



**DC-860-P-12**

**Double Chamber Vacuum Packaging  
Machine**

**Operation Manual**

Version 6.9.1

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## **Explanation of Abbreviations**

(FB) Standard Front / Back

(FBG) Front /Back with Gas

(FBTB) Front / Back with Top / Bottom Seal

(FBTBG) Front / Back with Top / Bottom Seal +Gas

# General

This owner's manual contains information relating to your Promax /Promarks machine. It will provide you with basic information concerning both operation and maintenance of your new machine. Please read it carefully as failure to do so may result in bodily injury and / or damage to the equipment.

Please fill in the information below. You will find the information on the bill of lading and on the machines identification tag. You will need this information when ordering replacement parts or making technical inquiries.

Model # \_\_\_\_\_

Serial # \_\_\_\_\_

Ship Date: \_\_\_\_\_

Owner: \_\_\_\_\_

Location: \_\_\_\_\_

# **1. SAFETY**

## **1.1 SAFETY RECOMENDATIONS**

Unsafe practices or unauthorized modifications of machine could result in accidents or property damage.

For safe installation, operation, handling and maintenance, please strictly follow the simple safety rules stated below and take precautions. Failure to follow these safety rules and take necessary precautions can result in serious injury or death as well as cause damage to the equipment.

- 1) Never operate or service your Promax / Promarks machine until you have read this manual completely and understand it fully.
- 2) All adjustments and repairs must be carried out only by qualified technicians or maintenance personnel.
- 3) No service work should be attempted until the machine's power has been turned off. All proper lock out / tag out procedures should be followed.
- 4) Do not put tools, parts or other foreign objects on or into the machine.
- 5) Always keep the machine clean, lubricated and in good working condition.
- 6) To provide protection against the risk of electrical shock the power connection must be properly grounded at all times.
- 7) The machine should always be operated on a flat stable surface.
- 8) A certified electrician should be employed to install the permanent electrical connections for your new machine.

## 1.2 PERSONAL SAFETY

**Please read and understand this operation manual before using this equipment. Failure to follow the operating instructions may result in personal injury or damage to the machine.**

The following procedures and guidelines must be observed to avoid problems that can result in property damage, personal injury or death. If you have any questions regarding this information please contact Promax /Promarks, Inc. Service Department at (909) 481-3338.

### **Hazardous Voltage: DANGER**

Electrical power must be disconnected and locked out before servicing or cleaning of the machine. Do not remove any panels before power has been disconnected and locked out due to the risk of electric shock hazard.

### **Explosion Hazard: DANGER**

When utilizing the gas flush feature (optional) do not use any gas mixture with greater than 22% oxygen content.

### **Blade Hazard: WARNING**

If your machine is equipped with either a Perforating Knife System (optional) or a Precut Knife System (optional) then do not remove or install blades without wearing protective gloves. These blades are SHARP, use care when handling.

### **Signal words used in classifying potential hazards are defined as follows:**

**DANGER:** Indicates an imminently hazardous situation, which if not avoided, may result in death or serious injury.

**WARNING:** Indicates a potentially hazardous situation, which if not avoided, could result in serious injury.

**CAUTION:** Indicates a potentially hazardous situation, which, if not avoided, may result in minor to moderate injury. Caution also indicates actions that may cause property damage.

## **1.3 FOOD SAFETY**

While many Promax / Promarks machines are used in applications involving vacuum packaging and vacuum cooking, there are inherent risks associated with these techniques that can result in serious illness or death to the consumer of the food product. Therefore if you are using your machine for food applications, you must consult a qualified food technician or specialist in vacuum / modified atmosphere (M.A.P.) to review the safety of your application.

### **GAS FLUSH**

If your machine is equipped with gas flush (optional) and your application involves the use of gas flush to extend the shelf life of your product you must consult a qualified food technician or specialist to review your application and develop a suitable gas mixture for your package. Further you must perform quality control and gas analysis on your final M.A.P. package.

### **CLEANING**

Every environment and application is different; therefore Promax / Promarks cannot provide cleaning procedure instructions that will guarantee microbiological sanitation. Therefore Promax / Promarks recommends that the purchaser of these machines consult with a sanitation expert to review your procedures for cleaning the machine while operating in your environment and with your specific product to develop a robust cleaning schedule and methodology, followed by bacterial testing to ensure satisfactory cleaning is achieved.

## 2.INSTALLATION

### 2.1 UNPACKING

- Carefully remove the cardboard outer shell by cutting the retaining straps then removing the top and then the side panels.
- Inspect the machine carefully for any hidden shipping damage. Notify the shipping company right away if any damage is observed.
- Remove the machine from the wooden skid. This can be done by two people on the smaller table top machines. However an approved fork lift will be required for the larger SC and DC models. **Important note:** Refer to the Moving the Machine Section below.
- Wipe down the outside of the machine.

### 2.2 MOVING THE MACHINE

Promax /Promarks chamber style vacuum packaging machines are available in three basic designs, TC (Table Top), SC (Free Standing Single Chamber) and DC (Double Chamber). Recommendations for the movement of all three types are listed below.

**TC Machines:** Some of the smallest TC units may be lifted off of their wooden skid and moved manually. However Promax /Promarks recommends that moving even the smallest of their TC units should not be attempted by one person. The larger TC units should be lifted with the aid of a fork lift or other approved lifting aid. Prior to lifting with a forklift the forks should be adjusted to a width that provides the machine with stable support. The proper lifting point for TC machines is to place the forks so they come in contact with the units rubber feet located on the bottom of the machine.

**SC Machines:** All SC units should be lifted from their wooden skid and moved to the location where they will be used with an approved fork lift. Be sure to take note of the points listed below.

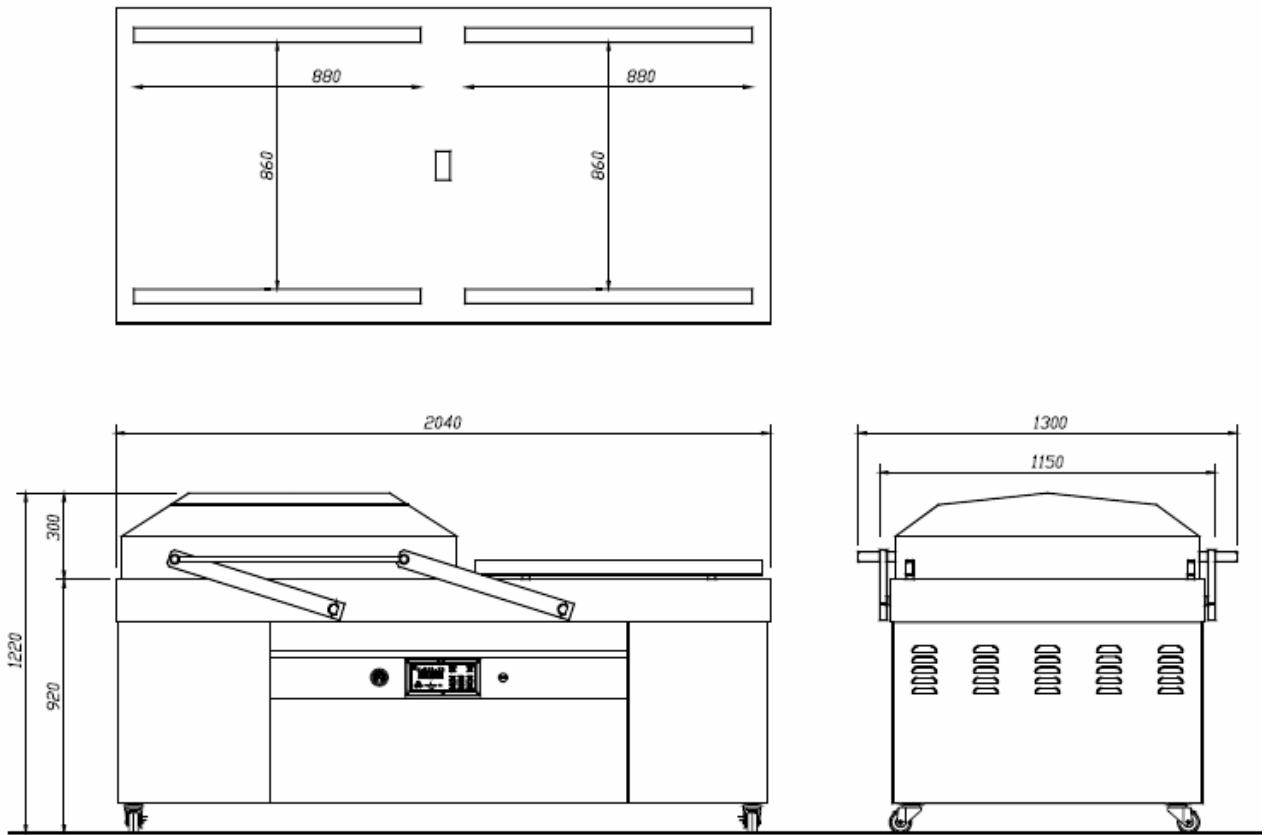
**DC Machines:** All DC units should be lifted from their wooden skid and moved to the location where they will be used with an approved fork lift. Be sure to take note of the points listed below.

**\* Make sure the fork lift forks are properly adjusted for width and use fork extensions if needed.**

**\* Make sure to ascertain the center of gravity and use identified lifting points.**



## 2.3 DC-860 SPECIFICATION



## 2.4 ENVIRONMENT REQUIREMENTS

The machine will be difficult to start if the air temperature is very low. This is caused by the increase in the vacuum pump's oil viscosity due to the low temperature. To prevent this, please set up machine according to the installation checklist described as below:

- Temperature: around 5 ~ 40°C
- Working elevation: between 0 ~ 1000 meters
- Relative humidity: 30 ~ 95% RH
- During operating, heat is generated by the vacuum pump and vacuum process, so a machine temperature of around 70 ~ 80°C is normal. The machine must have free air access for cooling.
- A minimum distance from walls, other machines, etc. should be maintained, at least 20 cm for each side of machine for providing adequate ventilation.

## 2.5 CHECK OIL LEVEL

Check the oil level only when the machine is not in operation and all vacuum built up in the chamber has been vented. Be aware that the oil may be very hot and avoid all contact.

### Checking the Oil Level

- \* Check the oil level on a daily basis
- \* When checking the oil level use the sight gauge shown in **figure 1 below**. The level should be between the arrows indicating Minimum and Maximum. If the level is below the minimum arrow add oil until the maximum arrow is reached.

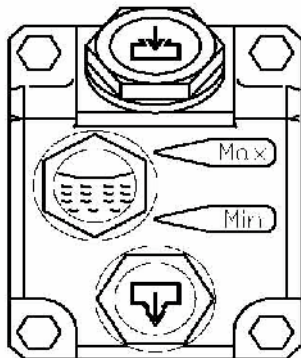


Figure 1

## 2.6 POWER CONNECTION

When preparing to install the machine's main power connection please refer to the electrical information on the serial number plate located on the machine's back panel. A certified electrician should be employed to complete this connection.

## 2.7 VACUUM PUMP ROTATION

If your machine operates on 3 phase power it is important to check the rotation of the vacuum pump. The pump should turn in the direction indicated in **Figure 2** below. If the pump turns in the wrong direction it will make a sound that is obviously wrong. Turn off the power immediately and change the position of two of the power wires and retest.

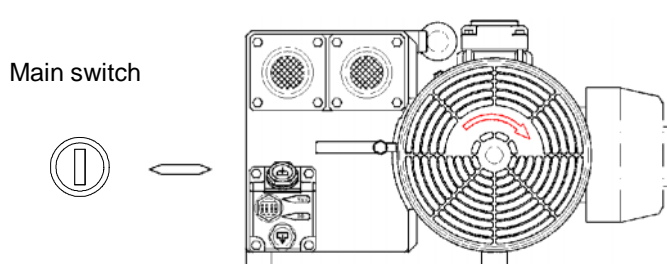


Figure 2

## 3. OPERATION

### 3.1 VACUUM SETTING GUIDLINES

Products	Vacuum time/Sec.	Storage life when stored at 2 ~ 6 °C/day
Fresh meat	30	10
Pork	30	10
Beef	30	30
Meat with liquid	15 ~ 30	14
Pasta	3 ~ 9	21
Sliced sausage	15	10
Cold cuts	9	10 ~ 21

### 3.2 BASIC OPERATING INSTRUCTIONS

Turn on the main switch and the LED display shows the operation menu, at this time, machine is ready to operate.

Place the product to be packaged in a vacuum pouch. Place the bag in chamber with the open end of bag across the sealing bar. (With a package that doesn't completely fill the chamber, place provided flat plates in the chamber to shorten vacuum time.)

Close the lid to start the cycle, the lid will open automatically when cycle is completed.

Take out the sealed product from vacuum chamber. You are ready to start the next cycle.

After all packaging is completed, please let the vacuum pump run for about 15 minutes, then turn off the main switch to shut down the machine.

### 3.3 OPTIONAL DEVICE

#### 3.3.1 GAS FLUSHING UNIT

If your machine is equipped with an optional gas flush system please note the following points.

