7 and 16 dot Print Head 
Maintenance Manual  
Version 1.0 as of September 2014
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1. The REA JET Print Head 7 and 16 dot

The REA JET 7 and 16 dot print heads are constructed to handle REA approved inks and cleaners. The features are as follows:

- One to two lines of text
- Print heights from 5 -27mm (7dot) and 5 to 67 mm (16dot)
- High quality materials, robust mechanical engineering
- Pigmented REA JET inks for dark background, solvent-based inks, etching inks for permanent coding and marking on metals
- Ventilated design for extreme temperature variations (prevents condensation)
- Different nozzle sizes for economical use of consumables
- Connection of one or more print heads to REA JET controller
- REA Plug & Print-technology (RJ) = high system availability via quick change system
- Continuous adjustment of print height through simple rotation of the print head - see illustration

- These operating instructions must be carefully read prior to initial operation
- The safety instructions are to be observed.
- This manual must be kept in the direct vicinity of the unit
### 1.1 Symbols used in this manual

This manual contains general information and instructions that ensure safe operation. The meanings of the symbols are described below. Safety specifications and warnings are emphasized with the following symbols.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Danger" /> <strong>Danger</strong></td>
<td></td>
</tr>
<tr>
<td>Indicates an imminently hazardous situation which, if not avoided, will result in serious injury or damage.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Warning" /> <strong>Warning</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol indicates a situation which, if not prevented, will result in death, serious injury or damage.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Caution" /> <strong>Caution</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol indicates a possibly hazardous situation which, if not avoided, will result in injury or damage.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Control" /> <strong>Attention</strong></td>
<td></td>
</tr>
<tr>
<td>This signal word indicates a hazard which could possibly result in minor injury or damage.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Beware" /> <strong>Beware of dangerous electrical voltage</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol indicates that dangerous electrical voltage is indicated with the symbol shown.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Risk" /> <strong>Risk of harmful vapors</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol indicates a possible risk to health posed by solvents.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Fire" /> <strong>Fire risk</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Open fire and heat are strictly prohibited</strong></td>
<td></td>
</tr>
<tr>
<td>This signal indicates a fire hazard.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Disposal" /> <strong>Disposal of equipment</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol draws attention to the particular care that needs to be shown when disposing of material and equipment. Please observe and adhere to the material safety data sheets, and observe all federal / local laws, rules and standards.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Eye" /> <strong>Wear protective eyewear</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol indicates that protective eyewear is required.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Hand" /> <strong>Wear hand protection</strong></td>
<td></td>
</tr>
<tr>
<td>This symbol indicates that protective gloves are required.</td>
<td></td>
</tr>
<tr>
<td>Symbol</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| ![Wear respirator.png](image1.png) | **Wear respiratory Protection**  
When working with consumables (ink, colour and cleaner) wear qualified respiratory Protection that are approved according to the safety data sheet for the chemicals contained in the consumable. |
| ![Wear hearing protection.png](image2.png) | **Wear hearing protection**  
This symbol indicates that hearing protection are required. |
| ![Follow operating instructions.png](image3.png) | **Follow operating instructions**  
References to this manual or other documents are marked with the book symbol. |
| ![Instructions for care.png](image4.png) | **Instructions for care**  
This symbol provides important tips for proper care and maintenance. |
| ![Information.png](image5.png) | **Information**  
This symbol indicates additional information that may be useful in helping ease operation and improve the production process. |
| ![Tip.png](image6.png) | **Tip**  
This symbol indicates operating instructions |

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### 2 Safety Instructions

**WARNING**

Commissioning, operation and eventual maintenance must be carried out exclusively by suitably qualified personnel.
Before maintenance or any other type of work on the system is done, turn the system off, disconnect the power cable and make sure the system is depressurized.

The safety data sheet for the color / ink used can be requested from REA Elektronik, Inc.

2.1 Operation

Observe in the operating manual. Read this operating manual carefully, even when you already have had experience with marking and coding systems.

Qualification of the personnel
The operator must ensure that the only qualified personnel work on the machine.

Adherence to norms and regulations
The operator must ensure that all relevant norms and regulations are adhered to when operating the marking system

Warranty and liability claims in the event of personal injury or damage to property are excluded if they are due to one or more of the following reasons:

- Disregard of the particular circumstances or other known precautions
- Disregard of the necessary care when handling or during operation.

Maintenance
To guarantee safe and proper function of the machine the unit must be maintained in accordance with the guidelines in chapter 9.

The rules and regulations for the prevention of accidents valid for the operating site must be observed.

