



# PROPORTIONING VALVE

Model 150

## INSTRUCTION MANUAL



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## Introduction

IMS Company reserves the right, at any given time, to alter the information in this operation manual.

IMS Company is not responsible for any mishandling or damages occurring when using this operation manual.

Translation and copying for purposes other than the purchasers' personal use must have the approval of IMS Company.

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### 1.1 Warning and Symbols Information

The following warnings and symbols are used in this operation manual:



**This symbol indicates key operating instructions.**



**This symbol indicates that serious damage to the machine or personal injury may occur if indicated precautions are not followed accordingly.**

### 1.2 Safety Information and Precautions

The safety information and precautions noted in this operation manual are directed to all personnel.

This operation manual should be used by all personnel operating the proportional valve and vacuum loader.

In every instance, be sure all operating personnel are familiar with this manual and the proportional valve.

#### 1.2.1 For Your Safety

Keep this operation manual available and near the proportional valve at all times.

IMS Company assumes no responsibility for changes or modifications to the proportional valve or vacuum loader without prior consent from IMS Company. These changes could damage the equipment and result in physical harm or violate your warranty. Please contact IMS Company prior to making structural modifications to the proportional valve.

Maintenance of and repairs to the proportional valve should be carried out by qualified personnel only, and with the spare parts provided only by IMS Company.

Operating and maintaining the proportional valve must be done by qualified personnel only.

Disconnect power supply before beginning any maintenance of, or repairs to, the proportional valve or vacuum loader it is connected to.

### 1.2.2 For the Safety of the Proportional Valve

Use only original proportional valve spare parts.

Observe the maintenance schedule.

Be aware that electronic components can be damaged by static.

### 1.3 Unpacking and Inspection

IMS Company proportional valves are shipped complete and will work with all the controls of the vacuum loader for automatic operation. The assembled proportional valve and vacuum loaders only requirements are:

110/115 volt single-phase power supply

Compressed air at approximately 80 PSI (minimum 70 PSI; not exceeding 100 PSI)

After receipt of the proportional valve, completely inspect it for damage.

***NOTE: Although valves are packaged securely, vibration and mishandling during transit can cause damage.***

The proportional valve is shipped with a complete hardware package, consisting of:

10 ft. of 1-1/2" ID Static Wire Vacuum Hose

Stainless Steel material suction wand/vacuum probe

(2) Hose clamps



## 2 INSTALLATION AND START-UP

The IMS Model 150 Proportioning Valve is designed to work with IMS Series Hopper Mount Material Loaders and IMS Series Just-In-Time Material Loaders. The valve converts a single inlet loader into a two inlet proportioning loader that can draw material from two sources such as virgin pellets and regrind pellets. Once connected to the vacuum loader, the vacuum loader control panel allows the user to adjust the ratio of vacuum time from one inlet to the other.

Refer to the IMS Series Hopper Mount Material Loader or Just-In-Time Material Loader's manual for loader operation and instructions.

The IMS Model 150 Proportioning Valve once installed uses the vacuum loaders electrical power, control panel and air pressure to operate.

The valve starts with "inlet one" open and "inlet two" closed ("inlet one" is on top). When the loader starts running the number one inlet is open and the number two inlet remains closed until the desired user programmed time expires. This signals the valves solenoid to energize and reroute the valves airflow which closes "inlet one" and opens "inlet two".

The valve remains this way until the vacuum loader completes its cycle. When the vacuum loader stops running, the valves solenoid is de-energized thus rerouting the airflow to the valve's cylinders which return them to their original positions. The cycle then repeats when the loader starts again.

### 2.1 Mounting Instructions



**Before attempting to mount valve, be sure the vacuum loader is securely mounted to a material hopper, feed throat of machine or other equipment. Once attached, the added weight of the valve to the loader inlet can tip material loader over!**



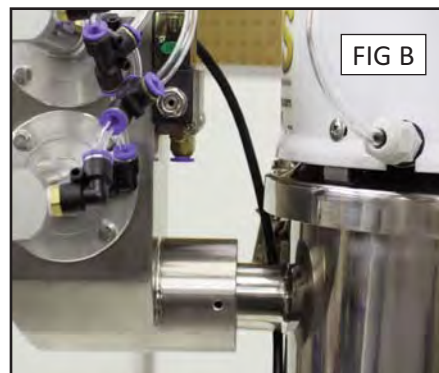
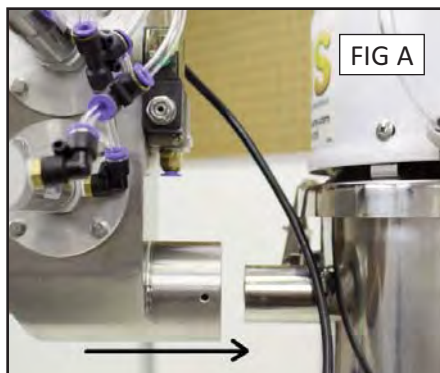
**Before attempting to mount valve, disconnect all air pressure and electrical power from the loader to which the valve will be attached! Follow lock-out/tag-out procedures for safety.**

Remove existing loader hose from loader inlet and put aside.