Make sure you have connected a regulated gas source to the gas inlet fitting

Do not set your regulator for a pressure of greater than 40psi

Place the open end of your package in front of the gas inlet nozzles

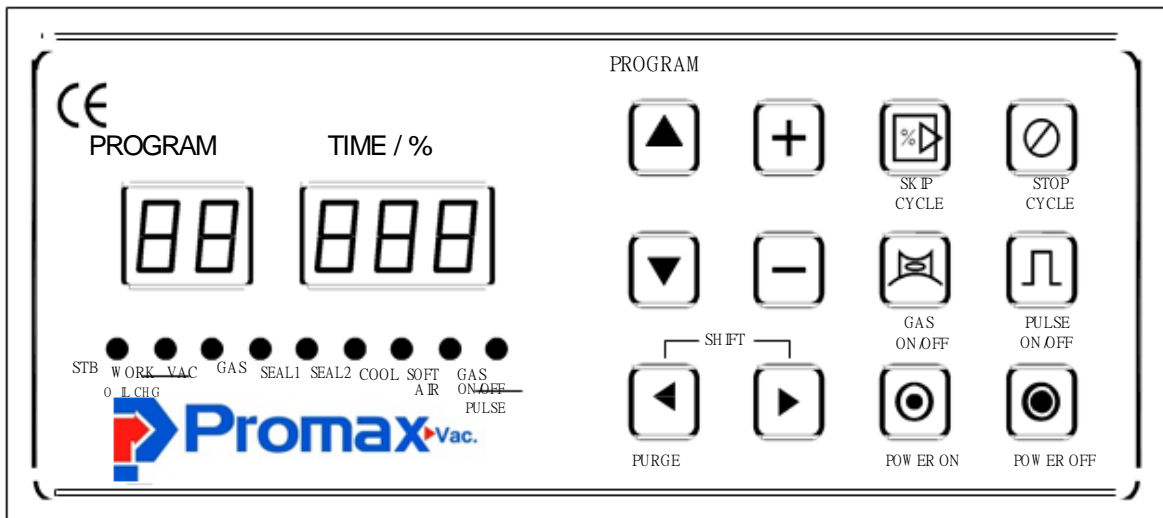
Do not tuck the bag under the gas nozzles

## 3.4 OPERATION OF THE PNC-01 DIGITAL CONTROL PANEL

### 3.4.1 Operation of the Model PNC-01 Digital Control Panel

When following the instructions for programming your machine please refer to Fig.5 below.

Figure 5



### Standard Machine – Basic Instructions

- A. Press the **Main Power** switch located to the right of the control panel.
  1. The Main Power switch will **NOT** light up.
  2. The standby, **STB**, LED on the control panel will light up.
- B. Press the **Power ON** touch pad on the control panel.
  1. The **Program** display and the **Time/%** display will light up.
  2. The **Program** display will indicate what program the machine is running.
  3. The **Time/%** display will indicate the vacuum setting for that program.
- C. **Changing to a different program**
  1. Press either the **Up or the Down** arrow key on the control panel.
  2. You will see the number displayed in the **Program** display change.
  3. Select the program number before the one you want to move to
  4. Press the **Up** arrow key and hold it down for approximately 5 seconds.
  5. You will see the number in the **Program Display** begin to blink.
  6. Press the **Up** arrow key once and it will stop blinking.
  7. Using the **Up / Down** arrows go back to the program number you chose.
  8. **Important:** Cycle the machine 1 time to save program change.

#### **D. Changing Program Settings**

1. Choose the program number you wish to edit
2. Press and hold down the **Right Arrow** key for 3 seconds.
3. You will see the **Time / %** display begins to flash.
4. **Change the settings as indicated in steps E to J.**

**Important Note: If your machine is equipped with the most recent version of the PNC-01 control you will not need to implement the instructions above in order to change program settings.**

#### **E. Vacuum**

1. Make sure the **LED** above the word **VAC** is lighted.
2. Using the **Plus/Minus** keys increase or decrease the vacuum time.
3. Press the **Right Arrow** key to move to the next setting.

**Important note: You may always use the left arrow key to go back to the previous setting.**

#### **F. Gas (Optional) See Optional Settings**

1. Using the **Plus/Minus** keys set to 0.00
2. Press the **Right Arrow** key **3X** to move to the next setting.

#### **G. Seal 1**

1. Using the **Plus/Minus** keys increase or decrease the seal time.
2. Press the **Right Arrow** key to move to the next setting.
3. Maximum sealing time : 3 seconds.

#### **H. Seal 2: Not used at this time.**

#### **I. Cool**

1. Using the **Plus/Minus** keys increase or decrease the cooling time.
2. Press the **Right Arrow** key to move to the next setting.
3. Minimum cooling time : 3 -5 seconds.

**J. Soft Air:** This feature allows the chamber to partially vent in short pulses. Three separate settings are required to complete this operation.

1. The first setting is **Total Vent Time**. Using the **Plus/Minus** keys to set the amount of **Total Vent Time** you want.
2. Press the **Right Arrow** key to move to the next setting. You will see that the soft air LED remains on. However you are now setting the **Vent On time**.
3. Using the **Plus/Minus** keys set the amount of time you want the vent valve to open during each pulse.

Press the **Right Arrow** key to move to the next setting. The Soft Air LED will remain on. However you are now setting the **Vent Off time**.

4. Using the **Plus/Minus** keys set the amount of time you want the vent valve to remain closed between each vent pulse.

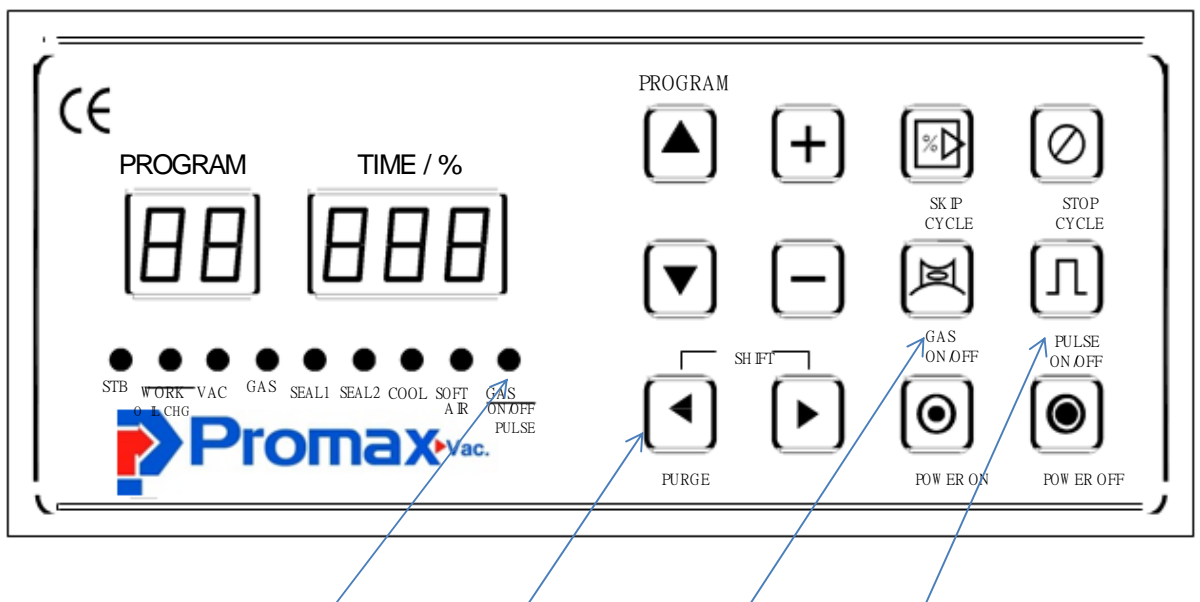
5. Press the **Up Arrow** key to return to normal operation mode.

### 3.4.2 Setting the Parameters for the Optional Settings

**Important Note:** These settings will only function if the options they pertain to were purchased.

Refer to figure 6 below to help you complete these settings.

Figure 6



Gas On / Off / Pulse LED

Purge

Gas On / Off Pulse On / Off

#### A. Gas Flush

1. Prepare to make changes as instructed in point D
2. Press the **Left Arrow** key until the **Gas LED** is lit.
3. Using the **Plus / Minus** keys set the amount of time you want gas to enter the chamber.

4. Press the **Left Arrow** key again you will see that the **Gas LED** remains lit. You will set a time value for the next two settings **only if you wish to use the PULSE GAS feature.**
5. Using the **Plus / Minus** keys set a **GAS ON** time
6. Press the **Left Arrow** key to move to the **GAS OFF** time setting.
7. Using the **Plus / Minus** keys set a **Gas Off** time.
8. Press the **Left Arrow** key to move to the next setting.

**Important Note:** Once you have returned the control to the normal operation mode you **MUST** turn the GAS Feature and the PULSE feature on for them to become part of the cycle. To do this Press the **Gas On / Off** key, indicated in **Figure 6** above. The **Gas On / Off / Pulse LED** will light up. This indicates that the gas flush system is engaged.

If you wish to engage the **PULSE** feature you must Press the **PULSE On/Off** touchpad indicated in **Figure 6** (on the previous page). The **Gas On / Off LED** will begin to blink. The gas pulse feature is now engaged.

- B. Vacuum by Percentage:** This option allows your machine to control the amount of vacuum achieved as a function of vacuum pressure instead of being time based. **Your machine must be equipped with the optional Sensor Control for this option to be used.**
1. Enter the Edit Mode (follow the instructions in point D on Pg.00)
  2. Make sure the LED above the word VAC is on.
  3. Press the **Minus** key repeatedly until you pass **-1**. You will see the Time / Percent display change to **99**.
  4. Continue to Press the **Minus** key until you have reached the vacuum percentage you desire..
  5. Press the **Left Arrow** key to move to the next setting.
- C. Percentage + Time Vacuum:** This setting will allow your machine to reach 99% then continue to vacuum for a set amount of time before moving to the next stage of the cycle.
1. Follow the instructions above to the point where the number 99 has appeared in the Time / Percent display.
  2. Press the **Plus** key and you will see a 1 with what looks like a sideways T next to it appear.
  3. Continue to Press the **Plus** key until you have set the amount of time you want the vacuum to continue after 99% has been achieved.
  4. Press the **Left** arrow key to move to the next setting.
- D. Pulse Vacuum:** This feature allows you to set the vacuum to pulse on and off for a preset **Total Vacuum Time**. If this optional feature has been purchased you will notice that the VAC setting will require three (3) settings to complete.

1. The first setting will be **Total Vacuum Time**. Using the **Plus/Minus** keys set the total time you want the vacuum cycle to last.
2. Press the **Right Arrow** key to move to the next setting. The VAC LED will remain on. However you are now setting the **Vacuum On Time**.
3. Using the **Plus/Minus** keys set the amount of time you want each vacuum pulse to last.
4. Press the **Right Arrow** key to move to the next setting.
5. Using the **Plus/Minus** keys set the amount of time you want the vacuum to remain off between each vacuum pulse.
6. You have now completed setting for a Pulsed Vacuum.
7. Press the **Right Arrow** key to move to your next setting.

**E. Multi Stage Vacuum / Gas:** This function allows your machine to perform multiple vacuum and gas stages before moving onto the seal mode. Up to 10 vacuum / gas or gas / vacuum stages may be set.

1. With the machine in the normal operation mode Press the Purge key indicated in Figure 6. You will see a decimal point appear in the **Program Display**. The machine can now be set for multi-stage operations that begin with a Vacuum cycle. If you Press the Purge key once more the decimal point will begin to blink. The machine will now perform multi-stage functions beginning with Gas. **Note: The vacuum will engage for 2 seconds to hold the lid down before the first gas stage begins.**
2. Once you have engaged the Purge function then enter EDIT MODE (follow the instructions indicated in point D on page 00).
3. The **VAC LED** will be lit and you will see a number appear in the **Time / Percentage** display. This number indicates how many stages you wish to execute.
4. Press the Plus / Minus keys to set the number of stages you want.
5. Press the **Left Arrow** key. You will see that the LED above the word **VAC** stays on.
6. Press the Plus / Minus Key to set the amount of Vacuum time for all of the vacuum stages. **This second setting is ALWAYS the vacuum time.**
7. Press the Left arrow key. You will see that the LED above the work **VAC** remains on.
8. Using the Plus / Minus keys set the amount of Gas time for all gas cycles. Note: **This third setting is always the Gas time.**

**Note: If you Press the Purge key a third time the decimal point will disappear. The Purge function is now OFF and your regular Vacuum & Gas settings will resume.**



# 4.MAINTENANCE

## 4.1 Basic Maintenance

The following maintenance procedures should be followed no matter what model Promarks machine you own.

### 4.1.1 Daily Visual Inspection

Your machine should have the following items inspected daily. If this inspection is performed daily prior to the start of your days production you will find that your machine will always perform consistently, last longer and suffer less down time.

#### A. Teflon Covers

1. Clean if they have any foreign mater adhering to them
2. Look for any burned spots, cuts or tears. Replace if needed.

#### B. Vacuum Pump Oil

1. Check the oil level. Fill if below Minimum on the sight gauge. Refer to Fig. 1 on page 6.
2. Replace the oil after 500 hours of operating time.

#### C. Vacuum Chamber Lid Gasket

1. Check for general wear
2. Check for damage
3. Replace as needed.

**D. Pressure Bar Rubber:** On TC and some SC machines this is the rubber part found in the lid of your machine that meets with the seal bar when the machine is in operation. In other SC machines and in all DC machines this is the rubber part that is located on the chamber's base that meets with the seal bar when the machine is in operation.

- 1 Check for excessive wear.
2. Check for burnt spots, cuts and tears.
3. Replace as needed.

#### E. Vacuum Pump Motor Sound

1. Listen for the smooth, normal sound of your vacuum pump.
2. If any abnormal sounds are detected **TURN OFF YOUR MACHINE RIGHT AWAY** and perform a trouble shooting procedure.

### 4.1.2 Daily cleaning

**Important Note:** The following daily cleaning points are meant to help keep your machine in proper working order. They are in no way intended to provide the required level of sanitation needed for the packaging of food products. As noted earlier in this manual your company should consult with an expert in the sanitation field to design a robust sanitation routine when packaging food products.

