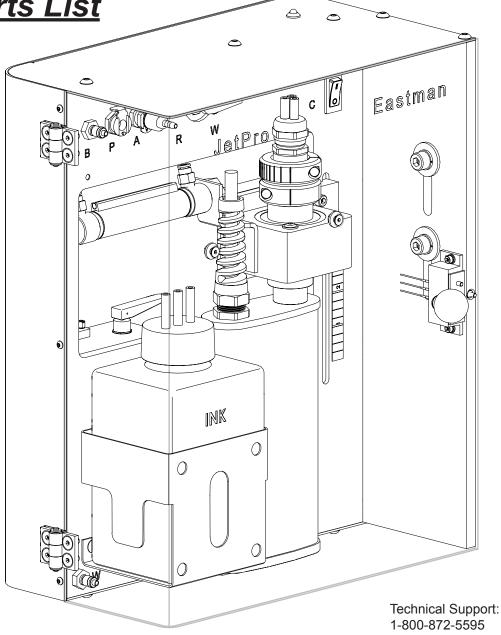
## THE EASTMAN®

# JetPro Printer

<u>Operation Manual & Illustrated Parts List</u>



Please read completely before attempting to operate your new **JetPro Printer**.

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## **IMPORTANT**

The purchaser must instruct all operators on the proper use of this equipment. All standard industrial safety measures and equipment should be provided to protect the operator. Operators must be cautioned that improper or careless use of this equipment may cause personal injury. If you do not have qualified operators to instruct new persons, contact your EASTMAN sales representative or EASTMAN factory direct.

Electrical connections and servicing to this equipment should be made by a qualified electrician who is familiar with applicable codes and regulations. Disconnect this equipment from electrical power source before proceeding with any disassembly for adjustment or repair.

## **Safety Information**

Throughout this manual, safety information is presented by the use of the terms WARNING, CAUTION, ELECTRI-CAL HAZARD, and NOTE. These terms have the follow-



A warning contains critical information regarding potential safety hazards that can occur during proper use or misuse of the machine. Failure to follow these procedures may result in serious personal injury to the user.

## **CAUTION**

A caution contains instructions for the use or maintenance of the machine. Failure to follow these procedures may result in damage to the machine.

## ♠ ELECTRICAL HAZARD

An electrical hazard calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond an Electrical Hazard.

## **General Safety Precautions**

## **N**WARNING

- This machine is equipped with very sharp and dangerous tools. Keep hands, arms, and hair away from the cutting area and drive system at all times. Safety gloves, glasses, and appropriate clothing may prevent serious personal injuries.
- Disconnect the power supply to the machine when it is not in use or during routine maintenance, including cleaning and lubrication.
- The purchaser must instruct all operators in the proper use of the machine according to the instructions in this manual. This training must include instruction on the potential safety hazards arising from the use or misuse of the machine. In addition to such training, the purchaser should provide written work instructions as necessary to ensure correct use of the machine for specific cutting and spreading applications.

## Safety and Indemnification

During the life of the machine, the purchaser agrees to provide to all machine users (including its own employees and independent contractors) all relevant safety information, including warning labels and instruction manuals. The purchaser also agrees to maintain the safety features and working condition of the machine, and to adequately train all users in the safe use and maintenance of the machine. The purchaser agrees to defend, protect, indemnify, and hold Eastman Machine Company and its subsidiaries harmless from and against all claims, losses, expenses, damages, and liabilities to the extent that they have been caused by the purchaser's failure to comply with the terms and instructions of this manual.

- Do not modify this machine or disable safety features. Unauthorized modification may result in serious personal injuries to the user. Electrical connections to this machine must be made by a qualified electrician familiar with applicable codes and regulations.
- Safety labels must be kept clean and legible at all times. Call the Eastman Machine factory to order replacement labels.
- Spray materials may be harmful if inhaled or allowed to come into contact with the skin or eyes.
   Consult the product label and Material Safety Data Sheet supplied with the spray material. Follow all safety precautions. Use in Well Ventilated Area to remove fumes, dust or over spray.

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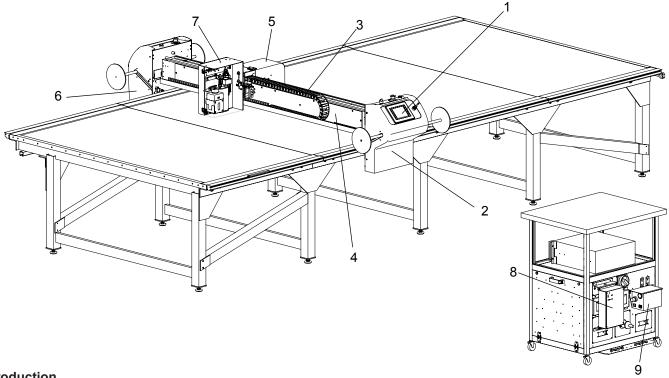
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Form E-562 3

# Familiarization Overall Gantry Layout with JetPro

## JetPro Mounting, Referenced Layout.

- 1 UIT(User Interface Terminal)
- 2 Operator Side Cover Assembly
- 3 Main Gantry Tube Assembly
- 4 E-Chain Cover
- 5 Y-Car & Tool Head Cover
- 6 Non-Operator Side Cover Assembly
- 7 JetPro System
- 8 Ink Jet Printer Controller
- 9 High Pressure Module