2.2 Operator liability

The operator is obligated to allow only those persons to work on the REA JET DOD print heads who comply with the following requirements:

- The person has been instructed regarding the principle directions of work safety and accident prevention;
- The person has received instruction regarding the use of the REA JET DOD print head;
2.3 User liability

Every person who works with the REA JET DOD print head commits to the following,

- Observe the basic regulations regarding the operational safety and accident prevention;
- Read and observe this manual and, in particular, the chapters on safety and the warning symbols.

2.4 Intended use

The REA JET DOD print head is exclusively intended for the labelling, marking and coding of various materials (i.e. packaging, products, and raw stock).

Any other use or extended use which goes beyond the intended purposes stated above is considered as being non-compliant with the intended use. The company REA Elektronik, Inc. is explicitly excluded from any liability for damages which may result.

Intended use also includes the following:

- Observance and compliance with all guidelines in this manual, especially capital 0 Safety Guidelines.
- The regular examination of the unit condition for correctness
  - Plug and connections
  - Cables
  - Hoses
  - Bolts and screws
  - Casing
  - Safety components (also additionally installed)
- The periodic condition and leakage control of the system

In the event that a unit shows any signs of damage it should not be put into operation, thus preventing personal and property damage. Operation of the unit may only take place with the specified hoses, bolts, cables and accessories. Only use original REA-accessories, original REA spare parts, REA inks and cleaners.

2.5 Hazards related to exposure to ink / colour

When working with ink, colour and cleaners, the following safety guidelines are to be unconditionally observed.
2.6 Precautions and steps by exposure to ink / colour / cleaner

Depending on the medium used, irritation to skin, eyes and mucous membranes can result.

The safety guidelines in the safety data sheet must be strictly observed.

Use the appropriate protective clothing (safety glasses / protective gloves / protective clothing)

Avoid contact of the medium with eyes and skin. Wash the affected area with water and soap. Special cleaning pastes for the skin are available.

If irritation occurs seek medical attention.

Avoid swallowing the medium.

First-Aid Measures:

Seek medical attention when symptoms occur or when in doubt.

If unconscious do not administer orally.

AFTER INHALATION:
Supply with fresh air, place the individual in a relaxed position and keep warm.
If respiration is irregular or has stopped, begin CPR. If the individual is unconscious place them in the recovery position and seek medical attention.

AFTER CONTACT WITH SKIN:
Removed contaminated clothing immediately. Clean affected skin thoroughly with water and soap. Do not use cleaning agents containing alcohol or other organic solvents or thinner under any circumstances.

AFTER CONTACT WITH EYES:
Hold eyelids wide open and flush with large amounts of clean, flowing water for a minimum of 10 minutes. Seek medical attention.

AFTER SWALLOWING:
If swallowed, seek medical attention immediately. Keep individual calm. Do not induce vomiting.
Safety data sheets

When handling ink, colour and cleaner the relevant safety data sheets must be strictly observed.

The use of ink, colour and cleaner are not allowed without the safety data sheets.

The safety data sheets are
- to be kept up to date
- easily stored and accessed
- made known to the operational staff.

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Do not inhale solvent vapours

Due to their chemical composition, in isolated cases special inks, colours and cleaners may create solvent vapours. These can pose a health risk over long periods of time and in high concentrations.

For more information as to what extent a health risk exists, please consult the safety data sheet for the fluid.

Here you will also receive information about the personal protective equipment that needs to be supplied for the operators and maintenance personal. In any doubts exist, please contact your trade association.

The solvent concentration during normal operation depends highly on the environment of the equipment and the application. Please make sure that there is always sufficient room ventilation. When in doubt, use an authorized active extraction system. We are more than happy to support you with the technical implementation.

Whether an active extraction system is necessary depends on the individual situation. The decision, whether an extraction system is necessary can be determined by the TLV-values (Threshold Limit Values). The acceptable TLV-values can be found in the safety data sheet and must be verified with a reading at the equipment location.

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Wear protective glasses

When working with ink, colour or cleaning you must wear protective glasses.

Wear protective glasses that have a side shields (or an equivalent protective guard), as soon as you work with ink, colour or cleaner.

In the event that liquid enters the eye, flush the open eye with an eye bath or, if not available, for 15 minutes under flowing water and immediately consult an eye specialist.
Wear protective gloves

When working with consumables (ink, colour and cleaner) wear qualified protective gloves that are approved according to the safety data sheet for the chemicals contained in the consumable. Latex gloves are not leak-proof and are not approved as protective gloves!