1. Clean the seal bar's Teflon tape very carefully using a rag and a mild organic solvent. **DO NOT** directly wash down this area of the machine.
  
2. Clean the rubber pad in the seal pressure bar. Once again use a rag and a mild organic solvent. **DO NOT** directly wash down this area of the machine.
  
3. Wipe down the stainless steel housing using an approved stainless steel cleaner.
  
4. On machines with clear chamber lids or viewing windows clean them using a mild glass cleaner.
5. If your machine is an SC Series or a DC Series unit open the housing access door and visually check for oil or debris around the vacuum pump area. If you see anything that needs to be cleaned **DO NOT start cleaning until the machine is properly locked out and tagged out.**

## 4.2 VACUUM PUMP MAINTENANCE

For detailed information concerning maintenance and repair of your machine's vacuum pump please refer to the manufactures operating manual that was packaged with your new machine.

## 4.3 SEAL BAR MAINTENANCE

### A. Replacing the Teflon Cover

1. Remove the seal bars from your machine.
  - a. Seal bars are located in the chamber on all TC Series machines and some smaller SC Series machines.

- b. Seal bars are located in the lid on larger SC Series machines and all DC Series machines.
2. Remove the screws that hold the Teflon holding strap in place. Refer to **Figure A on the next page**.
3. Remove the old Teflon cover.
4. Inspect the seal element.
  - a. Clean it off with lacquer thinner if needed.
  - b. Replace if broken or burnt badly. **Refer to the instructions under B below for replacement**
5. Install the new Teflon cover and reinstall the seal bars.

## **B. Replacing the Seal Element**

1. Using a hex wrench loosen the screws holding the seal element and remove it
2. Install the new seal element. **Refer to Figures B & C on the next page.**
  - a. Place the new element across the surface of the seal bar leave an excess of about 3/4" at each end.
  - b. Make sure you put the tension spring back in place.

## **4.4 V A C U U M V A L V E M A I N T E N A C E**

### **4.4.1 VENT VALVE GREASING PROCEDURE**

1. First, remove the inner snap ring.
2. Second , you can remove the valve piston.
- 3.Third , put a small amount of grease on the o-ring and reassemble(FIG1).

### **4.4.2 VACUUM VALVE GREASING PROCEDURE**

- 1.First , remove the four hex nuts(FIG2 A).
- 2.Second , apply small amount of grease to o-ring(FIG2 B).
- 3.Next , apply small amount of grease to inside well of piston housing(FIG2 C).  
Re-assembly

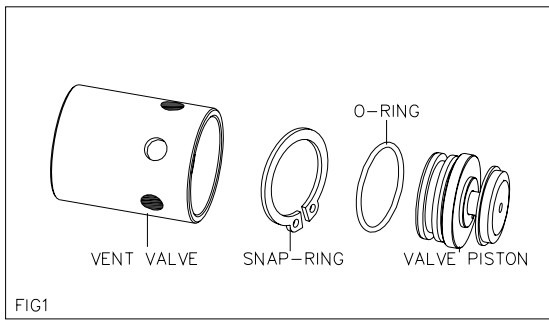


FIG1

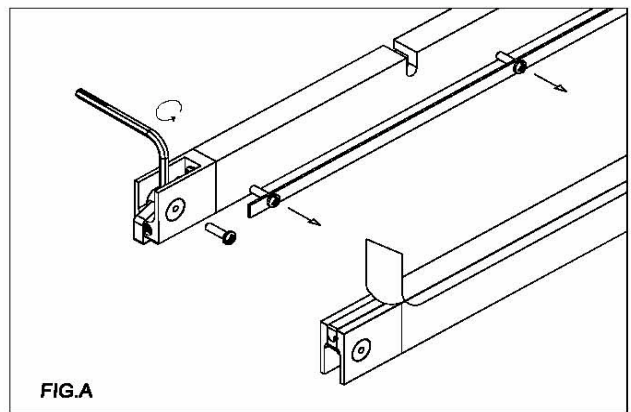


FIG.A

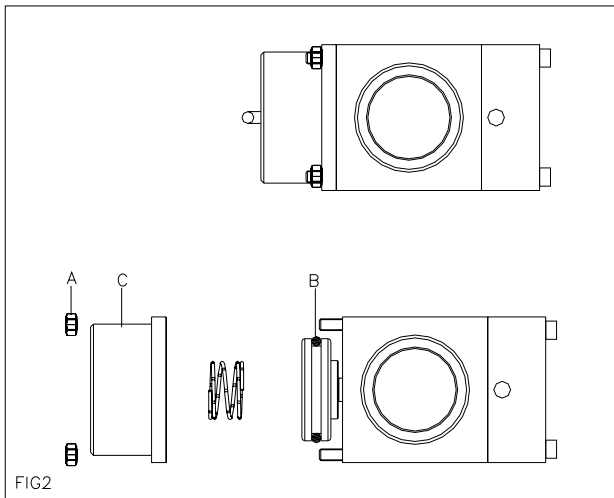


FIG2

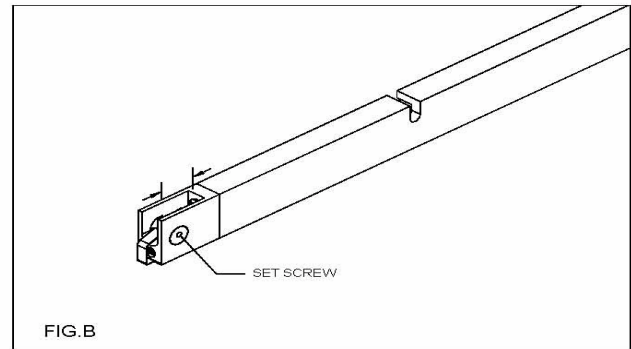


FIG.B

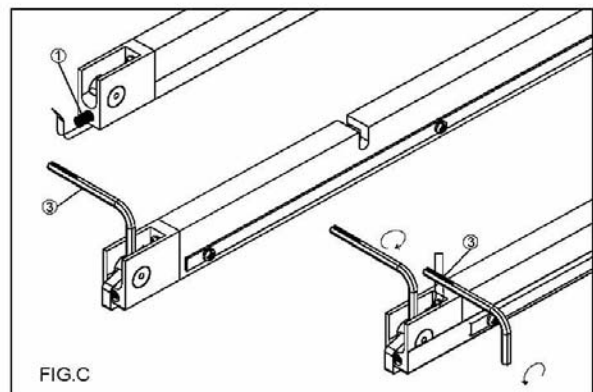


FIG.C

## 4.5 MAINTENANCE INTERVALS AND CHECK ITEMS

Maintenance Intervals/ Check items	Daily	Bimonthly	Quarterly	Yearly	Biyearly	3 ~ 5 years	Note
Keep the vacuum lid open after finished working and let vacuum pump running about 15 minutes.	X						
Check the oil level	X						
Check the sound of motor	X						
Oil come out from exhaust cover or not	X						
Bottom sealing bar working normally or not	X						
Clean the exhaust filter		X					
Change vacuum oil		X					
Replace exhaust filter				X			
Replace Teflon tape				X			As request
Replace sealing Silicone rubber				X			As request
Replace lid gasket rubber				X			As request
Replace pressure bag					X		As request
Replace vanes						X	

Above-mentioned maintenance intervals are scheduled basically for 8 working hours per day.

Recommended oil : A. Grav. API 30.5  
 Pour Pt. -15°C  
 Flash Pt. 225°C  
 Viscosity 32.05 CST@40°C  
 Color Light Yellow  
 V.I. 100

## 5. TROUBLESHOOTING

### 5.1 PROBLEMS AND CORRECTIONS

Problem and Corrections - Review installation procedure section to ensure the installation is correct. If correct, the troubleshooting chart below lists possible problems, causes, corrections, and reference guide.

Problem	Cause	Correction
Control panel is under normal function, but vacuum pump does not start.	The KM1, QM1, MCB1, MCB2 protectors are disconnected.	Check each part and turn on the switch, reconnect, if necessary.
Vacuum pump does not run.	The power supply is not corresponding with the power demand indicated on the back of machine.	Reconnect to correct power source.
Insufficient vacuum in chamber.	Low oil level in vacuum pump.  Lid silicone rubber damaged.	Fill oil, if necessary.  Stop machine immediately. Then alter the power connection and reconnect to correct ones. Replace.
Insufficient vacuum in bag.  <b>Note :</b> Mostly insufficient vacuum in bag is due to leakage of bag, but not the fault of machine.	Bag is leaking.  Sharp corners on wrapped product puncture the bag.  Bag is too large.	Replace the bag.  Replace the bag and use a thicker one.  Replace with a smaller one.
Vacuum bag is easily pulled apart by hand.	Sealing time (temperature) is too short (low).	Adjust sealing time (temperature) to be longer (higher).
Sealing area has some burnt marks or bubbles appeared.	Sealing area stuffed with oil or meat juice or dirt.  Sealing time (temperature) is too long (high).	Clean and remove them.  Adjust sealing time (temperature) to be shorter (lower).
Chamber Lid does not open.	Vent valve is sticking.	Apply grease refer to 4.4.1.
Machine does not start to vacuum	Vacuum valve is sticking	Apply grease refer to 4.4.2

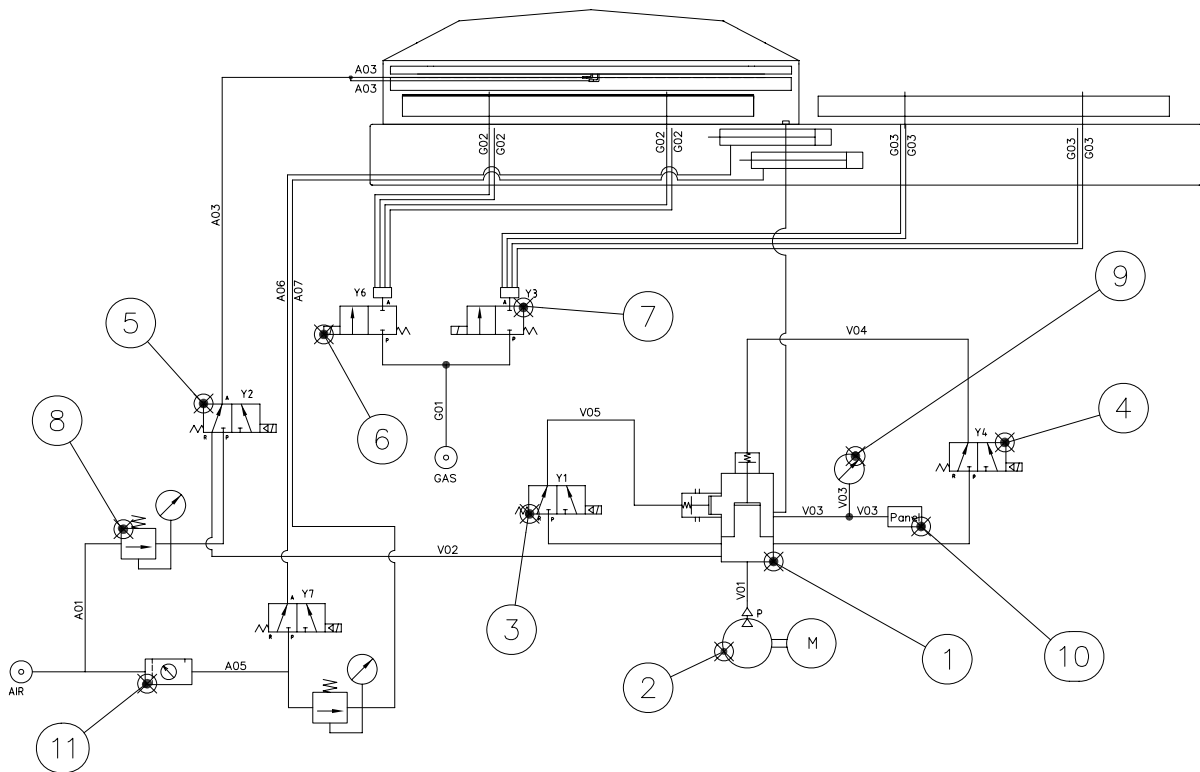
Problem	Cause	Correction
No or improper sealing.	Sealing wire is broken.	Replace it.
	Sealing wire is loose.	Tighten it.
	Insufficient pressure.	Pressure bar is damaged, replace it.
	Sealing transformer is damaged.	Replace it.
	Teflon tape or silicone rubber is damaged.	Replace it.
	Sealing time and cooling time are too short.	Adjust to proper time.
<b>NOTE :</b> Please do not adjust sealing longer than regular time, or it will reduce the life of Teflon tape and silicone rubber.	Sealing pressure is too low.	Replace the pressure bag.
	Lid does not close.	
	Vacuum valve is damaged.	Replace it.
	Limit switch is disconnected or damaged.	Reconnect or replace it.

