

POWER PINNER 50 PP 50 MULTI-HEAD WELDER OPERATOR'S MANUAL



Revise: November 6, 2019

Gripnail Corporation

97 Dexter Road East Providence, Rhode Island 02914-2045 Tel: (401) 216-7900 Fax: (401) 438-8520 E-mail: <u>gripnail@gripnail.com</u> Website: www.gripnail.com

TABLE OF CONTENTS

INTRODUCTION	3
OPERATOR SAFETY	3
SYSTEM REQUIREMENTS	4
INSTALLATION INSTRUCTIONS.	4-7
MAINTENANCE	7
SYSTEM OPERATIONS	8
COMPONENT IDENTIFICATION	
WELD SETTING ADJUSTMENT	9
OPERATOR PANEL	10
DRIVE HEAD AND LOAD CYLINDER ASSEMBLY	11-12
UPPER AND LOWER TRACK ASSEMBLIES	13
LINEAR DRIVE ASSEMBLY	14
CONTROL ENCLOSURE	15
PRESSURE REGULATORS	16
ENCODER/PART PRESENT LIMIT SWITCH	17
TROUBLE SHOOTING	
ELECTRICAL SCHEMMATIC	20-24
PNEUMATIC SCHEMATIC	25
REPLACEMENT PARTS LIST	
SERVICE POLICY	
WARRENTY	29

INTRODUCTION

The Gripnail PP-50 Power Pinner Multi-Head is designed to require minimum maintenance. The Multi-Head may be equipped with 5 or 6 Heads. The PP-50 is PLC controlled , which simplifies trouble shooting. The PP-50 requires 1/3 HP parasitic drive from the coil line. Two Clutch Assemblies drive the Carriage to match duct speed. The Weld Pin Tracks are split, allowing a supply of Weld Pins to move with the Carriage during the weld process. The Carriage is not required to travel back to the Home position after every weld. This reduces wear on the Carriage support/drive systems. All hose connections between valves and cylinders use push-fit type fittings. These fittings save maintenance time if lubrication or replacement is required on any item.

OPERATOR SAFETY

Proper safety precautions must be observed with any piece of equipment. This section contains several guidelines designed to ensure operator safety. Follow these directions at all times.

REMEMBER—SAFETY FIRST!

FIVE SAFETY RULES

- 1. DO NOT OPERATE this machine without all covers and guards in place.
- DISCONNECT all electrical power and compressed air sources before servicing. Follow OSHA standard 1910.147 "CONTROL of HAZARDOUS ENERGY (LOCKOUT/ TAGOUT)"
- 3. INSTALLATION and TROUBLESHOOTING should be done by qualified personnel only.
- 4. THE OPERATOR should always wear the personal protective equipment as outlined by his/ her employer, such as eye and ear protection, to avoid injury.
- 5. MAINTAIN the equipment in good operating condition.

SYSTEM REQUIREMENTS

ELECTRICAL: 190, 208, 230 VAC/60 HZ/3Ø 93, 85, 77 AMPS (5 Head)* 110, 100, 91 AMPS (6 Head) * See page 6

PNEUMATIC: 40-55 PSI @ 1 SCFM per Head

INSTALLATION INSTRUCTIONS

LIFTING & MOVING:

Care must be taken when removing the machine from the skid. The machine weighs approximately 2000 pounds, and the heavy Transformers are located under the Top Cover, toward the in-feed side of the machine. The machine can be lifted by a suitable fork truck. Place the forks over the cross brace on the outer legs, and under the cross brace toward the center of the machine. The bottom of the center cross braces are higher than the top of the outer cross braces.



Lift Multi-Head from this side of the machine ONLY. Inner Cross Brace Outer Cross Brace

MECHANICAL:

Set the machine in the coil line at its approximate position. Check for proper alignment position of the Heads, Belts and Drive in relation to the coil line and duct beading and other features. Align the drive sprocket on the Insulator to the Sprocket on the Multi-Head. Place the Feeder Bowls on top of the Multi-Head inserting the Feeder Bowls feet into the Feeder Bowl Keepers. Each Assembly is marked in association with its Head. Mount the Operator Enclosure on the operators side of the machine, towards the in feed, with the hardware provided. Wait to secure the machine in its final position until Gripnail Service Personal verify alignment.



Mechanical Drive to Coil Line

Operator Enclosure

ELECTRICAL:

This machine is a multi-head welder and is supplied with dual-element, time delay main fuses. If a transformer is required for a 5 Head welder, it is recommended to be at least 75kVA, depending on transformer location and local electrical codes, with a 208/230 volt 'wye" secondary. Select the size and style branch circuit protection to accommodate a potential 200kA inrush.

