 Troubleshooting Guides

Not all printer problems are reported by an error message. Malfunctioning hardware can cause a wide variety of problems without triggering a fault indication. The troubleshooting procedures in this section will help you to repair hardware problems.

3.4.1 Printer Does Not Power Up When Switched On

There are four things that can cause this problem.

- 1. A bad connection.
- 2. A malfunctioning On/Off switch.
- 3. Incorrect input power.
- 4. A malfunctioning power supply.

CAUTION: Input power voltages can be lethal. Be very careful while performing these procedures.

Step 1. Check all power connections.

Is the printer plugged in?

Are the connections on the On/Off switch secure?

Are the input power connections on the Power Supply secure?

Are the Power Supply connections to the Controller Board secure?

Step 2. Check the input power supply voltage. Input power should be 90—130 VAC or 180—264 VAC, single phase, 50 ± 3 —60 ± 3 Hz. Check input power at the plug-in, on the Power Supply side of the On/Off switch, and on the input side of the Power Supply.

If input power at the plug-in is incorrect, either the printer power cord is defective or the power supply is defective. Check power at the outlet to make sure the power source voltage is correct. If the power source voltage is OK, the problem is in the cord.

If input power at the plug-in is OK, check power from the On/Off switch to the Power Supply. If there is no power at the back of the On/Off switch when it is switched On, the On/Off switch is defective and should be replaced.

If input power is OK on the back of the On/Off switch, check input power on the Power Supply. If there is no input power at the Power Supply, the cabling from the On/Off switch to the Power Supply is defective.

Step 3. If input power to the printer Power Supply is OK, check output voltage of the Power Supply. Power Supply output voltage should be approximately +48 V DC. If the output voltage is incorrect, remove and replace the Power Supply.

3.4.2 Printer Powers Up but the Control Panel Does Not Function.

There are four things that can cause this problem.

- 1. A bad connection.
- 2. A bad control panel.
- 3. A bad Controller Board.
- 4. Loss of 5 V power supply.

NOTE: If the yellow Power On Indicator is the only one that does not function, the problem is most likely a malfunctioning Control Panel.

Step 1. Check the form movement keys to see if they function.

If the form movement keys function properly, the problem is either in the Control Panel or in the Controller Board.

Try another Control Panel first. If that does not correct the problem, then remove and replace the Controller Board.

Step 2. If the form movement keys do not function properly, check the Control Panel connection to the Controller Board.

If the connection is OK, the problem is in either the Control Panel or in the Controller Board. Try another Control Panel first. If that does not correct the problem, then remove and replace the Controller Board.

3.4.3 Control Panel Display Functions Partially, Nonsensically, or Not At All.

There are three things that can cause this problem.

- 1. A bad connection.
- 2. A malfunctioning Control Panel.
- 3. A malfunctioning Controller Board.
- **Step 1.** Check the Control Panel connection to the Controller Board.
- **Step 2.** If the connection is OK, the problem is in either the Control Panel or in the Controller Board.

Try another Control Panel first. If that does not correct the problem, then remove and replace the Controller Board.

3.4.4 No Printed Output but Printer Appears to be Operating Normally

There are three things that can cause this problem.

- 1. The platen may be open too far.
- 2. The Ribbon Cartridge may not be functioning properly.
- 3. Platen alignment may be incorrect.
- Step 1. Run another print gap detection and verify that the print gap is at a reasonable position by using the PRINT GAP adjust keys. The position should be around 55 for 18 lb. single part forms, or up to 115 for 6-part carbon forms. Or, go into Manual Platen Gap mode and adjust the "PRINT GAP –" key until dots appear on the page.
- **Step 2.** Make sure the Ribbon Cartridge is functioning (tracking) properly. If the Ribbon Cartridge is not functioning properly, replace it.
- **Step 3.** If steps 1–2 do not correct the problem, check and adjust the platen alignment guides. The Platen Gap should be approximately .013 in. with the Platen Gap fully closed.

3.4.5 Printed Output Appears Light

There are three things that can cause this problem.

- 1. The platen may be open too far.
- 2. The Ribbon Cartridge may be worn out.
- 3. Platen alignment may be incorrect.
- **Step 1.** Check for a proper the Platen Gap setting.
- **Step 2.** If the Ribbon Cartridge is functioning properly, it is probably out of ink. Remove and replace the Ribbon Cartridge.
- **Step 3.** If steps 1–2 do not correct the problem, check and adjust the platen alignment guides. The Platen Gap should be approximately .013 inches with the Platen Gap fully closed.

3.4.6 Printed Output Appears Shaky or Fuzzy

There are six things that can cause this problem.

- 1. The platen may be open too far.
- 2. The hammers are not firing properly.
- 3. Platen alignment may be incorrect.
- 4. Damaged platen.
- 5. The Shuttle Sensor is misaligned.
- **Step 1.** Run another print gap detection and verify that the print gap is at a reasonable position by using the **PRINT GAP** adjust keys.
- **Step 2.** Perform a Hammer Calibration procedure. This procedure is explained in Chapter 2, in the **TEST** Menu Section, under the **Diagnostic** Category (**PrntCal** Parameter).

If the hammers can not be calibrated, the problem is in the Controller CBA. Replace the Controller CBA following the procedure explained in Chapter 4.

- **Step 3.** Check and adjust the platen alignment guides. The Platen Gap should be .012 " .014" with the platen fully closed.
- **Step 4.** Check the impact area of the platen and replace the platen if this area is damaged.

3.4.7 Character Columns Not Printing

There are five things that can cause this problem.

- 1. Broken Hammer.
- 2. Defective Hammer Coil; either shorted or open.
- 3. Defective Hammer Bank Cable.
- 4. Malfunctioning Controller Board.
- 5. The hammer may be sticking due to contamination, such as paper and ink buildup.
- **Step 1.** Open the cover and paper guide areas.
- Step 2. Inspect the Hammer Bank cables for rub spots, cracked insulation, burn spots, etc.

If any physical defects are found in the cables, remove and replace the Cable Assembly and correct the cause of the problem with the cable.

Test the printer to see if the problem is still present. If it isn't, reinstall the cover, etc. and place the printer back in service.

If the problem is still present, proceed to STEP 3.

If no physical defects are found proceed to the next step.

- **Step 3.** Remove the Ribbon Cartridge and Ribbon Platform.
- Step 4. Check continuity from the Hammer Bank Cable Connector to the affected coils.
- **Step 5.** Check continuity of the Hammer Coil. Resistance of the coil should be 12 Ω (Ohms) \pm .3 Ω at 70° F. If the coil resistance is outside of this range, remove and replace the Hammer Module.

If the Hammer Coil is defective, check the Hammer Driver on the Controller Board also. Defective Hammer Drivers can cause problems with Hammer Coils. Instructions for checking Hammer Drivers are located at the end of this chapter.

- Step 6. Is the hammer broken or defective? If so, remove and replace the Hammer Module.
- Step 7. Check between the Hammer Plate and the Hammer Module Return Plate and between the Hammer Head and Hammer Coil for ink and paper buildup. Clean the Hammer Bank by prying out gently on the hammer with your finger and running a piece of paper behind the hammer to remove the contamination. For stubborn buildup you may use a little isopropyl alcohol on the paper to loosen the contamination.
- **Step 8.** If there are no physical defects, shorts, or opens, the likely cause of the problem is a malfunctioning Controller Board. Remove and replace the Controller Board.

3.4.8 Printer is Out of Paper — No Paper Out Fault is Reported

There are four things that can cause this problem.

- 1. Fault override for paper out sensor is on, disabling the paper out sensor.
- 2. Calibration values have been lost for the paper out sensor.
- 3. The Paper Out Sensor is bad.
- 4. Malfunctioning Controller Board.
- **Step 1.** Check to see if the fault override is enabled for Paper Out sensing.
- **Step 2.** If Fault Overrides are not enabled, check the sensor connections and recalibrate the Paper Out sensor. (See Chapter 2, under **Diag Category**.)
- **Step 3.** Use the Meters function (explained earlier in the troubleshooting table) to verify operation of the sensor. If the sensor is bad, replace it.
- **Step 4.** If none of the above checks eliminate the problem, the most likely cause is a malfunctioning Controller Board. Remove and replace the Controller Board.

NOTE: If you have no idea how long the printer has been banging away with no paper installed, check the platen for damage. If necessary, remove and replace the platen and any damaged hammers.

3.4.9 No Paper Motion — No Paper Motion Fault is Reported

There are three things that can cause this problem

- 1. Fault override for paper motion sensor is on, disabling the paper motion sensor.
- 2. Defective Paper Motion Sensor.
- 3. Malfunctioning Controller Board.
- **Step 1.** Check to see if the fault override is enabled for Paper Motion sensing.
- **Step 2.** Use the PapMot Meter Test to check the sensor. If it does not check correctly, remove and replace the upper tractor set.
- **Step 3.** If none of the above checks eliminate the problem, the most likely cause is a malfunctioning Controller Board. Remove and replace the Controller Board.

NOTE: If you have no idea how long the printer has been banging away with no paper motion, check the platen for damage. If necessary, remove and replace the platen and any damaged hammers.

Problem	Cause	Corrective Action
The paper holes are wider than normal after passing through the tractors.	Horizontal paper tension is too tight.	Unlock and readjust the tractors.
Printed characters on heavy weight or multi-part paper are smeared	The Platen Gap is not set correctly, or there is an incorrect Platen calibration.	Open the Platen Gap by pressing the PRINT GAP + key.
The printed characters are too light	The Platen Gap is not set correctly, or the ribbon is worn out, or there is an incorrect platen calibration.	Readjust the Platen Gap using the PRINT GAP keys. If this does not correct the problem, replace the ribbon cartridge with a new one, or calibrate platen.
The printed characters are shaky.	The Platen Gap is not set correctly, or there is an incorrect platen calibration	Adjust the Platen Gap using the PRINT GAP keys, or calibrate the platen.
The paper holes are elongated after passing through the tractors.	The Platen Gap is not set correctly, or there is an incorrect platen calibration.	Adjust the Platen Gap using the PRINT GAP keys, or calibrate the platen.
The paper comes out of the tractors or the paper tears at the right or left holes along the edges.	(1) The horizontal paper tension is incorrect.	To change the horizontal tension, unlock the right tractor and move it left or right to make the necessary adjustment.
	(2) The tractors are too far apart.	Unlock and realign the tractors.
	(3) The Platen Gap is not set correctly, or there is an incorrect platen calibration.	Adjust the Platen Gap using the PRINT GAP keys, or calibrate the platen.

3.4.10 Paper Handling Problems

3.4.11 Twinax Trouble Checklist

If the Printer Verification Test fails, check the following:

- Does the printer have the correct address setting?
- Does the address in the system configuration match the setting on the printer?
- Is the device type in the system configuration correct for the type of printer being emulated?
- Is the cable to the device immediately up cable on the Twinax line correctly connected?
- Are the devices down cable functioning properly?
- Is the last device on the line properly terminated?
- Is the printer properly configured?

Blank Page

4. Removing and Replacing Components

4.1 Removing the Operator Panel

Ensure power is OFF and power cable unplugged before performing this operation.

- 1. Lift the top lid of the printer.
- 2. Locate the small opening under the left side of the Operator Panel (about 2.5 inches from the top of the Operator Panel, in the opening where the top lid normally sits).



- 3. Using a small flat-blade screwdriver (or similar tool), push in through the opening and simultaneously lift the left edge of the Operator Panel (insertion of the screwdriver pushes against a tab on the Op Panel, releasing it from the housing).
- 4. Lift the Operator Panel gently, turn it at a slight angle and set it inside the printer through the opening where the Op Panel normally sits.
- CAUTION: The Operator Panel has a short connecting cable and can be damaged if pulled too tightly.

If you are going to completely remove the Operator Panel, trace the cable by hand to the connector on the Logic PCA assembly and unplug the connector.

CAUTION: The cable uses a reinforced end as the connection-point and can be damaged if inserted incorrectly when reassembling. It is recommended that the right-end cover be removed for reassembly (see next procedure).

4.2 Removing the Right End Cover

- 1. Follow instructions for removing the Operator Panel (steps 1 through 4).
- 2. With the top lid open, remove the flathead Phillips-head screw at the back corner (standard #2 Phillips screwdriver).



 Loosen a Phillips-head screw located at the bottom of the end panel – this screw is located through the Operator Panel opening (long-shaft – 10" - Phillips). Remove the screw at the top of opening.



4. Loosen two (2) Phillips-head screws located around the lower perimeter of the end-cover.



5. Remove two (2) Phillips-head screws located at the top of the back panel.



6. Lift cover from printer.

4.3 Removing the Control Board Assembly

- 1. Follow the instructions for removing the Operator Panel and Right End Cover.
- 2. Remove the nut holding the ground strap to the bottom of the Control Board mounting plate (5/16" nut-driver).



3. Remove the Phillips-head screw at the middle-right and loosen the screw in the lower-left of the back panel. (Lower left screw forms part of the "hinge" for the Control Board assembly.)



4. Tilt the assembly out slightly.

- 5. Disconnect all cables from the Logic PCA.
- 6. Remove the screw from the lower-left back panel area.
- 7. Remove one (1) Phillips-head screw holding the hinge-plate at the front of the Control Board assembly. Ensure you support the Logic pca assembly during this step.



- 8. Lift the Control Board clear of the printer.
- 9. If you are changing the Control Board and need to remove it from the metal shield, remove seven (7) Phillips-head screws and lift the plate clear of the circuit board.



4.4 Removing the Ribbon Platform

- 1. Loosen the two (2) Phillips-head screws at the back of the ribbon platform (one on each side).
- 2. Remove the Phillips-head screws toward the front of the ribbon platform (one on each side).
- 3. Lift the platform a little, tilt it up and then unplug the cables in the back-right corner under the platform then lift the platform clear of the printer.



4.5 Removing a Ribbon / Re-inking Motor



1. Loosen four Phillips-head screws and lift the motor from the platform.

4.6 Removing the Power Supply

CAUTION: Ensure the AC power cable is unplugged from the back of the printer.

- 1. Follow the instructions for removing the Operator Panel and Right-end Cover.
- 2. Remove four (4) Phillips-head screws from the panel at the back of the printer.



- 3. Unplug the power cable connection at the Control Board assembly.
- 4. Lift the Power Supply and panel assembly out of the printer.

4.7 Removing the Paper Drive Motor

- 1. Follow the instructions for removing the Operator Panel and Right-end cover.
- 2. Remove the Phillips-head screw at the middle-right and loosen the screw in the lower-left of the back panel. (Lower left screw forms part of the "hinge" for the Control Board assembly.)
- 3. Tilt the Control Board slightly.
- 4. Loosen the Torx-head screws (Torx 8 Plus driver) on the coupling of the paper motor shaft to the tractor drive shaft.

CAUTION: Do not loosen them too much as they may fall out – they have a tendency to disappear when they fall out.



5. Remove four (4) Phillips-head screws from the motor mount at the right-end of the print mechanism.



6. Remove motor from print mechanism.

4.8 Removing the Tractors

- 1. Remove the Paper Guides (lift at the bottom then lift out of the printer).
- 2. Unlock the tractors and move them to the center of the paper shaft.
- 3. Mark the position of the coupling on the Paper Drive Shaft (for position reference when reassembling).
- 4. Loosen the Torx-head screws (Torx 8 Plus driver) on the coupling of the paper motor shaft to the tractor drive shaft.

CAUTION: Do not loosen them too much as they may fall out – they have a tendency to disappear when they fall out.



5. Release the grip ring at the left end of the tractor drive shaft (the square shaft) and move it toward the center of the shaft.



- 6. Slide the square shaft as far left as possible.
- 7. Remove the coupling from the square tractor shaft / paper motor shaft careful not to drop the screws.
- 8. Remove the 'e-ring' at the left end of the round shaft of the paper drive assembly (see illustration above).
- CAUTION: The support bearing for the round shaft is a pressed-in nylon bearing. Hold this bearing in place with a long-nose pliers or similar tool while the round shaft is moved through it.

9. Unthread the round shaft from the Vernier Knob by turning the knob and holding the shaft in position. (There is a ground wire that is hard-mounted to the left end of the shaft.) Slide the round shaft as far left as possible



10. You should now be able to lift the square and round shafts together slightly and slide the tractors to the right and off of the shafts

When remounting the tractors, pay attention that the timing marks on the tractor bearing that fits on the square shaft are both on the same "lobe" of the square shaft.

4.9 Removing the Hammer Bank

- 1. Follow the instructions for removing the Operator Panel and Right-end cover.
- 2. Follow the instructions for removing the Ribbon Platform.
- 3. Release the Hammer Bank Ribbon Cable guides squeeze tab at back edge then lift gently (two places for the 6306 and four for the 6312).



- 4. Unplug the Hammer Bank Ribbon Cables (see above).
- 5. Loosen the screw holding the cable assembly strain relief clamp then slide the clamp to the right and out of the hammer bank assembly.



- 6. Move the tractors outside the edges of the ribbon shield.
- 7. Using a 3/16" allen driver, remove the two hammer bank mounting screws (see above).
- 8. Push the hammer bank back slightly to clear the guide pins, then lift the hammer bank clear of the printer.