## 5.2 25PIN D Type Terminal Wiring Connection Instructions

PIN NO	FUNCTION		PIN NO	FUNCTION	
1	AC24V Input — For Internal		13	External DC24V	Rectificated
2	AC24V Input — For Internal		14	External DC24V	Rectificated
3	AC24V Input — For External		15	Sealing Bar 2 Heat Contact	Relay Contact
4	AC24V Input — For External		16	Pulse Soft Air Contact	Relay Contact
5	Air Inlet Valve	Relay Contact	17	x	
6	Sealing Press Bar Gas Flushing	Relay Contact	18	x	
7	Sealing Bar 1 Heat	Relay Contact	19	x	
8	External Special Gas Valve	Relay Contact	20	x	
9	Vacuum Valve	Relay Contact	21	Over Relay Input Same As 25	External Input
10	COM	Relay Contact	22	Internal Grounding	External Input
11	Internal Grounding	External Input	23	COM point	Relay Contact
12	Vacuum Lid Signal Input	External Input	24	Vacuum Motor Contact	Relay Contact
			25	Over Relay Input Same As 21	External Input

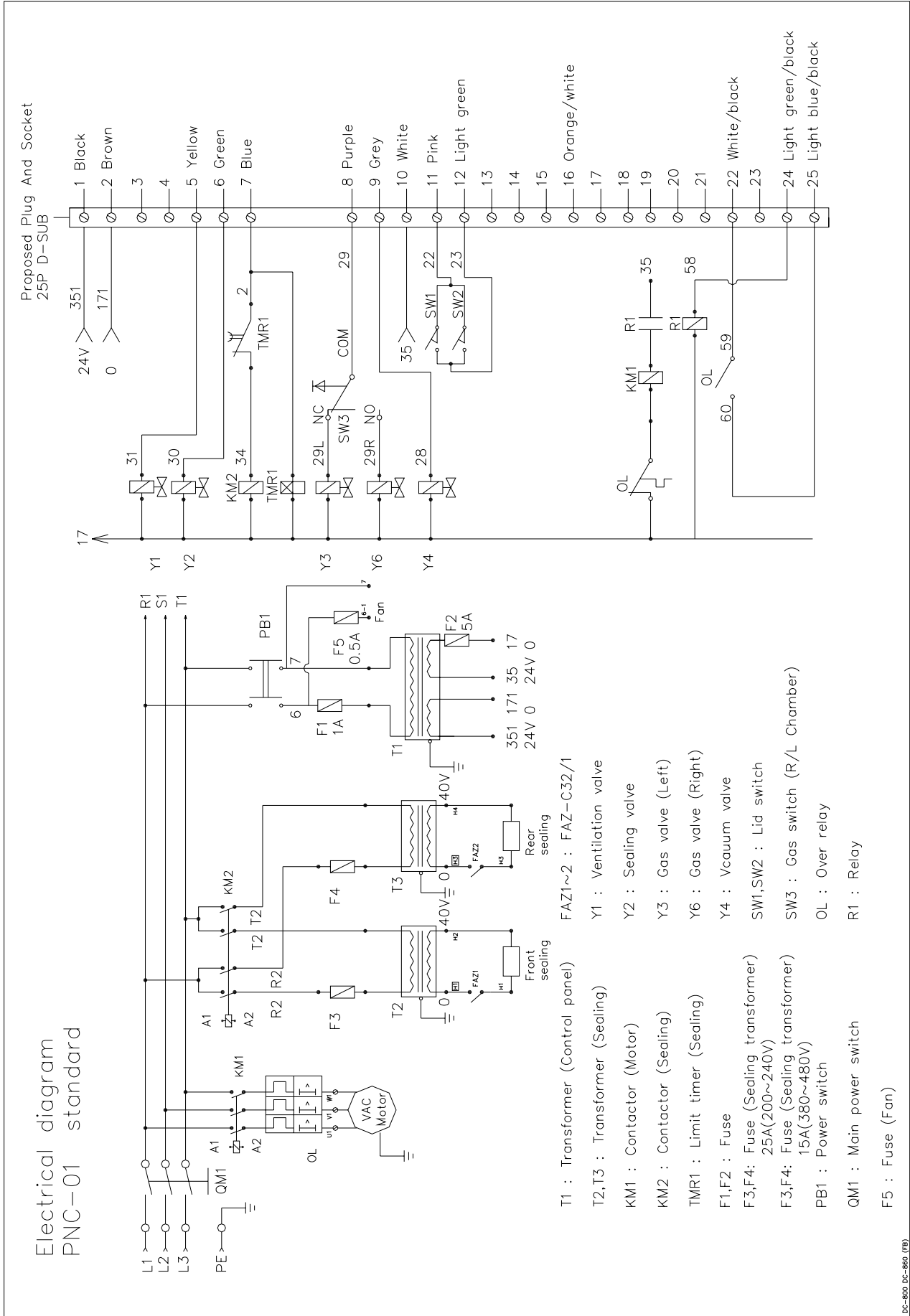
## 5.3 PNEUMATIC DIAGRAM

NO	DESCR	QTY	NOTE
1	Vacuum Valve Set	1	
2	Vacuum Pump	1	
3	Ventilation Valve	1	
4	Vacuum Valve	1	
5	Sealing valve	2	
6	Gas Valve	1	
7	Gas Valve	1	
8	Pressure control valve	2	
9	Vacuum Gauge	1	
10	Control panel	1	
11	Air units	1	

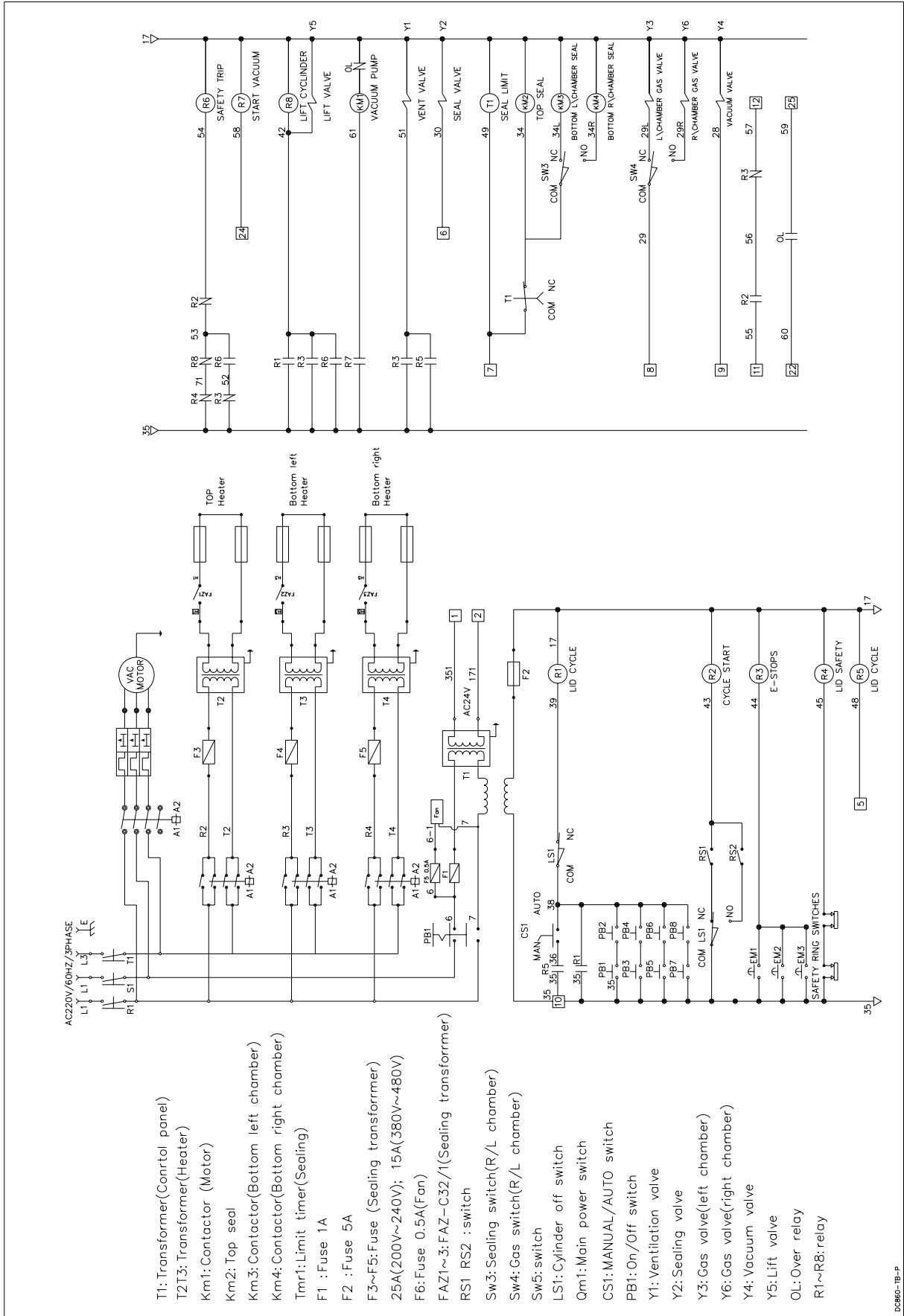




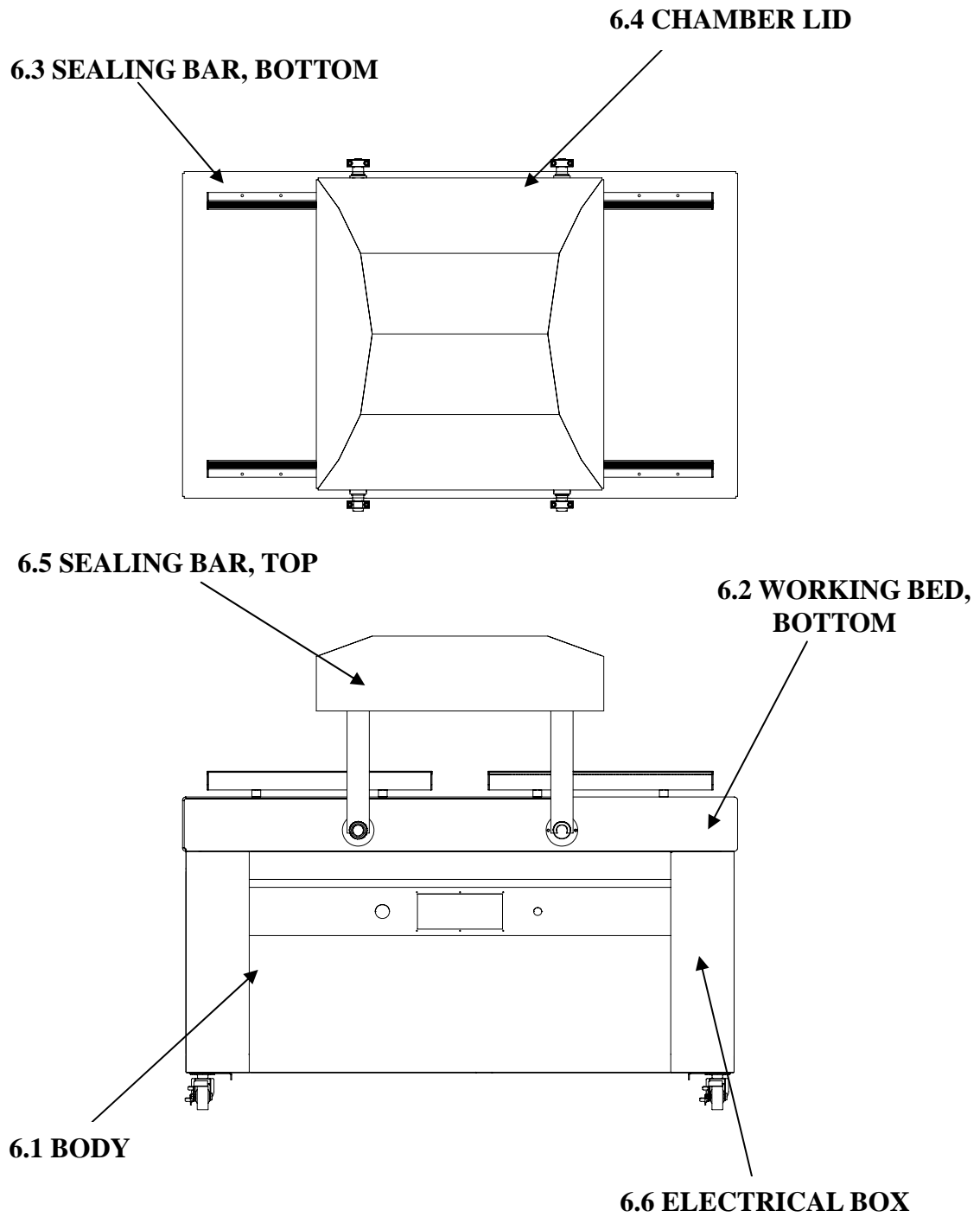
# 5.4 ELECTRICAL DIAGRAM (FB)