Wear respiratory Protection

When working with consumables (ink, colour and cleaner) wear qualified respiratory Protection that are approved according to the safety data sheet for the chemicals contained in the consumable

Disposal of equipment

When disposing of equipment it is important that:
- the appropriate safety data sheets are observed.
- the valid laws and regulations are observed.

For further hints, please contact your company’s safety officer. They will gladly give you more detailed information regarding your company’s disposal concept, storage places as well as safety at work.

2.7 Electrical hazards

When cleaning, maintenance and repair work is being done, the main switch is turned off, or the power plug has been pulled, appropriate measures must be taken to prevent the unauthorized restoration of the power supply.
2.8 Fire and explosion hazards

Open flame and heat are forbidden. Individual inks and cleaners may be flammable. All identified flammable inks, colours and cleaners are to be stored in accordance with applicable regulations.
3. Maintenance Procedures

3.1 What to do BEFORE a print job

1. Fill the bottle in the ink system. Always leave a minimum of 2” between the level of the ink in the bottle and the filler opening. Keep the ink bottle filled while operating the REA-JET system; avoid running out of ink and introducing air into the ink lines.

2. Make sure the ink bottle cap is securely tightened to prevent loss of pressure evaporation of the ink. Make sure the seal in the cap is present and it is not damaged.

3. It is recommended that the inline ink filter on the ink supply system be replaced every 4 months as part of a routine maintenance program.

4. The pressure of the ink supply system is preset, but can be adjusted if desired. Remove the red cap from the pressure reducer and turn the adjustment screw to change the pressure. The pressure reducer is located on the backside of the unit behind the ink supply bottle. Turn the setting screw counter-clockwise to increase the pressure to the bottle and turn the setting screw clockwise to decrease the pressure to the bottle.

5. **The controller should ALWAYS be powered down before connecting or disconnecting/connecting any cable.**
6. Connect the print head cable and ink supply hose to the input fitting of the print head. Make sure the quick disconnect fitting is locked into place on the input fitting. Check for any leakage at either the input fitting or the nozzle plate area.

7. Ink input fittings have an O-ring (pictured below) to prevent leaking. Over time, the O-rings may dry out, change shape, or they can be damaged. When this occurs, ink will leak from the input fitting after it is connected to a female fitting. If leaking ink is seen, replace the O-ring with a new one.

8. Check the encoder and sensor cables to see if they are properly connected. Verify the proper installation of the wheel on the encoder.

9. At the controller, turn the power on. Purge the print heads to make sure all of the nozzles are firing properly. If there is air in the print head, it must be bled out. Tilt the print head 90 degrees and press the purge button until all of the nozzles are firing ink.

10. Once the print heads have been tested and are functioning properly, position each print head so the gap between the product and the print head is ½ inch. (As indicated below) The gap must NOT exceed 5/8".
3.2 What to do AFTER a print job

1. Once the print job is completed, move the print heads away from the substrate. This will make access to the print heads during maintenance easier and will also protect the print heads from accidental damage.

2. After every print job, perform a Basic Cleaning on each print head. Clean the outside of the print heads by using the cleaning solution and the recommended shop towel. Moisten the towel with cleaner and wipe the nozzle plate, making sure to clean the recessed area of the nozzle plate too. (As indicated below) Clean all the ink form the outside of the nozzle plate.

2a. ONLY apply cleaner to a cloth and wipe the exterior. Do NOT squirt cleaner on top plate where connectors are. This could result in ink or solvent entering the print head and loosening glue or damaging coils.

3. When the exterior cleaning is completed, purge the print head to be sure all 7 or 16 present. If you have all 7 or 16 dots, simply clean the nozzle plate one more time and return the print head to the mounting bracket. This print head is ready for the next print job.

If the print head does NOT print all 7 or 16 dots when purging, please refer to the Advanced Print head cleaning instructions.
3.3 Advanced print head cleaning

1. If cleaning the outside of the print head has not worked, you will need to dismount the printhead for advanced cleaning.

! WARNING

The controller should ALWAYS be powered down before connecting or disconnecting/connecting any cable.

After the 7 or 16 dot printhead has been disconnect for service, remove the nozzle plate screws (see photo below). There are 4 screws (7dot) 6 screws (16dot) on the head. To avoid damaging the screws, be sure to use the proper size screw driver. It is recommended that screws be replaced when they are worn or otherwise no longer serviceable:

![Nozzle Plate Screws]

2. If the nozzle plate does not want to come off, dried ink is holding it in place. To remove, squirt some cleaner in the screw holes. Use a Philips head screw driver and insert it in one of the screw holes in the nozzle plate and rock it back and forth; (as indicated below) try this with a few screw holes if necessary. To prevent damage to the nozzle plate:

! WARNING

Do NOT use the screw driver or other tool to pry the nozzle plate off of the print head. Do NOT strike the outside of the nozzle plate with any object.

