

USER MANUAL



DOTMARK Identification Marking System

Series 1

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GENERAL INSTRUCTIONS BEFORE USE

Proper functioning of this unit depends upon correct treatment and maintenance of the system. The operation and maintenance instructions must be studied carefully by all operating personnel before the system is used



Pay attention of all warnings stated in this manual to avoid personal injury, damage to property and damage to the equipment described herein.

Liability

Trend Marking Systems hereby disclaims any liability for injuries or damage resulting from:

- Use or application of product contrary to instructions and specifications contained herein.
- Repair/maintenance being performed by personnel without appropriate technical qualifications.
- Lack of suitable periodical safety and maintenance checks.
- Normal wear & tear of the product

Trend's liability shall be limited to repair or replacement of product shown to be defective

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Environment

This equipment should be installed in a location with low vibration and free from liquid spillage and airborne particles.

The relative humidity should be between 0 and 85% (non-condensing).

The ambient temperature should be between 5 and 40°C.

This equipment is not designed for any areas having a fire or explosion hazard.

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SYMBOLS

The following symbols may be used in this manual:



Warning : Hazards or unsafe practices that could result in personal injury.



Caution : Hazards or unsafe practices that could result in equipment or property damage.



Important : Instructions that must be followed to ensure proper installation/operation of equipment.



Note : General statements to assist the reader.

INTRODUCTION

The Dotmark is a compact, reliable and easy to install ID marking system, printing a single dot to indicate the product has undergone a process, passed/failed a test inspection, originates from a particular production line or a simple orientation/installation mark.

The Dotmark uses a printhead with a compact high speed valve designed to run a variety of inks. These include pigmented and dye based inks such as water, methanol and Methyl Ethel Keytone bases. Ink is supplied to the printhead via the ink reservoir, pressurised using the integrated air-pump (or optionally through plant air).

The supplied mounting bracket and hardware provides a flexible solution to installation in any application. The self-contained controller will operate at 110VAC and 220VAC and offers easy adjustment of dot-size by, burst-rate and burst time The Dotmark is user-serviceable and operates with low maintenance for a cost-effective, simple and reliable ID marking alternative.

FEATURES

- Prints at up to 600 dots per second
- On non-porous or porous surfaces
- On moving or stationary objects
- Simple and easy to use
- Selection of different ink colors
- User serviceable

PRINTING MODES

- Single shot mode: produces a single dot when the unit is triggered.
- Continuous mode: produces a "line" of dots as long as the trigger is active.
- Burst mode: produces a line of dots that can be adjusted in length.

Controller

- Compact design,(WHD) 3.25x5x5.5"
- Single shot, burst or web mode

Trigger

- Optical sensor switch
- Or alternate thru DB9 connector

Print Head

- Stainless steel, 1" dia., 4" long
- Easy to mount

Dot size:

- Minimum 1/16" Maximum 1/4"

Inks:

- Uses non-porous inks, colors available
- Water, methanol and MEK based

Typical Installation

- 6" Wide
- 15" to 21" High
- 13" to 24" Deep
- Up to 12" reach with standard mounting equipment

Air

- Integral air pump
- Or alternate plant air

Power Supply

- 110 V / 120 V or 220 VAC

SAFETY INSTRUCTIONS

1. Always wear approved safety glasses and recommended personal protection.
2. Never point ink jet equipment at any person.
3. Always follow handling instructions when working with ink jet inks.
4. Be aware that some ink jet inks are highly flammable and should be handled accordingly.
5. Dispose of all waste in a manner recommended by your local regulatory body.
6. Ink container and tubing is pressurised and may release ink spray if opened



EQUIPMENT OVERVIEW

The DOTMARK-1 system consists of the following components:

- Print head - A compact high speed valve designed to run a variety of inks. These include pigmented and dye based inks. Ink bases include water, methanol and Methyl Ethel Keytone.
- Ink supply - The ink supply consists of a 1 liter ink supply, air pump, ink line tubing, ink line filter and ink line fittings. (Optional plant air filter / regulator is available upon request).
- Mounting bracket - The supplied mounting bracket and hardware should provide a solution for most installations.
- Controller - The DOTMARK-1 controller controls the print head. It provides the driver pulses based on controller setup and input type.
- Power supply - The DOTMARK uses a 24 VDC regulated power supply. This unit is self contained and has no repairable components. It will operate at 110VAC and 220VAC.