# 5.4 ELECTRICAL DIAGRAM (TB)

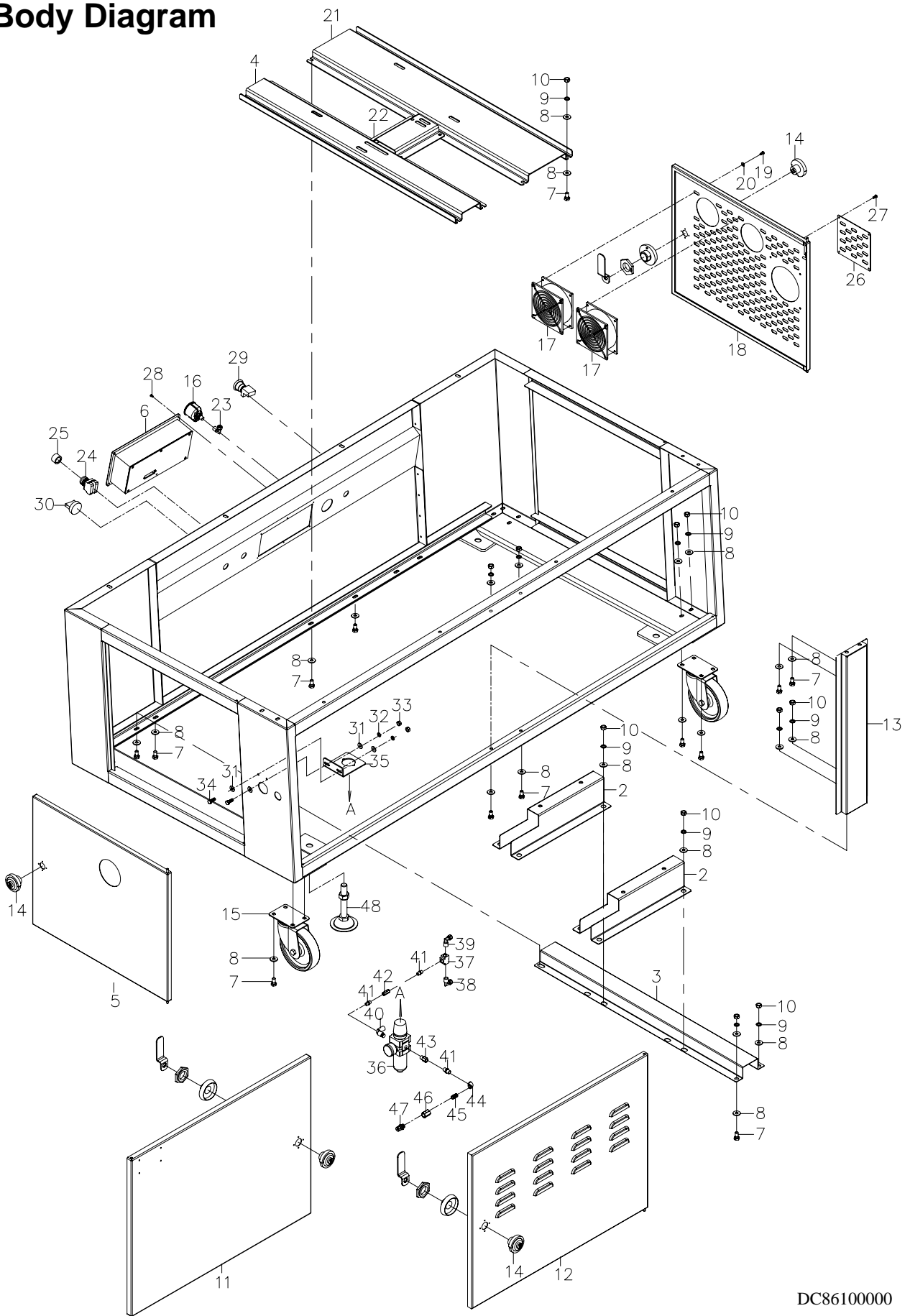


## 6. FABRICATION



# 6.1 BODY

## Body Diagram



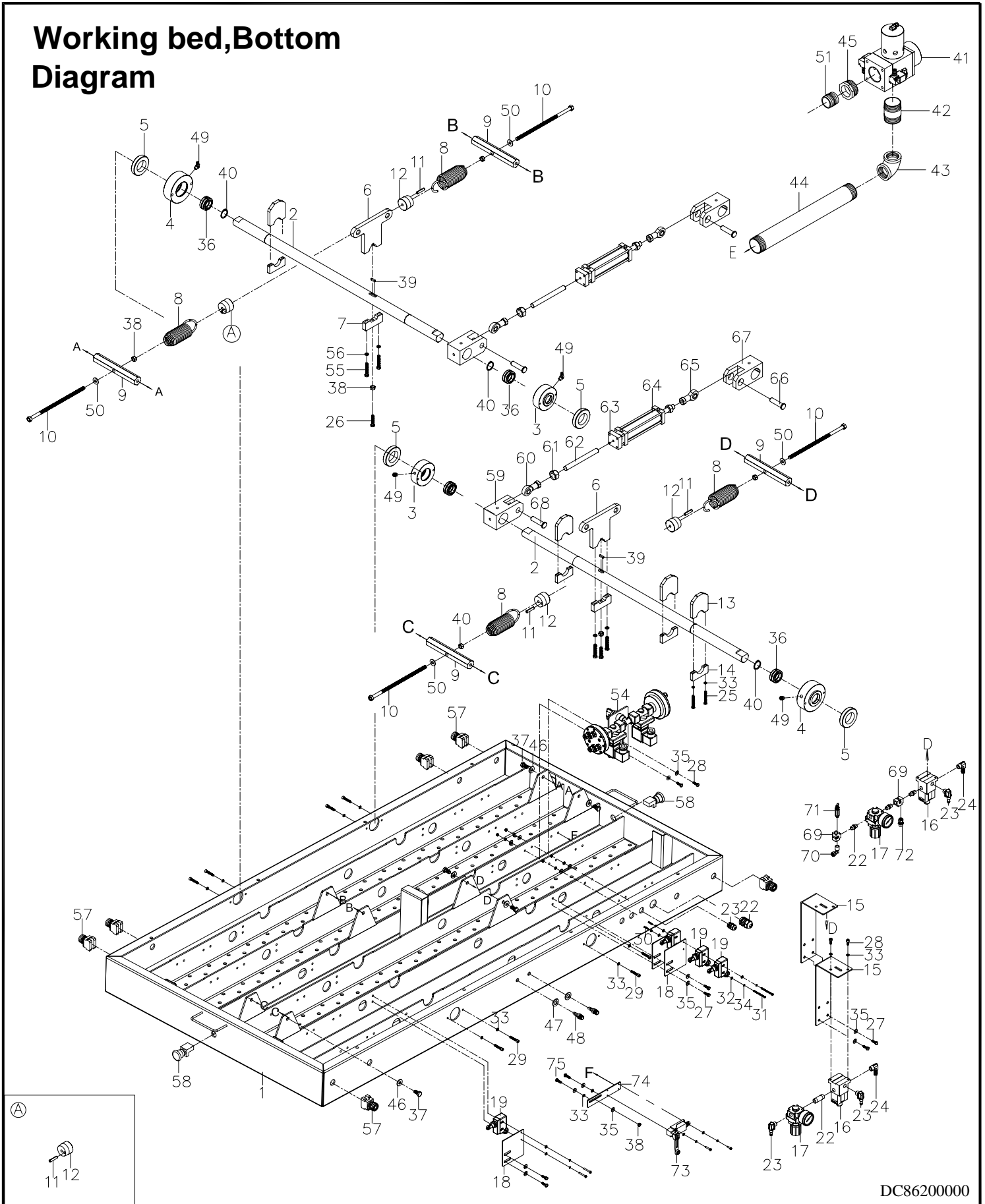
DC86100000

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	DC86121000	Frame	1	
2	DC86107000	Electrical box mounting bracket	2	
3	DC86106000	Electrical box mounting bracket	1	
4	DC86103002	Electrical box mounting bracket	1	
5	D88K116000	Side door	1	
6	2874033	Control panel	1	
7	2700408	Hex head screw M8 x 20	44	
8	2705152	Flat washer M8	46	
9	2705301	Split lock washer M8	44	
10	27072032	Nut M8	44	
11	D88K118001	Back door - L	1	
12	D80K117000	Back door - R	1	
13	D88K102000	Plate	1	
14	2883333	Door lock	4	
15	271211812	Casters	4	
16	29135564	Pressure Gauge	1	
17	2813507	Fan	2	
18	DC86115002	Side door-L	1	
19	2703302	Round head screw M5x15	8	
20	DC80119000	Fan plate	8	
21	DC86104002	Vacuum pump mounting bracket	1	
22	DC86105000	Vacuum pump mounting bracket	1	
23	29090426	Nylon tube fitting	1	
24	2870048	Round flat button YW1B-A1E20G	1	
25	28704940	Bushing ZBPO	1	
26	DC80120000	Cover plate	6	
27	2703308	Round screw hd M4x12	4	
28	2703307	Round screw hd M4x10	6	
29	28391232	Switch,Emergency	1	
30	2871220	Knob,Selector switch YW1S-2E10P	1	
31	2705151	Washer,Flat M6(S)	4	
32	2705302	Washer,Split lock M6(S)	4	
33	2707204	Nut,Hex hd M6(S)	2	
34	2700439	Screw,Hex hd M6x25(S)	2	
35	DC86291000	Bracket,Mounting-Air reguator	1	

NO.	PART NO.	DESCRIPTION	QTY	NOTES
36	29101020	Regulator,Air Main SMC AW30-02BD	1	
37	2909009	Tee Branch valve 1/4"	1	
38	2909042	Fitting,Nylon tube A033	1	
39	2909069	Fitting,Nylon tube A034	1	
40	2909021	90 ° Fitting	1	
41	2909102	Fitting 1/4"	3	
42	2914052	Valve,check 1/4"	1	
43	2909130	Fitting P52	1	
44	2909110	90 ° Fitting	1	
45	29092180	Nipple 1/4"x30mm	1	
46	2909172	Fitting B23	1	
47	2909JPC1002	Fitting JPC10-02	1	
48	27M82533	Base leg	4	

## 6.2 WORKING BED (BOTTOM)

### Working bed, Bottom Diagram



DC8620000

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	DC86224000	Welded body (FB-P)	1	
	DC86223000	Welded body (TB-P)		
2	DC86202000	Main shaft	2	
3	D88K203000	Bearing bracket	2	
4	D88K204000	Bearing bracket	2	
5	D80K205000	Washer	4	
6	D88K206000	Bracket - Spring,Top	2	
7	D88K207000	Bracket - Spring,Bottom	2	
8	D80K208000	Tension spring	4	
9	D80K210000	Spring mounting bar	4	
10	D80K211000	Spring adj. screw	4	
11	2708012	Spring pin	4	
12	D80K209000	Spring pull shaft	4	
13	D88K212000	Sensor plate	3	
14	D88K213000	Sensor plate	3	
15	DC80216001	Solenoid valve mounting plate	2	
16	2911805	Solenoid valve VT317-9D-02 AC24V	2	
17	29100050	Air regulator SMC AR20-02H	2	
18	DC86215000	Limit switch bracket	3	
19	2853313	Limit switch TZ-7311	4	
20	2861022	Fitting - electric conduit, MG Type MG-25A-18B	1	
21	2861021	Fitting - electric conduit, MG Type MG-20A-14B	2	
22	2909112	Fitting, P-12 1/4"x1/4"	2	
23	29090312	Speed control valve - L type VSL-8x1/4"	3	
24	29093431	Pin - copper tube 90° B-01 1/4PTx1/4H	2	
25	2700403	Hex head screw M6 x 50	6	
26	2700441	Hex head screw M8 x 35	2	
27	27004011	Hex head screw M6 x 20	6	
28	2701152	Hex socket head screw M6 x 16	4	
29	27011551	Hex socket head screw M6 x 35	8	
30	2703311	Round head screw M4 x 30	2	
31	27033161	Round head screw M4 x 60	2	
32	2705306	Split lock washer M4	4	
33	2705302	Split lock washer M6	16	
34	2705154	Flat washer M4	6	
35	2705151	Flat washer M6	14	

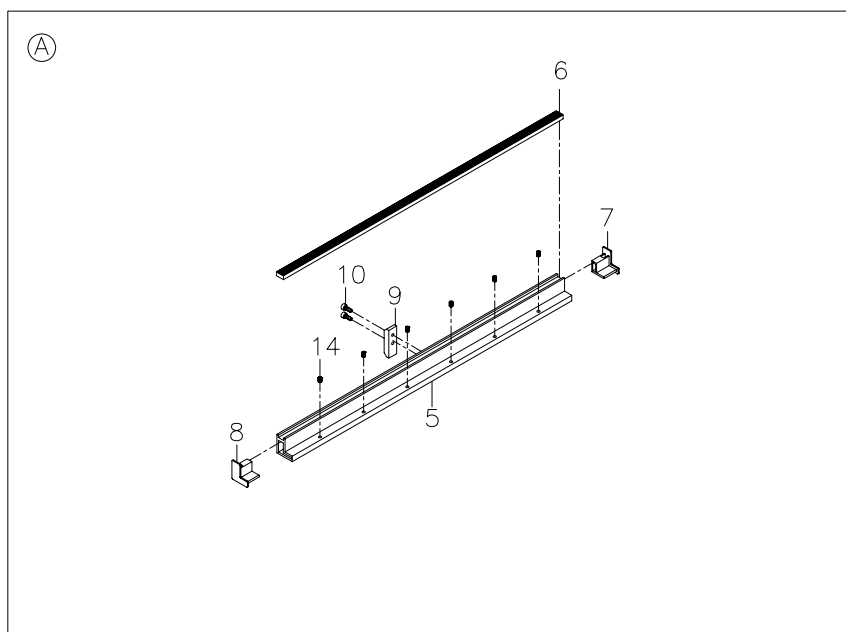
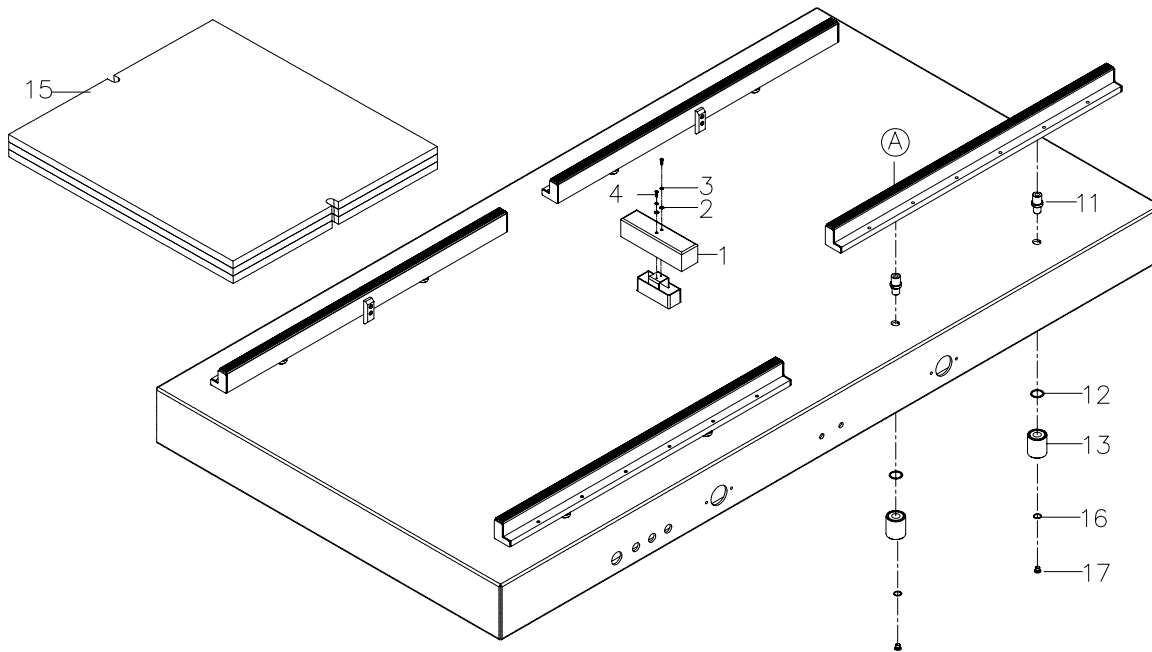


