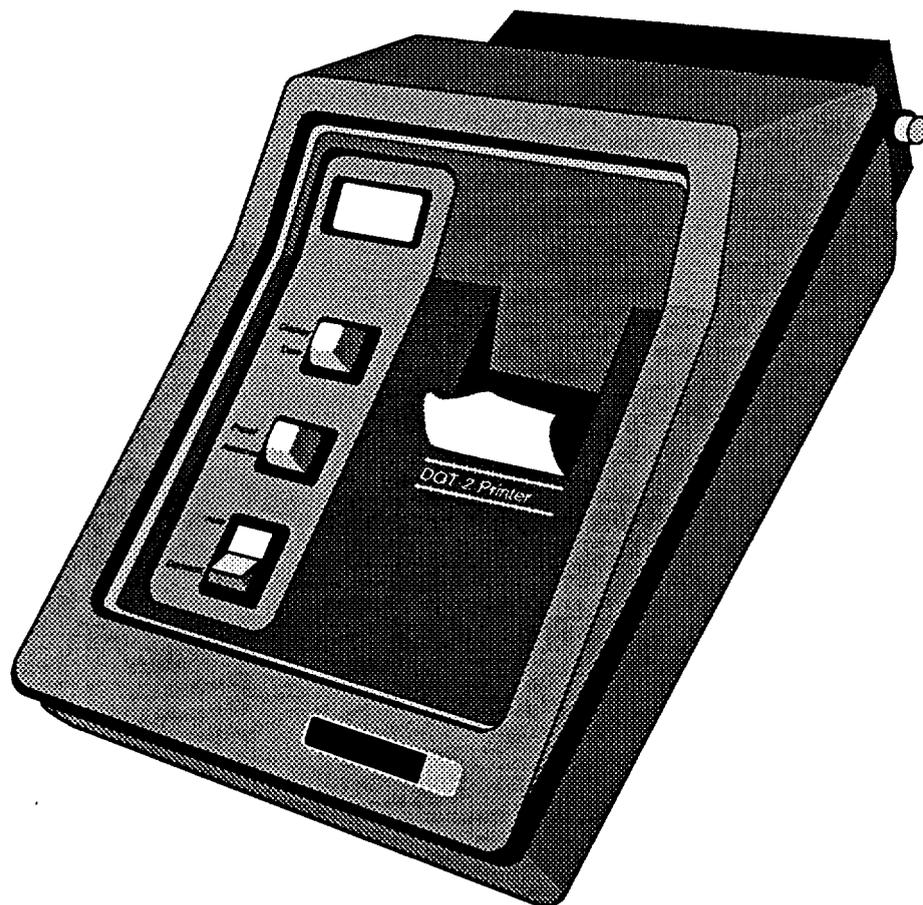


## TECHNICAL MANUAL

## DOT™-2 PRINTER



## **FCC WARNING**

This equipment generates, uses, and can radiate radio frequency energy. Equipment not installed according to manufacturer's instructions may interfere with radio communications. This equipment has been tested and complies with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules. These rules provide reasonable protection against such interference in a commercial environment. However, the operation of this equipment in a residential area is likely to cause radio interference. The user is required to correct this interference at his/her own expense.

## **COMPUTER PROGRAMS**

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## **WARNING**

**Do not use E-STOP, ALL-STOP, or PUMP-STOP keys on Gilbarco consoles/cash registers to shut off power to dispensing units. These keys do not remove AC power and do not always stop product flow.**

**Signal Words and Safety Symbols**



This is a standard alert symbol. When you see this symbol, along with the following signal words in Gilbarco manuals, be alert to the potential for personal injury.

	<b>DANGER</b> The hazard or unsafe practice will result in severe injury or death.
--	---

	<b>WARNING</b> The hazard or unsafe practice could result in severe injury or death.
--	---

	<b>CAUTION</b> The hazard or unsafe practice could result in minor injury.
--	---

	<b>WARNING</b> You are working in a dangerous environment. Fuels are highly flammable and explosive. Observe all safety precautions. Failure to do so could result in injury or DEATH.
--	---



Wear eye protection.



Use emergency power cutoff.



No people in area.



Clean up spills.



No smoking.



No open flames.



Collect fuel in approved containers.



No power tools.



No vehicles in area.



Use safety barricades.



**Explosive**



**Electricity**



**Flammable**



Read instructions for this and all related equipment. Do not allow untrained or unauthorized persons to service equipment. Call a Gilbarco Authorized Service Contractor if you need help.



**WARNING**

**Remove all power before installing kits. Turn off circuit breakers for the unit being serviced.**

**ELECTRICAL CIRCUITS**

Some of the procedures in this manual involve the removal and reconnection of components either at start-up or to isolate a problem. Turn power off prior to performing these procedures.

Under certain conditions, dangerous potentials may exist even when the power is turned off. Always remove power and discharge and ground a circuit before touching it.

**LOW VOLTAGE**

Do not be misled by the term "Low Voltage." Potential voltage as low as 50 volts may cause death under adverse conditions, whenever possible, keep one hand away from equipment to reduce hazard of current flowing through your body.

**HIGH VOLTAGE**

High voltage of 120 volts AC is used for operation of this equipment. Death on contact may result if you fail to observe safety precautions.

**WORKING ALONE**

It is highly recommended that someone who is capable of rendering aid is present. Be familiar with Cardiopulmonary Resuscitation methods if you are working with or near high voltages. This information may be obtained from the American Red Cross.

**EMERGENCY POWER CUTOFF**

Locate and know how to shut off all power using the "Emergency Power Cutoff" (a single control that simultaneously removes AC power from all site dispensing equipment and STPs). This control is an additional safety feature and is not a substitute for NEC/NFPA30A circuit breaker requirements.



**WARNING**

**Do not use E-STOP, ALL-STOP, or PUMP-STOP keys on Gilbarco consoles/cash registers to shut off power. These keys do not remove AC power and do not always stop product flow.**

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## GENERAL DESCRIPTION

### OVERVIEW

The DOT™-2 printer is a component of a Gilbarco Transac Fueling System. It makes printouts of all information received from a Transac® 9, 10, 11, 12, or 12A, B, C, and G console equipped with an output port. A data cable (part of printer) connects the Transac console and DOT-2 printer. Two types of information printouts are, managerial data and customer transaction receipts.

All managerial data, such as SHIFT TOTALS, STATION TOTALS, INVENTORY, and PPU, automatically print by the DOT-2 printer. (See Appendix A). Customer transaction receipts print automatically at the time of each transaction or only on request. The printout format varies depending on console model. However, information content is the same regardless of format. Each customer receipt includes date, pump number, volume, volume unit of measure, price per unit, money amount and sequential transaction ticket number. You have the option of not printing, or printing the time of day on all customer transaction receipts.

### FEATURES

- A. Liquid Crystal Display (LCD) of time. Date displays at the press of a button.
- B. Liquid Crystal Display indicates error code in case of malfunction.
- C. AUTO/DEMAND switch allows customer transaction receipts to print automatically or only on request.
- D. Standard 2.25 inch (58 +0.1/-0.1mm) adding machine tape up to 0.004 inch (0.1mm) thick.
- E. Variable length of customer transaction receipt.
- F. Dependable dot matrix printer assembly.

### SPECIFICATIONS

Name:	DOT™-2 Printer
Model Numbers:	Domestic: PA01630XXX International: PA0163XXXX
Dimensions:	Height: 7.0 in. (18 cm.) Width: 10.5 in. (27 cm.) Depth: 16.0 in. (41 cm.)
Storage Temperatures:	-4 to 158 deg. F. (-20 to 70 deg. C.)
Operating Temperatures:	41 to 104 deg. F. (5 to 40 deg. C.)
Humidity:	95 % relative humidity, non-condensing
Display:	Liquid Crystal Display (LCD). 3-1/2 digits with AM/PM indicator and flashing colon.
Power Requirements:	Domestic: 98 to 127VAC; 60 Hz. International: 220 to 240VAC; 50 or 60 Hz.
Current Drain:	Domestic: 1.0 Ampere at 115VAC International: 0.5 Ampere at 230VAC
Internal Voltages:	+5 and +12VDC, +/- 5%
Replaceable Fuses:	F1: 1.5A at 250VAC (Slow Blow) Q10131-11, F4: 3.0A at 250VAC: Q10131-19
Printer Type:	DOT-matrix alphanumeric printout with left to right printing.
Line Capacity:	21 characters per line
Characters:	5x7 matrix about 0.114 in (2.9mm) high.
Paper Advance Speed:	Up to 10 lines per second.
Printhead Lifespan:	15,000,000 characters.

**INSTALLATION INSTRUCTIONS**

DO NOT ATTEMPT TO INSTALL THE DOT™-2 PRINTER UNTIL YOU READ AND UNDERSTAND THE OPERATING INSTRUCTIONS, MDE-1785. BE SURE TO OBSERVE ALL THE PRECAUTIONS DESCRIBED IN THAT MANUAL.

1. Carefully inspect shipping box for visible signs of shipping damage.
2. Unpack DOT-2 printer and Owner's Package. Visually inspect all contents for evidence of shipping damage. Report all shipping damage claims to carrier. Shipping damage is not covered by the Gilbarco warranty.
3. Inspect DOT-2 printer for loose screws, connectors, printed circuit boards or printer assembly.
4. Make sure all wiring is placed so as not to interfere with printer operation and will not be nicked or crushed by other parts inside the unit.
5. Prepare DOT-2 printer for operation. Set up processor board, load ribbon, and load paper per instructions in MDE-1785. Retain unused jump jacks from processor board for possible future use.
6. Remove console power by disconnecting console power cord from the dedicated wall receptacle.
7. Remove protective cover from printer cable connector on rear of console. Tape connector protective plate and attaching screws to console bottom for possible future use.
8. Place DOT-2 printer in a convenient location where it will not be subjected to liquid spillage, extreme temperature variations, excessive dust or other contaminants. The printer must be within ten feet (3 meters) of the console.
9. Route DOT-2 printer data cable to rear of console, keeping cable away from sources of electrical noise such as, motors, relays, and compressors.
10. Plug DOT-2 printer data cable into printer connector on rear of console and secure connection with slotted screws attached to data cable connector.
11. Route console power cord to receptacle marked "120VAC, 2A" on left rear of DOT-2 printer. Plug console power cord into this receptacle. **THE DOT-2 PRINTER POWER RECEPTACLE MUST NOT BE USED FOR ANY OTHER PURPOSE THAN PROVIDING AC POWER TO THE CONSOLE.**
12. Route DOT™-2 printer power cord to dedicated wall receptacle previously used by the console and plug in printer. **NO OTHER EQUIPMENT CAN USE THE ELECTRICAL CIRCUIT WITH THE TRANSAC® CONSOLE/DOT-2 PRINTER COMBINATION.**
13. Set correct time of day and date on printer.
14. **PUMP TOTALS must be taken if Highline™ 111B dispensing units are used in conjunction with a Transac® 11, 12, or 12A, B, C, and G console. A Highline™ 111B dispensing unit, printing three grades of pump totals per hose, must have logic board cleared so only the correct grade is printed in future pump totals.**

**SERVICE****GENERAL SERVICE AND TROUBLESHOOTING TIPS**

- A. Clearly define problem. Perform complete operational check. **FIX PROBLEM, NOT SYMPTOM.**
- B. Look for loose connections or burned spots. Listen for unusual noises or sounds. Cautiously feel for "hot spots."
- C. Be prepared to work on equipment. Bring manuals and have all the right parts and tools needed.
- D. Never use AC line fuses (F1 or F4) as ON-OFF switches. This can damage the power supply or logic board. To remove power from the printer, unplug AC power cord.