Check inlet for wear and replace if necessary. The loader inlet should be smooth and without burrs, chips, dents or other noticeable damage.

Inspect the valve's connection port to be free of debris, you may find it helpful to apply a thin layer of silicone grease to the valves connection port O-ring. Check to make sure the set screws are backed out and not protruding into the connection port.

Refer to FIG A and FIG B for proper valve to loader orientation and installation position.



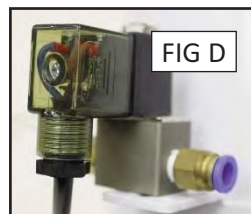
Push valve onto loader inlet as demonstrated by FIG A and FIG B.

Once valve is connected to inlet, tighten the two set screws (located on the side and bottom of connection port) with a 2.5mm hex key wrench. Tighten screws evenly and firmly until valve feels securely connected. Pull on valve to ensure its connection.

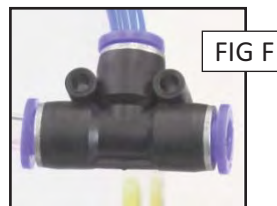
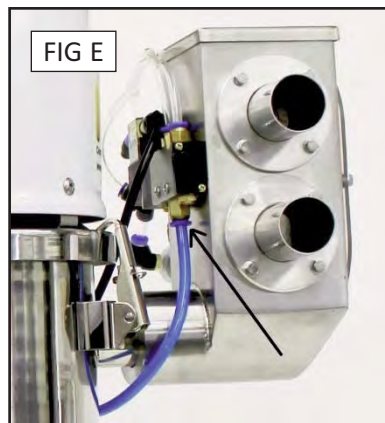
 **Make sure valve is in vertical position and square to loader. Mounting valve incorrectly could cause valve to not operate correctly or contradictory to the instruction manual.**

## 2.2 Air Line Connection Instructions

Disconnect supply air line from loader's air pulse solenoid valve. FIG C and FIG D





Find the push-to-connect "T" Fitting that is attached to the valve's solenoid FIG E and FIG F




Attach "T" push-to-connect fitting to loader solenoid and re-connect supply air to remaining port FIG G



 Supply air should consist of a 3/8" compressed air line that is filtered and regulated. The minimum requirement is 70 PSI.

 Warning: DO NOT exceed 100 PSI.

### 2.3 Control Panel Connection Instructions

 Confirm that all electrical power is disconnected from loader. Failure to comply may cause shock hazard which could result in electrocution and even death!

Locate the control panel – FIG H

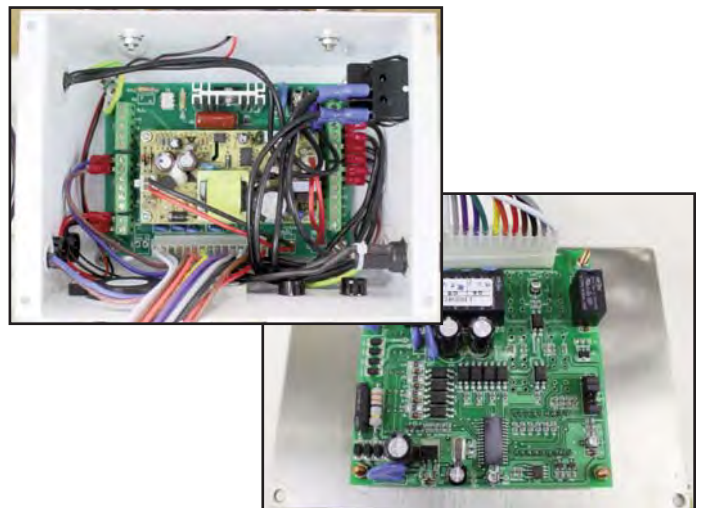


Remove the (4) front panel screws using a medium sized phillips head screwdriver and set aside. Carefully remove the cover by pulling it forward and laying it down while leaving the control wires attached.

Front Panel



Control Panel and Front Panel Disassembled



## 2.3 Control Panel Connection Instructions (continued)

Depending on the serial number of your loader, the control panel attached to the loader may have slight differences in electrical input configuration. FIG I and FIG J.

The configurations differences do not affect the operation of the proportional valve.



FIG I

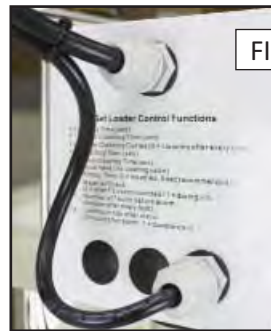



FIG J

 **NOTE: Older model loaders that start with serial number EHL. Loaders serial numbers that start with this designation cannot use the proportional valve without its own control panel. Please consult the technicians at IMS Company if your loader has this serial number sequence.**

Locate the electrical connection wire to the valve FIG K. It will include a strain relief; the end will include both a blue and brown wire with wiring connectors attached. Remove locking nut from strain relief and set aside for now.



FIG K

With front panel removed – located available plugged electrical input and remove plastic plug.

Fish the valve's electrical connection wires thru now open electrical input hole.