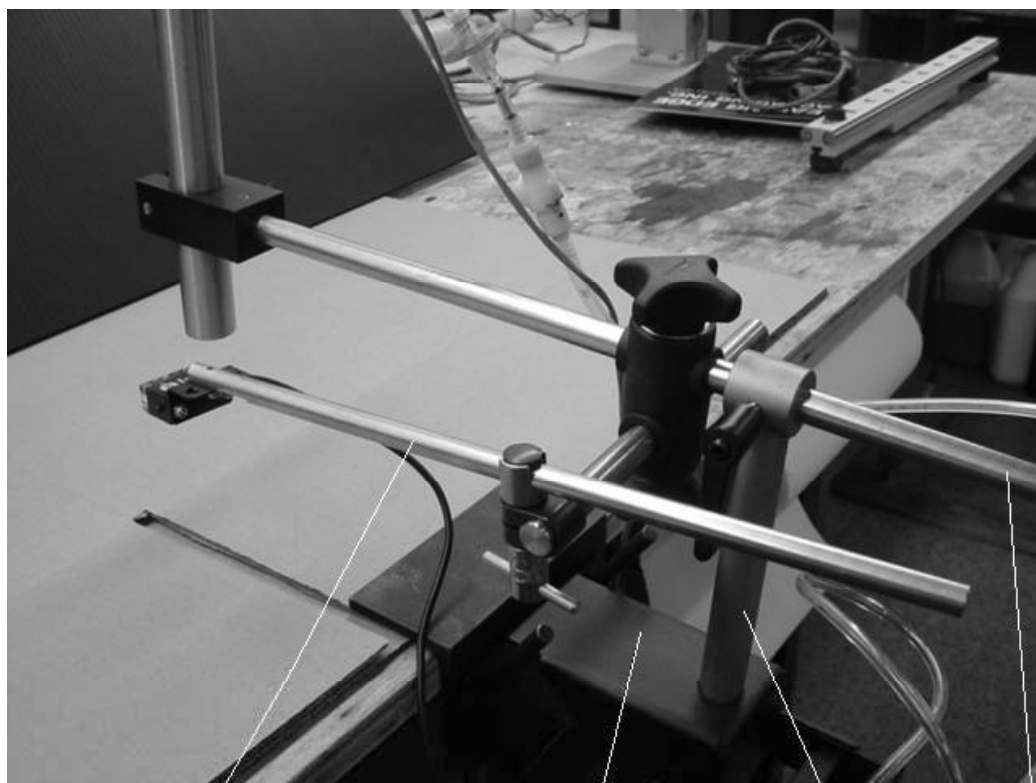


Photo detector mount Coveyor mount bracket Vertical rod Horizontal rod

INSTALLATION INSTRUCTIONS



Prior to installing equipment ensure there is no visible damage to the machine and accessories including power cords.

Installation of the DOTMARK-1 is in most cases very simple and generally should take less than one hour to complete. As shipped all DOTMARK systems are completely assembled and tested.

When installing this system it is important to look at the installation with the following considerations:

- Ease of use
 - Can the operator get to the equipment when needed?
 - Is it easy to fill the ink tank?

- Risk of damage
 - Can the unit be damaged by process equipment or product?
 - Are all cables and lines clear of moving parts?

- Quality of print
 - Will vibration or print distance affect print quality?
 - Can the print head be positioned correctly?

Once a suitable location has been found:

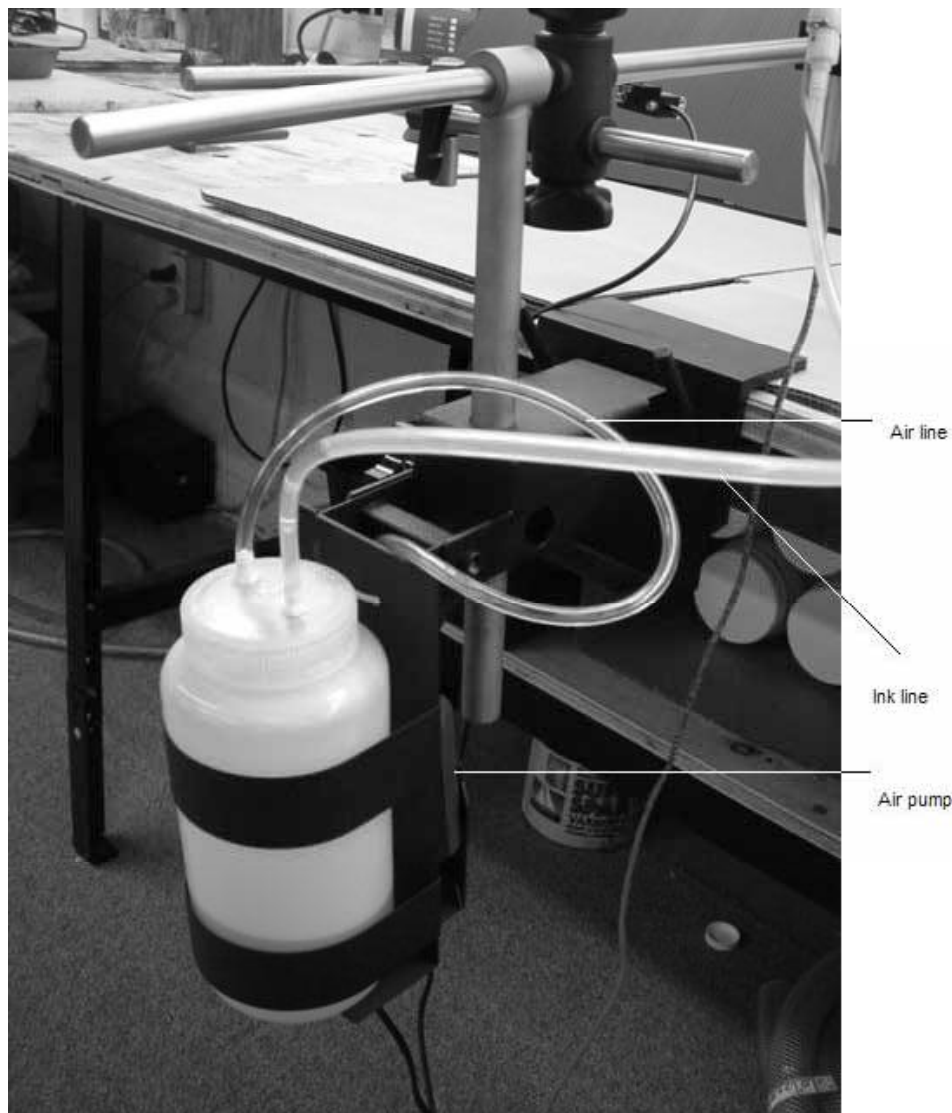
1. Install the conveyor mount bracket in the location selected.
2. Mount the print head and connect the ink line fittings.
3. Mount the photo detector and photo detector rod.
4. Mount the controller holder on the back of the horizontal rod.
5. Install controller in holder.
6. Connect photo detector to back of controller.
7. Connect print head cable to back of controller.
8. Plug in power supply.
9. Fill ink container.
10. Screw ink cap on tank firmly.
11. Plug in air pump.

INKING THE SYSTEM

If the ink line contains air or solvent it may be necessary to bleed the ink line. This is a simple process and can be done without spilling any material.

To flush the ink line:

1. Fill ink tank with ink or solvent to be used.
2. Screw tank lid on firmly.
3. Plug in air pump.
4. Disconnect ink line from print head connector at quick disconnect.
5. Point male ink line fitting in paper cup and press fitting release. Solution will run up the line to fitting.
6. Reconnect ink line fitting to print head.
7. Press purge button on controller until new material is fired from head.



POSITIONING THE MARK:

1. Position the print head so that its center falls over the location to be marked.
2. Make test mark by pressing the trigger button on the controller.
3. Position the photo detector so that the trigger occurs with the print head at the correct location.
4. "Run" the product to be marked. Adjust the photo detector position so that the mark position is fine tuned.

MAINTENANCE

The DOTMARK-1 printer requires only minimal maintenance and in most cases the unit will perform for several years without requiring any outside service.

Daily service:

- Wipe front nozzle with cleaner recommended for ink being used.
- Remove ink container and shake well (pigmented inks only).
- Check all line and wires for damage from surrounding equipment.