The incoming power connections must be installed, by customer, in accordance with all applicable codes. The incoming 3 phase, with ground, wiring is connected to the Disconnect Switch, located in the Main Electrical Enclosure. Remove the cover on the top of the Disconnect Switch to expose the Wire Terminals.

The Part Present Switch wires connect to the coil line controller. A dry contact signal from the coil line controller is required to signal the Multi-Head to place a pin. *The Encoder and Cable is supplied by others and mounts to a Gripnail supplied Bracket and Count Wheel.* Wire each Feeder Bowl to the terminal strip under the Top Cover. Check the voltage connections on the taps for the Weld Transformers, located under the Top Cover. The connections are marked and should match the incoming voltage.

Weld Transformer Taps Feeder Bowl Electrical Terminals

Disconnect Switch Cover

Part Present Terminals Wires Numbered 9 & 10

Dry Fire Signal Wire Terminals Wires Numbered 2 & 3

PNEUMATIC:

A pneumatic line must be attached to the inlet of the Main Regulator. The Air Line size must be sufficient to supply enough air to the machine.

1/2" NPT Main Regulator Inlet Connection

MAINTENANCE

DAILY:

- 1. DRAIN water from filter/regulator assembly.
- 2. REMOVE accumulated fiberglass and adhesive buildup from moving machine components.

MONTHLY:

- 1. CHECK and TIGHTEN Weld Bus Bar and Cable connections.
- 2. CHECK for worn Weld Cables.
- 3. LUBRICATE moving components with a dry film lubricant.

ANNUALLY:

- 1. INSPECT Clutch for wear.
- 2. Contact Gripnail Corp for service by factory technician.

SYSTEM OPERATION

(Refer to the following pages for Component Identification and Location)

Load the Feeder Bowls with the appropriate Gripnail Weld Pins. Adjust each Feeder Bowl Feed Control to fill the Tracks. Manually place a Weld Pin on each Upper Weld Tip as required. Select and Enable the Heads to be used to secure the insulation to the duct. Once the initial settings (Weld, Feeder Speed, pins loaded in the Feeder Bowls and Heads enabled) are determined, and pin placement is programmed into the Coil Line Control, the Multi-Head is ready. A piece of duct feeds from the Coil Line to the Multi-Head. The leading edge of the duct triggers the Part Present Switch, enabling the Encoder. The Encoder provides count information to the Coil Line Control to signal the Multi-Head Control (Input 1) to place a pin. When the Input 1 closes, the Clutch (Output 7) engages, the Carriage Return Valve (Output 6) turns off, and the enabled Drive Valves turn on (Outputs 2 & 3). The Carriage travel speed matches the duct speed. The weld pins pierce the insulation and contact the sheet metal. The Weld Relays (Output 1) turns on for a time based on the Weld Setting (Inputs 2-6). When this time elapses, the Weld Relays turn off, then the Drive Valves turn off. When the Drive Cylinders have retracted, the enabled Load Valves (Outputs 4 & 5) turn on, loading the next pin from the Lower Track. The Load Valves turn off, the clutches disengage, the Carriage Return Valve turns on, and the Carriage moves back toward its home position waiting for the next signal to place a pin.

Turn off the main power to the PP-50 when the coil line is not in use.

WELD SETTING ADJUSTMENTS

1. Set the Weld Setting switch to correspond to the pin being fastened. (Note: These setting are reference starting points only.)

PIN	SETTING
57	1
107	1-2
127	2
137	2-3
157	3
207	4

2. Make several test welds to insure uniform and proper welds.

OPERATOR PANEL

- 1. Adjust each Feeder Speed Control to supply an adequate amount of pins to each Track. Once the Track is full, a Sensor will stop the pins from continuing to fill. The sensor will allow more pins to fill as the Track empties.
- 2. Each Head is enabled by the Head Enable/Disable Switch. With the Switch in the Up position, the Head is Enabled. With the Switch in the Down position, the Head is Disabled.

Head Enable/Disable Switch

DRIVE HEAD AND LOAD CYLINDER ASSEMBLY (View From Exit Side)

Drive Valve P/N 44240

DRIVE HEAD AND LOAD CYLINDER ASSEMBLY

(View From Entrance Side)

UPPER AND LOWER TRACK ASSEMBLIES

Track Sensor P/N 51262

> Adjust height, by moving the Cylinder in the Bracket, up or down to lift the first weld pin in the Lower Track up into the Upper Track when the Cylinder extends. Adjust the Track Gate in or out by loosening the Set Screw on top of the Gate. The lead edge of the Gate should barely (approx 1/16") intrudes on the open part of the Track. In the position shown, the Weld Pin can not pass by the Gate.