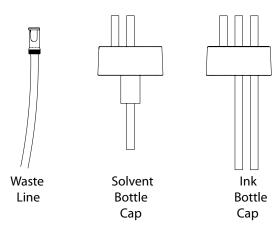
### Introduction

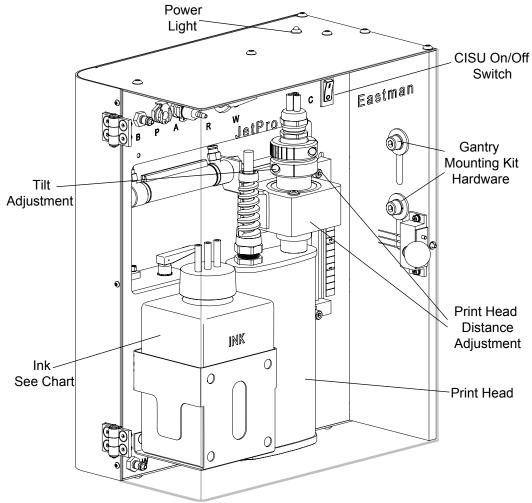
The Eastman JetPro system, as shown above, conventionally mounts directly to the back of the Y-Car with the help of a simple bracket mounting kit to maintain optimal functionality of your tool heads. With the mounting kit in place, (see pg. 12), the JetPro is supported by four bolts fastened to the back of the Y-Car for easy connection and removal of the system.

Apart from a detailed parts description of the machine, this manual will also provide instructions for using the JetPro from a software stand point. The system runs on Eastman's branded cutting software, EastmanPRO.

The JetPro system is a Drop-on-Demand (DOD) type printer which converts TEXT entities from a drawing file and prints them with the JetPro head. The result is very fast throughput compared to traditional pen or Airbrush marking.

## JetPro Familiarization





Color	Part no.	Description
Solvent	67-27191-SOL L	Solvent, Jetpro, 1 Liter
White	67-27191-51MP L	White, Jetpro, 1 Liter
Black	67-27191-01MP L	Black, Jetpro, 1 Liter
Blue	67-27191-03MP L	Blue, Jetpro, 1 Liter
Yellow	67-27191-59MP L	Yellow, Jetpro, 1 Liter
Green	67-27191-31MP L	Green, Jetpro, 1 Liter

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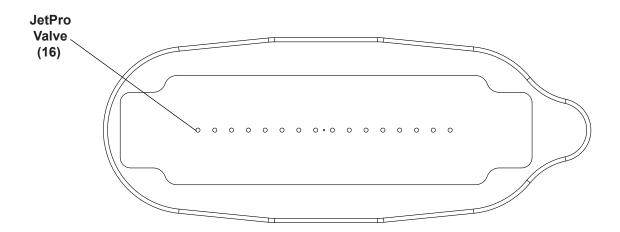
### About the JetPro Head

Pictured to the right is a bottom view of the Inkjet head. The Inkjet Valves are aligned horizontally in the center of the head. There are 16 individual valves, separated by 4mm, used to generate text output. A preset number of jets are required by the head to produce text, and results in a fixed text height.

Typical Inkjet printing can be "dotty" and as illustrated by the table above, has a limited text size selection.

To achieve other text sizes and more refined text, tilt must be used. Tilting essentially reduces the 4mm dot spacing and results in higher resolution text. The side effect is the maximum achievable text height is reduced.

The hardware and software design allows for tilt reductions from 100% (full vertical) down to 10%.



Number of Jets Selected	Resulting Text Height(cm)
5	2.0
7	2.8
9	3.6
14	5.6
16	6.4

#### **OPERATION**

### Ink Replacement

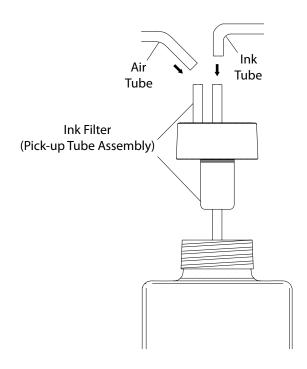
- 1)Turn off air pump power switch. (back of diagnostic cabinet)
- Turn off printer assembly power switch. (open clear door, located upper right corner)
- 3)Place protective covering over table surface.
- 4)Release ink bottle air pressure by slowly removing the ink bottle cap.
- 5)Shake new ink bottle vigorously for minimum 3 of minutes before initial installation into machine.
- 6)Replace empty ink bottle with new ink bottle. Tighten ink bottle cap.
- 7)Turn on printer power switch
- 8)Turn on air pump power switch. **Caution**: never exceed 15 psi pressure.

## To Purge Solvent/Ink from System

- Connect "W" waste line to "W" connection on printer assembly. (Located lower left corner)
- 2)Place "W" waste line in empty container to capture waste fluid.
- 3)Switch "R" "W" handle to "W" position. (located top center of printer assembly)
- 4)Press black waste Lever down to drain fluid. (located at center of printer assembly) Notice waste bottle will fill with fluid.
- 5)Return "R" "W" handle to "R" position.

## Ink Filter Replacement (Pick-up Tube Assembly)

- 1)Make sure the print head is not in operation.
- 2)Switch the ink supply off.
- 3)Relieve the pressure in the bottle by removing the air tube from the nipple.
- 4)Disconnect the ink or cleaner fluid tube. **NOTE**: Ink or cleaner fluid may drip.
- 5)Replace the filter with a new one. **NOTE**: If old filter is turned upside down, fluid can spill out.
- 6)Connect new filter to the ink or cleaner fluid tube.
- 7)Connect air tube to new filter.