**BOARD BY BOARD ANALYSIS**

The DOT-2 printer is made up of four printed circuit boards and three assemblies and are individually replaceable.

1. **DISPLAY BOARD (T12877-G1)** - The display board with display logic decoders and drivers receives coded information from the processor board and decodes the information for display on the liquid crystal display. A 120 hertz signal from the regulator board causes the display colon to flash on and off.
2. **PROCESSOR BOARD (T14588-G13)** - The processor board uses a microprocessor to generate all coded signals necessary to operate the printer assembly and display. A 120 hertz signal from the regulator board is used for clock pulses. All date, time, error codes, and printer commands are generated on the processor board. Information is received from the Transac® console by a data cable which terminates at the processor board. The processor board decodes the console information and gives the printer assembly commands needed to print received information. Two versions of software are available for use on the processor board. Version 21.2 operates with four grade, two price levels per grade which includes Transac® 9, 10, 11, 12, 12A, and 12B consoles. Version 90.2 operates with six grade, four price levels per grade which includes Transac® 12C and 12G consoles. Software selection is obtained by having processor board jumpers JP7, 8, 9, and 10 in the proper position before AC power is applied.
3. **DRIVER BOARD (T14594-G1)** - The driver board uses dc ground control signals and +12VDC to activate the printhead hammer solenoids. Switching transistors, mounted on the driver board activate the seven printhead solenoids. Various printer information is routed through the driver regulator boards to be used by the processor board.
4. **REGULATOR BOARD (T14591-G1)** - The regulator board receives 8.4 and 18.0VAC from the transformer and converts these AC voltages to regulated +5 and +12VDC voltages. The line frequency, 50 or 60 hertz signal is changed to a 120 hertz pulsed signal on the regulator board. The 120 hertz pulsed signal is used by the processor board to generate clock pulses and by the display board to flash the colon. Printer commands and motor timing signals pass through the regulator board. The regulator board generates the printer motor control signals.

Both regulated dc circuits are preset at the factory and cannot be adjusted in the field.

The regulated +12VDC in the printer assembly drives the printhead solenoids, powers the printer motor, and indirectly feeds the paper and moves the ribbon.

The +5VDC powers the processor and display boards.

**OTHER ASSEMBLIES**

- A. **JOURNAL TAKE-UP (T12882-G2)** - The journal take-up assembly stores extra copies of printed data if two-ply paper is used. It operates off the same 8.4VAC used by the regulator board to create +5VDC. The input AC voltage can be checked on connector J1. An ON- OFF switch is also provided. The entire assembly is to be replaced if it does not work properly.
- B. **POWER SUPPLY** - The power supply is made up of a **LINE FILTER ASSEMBLY (T14901)**, **TRANSFORMER ASSEMBLY (R16901-G1 for U.S.A. or R16744-G1 for International)**, and **TRANSISTOR ASSEMBLY (R16888-G1)**.

The Line Filter Assembly contains fuse F4 (3.0 Amp at 250VAC, Gilbarco P/N Q10131-19), the dedicated Transac® console power receptacle, as well as filters and noise suppressors to condition the AC input power.

The Transformer Assembly input is protected by fuse F1 (1.5 Amp at 250VAC, Slowblow; Gilbarco P/N Q10131-11). This assembly changes the line voltage to 8.4 and 18.0VAC voltages for use by the Regulator Board and the Journal Take-Up Assembly.

The Transistor Assembly uses the rectified 18.0VAC to produce a regulated +12VDC.

- C. **PRINTER ASSEMBLY (R16735-01)** -The printer assembly is a miniature impact dot matrix printer. It will print 2.5 lines per second using a 5x7 matrix to print each character . The major printer assembly accessories are listed below.

1. **PAPER** - single or two ply, adding machine type of paper, 2.25 inches (58 +0/-0.1mm) width, and 0.0036 inch thick for each layer of paper. The paper should have a smooth finish and be lint free. Gilbarco DOT™ - 2 printer paper part numbers are Q11206-01 for single ply and Q11206-02 for two ply.
2. **RIBBON** - black or purple inked #40 nylon ribbon on 36mm diameter ribbon spools. Ribbon width is 13mm and length is 6m. Gilbarco DOT-2 printer ribbon part numbers are Q11408-01 for black ribbon and Q11408-02 for purple ribbon.

The rest of the printer is changed as an assembly if it fails. However, major printer functions are given as a troubleshooting aid for the service technician.

3. **PRINTHEAD MOVEMENT** - Printer motor rotation transfers through reduction gears to a spiral grooved cylindrical driveshaft on which the printhead carriage travels left to right. A shorter groove on the driveshaft allows the printhead carriage to move swiftly from right to left since no printing is done during right to left movement.
4. **PRINTER PAPER FEED** - A dc ground command signal from the processor board routes through the regulator and driver boards to the printer paper feed solenoid. The paper feed solenoid has +12VDC applied constantly and, upon receiving the dc ground command signal, is energized. Once the paper feed solenoid energizes, the motor rotational power transfers to a paper feed roller through a paper feed lever and ratchet. Resistance of the paper feed solenoid is about 60 ohms.
5. **PRINTER TIMING SIGNAL** - A magnetic timing coil on the motor shaft rotates with the printer motor. A pick-up coil is induced to generate a sine-wave signal larger than 0.2VAC. The sine-wave signal travels through the driver and regulator boards to the processor board. The processor board uses this sine-wave timing signal to identify the position of the printhead carriage. The magnetic timing coil resistance is about 800 ohms.

6. **PRINTER RESET SIGNAL** - This signal tells the processor board when the printhead is at the right end of a line, so the motor can be temporarily stopped to allow the printhead to change driveshaft grooves and direction. The processor board needs to know when the printhead is at the far right end of a line because that is the "home" position of the printhead when not in use.
7. **PRINthead** - The printhead has seven hammers which impact the ribbon, pushing the ribbon against the paper and forcing the paper against the platen. Each printhead hammer activates when a dc ground signal is applied to a hammer solenoid which also has +12VDC constantly applied. Removing the dc ground causes the activated printer hammer solenoid to deactivate and the hammer to retract. Each of the seven printer hammer solenoids have a nominal resistance of 3.6 ohms and may pull a load of up to 2.5 amperes. A thumbwheel below the printhead changes the distance between the printhead and the platen behind the paper. The clearance between the platen and paper adjusts to be between 0.014 and 0.018 inch (0.35 to 0.45mm).

### PREVENTIVE MAINTENANCE

Preventive maintenance (not covered by warranty) should be performed on the DOT™-2 printer semi-annually by a qualified technician. Preventive maintenance should consist of the following functions and done in the order given:

- Cleaning case inside and out
  - Cleaning printhead
  - Cleaning and greasing driveshaft
  - Checking and adjusting printhead face to platen clearance
  - Checking for connections and screws worked loose
  - Verifying proper printer operation.
- A. **CLEANING OUTSIDE COVER** - Wipe the outside cover with a soft, damp cloth moistened with a solution of mild detergent and water. Rinse cloth and remove all soap from case. Take care not to scratch the display glass.
  - B. **CLEANING INSIDE** - Blow dust out of the case using a vacuum cleaner exhaust or strong air bulb. Remove dust from top of printed circuit boards as well as from around the printer assembly.
  - C. **CLEANING PRINthead** (Remove power before proceeding) Clean face of the printhead using swabs moistened with alcohol. Remove all dried and excess ink from printhead face and platen.
  - D. **CLEANING DRIVESHAFT** (Remove power before proceeding) Remove dust and grease from driveshaft using a dry swab. Use alcohol on a swab to remove buildup of grease. Turn the driveshaft by hand to reposition the printhead carriage. Clean the driveshaft to remove all possible printhead carriage drag. Apply a thin, light film of grease (Gilbarco part number Q11369-187) to the driveshaft. Lubricate all springs and gears with a thin light coat of grease (Gilbarco part number Q11369-185).
  - E. **ADJUSTING PRINthead CLEARANCE** - Loosen the two screws holding printhead to carriage. Turn thumbwheel clockwise or counterclockwise slowly until a clearance of 0.014 to 0.018 inch (0.35mm to 0.45mm) is obtained between the printhead face and platen. After proper clearance, tighten the screws which hold the printhead to the carriage.

F. **AUTOMATIC PRINT TEST** - An automatic print test verifies proper operation of the DOT™-2 printer. The complete character set prints in a recurring scrolling pattern. This enables the service technician to check ribbon quality, paper movement through the printer, line feed operation and the quality of printing. Print quality check consists of making sure (1) all the printhead hammers work, (2) the printhead hammer marks are clean and round, (3) the hammers are not punching or cutting holes into the ribbon, and (4) printhead face to platen clearance is correct. Follow the steps below to perform the automatic print test.

- (A) Remove power from DOT-2 printer.
- (B) Open cover and remove jump jack JP1 from processor board.
- (C) Power-up the DOT-2 printer. Once power is applied, the display shows a two digit software code, then starts the printer test.
- (D) Install jump jack JP1 on processor board. The printer test continues.
- (E) Once the print test has progressed enough to verify proper operation, stop the test by depressing the date and paper advance pushbuttons simultaneously. The printer then prints POWER UP - SET TIME to remind you to reset the time and date. A sample printout of the print test is shown in Appendix A.

**ERROR CODES**

The DOT™-2 printer displays a two-digit error code to identify certain types of malfunctions. Equipment operators should call the service technician immediately if an error code other than 01 (low paper) displays. Instruct operators to try removing power temporarily from the DOT-2 printer if an error code other than 01 or 12 occurs. If the temporary interruption of power does not correct the problem, remove power until a service technician can repair the unit. The following chart aids the service technician in determining the cause of the malfunction.