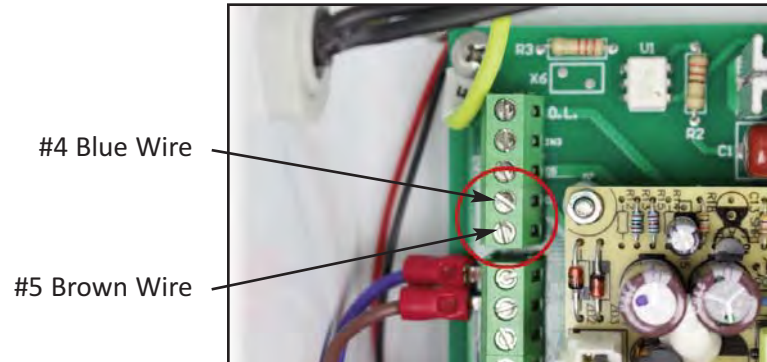
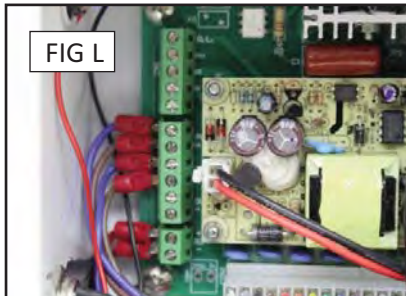
Inside panel, attach strain relief with previously removed strain relief locking nut and hand tighten.





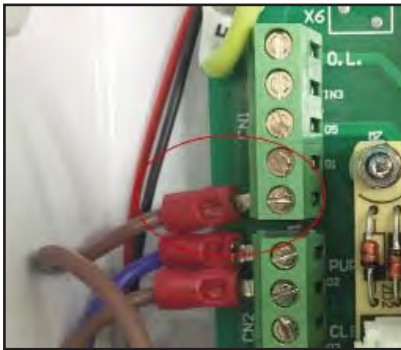
### 2.3 Control Panel Connection Instructions (continued)

Referring to board wiring schematic on page (16) – located the proportion valve connection at number “4” and “5” FIG L

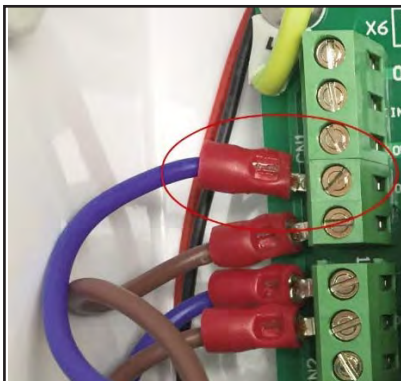


Loosen terminal screws with a small flat head screw driver at the #4 and #5 location


First wire terminal 5, using a pair of needle nose pliers – grasp the wiring connector of the #5 Brown Wire and gently insert it into the terminal slot, tighten the #5 terminal making sure the wire connection is secure.



Repeat the process for the #4 Blue Wire terminal above it.



## 2.3 Control Panel Connection Instructions (continued)

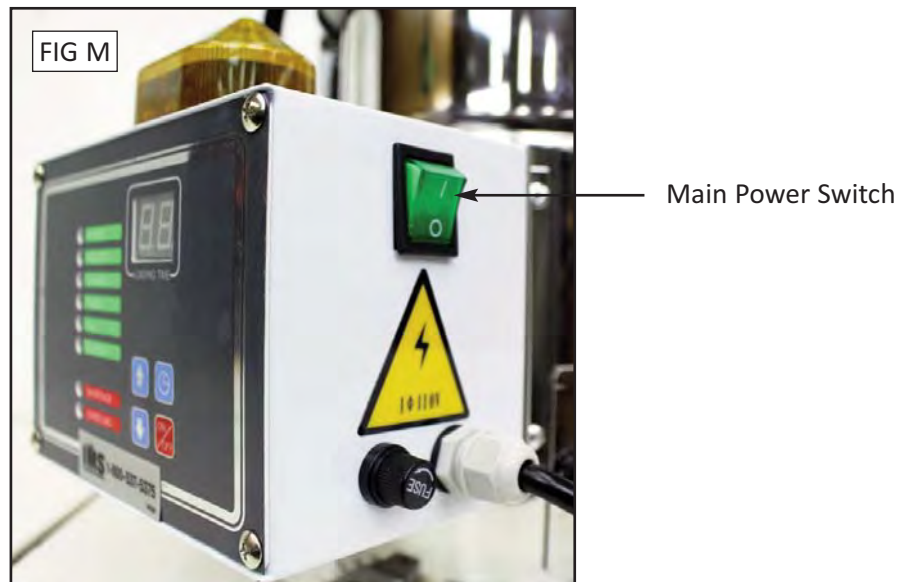
 **If you have difficulty securing the terminal to the wire connection, you may be inserting the connector below the terminal clamp. If this occurs, loosen the terminal screw fully and then try sliding the connector from the top of the terminal towards the circuit board. Do this slowly until you reach the top of the terminal opening and then slide the connector into the terminal clamp and re-tighten.**

Once you have made the connections and confirmed they are secure, reinstall the front of the control panel by using the (4) screws that you previously removed.

Before proceeding, check all newly made connections and verify they are secure.

Reattach air supply line to the installed “T” Fitting if you haven't already done so and adjust line pressure to 70 PSI.