Cylinder P/N 44295

Valve & Actuator P/N's 44271 & 44272

Track Gate P/N 31419

Adjust the Load Cylinder up and down so the Transfer Block nests in the Lower Track. Adjust the Load Cylinder in and out so the lead edge barely (approx 1/16") intrudes on the open part of the Track.

Transfer Block P/N 31491

LINEAR DRIVE ASSEMBLY

Retract Valve (Not Shown) P/N 44240

> Retract Cylinder P/N 44273

CONTROL ENCLOSURE

LINE FILTER P/N 51420

FEEDER SPEED CONTROL P/N 51419-2

PRESSURE REGULATORS

Regulator (Set to approx. 30 PSI) P/N 44116 Gauge P/N 44117 (Controls the air pressure to the Load Cylinders & Upper Track Stop Cylinders)

ENCODER

Measure Wheel

Encoder By others

TROUBLESHOOTING

Symptom:	Possible Cause:
Weld pins excessive burning	Check weld setting and reduce as necessary
Weld pin pushed through sheet	Check for wear of the Lower Weld Tip Check alignment with Upper Weld Tip
Weld quality degraded	Check Weld Setting and increase as necessary Check all connections from Transformer to Weld Tip Check condition of Weld Tips Check for worn or damaged cable Check supply voltage
Individual heads stop welding	Check to be sure Head switch is ON Check Weld Relay for proper function
Failure to start weld cycle	Check to ensure Head switches are ON Check Part Present switch operation Check to ensure Encoder signal is being sent to coil line Check Input 1 on the PLC
Offset of pin rows	Check Part Present switch operation
Feeder bowl feeding slowly	Check Feeder Speed Control Check and tighten fastener at bottom of bowl Check feet on bottom of feeder base Check for bowl contact with other parts
Feeder base inoperable	Check to ensure rate is not set at "0" Check Track Sensor Clean Tracks Check fuse
Poor pin transfer	Check alignment of Transfer Block and Lower Track
Sheet metal stops in machine	Check for belt slippage Check chain drive from coil line
Carriage motion is erratic, binding	Check Clutches for proper operation Check and clean Carriage linear shafts and bearings.

Check for free carriage travel	Turn OFF main electrical power and air supply. Manually pull out carriage to it's fully extended limit and return about half way. Normal motion will provide no resistance to movement and will remain smooth and steady. Jerky motion indicates shaft/ bearings etc., require further examination, such as cleaning and lubrication. Examine shafts and bearings at <u>each</u> end of carriage. Clean accumulated dirt, glue, or sealant from shaft sur- faces using and appropriate solvent and wipe clean. Lubri- cate lightly with a dry type lubricant.
Drive Cylinder does not function	Check main air pressure. Manually operate the drive valve using the recessed override button. View the LED indicator light on the drive valve connector when cycled. Check Head switch and fuse.
Drive Cylinder is sluggish	Check air pressure at main regulator. Check for binding of the Guide Shaft.
Load Cylinder does not function	Check main air pressure. Manually operate the drive valve using the recessed override button. View the LED indicator light on the drive valve connector when cycled. Check Head switch and fuse.
Load Cylinder is sluggish	Check air pressure at load regulator. Manually operate load valve by depressing the recessed override button. Check alignment of the Transfer Block to the Lower Track for interference.
Head not welding	Weld head on Main Enclosure must be "ON". Check upper and lower weld contacts/tips for sealant and adhesive buildup and clean as required. Examine cable connectors for tightness. If connectors are loose, clean surfaces before tightening. Examine weld cable(s) for overheating or damaged attachment to cable connector. During normal operation, all will become warm to the touch. A "HOT" cable indicates a faulty or loose cable- to-connector attachment. Remove cable from connector and clean before reconnecting or replace cable. If problem persist, contact the factory for assistance.
Poor or Weak welds	Clean sealant and adhesive from weld tips. Replace badly worn weld tips as required. Increase Weld Setting.