<b>CODE</b>	<b>ACTION</b>
01	Low paper. Replenish paper. Check low paper switch for proper operation and adjust or replace as needed.
12	Defective +12VDC circuit. Perform the following checks to determine the bad assembly. <ul style="list-style-type: none"> <li>(A) Remove power from DOT-2 printer. Disconnect connector P3 from driver board to printer assembly. Refer to interconnect diagram in rear of this manual and measure the resistance of all seven printer hammer solenoids. Normal hammer solenoid resistance is about 3.6 ohms. Replace printhead or printer assembly if any hammer solenoid measures noticeably less than the other (less than 2 ohms).</li> <li>(B) With power removed from the DOT™-2 printer, measure the resistance between a dc ground on driver board and a metal tab on each of seven transistors on driver board. Each of the seven readings should be more than 50 ohms. Replace driver board if any reading is less than 50 ohms.</li> <li>(C) With power applied to the DOT-2 printer, measure from dc ground to a +12VDC test point on either connector P1 or P3 of driver board. If the voltage is less than +11.4VDC, replace regulator board.</li> </ul>
61	Motor operation jammed during a printing operation. Check for printer jam. If no cause can be found, replace the following components in the order given until the error code clears. <ul style="list-style-type: none"> <li>(A) Printer Assembly</li> <li>(B) Driver Board</li> <li>(C) Regulator Board</li> <li>(D) Processor Board</li> </ul>

- 62 Printer Assembly is unable to print POWER UP-SET TIME message. Check for printer or paper jam and clear if needed. If no jam is found, replace the following components in the order given until the error code clears.
- (A) Printer Assembly
  - (B) Driver Board
  - (C) Regulator Board
  - (D) Processor Board
- 63 Linefeed motor timeout. Check for printer or paper jam preventing printer from performing a linefeed. Loss of communication between the Transac® console and DOT-2 printer may have occurred. If no visible cause is found, change the processor board.
- 64 Self-test motor timeout. The motor is prompted to stop operating during printer self-test. Check for printer paper jam or low paper. Make sure printer connector at console port is a grey molded connector and not a black "AMP" connector. If no visible cause is found, replace the following components in the order given until the error code clears.
- (A) Processor Board
  - (B) Printer Assembly
  - (C) Driver Board
- 65 Printer will not print when prompted to or is slow to begin printing. Check for printer paper jam. Make sure printer connector at console port is a grey molded connector and not a black "AMP" connector. Clean printer driveshaft. If no visible cause is found, replace the following components in the order given until the error code clears.
- (A) Processor Board
  - (B) Printhead or Printer Assembly
  - (C) Driver Board
- 88 Defective chip on Processor Board. Replace Processor Board.
- 97 Printer motor stalled. Check for printer or paper jam. Clean printer driveshaft. If no cause can be found, replace the following components in the order given until the error code clears.
- (A) Printer Assembly
  - (B) Processor Board
  - (C) Regulator Board
  - (D) Driver Board
- 98 50/60 hertz timer error. Replace processor board.
- 99 Defective chip on processor board. Replace processor board.

Any code except 01 or 12 can be caused by electrical noise. Before replacing any boards, power down the DOT™-2 printer and power up again. Check the data cable connection at the rear of the console. If data cable has a black connector with the word "AMP" imprinted on it, the connector must be upgraded to a grey molded cable and connector using part number K93038. If the same error code reappears, replace the appropriate board. If the DOT-2 printer works correctly, replace nothing. However, note the failure code so the proper action can be taken at a later date if the same problem reappears.

**RECOMMENDED SPARE PARTS**

A technician should have parts on hand for replacement. The parts listed below are recommended.

<b>PART NUMBER</b>	<b>DESCRIPTION</b>
R16735-01	Printer, Dot Matrix
K93038	Data Cable Assembly
Q11206-01	Paper Roll, Single Ply
Q11408-01	Ribbon, Black Ink
T14594-G1	Driver Board Assembly
T14591-G1	Regulator Board Assembly
T12877-G1	Display Board Assembly
T14588-G13	Processor Board Assembly
R16888-G1	Transistor Assembly
T12882-G2	Journal Take-up Assembly
Q10131-11	Fuse, 1.5A, 250VAC, Slow Blow
Q10131-19	Fuse, 3.0A, 250VAC
Q10890-01	Jump Jack
T14901-G1	Line Filter Assembly (Domestic)
N21114	Paper Tear Off Blade

**TROUBLESHOOTING**

1. Smudges on paper while printing.
  - A. Printhead clearance too close.
  - B. Paper too thick. Use thinner paper.
2. Printer prints dash line through characters.
  - A. Loose or bad regulator board to driver board cable.
  - B. Loose or bad cable between regulator and processor boards. Look for loose connections at P2 on processor board or wires cut where laying on housing.
  - C. Replace regulator board
3. Lose of +5VDC on regulator board.
  - A. Shorted wire from regulator to processor board.
  - B. Shorted wire in cable from regulator board to driver.
  - C. Processor board not installed correctly and shorting against housing or cable.
  - D. Regulator board shorted from loose hardware or not installed correctly.
  - E. Defective processor board.
  - F. Driver board shorted against chassis.
  - G. Shorted transistor assembly.
4. Loss of +12VDC on regulator board
  - A. Driver board shorting against housing.
  - B. Shorted wire in regulator board to driver board cable.
  - C. Regulator board not correctly installed or loose hardware shorting against regulator board.
  - D. Shorted cable between regulator and processor board.
  - E. Transistor assembly defective.

5. Will not maintain correct time.
  - A. Defective processor board.
  - B. Noise on regulator to processor board cable. Reroute cable.
6. Journal take-up assembly hot.
  - A. Motor control board shorted against housing. Disconnect J1 and remove short. Replace journal assembly if necessary.
7. Loud hum in transformer. (Printer operates)
  - A. Bad transformer assembly.
8. Loud hum in transformer. (Printer will not power up).
  - A. Severe short. Check cable from transformer to regulator board. Verify regulator board +5VDC and +12VDC output. If dc voltage is missing, replace regulator board. Do not reconnect driver board or processor board to new regulator board. Verify +5VDC and +12VDC. If there is still no dc voltages, verify 8.4VAC and 18VAC outputs from transformer. If no VAC output, replace transformer assembly. If there are VAC outputs to, the regulator board, then the regulator board is shorting against mounting or housing.
  - B. If dc voltages are present, disconnect driver board, processor board, and printer assembly. If hum decreases in volume, connect each board one at a time until hum gets louder. Last connected board or assembly is defective. If hum does not change in volume, transformer assembly or line filter assembly is defective.
9. Printer prints "Data Error".
  - A. JP9 or JP10 in wrong location. Set jumper to correct position.
  - B. Transac®12C console programmed to printer option #1.
  - C. Transac®12G console must be programmed for printer option #95.
10. Printer prints receipt every sale or partial receipt every sale. (Transac®12C or 12G)
  - A. Customer or Manager message not correctly programmed.
11. Printer prints extra letters or garbage.
  - A. Console not powered by DOT™-2 power receptacle.
  - B. DOT™-2 not on dedicated, isolated AC power circuit.
  - C. Data cable to console port does not have grey molded connector and has black connector with AMP imprint.
  - D. Data cable intermingled with other noise inducing wiring.
  - E. Transac®12C console does not have complete ESD kit installed.
  - F. Transac®12C or 12G console does not have T16322 logic board.
  - G. Poor ground connection in DOT-2. Remove ground stud nut and ground wires from stud. Use sand paper or wire brush to remove paint and/or corrosion from stud. Install ground wires and nut.

12. Printer skips letters.
  - A. Data cable to console has black, AMP connector. Replace with data cable having grey molded connector.
  - B. Data cable connector to console not mounted with two mounting screws or screws are loose.
  - C. Poor data cable connection inside DOT-2 at P3 on processor board.
  - D. Poor printer port to logic board connection at console logic board.
  - E. Transac@12C needs complete ESD kit or proper software on T16322 logic board.
  - F. Transac@12G needs T16322 logic board.
  
13. F1 line fuse blows constantly.
  - A. Defective fuse holder.
  - B. Defective line filter assembly.
  - C. Defective transformer assembly.
  
14. Console printer port blows.
  - A. Defective DOT-2 transistor assembly.
  - B. Shorted DOT-2 transistor assembly
  - C. Defective printer to console data cable.
  
15. Printer prints slowly.
  - A. Clean and lubricate printer assembly.
  
16. Printer regulator board pops when printer is connected to console.
  - A. Shorted DOT-2 transistor assembly. To verify, disconnect transistor assembly from regulator board. Use highest possible resistance scale and measure from case of transistor to heat sink. Reading should be more than 1 megohm to infinity. Replace transistor assembly if readings are less than 1 megohm.
  - B. Shorted printer data cable.

PROGRAMMING

```

0002      8:12AM
          12 DEC 1983
PMP 1
VOL      2.750G
PPU      $ 1.129

TOTAL $ 3.10

GILBARCO, INC.
FIELD ENGINEERING
GREENSBORO, N. C.
U.S.A.
DOT 2 PRINTER
    
```

```

!"#$%&'()*+,-./01
!"#$%&'()*+,-./012
!"#$%&'()*+,-./0123
#$%&'()*+,-./01234
#$%&'()*+,-./012345
%&'()*+,-./0123456
%&'()*+,-./01234567
'()*+,-./012345678
()*+,-./0123456789
()*+,-./0123456789:
*+,-./0123456789:;
+,-./0123456789:;<
,-./0123456789:;<=
-./0123456789:;<=>
./0123456789:;<=>?
/0123456789:;<=>?@
0123456789:;<=>?@A
123456789:;<=>?@AB
23456789:;<=>?@ABC
3456789:;<=>?@ABCD
456789:;<=>?@ABCDE
56789:;<=>?@ABCDEF
6789:;<=>?@ABCDEFG
789:;<=>?@ABCDEFGH
89:;<=>?@ABCDEFGHI
9:;<=>?@ABCDEFGHIJ
:;<=>?@ABCDEFGHIJK
;<=>?@ABCDEFGHIJKL
<=>?@ABCDEFGHIJKLM
=>?@ABCDEFGHIJKLMN
>?@ABCDEFGHIJKLMNO
?@ABCDEFGHIJKLMNOP
@ABCDEFGHIJKLMNOPQ
ABCDEFGHIJKLMNOPQR
BCDEFGHIJKLMNQRST
CDEFGHIJKLMNQRSTU
DEFGHIJKLMNQRSTUV
EFGHIJKLMNQRSTUVW
FGHIJKLMNQRSTUVWX
HIJKLMNQRSTUVWXY
IJKLMNQRSTUVWXYZ
JKLMNQRSTUVWXYZ[
KLMNQRSTUVWXYZ[\
LMNQRSTUVWXYZ[\]
MNOPQRSTUVWXYZ[\]^
NOPQRSTUVWXYZ[\]^+
OPQRSTUVWXYZ[\]^+&
PQRSTUVWXYZ[\]^+&
QRSTUVWXYZ[\]^+&!
RSTUVWXYZ[\]^+&! "

POWER UP-SET TIME
    
```

```

SHTL      4:30PM
          12 DEC 1983
G1         0.00G
G2         0.00G
G3         0.00G
G4         0.00G

CA         $ 0.00
CR         $ 0.00

L1         $ 0.00
L2         $ 0.00
TL         $ 0.00
    
```

```

PPU      4:30PM
          12 DEC 1983
PMP 00
G1 L1     $0.000
   L2     $0.000
G2 L1     $0.000
   L2     $0.000
G3 L1     $0.000
   L2     $0.000
G4 L1     $0.000
   L2     $0.000
    
```

```

STTL      4:31PM
          12 DEC 1983
G1         0000000G
G2         0000000G
G3         0000000G
G4         0000000G

CA         $0000000
CR         $0000000

L1         $0000000
L2         $0000000
TL         $0000000
    
```

```

INU      4:31PM
          12 DEC 1983
G1         0000000G
G2         0000000G
G3         0000000G
G4         0000000G
    
```

**Transac®12C Console Programming**

**Note:** For proper operation with DOT™-2 Printer, Transac®12C console must have either V20.3 (K93032-02S) or V21.3 (K93032-01S) software, and logic board (T16322) and ESD kit (K93042).