4.10 Installing the Hammer Bank

- 1. Ensure the hammer bank is properly positioned on the guide pins, pull it forward slightly, then insert and tighten the hammer bank mounting screws.
- 2. Insert the stain relief in the right end of the hammer bank then tighten screw.
- 3. Before mounting the ribbon platform, power up the printer, turn on the Tech Access feature then run the Print Gap test (Cal Engine Print Gap). This test will run the platen gap to an indicated "54" on the display. At this time set the physical platen gap to 0.013" using the platen gap adjustment screws at each end of the platen.



4.11 Removing the Platen Motor and Sensor PCA

- 1. Unplug the Sensor and Drive cables from the assembly.
- 2. Loosen the two set-screws on opposite sides of the platen that mount the platen to the motor shaft.



CAUTION: Do not totally remove the set screws to prevent them from falling into the mechanism.
3. Remove two socket head screws from opposite corners of the motor and lift the assembly clear of the printer.



4.12 Installing the Platen Motor and Sensor PCA

- 1. With the assembly in-hand, turn the motor shaft so that it is aligned as in the "pictogram" just to the left of the shaft.
- 2. Insert the assembly through the side frame of the printer and install and tighten the mounting screws.
- 3. Reach through the opening at the back of the side frame and move the platen to a "full open" position.
- 4. Holding the platen fully open and ensuring the motor shaft is still aligned, tighten the set-screw that mounts the platen to the motor shaft.
- 5. Connect the cables.
- 6. Power the printer up then run the "Platen" function (Engine Cal Platen) which calibrates the platen sensor to the platen motor. You can monitor the progress on the display of the printer.

5. Firmware Download Instructions

Tally T6xxx Series and TallyGenicom 63xx Series line printer firmware flash download files have a suffix of .EXA or .EXB. All are self-extracting PKZIP files, containing a single compressed file that can be downloaded without possibility of corruption. In other words, all of the separate bits & pieces of our flash-download process have been rolled into a single file that is compressed using PKZIP. Both the name of the ZIP file and the compressed firmware image file inside it have suffixes that describe their contents:

ZIP suffix	Image suffix	Contents
.EXA	.TFA	TallyGenicom Flash ASCII format
.EXB	.TFB	TallyGenicom Flash BINARY format

ASCII format (.EXA) is used for printers that support only ASCII downloads (all T60xx and early T62xx models). ASCII-format downloads are supported via parallel-port, using the special flash-download panel key sequence with which you are already familiar.

BINARY format (.EXB) is used for printers that support BINARY downloads (i.e., T62xx with Boot v2.3+ firmware, and 63xx models). BINARY-format downloads are faster; they are compressed files that take less time to download & program. BINARY-format downloads are supported via parallel-port or Ethernet. Note that Ethernet downloads require a controller with 8MB of RAM (the newer T62xx controllers have this).

5.1 Flash Download via Parallel Port

First, put the printer into flash-download mode.

Save the ZIP file to disk and open a DOS window. You will need to rename the file extension from .EXA/EXB to .EXE because Windows won't let you execute files with .EXA/EXB extensions.

With .EXA files, unzip to printer via "file.EXE -p" command; with .EXB files, unzip to printer via "file.EXE -pb" command.

As an alternative, you could unzip the ZIP file to disk using "file.EXE" command, then send the resulting .TFA/TFB file to the printer via DOS "copy/b file.TFx lpt1:" command. This simple file-copy method also works if you are downloading firmware via USB-to-Parallel adapter, or if downloading firmware from a non-PC platform (of course, the command format will be different).

5.2 Flash Download into a Printer via Ethernet

Do not put the printer in flash-download mode. Instead, start WebPanel and select the "Printer Configuration->Download Firmware" option. Follow the instructions carefully. Don't forget to set the printer OFFLINE before downloading.

To prepare the firmware file for download, save the ZIP file to disk and open a DOS window. You will need to rename the file extension from .EXB to .EXE because Windows won't let you execute files with .EXB extension. Unzip the file to disk using "file.EXE" command.

When WebPanel prompts you for a download file, use the unzipped ".TFB" file. WebPanel will send this file to the TallyCom, and the printer will go thru a flash-download sequence. If all goes well, WebPanel will report a successful download and you should see a new firmware version reported in the "Printer Status" frame. If not, WebPanel may display an error and you will have to try again.

6. Print Gap Control

6.1 Control Panel Keys – Print Gap

PRINT GAP - (Minus)

Pressing this key once causes the print gap adjust menu to display. If six seconds have passed and no key is pressed, the print gap adjust menu will disappear and the display will revert back to the current online/offline status. Pressing the clear key will also cause the gap adjust menu to disappear.

Additional key presses will decrease the print gap by approximately 0.3mils'. Each print gap adjust (+ or -) key press rotates the platen by 0.9° which is one half step of the motor. Since the print gap is determined by the rotational position of the platen, the gap change for each motor step follows a sinusoidal curve. About the center of the platen rotation, the gap change from step to step is fairly linear and is approximately 0.3mils. At the rotational extremes the change from each step, however, is much less. Within the usable rotational range of the platen, the print gap ranges from 4.5mils to 44mils. If printing does not commence within 6 seconds of the last key press, the platen will return to the fully open position.

Once the platen control system has detected that it cannot decrease the print gap anymore, the minus key will be disabled. This condition arises when the platen is in contact with the form and it does not have enough torque to compress it any further.

PRINT GAP + (Plus)

Pressing this key once causes the print gap adjust menu to display. Additional key presses will increase the print gap by approximately 0.3mils.

6.2 Menu Structure

To configure normal platen operation, <u>Print Gap</u> has been added as a category under the Operator menu. Within the Print Gap category are the following parameters: <u>Detect</u>, <u>Adjust</u>, <u>Reset</u>, <u>Mode</u> and <u>Detect Distance</u>.

To calibrate the platen system, <u>Platen</u>, <u>Print Gap</u> and <u>Gap Verify</u> have been added as options under the Cal-Engine parameter. These options are only accessible when tech access is enabled.

To test the platen motor, Print Gap has been added as an option under the Motors parameter.

6.2.1 Basic Platen Parameter and Option Descriptions

6.2.1.1 Mode

The two options within this parameter are auto or manual.

In auto detect mode, the adjustment range about the calculated optimal gap will be restricted. The minus adjustment will be limited to a range that does not allow the gap to get tight enough to stall the shuttle system. The plus adjustment will be limited to a range that does not allow for excessive missing dots.

In manual detect mode, the adjustment range of the platen is 0 to 190.

If auto is selected, print gap detection will be preformed during the first platen close operation after a paper-out condition.

The following events will cause the platen to close: TOF key press, detect key press, print gap adjustment key press or the start of a print job. Subsequent platen closings will not trigger a print gap detection operation until the next paper-out condition is detected. The calculated optimal gap setting for each print gap detection is compared to the value stored in the current configuration. If it is not significantly different, the previous gap setting with adjustment will be retained. In the zero-tear printing mode, print gap detections will be tied solely to the TOF key. This is due to the fact that the paper-out sensor is non-usable in this print mode.

The resulting optimal print gap setting and adjustment range will then be stored in the current configuration. From this point on, when the platen is commanded to close, it will go to this stored setting.

If the platen is unable to close down to this gap setting, either a print gap fault or a platen motion fault message will be displayed. This scenario can be caused by a paper jam within the print zone.

If manual is selected, print gap detection will only be preformed when commanded by selecting the detect parameter from the control panel. Manual mode allows the "power" user to use the + and – adjust keys to go directly to the gap of their choosing without having to run a print gap detect operation. This mode, however, will allow the user to select print gaps which give very poor print quality and shuttle, ribbon and or paper motion faults.

Each time the platen is commanded to close, it will go to the last value stored in the current configuration. If the platen is commanded to close on an area of a form that is greater than the current gap setting (such as a male perforation or label), a simplified auto detection will be preformed and a new optimal gap setting saved. This may result in a few smudged print lines, as the correction will be occurring after the printing has started

If no value has been stored in the current configuration the platen will drive to a value of 190. The default value of the print gap in all the configurations will be set to 255 (0xFF). Since the allowable print gap values are 0 to 190, 255 is used as a no print detect preformed flag. If the platen is commanded to close and the current configuration has a value of 255, the platen will close to a value of 190 and have an adjustment range of -190 / +0. This is similar to the reset condition.

6.2.1.2 Detect Distance

This parameter is only meaningful if the detect mode is auto.

The options within this parameter are 0" to the current form length with increments of a tenth of an inch. The default setting is 2.0". When a TOF key is pressed after a paper-out error, this sets the vertical distance from the top of form to where the print gap detect is preformed.

If a form is not of uniform thickness, detect distance allows the user to select where on the form to detect the optimal print gap. Typically this would be the thickest part of the form. Since a print gap detect has the side effect of placing dots on the form, this parameter also allows the user to put these dots in a part of the form that does not affect readability. Even though this parameter allows the gap detect to be performed on the perforation of the form (distance of 0" or the form length), this is not recommended. The perforation thickness is not representative of the actual form thickness and may give a sub-optimal print gap setting

6.2.1.3 Detect

When the enter key is pressed, the platen closes down at the current location until the form compression point is reached. Based upon this compression point, a resulting optimal print gap setting is computed and stored in the current configuration. Unlike the print gap detections that are run after paper-out errors, this operation does not compare its calculated gap with the current setting. It will just overwrite the current setting with the new one. The platen then returns to the fully open position.

6.2.1.4 Reset

When the enter key is pressed, the current gap position is set to 190. The usable / printable rotational range of the platen is 171° which equates to values of 0 through 190 on the print gap adjust display. The reset value of 190 equates to a gap of approximately 44mils. The reset function is useful for the user that does not wish to operate in the auto detect mode, but is unsure of where to set the gap. Reset will put the gap at a known position (wide) where the user can then begin honing in on the optimal gap.

If manual detect mode is selected, the allowable adjustment range will be set to -190 / +0. If auto detect mode is selected, a print gap detection will be run the next time the platen is commanded to close.

6.2.1.5 Adjust

This parameter works similar to that of pressing the dedicated platen adjust keys. The only difference is that the display does not time-out after six seconds of inactivity.

6.2.2 Platen Calibration Option Descriptions

6.2.2.1 Platen

This option calibrates the platen sensor to the platen motor. In order for the platen sensor calibration to work properly, paper and the ribbon cartridge must be removed. The software, however, checks for the presence of these items and will display an error message and not start the calibration until they have been removed.

When the enter key is pressed the platen motor will step through its entire rotational range. At each step the sensor reading will be recorded. This process takes approximately 30 seconds and its progress is indicated by an increasing bar graph on the control panel. Once completed the platen will return to the fully open position. If errors are found in the table after the calibration has completed, the table is erased and "Platen Sensor Fault" is displayed on the front panel.

6.2.2.2 Print Gap

This option allows the platen to be aligned to the hammer bank. When the enter key is pressed the platen goes to a value of 54. At this point, the technician will align and distance by approximately 13mils the platen from the hammer tips. This is achieved by turning the screws on the adjust side plates. Once this is complete, the enter key is pressed again and the platen returns to the fully open position.

The print gap calibration and the platen sensor calibration need only be run during final assembly of the printer and anytime a platen is replaced. If a hammer bank is replaced, only the print gap option needs to be run.

6.2.2.3 Gap Verify

This option allows the technician to verify that the correct gap setting has been set. Before this operation is run, paper and ribbon are removed and a sheet of plastic shim stock is inserted into the print zone area. The platen will close down onto the sheet and display the value of the crush point. Using a conversion table, this crush point value can be changed to a print gap distance in inches. If the gap is set correctly, this print gap distance should be very close to the actual thickness of the plastic shim sheet.

6.2.3 Platen Motor Option Description

6.2.3.1 Print Gap

This option rotates the platen between the fully open position and the gap position stored in the current configuration. The enter key operates as a toggle switch between these two positions.

6.3 Configurations

The following parameters have been added to the savable items within a given configuration: print gap setting, detect mode setting and the detect distance.

6.4 Print Gap Display Description

One way of thinking about the display bar graph is to visualize it as a horizontal cross-section of the print zone. The fixed left arrowhead denotes the hammer tip. The other arrowhead and associated block characters denote the platen. The dashes in between the arrowheads denote the print gap. As the platen closes down, the arrowhead and blocks fill in from the right. More dashes indicate a wide gap and few dashes indicate a narrow gap. See the control panel display examples in appendix A for further clarification.

If auto detect mode is selected, the arrowheads touching will indicate that the maximum minus adjust range has been reached. When the rightmost arrowhead is in the middle of the display (5 blocks behind it), this indicates that the platen is at the calculated optimal print gap position (+0 adjust). When the rightmost arrowhead has no blocks behind it, this indicates that the maximum plus adjust range has been reached.

If manual detect mode is selected, the arrowheads touching will indicate that the platen is closed down to the absolute minimum gap (0). When the rightmost arrowhead is in the middle of the display, this indicates that the platen is in the middle of its usable range (95). When the rightmost arrowhead is all the way to the right, this indicates that the platen is at the largest printable gap (190).

6.4.1 Control Panel Display Examples

The following will be displayed once one of the print gap adjustment keys is pressed.