![Cleaning Nozzle Plate]
3. Always place the nozzle plate down on a clean, dust-free surface with the outside of the nozzle plate facing down (as pictured below.)

**WARNING**

NEVER SET THE NOZZLE PLATE DOWN WITH THE INSIDE, OR BACKSIDE, FACING DOWNWARD!

4. Flush the inside of the print head with REA-JET cleaner, aiming the cleaner stream at the ink well area and the surfaces of the plungers. Afterwards, tilt the print head 90 degrees and hold it over a basin or pan. Flush the inside of the print head again (as pictured below) with a generous amount of REA-JET cleaner, starting with the ends of the plungers first and finishing with each side of the ink well. Look inside the ink well and make sure there are no particles or debris present.
5. Flush the backside of the nozzle plate with REA-JET cleaner; (as indicated below, cleaner should go through nozzles) use your fingertip to wipe away any debris that still adheres to the surface of the nozzle plate.

6. Use a nozzle cleaning pin and magnifying lens to clean the orifice or nozzle in each of the jewels found on the nozzle plate. Carefully insert the cleaning pin through each of nozzles (in direction of picture below) always starting from the outside surface of the nozzle plate. 

**WARNING**

*NEVER* push the cleaning pin through from the inside surface of the nozzle plate. This will prevent damage to the jewel or lodging debris in the nozzle. The inside surface is the side of the nozzle plate where the jewels form a series of bumps. The outside surface of the nozzle plate is the side that has the slotted channel.

7. Hold the nozzle plate over a basin to catch used cleaner. Hold a squirt bottle against a nozzle jewel on the front of the nozzle plate. Squirt cleaner through each nozzle checking whether stream is straight and solid. If the stream is bent or sputtering, clean the nozzle with a nozzle cleaning pin.
8. Do not assume a nozzle plate is clean because you can see light through the nozzles. The nozzles are currently made from sapphire jewels and light will still show through even if the nozzle itself is clogged.

9. Re-install the nozzle plate. The nozzle plate must go back on in a fixed position with dimple (pictured below) of the print head lining up with the recessed area of the nozzle plate. The nozzle plate O-ring must fit into the recessed groove and must not be pinched by the nozzle plate. If this O-ring is damaged or stretched, replace it.

10. When re-installing the nozzle plate, **DO NOT OVER TIGHTEN THE SCREWS!** The heads of the screws are made of stainless steel and are easily stripped.

11. If you still have dots missing, we recommend using an ultrasonic bath to clean the nozzle plate jewels. Put the nozzle plate in the ultrasonic bath inside a beaker or other container filled with standard cleaner. Turn on the ultrasonic bath and soak the nozzle plate for approximately 10 minutes to remove any hardened ink for the nozzle jewels. **CAUTION:** The jewels are easily damaged! Position the nozzle plate in the beaker so the jewels are facing upwards or away from any damaging surface.
INK SUPPLY SYSTEM AND PROLONGED DOWNTIME

If the printing system is going to be shut down for a prolonged period of time, such as for plant maintenance, retrofit work, etc., flush the ink supply and ink lines with cleaner and unplug the ink supply system from the electrical outlet.

3.4 Recommended Spare Parts and Accessories

<table>
<thead>
<tr>
<th>Recommended Spare Parts</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>050.070.042, Ink quick disconnect (metal)</td>
<td>2</td>
</tr>
<tr>
<td>050.330.001, Nozzle plate sealing ring for 7 dot print head</td>
<td>2</td>
</tr>
<tr>
<td>050.330.002, Nozzle plate sealing ring for 16 dot print head</td>
<td>2</td>
</tr>
<tr>
<td>91801A107, Fastening screw DPS M2x6</td>
<td>16</td>
</tr>
<tr>
<td>050.330.121, O-ring for ink input fitting assy.</td>
<td>4</td>
</tr>
<tr>
<td>050.881.100, Nozzle plate pin 80 micron (for 080 and 130 print heads)</td>
<td>5</td>
</tr>
<tr>
<td>050.881.110, Nozzle plate pin (for 180 micron and larger print heads)</td>
<td>2</td>
</tr>
<tr>
<td>PL4, Tubing</td>
<td>50 ft.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommended Accessories</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bransonic Ultrasonic Cleaner, Model 1510R-MTH (or similar)</td>
<td>1</td>
</tr>
<tr>
<td>Lighted Desktop Magnifier</td>
<td>1</td>
</tr>
</tbody>
</table>