**Printer Selection**

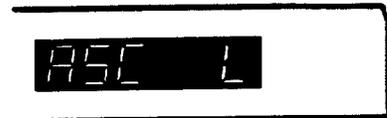
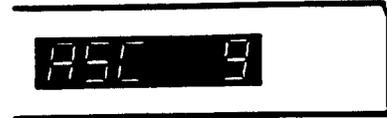
Keylock: MGR  
Mode Select Button: Prog

Press PUMP STOP

Enter 2 or 3 (using numeric keyboard) from the following chart:

ENTRY	SELECTION
2	DOT-2, 6 Grade Printer (Gal)*
3	DOT-2, 6 Grade Printer (Lit)*

After entering selection, press AUTHORIZE.



**Transac® 12G Console Programming**

**DOT-2 Printer Connected - Code 95**

STEP	ACTION/RESPONSE
1.	Operator: Enter 95 on numeric keypad. Console: Displays digits as entered.
2.	Operator: Press CHANGE. Console: Displays the Manager Function Code 095.



Transac®12G console must have version 22.1 software (K93307) if custom message feature is desired. V22.1 software is only available for use with T16322 console logic board.

### Transac®12C Custom Message Programming

**Entering Program Mode:** \_\_\_\_\_

Keylock: MAN  
Mode Select Button: Data Dump

FOR:  
Customer Message CASH  
Manager Message CREDIT

**Message Programming:** \_\_\_\_\_

Keylock: MAN  
Mode Select Button: Data Dump

Press:  
CASH for Customer message or  
CREDIT for manager message.

**Note:** 128 characters can be programmed in customer message.  
64 characters can be programmed in manager message.

The technique for message programming is the same for both customer and manager messages. Enter message through the console numeric keypad using numeric codes to equal letters and special characters.

Table 1 identifies the number/code equivalent letters and characters. The customer message can be up to 128 characters (including spaces, carriage returns, and end of message code). The manager message can be up to 64 characters long. Any message line can be up to 21 characters long. The message must end with the end of message code, 10.0.

**Entering The Message:** \_\_\_\_\_

Keylock: MAN  
Mode Select Button: Data Dump  
Press CASH (customer) or CREDIT (manager).

Enter code for the first character.

Press AUTHORIZE.

Repeat the above two steps for remaining characters.

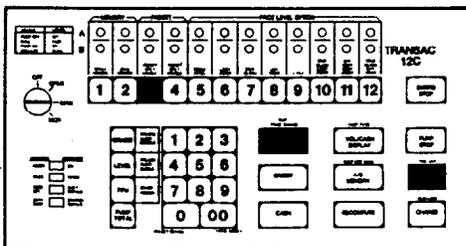
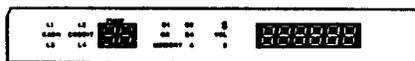
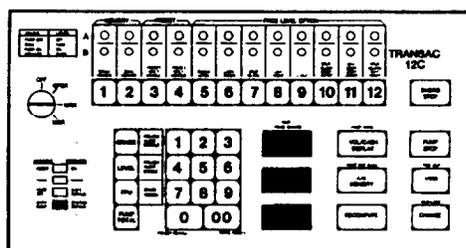
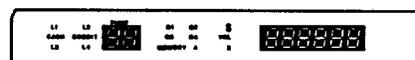
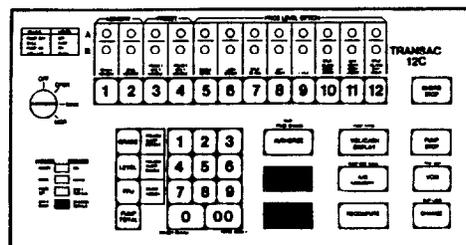
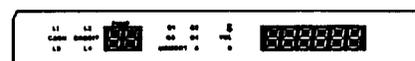
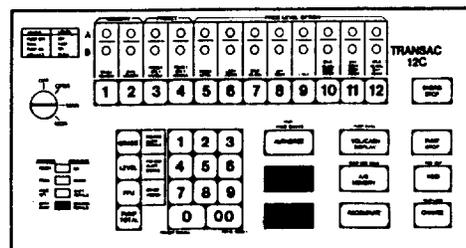
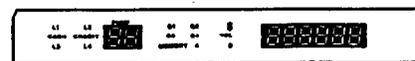
When message is complete, simply exit the custom message mode by moving MODE BUTTON and KEYLOCK.

**Editing The Message:** \_\_\_\_\_

**To Back Space**  
Press PUMP SELECT #3.

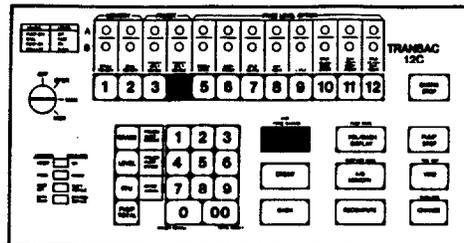
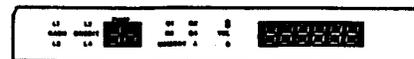
**To Move Forward**  
Press AUTHORIZE.

**To Clear An Entry**  
Press VOID instead of AUTHORIZE.



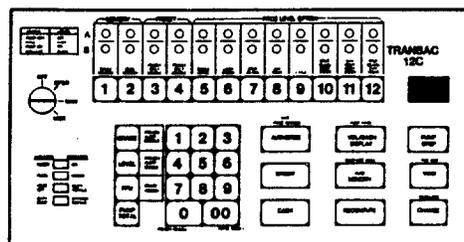
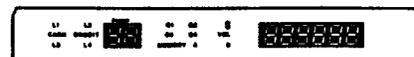
**To Move To A Particular Position In Message.**

Press PUMP SELECT #4.  
 When in position, enter correct numeric equivalents  
 for desired characters on keypad.  
 Press AUTHORIZE.



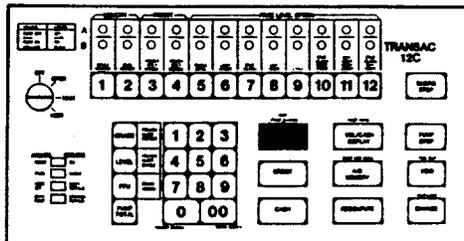
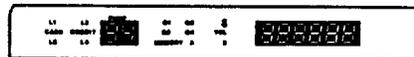
**To Delete Message**

Press E-STOP.



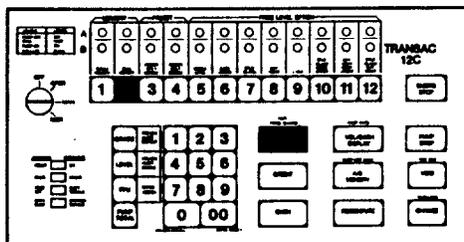
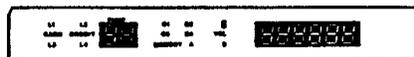
**To Modify A Character**

Move to position desired.  
 Enter new code.  
 Press AUTHORIZE.



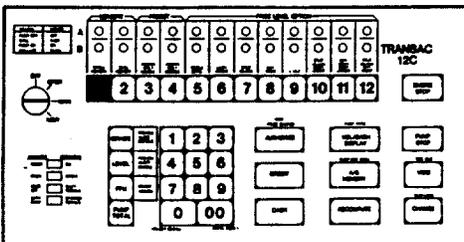
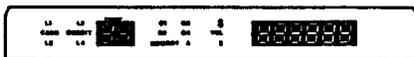
**To Insert A Character**

Move to position in message.  
 Press PUMP SELECT #2.  
 (A space character will be entered if no code is chosen).  
 Enter code for character to be inserted.  
 Press AUTHORIZE.  
 All characters will be SHIFTED to the right after the insertion.



**To Delete A Character**

Move to position in message.  
 Press PUMP SELECT #1.  
 All characters to the right of the deleted character moves  
 to the left by one space.



The blank message or organization chart in Table 2 helps the programmer organize the message. The first 21 character line in each group is intended for message. The second row is for entering the corresponding code for the message above. The third row is the position of the code above.

During the programming cycle, the character position displays immediately to the left of the code entry on the console display.

**TABLE 1 NUMERICAL CODES**

**Note:** 01-09, 11-31, and 91-99 are not used by the DOT™-2 Printer.

CODE	EQUIVALENT	CODE	EQUIVALENT	CODE	EQUIVALENT
32	Space	48	0	65	A
33	!	49	1	66	B
34	"	50	2	67	C
35	#	51	3	68	D
36	\$	52	4	69	E
37	%	53	5	70	F
38	&	54	6	71	G
39	'	55	7	72	H
40	(	56	8	73	I
41	)	57	9	74	J
42	*	58	:	75	K
43	+	59	;	76	L
44	,	60	<	77	M
45	-	61	=	78	N
46	.	62	>	79	O
47	/	63	?	80	P
		64	@	81	Q
				82	R
				83	S
				84	T
				85	U
				86	V
				87	W
				88	X
				89	Y
				90	Z

10 CARRIAGE RETURN  
00 END OF MESSAGE

**Note:** Last two characters of message must be the end of message code, 10,0.

### Using Message Organizational Chart

The message organization chart, and the character identifiers relate to the message layout on the ticket. To center the message; "space-out" ( Code 32) to the beginning of the message and fill the remainder of the 21 character line with spaces. After the message, carriage return characters (10) may be used (up to maximum of 128 total characters, to add whole lines of spaces between the message and receipt data.