Making sure the main power switch (FIG M) is down and in the off position, plug loader into 110/115 Volt single-phase power supply.



**Before continuing to program the valve the following must be understood.**

### **Valve Programming Operation:**

The adjustment of the valves time is proportional to the loaders overall run time.

For example – If you want a 50/50 mix and your loader has a 30 second total run time, the valve will need to switch from “inlet one” to “inlet two” at the 15 second mark.

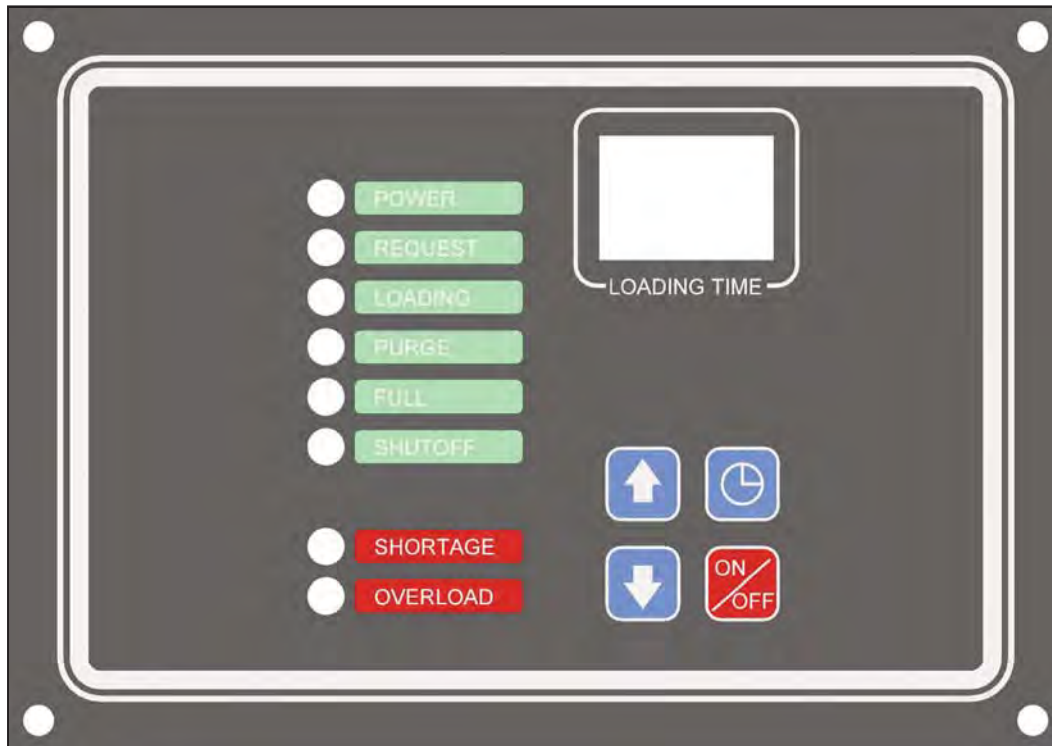
Therefore, the loaders run time (Parameter F3) would be set to 30 and the valves run time (Parameter FE) would be set to 15. The valves setting (FE) cannot be higher than the loader run time setting (F3).

If you wanted a 70/30 mix based on a 60 second overall run time, the valves setting would be 20 seconds.  
(1/3 of the overall runtime)


### 3 Programming the Model 150 Proportional Valve

Refer to IMS Model 200, 400, 800, 200JT or 300JT Loader operating manual for full control panel features.


#### BASIC OVERVIEW OF LOADER CONTROL PANEL





#### 3.1 Setting Proportional Parameters

 Before attempting to program the valve, be sure to understand how the control panel functions. Read this section in its entirety first.



To adjust parameters, you must be in the function menu.


To enter the functions menu press 


To select and set a specific function, press 

Continuing to press  will scroll thru the other available functions

### 3.1 Setting Proportional Parameters (continued)

Once you arrive at the function you want to adjust use   to adjust higher or lower.


Press  to save the value.


To exit the functions menu without saving the value and default to the formerly saved value, press .


### 3.2 Unlocking Proportional Valve Programming Features



In order to “Unlock” the Proportional Valves programming features you must comply with the following instructions.


1) Check that the Main Power Switch is ON.

2) Immediately press  several times until you reach F3 (Loading Time)

3) Press   to adjust parameter to 98. (holding the up or down button will quickly adjust)

4) Press  once to reach parameter F4 (Line Clearing Time)

5) Press   to adjust parameter to 97.

6) Press  to save the value.


7) You have now “Unlocked” the valve to be programmed.

8) Press  until you reach parameter FE (Recycling material valve action time).


### 3.2 Unlocking Proportional Valve Programming Features (continued)

9) Adjust the proportional range using   to be less than that of parameter F3 (Loading Time)

a. See bottom of page 8 for clarification if needed


10) Now that the proportional time has been set, press  until you reach F3

(Loading Time) and readjust from 98 to actual desired loader overall run time (greater than FE time).

11) Press  to adjust F4 (Line Clearing Time) and readjust from 97 to actual desired line clearing time.

12) Press  or wait 10 seconds to save the new values.