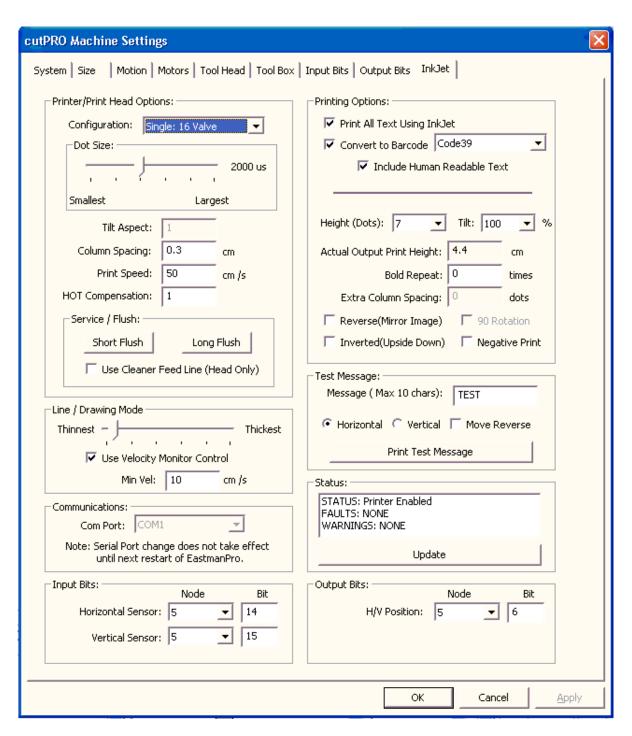


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## **Inkjet Setup and Options**

When the JetPro option is checked on Eastman-PRO Machine Settings->System Tab, it will initialize communications with the JetPro and display an additional JetPro tab on the Machine Settings Page. This tab contains all of the available JetPro options.



## **Printer/Print Head Options Group**

## Configuration

The print head type connected to the system is selected from this drop list box.

#### **Dot Size**

This setting will change the resulting dot size from the Inkjet Print head. This setting will vary depending on ink type and material. It instructs the system how long to keep each individual valve when printing. A good starting point is 1000.

### Tilt Aspect

Tilt Aspect is only applicable when the print height is not 100%.

## **Column Spacing**

Set the distance between vertical print columns. A smaller number will make the text characters narrower and result in an overall shorter message length. This is ignored when printing with tilt.

## **Print Speed**

Print Speed setting is the machine movement speed when printing. Range is 2.5 to 100cm/s.

### **HOT Compensation (Head Open Time)**

During periods of non-printing it is possible for the ink in the nozzles to start to dry. This dried ink can affect the quality of the first printout after an inactive period. HOT compensation provides a method to eliminate this issue. This is accomplished by holding each valve open proportionally longer for the first dot column printed. This allows the ink in the nozzle to be re-wetted and form proper drops. The higher the number, the longer each valve is held open for the first column printed. Choose a value that provides the proper correction for your normal non-printing interval.

### Service/Flush

A short flush will purge the system 1 second, a long flush for 3 seconds. If the Use Cleaner Feed Line (Head Only) box is checked, the Head only will be purged through the auxiliary line on the print head.

## **CAUTION**

All connected print heads will be activated during a flush cycle. Be sure to have something to collect all fluids from each print head during the flush cycle.

## **Line/ Drawing Mode Group**

#### Line Thickness Slider

Adjust the slider control to change the resulting thickness of the lines.

### **Velocity Monitor Control**

When using the Inkjet head as a drawing tool, it is common for small pools of ink to form at the start points and end points of the lines. Checking this box will turn off the printing when the machine velocity drops below the Minimum velocity setting. The velocity monitor control setting is active for both manual and automatic modes.

## **Minimum Velocity**

This is the minimum velocity setting used in conjunction with the Velocity Monitor above.

## **Communications Group**

Selects the serial port EastmanPRO uses to communicate with the JetPro Controller.

## **Input Bits Group**

This section is used to assign the Synqnet inputs nodes and bits used for the horizontal and vertical position input sensors.

## **Test Message Group**

Allows user to perform a test. The maximum characters for the test is 10. Can be performed horizontally, vertically and in reverse.

## **Status Group**

Aids in trouble shooting problems with the JetPro head. Pressing the Status button will request a new status report from the controller.

## **Output Bits Group**

This section is used to assign the Synqnet output node and bit used for the positioning output solenoid.

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Form E-562 9

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## **Printing Options Group**

## Print all text Using Inkjet

When this option is checked, all TEXT entities will be printed with the JetPro. Otherwise, only TEXT entities on Layer "InkJetLayer" will be printed with the JetPro.

### **Combine All Panel Text**

This option is reserved for the future.

#### **Convert to Barcode**

When this option is checked, all Inkjet entities will be printed with a representative barcode.

#### **Include Human Readable Text**

When this option is checked, Human readable text(HRI) will be included with the barcode. Note that HRI takes up 8 dots of the print head.

## **Text Size (Dots)**

This drop list specifies the resulting output text height in dots.

## Tilt %

Specifies the physical tilt of the head to reduce height or increase resolution. It is very important that this setting matches the physical setting of the head or unexpected results will occur, such as skewed output.

## **Actual Print Height**

This read only edit box displays the resulting output text height. It is a combination of the Text size and Tilt.

## **Bold Repeat**

Bold repeat will add and additional dot column for each character column. The range is 0-9.

## **Extra Column Spacing**

Specifies how many extra columns should be added between each text character. The range is 0-7.

## Reverse (Mirror Image)

Reverse Print direction

### **Inverted (Upside Down)**

Inverts Printing

## 90 Rotation

Characters are rotated 90 degrees clockwise

## **Negative Print**

Prints text using negative format

## **Available Text Options**

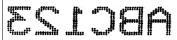
Normal Print

**Bold 1 Print** 

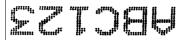


Inverse Print

Reverse Print



Invert and Reverse



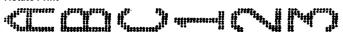
Negative Print

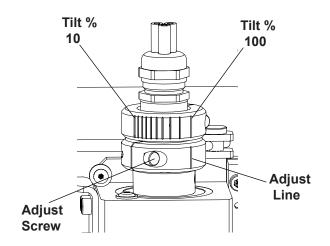


Negative Print with Leading Space



Rotate Print





## **SERVICE AND MAINTENANCE**

## Daily:

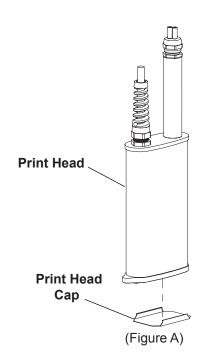
- -Always keep the print head clean.
- -Routinely clean the nozzles with a brush and cleaner fluid.
- -Use a lint free cloth to dry or let the print head dry by itself.
- -Replace Print Head Cap after usage. (Figure A)

## Weekly:

- -Run long flush cycle.
- -Check ink level.