TABLE 2 TRANSAC® 12C MESSAGE ORGANIZATION CHART

MSG.	-	-	-	-	-	-	-	-	K	E	N	'	S	-	-	-	-	-	-	-
CODE	32	32	32	32	32	32	32	32	75	69	78	39	83	32	32	32	32	32	32	32
CHAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MSG.	-	-	-	-	-	S	E	L	F	-	-	S	E	R	V	I	C	E	-	-
CODE	32	32	32	32	32	85	69	76	70	32	32	83	69	82	86	73	67	69	32	32
CHAR	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
MSG.	-	-	-	-	-	1	0	.	M	A	I	N	-	S	T	R	E	E	T	-
CODE	32	32	32	32	32	49	48	32	77	65	73	78	32	83	84	82	69	69	84	32
CHAR	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
MSG.	-	-	-	-	-	H	O	M	E	T	O	W	N	,	N	.	C	.	-	-
CODE	32	32	32	32	32	72	79	77	69	84	79	87	78	44	78	46	67	46	32	32
CHAR	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
MSG.																				
CODE	0																			
CHAR	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
MSG.																				
CODE																				
CHAR	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
MSG.																				
CODE	10	0																		
CHAR	127	128																		

## TRANSAC® 12C MESSAGE ORGANIZATION CHART

MSG.																					
CODE																					
CHAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MSG.																					
CODE																					
CHAR	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
MSG.																					
CODE																					
CHAR	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
MSG.																					
CODE																					
CHAR	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
MSG.																					
CODE																					
CHAR	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
MSG.																					
CODE																					
CHAR	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
MSG.																					
CODE																					
CHAR	127	128																			

## Transac® 12G CUSTOM MESSAGE PROGRAMMING

**Program Special Message Printed On Manager Reports - Code 71**

A special message can be programmed that will be printed at the top of all manager reports.

Up to 62 characters and 3 lines can be programmed.

**STEP ACTION/RESPONSE**

Use the Message Organization Chart to lay out your message before you begin.

1. Operator: Enter 71 on the numeric keypad.  
Console: Displays the digits as they are entered.
2. Operator: Press CHANGE.  
Console: Displays x yyy zz  
  
where: x = '1' to indicate that the message is for Manager Reports  
yyy = the current position (Character) of the message which is being programmed, i.e., for the first letter of the first word of the message, this would be '001'.  
zz = the current code or digits being entered
3. Operator: Enter the coded digits corresponding to each character of the message. Up to 64 characters can be programmed, including blanks and carriage returns. Fill all positions that are not keyed with characters with blanks.  
Console: Display digits as entered in position 'zz'.
4. Operator: Press AUTHORIZE.  
Console: Position 'yyy' increments to next position.
5. Operator: Enter '00' to indicate "end of message".  
Console: Display '00'.
6. Operator: Press PUMP SELECT 12.  
Console: No change on display. Printer prints the programmed special message on manager reports.

**Editing the Message.** All the following functions must be preceded by steps 2 and 3 on the previous page.

**To backspace:**

Press PUMP SELECT 3.

**To move forward:**

Press AUTHORIZE.

**To clear an error:**

Press VOID.

**To move to a particular position:**

Press PUMP SELECT 4.

Enter digits of selected position.

Press AUTHORIZE.

**To Insert a character:**

Move to selected position.  
Press PUMP SELECT 4.  
Enter digits of desired position.  
Press AUTHORIZE.

**To Insert a character:**

Move to selected position.  
Press PUMP SELECT 4.  
Enter digits of selected position.  
Press AUTHORIZE.  
Press PUMP SELECT 2 to enter INSERT mode.  
Enter digits of code being inserted (displays as entered).  
**Note:** A blank space will be entered if no code is entered.  
Press AUTHORIZE.  
**Note:** All characters are shifted to the right after insertion.

**To modify a character:**

Move to the selected position.  
Press PUMP SELECT 4.  
Enter digits of selected position.  
Press AUTHORIZE.  
Enter digits of new code.  
Press AUTHORIZE.

**To fill a whole message with blanks:**

Press PUMP SELECT 6.  
**Note:** The whole message will be filled with blanks.

**To delete a character:**

Move to selected position.  
Press PUMP SELECT 4.  
Enter digits of selected position.  
Press AUTHORIZE.  
Press PUMP SELECT 1. (Character will be deleted).  
**Note:** All characters will be shifted to the left after deletion. To stop printing the special message on Manager Reports, perform steps 1 & 2 on the previous page. To start printing the special message on Manager Reports, press PUMP SELECT 12.

**Program Special Message Printed On Customer Reports - Code 72**

Up to 126 characters and six lines can be programmed. However, if the length of your total receipt, including message, is longer than thirteen lines, a receipt will be printed for EVERY transaction, even if your printer is set to ON-DEMAND printing. Therefore, a brief message is recommended for ON-DEMAND printing.

A special message can be programmed that will be printed at the top of all customer reports.

**STEP            ACTION/RESPONSE**

- 1. Operator: Enter 72 on numeric keypad.  
 Console: Displays digits as they are entered.
  
- 2. Operator: Press CHANGE.  
 Console: Displays x yyy zz  
 where:  
           x = '2' to indicate that the message is for Customer Reports  
           yyy = the current position (character) of the message which is being programmed, i.e., for the first letter of the first word of the message, this would be '001' zz = the current code or digits being entered
  
- 3. Operator: Enter the coded digits corresponding to each character of the message. Up to 126 characters can be programmed, including blanks. Fill all positions that are not keyed with characters with blanks. (See instructions on the next page for filling a whole message with blanks. Also see the numerical codes section for equivalent letters and characters).  
 Console: Displays digits as entered in position 'zz'.
  
- 4. Operator: Press AUTHORIZE.  
 Console: Position 'yyy' increments to next position.
  
- 5. Operator: Enter '00' to indicate "end of message".  
 Console: Displays '00'.
  
- 6. Operator: Press PUMP SELECT 12.  
 Console: No change on display. Printer prints special message on customer reports.

**Note:** Console display shows 127 and 128 character positions. However, these positions are not programmable.

**Transac12G Custom Message Programming**

**Editing the message.** All the following functions must be preceded by steps 1 and 2 on the previous page.

**To Backspace:**

Press PUMP SELECT 3.

**To move forward:**

Press AUTHORIZE.

**To clear an error:**

Press VOID.

**To move to a particular position:**

Press PUMP SELECT 4.  
Enter digits of selected position.  
Press AUTHORIZE.

**To insert a character:**

Move to selected position.  
Press PUMP SELECT 4.  
Enter digits of selected position.  
Press AUTHORIZE.  
Press PUMP SELECT 2 to enter INSERT mode.  
Enter digits of code being inserted (digits display as entered).  
Press AUTHORIZE.

**Notes:**All characters will be shifted to the right after insertion.  
A blank space will be entered if no code is entered.

**To delete a character:**

Move to selected position.  
Press PUMP SELECT 4.  
Enter digits of selected position.  
Press AUTHORIZE.  
Enter the digits of the new code.  
Press AUTHORIZE.

**To fill a whole message with blanks:**

Press PUMP SELECT 6.

**Note:** The whole message is filled with blanks, and a new line code ('10') and end of message ('00') are automatically put in the last two positions. To stop printing the special message on customer reports, perform steps 1 & 2 on the previous page. To start printing the special message on customer reports, press PUMP SELECT 12.

TABLE 3 NUMERICAL CODES

**Note:** 01-10, 11-31, and 91-99 are not used by the DOT™-2 printer.

CODE	EQUIVALENT	CODE	EQUIVALENT	CODE	EQUIVALENT
32	Space	48	0	65	A
33	!	49	1	66	B
34	"	50	2	67	C
35	#	51	3	68	D
36	\$	52	4	69	E
37	%	53	5	70	F
38	&	54	6	71	G
39	'	55	7	72	H
40	(	56	8	73	I
41	)	57	9	74	J
42	*	58	:	75	K
43	+	59	;	76	L
44	,	60	<	77	M
45	-	61	=	78	N
46	.	62	>	79	O
47	/	63	?	80	P
		64	@	81	Q
				82	R
				83	S
				84	T
				85	U
				86	V
				87	W
				88	X
				89	Y
				90	Z

00 End of Message

**Note:** Last character of message must be the end of message code 0.

### Using Message Organizational Chart

The message organization chart, and the character identifiers relate to the message layout on the ticket. To enter a message: first fill the whole message with blanks using PUMP SELECT 6. To center the message go to the selected position and enter codes. Remember that each line has 21 characters.

TABLE 4 TRANSAC® 12G MESSAGE ORGANIZATION CHART

MSG.	-	-	-	-	-	-	-	-	K	E	N	'	S	-	-	-	-	-	-	-	
CODE	32	32	32	32	32	32	32	32	76	69	78	39	83	32	32	32	32	32	32	32	
CHAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MSG.	-	-	-	-	-	S	E	L	F	-	-	S	E	R	V	I	C	E	-	-	-
CODE	32	32	32	32	32	83	69	76	70	32	32	83	69	82	86	73	67	69	32	32	32
CHAR	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
MSG.	-	-	-	-	-	1	0	.	M	A	I	N	-	S	T	R	E	E	T	-	-
CODE	32	32	32	32	32	49	48	32	77	66	73	78	32	83	84	82	69	69	84	32	32
CHAR	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
MSG.	-	-	-	-	-	H	O	M	E	T	O	W	N	,	N	.	C	.	-	-	-
CODE	32	32	32	32	32	72	79	77	69	84	79	87	78	44	78	46	67	46	32	32	32
CHAR	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
MSG.																					
CODE	0																				
CHAR	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
MSG.																					
CODE																					
CHAR	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
MSG.																					
CODE	10	0																			
CHAR	127	128																			

TRANSAC® 12G MESSAGE ORGANIZATION CHART

MSG.																					
CODE																					
CHAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MSG.																					
CODE																					
CHAR	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
MSG.																					
CODE																					
CHAR	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
MSG.																					
CODE																					
CHAR	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
MSG.																					
CODE																					
CHAR	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
MSG.																					
CODE																					
CHAR	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
MSG.																					
CODE																					
CHAR	127	128																			

**Software Installation**

**Overview**

This appendix provides installation instructions for version 90.2 software to be installed in the T14588 DOT™-2 processor board. K92629-01 and K92629-02 upgrades older DOT-2 printers to full four price level, six grade capability, required for operation with the Transac®12C and 12G consoles. Use K92629-01 on DOT-2 printers with processor board T14588, revision "A" (shipped in printer assemblies with date codes "CP" or earlier and with a part number ending in "G1"). Use K92629-02 for printers with revision "B" or higher processor boards (shipped in assemblies with date codes "DP" or later and with a part number ending in "G13").