13) The proportional parameter FE will no longer be available as it now been locked out by default.

14) Press  to start the new run program.

Your loader and proportional valve are now programmed and ready for use. You may connect your vacuum hose to “inlet one” and “inlet two” using the supplied hose clamps that came with the valve and loader.

Run loader to confirm that it is running correctly and as anticipated. If you need to make adjustments to the proportioning valve, repeat steps 1 thru 14.

If you need to make other adjustments to the loaders parameters, follow the instructions that came with the loader.

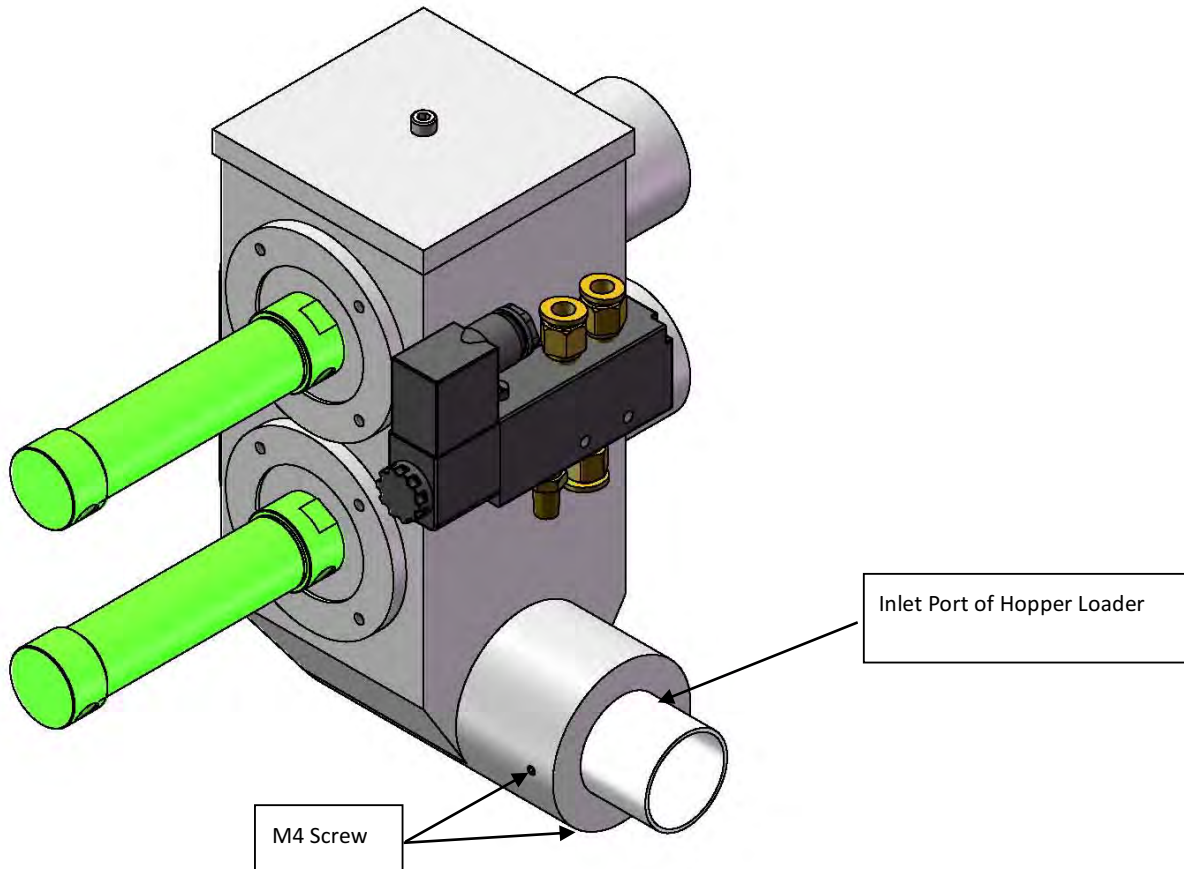
A chart has been provided for your reference, however not all functions may be available for your particular loader depending on its age and/or serial number.