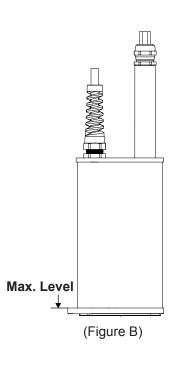
## Bi-Monthly:

-Check entire machine for loose nuts and bolts.



## **TROUBLE SHOOTING**

Problem	Possible Cause	Solution
No printout or poor printout quality	1)Tool On/Off Switch in Off Position.	Turn Switch On.
	2)Line pressure incorrect.	Adjust line pressure.
	3)Printhead not receiving	Check all tubing.
	.ink.	Replace ink filter.(See Page 7)
	4)Blocked ink filter.	Soak Print Head in Boiling Water
	5)Clogged valves.	NOTE: Soaking must not
		exceed max level on print head. (Figure B)
Poor Print Quality	1)Distance between target.	Move print head closer
	and print head is too far.	to target.
	2)Ink bottle filter clogged.	Replace ink filter
		(See Page 7)
	3)Attribute settings such as	Adjust print attribute
	dot size and print width are Incorrect.	settings.
	4) Low ink pressure.	Adjust pressure at the
		ink supply unit.
Printout Contains	1)Print head valves are	Perform flush cycle,
Missing Dots	blocked.	clean print head valves.
Printout	1)Print head is touching the	(See Daily Maintenance)
is smeared	print target.	Adjust Print head distance
		position.
		(See Page 5)
Printout is slanted	1)Print head tilt % does not	Adjust Print head angle
	correspond with	or print head setting.
	the print Tilt Aspect setting.	(See Page 9 and 10)

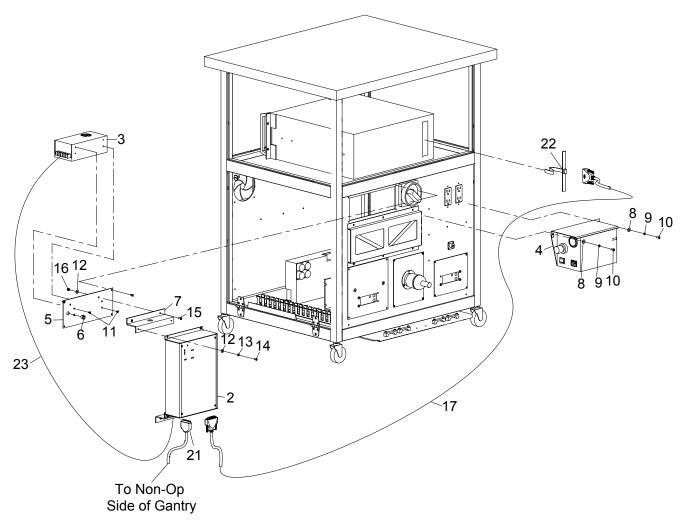


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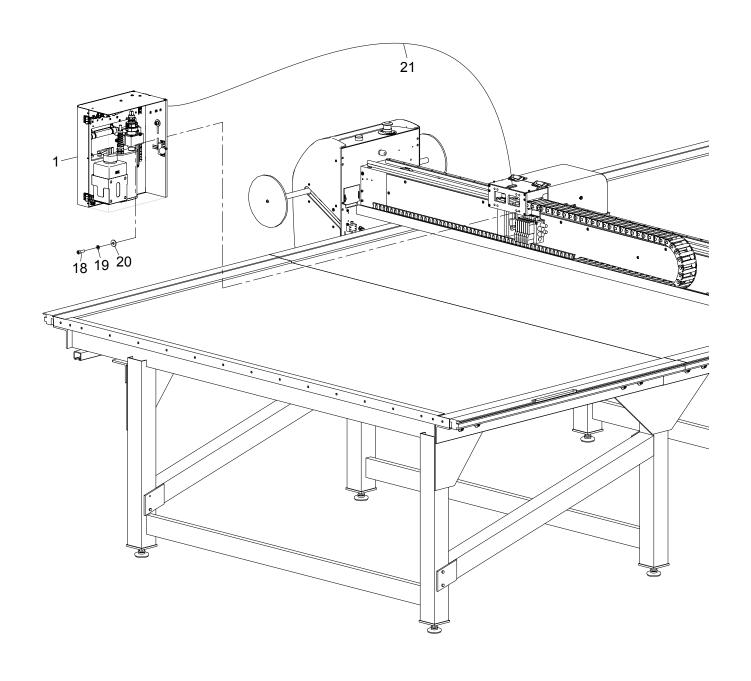
Form E-562 11

# JetPro, InkJet Printer Assembly 68-26658



Item	Part No.	Description	Qty.
1	68-26660	Jetpro, Print Head Assembly	1
2	31-27112-1	Controller, Ink Jet Printer	1
3	31-27112-2	Power Supply, 24Vdc, 10Am	p 1
4	31-27112-3	High Pressure Module, 110V	′ 1
5	54-26875-8	Panel, Jet Printer, Diag.	1
6	21C14-19	Bushing, Strain Relief	1
7	54-28617	Bracket, Controller Mount	2
8	410-010	Washer, Flt.#10	2
9	402-010	Washer, Lock #10	2
10	333-102-8	Scrw,Skt.Btn.Hd.#10-32X1/2	2
11	333-M4-6	Scrw,Skt.Btn.Hd. M47 X 6	4

Item	Part No.	Description	Qty.
12	410-080	Washer, Flt.#8	8
13	402-080	Washer, Lock #8	4
14	333-93-6	Screw, Skt. Btn. Hd. #8-32X3/8	4
15	333-93-8	Screw, Skt. Btn. Hd. #8-32X1/2	4
16	211-93	Nut, Elastic Hex Light #8-32	4
17	31-26371-2.5	DB9 M/F Interface Cable	1
18	335-M8-25	Screw, Skt. Hd. M8-1.25 X 25	4
19	402-M8	Washer, Lock M8	4
20	410-M8	Washer, Flt M8	4
21	31-27113-CL	Cable, X-Axis Inkjet Controlle	er2
22	11-00052	Add-A-Port Cable W/Bracket	: 1
23	31-27126	24VDC Inkiet Power Cable	1



Item numbers are for reference only.
Please Specify PART NUMBER when ordering replacement parts.