NO.	PART NO.	DESCRIPTION	QTY	NOTES
36	27281157	Bearing GE35ES	4	
37	D80K231001	Hex socket head screw M10 x 25	8	
38	2707203	Hex nut M8	6	
39	2709206	Key 8x8x20	2	
40	27062201	Ring, R55	4	
41	D80K235000	Vacuum valve assembly 2"	1	
42	290932573	Nipple 2"x2"	1	
43	2740068	Elbow, 2"	1	
44	290932572	Nipple 2"x 365mm	1	
45	2909007D	Fitting, 2" x 1-1/4" (R5 0100E)	1	
	29090072	Fitting, 2" x 1-1/2" (R5 0205D; R5 0305D)		
46	2705189	Washer flat M10	8	
47	2705155	Split lock washer M14	2	
48	29091751	Fitting, Nylon Tube 90° B-01 1/4PTx1/4H	2	
49	27401402	Nipple, Grease 1/8"	4	
50	27046153	Wahser flat M8	4	
51	2909325632	Nipple, 1-1/4"x40mm (R5 0100E)	1	
	2909325631	Nipple, 1-1/2"x40mm (R5 0205D; R5 0305D)		
52	274000671	Elbow, 1-1/4 (R5 0100E)	1	
	27400067	Elbow, 1-1/2 (R5 0205D; R5 0305D)		
53	DC80150000	Pump air wire fitting (R5 0100E)	1	
	DC80140000	Pump air wire fitting (R5 0205D; R5 0305D)		
54	DC804G0000	Gas nozzle electrical unit	1	OPTION
55	27004202	Hex head screw M8 x 50	4	
56	2705301	Split lock washer M8	4	
57	2870049	Round Flat Button YW1B-M1E10G	8	
58	28391232	Switch Emergency	2	
59	D1KK293000	Base Shaft	2	
60	2728419	Rod eye PHS M16x2	2	
61	27070123	Nut Hex hd M16x2	2	
62	DC80298000	Link Universal Joint	2	
63	DC80297000	Bracket Mounting Universal Joint	2	
64	2920679	Air cylinder MCQA-11-63-200M	2	
65	27284071	Rod eye PHS M18x1.5	2	



### 6.3.1 CUSHION BAR (FB)

## Cushion Bar Diagram

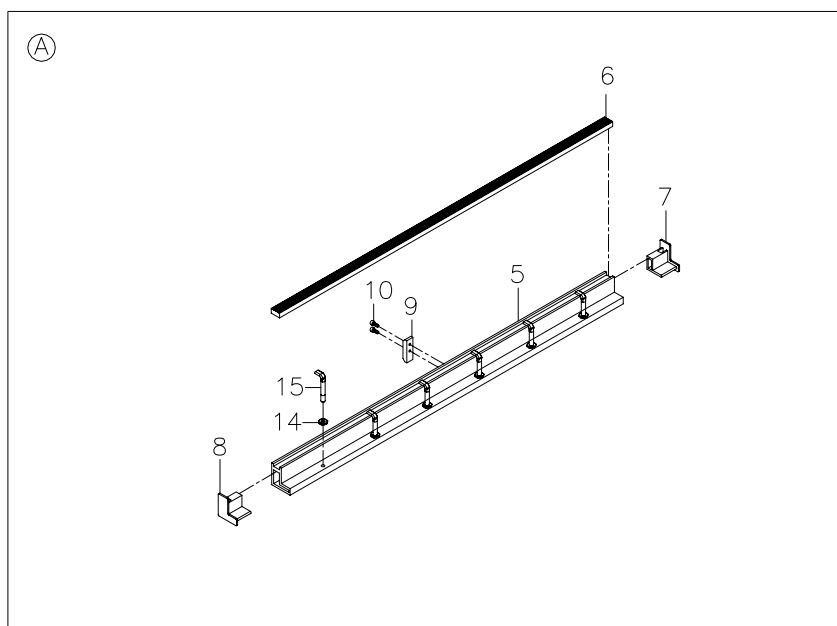
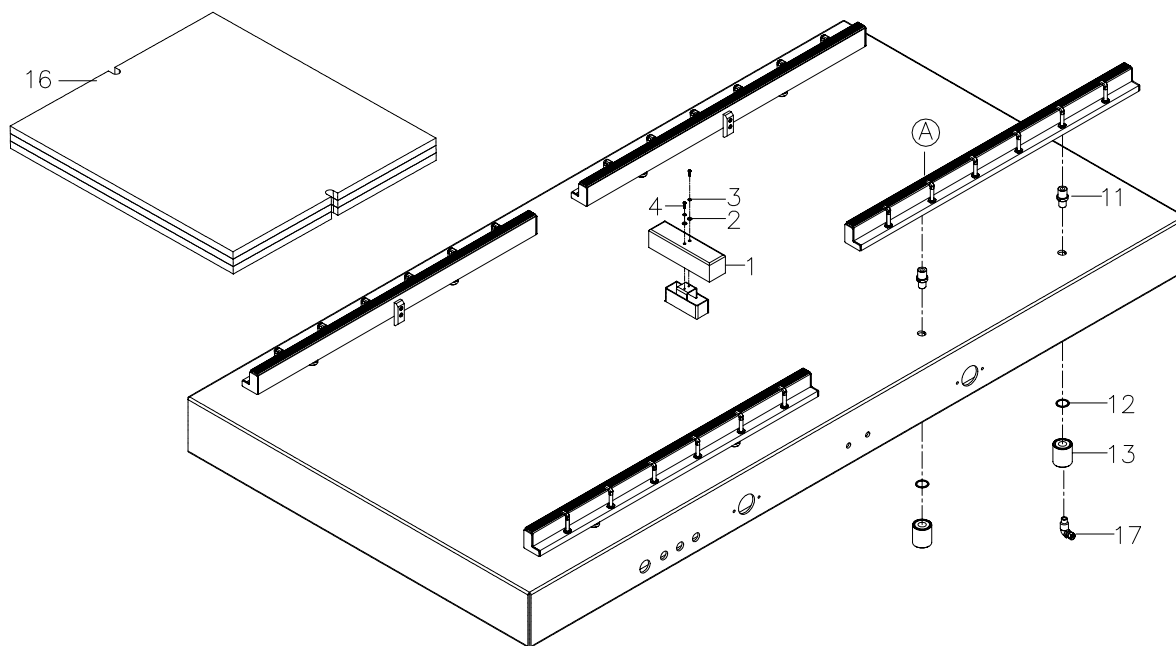


D88K2FB000

<b>NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>NOTE</b>
1	DC80202000	Cover - vacuum suction	1	
2	2705154	Flat washer M4	2	
3	2705306	Split lock washer M4	2	
4	2703308	Round screw hd M4x12	2	
5	D88K223000	Sealing bar (FB)	4	
6	D88K252000	Sealing silicon	4	
7	D80K226000	Silicon bar end insert-L	4	
8	D80K225000	Silicon bar end insert-R	4	
9	D80K224000	Inner plate	4	
10	2701164	Socket set screw M4 x 10	8	
11	DC80210000	Support shaft - bottom sealing bar	8	
12	2740168	O-ring	8	
13	DC80211000	Nut - bottom sealing bar support shaft	8	
14	2867290	Cap	24	
15	D88K222000	Flat plate	4	
16	2740171	O-ring	8	
17	DC80212000	Cap	8	
A	D88K2FB000	Cushion bar assembly	4	

## 6.3.2 CUSHION BAR (FBG)

### Cushion Bar Diagram

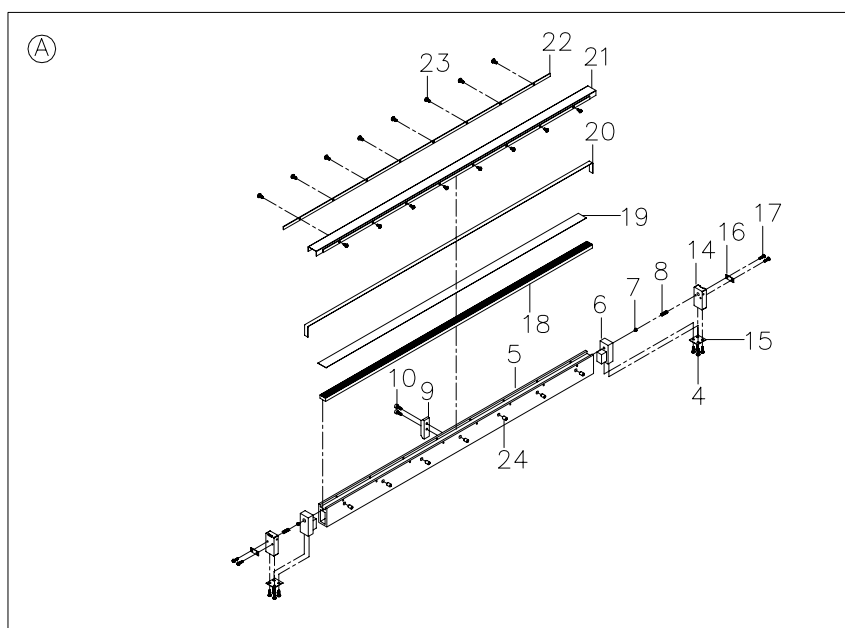
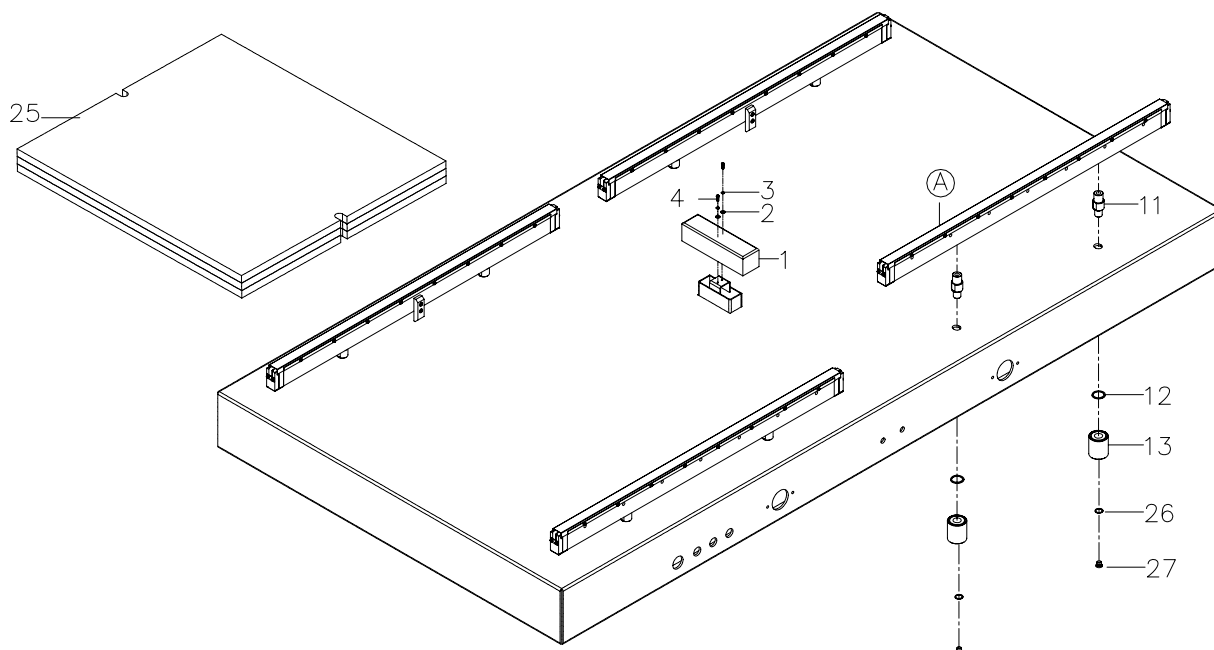