Р	R	Ι	N	Т		G	A	Р		X	X	X	
	—	_	—	—	◄					±	0	0	

 \leftarrow Optimal position

← Adjustment value

Single part paper – nominal gap

Р	R	Ι	N	Т		G	A	Р			5	4	
	—	—			◄					+	0	0	

Single part paper - minimum gap

Р	R	Ι	Ν	Т	G	A	Р			5	4	
	◄								-	1	0	

Single part paper - maximum gap

Р	R	Ι	N	Т	G	A	Р			5	4	
								◄	+	1	0	

Detect Mode = Manual

Р	R	Ι	Ν	Т		G	A	Р					
	—				◄					X	X	X	

← Absolute position

	Ν	Minin	num g	gap							
Р	R	Ι	Ν	Т	G	A	Р				
	•									0	

Maximum gap

Р	R	Ι	N	Т		G	A	Р						
			l	-	-	-	-		-	◄	1	9	0	

Appendix A. Drawings

6306 Drawings

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							REF	61	4077		BAS	IC PRINTER ASSY- T63	306	9
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							1	61394	8-0853	359	CAE	BINET- LID ASSY		11
							1	61386	5-0859	26	CAE	BINET- RIGHT HAND S	SIDE	12
							1	613894	4-0859	11	CAE	BINET- INNER COVER		13
														14
							1	61394	6-0854	183	FOA	AM- ACOUSTIC		15
							2	4025	524-43		SCR	EW- #8-32 X 0.500 S	EMS	16
							7	4025	524-42		SCR	EW- #8-32 X 0.375 S	EMS	17
							1	402	524-41		SCR	EW- #8-32 X 0.250 S	EMS	18
							3	40411	7-7322	215	SCR	EW- #8-32 X 0.375 P	AN HEAD	19
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							1	613862	2-0863	375	INLE	T BAFFLE			10
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							1	613864	-0859	09	CAB	INET- FRONT			12
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							1	613866	-0861	04	CAB	INET- LEFT SIDE			14
							1	613867	-0861	22	PAP	ER INLET- TOP			15
							1	613876	-0851	46	PAP	ER INLET- LEFT			16
							1	613876	6-0859	207	PAP	ER INLET- RIGHT			17
							1	613946	-0854	79	FOA	M- ACOUSTIC			18
							2	613946	6-0854	78	FOA	M- ACOUSTIC			19
							1	4012	226-01		MAF	RKERS- MOUNTED			20
							1	612416	6-0831	45	FAN	ASSY			21
							1	61410	1-0859	923	мо	UNT- BOARD			22
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							2	4025	24-46	1	SCR	EW- #8-32 X 1.250, SE	EMS	26
							1	403692	-7310	92	BAL	l stud		27
							1	4007	83-15		NUT	- #5/16, KEPS		28
							2	400783	3-730	502	NUT	- #8-32, KEPS		29
							1	403692	2-7310	060	GAS	SPRING		30
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							1	614134	4-086	77	CA	BLE ASSY- PAPER OU	Γ	32
							1	4025	524-02	2	SC	REW- #4-40 X 0.375, S	SEMS	33
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							1	6136	57-085	932	BAS	E ASSY			9
							1	61365	58-086	383	LEG	ASSY, RIGHT			10
							1	6136	58-086	103	LEG	ASSY, LEFT			11
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							1	61415	53-0860)74	DOC	OR ASSY			13
							1	61360	61-085	936	BRA	CE- DOOR			14
							1	61400	04-085	493	GUI	DE- PAPER			15
							1	61417	75-0862	229	PLA	IFORM - PAPER STA	CK	ING	16
							1	61128	38-0800)19	TRA	Y- PAPER			17
							1	6136	59-086	094	PAN	EL- REAR			18
							1	6139	46-085	482	FOA	M- ACOUSTIC			19
							18	402	2524-4	2	SCR	EW- #8-32 X 0.375 S	Sem	IS	20
							4	4040	36-731	449	CAS	STER			21
							5	4041	14-733	483	SCR	EW- #6-32 X 0.375 I	PAN	I HEAD	22
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							REF	61	3945		RIBB	ON PLATFORM ASSY		14
							1	6140	58-0850	641	CAE	BINET- REAR		15
							REF	6	14035		FRC	ONT PANEL ASSY		16
							REF	6	14150		ELEC	CTRONICS ASSY		17
							1	403	3769-02	2	мо	UNT - VIBRATION DAI	MPING	18
							2	6141	51-086	071	PAP	ER GUIDE- TRACTOR	Shaft	19
							2	40	3769-1	0	мо	UNT - VIBRATION DAI	MPING	20
							2	4043	21-732	852	мо	UNT - VIBRATION DA	MPING	21
							1	40	1417-00	6	TER/	MINAL - RECTANGUL	AR TONGUE	22
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							1	6141	79-086	241	GR	OUND STRAP - INSUL/	ATED 6.0" LONG	26
							1	40360	66-730	945	GR	ound strap - insul	ated 3.0" long	27
														28
							1	61405	52-086	204	GU	IDE- PAPER		29
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							2	6141	96-086	380	RES	STRAINT - SHIPPING		31
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							1	61396	8-085	462	PLA	ATEN ADJUST ASSY- R.I	H.S.	11
							1	61396	68-085	463	PL/	ATEN ADJUST ASSY- L.I	H.S.	12
							1	61396	5-085	465	PLA	ATEN ASSY		13
							1	61412	24-085	972	PLA	ATEN MOTOR W/SENS	OR ASSY	14
														15
							1	61394	46-085	480	FO	AM- ACOUSTIC		16
							1	6132	67-085	471	мс	DTOR- PAPER DRIVE		17
							1	6139	62-085	450	СС	OUPLER- SHAFT		18
							1	61403	36-085	561	SHA	AFT- TRACTOR DRIVE		19
							1	61414	49-086	245	SHA	AFT- TRACTOR SUPPO	RT	20
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							1	612	416-083	145	FAN	I ASSY				29
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							1	6140	016-085	506	HA	mmer bank ass	Y			31
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							1	614	069-085	642	CAB W/C	LE ASSY- HAMMER CLAMP- T6306	DRIVE	R		33
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							1	614	148-086	064	IRO	N ASSY- PAPER				35
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							1	40	02524-5	1	SCR	EW- #8-32 X 0.62	25 SEM	S		39
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							8	PAR	T NUM	IBER		DESCRIPTIC	N	ITEM NO.
							A/R	61403	3-085	897	PLA	TE- TRIM MASS, 10gm		47
							A/R	61403	3-085	898	PLA	TE- TRIM MASS, 30gm		48
							A/R	61403	3-085	899	PLA	TE- TRIM MASS, 70gm		49
							A/R	61403	33-085	900	PLA	TE- TRIM MASS, 100gm	1	50
														51
							2	61416	57-086	213	SCF	REW- METRIC, M5 X 18m	nm SOCKET CAP	52
														53
							2	40402	23-733	3759	SPR	ING- EXTENSION		54
							2	401	223-02	2	NUT	- #4-40, HEX.		55
								404303	3-7337	'11	SCR	EW- #4-40 X 0.50, TOR	X PLUS	56
								4006	641-18	}	RING	G- RETAINING		57
							1	40446	5-733	805	BEA	RING, NYLON		58
							2	40252	24-730	381	SCR	EW- #6-32 X 0.375, SE	NS	59
							2	40016	53-732	831	SCR SOC	REW- #6-32 X 0.500 SHOUI CKET HEAD	_DER,	60
							4	402	524-4	2	SCR	2EW- #8-32 X 0.375, SE	MS	61
							2	40252	24-732	2692	SCR	EW- #8-32 X 1.625, SE	٨S	62
							2	402	524-03	3	SCR	EW- #4-40 X 0.500, SE	NS	63
							2	40442	24-733	755	SCR	2. 2	KET HEAD CAP	64
							2	400	0215-1	3	WA	Sher- #1/4, split loc	K	65
							2	400)782-0	9	WA	Sher- #1/4, Flat		66
							2	402	2524-0	2	SCR	2EW- #4-40 X 0.375, SE	MS	67
														68
														69
	ЪТа		ienia	Om	SHIP)20 50 1	90TH ST	SIZE	CODE 123	IDENT	dwg NO. 61407	6	
					KENT	T, WA 980	032 US	A	REV:	F		I FILE NAME: PL4076F	SHEET: 4 OF 5	

Q	UANT	ITY RE	QUIRE	ED PE	r assi	EMBLY	/								
								~							
							8	PARI		BER		C	escriptio	Ν	ITEM NO.
							4	404287	7-7328	807	SET S	SCREW- #10	-32 X 1.000)	70
							2	404287	7-7327	758	SET S	SCREW- #10	-32 X 1.250)	71
							6	4007	783-10)	NUT	- #10-32 KEF	°S		72
															73
							2	401	226-0	1	LAB	EL- PRINTABI	E		74
							A/R	40065	8-730	213	AD	HESIVE- LOC	TITE 242		75
							1	61404	40-085	5567	PIN	- PLATEN			76
							3	40252	4-730	381	SCF	REW- #6-32 >	(0.375 SEN	۸S	77
							1	4002	260-18	3	RIN	G- RETAININ	G, E - TYPE	-	78
															79
															80
															81
							1	4009	95-18	3	WA	ASHER - CUV	ed spring	7	82
							1	614187	7-0862	283	SHU	JTTLE SENSOI	r assy		83
							1	4025	524-23	3	SCF	REW- #6-32 >	(0.500 SEN	٨S	84
															85
															86
															87
															88
															89
															90
															91
															92
	ЪТ	lh/C	ani	~nm		-					IDENT	DWG NO.	61407	6	
JE		ay U	ici Ill	J	shipi Kent	ping: 6 [, wa 98	020 So 3032 US	901H ST., A	REV:	F		FILE NAME: PL4	076F	SHEET: 5 OF 5	



		2			1			
			REVISIO	NS				
	SYM	DATE	DESC	CRIPTION	BY	APP	ROVED	
	-	1/10/04	RELEASE TO PRODUCTION		YL	DB MB	0	
	A	4/8/04	REVISED PER DCR #31204		YL	DB GA	G	{
	C	5/26/04	REVISED PER DCR #31336		YI	DB CB		
	D	6/6/04	REVISED PER DCR #31395		YL	DB CB		
ľ	E	7/1/04	REVISED PER DCR #31417		YL	DB CB		
[F	10/1/04	REVISED PER ECO #40199		YL	DB C2		
								D
			NOTES: (UNLESS OTH 1. MANUFACTURE, WORKMANSHIP 2. NUMBER WITHIN NUMBER, SEE PA TORQUE TO 5. TORQUE TO 6. TORQUE TO 6. TORQUE TO 2. TIGHTEN THE F PLATEN TO TH THAT THE SHALL PLATEN MOTO SET SCREWS. DIDENTIFY CON	IERWISE SPECIFIED ASSEMBLE & PART MA STANDARDS. CIRCLE INDICATES ITT RTS LIST FOR SPECIFIC 0 IN-LBS. 0 IN-LBS. 5 - 4.0 IN-LBS. PLATEN MOTOR SH. 2 VIEW A-A]; MANU 2 VIEW A-A] 2 MANUTARIA 2 VIEW A-A] 2 MANUTARIA 2 MANUTARI 2 MANUTARIA 2 MANUTARIA 2 MANUTARIA 2 MANUTARI 2	D) AFT SET SCI AFT SET SCI JALLY ROTJ ITION, WHI THE PLATE HE ILLUSTR. GHTEN THE 26. 22.	rew as Tie the Le holdi Ation Oi Right pl	NG RSO N THE ATEN	С
	A	~	 9. ORIENT TENSION THE SQUARE COUPLER UN COMBINATIC SO THE SHOU THE END OF / SPRING WASH 	DN CLIP (ITEM 41) / SHAFT SHOULD BE TIL IT HITS THE INTEF IN IS PUSHED INTO LDER OF THE SQU/ MOTOR SHAFT. HER (ITEM 82) TO BI	as shown Pushed in Rnal stop The Moto Rre Shaft i E Orientee	IN VIEW ITO THE THIS R SHAFT S AGAIN O AS SHO	B-B. ST WN.	В
	, , , , , , , , , , , , , , , , , , ,			ienicom	MATER SHIPPING KENT, WA	IAL 6020 So 1907 98032 USA	FINISH	A
			PRIN 6306		41SM- 1 61407	3ASIC	REV	
						IFFT: 1		
					1	!!!!	2. 0	J







			В
F- TRIM MASS, 50am	-	- 1	1
E- TRIM MASS, 35am	-	-	1
E- TRIM MASS, 15gm	-	-	1
E- TRIM MASS, 5gm	-	-	1
W- #10-32 X 0.75, SEMS	-	-	1
W - BRACKET	-	-	1
ESIVE - LOCTITE 242	-	-	┣
W - #6-32 X 3/16, TURSS HEAD	-	-]
IT- HAMMER MODULE, T6306	-	-	
CKET ASSY - RIBBON SHIELD ADJUST	-	-	
ON SHIELD ASSY	-	-	
MER BANK ASSY	-	-	
mer bank assy - final	-	-	
DESCRIPTION	MATERIAL	FINISH	
TallyGenicom	SHIPPING: 6020 So 190 KENT, WA 98032 USA	ITH ST.,	
HAMMER BAN	k assy - Fii	NAL	
SIZE CODE IDENT DWG NO	² 614016	B	
2 SCALE: NONE HILE NAME: 4016	I SHEEL: 1	UF I	
۷	I		

3 TORQUE TO 23 IN-LBS.

REVISIONS

DESCRIPTION

BY

YL DB GAG YL DB DD

YL DB EDB

APPROVED

DATE

A

12/30/03 RELEASE TO PRODUCTION

B 9/9/04 REVISED PER DCR #31465

3/17/04 REVISED PER DCR #31246

MANUFACTURE, ASSEMBLE & PART MARK PER TALLY WORKMANSHIP STANDARDS.

2. NUMBER WITHIN CIRCLE INDICATES ITEM OR FIND NUMBER, SEE PARTS LIST FOR SPECIFICATION.

ADD TRIM MASSES, ITEM 10 TO 13, TO ASSEMBLE AS REQUIRED TO CONTROL ASSEMBLY MASS TO 1360±5 gm.

5 BUTT 2 PIECES TOGETHER AT CENTER.

NOTES: (UNLESS OTHERWISE SPECIFIED)

Q	UANT	ITY RE	QUIRI	ED PEI	R ASSI	EMBLY	/							
						8		PAR	T NUM	BER		DESCRIPTIO	N	ITEM NO.
	Í	[-	085	5356		RIBB	ON PLATFORM ASSY- W/R	FD	1
						-		080	6000		RIBB	ON PLATFORM ASSY- W/R & I	FD SKIP OVER WEL REINKING DRIVE	P2
														3
														4
														5
														6
														7
														8
						1	1	613870	-0860	22	PLA	IFORM ASSY- RIBBON		9
						2	1	613971	-0854	69	RIBE	SON DRIVE MOTOR		10
						1		614134	-0860	06	CAE	BLE ASSY- OPTICAL SEN	SOR	11
														12
						1	1	613946	-0863	03	ACO	DUSTIC FOAM		13
						1	1	613946	6-0860	07	ACO	DUSTIC FOAM		14
						1	1	613946	-0860	80	AC	DUSTIC FOAM		15
						2		4029	53-01		PAC	- MTG, CABLE TIE		16
						4	2	4003	341-01		CAE	BLE TIE		17
						1	1	61407	4-085	856	LABI	EL- HORIZONTAL SCALE	(136 COLUMN)	18
						1	1	61383	9-085	084	LAB	el- forms setting ref	ERENCE	19
						1	1	613324	4-0860	010	LAB	EL- RIBBON LOADING		20
						1	1	61395	4-085	394	PIN-	RIBBON PLATFORM		21
						4	2	4012	226-01		LAB	EL- PRINTABLE		22
														23
	L , Ta	llyC	jeni o	com	SHIP	PING: 6	020 So	190TH ST.,	SIZE A	CODE	IDENT	DWG NO. 61394.	5	
	-	-			KENT	r, wa 98	3032 U	SA	REV:	F		FILE NAME: PL3945F	SHEET: 2 OF 3	

Q	JANTI	ITY RE	QUIRE	ED PEI	r Assi	EMBLY	,								
						8	8 3 8	PAR	T NUM	BER		DESC	RIPTIOI	N	ITEM NO.
						8	4	4025	524-47		SCR	EW- #8-32 X 0.31	12 SEM	S	24
						2	2	4007	83-01		NUT	- #4-40, HEX, KEF	۶S		25
						1		4025	524-02		SCR	EW- #4-40 X 0.37	75, SEN	15	26
						1	1	400	627-02	<u>)</u>	SCR	EW- #4-40 X 0.18	87 PAN	I HEAD	27
															28
						A/R	A/R	400	658-31		ADH	IESIVE- LOCTITE 2	262		29
															30
						1	1	40363	7-7310)38	CA	BLE SUPPORT- TW	/IST LO	СК	31
						1	1	61416	0-086	130	СВ	A- RIBBON MOTI	ON		32
						1	1	61416	8-0862	209	СА	BLE ASSY- RIBBC	N SEN	SORS	33
						1		61416	8-0862	208	CA	BLE ASSY- RIBBO	n sens	SORS	34
															35
															36
															37
															38
															39
															40
															41
															42
															43
															44
															45
									0.77	005-					46
	ù Ta	llyG	ienia	com	SHIP	PING	020 50	190TH ST	A	123	44	61	394	5	
		<i>.</i>		=	KENT	r, wa 98	8032 US	A	REV:	I F		I FILE NAME: PL3945F		SHEET: 3 OF 3	



QUANTITY REQUIRED PER ASSEMBLY													
	С () () () () () () () () (PARI	PART NUMBER		DESCRIPTION			ITEM NO.	
							-	086081		ELE(PSIC	ECTRONICS ASSY - STD - SER/PAR SIO READY, T6306		
						-		086082		ELE WITI	ELECTRONICS ASSY - SER/PAR WITH SINGLE PSIO OPTION, T6306		
					-			086085		ELECTRONICS ASSY - STD - SER/PAR PSIO READY, T6312			3
				-				086086		ELE¢ WITI	ELECTRONICS ASSY - SER/PAR WITH SINGLE PSIO OPTION, T6312		
													5
													6
				1	1	1	1	400326-04		WASHER- #8 FLAT NYLON			7
													8
						REF	REF	614050		CBA - CONTROLLER, T6306			9
				REF	REF			613860		CBA - CONTROLLER, T6312			10
				1	1	1	1	613872-085142		PLATE - CONTROLLER MOUNTING			11
				1	1	1	1	613871-085941		BACK PLATE ASSY			12
				1	1	1	1	614102-086092		BRACKET - PIVOT			13
				1	1	1	1	400783-730382		NUT - #6-32, HEX, KEPS			14
					1		1	612936-081935		PANEL - PSIO, BLANK COVER			15
				1	1	1	1	402524-24		SCREW - #6-32 X 0.75 SEMS			16
				9	9	6	6	402524-23		SCREW - #6-32 X 0.50 SEMS			17
				1	1	1	1	403666-730953		STRAP - GROUND, INSULATED			18
				2	2	2	2	403807-732704		SCREW LOCK			
				2	2	2	2	400215-730286		WASHER - #4 SPLIT LOCK			20
				2	2	2	2	402524-01		SCREW - #4-40 X 0.25 SEMS			21
					2		2	450049-30		SCREW - M3 X 6mm			22
				2	2	2	2	404251-732656		POP RIVET - Ø1/8 X 0.275, DOME HEAD			23
Tally Genicom				MAILING: P.O. BOX 97018 KENT, WA 98064-9718 USA			97018 18 USA	SIZE A	CODE IDENT DWG NO. 12344 614150		50		
			KENT	, WA 98	3032 US	SA	REV:	В		I FILE NAME: PL4150B	SHEET: 2 OF 2		



	2	-		. 1			
		REVISIO	NS				
SYM	DATE 1/5/04	DESC RELEASE TO PRODUCTION	CRIPTION	BY		/ED	
A	4/12/04	REVISED PER DCR #31297		YL	DB EB		
В	6/3/04	REVISED PER DCR #31389		YL	DB EB		
							D
		NOIES: (UNLESS OIF 1. MANUFACURE, WORKMANSHIP 2. NUMBER WITHIN NUMBER, SEE PA LIMITED US	IERWISE SPECIFIEL assemble & PART MA STANDARDS. CIRCLE INDICATES ITE RTS LIST FOR SPECIFIC E, SEE P/L.)) M OR FIND ATION.	(С
							В
 				MATER MAILING: KENT, WA SHIPPING KENT, WA	AL P.O. BOX 97018. 98064-9718 USA 8801 So 1801H S 98032 USA	FINISH F.,	А
				22 A2	JI		
			DENT DWG NO.	61415	0	REV B	
 	+	SCALE: NONE F	ILE NAME: 4150B	SH	- (IEET: 1 OF	1	
 				1			