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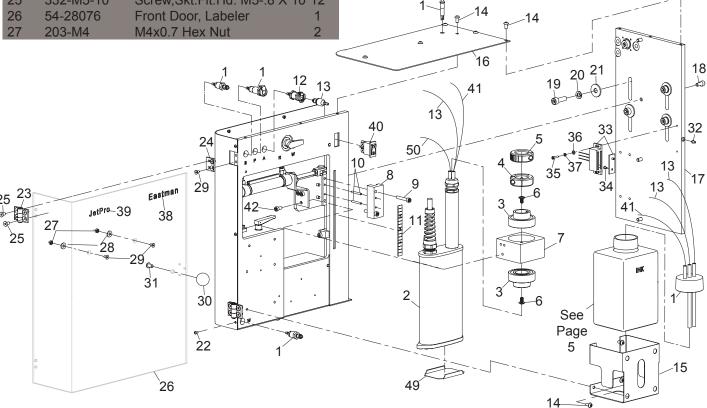
# JetPro, Print Head Assembly, Front

68-26660

Item	Part No.	Description	Qty.
1	31-27112-4	Cisu Assembly Kit, Ink Jet Pr	1
2	31-27112-10	Print Head, 8000/16V, Inkjet	1
3	9026-0006	Flg id.25mm,od.52mm,W.15	2
4	9060-031-1	Collar, 25mm id, Modified	1
5	9060-031-2	Collar, Indexing Marked	1
6	67-27041	Flanged Bshcs M5X10X0.8	2
7	54-28624	Housing, Bearing Ink Jet	1
8	54-28623	Lock Bar, Ink Jet	1
9	335-M5-30	Screw,Skt.Hd. M58 X 30	2
10	17C1-21	Pin Dowel .125 X 1" Long	2
11	9124-141	Decal, Counter Weight Adjust	1
12	100-19-53-1	Quick Connect,1/8"id	1
13	100-19-54-1	Quick Connect,1/8"id Tube	2
14	333-M5-10	Screw, Skt. Btn. Hd. M58X10	19
15	54-28625	Container Mount, Ink Jet	1
16	54-28073-10	Top Cover, Ink Jet	1
17	54-28072	Side Plate, Labeler	1
18	335-M6-12	Screw, Skt. Hd. M6-1 X 12	4
19	335-M8-25	Screw, Skt. Hd. M8-1.25 X 25	4
20	402-M8	Washer, Lock M8	4
21	410-M8	Washer, Flt M8	4
22	333-M3-6	Screw, Skt. Btn. Hd. M35 X 6	1
23	67-26929	Aluminum Hinges-Short Type	2
24	54-28077	Hinge Mount, Labeler	2
25	332-M5-10	Screw, Skt. Flt. Hd. M58 X 10	12
26	54-28076	Front Door, Labeler	1
27	203-M4	M4x0.7 Hex Nut	2

Item	Part No.	Description	Qty.
28	410-M4	Washer, Flt M4	2
29	332-M4-8	Screw, Skt. Flt. Hd. M47 X 8	6
30	67-26930	Ball Knob-Resin	1
31	333-M6-10	Screw, Skt. Btn. Hd. M6-1 X 10	0 1
32	335-M3-5	Screw,Skt.Hd. M35 X 5	1
33	67-26928	Magnet Catches W/Sensor	1
34	332-M3-6	Screw, Skt. Flt. Hd. M35 X 6	2
35	335-M3-12	Screw,Skt.Hd. M35 X 12	2
36	401-050	Flat Washer, Narrow, #5	2
37	402-050	Washer, Lock #5	2
38	91-26002	Decal, Small Worldwide	1
39	91-26104	Decal, Jetpro	2
40	580C1-198	Switch 1Ph	1
41	100-19-54-2	Quick Connect, 1/8"ID	2
42	335-M5-10	Screw,Skt.Hd. M58 X 10	3
43*	11-963	Tie, Cable Small	10
45*	67-26348	Tube Clamp	4
46*	100-10-6	1/4 OD Poly Tubing	3FT
47*	100-19-55	4mm x M7 Valve Fitting	2
48*	11-987	Tie Cable Mounts	4
49		Print Head Cap	1
50	100-19-54-3	Quick Connect, 1/8"ID	1
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\*Not Shown