D88K2FBG00

<b>NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>NOTE</b>
1	DC80202000	Cover - vacuum suction	1	
2	2705154	Flat washer M4	2	
3	2705306	Split lock washer, M4	2	
4	2703308	Round head screw M4 x 12	2	
5	D88K223000	Sealing bar (FB)	4	
6	3114462	Sealing silicon	4	
7	D80K226000	Cushion bar end insert-L	4	
8	D80K225000	Cushion bar end insert-R	4	
9	D80K224000	Inner plate	4	
10	2701164	Socket set screw M4 x 10	8	
11	DC80210000	Support shaft - cushion bar	8	
12	2740168	O-ring	8	
13	DC80211000	Nut - cushion bar support shaft	8	
14	D80K412001	Gas nozzle (FB)	24	OPTION
15	D80K414000	Gas nozzle nut	24	OPTION
16	D88K222000	Flat plate	4	
17	2909057	Pin-copper tube 1/8x5/16	8	
A	D88K2FBG00	Cushion bar assembly	4	

### 6.3.3 SEALING BAR, BOTTOM (FBTB)

## Sealing Bar, Bottom Diagram



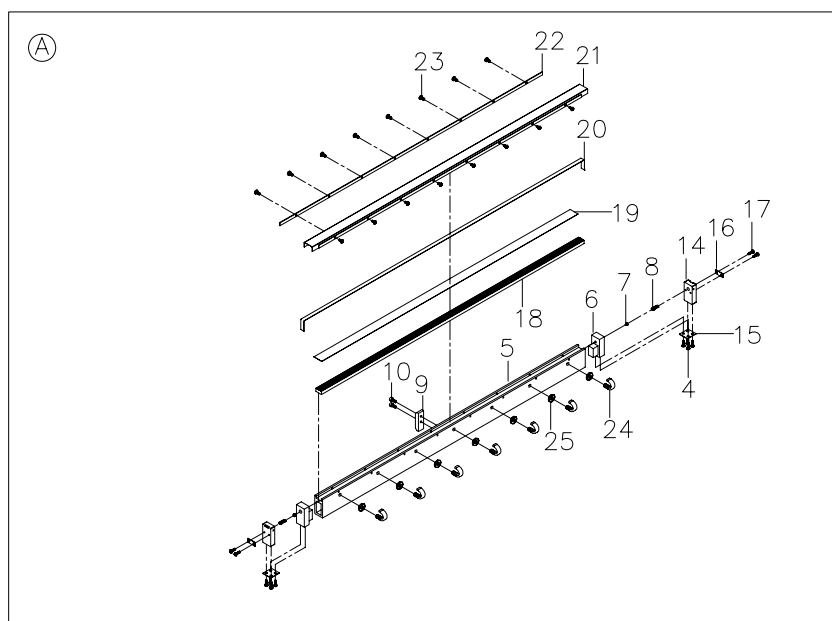
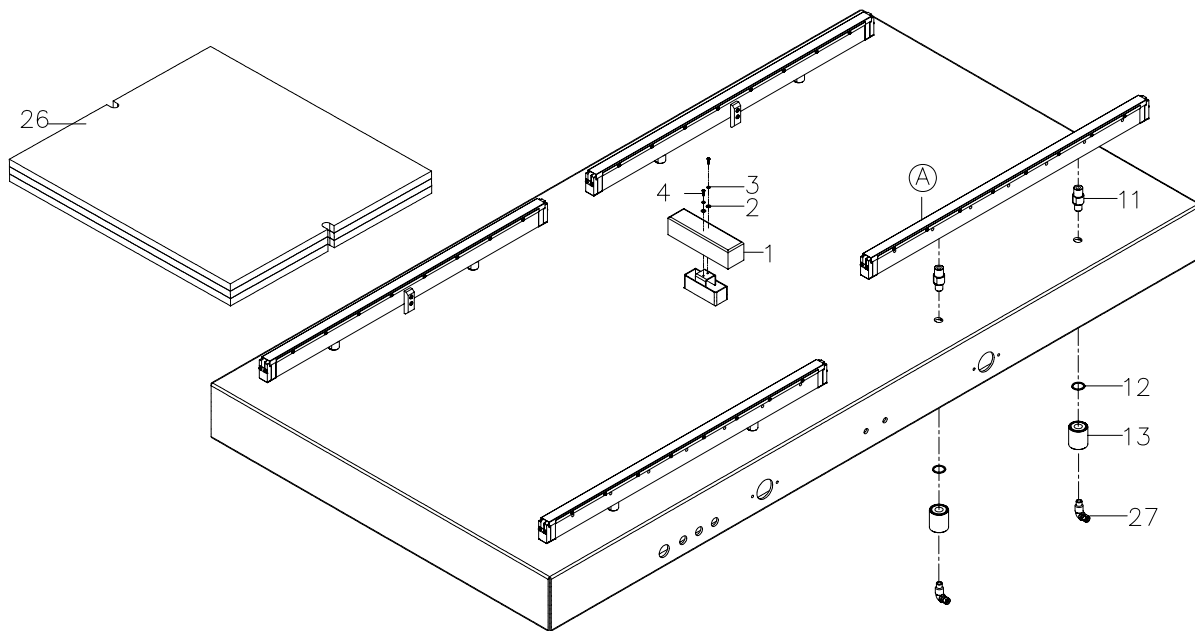
DC862TB000

<b>NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>NOTE</b>
1	DC80202000	Cover - vacuum suction	1	
2	2705154	Flat washer M4	2	
3	2705306	Split lock washer, M4	2	
4	2703308	Round head screw M4 x 12	2	
5	D88K263001	Sealing bar - bottom (TB)	4	
6	D88K286000	Isolated plate-heating	8	
7	D88K289000	Isolated plate	8	
8	VA04277000	Spring	8	
9	D80K224000	Inner plate	4	
10	2701164	Socket set screw M4 x 10	8	
11	DC80210000	Nut - bottom sealing bar support shaft	8	
12	2740168	O-ring	8	
13	DC80211000	Nut - bottom sealing bar support shaft	8	
14	D88K287000	Fitting-heating	8	
15	D88K288000	Joint plate - fitting	8	
16	D88K284000	Sealing wire plate	8	
17	2703307	Round head screw M4 x 10	16	
18	3114463	Sealing silicon	4	
19	3200955	Teflon tape	4	
20	2824011115	Sealing wire	4	
21	3200955	Teflon tape	4	
22	D88K268000	Teflon tape clamp	8	
23	2703325	Round head screw M4 x 8	64	
24	2867290	Cap	28	
25	D88K222000	Flat plate	4	
26	2740171	O-ring	8	
27	DC80212000	Cap		
A	DC862TB000	Sealing bar assembly- bottom	4	



### 6.3.4 SEALING BAR, BOTTOM (FBTBG)

## Sealing Bar, Bottom Diagram

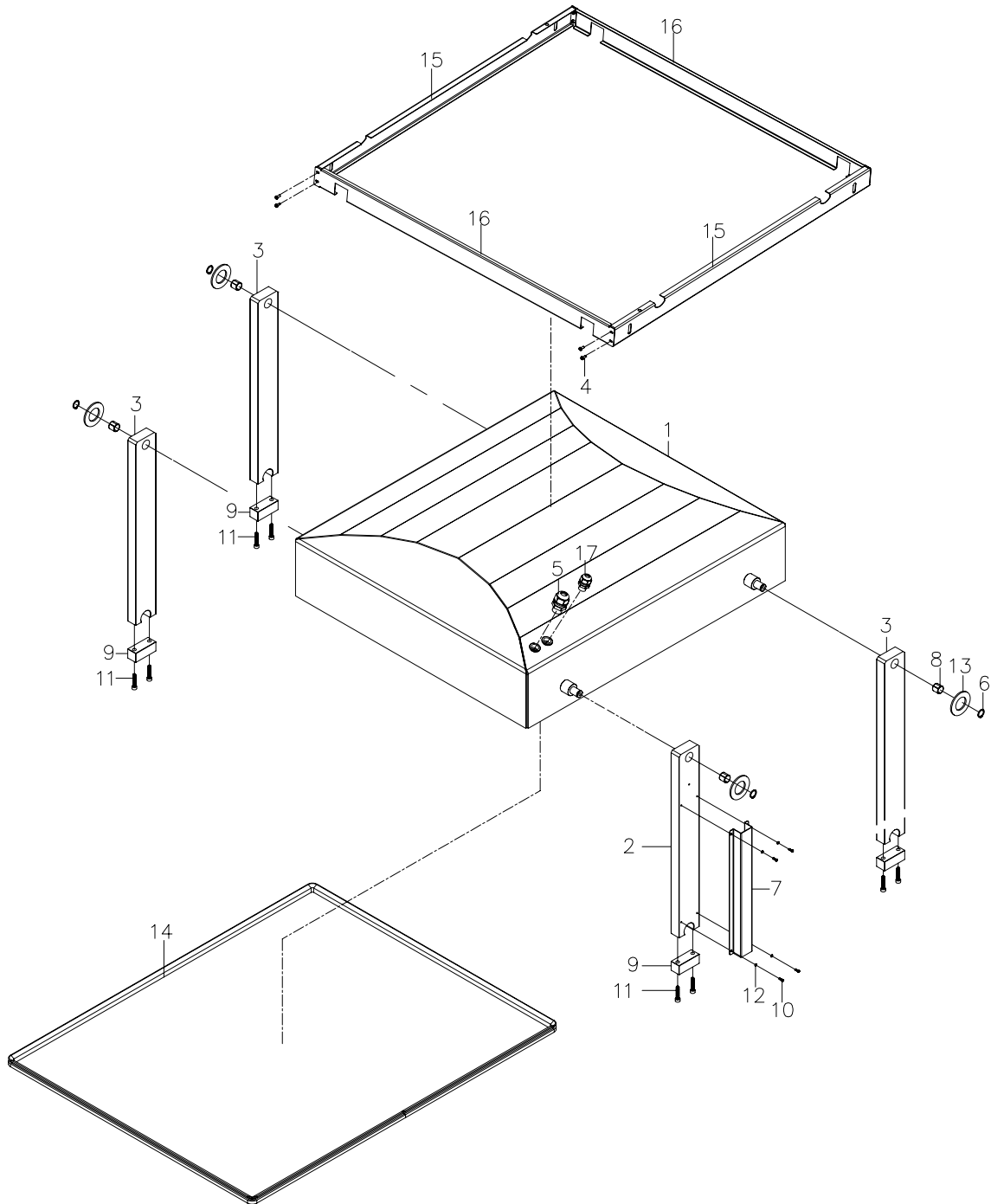


DC862TBG00

<b>NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>NOTE</b>
1	DC80202000	Cover - vacuum suction	1	
2	2705154	Flat washer M4	2	
3	2705306	Split lock washer, M4	2	
4	2703308	Round head screw M4 x 12	2	
5	D88K263001	Sealing bar- bottom (TB)	4	
6	D88K286000	Isolated plate-heating	8	
7	D88K289000	Isolated plate	8	
8	VA04277000	Spring	8	
9	D80K224000	Inner plate	4	
10	2701164	Socket set screw M4 x 10	8	
11	DC80210000	Nut - bottom sealing bar support shaft	8	
12	2740168	O-ring	8	
13	DC80211000	Nut - bottom sealing bar support shaft	8	
14	D88K287000	Fitting-heating	8	
15	D88K288000	Joint plate - fitting	8	
16	D88K284000	Sealing wire plate	8	
17	2703307	Round head screw M4 x 10	16	
18	3114463	Sealing silicon	4	
19	3200955	Teflon tape	4	
20	2824011115	Sealing wire	4	
21	3200955	Teflon tape	4	
22	D88K268000	Teflon tape clamp	8	
23	2703325	Round head screw M4 x 8	64	
24	D80K413001	Gas nozzle (FB)	28	OPTION
25	D80K414000	Gas nozzle nut	28	OPTION
26	D88K222000	Flat plate	4	
27	2909057	Pin-copper tube 1/8x5/16	8	
A	DC862TBG00	Cushion bar assembly	4	

## 6.4 CHAMBER LID DIAGRAM

### Chamber Lid, Top Diagram

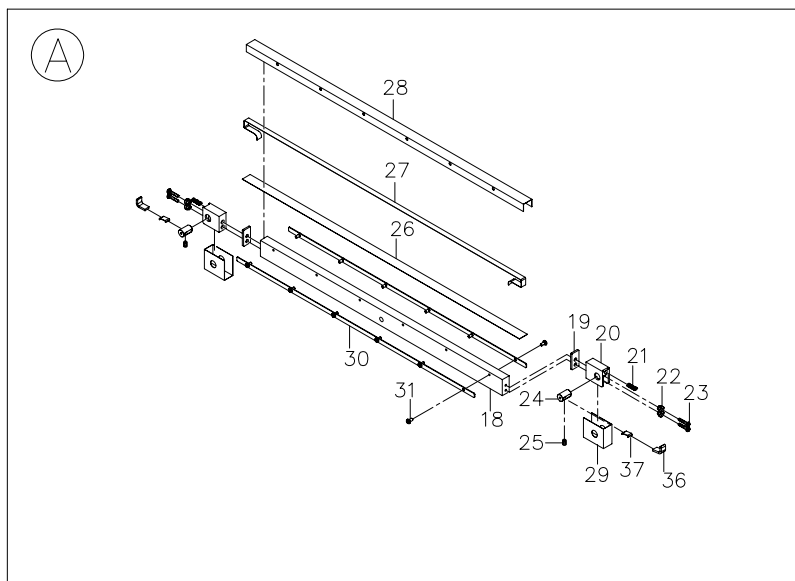
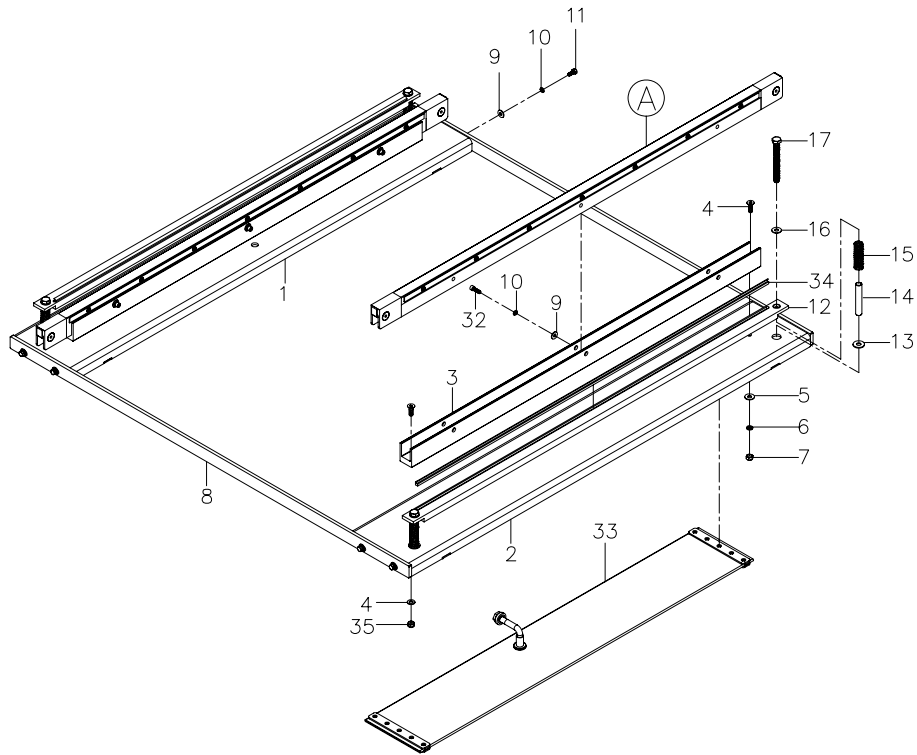