	2						1				,
				REVISION	s		_				
SYM - 1	DATE 0/30/03	RELEASE TO P			IPTION		BY	DB	APPRO	OVED	-
A 1	2/20/03	REVISED PER	DCR #	31125			YL	DB	PB		
В	4/30/04	REVISED PER	DCR #	431345			YL	DB	MBC	C	
											D
		NOTES 1. N 2. r 3. r 1 1 1 1 1 1 1 1 1 1 1 1 1	: (UNI MANUF WORK NUMB NUMB APPL ITEM 7	LESS OTHI ACTURE, A MANSHIP S R WITHIN C ER, SEE PAF ADHESIN 7 ADHESIN 7 BEFORE	ERWISE SSEMBLE TANDARI CIRCLE IN TS LIST FO ZE (ITEM ASSEME	SPECIFIED, & PART MAF 35. DICATES ITEI R SPECIFIC 8) TO INDI LY.) M OR FIND ATION. CATED A	Y REAS (OF		С
ABLE ASSY-	10 CO	NDUCTOR	R FLA	t cable	<u>-</u>					-	В
JTTON- BLUE							-			-	
JIION- GRE	Y						-			-	
DHESIVE - LC	OCTLTE	411					-			-	
OVER, LED							-		\square	-	
/ERLAY- DIS	PLAY						-		\square	-	
REW- PAN	HEAD	TRI-ROUN	DUL	AR PLAS	TITE		-			-	
ONTROL PAN	IEL BEZ	EL - LABEL	ED							-	
Y PAD- CO	NDUCI	IVE RUBBE	ER				-			-	
BA- CONTRO	OL PAN	IEL					-			-	
ONTROL PAI	NEL AS	SY					-			-	
	E	DESCRIPTION					MATE	RIAL		FINISH	
			g.	TallyG	enico	m	Mailing Kent, W Shipping Kent, W	: P.O. BC 4 98064-9 5: 8301 Sc 4 98032	0X 9701 9718 US 0 180TH USA	8 5A I ST.,	A
			L .	СО	NTR	OL P/	ANEL	_ A	SS	Y	
		SIZI	۰ ۱		1	DWG NO.	6140	35]	REV	
		SC4	• ALE:		E NAM	E: 4035B	5	HEET	1 (DF 1	
	L	307				0000					J

Q	JANTITY REQUIRED PER ASSEMBLY							ILY				
								0/	7			
								^) / P	ART NU	JMBER	DESCRIPTION	ITEM NO.
							_		08535	0	POWER SUPPLY ASSY- MEANWELL, 6306	1
												2
												3
												4
												5
												6
												7
												8
							1	4043	526-73	32866	MODULE- POWER ENTRY/SWITCH/LINE FILTER	9
							1	4043	525-73	32863	POWER SUPPLY- MEANWELL	10
							1	6138	873–08	36433	PLATE- POWER SUPPLY MOUNTING	11
							2	40	2454-	-03	SCREW- #4-40 X 0.250, FLAT HEAD 100°, CROSS RECESSED, STAINLESS STEEL	12
							1	4007	/83–73	30502	NUT- #8-32 HEX KEPS	13
							1	40	0341-	-03	CABLE TIE	14
							1	6123	573–08	83814	CABLE ASSY- A C LINE POWER	15
							1	6141	38–08	36015	CABLE ASSY- POWER DISTRIBUTION	16
												17
							1	6053	318–0	85011	LABEL- GROUND	18
												19
												20
							4	404 ⁻	130-7	32858	SCREW- M4 x 8mm SEMS	21
												22
							1	614	138-0	86017	CABLE ASSY- GROUND	23
	Ъ	lh/C	ioni	ഹന	спр		5020 5	o 1001U		e code 12.3	dent DWG NO. 44 613943	
L					KEN	r, WA 9	8032	USA	REV	<u> </u>	FILE NAME PL3943B SHEET 2 OF 2	



	2		1			
-	DUTT	REVISIONS	P /		10000150	
SYM	12/15/03	RELEASE TO PRODUCTION FROM X1	BT YL	DB	EWG	
A	4/12/04	REVISED PER DCR #31296	YL	DB	EB	
в	10/4/04	REVISED PER ECO #40226	YL	DB	мво	
						D
		NOTES: (UNLESS OTHERWIS) 1. MANUFACTURE, ASSEMBLE & PART WORKMANSHIP STANDARDS. 2. REMOVE ALL DURENS, DREAK SHAR SURFACES 125. 3. ALL DIMENSIONS APPLY AFTER SU HAVE BEEN APPLED. 4. NUMBER WITHIN CIRCLE INDICATE: NUMBER SEE PARTS LIST FOR S 5. UNLESS OTHERWISE NOTED BY STANDARD FASTENERS MAY BE AL TO TALLY WORKMANSHIP STANDAR 6. ALL SURFACES TO COMPLY WITH Q-D1094, CLASS C. (7) POWER SUPPLY NEG. (8) ITEMS SUPPLIED WITH TH SUPPLY (ITEM 10) 6 EA TERMINAL STRIP S 1 EA CLEAR PLASTIC CO	E SPE(MARK F P EDGES RFACE OC S ITEM O PECIFICA DUSTED DS. TALLY SI HE PON CREWS OVER.	CIFIE Ver T, , MAC R FIN TO C TO C PECIFI WER	ED) ALLY XHINE - SS - HD OF - XONFORM - HCATION	С
						В

		D	ESCRIPTIO	N			MA	TERIAL	FINISH	
Y	UEN LAI	4/2/03	48	Thill -	Camla				•	A
D	. BROWN	4/7/03	UY	Rana	uento		SHIP	PING: 6020 S	o 190TH ST., USA	
LJ.	WAGAMAN	4/8/03	TITLE							
E	. GOODMAN	12/15/03		P(DWEF	r sui	PDL.	Y ASS	SY-	
L.	SPYRIDIS	12/17/03			MEA	NWEL	_L,	6306		
T.	SCHORN	12/17/03	SIZE	CODE	IDENT	DWG NO	· • • = •		REV	
D	. SCHULTZ	12/17/03	D	12	344	6	5139	943	B	
G	. GESELLCHEN	12/17/03	SCALE	1/1	FILE NAM	E 3943B		SHEET 1	OF 1	
		2						1		





1					
NS					
PTION	BY		APP	ROVED	
	YL		DB CI	3	
					D
OTHERWISE SPECIF ASSEMBLE & PART MAI STANDARDS.	TED) rk pei	R TA	LLY		
TATION OF ENCODE	ER.				
2.5-4.0 IN-LBS.					
					С
DN LOCKING PAT	СН		-	-	B
			-	-	_
			-	-	4
			-	-	
		M	ATERIAL	FINISH	
enicom Le senso	shippi kent,		6020 So 190 98032 USA	TH ST.,	A
dwg NO.	41	8	7	REV	
FILE NAME: 4187-		SHE	ET: 1 OF	1	
1					

	4	3				2	2			1			
PF	ROPRIETARY NOTICE							REVIS	SIONS				7
Th	his document and the information contained therein are the				SYM	I DATE		DESCR	RIPTION BY	,	APPROVED		
(1	1) use such information for purposes other than those expressly uthorized by TALLY: and (2) furnish such information				-	10/22/03	RELEASE TO P	RODUCTION	YL	. [DB SP		
to	any other person in whole or in part without the prior express vitten permission of TALLY; and, to promptly return				А	12/6/03	REVISED PER I	DCR #31109	YL	. [DB SP		
D th	his document to TALLY upon the receipt of a request herefor.							NOTES:	(UNLESS OTHERWISE SPECIF	IED)			D
								1. MANU	Facture, assemble & Part Mark F	PER TAL	LLY		
	$\overline{(3)}$							WORK	MANSHIP STANDARDS.	МАСЧ			
							ACES 125.						
	4							3. ALL DIN — HAVE	Mensions Apply After Surface C Been Applied.	OATING	GS-		
C								4. ALL SU — SPECH	RFACES TO COMPLY WITH TALLY FICATION Q-D1094, CLASS C.				
В	<u>085</u>	<u>625 ASSY</u>											В
				1	4	403760-01	CONNE	ECTOR- HORIZONT	al modular jack 4-positi	ON	-	-	
				1	3	404448-7337	58 POTEN	NTIOMETER- 10	K 30% ANGLE SENSING		-		
				1	2	614059-0856	24 PCB-	PLATEN POSITIO	ON SENSOR		-		
				-	1	085625	CBA-	PLATEN POSITI	on sensor		-	-	
				085625 QTY REO'D	ITEM NO.	PART NUMBER	2	DES	SCRIPTION		MATERIAL	FINISH	
				UNLESS OTHERWISE SPECIFIED		DWN			[]]. .	M) KF	IAILING: P.O. BOX 970 ENT, WA 98064-9718	J18 USA	1
				IN INCHES AND SHALL BE INTER	ES ARE R-	СНКД		┛	ully	SH KE	HIPPING: 8301 So 180 ENT, WA 98032 USA	TH ST.,	
A				TOLERANCES ARE:		FINAL		- ntl	E CBA- PLATEN POS	TIO	N SENS	OR	
	085625 614124	Τ6306/Τ6312 Δ	1	0.XX ±0.01 0.XXX ±0.005	W					_			
	PART NUMBER NEXT ASSY	MODEL REV	SHT	- 0.XXXX ±0.0005 ANGLE ±0°30'		GLE C.S.		SIZI	E CODE IDENT DWG NO.	61	1060	REV	
	APPLICATION DO NOT SC					E DRAWING CHG BD SCALE: NONE FILE NAME: 4060A SHEET: 1 OF 1				_			
16-0	16-0001E-17 4 3				2 I SCALE: NOINE FILE NAME: 4060A SHEET: T OF T								

Ql	JANT	ITY F	REQU	IRED	PEF	R ASS	SEME	ILY			
	/~ ^?/	5	6	6	60	20	/ /	150			
		δ / δ			$\frac{1}{2}$	<u>,</u>	6	PART	NUMBER	DESCRIPTION	ITEM NO.
1	1	1	1	1	1		-	085	536	CBA- CONTROLLER 6306, W/PSIO W/O MAIN FIRMWARE	1
											2
					_			086	5188	CBA- CONTROLLER 6306, SER/PAR/PSIO	3
				_				086	5189	CBA- CONTROLLER 6306, SER/PAR/PSIO - TESTED	4
			_					086	5190	CBA- CONTROLLER 6306, LJ SERIES	5
		_						086	5191	CBA- CONTROLLER 6306, LJ SERIES - TESTED	6
	_							086	6192	CBA- CONTROLLER 6306, LG SERIES	7
_								086	5193	CBA– CONTROLLER 6306, LG SERIES – TESTED	8
											9
											10
											11
											12
											13
				1	1			700700-	-086142	FIRMWARE- MAIN, SER/PAR/PSIO REV	14
		1	1					700700-	-086144	FIRMWARE- MAIN, SER/PAR/PSIO 6312 LJ SERIES REV	15
1	1							700700-	-086146	FIRMWARE- MAIN, SER/PAR/PSIO 6312 LG SERIES REV	16
											17
											18
1		1		1				402697	-730208	BAG- ELECTROSTATIC SHIELD 11"X15"	19
											20
											21
											22
											23
10	ЪЪ	lŀvG	enia		MAIL KENT SHIP	ING: P. F, WA S PING: 8	0. BOX 98064- 3301 S	97018 9718 USA o 180TH ST	$ A ^{\text{SIZE}}$	544 614050	
		, ~			KENT	r, wa s	8032	USA	REV C	FILE NAME PL4050C SHEET 2	

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BILL OF MATERIALS

DRAWING NO. 614050

REVISION .

ASSEMBLY NO. 085536

DESCRIPTION 6306 CONTROLLER W/ PSIO



MAILING: P.0. BOX 97019 KENT, WA 98064-9718 USA SHIPPING: 8301 S. 180TH ST. KENT, WA 98032 USA

ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE	COMMENTS
1	6	404068-732438	Chip Ceramic Capacitor - 22pF 50V 10%	C174, C175, C24, C28, C43, C46	0805	
				C12, C14, C155, C167, C22, C25, C27, C37,		
				C38, C4, C40, C41, C45, C47, C49, C5, C57,		
2	23	404069-732458	Chip Ceramic Capacitor - 1000pF 50V 10%	C60, C61, C65, C7, C87, C92	0805	
3	6	404069-732466	Chip Ceramic Capacitor - 4700pF 50V 10%	C10, C172, C23, C33, C51, C70	0805	
4	8	404069-731545	Chip Ceramic Capacitor - 0.01uF 50V 10%	C160, C161, C162, C163, C164, C165, C88, C93	0805	
				C107, C108, C109, C11, C110, C111, C112, C13,		
				C147, C148, C149, C152, C166, C168, C169,		
				C18, C19, C20, C21, C26, C29, C30, C31, C32,		
				C34, C36, C39, C44, C48, C50, C52, C54, C55,		
				C56, C58, C59, C6, C63, C64, C66, C67, C68,		
				C69, C75, C76, C77, C78, C79, C8, C80, C81,		
5	55	404069-732481	Chip Ceramic Capacitor - 0.1uF 25V 10%	C83, C86, C9, C94	0805	
6	8	404368-733533	Chip Ceramic Capacitor - 0.1uF 100V 10%	C1, C123, C124, C125, C126, C127, C128, C146	1210	
				C115, C116, C117, C118, C119, C120, C133,		
				C134, C135, C136, C137, C138, C140, C141,		
7	19	404069-733577	Chip Ceramic Capacitor - 0.22uF 16V 10%	C142, C143, C144, C145, C82	0805	
8	6	404368-733576	Chip Ceramic Capacitor - 0.22uF 100V 10%	C100, C101, C102, C97, C98, C99	1210	
9	7	404143-732262	Chip Electrolytic Capacitor - 10uF 16V 20%	C103, C15, C154, C16, C17, C2, C3		
10	3	404143-733666	Chip Electrolytic Capacitor - 47uF 63V 20%	C139, C150, C151		
11	1	404415-733700	Electrolytic Capacitor - 22000uF 50V 20%	C171		
12	6	404173-733535	Chip Tantalum Capacitor - 10uF 10V 20%	C173, C35, C53, C62, C84, C85	3216	
13	1	404277-733783	Chip Tantalum Capacitor - 100uF 10V 20% Low ESR	C104	7343	
14	2	404366-733413	Chip Resistor - 0 1/10W 5%	R14, R62	0805	
				R117, R119, R13, R140, R144, R147, R19, R24,		
15	13	404366-733422	Chip Resistor - 22 1/10W 5%	R25, R31, R37, R83, R95	0805	
16	5	404366-733426	Chip Resistor - 33 1/10W 5%	R10, R5, R7, R8, R9	0805	
17	8	404366-733440	Chip Resistor - 120 1/10W 5%	R11, R22, R4, R54, R55, R57, R59, R6	0805	
18	3	404366-733445	Chip Resistor - 200 1/10W 5%	R12, R20, R42	0805	
19	6	404366-733454	Chip Resistor - 470 1/10W 5%	R128, R129, R16, R17, R35, R36	0805	
20	1	404365-733145	Chip Resistor - 1.0K 1/10W 5%	R53	0805	
21	5	404365-733157	Chip Resistor - 3.3K 1/10W 5%	R136, R15, R27, R3, R63	0805	
22	3	404365-733161	Chip Resistor - 4.7K 1/10W 5%	R39, R40, R41	0805	
23	2	404365-733164	Chip Resistor - 6.2K 1/10W 5%	R66, R79	0805	
				R1, R113, R125, R126, R127, R135, R26, R38,		
				R56, R67, R71, R72, R73, R74, R75, R76, R87,		
24	20	404365-733169	Chip Resistor - 10K 1/10W 5%	R90, R92, R98	0805	
25						

BILL	OF MA	TERIALS]			
D	RAWING NO.	614050			MAILING: P.0.	BOX 97019
	REVISION				KENT	. WA 98064-9718 USA
AS	SEMBLY NO	085536		- Ially Genicom	SHIPPING 8301	S 180TH ST
	ESCRIPTION					
	ESCRIPTION				KENT	, WA 30032 03A
ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE	COMMENTS
26	1	404365-733174	Chip Resistor - 16K 1/10W 5%	R97	0805	
27	1	404365-733176	Chip Resistor - 20K 1/10W 5%	R21	0805	
28	7	404365-733190	Chip Resistor - 75K 1/10W 5%	R23, R65, R78, R80, R81, R86, R89	0805	
29	2	404365-733193	Chip Resistor - 100K 1/10W 5%	R96, R99	0805	
30	1	404365-733393	Chip Resistor - 200K 1/10W 5%	R100	0805	
31	2	404365-733412	Chip Resistor - 10M 1/10W 5%	R44, R52	0805	
32	4	404172-733573	Chip Resistor - 1.00 1/8W 1%	R103, R104, R109, R110	1206	
33	4	404172-733575	Chip Resistor - 1.50 1/8W 1%	R105, R106, R111, R112	1206	
34	1	404364-733777	Chip Resistor - 1.00K 1/10W 1%	R43	0805	
35	2	404364-733134	Chip Resistor - 2.00K 1/10W 1%	R138, R139	0805	
36	2	404364-733776	Chip Resistor - 3.09K 1/10W 1%	R33, R34	0805	
37	2	404364-733784	Chip Resistor - 4.12K 1/10W 1%	R114, R60	0805	
38	2	404364-733736	Chip Resistor - 6.65K 1/10W 1%	R116, R132	0805	
39	3	404364-733706	Chip Resistor - 8.25K 1/10W 1%	R50, R88, R91	0805	
40	5	404364-733707	Chip Resistor - 17.8K 1/10W 1%	R123, R124, R134, R142, R49	0805	
41	1	404364-733139	Chip Resistor - 20.0K 1/10W 1%	R32	0805	
42	2	404364-733140	Chip Resistor - 30.1K 1/10W 1%	R77, R82	0805	
43	1	404364-733708	Chip Resistor - 33.2K 1/10W 1%	R51	0805	
44	2	404364-733709	Chip Resistor - 59.0K 1/10W 1%	R48, R61	0805	
45	1	404364-733544	Chip Resistor - 100K 1/10W 1%	R45	0805	
46	5	404364-733482	Chip Resistor - 200K 1/10W 1%	R122, R141, R47, R58, R68	0805	
47	1	404364-733710	Chip Resistor - 523K 1/10W 1%	R46	0805	
				RP41, RP43, RP45, RP47, RP49, RP51, RP63,		
48	11	404189-733656	Chip Resistor Array - 18 1/16W 5%	RP65, RP67, RP69, RP71	1206	
				RP10, RP13, RP14, RP16, RP18, RP19, RP20,		
				RP21, RP22, RP23, RP24, RP25, RP26, RP7,		
49	17	404189-733657	Chip Resistor Array - 22 1/16W 5%	RP72, RP8, RP9	1206	
				RP1, RP2, RP3, RP42, RP44, RP46, RP48,		
50	14	404189-733660	Chip Resistor Array - 1.2K 1/16W 5%	RP50, RP52, RP62, RP64, RP66, RP68, RP70	1206	
				RP11, RP12, RP15, RP17, RP29, RP30, RP31,		
51	10	404189-733662	Chip Resistor Array - 4.7K 1/16W 5%	RP4, RP5, RP6	1206	
52	2	404189-733663	Chip Resistor Array - 10K 1/16W 5%	RP27, RP28	1206	
53	1	404363-733523	Metal Strip Resistor - 0.10 1W 1%	R94	2512	
54	2	404363-733538	Metal Strip Resistor - 0.30 1W 1%	R107, R108	2512	
55	1	404395-733529	Metal Strip Resistor - 82.5 1W 1%	R130	2512	
56	1	404452-733769	Chip Fuse - Resetable 140mA	F1		
57	1	404142-732583	Chip EMI Filter - 60 Ohm 6A	L10	1806	
58	10	404142-733562	Chip EMI Filter - 600 Ohm 200mA	L1, L11, L14, L15, L2, L3, L4, L6, L7, L8	0805	
59	1	404193-733773	Inductor - 68uH 3A	L12		