The EPROM in K92629-01 contains only version 90.2 code, and a printer converted with K92629-01 will only operate with a Transac®12C or 12G console.

The EPROM in K92629-02 contains both version 21.2 and 90.2 code. Version 21.2 code communicates with the Transac®9, 10, 11, 12, 12A, and 12B consoles. Version 90.X code communicates with a Transac®12C or 12G and has six grade, four price level capability. K92629-02 can also be programmed for a custom message in version 21.2X upon request when ordering. Custom message is not available in version 90.X since the custom message is programmable through the Transac® 12C or Transac® 12G.

**Parts List**

Before attempting installation, ensure all parts are present for each kit.

Part Number	Description	Quantity
<i>K92629-01 (For version 90.X only):</i>		
Q11933 090XEP	EPROM	1
<i>K92629-02 (For version 90.X and 21.X)</i>		
Q11785 0A0XEP	EPROM	1

**Note:** "X" in EPROM part number is for the current software version. Current software version is on shipping carton.

**Special Tools and Supplies**

1. Antistatic Work Station including wrist strap and mat.
2. IC extraction tool: Gilbarco P/N Q11850-01.
3. Needlenose Pliers.

**General Precautions**

**Safety:**

- Remove AC power to console and printer.
- Observe all safety precautions appropriate to working in a fueling environment.

**Electrostatic Discharge**

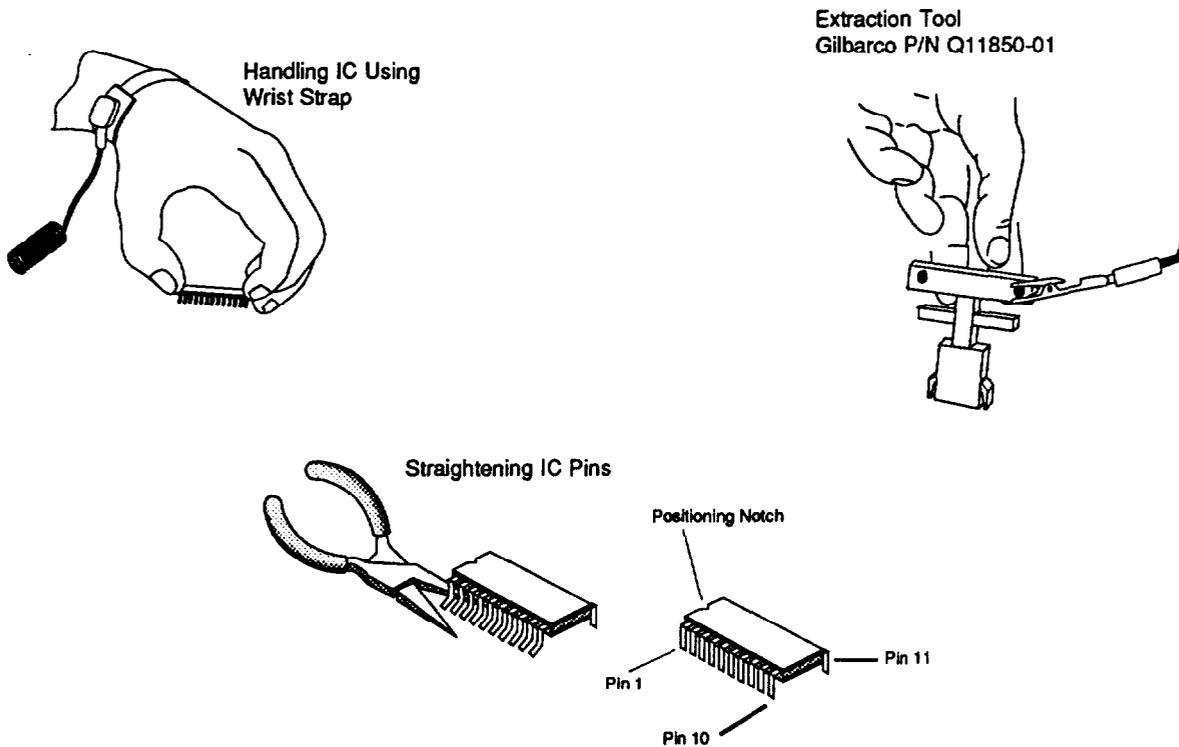
Printed Circuit Boards (PCBs) are particularly sensitive to Electrostatic Discharge (ESD) caused by static electricity. Rubbing different materials together or sliding across a truck seat can easily produce this electricity. Before handling a PCB or any of its components:

Place yourself and the equipment at a neutral, static-free potential by touching the outer case (if it is metal) or touching the interior metal frame. Use a wrist strap connected to the grounded metal frame or chassis. If any PCBs or PCB components need to be removed, place them on a grounded antistatic mat. Any PCBs to be returned for credit should be placed in the static shielding bags (that contained the replacement parts) and packed into shipping containers as soon as possible to prevent ESD or physical damage to the boards.

**Installation Hints**

1. Use the antistatic wrist strap and work mat. Make sure they are connected to an earth ground.
2. Use an IC extractor tool. The DOT™-2 Processor board is easily damaged if IC is not removed properly.
3. Do not remove any IC from its protective carrier until you are ready to insert the IC. Immediately place IC removed from the logic board into a chip carrier.
4. Make sure each IC lead is straight and aligns with the logic board mounting sockets. Never touch an IC lead. Straighten any bent leads with needlenose pliers. Always handle by the front and rear of the IC. See Figure 1.
5. Make sure the notch or position indicator on an IC aligns with notch silkscreened on the logic board.
6. Always verify software version after installing or replacing software.

**Figure 1: IC HANDLING**



## Installation

1. Record all console totals then place dispensing units into STANDALONE operation. Remove power from console and printer, then remove retaining screws and data cable from console.
2. Lift printer cover by sliding Gilbarco logo to the right and lifting on the front edge.
3. While using wrist strap protection, carefully use an extraction tool to remove the old EPROM (U13) [ on rev. "A" or "G1" boards remove U14 also]. Place removed chip(s) on antistatic work mat.
4. Remove EPROM to be installed from its protective packing. Make sure you only hold the chip by the two ends that do not have leads and the notch on the top of the chip is facing away from you. Make sure the logic board is supported so it will not flex then insert the chip into its proper location (U13). Make sure all leads are firmly mounted into pin sockets. The location for each chip can be determined by matching the part number written on top of each chip with the U-number shown on the board itself.
5. If K92629-02 was installed, set jumpers on processor board using processor board drawing for jumper locations.

For printers to be operated with a Transac®9, 10, 11, 12, 12A, or 12B console, set JP7 and JP10 in, and JP8 and JP9 out, software version will be V21.2.

For printers to be operated with a Transac®12C or 12G console, set JP7 and JP9 in, and JP8 and JP10 out, software version will be V90.2..

If no special message is desired, install JP3.

6. Close printer cover and connect and secure printer data cable into console.
7. Apply power to console and printer and look for power-up display. Perform console diagnostic exercises. If console or printer fails to perform these functions, remove power from console and printer and recheck your work. The most common installation errors are bent leads on a chip, improper orientation of a chip, a chip installed in the wrong location or a board connector not firmly seated.

**BLANK ORDERING FORM FOR SPECIAL CUSTOM MESSAGE FOR DOT-2 PRINTER**

**CUSTOMER RECEIPT MESSAGE**


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SOLD TO:

PURCHASE ORDER:

SHIPPING ORDER:

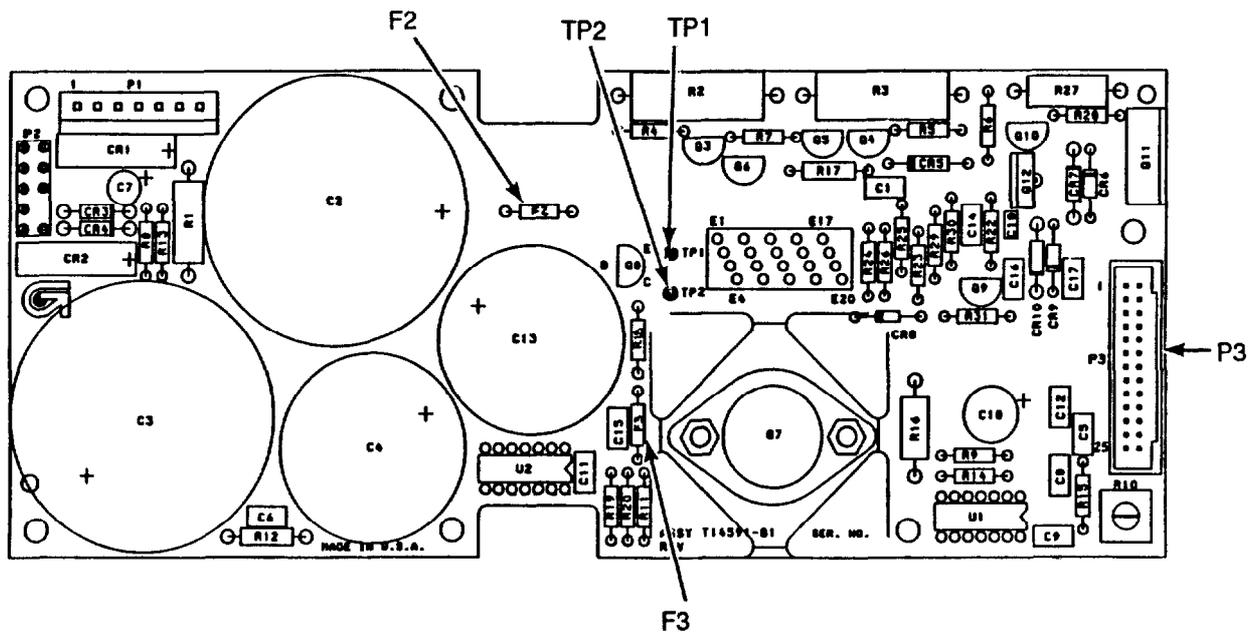
MESSAGE TYPED/SENT DOWN:

T14588 PROCESSOR BOARD REVISION LEVEL:   A   B   C

**MANAGER RECEIPT MESSAGE**


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Figure 2 Regulator Board Assembly (T14591-G1)



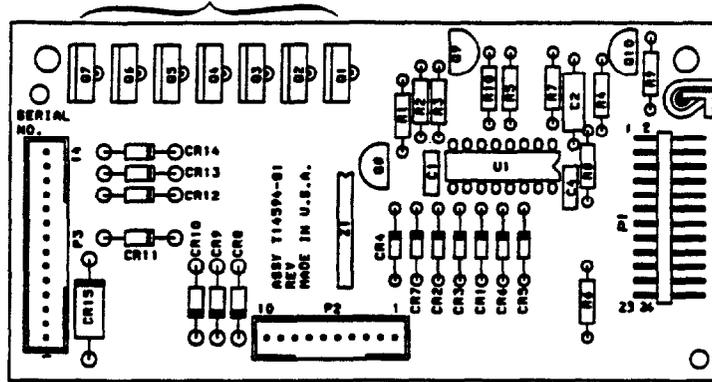
**Note:** Regulator Board fuses are not field replaceable.