Setting Parameters

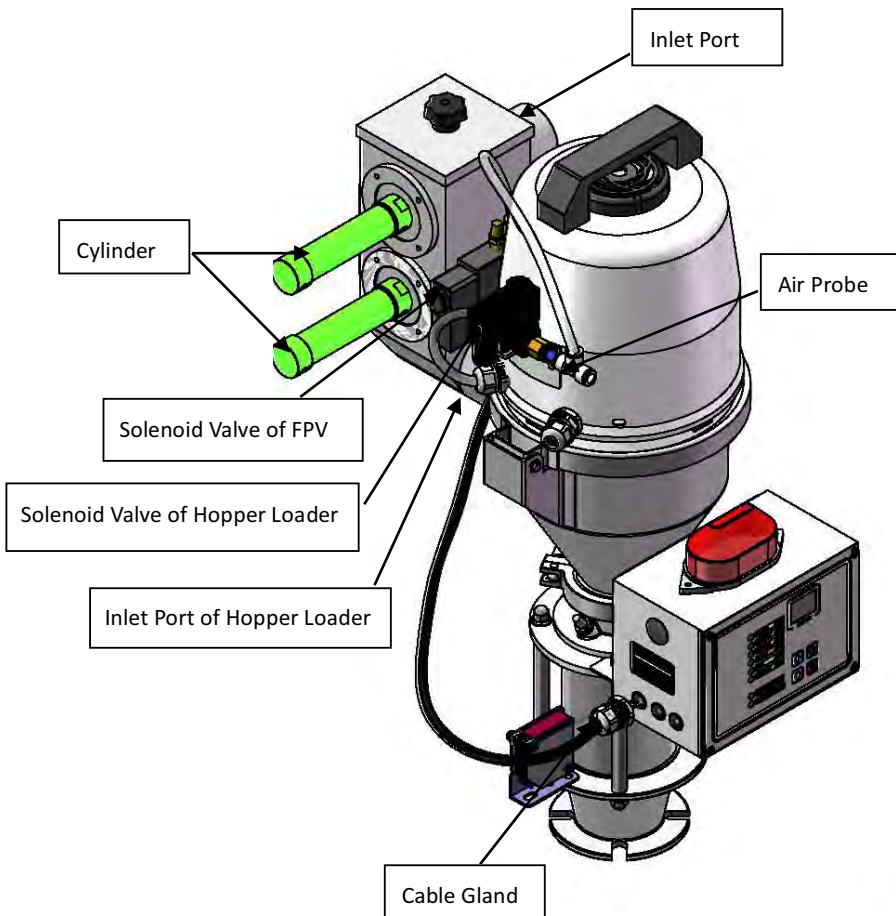
| NO. | Name  | Parameters            |       | unit      |
|-----|---|-----------------------|-------|-----------|
|     |   | Factory value setting | Range |           |
| F0  | <b>Delay Time</b>                           | 3                     | 99    | sec       |
| F1  | <b>Filter Cleaning Time</b>                 | 20                    | 0-99  | time      |
| F2  | <b>Quantity of Filter Cleaning</b>          | 20                    | 0-99  | sec       |
| F3  | <b>Loading Time</b>                         | 30                    | 1-99  | sec       |
| F4  | <b>Line Clearing Time</b>                   | 5                     | 0-99  | sec       |
| F5  | <b>Empty Time</b>                           | 30                    | 0-99  | sec       |
| F6  | <b>Drop Detection Mode Selection</b>        | 0                     | 0-1   |           |
| F7  | <b>Alarm Setting</b>                        | 3                     | 0-99  |           |
| F8  | <b>Alarm Stop Function</b>                  | 0                     | 0-1   |           |
| F9  | <b>Motor reversal protection time</b>       | 30                    | 1-99  | sec       |
| FA  | <b>Preparation time</b>                     | 0                     | 0-99  | sec       |
| FB  | <b>Motor Delay Stopped Tme</b>              | 0                     | 0-99  | sec       |
| FC  | <b>Drop DetectionTime</b>                   | 1                     | 1-99  | 0.025 sec |
| FD  | <b>Cleaning Action Time</b>                 | 5                     | 0-1   | sec       |
| FE  | <b>Recycling material valve action time</b> | 0                     | 0-99  | sec       |

**Note:** Parameters F9 to FE can only be accessed once “unlocked” – refer to Page 10, 3.2 Unlocking Proportional Valve Programming Features