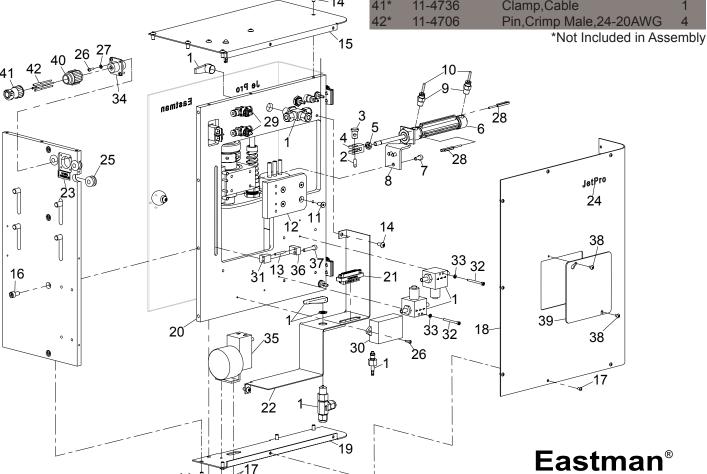


# JetPro, Print Head Assembly, Back

68-	26660		
Item	Part No.	Description	Qty.
1	31-27112-4	Cisu Assembly Kit, Ink Jet Pr	
2	532-6-24	Pin,Dowel 3/16 X 1&1/2	1
3	54-28619	Bushing, Connecting Rod	1
4	27-26031-1	1/4-28 Rod Clevis, Special	1
5	206-35	Nut,Jam Hex Nut 1/4-28	1
6	67-26092-7	Air Cyl .75 X 2.25, Side Port	1
7	335-M5-10	Screw,Skt.Hd. M58 X 10	3
8	54-28621	Cylinder Mount. Ink Jet Print	1
9	100-11-17	Male Straight,1/8Npt	2
10	27-02996-2	Tubing,Air,5/32"	4
_11	332-M5-12	Screw, Skt. Flt. Hd. M58 X 12	4
12	54-28622	Slide Plate, Ink Jet Printer	1
13	17C1-21	Pin Dowel .125 X 1" Long	1
14	333-M5-10	Screw, Skt. Btn. Hd. M58X10	19
15	54-28073-10	Top Cover, Ink Jet	1
16	335-M6-12	Screw,Skt.Hd. M6-1 X 12	4
17	333-M3-6	Screw, Skt. Btn. Hd. M35 X 6	1
18	54-28075	Back Cover, Labeler	1
19	54-28074-10	Bottom Cover, Ink Jet	11
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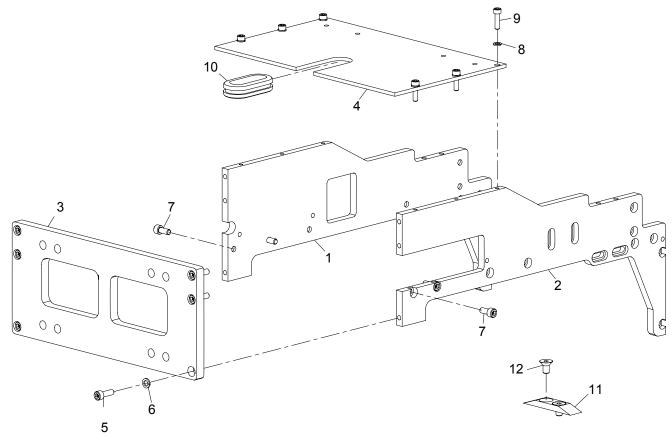
Item	Part No.	Description	Qty.
20	54-28071-10	Back Plate, Ink Jet	1
21	31-27134-1	Db25 M/M Connector	1
22	54-28626	Cover, Internal, Inkjet	1
23	91-26096	Decal, Power In, 24 vdc	1
24	91-26104	Decal, Jetpro	2
25	9015-0003	Grommet, Rubber	3
26	333-M3-10	Screw, Skt. Btn. Hd. M35X10	6
27	402-M3	Washer, Lock M3	6
28	31-26509	Sensor	2
29	100-18-38	Flow Valve, In-Line, 5/32Tube	2
30	31-27140-3	Step Down Converter	1
31	54-28734	Stop Side Plate, InkJet	1
32	335-M5-35	Screw, Skt. Hd. M58 X 35	2
33	402-M5	Washer, Lock M5	2
34	11-4737	Connector, Square Flange	1
35	31-27112-6	CISU Liquid Pump	1
36	54-28733	Stop Lock Plate, InkJet	1
37	335-M5-25	Screw, Skt. Hd. M58 X 25	1
38	333-M4-6	Screw, Skt. Btn. Hd. M47 X 6	
39	67-27232	Access Cover Plate	1
40*	11-4747	Connector, 4P, Circular Plug	1
41*	11-4736	Clamp,Cable	1
42*	11-4706	Pin,Crimp Male,24-20AWG	4
		*Not Included in Ass	embly

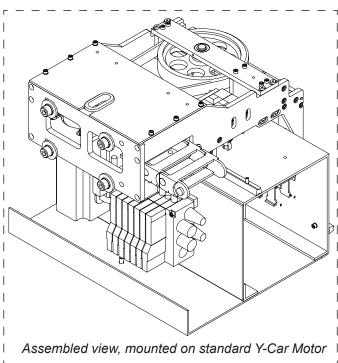
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Form E-562 15