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BILI		FERIALS]			
D	RAWING NO.	614050			MAILING: P.0.	BOX 97019
_	REVISION				KENT	. WA 98064-9718 USA
AS	SEMBLY NO.	085536		- Ially Genicom	SHIPPING: 8301	S. 180TH ST.
	ESCRIPTION	6306 CONTROL	I FR W/ PSIO		KENT	WA 98032 USA
_						,
ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE	COMMENTS
60	1	404392-733521	Chip LED - Green	LED1	0805	
61	1	404392-733520	Chip LED - Red	LED2	0805	
62	1	404050-733785	Crystal - 16.667MHz	Y2		
63	1	404050-733491	Crystal - 20.000MHz	Y1		
64	1	404432-733703	Diode - Dual Schottky Power Rectifier MBRD660CT	D4		
		101010 700010	Diada Dual Ultra Fact DD4004	D25, D26, D27, D28, D29, D30, D31, D32, D33, D34, D35, D46, D47, D48, D49, D50, D51, D52, D52, D54, D55, D55, D56, D57, D57, D57, D57, D57, D57, D57, D57		
60	23	404310-732043	Diode - Dual Ultra Fast BD1204	D53, D54, D55, D56, D9		
67	2	404310-732044	Diode - Dual Ullia-Past BD1205			
60	1	404201-733007	Diode - Scholiky Power Recimer MBR536013			
60	F	404000-733509	Diode - Hansieni Voltage Suppressor 1105906			
70	5	404233-732007	Diode - Ultra-Fast Recovery CIVIRSO-02	D11, D12, D37, D0, D7		
70	2	403660-733510	Diode - Ultra-Fast Recovery USTB	D14, D30		
71	I	400093-733733				
				$Q_{30}, Q_{31}, Q_{32}, Q_{33}, Q_{34}, Q_{35}, Q_{36}, Q_{37}, Q_{38}, Q_{30}, Q_{40}, Q_{52}, Q_{54}, Q_{55}, Q_{56}, Q_{57}, Q_{58}, Q_{59}, Q_{5$		
70	22	404444 700700	Transister N Channel Dual MOSEET EDS2800	(39, 040, 053, 054, 055, 056, 057, 058, 059, 050, 051, 058, 059, 051, 052, 053, 055, 056, 057, 058, 059, 059, 059, 059, 059, 059, 059, 059	500	
72	22	404441-733726	Transistor - N-Channel MOSEET NTD20551 104			
73	2	404421-733074	Transistor - N-Channel MOSFET NTD3055L104		DPAK	
74	2	404442-733729	Transistor - N-Charmer Fower MOSFET NTD32N00		DPAR SOT 22	
75	9	404220-732010	Transistor - D Channel Dewer MOSEET IDEDE205		301-23	
70	3	404433-733704	Transistor - P-Channel Fower MOSFET IRFR3305		DPAR SOT 22	
79	4	404229-732019	Pogulator Linoar LT1086CM3.3		301-23	
70	1	404201-732747	Regulator Simple Switcher M2502HV/S AD			
19	1	404417-733774	IC 22 Bit Broopport MCE5207		DOED209	
81	1	700700-086150				Programmed device
82	1	700700-086148				Programmed device
83	1				BGA64	
84	1	404457-733788	IC - SDRAM 256Mbit MT48LC16M16A2TG-7E		TSOP54	
85	1	404298-732777	IC - Serial FEPROM 64K-Bit M24C64		508	
86	3	404200-733548	IC - Hey Inverter 74AHCT14		SO14	
87	1	404429-733694	IC - Ouad Nand 74HCT00		SO14	
88	6	403005-733642	IC - 8-bit Shift Register 74HC595		SO16	
89	3	401956-732150	IC - Octal 3-State Buffer 74I S244	U19. U20. U3	SO20W	
90	2	404278-732744	IC - Bidirectional Transceiver 3.3V 74I CX245	U21, U22	SO20W	
91	1	404279-732745	IC - Octal D-Type Flip-Flop 3 3V 74I CX374	U1	SO20W	
92	1	404391-733519	IC - RS232 Transceiver MAX238	U2	SO24W	
93	1	404456-733787	IC - Spread Spectrum Clock Generator CY25812SC	 U44	S08	
94	1	404282-732749	IC - Voltage Supervisor TLC7733	U13	SO8	
95	2	404414-733639	IC - Analog Mux 74HC4051	U24, U25	SO16	

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BILL	OF MA	TERIALS						
DI	RAWING NO.	614050		2 M 1	MAILING: P.O. E	3OX 97019		
	REVISION				KENT, WA 98064-9718 US			
ASS	SEMBLY NO.	085536		- Ially Genicom	SHIPPING: 8301 S. 180TH ST.			
	ESCRIPTION	6306 CONTROL	I FR W/ PSIO		KENT	WA 98032 LISA		
		0000 000000			RENT, WA 90032 03A			
ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE	COMMENTS		
96	1	402328-732882	IC - Quad Op-Amp LM324	U23	SO14			
97	6	404413-733638	IC - DMOS Full-Bridge Motor Driver A3959SLB	U28, U29, U30, U31, U32, U33	SO24W			
98	1	404390-733517	Socket - PLCC 68-Position	U9	PLCC68			
99	1	404430-733695	Connector - FFC Receptacle 10-Position	J207				
100	1	404410-733630	Connector - Friction Lock Header 4-pin	J17				
101	1	402791-732536	Connector - Header 10-Pin	J9				
102	2	404092-732164	Connector - Latched Header 2-Pin	J24, J26				
103	1	403081-730147	Connector - RT Angle Receptacle 25-Position	J2				
104	1	403967-732189	Connector - RT Angle Receptacle 36-Position	J1				
105	1	404178-732430	Connector - RT Angle Receptacle 50-Position	J12				
106	1	404025-731119	Connector - Soft Shell Header 4-Pin	J18				
107	3	404252-732660	Connector - ULTREX Header 4-Pin	J20, J21, J22				
108	5	403760-732621	Connector - Vertical Modular Jack 4-Position	J201, J202, J203, J205, J206				
109	2	402242-732669	Connector - Vertical Shrouded Header 26-Pin	J101, J102				
110	1	614049-085535	PCB - Controller, 6306	PCB1				
MECHA		PONENTS						
111	2	613374-083383	Guide - Molded, PSIO					
112	1	613396-083507	Support - PSIO					
113	4	404240-732638	Screw - #6-19 x 3/8 Thread Forming					
NOT IN	STALLED CC	MPONENTS						
	2	404366-733413	Chip Resistor - 0 1/10W 5%	R18, R2	0805			
	1	402791-	Connector - Dual Row Header 4-Pin	J4				
	2	402706-03	Connector - Header 4-Pin	J25, J6				
	2	402706-01	Connector - Header 2-Pin	JP1, JP3				
	1	402242-	Connector - Header 6-Pin	J3				
	1	402242-732669	Connector - Vertical Shrouded Header 26-Pin	J8				
	1	404141-732259	Switch - Push Button	SW1				



	2		1		1
574	DATE	REVISIONS	- BV	APPROVED	
- 12	2/11/03 R	ELEASE TO PRODUCTION FROM XO; W/CHANGES	YL	DB SP	1
A 2	/26/04 F	EVISED PER DCR #31208	YL	DB SP	1
B 5	/14/04 6	EVISED PER DCR #31360	YL	GAG SP	
	/19/04	EVISED PER DCR #31436		DB BK	
					D
	[NOTES: (UNLESS OTHERWISE MANUFACTURE, ASSEMBLE & PART M TALLY WORKMANSHIP STANDARDS. NUMBER WITHIN CIRCLE INDICATES IT NUMBER. SEE PARTS LIST FOR SPEC UNLESS OTHERWISE NOTED BY , STANDARD FASTENERS MAY BE ADJU CONFORM TO TALLY WORKMANSHIP S ANY DESIGN CHANGE TO THIS DRAWI ADDITIONAL RFI TESTING AND/OR RE TO THE RESPECTIVE AGENCIES FOR LOAD MAIN FIRMWARE IN IT FIRMWARE TO BE DETERMIN ORDERED. CONSULT P/L S 	SPECI ARK PEL TEM OR CIFICATIC LENGTH STED TO STANDAR S FOR ING MAY -SUBMI COMPLI/ TEM # NED B HEET	FIED) FIND N. HS OF DS. FREQUIRE COMPLIANCE FREQUIRE SSION NOCE APPROVAL. 83. Y ASSEMBLY 2.	С
	-6133 2X (NOTE	74–083383 ORIENTATION OF PART)			В
	DESCRIPTI	ON		MAT'L SPEC.	-
YUEN LAI	3/26/	03			A
D. BROWN	3/28/	os (j.g.) Tally Genicom	SHIPPIN	3: 6020 So 190TH ST.,	
S. PHILLIPS	3/28/		KENT, W	A 98032 USA	1
S. PHILLIPS	12/15/	O3 CIRCUIT BOARD	ASSE	EMBLY	
L. SPYRIDIS	12/17/	03 CONTROLLER, 6306			
TIM SCHORN	12/17/	03 SIZE CODE IDENT DWG NO	1 4 0 1	DWG REV	1
D. SCHULTZ	12/17/	<u>03 D 12344 6'</u>	1405		
G. DESELLCHEN	12/17/	03 FILE NAME 4050P1C	S	HEET 1 OF 8	

















6312 Drawings

Q	UANTI	TY RE	QUIRE	ED PEI	R ASS	EMBL`	Y								
	/ /	/ /	/ /	/ /	/ /	/ /	/ /	\sim							
							8	PAR	глим	BER		DESC	RIPTION	Ν	ITEM NO.
							-	086	6091		GEI	VERAL ASSY- T63	12		1
															2
															3
															4
															5
															6
															7
															8
							REF	61	4081		BAS	C PRINTER ASSY-	T6312		9
															10
							1	61394	8-085	359	CAE	BINET- LID ASSY			11
							1	61386	5-0859	926	CAE	BINET- RIGHT HAN	d Side	Ē	12
							1	613894	4-0859	11	CAE	BINET- INNER COV	/ER		13
															14
							1	61394	6-0854	483	FOA	M- ACOUSTIC			15
							2	4025	524-43	8	SCR	EW- #8-32 X 0.500	o sems	S	16
							7	4025	524-42	-	SCR	EW- #8-32 X 0.37	5 SEMS	S	17
							1	402	524-4		SCR	EW- #8-32 X 0.25	0 SEM	S	18
							3	40411	7-732	215	SCR	EW- #8-32 X 0.37	5 PAN	HEAD	19
															20
							1	61414	6-086	059	REA	r guide assy			21
															22
															23
7		Iv			MAIL KENT SHIPI	LING: P. [, WA 98 PING [,] 8	O. BOX 3064-97 301 So	97018 18 USA 180TH ST	SIZE A	code	IDENT	DWG NO.	4082	2	
		J			KENT	, WA 98	3032 US	A	REV:	-		FILE NAME: PL4082-		SHEET: 2 OF 2	



Q	UANT	ITY RE	QUIRI	ED PE	r ass	EMBLY	(
							8	PAR	T NUM	BER		DESCRIF	PTIO	Ν	ITEM NO.
							-	085	5640		CAB	INET- BASE ASSY			1
															2
															3
															4
															5
															6
															7
															8
							1	613861	-0863	374	CAB	INET BASE			9
							1	613862	2-0863	375	INLE	T BAFFLE			10
							1	613863	-0859	10	PRIN	IT MECH. SUPPORT	•		11
								613864	-0859	09	CAB	INET- FRONT			12
															13
							1	613866	-0861	04	CAB	INET- LEFT SIDE			14
							1	613867	-0861	22	PAP	ER INLET- TOP			15
							1	613876	-0851	46	PAP	ER INLET- LEFT			16
							1	613876	6-0859	207	PAP	ER INLET- RIGHT			17
							1	613946	-0854	79	FOA	M- ACOUSTIC			18
							2	613946	5-0854	78	FOA	M- ACOUSTIC			19
							1	4012	226-01		MAF	RKERS- MOUNTED			20
							1	612416	6-0831	45	FAN	ASSY			21
							1	61410	1-0859	923	мо	UNT- BOARD			22
							1	61415	7-0860	069	PAF	PER INLET			23
	L , Ta	llyG	ieni o	com	SHIP	PING: 6	020 So	190TH ST.,	SIZE A	CODE	IDENT	DWG NO. 614	057	7	
	-				KEN1	r, wa 98	3032 U	SA	REV:	C		FILE NAME: PL4057C		SHEET: 2 OF 3	

Q	UANT	ITY RE	QUIRI	ED PEI	r Ass	EMBLY	(
) 200 200	PAR	r num	IBER		DESCRIPTI	ON	ITEM NO.
							1	404304	-7327	'90	FINC	GER GUARD		24
							37	404251	-7326	56	POF	? RIVET- Ø1/8 X 1/8		25
							2	4025	24-46	1	SCR	EW- #8-32 X 1.250, SI	EMS	26
							1	403692	-7310	92	BAL	l stud		27
							1	4007	83-15		NUT	- #5/16, KEPS		28
							2	400783	8-730	502	NUT	- #8-32, KEPS		29
							1	403692	2-7310	060	GAS	SPRING		30
														31
							1	614134	1-086	77	CA	BLE ASSY- PAPER OU	Γ	32
							1	4025	524-02	2	SC	REW- #4-40 X 0.375, S	Sems	33
														34
														35
														36
														37
														38
														39
														40
														41
														42
														43
														44
														45
									1	1		1		46
	Ъ	lh/C	onic	ഹം	01.110		000 5 -			123	10ENT	DWG NO. 6140.	57	
L		uyU			KENI	, WA 98	020 SO 3032 US	A	REV:	C		FILE NAME: PL4057C	SHEET: 3 OF 3	



G	UANT	ITY RE	QUIR	ED PE	r ass	EMBLY									
							/ /								
							8	PAR	T NUM	BER		DESCRI	PTIO	Ν	ITEM NO.
							-	080	6087		PEC	ESTAL ASSY			1
															2
															3
															4
															5
															6
															7
															8
							1	61365	7-0859	932	BAS	e assy			9
							1	61365	8-086	383	LEG	ASSY, RIGHT			10
							1	61365	58-086	103	LEG	ASSY, LEFT			11
															12
							1	61415	3-0860)74	DOC	OR ASSY			13
							1	61366	1-0859	936	BRA	CE- DOOR			14
							1	61400	4-085	493	GUI	DE- PAPER			15
							1	61417	5-0862	229	PLA	IFORM - PAPER STA	4CK	ING	16
							1	61128	8-0800)19	TRA	Y- PAPER			17
							1	61365	9-0860	094	PAN	EL- REAR			18
							1	61394	46-085	482	FOA	M- ACOUSTIC			19
							18	402	2524-4	2	SCR	EW- #8-32 X 0.375	Sen	IS	20
							4	40403	86-731	449	CAS	STER			21
							5	40411	4-733	483	SCR	EW- #6-32 X 0.375	PAN	N HEAD	22
							A/R	4006	58-730	213	ADH	IESIVE- LOCTITE 242	2		23
	L Ta	llyC	ieni o	com	SHIP	PING: 60)20 So	190TH ST.,	SIZE A	CODE 123	IDENT 344	dwg NO. 614	10	4	
					KEN	i, wa 98	U32 US	A .	REV:	С		FILE NAME: PL4104C		SHEET: 2 OF 2	