TP1	120 Hz for flashing colon. Used by processor board to keep time.
TP2	+5VDC output.
F2	5A at 125VAC
F3	3A at 125VAC
Ground	P3 connector
Test Points	Pins 1,2, or 4
+5VDC Test Point	P3 connector at pins 22,23, or 24
+12VDC Test Point	P3 connector at pin 19

**Note:** Check voltages with board installed or sitting on top of insulated surface. Never set board on casing or other metallic objects.

Figure 3 Driver Board Assembly (T14594-G1)

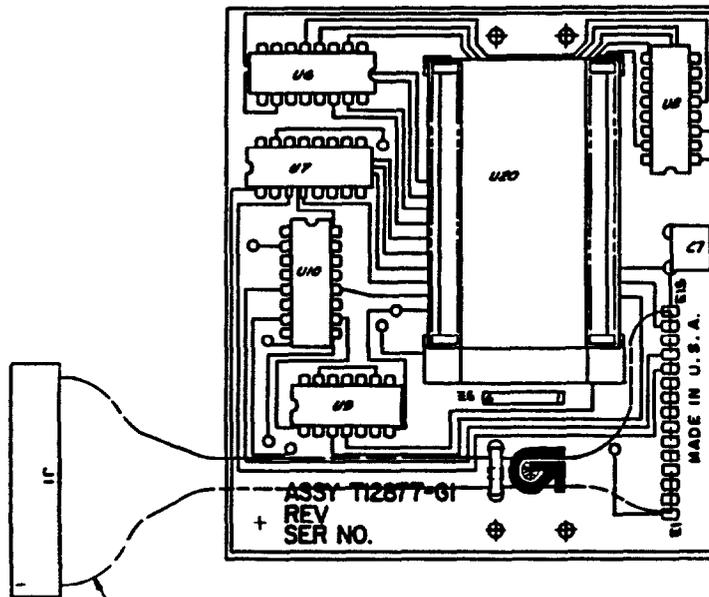
Q1 - Q7 Printhead Hammer Solenoid Drive Transistors



Connectors:

- P1 to Regulator PCB Assembly
- P2 to Printer Control Circuitry
- P3 to Printer Hammers

Figure 4 Display Board Assembly (T12877-G1)

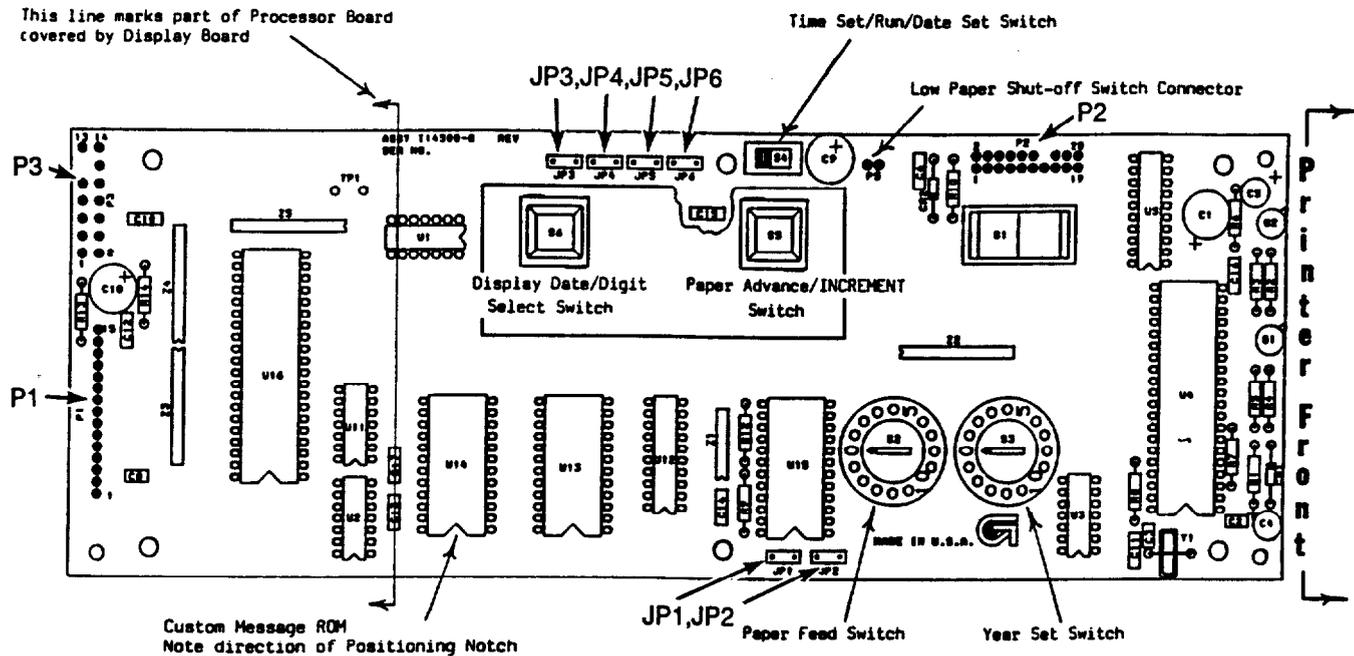


Connector J1 to Processor PCB Assembly

Figure 5 Processor Board Assembly (T14588-G1)

Connectors: P1 to Display Board  
 P2 to Regulator Board  
 P3 Data Cable from Transac Console

Note: Custom message must be ordered through Spare Parts when Dot 2 is used with T9/10/11/12/12A/or 12B.



JP1 and JP3 are for Serviceman's use only!  
 Unit must be powered down to set JP1 or JP3.

Notes: Jump Jack Selections  
 All Jump Jacks shown installed.

JP1 - Out = Continuous Print Test Mode  
 In = Normal Operation

JP2 - Out = Month/Day Formal  
 In = Day/Month Formal

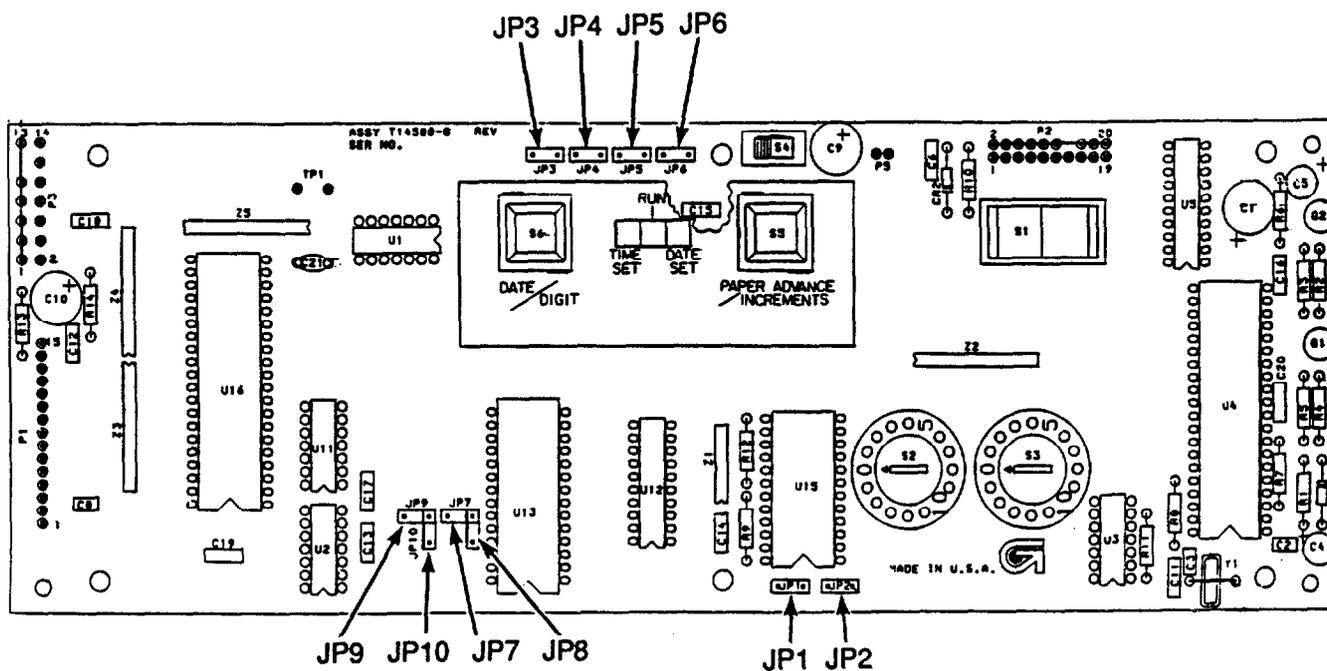
JP3 - Out = U14 Custom Message ROM Installed  
 In = No U14 Custom Message ROM Installed

JP4 - Out = Print L on ticket to indicate volume is liters  
 In = Print G on ticket to indicate volume is gallons

JP5 - Out = Print Name of month (i.e. Dec.)  
 In = Print number of month (i.e. 12)

JP6 - Out = Print time on receipt  
 In = No time printed on receipt

Figure 6 Processor Board Assembly (T14588-G13)



Notes: Function of jumpers JP1, JP2, JP4, JP5, and JP6 are the same on both processor boards.

JP3 and JP7 are always installed.

JP9 is installed for DOT™-2 printer used with Transac12C or Transac12G consoles. (See Appendix A for additional console programming). Allows use of V90.2 software. Custom message can be programmed through console.

JP10 is installed for DOT-2 printer used with Transac® 9, Transac® 10, Transac® 11, Transac® 12, Transac® 12A, or Transac® 12B consoles. Allows use of V20.2 software. Custom message must be ordered through spare parts.