# JetPro Gantry Y-Car Mounting Kit 68-26489

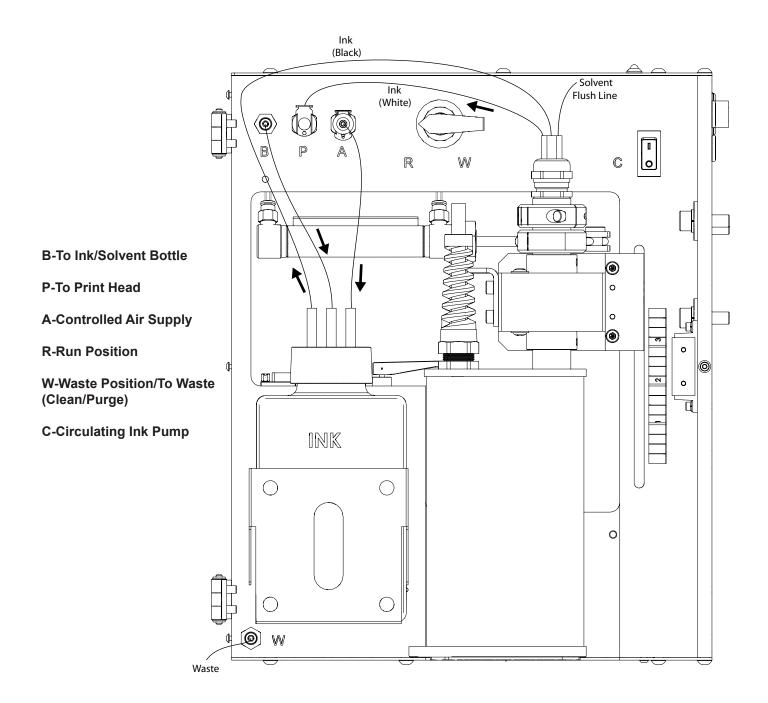




ITEM	PART NO.	DESCRIPTION	QTY.
1	54-28115	Y-Car Side Plate (RHS)	1
2	54-28116	Y-Car Side Plate (LHS)	1
3	54-28117	Mounting Plate, Labeler	1
4	54-28118	Rear Cover Toolhead, Labele	er 1
5	335-93-8	Scr. Socket. Hd. #8-32x1/2	6
6	402-080	Washer, Lock #8	6
7	335-93-6	Scr. Socket. Hd. #8-32x3/8	4
8	402-060	Washer, Lock #6	6
9	335-86-8	Scr. Socket Hd. #6-32x12	6
10	9015-0010	Grommet, Rubber (1.5"Dia.)	1
11	54-26807-1	Limit Cam, Long, 4" Labeler	3
12	332-102-6	Scr,Skt.Flt.Hd.#10-32 X 3/8	6

Item numbers are for reference only. Please Specify PART NUMBER when ordering replacement parts.

## **Tubing Pictorial, Front**

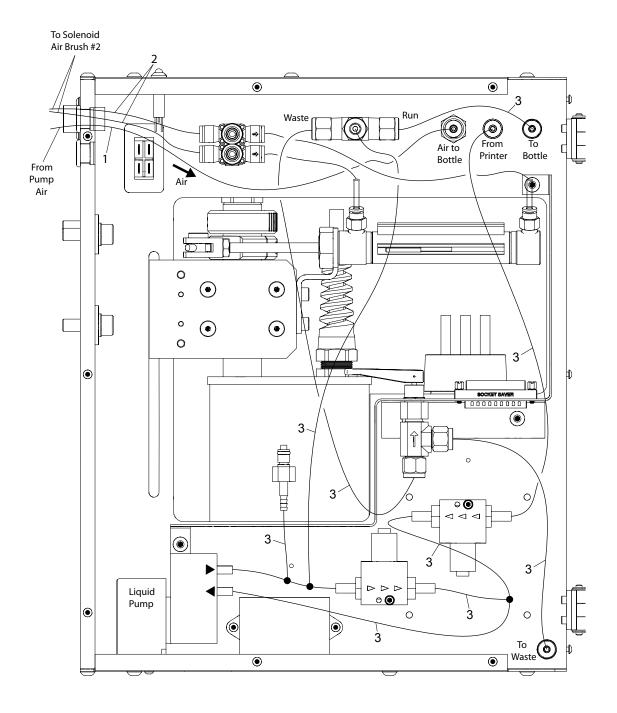


-Ink Supply Line

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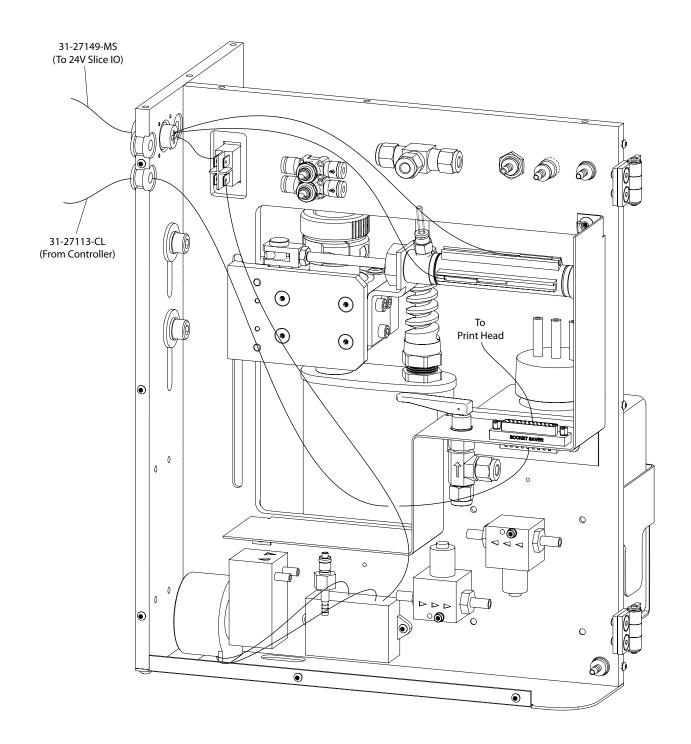
# Tubing Pictorial, Back



ITEM	PART NO.	DESCRIPTION	QTY.
1	100-10-6	1/4" Air Tubing	A/R
2	27-02996-2	5/32" Air Tubing	A/R
3		Ink Supply Line	A/R