Monthly service: (pigmented systems only)

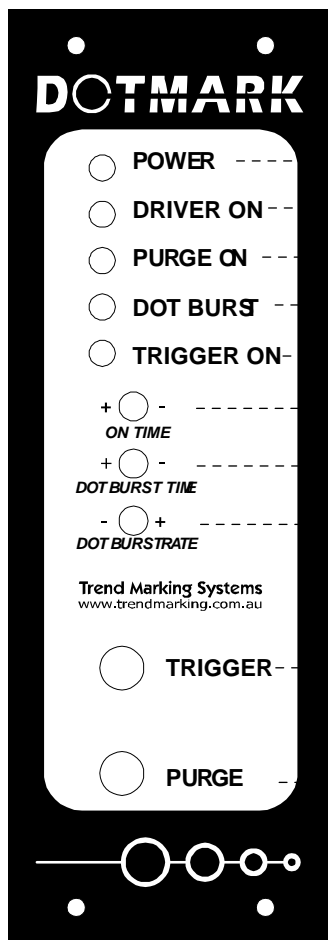
- Remove all ink from tank. (Save in clean container for reuse).
- Clean bottom of ink tank.
- Flush ink lines with solvent or cleaner.

Annual service:

- Replace ink container.
- Replace ink / air lines.
- Replace print head filter.



CONTROLLER FUNCTIONS



- POWER ----- Indicates power to controller
- DRIVER ON ----- Indicates printhead firing
- PURGE ON ----- Indicates printhead purging
- DOT BURST ----- Indicates a "burst" printing
- TRIGGER ON ----- Indicates signal being recieved to print
- + - ----- Adjustment for dot size
- ON TIME
- + - ----- Adjustment for time of dot burst
- DOT BURST TIME
- + ----- Adjustment for dot printing rate during burst
- DOT BURSTRATE

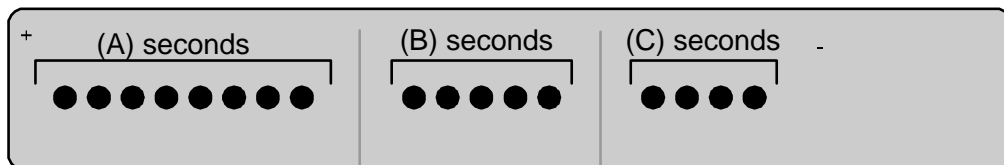
- TRIGGER ----- Press for manual test-print

- PURGE ----- Press to purge printer

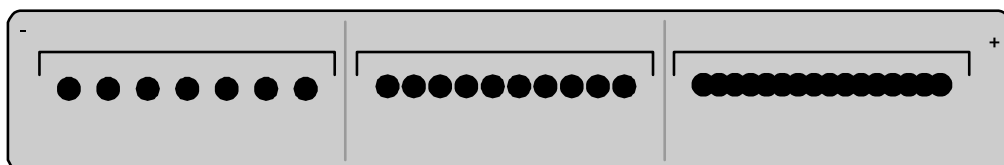
+ -
ON TIME



+ -
DOT BURST TIME



- +
DOT BURSTRATE - at Dot Burst time of (A) seconds



SELECTING MODES



Disconnect power prior to opening cabinet

In order to select between SingleShot, Continuous and Burst modes, jumpers must be internally configured to allow for these functions to operate.

Single shot mode:

Single shot produces a single dot when the unit is triggered.

Continuous mode:

The unit will produce a “line” of dots as long as the trigger is active.

Burst mode:

The unit produces a line of dots that can be adjusted in length.

As standard, Dotmark systems are shipped in S. SHOT (SingleShot) mode (J1). The other two jumper locations are BURST (J2) and CONT (J3) (continuous). The burst mode fires the unit similar to a purge for a set length of time. This burst length can be adjusted using DOT BURST TIME adjustment. The rate of the burst can be adjusted using the DOT BURST RATE adjustment.

The units as shipped only allow for a small range of adjustment. This range is extended by the insertion or removal of the following.