Figure 7 Main Mechanical Parts

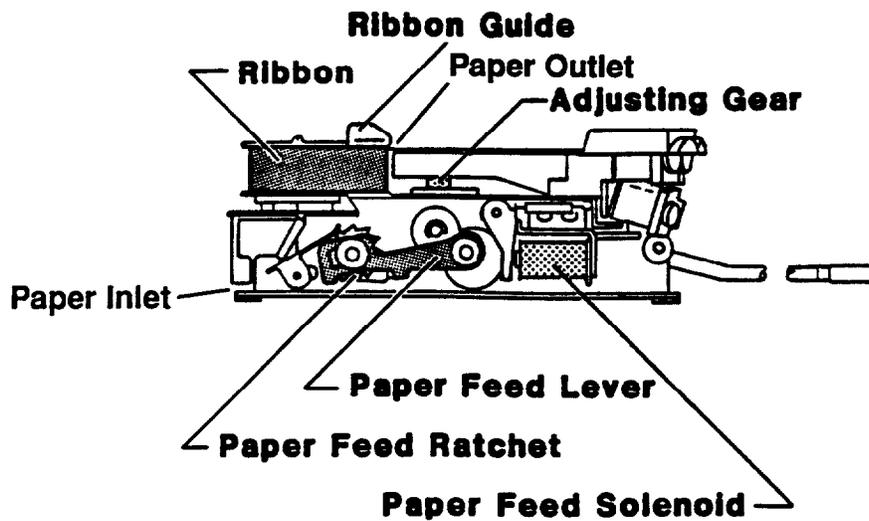
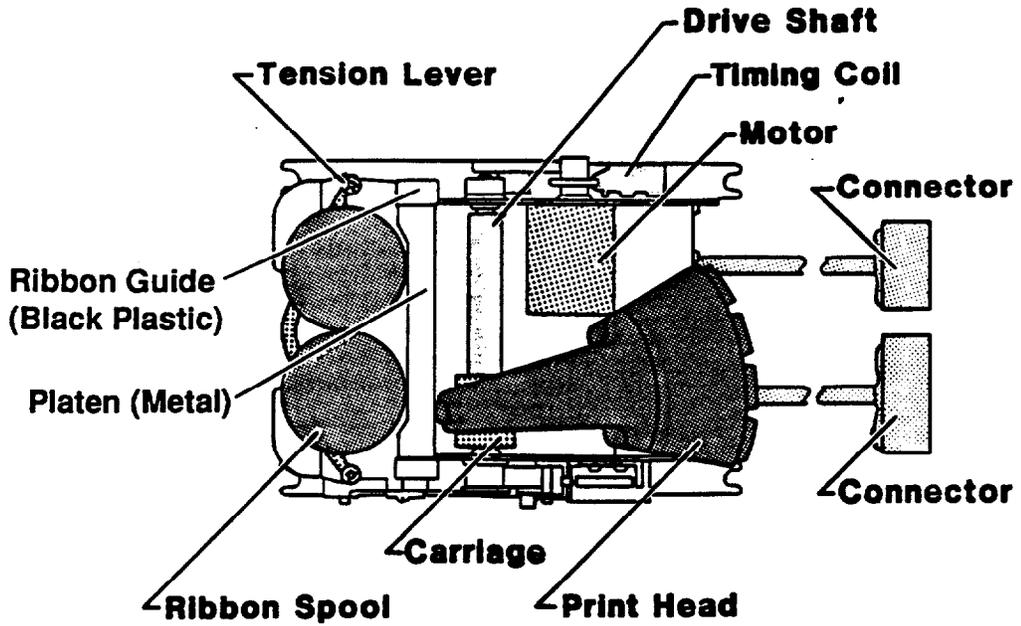


Figure 8 DOT™-2  
Printer Functional  
Block Diagram

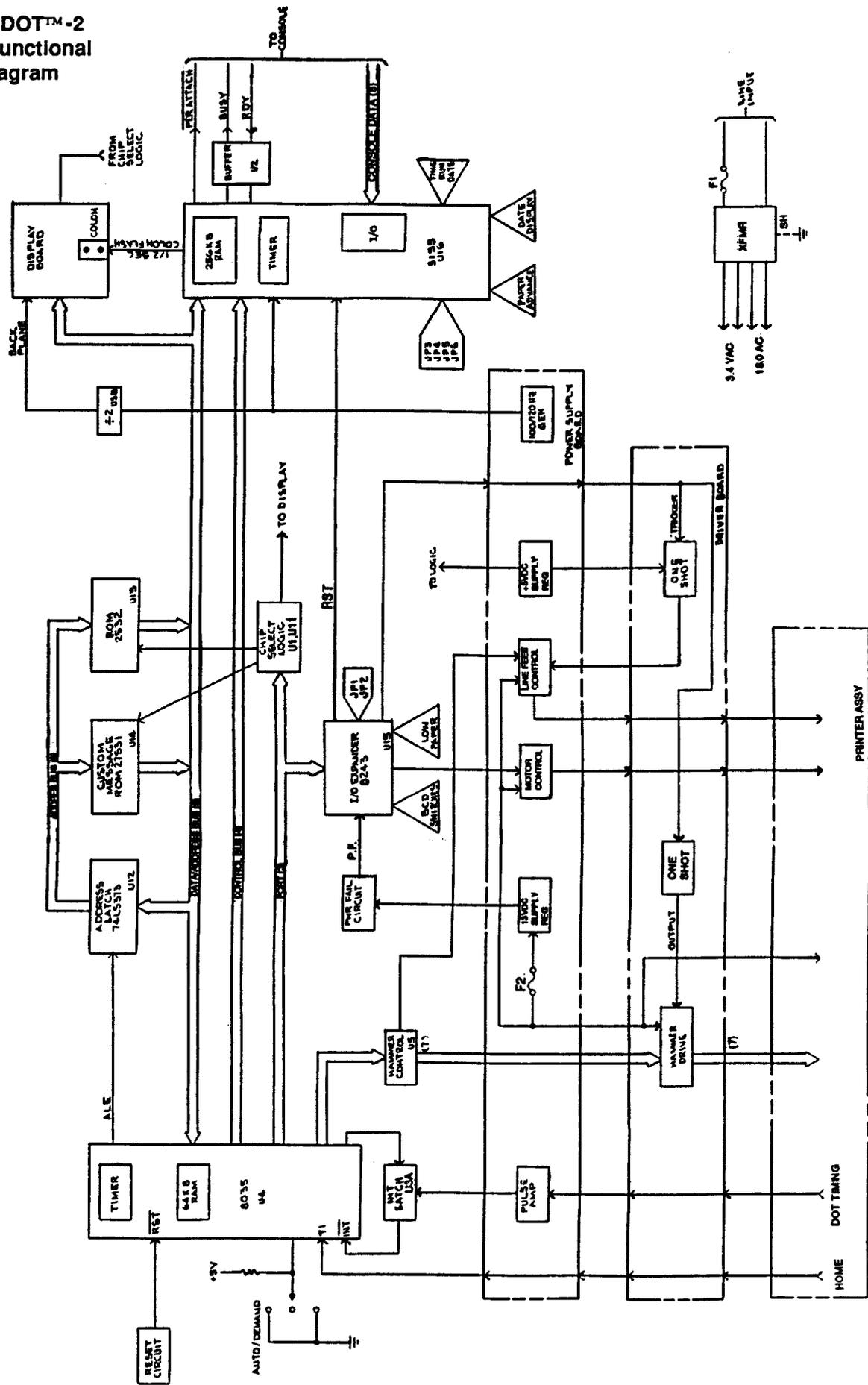
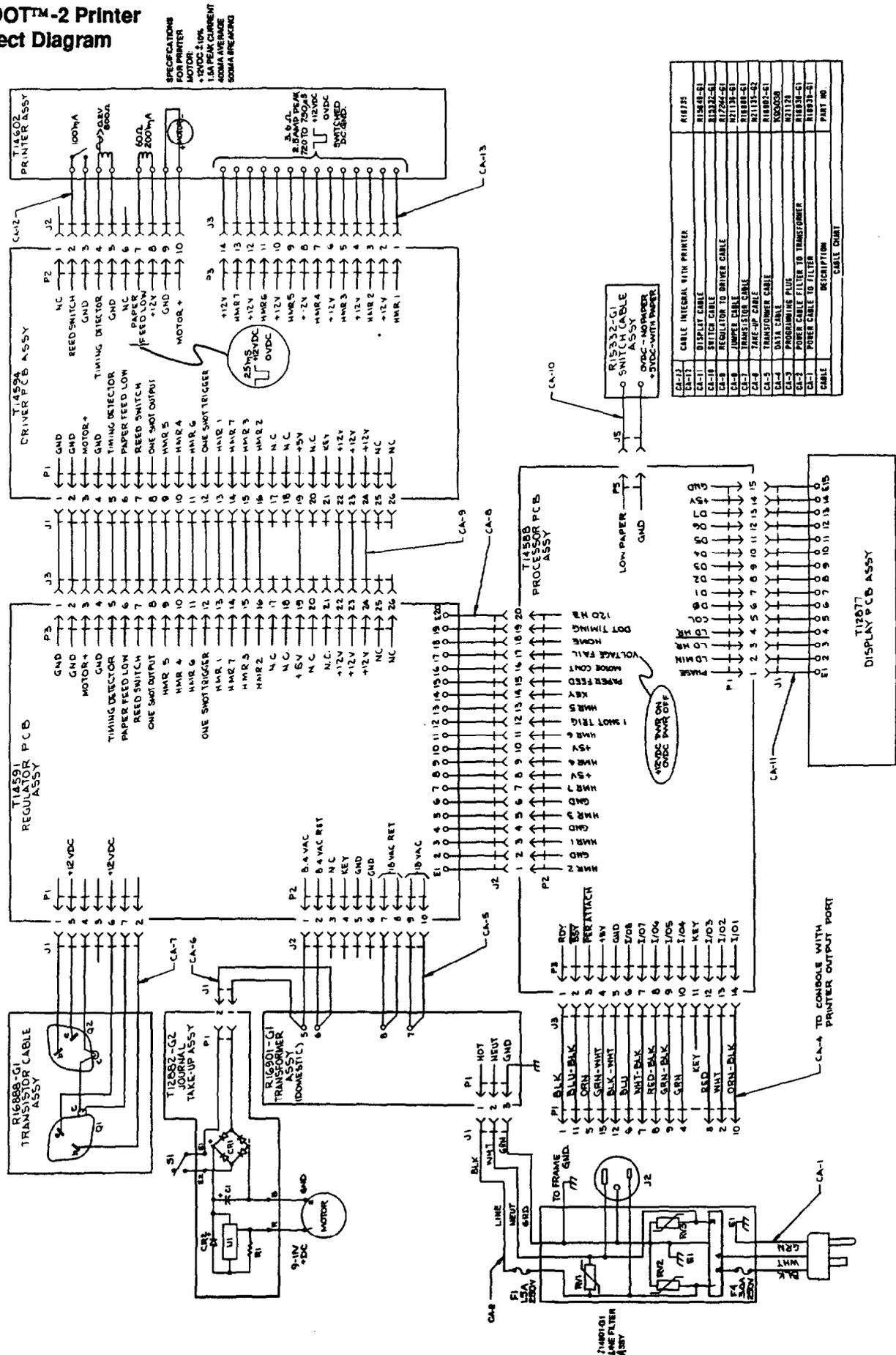


Figure 9 DOT™-2 Printer Interconnect Diagram





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