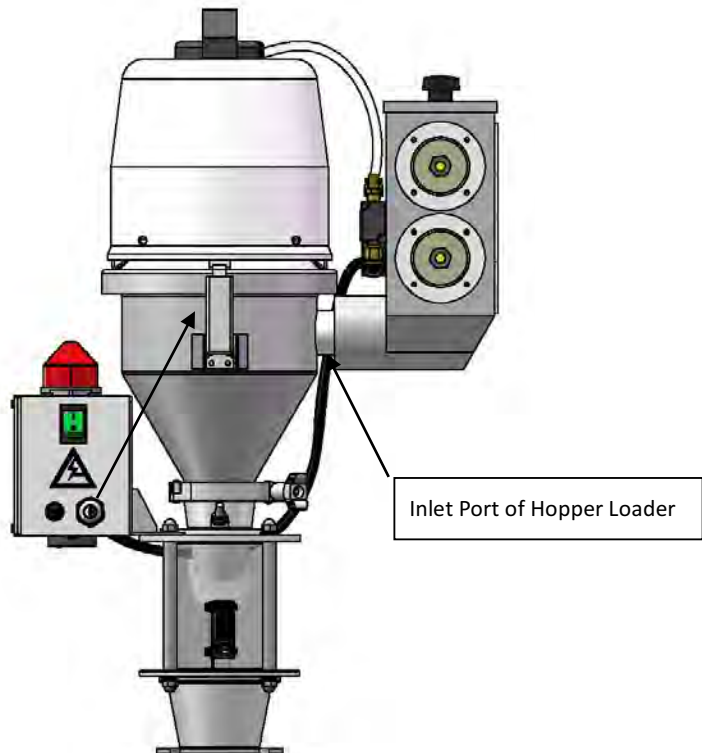
## Reference Information



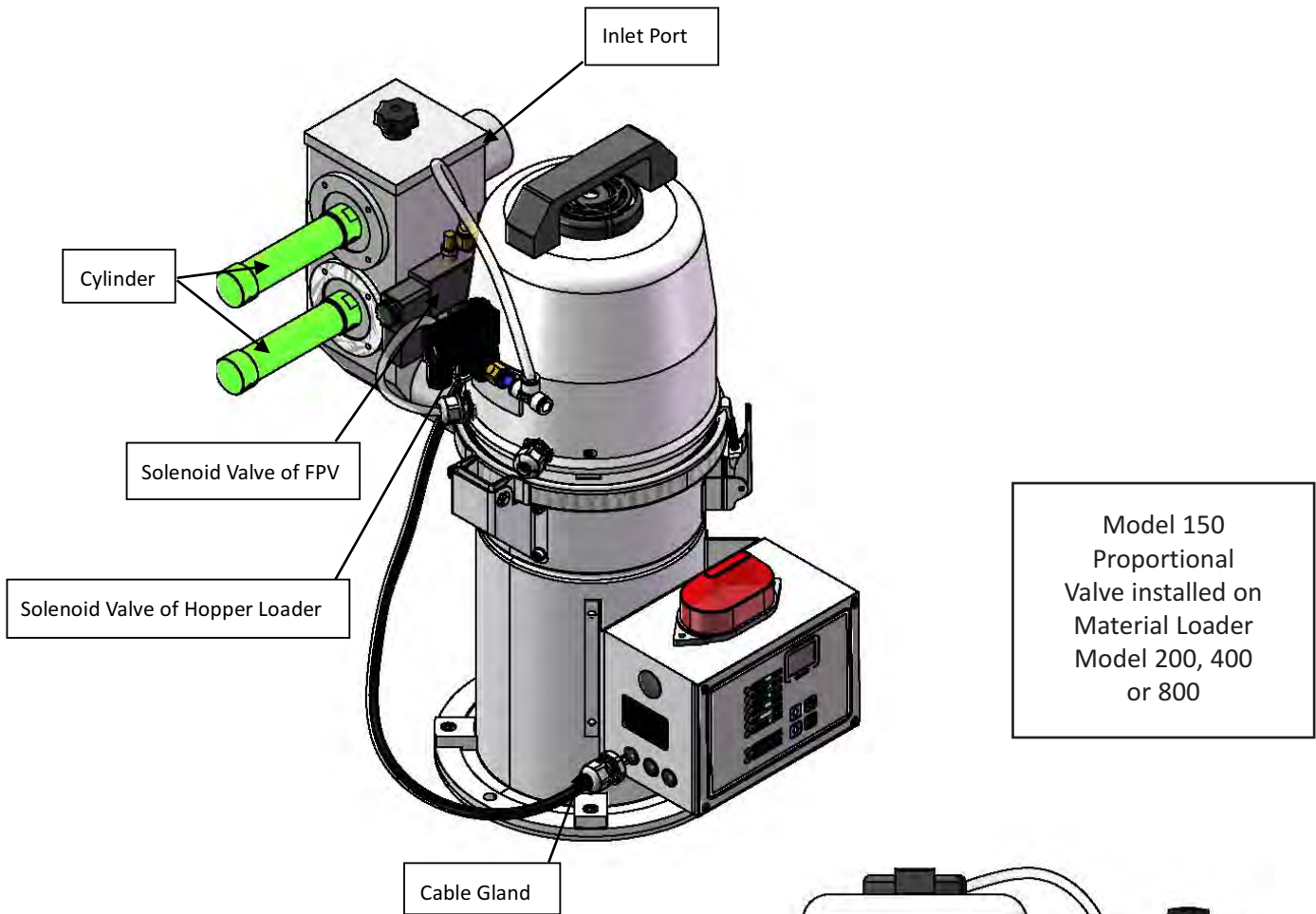
Model 150  
Proportional  
Valve



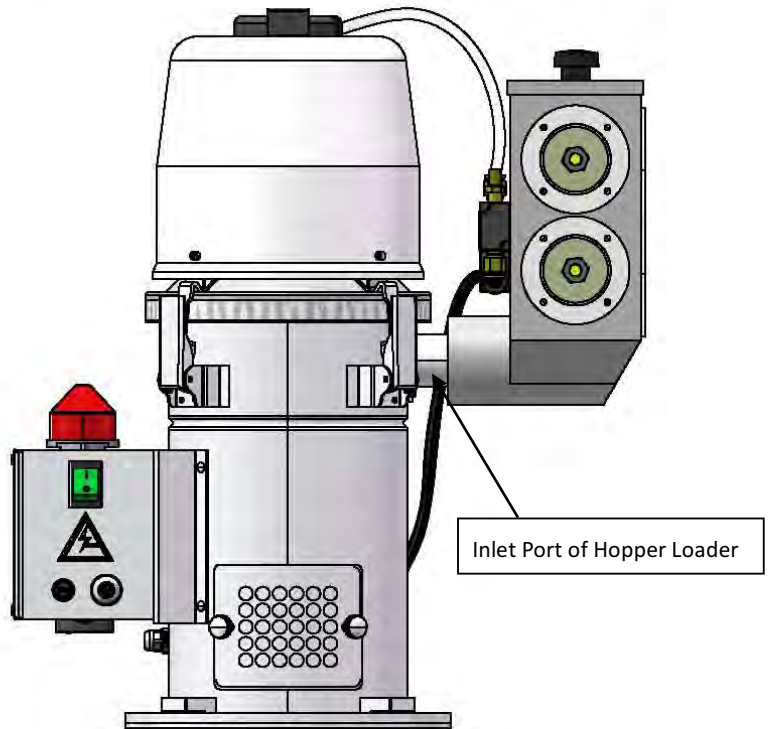
Model 150  
Proportional  
Valve installed on  
Just-in-time  
Model 200JT or  
300JT Loader