REPLACEMENT PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	42540	Belt, 3" Wide Ruff top	4
2	42539	Bushing, Drive Pulley .56ODx.38IDx.50Lg	6
3	42538	Bushing, Dive Pulley 1.500Dx1.18IDx1.00Lg	4
4	51311	Clutch	2
5	42410	Linear Pillow Block	4
6	42541	Linear Carriage Shaft	2
7	40264	Carriage Belt	12 FT
8	44273	Carriage Return Cylinder	2
9	20441	Pin Transfer Block	1
10	44267	Drive Cylinder	5
11	31011	Upper Weld Tip	5
12	31351	Guide Rod	5
13	31299	Rod Guide	5
14	42446	Head Handle	5
15	44295	Load Cylinder	5
16	31110	Lower Weld Tip	5
17	42361-3	Feeder Bowl Base 60 HZ (42361-8 50 HZ)	5
18	51262	Track Sensor	5
19	31419	Track Slide Gate	5
20	44270	Track Slide Cylinder	5
21	44271	Track Slide Valve	5
22	20457	Weld Cable, Drive Head	5
23	20455	Weld Cable, RH Ground	1
24	20456	Weld Cable LH Ground	1
25	40206	Main Regulator	1
26	44120	Main Gauge	1
27	44116	Load Cylinder Regulator	1
28	51301	Weld Relay	5
29	51274	3 A Fuse	10
30	44117	Load Cylinder Gauge	1

ITEM NO.	PART NO.	DESCRIPTION	QTY
31	44251	Load Valve (& Track Valve)	6
32	51227	Valve Cord Set	12
33	44240	Drive Valve (& Carriage Return Valve)	6
34	51299	35 A Fuse	3
35	51316	Clutch Power Supply	1
36	51315	24VDC Power Supply	1
37	51314	Controller	1
38	51313	Head ENABLE/DISABLE Switch	5
39	51273	1 A Fuse	1
40	51312	Clutch Relay	1
41	42415	Magnetic Strip	4
42	42542	Pillow Block Bearing 1.00" Shaft	6
43	42543	Pillow Block Bearing 1.18" Shaft	2
44	44272	Slide Gate Ball Actuator	5
45	50208	Part Present Switch	1
46	50209	Part Present Arm	1
47	44157	Load Cylinder Flow Control	5
48	51419-2	Pin Feed Control	5
49	50224	Weld Setting Switch Operator	1
50	50225	Weld Setting Switch Contact Block	2

SERVICE POLICY

Proper operation of your machine is a top priority with the Gripnail Corporation. We will assist you to the best of our abilities to see it is kept in peak operating condition.

In many cases, service needs can be made simply by calling Gripnail Customer Service Department. If it becomes necessary for a service technician to visit your plant, we can make the arrangements.

All Gripnail machines are covered under a one year New Machine Warranty (see Warranty next page). Replacement parts covered by the warranty are supplied free of charge, provided the original parts are returned to Gripnail and do not shown signs of abuse.

At the end of the new machine warranty period, the buyer has the option of purchasing a Limited Extended Parts Warranty. This warranty covers specified machine parts only. Call Gripnail for full details.

All warranties on Gripnail machines are good only if Gripnail fasteners are used. If it is determined that fasteners other than those manufactured by Gripnail have been used, the warranty is voided. At Gripnail, we believe in servicing what we sell for the lifetime of the equipment. If you are having difficulty with your machine or if you have any questions regarding service and warranty policy, please call, fax, or write:

Gripnail Customer Service Department Gripnail Corporation

97 Dexter Road East Providence, Rhode Island 02914 Phone: (401) 216-7900 Fax (401) 438-8520 Email: gripnail@gripnail.com Website: www.gripnail.com

WARRANTY

All Gripnail Fastening Equipment is thoroughly inspected and tested before leaving the factory. Gripnail Corporation warranties its equipment to be free from defects in workmanship and materials under normal and proper use for a period of one (1) year from date of sale to original end purchaser.

The warranty does not apply when repairs or attempted repairs have been made by persons other than Gripnail Corporation's authorized service personnel, or where it is determined by our service personnel that the equipment has been subjected to misuse, negligence or accident. If it is determined that any fasteners other than those manufactured by Gripnail have been used in this machine or tool, the warranty is terminated.

This warranty is not effective unless equipment is properly registered with the factory through the use of warranty information card prior to use. Gripnail Corporation shall not be liable for contingent damages or delays caused by defective materials or any other means beyond our control.

Gripnail Customer Service Department Gripnail Corporation

97 Dexter Road East Providence, Rhode Island 02914 Phone: (401) 216-7900 Fax: (401) 438-8520 Email: gripnail@gripnail.com Website: www.gripnail.com