D88K300000



## 6.5.1 SEALING BAR, TOP (FB)

### Sealing Bar-Top Diagram

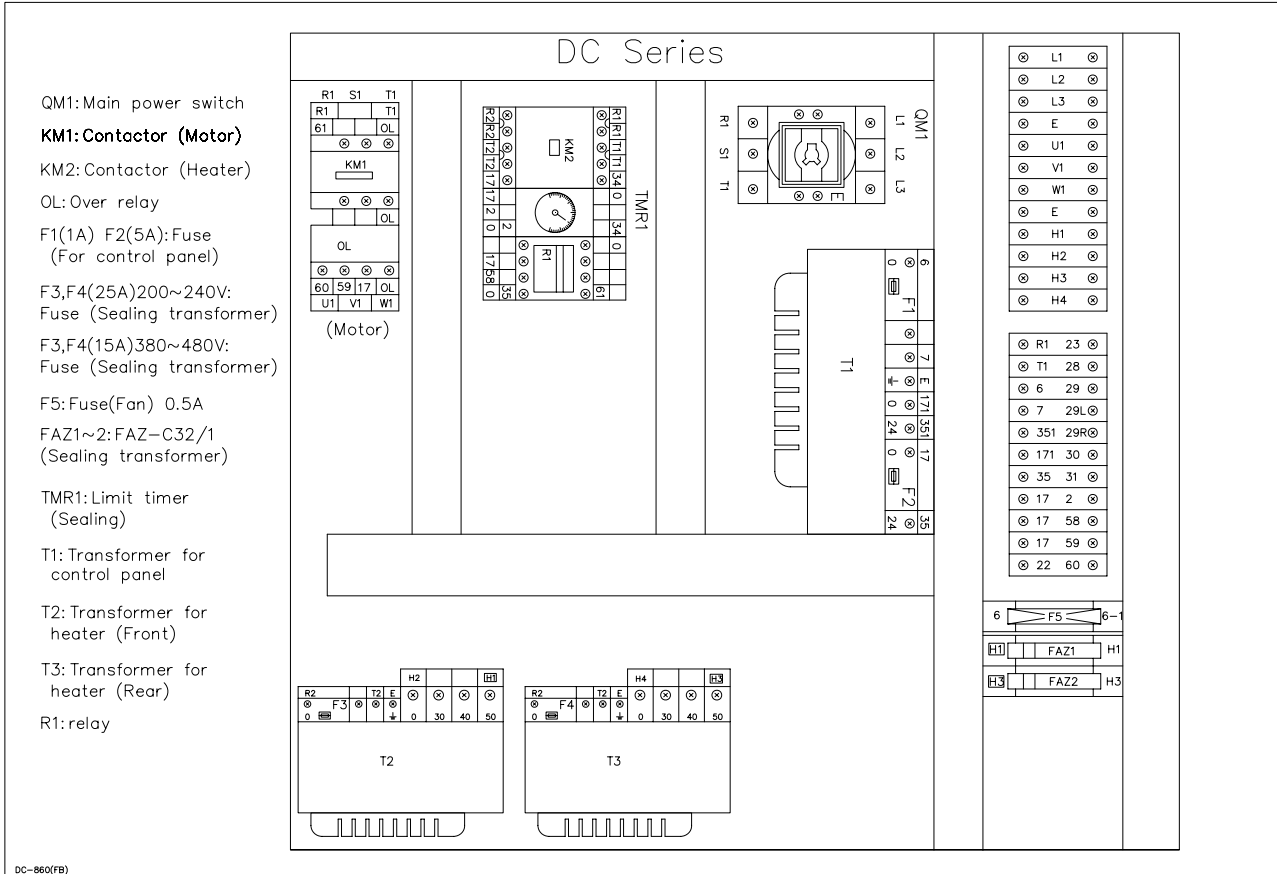


D88K312A00

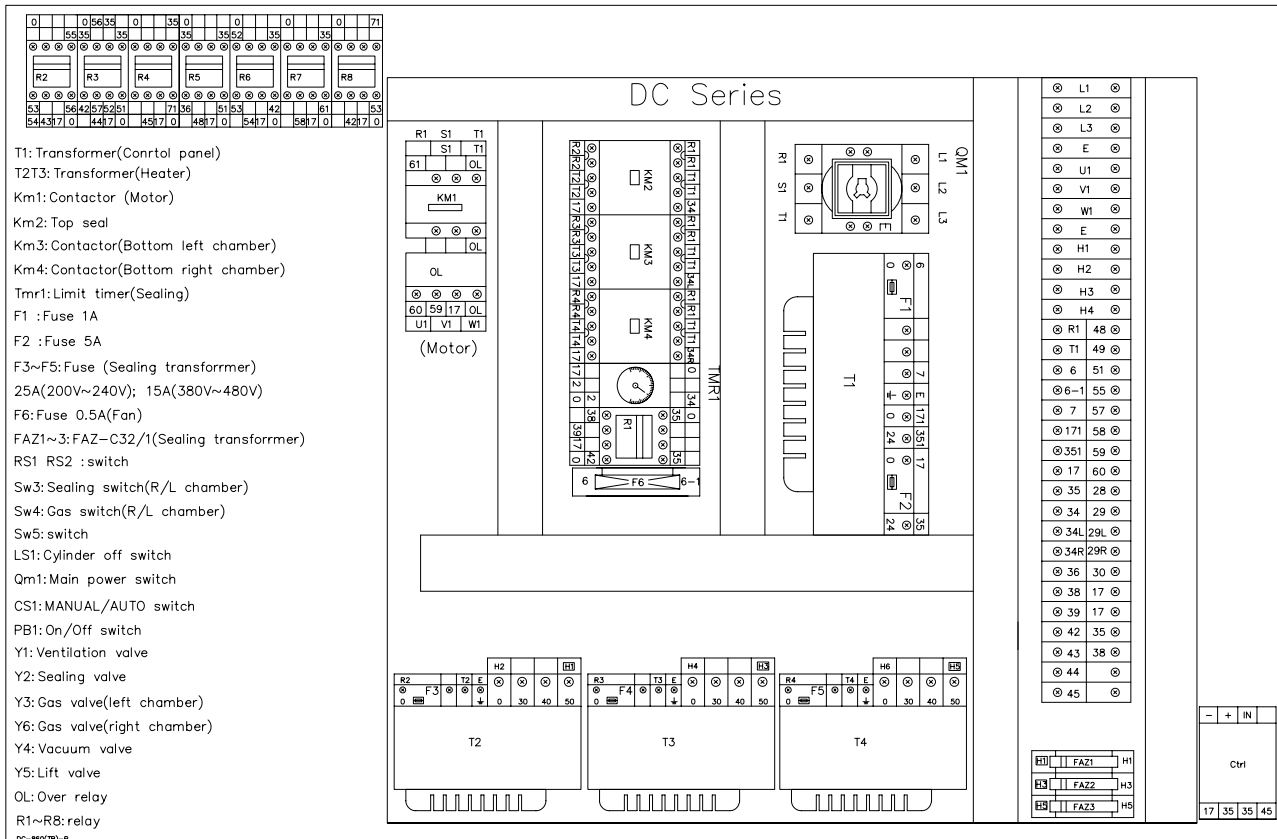
NO.	PART NO.	DESCRIPTION	QTY	NOTE
1	D88K302000	Holder - sealing bar (F)	1	
2	D88K303000	Holder - sealing bar (B)	1	
3	D88K311000	Holder - sealing bar	2	
4	2702084	Flat head screw M6x16	4	
5	2705151	Flat washer M6	10	
6	2705302	Split lock washer M6	6	
7	2707204	Hex nut M6	4	
8	D88K307000	Jointer - sealing bar	2	
9	2705150	Flat washer M5	8	
10	2705303	Split lock washer M5	8	
11	2700414	Hex head screw M5x12	8	
12	D88K410000	Bag retainer	2	OPTION
13	2705304	Flat washerM10	4	
14	D80K308000	Bushing	4	
15	D80K309001	Compression spring	4	
16	2705301	Flat washer M8	4	
17	2701199	Hex head screw M8x75	4	W/GAS
	2700407	Hex head screw M8x80		
18	D88K312000	Sealing bar - top	2	
19	D80K314000	Isolated flat plate	4	
20	D80K315001	Copper connector - sealing	4	
21	VA04277000	Compression spring	4	
22	D80K317000	Isolated sleeve	8	
23	2703327	Round head screw M4x20	8	
24	D80K316000	Connecting copper shaft	4	
25	2704603	Socket set screw M6x10	4	
26	3200958	Teflon tape	2	
27	2824011115	Sealing wire	2	
28	3200955	Teflon tape	2	
29	3200955	Teflon tape	4	
30	D88K313000	Teflon tape clamp	4	
31	2703325	Round head screw M4x8	36	
32	2701208	Hex socket head screw M6x30	2	
33	D88K304A00	Pressure bag assembly	2	
34	D88K411000	Gas nozzle sealing silicone	2	OPTION
35	2707110	Hex nylock nut M6	4	



## 6.6.1 ELECTRICAL BOX(FB)



## 6.6.2 ELECTRICAL BOX(TB)





ITEM	PART NO.	DESCRIPTION	SPECIFICATION	Q'TY	NOTE
KM1	28107281	Contactor	TE LC1D186B7 AC24	1	Option
	2810746		TE LC1D326(AC24V)		
	2810762		TE LC1D50B7 (AC24V)		
KM2 KM3 KM4	2810755	Contactor	MOELLER DILMP20(AC24V)	1	
OL	2811616	Overload Relay	TE LRD012 5.5-8A	1	Option
	2811635		LR3D216 12-18A		
	2811636		TE LR3D326 (23-32A)		
	2811637		TE LR3D3355(30-40A)		
R1	2830132	Relay	RU4S-C-A24	1	
	2831106	Socket, Relay	SY4S-05D	1	
	2850636	Hook	PYC-A1	2	
F1	2890048	Fuse	20mm 1A	1	
F2	2890046	Fuse	20mm 5A	1	
F3~F4	2890068	Fuse	20mm 15A	2	Option
F3~F4	2890069		20mm 25A		
F5	2890070	Fuse	30mm 0.5A	1	
FAZ1~2	2801734	Breaker	FAZ-C32/1	2	TB
FAZ1~3				3	
TMR1	2833328	Time Relay	ANLY AMY-2 6S AC24V	1	
	2833329	Socket Relay	PYF08A-E MY2	1	
	2850635	Hook	FM-4	2	
T1	2896065	Transformer TBSW-1I-120VA	0F-200-220V/0-24V	1	Option
	28960654		0F-400V/0-24V.0F-24V		
	28960652		380V-415/0-24 OF-24		
T2	28961063	Transformer TBSW-1I-800VA	0F-200-220/0-30-40-50 CE	2	Option
	28961065		0F-400V/0-30-40-50 CE		
	28961070		0F-380-415/0-30-40-50 CE		
QM1	2807121	Switch, Selector	P1-32/V/SVB-SW	1	Option
	2807122		P3-63/V/SVB-SW		
	28071211	Link Bracket	MOELLER ZVV-TO	1	Option
	28071221		MOELLER ZVV-P3		
	28071212	Link-Selector SW	MOELLER ZAV-TO	1	Option
	28071222		MOELLER ZAV-P3		

T.B	2843212	Terminal Block	PTU-10	25	
	2843209	Terminal Block	PTU-30	5	
	2843210	Plate, Terminal Block	PTU-30L	1	
	2843207	Brake, Terminal Block	SBN-20(TA-002)	2	
BOX	DC80800000	Electrical Box		1	
WIRE	DC80808000	Electrical Wire		1.set	FB
	DC80808T00	Electrical Wire		1.set	TB
CONTROL PANEL	2890048	Fuse	20mm 1A	2	
	2890049	Fuse	20mm 2A	1	