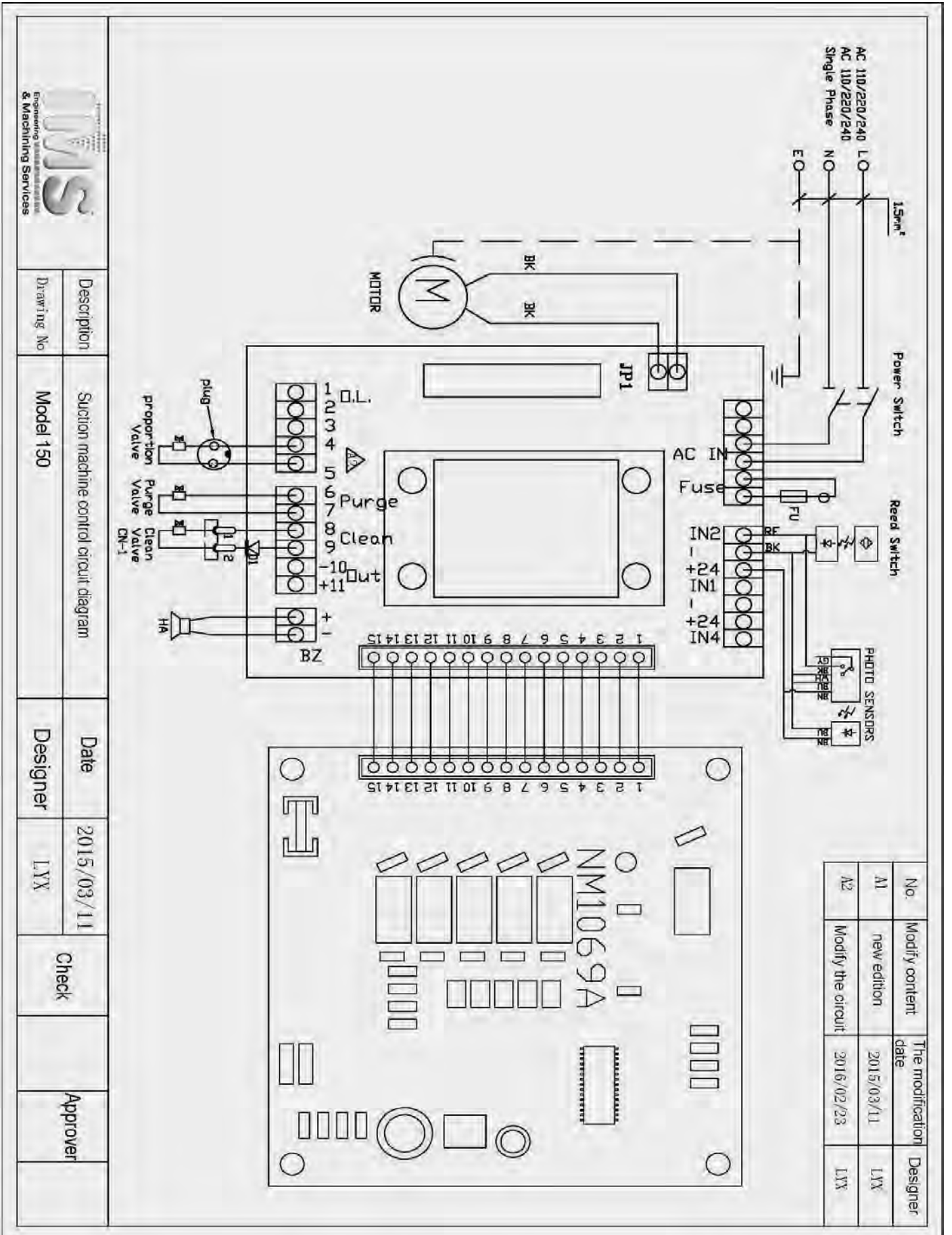




Model 150  
Proportional  
Valve installed on  
Material Loader  
Model 200, 400  
or 800



### 8.6. Circuit diagram



| No. | Modify content     | The modification date | Designer |
|-----|--------------------|-----------------------|----------|
| A1  | new edition        | 2015/03/11            | LYX      |
| A2  | Modify the circuit | 2016/02/23            | LYX      |



|             |   |
|-------------|---|
| Description | Suction machine control circuit diagram |
| Drawing No  | Model 150                               |

|          |            |
|----------|------------|
| Date     | 2015/03/11 |
| Designer | LYX        |
| Check    |            |
| Approver |            |