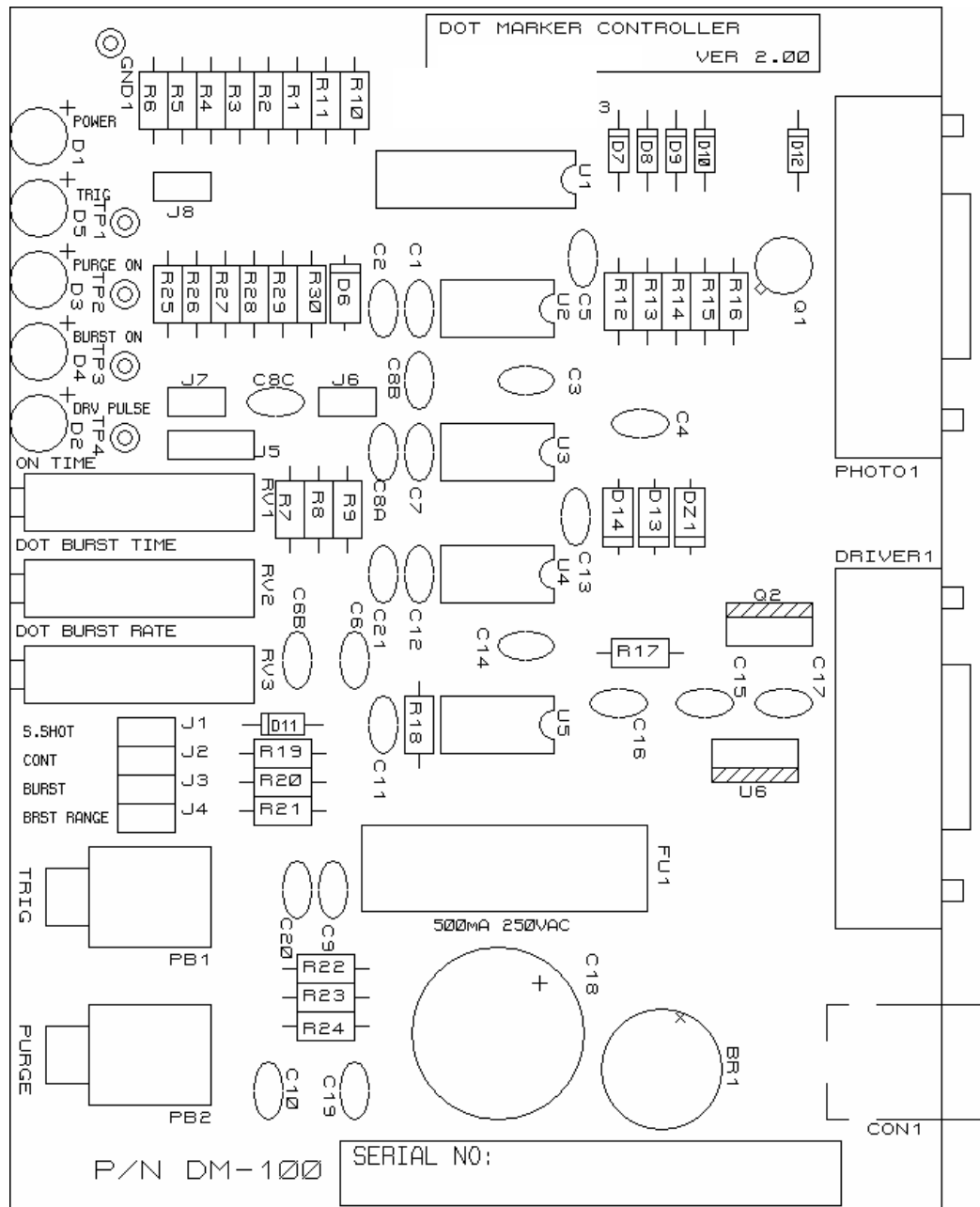
- J4 - Burst range*
- J5 - Fixed dot size / Adjustable dot size**
- J6 - Length of burst***
- J6B - Length of burst***
- J7 - Rate of burst or continuous***
- J8 - Rate of burst or continuous*

*Jumpers J4 and J8 are jumpers that when in place increase the length of the burst. Removing these will shorten the burst length.

**Jumper J5 should be left in the position furthest from the front of the board. If this is in the wrong location the dotsize will be fixed.

***Jumpers J6 and J7 control the rate at which the burst occurs. The jumpers in place slows the burst rate. Removing them increases the rate.

Jumper Settings Diagram:

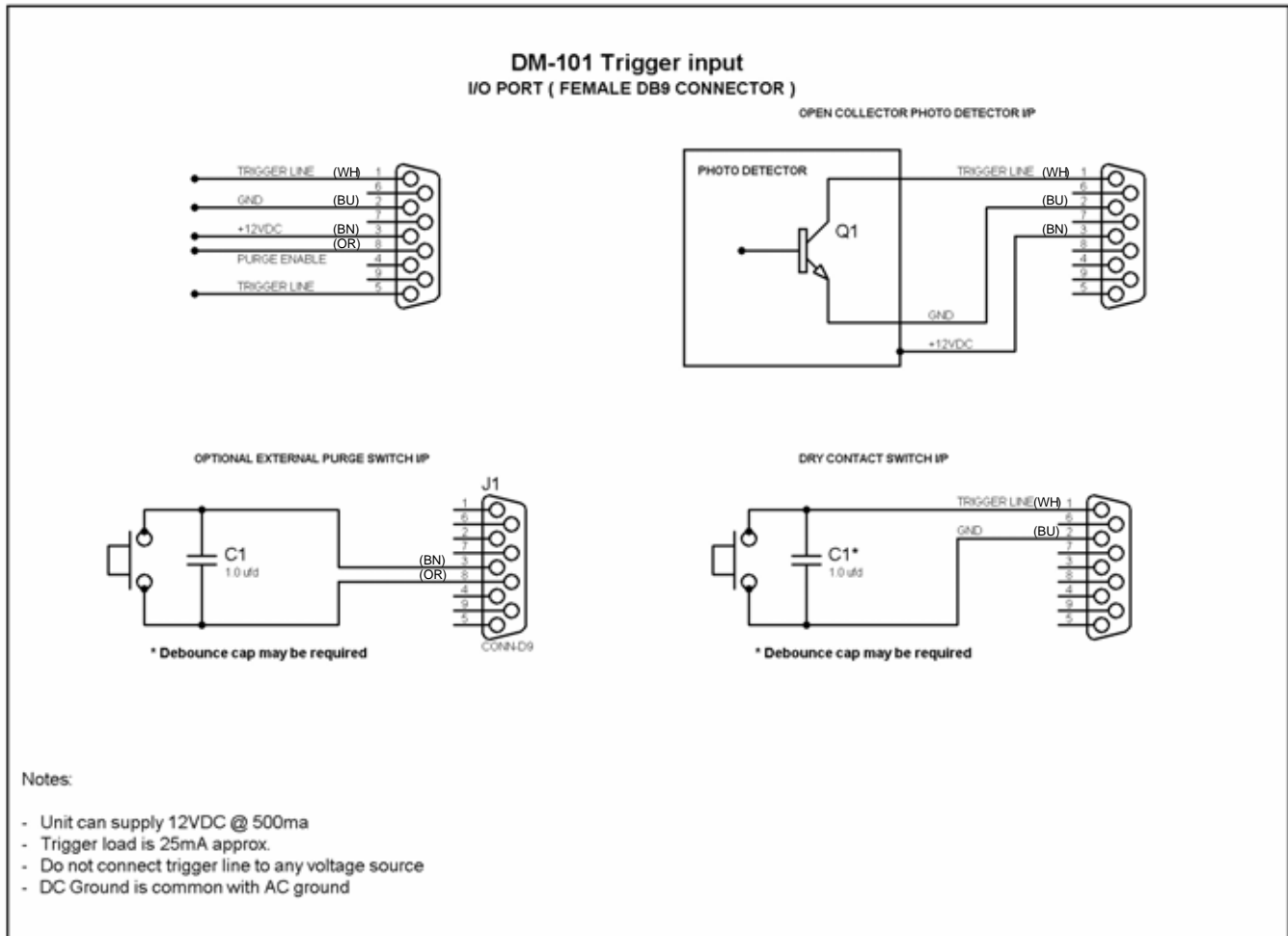


- J1 - Single shot
- J2 - Continuous
- J3 - Burst
- J4 - Burst range
- J5 - Fixed dot size / Adjustable dot size
- J6 - Length of burst
- J6B - Length of burst
- J7 - Rate of burst or continuous
- J8 - Rate of burst or continuous

SIGNAL WIRING

CABLE COLOUR CODES FOR EXTERNAL SIGNAL CABLING:

WHITE: trigger/signal BLUE: ground RED:+12vdc BLACK: purge



ADJUSTING SOLENOID VALVE

This procedure should be followed to adjust the solenoid to ensure it correctly activates the piston. This may be required if changing the piston assembly.



STEP 1:

Remove the screws on the printhead outer barrel casing while the printhead is still in its mounting bracket.

STEP 2:

Carefully remove the internal valve assembly from the outer barrel casing. You may need to press on the nozzle face to push it out.



The system is still pressurised. Do not pull the ink delivery tubing as this may cause ink spray and spillage.



STEP 3:

Use a 7/16 open ended spanner to adjust the lock nut that holds the solenoid in place.

Make a test print and re-adjust in very small increments until the desired dot-size is obtained. You can perform the adjustments in single-shot mode or you can set the unit in continuous mode and trigger the unit while turning the lock nut.



STEP 4:

Clean the inside of the outer barrel casing and the nozzle block with a suitable cleaner for your ink type, wipe dry and re-insert the internal valve assembly.

STEP 5:

Align the bottom screw hole first and replace the screw, then align the top hole and replace the other screw.