G	UANT	ity re	QUIR	ED PE	r ass	EMBLY									
							/ /	5							
							8	PAR	T NUM	BER			DESCRIPTI	ON	ITEM NO.
							-	086	6083		BAS	SIC PRINTE	R ASSY- 63	312	1
															2
															3
															4
															5
															6
															7
															8
							1	61408	0-0860	89	PRI	NT MECH	BASIC, 63	12	9
															10
							1	61405	7-0856	640	CAE	BINET- BASE	ASSY		11
								61394	4-0853	351	POV	WER SUPPL	Y ASSY		12
															13
							REF	61	3945		RIBB	ON PLATE	ORM ASSY		14
							1	61405	8-0856	541	CAE	BINET- REAI	2		15
							REF	61	4035		FRC	ONT PANEL	ASSY		16
							REF	61	4150		ELEC	CTRONICS	ASSY		17
							1	403	769-02	2	мо	UNT - VIBR	ATION DA	MPING	18
							2	61415	51-0860	071	PAP	'ER GUIDE-	TRACTOR	Shaft	19
							2	403	3769-10	0	мо	UNT - VIBR	ATION DA	MPING	20
							3	40432	21-7328	352	мо	UNT - VIBR	ATION DA	MPING	21
							1	401	417-08	5	TER/	MINAL - RE	CTANGUL	AR TONGUE	22
							18	402	524-42	2	SCR	2EW- #8-32	X 0.375 SE	MS	23
	ол т.	lh/C	loni	rom					SIZE			DWG NO.	6140	81	
V	27 Id	mγC	yci iù		SHIP KEN	PING: 60 T, WA 980	020 So 032 US	190th St., Sa	REV:		, -	FILE NAME: PI	4081C	SHEET: 2 OF 3	
16-000)1E-14													1	

Q	UANTI	ITY RE	QUIRE	ED PEI	r Assi	EMBLY	(
							/ /	3						
							8	PAI	RT NUN	1 BER		DESCRIPTIO	Ν	ITEM NO.
							1	40366	0-7309	910	BEA	D - FERRITE, CLAMP-O	N	24
														25
							1	6141	79-086	241	GR	OUND STRAP - INSULAT	ed 6.0" long	26
							1	4036	66-730	945	GR	ound strap - insulat	IED 3.0'' LONG	27
														28
							1	61405	52-086	204	GU	IDE- PAPER		29
														30
							2	61419	96-086	380	RES	traint- shipping		31
							2	40	2524-4	3	SC	REW- #8-32 X 0.500 SE/	MS	32
														33
														34
														35
														36
														37
														38
														39
														40
														41
														42
														43
														44
														45
														46
	L Ta	llyG	ieni o	com	SHIPI	PING: 6	020 So	190TH ST.,	A SIZE	123	DENT	DWG NO. 61408	1	
		-			KENT	, WA 98	3032 US	SA	REV:	С		FILE NAME: PL4081C	SHEET: 3 OF 3	





Q	UANT	ITY RE	QUIRI	ED PE	r ass	EMBL	ſ							
							8	PAR	T NUM	BER		DESCRIPTIC	N	ITEM NO.
							-	080	6089		PRIN	IT MECHANISM- BASIC	C, T6312	1
														2
														3
														4
														5
														6
														7
														8
							1	614067	-0856	37	FIXT	URED PRINT MECH. , TO	6312	9
														10
							1	613968	8-0854	62	PLA	ten adjust assy- r.h	.S.	11
							1	613968	8-0854	63	PLA	ten adjust assy- l.h.	S.	12
							1	613965	5-0854	65	PLA	TEN ASSY		13
							1	614124	-0859	72	PLA	TEN MOTOR W/SENSO	R ASSY	14
														15
							1	613946	5-0854	80	FOA	M- ACOUSTIC		16
							1	613267	-0854	71	MO	TOR- PAPER DRIVE		17
							1	613962	2-0854	50	CO	JPLER- SHAFT		18
							1	614036	-0855	61	SHA	FT- TRACTOR DRIVE		19
							1	614149	-0862	45	SHA	FT- TRACTOR SUPPOR	Γ	20
							1	611148	8-0754	80	BUS	HING- SQUARE SHAFT		21
														22
									1	,				23
	L Ta	llyG	ienio	com	SHIP	PING: 6	.020 So	190TH ST.,	SIZE A	CODE	IDENT	DWG NO. 61408	0	
	-	-			KEN	T, WA 98	8032 U	SA	REV:	F		FILE NAME: PL4080F	SHEET: 2 OF 5	

Q	UANT	ITY RE	QUIRE	ED PEI	r Assi	EMBLY	/							
							8	PA	RT NUM	BER		DESCRIPTIO	ЛС	ITEM NO.
							1	6140	97-0862	07	KNC	B SUPPORT- HORIZON	NTAL VERNIER	24
							1	6140	96-0859	918	KNC	DB- HORIZONTAL VERI	NIER	25
														26
							1	6141	39-0860	23	TRA	CTOR/SENSOR ASSY-	PAPER DRIVE	27
														28
							1	6124	116-083	145	FAN	I ASSY		29
														30
							1	6140)24-085	515	HA	MMER BANK ASSY		31
														32
							1	6140	071-085	644	CAB W/C	LE ASSY- HAMMER DRIVI LAMP- T6312	ER	33
														34
								614	148-086	064	IRO	N ASSY- PAPER		35
														36
														37
														38
							1	40)2524-5]	SCR	EW- #8-32 X 0.625 SE	MS	39
														40
							2	6128	802-086	240	SPRI	NG- GROUNDING TR	actor shaft	41
														42
							1	6127	726-0859	995	BLC	WER ASSY		43
							1	614	070-085	643	CAF	P- CABLE CLAMP		44
							1	614	118-085	958	SEA	L- BLOWER		45
							1	614	105-086	301	DUC	CT- BLOWER		46
		ally(Geni	com	с ШР		020 50	1901H ST		CODE	IDENT	DWG NO. 61408	30	
					KENT	, WA 98	3032 US	SA	REV:	F		I FILE NAME: PL4080F	SHEET: 3 OF 5	

Q	UANT	ITY RE	QUIRE	ED PEI	r ass	EMBLY								
							/ /							
							8	° PAR	RT NUM	BER		DESCRIPTIC	N	ITEM NO.
							A/R	61403	33-0858	397	PLA	TE- TRIM MASS, 10gm		47
							A/R	61403	33-0858	398	PLA	te- trim mass, 30gm		48
							A/R	61403	33-0858	399	PLA	TE- TRIM MASS, 70gm		49
							A/R	61403	33-0859	900	PLA	te- trim mass, 100gm	1	50
														51
							2	61416	67-0862	213	SCR	EW- METRIC, M5 X 18m	m SOCKET CAP	52
														53
							2	40402	23-7337	759	SPR	ING- EXTENSION		54
							2	401	223-02	2	NUT	- #4-40, HEX.		55
							2	404303	3-7337	11	SCR	EW- #4-40 X 0.50, TOR	X PLUS	56
							1	400	641-18		RING	G- RETAINING		57
									65-7338	305	LINE	R- BEARING, NYLON		58
							2	40252	24-7303	881	SCR	EW- #6-32 X 0.375, SE	MS	59
							2	40016	63-7328	331	SCR SOC	EW- #6-32 X 0.500 SHOUL :KET HEAD	DER,	60
							4	402	524-42		SCR	2EW- #8-32 X 0.375, SE	MS	61
							2	40252	4-7326	92	SCR	EW- #8-32 X 1.625, SE/	MS	62
							2	402	524-03		SCR	EW- #4-40 X 0.500, SE/	MS	63
							2	40442	4-7337	55	SCR	EW- #1/4-28 X 3/4, SOC	KET HEAD CAP	64
							2	400	215-13	3	WAS	Sher- #1/4, split loc	K	65
							2	400)782-09)	WA	SHER- #1/4, FLAT		66
							2	402	2524-02	2	SCR	2EW- #4-40 X 0.375, SE	MS	67
														68
														69
		llvC	ienio	com	снір		120 50 1	 72 HT09	SIZE	CODE	IDENT	dwg NO. 61408	0	
	•				KENI	T, WA 980	032 US	Α	REV:	F		I FILE NAME: PL4080F	SHEET: 4 OF 5	

Q	UANT	ITY RE	QUIRE	ED PEI	r Assi	EMBLY	(
	/ /													
							8	PAR	T NUM	BER		DESCRIPTIC	N	ITEM NO.
							4	40428	7-7328	307	SET :	SCREW- #10-32 X 1.00	0	70
							2	40428	7-7327	758	SET	SCREW- #10-32 X 1.25	0	71
							6	400)783-1	0	NUT	- #10-32 KEPTS		72
														73
							2	401	226-0	1	LAB	EL - PRINTABLE		74
							A/R	40065	58-730	213	AD	HESIVE - LOCTITE 242		75
							1	61404	40-085	567	PIN	- PLATEN		76
							3	40252	24-730	381	SCF	REW - #6-32 X 0.375 SE	MS	77
							1	400)260-1	8	RIN	G - RETAINING, E - TYP	.Е	78
														79
														80
														81
														82
														83
							3	4006	527-10	6	SCI	REW - #6-32 X 1.25 PA	N HEAD	84
							3	4002	215-09)	WA	SHER - #6, SPLIT-LOCH	<	85
							3	4002	216-09)	WA	ASHER - #6, FLAT		86
							2	402	524-41		SCI	REW - #8-32 X 0.25, SE	MS	87
							1	61418	37-086	283	ડાના	JTTLE SENSOR ASSY		88
							1	4009	995-18	3	WA	SHER - CURVED SPRIN	IG	89
							1	402	524-23	3	SC	REW - #6-32 X 0.500 SI	EMS	90
														91
														92
	L) Ta	llyG	ienio	com	SHIP	PING: 6	020 So	190TH ST	SIZE A	CODE 1	10ENT	DWG NO. 61408	50	
	•	-			KENT	T, WA 98	3032 US	Â	REV:	F		FILE NAME: PL4080F	SHEET: 5 OF 5	


			REVISIONS				
	SYM	DATE	DESCRIPTION	BY	APP	ROVED	
	-	1/10/04		YL		0	
	В	5/4/04	REVISED PER DCR #31337	YL	DB CB		
	С	5/26/04	REVISED PER DCR #31376	YL	DB CB		
	D	6/6/04	REVISED PER DCR #31398	YL	DB CB		
	E	6/30/04	REVISED PER DCR #31416	YL	DB ED	В	
	F	10/1/04	REVISED PER DCO #40200	YL	DB C2		
							D
			 NOTES: (UNLESS OTHERWISE SPECIFIED) 1. MANUFACTURE: ASSEMBLE & PART MAR WORKMANSHIP STANDARDS. 2. NUMBER WITHIN CIRCLE INDICATES ITEN NUMBER. SEE PARTS LIST FOR SPECIFICA (3) TORQUE TO 5.0 IN-LBS. (4) TORQUE TO 6.0 IN-LBS. (5) TORQUE TO 2.5 - 4.0 IN-LBS. (6) TIGHTEN THE PLATEN MOTOR SHA FOLLOWS (SEE VIEW A-A); MANUA PLATEN TO THE FULLY OPEN ROTATE I THAT THE SHAFT FLAT MATCHES THE PLATEN MOTOR SUSSOR PCB, TIG SET SCREWS. 	K PER TALL A OR FIND ATION. FT SET SC ALLY ROT. ION, WHI HE PLATE IE ILLUSTR HTEN THE 6.	Y REW AS ATE THE LE HOLDI NI MOTOI ATION OI RIGHT PL	NG 8 SO N THE ATEN	С
			DIDENTIFY CONNECTOR NO. AS J2	2.			
	A	\ >	 9. ORIENT TENSION CLIP (ITEM 41) AT THE SQUARE SHAFT SHOULD BE P COUPLER UNTIL IT HITS THE INTER COMBINATION IS PUSHED INTO T SO THE SHOULDER OF THE SQUAF THE END OF MOTOR SHAFT. SPRING WASHER (ITEM 89) TO BE 	USHED IN NAL STOP HE MOTO RE SHAFT ORIENTEI	ITO THE , THIS , THIS R SHAFT IS AGAIN D AS SHO	B-B. ST WN.	В
N RY	,	1/10 1/13 1/13 1/14	704 704 704 704 704 704 704 704 704 704	MATER SHIPPING KENT, WA	11AL : 4020 So 1901 : 98032 USA BASIC	FINISH H ST.,	A
IS		1/14	/04 6312				
N		1/14	/04 SIZE CODE IDENT DWG NO.	41109	RO	REV	
N		1/14	/ <u>04</u> D 12344 C	1400			
LC	HEN	1/14	/U4 SCALE: NONE FILE NAME: 4080F	SI	HEET: 1	OF 3	
		(1	I	I			







			-			-					
		2	<u>}</u>					1	1		
	SAW	DATE			REVIS			PV			
	-	12/30/03	RELEAS	E TO PROD	UCTION	SCRIPTION		YL	DB	GAG	
	А	7/18/04	REVISE	D PER DCR	#31247			YL	DB	DD	
											D
			N (OTES: (UN 1. MANU WORP 2. NUMBE 3. TOROL 3. ADD T TO AS ASSEN	ILESS O FACTURE (MANSH ER WITHIN ER, SEE F IJE TO 2 RIM MA SEMBLE MBLY MJ	THERWIS	E SPECIFIED, E & PART MAR RDS. NDICATES ITEM OR SPECIFICA M 12 TO 15, IIRED TO CO :60±5 gm.) AK PER TALL A OR FIND NTROL	Υ		С
REV	V- #10	-32 X 0.7	5 SEMS	5				-		-	
ATE-	TRIM	MASS, 50)gm					-		-	
ATE-	TRIM	MASS, 35	gm					-		-	
ATE-	TRIM	MASS, 15	gm					-		-	
ATE-	TRIM	MASS, 5g	gm					-		-	
REV	V - BRA	ACKET						-		-	
HES	SIVE - I	OCTITE 2	242					-		-	
REV	V - #6-	32 X 3/16	5, TURS	s head				-		-	
HES	SIVE - E	END CAP	, RIGH	t side				-		-	
HES	SIVE - E	END CAP	, LEFT S	SIDE				-		-	
RRI	AGE -	END CA	Р					-		-	
ACI	KET AS	SY - RIBBO	ON SH	IELD AD.	JUST			-		-	
BO	N SHIE	LD ASSY						-		-	
MM	1ER BA	NK ASSY						-		-	
MM	1ER BA	NK ASSY	- FINA	L				-		-	
		1	DESCRIPTI	ON				MATER	IAL	FINISH	
AI		12/3	0/03	m	17.			MAILING:	P.O. BOX 9	7018	ΠA
WN		12/3	1/03	10	uy			SHIPPING KENT WA	8301 So 18 98032 11SA	BOTH ST.,	
			-	TITLE					UJA		\neg
ELLC	CHEN	12/3	1/03	LI	<u></u>		Βννιγ	νου	/ EI	ΝΛΙ	
IDIS		1/14	4/04	H		VIEK	DAINK	H331	- FI		
	(N	1/1/	4/04	SIZE			DWG NO.	61402	4	REV	
ELLC	CHEN	1/1/	4/04	SCALE	NONE		ME: 1024A	02	- • HEFT· 1	 	
				JUNLL.		THE INAL	VIL. 4024A			011	

Q	QUANTITY REQUIRED PER ASSEMBLY													
						8		PAR	T NUM	BER		DESCRIPTIO	Ν	ITEM NO.
							-	085	5356		RIBB	on platform assy- w/r	FD	1
						-		080	6000		RIBB	ON PLATFORM ASSY- W/R &	FD SKIP OVER WEL REINKING DRIVE	P2
														3
														4
														5
														6
														7
														8
						1	1	613870	-0860	22	PLA	iform assy- ribbon		9
						2	1	613971	-0854	69	RIBE	SON DRIVE MOTOR		10
						1		614134	-0860	06	CAE	BLE ASSY- OPTICAL SEN	SOR	11
												12		
						1	1	613946	-0863	03	ACO	DUSTIC FOAM		13
						1	1	613946	6-0860	07	ACO	DUSTIC FOAM		14
						1	1	613946	-0860	08	AC	DUSTIC FOAM		15
						2		4029	53-01		PAC	- MTG, CABLE TIE		16
						4	2	4003	341-01		CAE	BLE TIE		17
						1	1	61407	4-0858	856	LAB	EL- HORIZONTAL SCALE	(136 COLUMN)	18
						1	1	61383	9-0850	084	LAB	el- forms setting ref	ERENCE	19
					1	613324	4-0860	010	LAB	EL- RIBBON LOADING		20		
1 1 6139				61395	4-0853	394	PIN-	RIBBON PLATFORM		21				
	4 2 401226-01						LAB	EL- PRINTABLE		22				
										1				23
	y Ta	llyC	ienio	com	SHIP	PING: 6	020 So	190TH ST.,	SIZE A		IDENT	dwg NO. 61394	5	
	-				KENT	, WA 98	3032 U	ŚA	REV:	F		FILE NAME: PL3945F	SHEET: 2 OF 3	