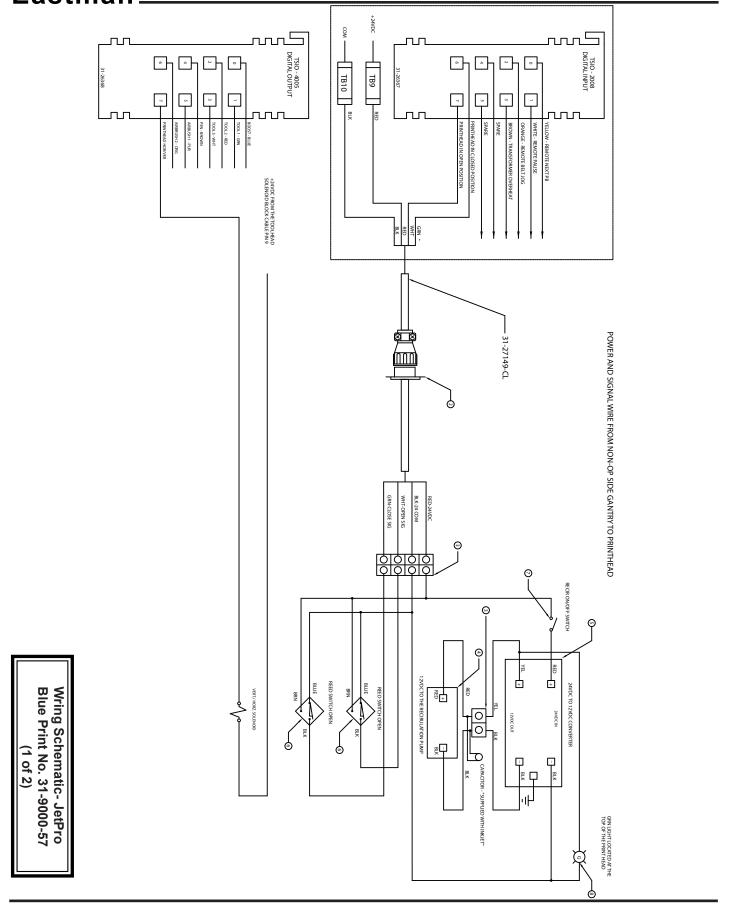
A/R-As Required

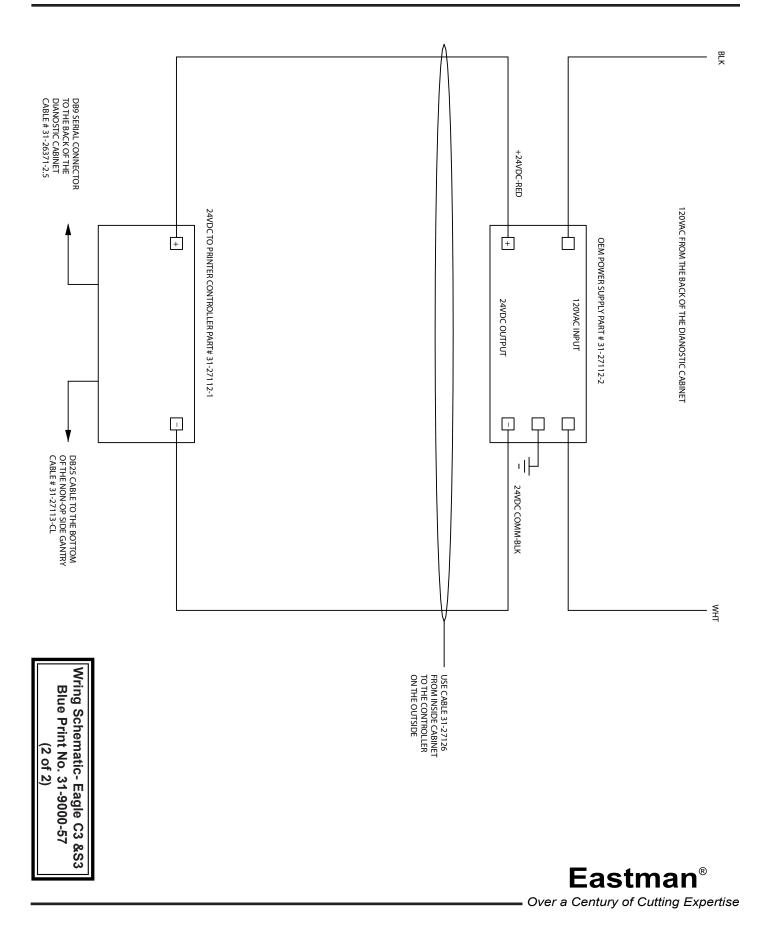
# Wiring Pictorial



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	Not	es	_

Service Record				
Machine Serial No.: Machine Voltage: Date of Purchase:				
Date	Type of Service Performed			

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## TECHNICAL DATA Eastman® JetPro

## JetPro Printer System

Maximum Print Speed	39.37 in./s (100cm/s)
Print Height	Min. 1/4 in.(.635 cm)
	Max. 2 1/2 in.(6.35 cm)
Operating Pressure; Pigment "MEK"	14.7 PSI (1.0 Bar)
Operating Pressure; Non-Pigment "MEK"	10 PSI (0.7 Bar)
Print Head	16-Valve Head
CISU Filter Kit	31-27112-4

Limited Warranty. Eastman warrants to the buyer that the Equipment shall be free from defects in materials or workmanship for a period of 180 days commencing on the date of invoice. Any goods or parts claimed by the buyer to be defective must be returned to Eastman, freight charges prepaid, within the 180-day warranty period. If Eastman determines that the goods or parts are defective in materials or workmanship, Eastman's sole obligation under this warranty shall be, at Eastman's sole option, to repair or replace the defective goods or parts or to provide the buyer a credit equal to the portion of the purchase price allocable to the defective goods or parts. This warranty shall not apply if defects are caused by buyer, or if other than genuine Eastman parts are used in the machine. THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THIS PURCHASE. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability. Eastman's liability to the buyer, and the buyer's remedies from Eastman, whether in contract, negligence, tort, under any warranty or otherwise, shall be limited to the remedies provided in the foregoing Limited Warranty. In no event shall Eastman have any responsibility or liability to the buyer for (a) any special, indirect, incidental, or consequential damages, including, but not limited to, loss of use, revenue, or profit, even if Eastman has been advised of the possibility of such damages, or (b) any claim against the buyer by any third party. The price stated for the product sold is a consideration for limiting Eastman's liability.

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