Q	QUANTITY REQUIRED PER ASSEMBLY														
						8	8 3 8	PAR	T NUM	BER		DESC	RIPTIOI	Ν	ITEM NO.
						8	4	4025	524-47		SCR	EW- #8-32 X 0.31	12 SEM	S	24
						2	2	4007	83-01		NUT	- #4-40, HEX, KEF	۶S		25
						1		4025	524-02		SCR	EW- #4-40 X 0.37	75, SEN	15	26
						1	1	400	627-02	<u>)</u>	SCR	EW- #4-40 X 0.18	87 PAN	I HEAD	27
															28
						A/R	A/R	400	658-31		ADH	IESIVE- LOCTITE 2	262		29
															30
						1	1	40363	7-7310)38	CA	BLE SUPPORT- TW	/IST LO	СК	31
						1	1	61416	0-086	130	СВ	A- RIBBON MOTI	ON		32
						1	1	61416	8-0862	209	СА	BLE ASSY- RIBBC	N SEN	SORS	33
	1 614168				8-0862	208	CA	BLE ASSY- RIBBO	n sens	SORS	34				
															35
															36
															37
															38
															39
															40
															41
															42
															43
															44
															45
									0.77	005-					46
	ù Ta	llyG	ienia	com	SHIP	PING	020 50	190TH ST	A	123	44	61	394	5	
		<u> </u>		=	KENT	r, wa 98	8032 US	A	REV:	I F		I FILE NAME: PL3945F		SHEET: 3 OF 3	



Q	UANT	ANTITY REQUIRED PER ASSEMBLY												
				/ /	//	/								
				8	8 8 8	8		PARI	i nume	BER		DESCRIPTIC	DN	ITEM NO.
							-	086	081		ELE(PSIC	CTRONICS ASSY - STD - SE D READY, T6306	ER/PAR	1
						-		086	082		ELE WITI	CTRONICS ASSY - SER/PA H SINGLE PSIO OPTION, 1	R 6306	2
					-			086	085		ELE(PSIC	CTRONICS ASSY - STD - SE D READY, T6312	R/PAR	3
				-				086	086		ELE¢ WITI	CTRONICS ASSY - SER/PA H SINGLE PSIO OPTION, 1	R 6312	4
														5
														6
				1	1	1	1	4003	826-04		WAS	Sher- #8 Flat Nylon		7
														8
						REF	REF	614	1050		СВА	- CONTROLLER, T630	6	9
				REF	REF			613	860		СВА	- CONTROLLER, T631	2	10
	1			1	1	1	1	613872	-08514	12	PLA	TE - CONTROLLER MC	UNTING	11
	1			1	1	1	1	613871	-08594	11	BAC	k plate assy		12
				1	1	1	1	614102	-08609	92	BRA	CKET - PIVOT		13
				1	1	1	1	400783	-73038	32	NUT	- #6-32, HEX, KEPS		14
					1		1	612936	-08193	35	PAN	el - Psio, blank cov	/ER	15
				1	1	1	1	4025	524-24		SCR	EW - #6-32 X 0.75 SE№	15	16
				9	9	6	6	4025	524-23		SCR	EW - #6-32 X 0.50 SEⅣ	IS	17
				1	1	1	1	403666	-73095	53	STRA	AP - GROUND, INSULA	TED	18
				2	2	2	2	403807	-73270)4	SCR	EW LOCK		19
	2			2	2	2	2	400215	-73028	36	WAS	SHER - #4 SPLIT LOCK		20
	2			2	2	2	2	4025	24-01		SCR	EW - #4-40 X 0.25 SEN	IS	21
					2		2	4500	049-30		SCR	EW - M3 X 6mm		22
	2					2	2	40425	51-732	656	POP	RIVET - Ø1/8 X 0.275,	Dome head	23
	Та	IIvG	enic	'n	MAIL KENT	ING: P. , WA 98	O. BOX 3064-97	97018 18 USA	SIZE A	CODE 123	IDENT	61415	0	
				~ 11	KENT	, WA 98	301 SO 3032 US	SA	REV: E	3		I FILE NAME: PL4150B	SHEET: 2 OF 2	



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		2	<u> </u>		REVISIO	NS			<u>'</u>		٦
	SYM	DATE			DESC	RIPTION		BY		APPROVED	1
	-	1/5/04	RELEAS	e to prod	UCTION			YL	DB	MBO]
	А	4/12/04	REVISE	D PER DCR	#31297			YL	DB	EB	
	В	6/3/04	REVISED	U PER DCR	#31389			YL	DB	ΕB	
											טן
			N	OTES: (UN	ILESS OTH	IERWISE	SPECIFIED))			
				1. MANU	JFACTURE,	ASSEMBL	& PART MA	RK PER TA	ALLY		
				WOR	KMANSHIP	STANDAF	2DS.		_		
				2. NUMB NUMB	er within (Ber, see pa	CIRCLE II RTS LIST F	NDICATES ITE OR SPECIFIC	m or fin Ation.	D		
			F	⇒ un	IITED US	E, SEF	P/L.				
			L.			2,022	.,				
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			DESCRIPTI	ION				MA	TERIAL	FINISH	
1		1/5	/03					MAIL	NG: P.O. B())	(97018	A
1 /N		1/5	/0/	l (D	Tally G	ieni c	om	KENT,	WA 98064-97	18 USA	 `
r I N		1/8	/ U4					SHIPP KENT,	WA 98032 U	SA	
DY		1/0	/04	TITLE							
NKY		1/9	/04	-	ELI	ECT	RONI	CS A	SSY		
л <u>5</u> 05		1/14	1/04							<u> </u>	
	N	1/14	1/04	SIZE		DENT	DWG NO.	61/1	150	REV	
IN		1/14	1/04		1234	4	L	1	100		-
LC	HEN	1/14	1/04	SCALE:	NONE F	LE NAM	ИЕ: 4150B		SHEET:	1 OF 1	J
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SVM	DATE			REVI			PV.			(F.D.	
-	10/30/03	RELEAS	E TO PROD		ESCRIPTION		YL	DB	SP	/ED	
A	12/20/03	REVISE	D PER DCR	#31125			YL	DB	PB		
В	4/30/04	REVISE	D PER DCR	#31345			YL	DB	MBO		
											D
		N	OTES: (UN 1. MANU WORI 2. NUME NUM 3. APPL ITEM	ILESS C FACTURI KMANSH ER WITH BER, SEE Y ADHI 7 BEFO	THERWISI E, ASSEMBL IP STANDA IN CIRCLE PARTS LIST ESIVE (ITEN RE ASSEN	E SPECIFIED) E & PART MAR RDS. INDICATES ITEM FOR SPECIFICA M 8) TO INDIG IBLY.) M OR FIND ATION.	Y REAS C	DF		С
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		DESCRIPTI					MATER	IAL		FINISH	_
4	4/15	5/03	10	Tallv	Genic	om	Mailing: Kent, Wa	P.O. BO) 98064-97	(97018 718 USA		Α
WN	10/3	1/03	W			~	SHIPPING KENT, WA	8301 So 98032 U	180TH S ISA	Τ.,	
IPS	10/3	1/03	TITLE	~							
DIS	11/1:	2/03		C	ONTE	ROL PA	ANEL	AS	SSY		
IORN	11/1	2/03	SIZE	COD	E IDENT	DWG NO.				REV	
TIN	11/1:	2/03	D	123	344	6	61403	35		В	
ELLCHEN	11/1:	2/03	SCALE:	NONE	FILE NAI	VIE: 4035B	SH	HEET:	1 OF	1]

Q	QUANTITY REQUIRED PER ASSEMBLY																	
	/ /	/ /	/ /	/ /	/ /		/ /	5	/									
							/20	S/P	ART	NUME	BER			DES	CRIPTIO	N		ITEM NO.
							-		085	351		POW	VER SUPF	LY ASS	SY- MEA	ANWELL,	6312	1
																		2
																		3
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							1	4040)20-	731	108	MODU	JLE- POV	VER EN	TRY/SW	ІТСН		9
							1	4044	109-	-733	571	POV	WER SU	PPLY-	- MEAN	WELL		10
							1	6138	374-	-086	434	мои	NTING P	late a	ASSY-	POWER	SUPPLY	11
							1	6138	377-	-085	148	PLAT	te— Line	E FILTE	IR			12
																		13
							1	4044	109-	-733	691	FILT	rer- ac	C LINE	-			14
							1	6138	312-	-086	224	CAE	BLE ASS	Y- A(C			15
							1	6138	312-	-084	995	CAE	BLE ASS	Y				16
							1	614	138-	-086	015	CAE	BLE ASS	Y- P	OWER	DISTRI	BUTION	17
							1	6141	138-	-086	016	САВ	BLE ASS	Y– GI	ROUND	I		18
																		19
							1	605	318-	-085	011	LAB	EL- GR	ROUND				20
																		21
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	Б	lh/C	oni	~~~ ~	CHID		5020 5	а <u>19</u> 0тц	_{ст}	SIZE	code 1 123	ident 44	DWG NO.	61.	3944	Ļ		
Le		Tally Genicom SHIPPING: 6020 So 190TH ST., A REV											FILE NAME	PL394	44B	SHEET	2	

Q	QUANTITY REQUIRED PER ASSEMBLY																
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							/8	PART	NUM	1BER			DESCRIPTIC	NC			ITEM NO.
							1	4003	41-0)3	CA	BLE TIE					24
							2	400783	-730)502	NU	T— #8—3	32 HEX KE	PS			25
																	26
							6	404130	-732	2244	SC	REW- M	3 x 6mm	SEMS			27
																	28
																	29
																	30
							2	400783	-730)382	NU	T— #6—3	32 HEX KE	:PS			31
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	Ta	llvG	ieni	com	SHIP	PING: 6	5020 S	o 190TH ST.,	A	123	01 044	DWG NO.	61394	4			
)'	IALLY GENICOM SHIPPING: 6020 So 190TH ST KENT, WA 98032 USA								B		FILE NAME	PL3944B	SHEET	3	OF	3

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	REVISIONS		1	4
SYM DATE	DESCRIPTION	BY	APPROVED	
- 12/15/03	RELEASE TO PRODUCTION FROM X1	YL	DB EWG	
A 4/12/04	REVISED PER DCR #31296	YL	DB EB	
B 10/4/04	REVISED PER ECO #40226	YL		
				-
				D
	NOTES: (UNLESS OTHERWIS 1. MANUFACTURE, ASSEMBLE & PART WORKMANSHIP STANDARDS. 2. REMOVE ALL BURRS, BREAK SHAR SURFACES 125- 3. ALL DIMENSIONS APPLY AFTER SU HAVE BEEN APPLIED 4. NUMBER WITHIN CIRCLE INDICATE NUMBER SEE PARTS LIST FOR S 5UNLESS OTHERWISE NOTED BY STANDARD FASTENERS MAY BE A TO TALLY WORKMANSHIP STANDAR 6. ALL SURFACES TO COMPLY WITH Q-D1004, CLASS C. [7] POWER SUPPLY NEG. [8] ITEMS SUPPLIED WITH TI SUPPLY (ITEM 10) 6 EA TERMINAL STRIP S 1 EA CLEAR PLASTIC CO	E SPE MARK F P EDGES RFACE C S ITEM C PECIFICA S. LENG S. LENG DUSTED TALLY S HE POU CREWS DVER.	CIFIED) PER TALLY , MACHINE DATINGS - DATINGS - DR FIND TO CONFORM- PECIFICATION WER	С
				В

		D	ESCRIPTIC	DN			MA	TERIAL	FINISH	١.
Y	UEN LAI	4/2/03	4		Carla				•	ļΑ
D	. BROWN	4/7/03	US		Genic	om	SHIPF KENT	ING: 6020 S	o 190TH ST., USA	
L J	WAGAMAN	4/8/03	TITLE							1
Ε	. GOODMAN	12/15/03		P	OWEF	r su	PL	Y ASS	SY-	
L	. SPYRIDIS	12/17/03			MEA	ANWEI	_L,	6306		
T.	SCHORN	12/17/03	SIZE	COD	E IDENT	DWG NO	· ·		REV	1
D	. SCHULTZ	12/17/03	D	12	<u>344</u>	(5139	943	B	
G	. GESELLCHEN	12/17/03	SCALE	1/1	FILE NAM	e 3943B		SHEET 1	OF 1	
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	PROPRIETARY NOTICE		I					I						REVISIONS]
	This document and the information contains	ained therein ar	re the						SYM	1	DATE			DESCRIPTION		BY	Y	APPROVED		
	 (1) use such information for purposes other authorized by TALLY; and (2) furnish such 	er than those ex information	pressly						-	10/	/22/03 RE	ELEASE TO PR	ODUCTION			YL	L DB	SP		
	to any other person in whole or in part wi written permission of TALLY; and, to prom	ithout the prior e	express						А	12	2/6/03 RE	EVISED PER DO	CR #31109			YL	DB	SP		
D	this document to TALLY upon the receipt therefor.	of a request																		D
С		4	3										NC 1. N 2. F 3. A 4. A	DTES: (UNL MANUFACTU WORKMANS REMOVE ALL SURFACES -1 ALL DIMENSIC HAVE BEEN / ALL SURFACE SPECIFICATIO	ESS OTHERV RE, ASSEMBLE & HIP STANDARD BURRS, BREAK 25/- ONS APPLY AFT APPLIED. STO COMPLY ON Q-D1094, C	VISE SPECIF & PART MARK I SS. SHARP EDGES, ER SURFACE C WITH TALLY CLASS C.	FIED) per tally , Machine ; Oatings -	Ē		С
В			<u>0856</u>	<u>525 ASSY</u>																В
								1	4	403	760-01	CONNEG	CTOR- HORI	ZONTAL M	ODULAR JA	CK 4-POSITI	ION	_		-
								1	3	40444	8-733758		TIOMETER	- 10K 30	% ANGLE	SENSING	-	-	-	-
								1	2	61405	9-085624	PCB-P	LATEN PO	SITION S	ENSOR			-	_	-
								_	1	08	35625	CBA- F	LATEN PC	DSITION S	SENSOR			-	-	1
								085625	ITEM	PART	I NUMBER			DESCRIPTI	ON			MATERIAL	FINISH	1
							UNLESS OTHFRV	<u>LQ'D</u> NISE SPECIFIFI	NO D	DW	/N YUEN	LAI	10/22/03				MAILIN	NG: P.O. BOX 970	18	-
							DIMENSIONS A	ND TOLERAN() SHALL BE INT	Ces are Ter-	СН	^{kd} D. BR	ROWN	10/23/03	'Ial	ly		KENT, V SHIPPIN	WA 98064-9718 U NG: 8301 So 1801	isa h st.,	
A					I	1	PRETED PER AN TOLERANCES AI 0.X ±0.1 0.XX ±0.01	ISI Y14.5M-198 RE:	32.		^{al} S. PH G L. SPY	IILLIPS YRIDIS	- 10/23/03 11/12/03		a- plate	EN POS	ITION	SENS	OR	A
	085	625	614124	16306/T6312	A	1	0.XXX ±0.005 0.XXXX ±0.000	5		ile Q.A	a. TIM S	SCHORN	11/12/03	SIZE	CODE IDENT	DWG NO.			REV	-
	PART N	NUMBER	NEXT ASSY	MODEL	REV	SHT	ANGLE ±0°30'		PROJECTIC	DN C.S.	C. M.		11/12/03	B	<u>12</u> 344		6140)60	A	
			A 	PPLICATION	<u> </u>		DO NOT	SCALE DRA	AWING	CHO		ESELLCHEN	11/12/03	SCALE: NO	NE FILE NAM	ME: 4060A	S⊦ 1	HEET: 1 OF 1	-	
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Ql	JANTITY REQUIRED PER ASSEMBLY										
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60	() () () () () () () () () () () () () (~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\frac{1}{2}$	(o) (o)	6, 6	10,	000	°/ Part	- NUMBER	DESCRIPTION	ITEM NO.
1		1	1	1	1		<u> </u>	085	5645	CBA- CONTROLLER 6312, W/PSIO W/O MAIN FIRMWARE	1
											2
					-			086	5194	CBA– CONTROLLER 6312, SER/PAR/PSIO	3
				-				086	6195	CBA– CONTROLLER 6312, SER/PAR/PSIO – TESTED	4
			<u> </u>					086	5196	CBA– CONTROLLER 6312, LJ SERIES	5
								086	5197	CBA– CONTROLLER 6312, LJ SERIES – TESTED	6
	—							086	5198	CBA– CONTROLLER 6312, LG SERIES	7
_								086	5199	CBA– CONTROLLER 6312, LG SERIES – TESTED	8
											9
											10
											11
											12
											13
				1	1			700700	-086142	FIRMWARE- MAIN, SER/PAR/PSIO REV	14
		1	1					700700	-086144	FIRMWARE- MAIN, SER/PAR/PSIO 6312 LJ SERIES REV	15
1	1							700700	-086146	FIRMWARE- MAIN, SER/PAR/PSIO 6312 LG SERIES REV	16
											17
											18
1		1		1				4026	97-06	BAG- ELECTROSTATIC SHIELD 12"X18"	19
											20
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48		IL .C	'ani							DENT DWG NO.	
Ľ	, idi	щуU		JOILI	KEN1	PING: 6 7, WA 9	5020 S 98032	o 1901H SI., USA	REV C	FILE NAME PL3860C SHEET 2	

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BILL OF MATERIALS

DRAWING NO. 613860

REVISION .

ASSEMBLY NO. 085645

DESCRIPTION 6312 CONTROLLER W/ SINGLE PSIO



MAILING: P.0. BOX 97019 KENT, WA 98064-9718 USA SHIPPING: 8301 S. 180TH ST. KENT, WA 98032 USA

ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE	COMMENTS
1	6	404068-732438	Chip Ceramic Capacitor - 22pF 50V 10%	C174, C175, C24, C28, C43, C46	0805	
				C12, C14, C155, C167, C22, C25, C27, C37,		
				C38, C4, C40, C41, C45, C47, C49, C5, C57,		
2	23	404069-732458	Chip Ceramic Capacitor - 1000pF 50V 10%	C60, C61, C65, C7, C87, C92	0805	
3	7	404069-732466	Chip Ceramic Capacitor - 4700pF 50V 10%	C10, C172, C23, C33, C42, C51, C70	0805	
				C156, C157, C158, C159, C160, C161, C162,		
4	12	404069-731545	Chip Ceramic Capacitor - 0.01uF 50V 10%	C163, C164, C165, C88, C93	0805	
				C105, C106, C107, C108, C109, C11, C110,		
				C111, C112, C13, C147, C148, C149, C152,		
				C166, C168, C169, C18, C19, C20, C21, C26,		
				C29, C30, C31, C32, C34, C36, C39, C44, C48,		
				C50, C52, C54, C55, C56, C58, C59, C6, C63,		
				C64, C66, C67, C68, C69, C75, C76, C77, C78,		
5	57	404069-732481	Chip Ceramic Capacitor - 0.1uF 25V 10%	C79, C8, C80, C81, C83, C86, C9, C94	0805	
				C1, C121, C122, C123, C124, C125, C126, C127,		
6	10	404368-733533	Chip Ceramic Capacitor - 0.1uF 100V 10%	C128, C146	1210	
				C113, C114, C115, C116, C117, C118, C119,		
				C120, C129, C130, C131, C132, C133, C134,		
				C135, C136, C137, C138, C140, C141, C142,		
7	25	404069-733577	Chip Ceramic Capacitor - 0.22uF 16V 10%	C143, C144, C145, C82	0805	
8	8	404368-733576	Chip Ceramic Capacitor - 0.22uF 100V 10%	C100, C101, C102, C95, C96, C97, C98, C99	1210	
9	8	404143-732262	Chip Electrolytic Capacitor - 10uF 16V 20%	C103, C15, C153, C154, C16, C17, C2, C3		
10	3	404143-733666	Chip Electrolytic Capacitor - 47uF 63V 20%	C139, C150, C151		
11	2	404415-733700	Electrolytic Capacitor - 22000uF 50V 20%	C170, C171		
12	6	404173-733535	Chip Tantalum Capacitor - 10uF 10V 20%	C173, C35, C53, C62, C84, C85	3216	
13	1	404277-733783	Chip Tantalum Capacitor - 100uF 10V 20% Low ESR	C104	7343	
14	2	404366-733413	Chip Resistor - 0 1/10W 5%	R14, R62	0805	
				R115, R117, R118, R119, R120, R13, R133,		
				R140, R144, R145, R146, R147, R19, R24, R25,		
15	19	404366-733422	Chip Resistor - 22 1/10W 5%	R31, R37, R83, R95	0805	
16	5	404366-733426	Chip Resistor - 33 1/10W 5%	R10, R5, R7, R8, R9	0805	
17	8	404366-733440	Chip Resistor - 120 1/10W 5%	R11, R22, R4, R54, R55, R57, R59, R6	0805	
18	4	404366-733445	Chip Resistor - 200 1/10W 5%	R12, R20, R28, R42	0805	
19	6	404366-733454	Chip Resistor - 470 1/10W 5%	R128, R129, R16, R17, R35, R36	0805	
20	1	404365-733145	Chip Resistor - 1.0K 1/10W 5%	R53	0805	
21	5	404365-733157	Chip Resistor - 3.3K 1/10W 5%	R136, R15, R27, R3, R63	0805	
22	3	404365-733161	Chip Resistor - 4.7K 1/10W 5%	R39, R40, R41	0805	
23	4	404365-733164	Chip Resistor - 6.2K 1/10W 5%	R64, R66, R79, R84	0805	

BILL	OF MAT	FERIALS			
D	RAWING NO.	613860			MAILING: P.0. BOX 97019
	REVISION				KENT WA 98064-9718 USA
10		085645		<u> </u>	SHIDDING: 8301 S 180TH ST
AS					
U	ESCRIPTION_	6312 CONTROL	LER W/ SINGLE PSIO		KENT, WA 98032 USA
ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE COMMENTS
				R1, R113, R125, R126, R127, R135, R26, R30,	
				R38, R56, R67, R70, R71, R72, R73, R74, R75,	
24	23	404365-733169	Chip Resistor - 10K 1/10W 5%	R76, R85, R87, R90, R92, R98	0805
25					
26	1	404365-733174	Chip Resistor - 16K 1/10W 5%	R97	0805
27	2	404365-733176	Chip Resistor - 20K 1/10W 5%	R21, R29	0805
28	9	404365-733190	Chip Resistor - 75K 1/10W 5%	R23, R65, R69, R78, R80, R81, R86, R89, R93	0805
29	2	404365-733193	Chip Resistor - 100K 1/10W 5%	R96, R99	0805
30	1	404365-733393	Chip Resistor - 200K 1/10W 5%	R100	0805
31	2	404365-733412	Chip Resistor - 10M 1/10W 5%	R44, R52	0805
32	4	404172-733573	Chip Resistor - 1.00 1/8W 1%	R103, R104, R109, R110	1206
33	6	404172-733575	Chip Resistor - 1.50 1/8W 1%	R101, R102, R105, R106, R111, R112	1206
34	1	404364-733777	Chip Resistor - 1.00K 1/10W 1%	R43	0805
35	2	404364-733134	Chip Resistor - 2.00K 1/10W 1%	R138, R139	0805
36	2	404364-733776	Chip Resistor - 3.09K 1/10W 1%	R33, R34	0805
37	2	404364-733784	Chip Resistor - 4.12K 1/10W 1%	R114, R60	0805
38	2	404364-733736	Chip Resistor - 6.65K 1/10W 1%	R116, R132	0805
39	3	404364-733706	Chip Resistor - 8.25K 1/10W 1%	R50, R88, R91	0805
40	5	404364-733707	Chip Resistor - 17.8K 1/10W 1%	R123, R124, R134, R142, R49	0805
41	1	404364-733139	Chip Resistor - 20.0K 1/10W 1%	R32	0805
42	2	404364-733140	Chip Resistor - 30.1K 1/10W 1%	R77, R82	0805
43	1	404364-733708	Chip Resistor - 33.2K 1/10W 1%	R51	0805
44	2	404364-733709	Chip Resistor - 59.0K 1/10W 1%	R48, R61	0805
45	1	404364-733544	Chip Resistor - 100K 1/10W 1%	R45	0805
46	5	404364-733482	Chip Resistor - 200K 1/10W 1%	R122, R141, R47, R58, R68	0805
47	1	404364-733710	Chip Resistor - 523K 1/10W 1%	R46	0805
				RF33, RF33, RF37, RF39, RF41, RF43, RF43, DD47, DD40, DD51, DD52, DD55, DD57, DD50	
10	20	404100 722656	Chip Desister Array, 19, 1/16/M/ 59/	RF47, RF49, RF51, RF53, RF55, RF57, RF59, DD61 DD62 DD65 DD67 DD60 DD71	1206
40	20	404109-733030	Chip Resistor Array - 18 1/16W 5%		1200
				RE 10, RE 13, RE 14, RE 10, RE 10, RE 19, RE20,	
40	17	404100 722657	Chin Bosistor Array 22, 1/16/M/ 5%	RF21, RF22, RF23, RF24, RF23, RF20, RF7, DD2 DD0 DD0	1206
49	17	404109-10001	01111 NESISIUI AITay - 22 1/1011 3%		1200
				RF1, RF2, RF3, RF32, RF34, RF30, R	
				PD54 $PD56$ $PD59$ $DD60$ $DD62$ $DD64$ $PD66$	
50	22	10/180 733660	Chip Posistor Array, 1.2K 1/16W 5%	DD69 DD70	1206
- 50	20	103-133000	01111 1001 5/0 Allay - 1.2K 1/1000 5/0	DD11 DD12 DD15 DD17 DD20 DD21	1200
51	10	404180-733663	Chip Resistor Array - 4 7K 1/16W/ 5%	RP4 RP5 RP6	1206
52	2	10/180_733663	Chin Resistor Array - 10K 1/16W/ 5%	PD27 PD28	1200
52	4	-0-100-100000	$\frac{1}{1000} = 1011 + 1000 = 0.000$	IN 27, IN 20	1200

BILL	BILL OF MATERIALS										
		613860				BOX 97019					
	DEVISION	010000				JT MA 08064 0718 LISA					
				— IP Tally Genicom [®]		1, WA 90004-97 10 USA					
AS	SEMBLY NO.	085645			SHIPPING: 830						
D	ESCRIPTION	6312 CONTROL	LER W/ SINGLE PSIO		KEN	NI, WA 98032 USA					
ITEM	ΟΠΑΝΤΙΤΧ		DESCRIPTION			COMMENTS					
53		404363-733523	Metal Strip Resistor - 0.10, 1W, 1%		2512	COMMENTS					
54	2	404363-733538	Metal Strip Resistor - 0.30, 1W, 1%	R107 R108	2512						
55	1	404305-733530	Metal Strip Resistor - 82.5 1W/ 1%	P130	2512						
56	1	404393-733329	Chin Fuse Resolution 140mA	E1	2312						
57	1	404452-755709	Chip Full Eiltor 60 Ohm 64	11	1806						
58	11	404142-732562	Chip EMI Filter 600 Ohm 200mA		0805						
50	1	104142-70002	Inductor - 68uH 3A	1, L I, L 4, L 3, L2, L3, L4, L3, L0, L7, L0	0000						
60	1	404193-133113	Chin LED - Green		0805						
61	1	404302 733520			0805						
62	1	404392-733320	Chip LED - Red		0005						
62	1	404050-733785		12 V1							
64	1	404050-755491	Diedo Duel Schottley Dower Postifier MPDD660CT								
04	1	404432-733703	Didde - Dudi Scholiky Fower Recliner MBRD000CT								
				D10, D17, D10, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D20, D20, D21, D22, D22, D22, D22, D23, D24, D24, D25, D26, D27, D28, D20, D20, D21, D22, D22, D23, D24, D24, D25, D26, D26, D26, D26, D26, D26, D26, D26							
				D25, D20, D27, D28, D29, D50, D51, D52, D55,							
				D34, D35, D37, D36, D39, D40, D41, D42, D43,							
6F	44	404040 700040	Diede Duel Ultre Feet RD1204	D44, D45, D46, D47, D46, D49, D50, D51, D52,							
60	41	404310-732043	Diode - Dual Ultra Fast BD1204	D10, D15							
67	2	404310-732044	Diode - Dual Ollia-Fast BD1205								
60	1	404201-733667	Didde - Schollky Power Reciller MBRS36013								
60	1	404000-733509	Diode - Hansient Voltage Suppressor 1105906								
09	9	404200-700540	Diode - Ultra-Fast Recovery CIVIRSU-02	D11, D12, D13, D2, D37, D30, D0, D7, D0							
70	2	403880-733510	Diode - Ultra-Fast Recovery USTB	D14, D36							
71	1	400093-733733	Diode - Zener 12V MINISZ5242B11								
				Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29,							
				Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38,							
				Q39, Q40, Q44, Q45, Q46, Q47, Q48, Q49, Q50,							
70	40	404444 700700	Terreister, N. Okanasi Dusi MOOFET, ED00000	Q51, Q52, Q53, Q54, Q55, Q56, Q57, Q58, Q59,	000						
72	40	404441-733728	Transistor - N-Channel Dual MOSFET FDS3890	Q60, Q61, Q62, Q63	508						
73	2	404421-733674	Transistor - N-Channel MOSFET NTD3055L104	Q3, Q4	DPAK						
/4	4	404442-733729	Transistor - N-Channel Power MOSEET NTD32N06		DPAK						
/5	9	404228-732618	Transistor - NPN Driver MMBTA06	Q10, Q11, Q14, Q15, Q17, Q18, Q2, Q5, Q6	SU1-23						
/6	(404433-733704	Transistor - P-Channel Power MOSEET IRER5305	Q19, Q20, Q65, Q66, Q7, Q8, Q9	DPAK						
//	4	404229-732619	Transistor - PNP Driver MMBTA56	Q I, Q12, Q13, Q16	501-23						
/8	1	404281-/32/4/	Regulator - Linear LT1086CM3.3								
/9	1	404417-733774	Regulator - Simple Switcher LM2592HVS-ADJ		DOFDOOD						
80	1	404283-732785	IC - 32-BIT PROCESSOR MCF5307		PQFP208	Des enseres e dades :					
81	1	700700-086150	CONTROL PROCESSOR - SAME FOR ALL		PLCC68	Programmed device					
82	1	/00/00-086148			IQFP144	Programmed device					
83	1				BGA64						
84	1	404457-733788	IC - SDRAM 256Mbit MT48LC16M16A2TG-7E	U11	ISOP54						

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BILL		ERIALS				
DF	RAWING NO	613860			MAILING: P0	BOX 97019
	REVISION	0.0000			KEN	T WA 98064-9718 USA
100		085645		— IP Tally Genicom [®]	SHIPPING: 830	1 S 180TH ST
AS		003043				
	ESCRIPTION	6312 CONTROL	LER W/ SINGLE PSIO		KEN	I, WA 98032 USA
ITEM	QUANTITY	TALLY P/N	DESCRIPTION	REFERENCE DESIGNATORS	SIZE CODE	COMMENTS
85	1	404298-732777	IC - Serial EEPROM 64K-Bit M24C64	U7	SO8	
86	3	404399-733548	IC - Hex Inverter 74AHCT14	U14, U4, U5	SO14	
87	1	404429-733694	IC - Quad Nand 74HCT00	U6	SO14	
_				U34. U35. U36. U37. U38. U39. U40. U41. U42.		
88	10	403005-733642	IC - 8-bit Shift Register 74HC595	U43	SO16	
89	3	401956-732150	IC - Octal 3-State Buffer 74LS244	U19. U20. U3	SO20W	
90	2	404278-732744	IC - Bidirectional Transceiver 3.3V 74LCX245	U21. U22	SO20W	
91	1	404279-732745	IC - Octal D-Type Flip-Flop 3.3V 74LCX374	U1	SO20W	
92	1	404391-733519	IC - RS232 Transceiver MAX238	U2	SO24W	
93	1	404456-733787	IC - Spread Spectrum Clock Generator CY25812SC	U44	SO8	
94	1	404282-732749	IC - Voltage Supervisor TI C7733	U13	S08	
95	2	404414-733639	IC - Analog Mux 74HC4051	U24 U25	SO16	
96	-	402328-732882	IC - Quad Op-Amp M324	U23	SO14	
97	8	404413-733638	IC - DMOS Full-Bridge Motor Driver A3959SI B	U26 U27 U28 U29 U30 U31 U32 U33	S024W	
98	1	404390-733517	Socket - PLCC 68-Position		PLCC68	
99	1	404430-733695	Connector - EEC Recentacle 10-Position	J207	1 20000	
100	1	404410-733630	Connector - Friction Lock Header 4-pin			
101	1	402791-732536	Connector - Header 10-Pin			
102	3	404092-732164	Connector - Latched Header 2-Pin	123 124 126		
103	1	403081-730147	Connector - RT Angle Receptacle 25-Position	J2		
104	1	403967-732189	Connector - RT Angle Receptacle 36-Position			
105	1	404178-732430	Connector - RT Angle Recentacle 50-Position			
106	1	404025-731119	Connector - Soft Shell Header 4-Pin			
107	4	404252-732660	Connector - UI TREX Header 4-Pin			
108	6	403760-732621	Connector - Vertical Modular Jack 4-Position	1201 1202 1203 1204 1205 1206		
100	4	402242-732669	Connector - Vertical Shrouded Header 26-Pin			
110	1	613859-085096	PCB - Controller, T6312 Rev X3	PCB1		
110	1	010000-0000000				
MECHA	ANICAL COMP	PONENTS				
111	2	613374-083383	Guide - Molded, PSIO			
112	1	613396-083507	Support - PSIO			
113	4	404240-732638	Screw - #6-19 x 3/8 Thread Forming			
		404366-733413	Chip Resistor - 0 1/10W 5%	B18 B2	0805	
	1	402791-	Connector - Dual Row Header 4-Pin			
	1	402242-	Connector - Header 12-Pin			
	2	402706-03	Connector - Header 4-Pin			
	3	402706-01	Connector - Header 2-Pin	JP1 JP2 JP3		
	1	402242	Connector - Header 6-Pin	3		
1		702272-				

BILL OF MATERIALS

DRAWING NO. 613860

REVISION



DESCRIPTION 6312 CONTROLLER W/ SINGLE PSIO



MAILING: P.0. BOX 97019 KENT, WA 98064-9718 USA SHIPPING: 8301 S. 180TH ST. KENT, WA 98032 USA

ITEM	QUANTITY	TALLY P/N	DESCRIPTION		REFERENCE DESIGNATORS	SIZE CODE	COMMENTS
	1	402242-732669	Connector - Vertical Shrouded Header 26-Pin	J8			
	1	404141-732259	Switch - Push Button	SW1			



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Coil38	12	6	Coil37
Coil36	17	8	Coil35
Coll 34	19	10	Coll33
Coll 22	11	12	Coll 21
Call 20	13	14	C-1120
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Coil28	17	10	Coil27
Coil26	1	10	Coil25
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