



**BT-800K**

# **Belt Type Vacuum Packaging Machine**

## **Operation Manual**

Version 6.9.1



# **TABLE OF CONTENTS**

<b>1. SAFETY .....</b>	<b>1</b>
1.1 SAFETY RECOMMENDATIONS .....	1
1.2 PERSONAL SAFETY .....	2
1.3 FOOD SAFETY .....	3
<b>2. INSTALLATION .....</b>	<b>4</b>
2.1 UNPACKING .....	4
2.2 MOVING THE MACHINE .....	4
2.3 MACHINE SPECIFICATIONS .....	5
2.4 ENVIRONMENT REQUIREMENTS .....	5
2.5 CHECK OIL LEVEL .....	6
2.6 POWER CONNECTION .....	6
2.7 VACUUM PUMP ROTATION .....	6
<b>3. OPERATION PARAMETERS .....</b>	<b>7-16</b>
<b>4. MAINTENANCE .....</b>	<b>17</b>
4.1 BASIC MAINTENANCE .....	17
4.1.1 DAILY VISUAL INSPECTION .....	17
4.1.2 DAILY CLEANING .....	18
4.2 VACUUM PUMP MAINTENANCE .....	18
4.3 SEAL BAR MAINTENANCE .....	18
4.4 VACUUM VALVE MAINTENANCE .....	19
4.4.1 VENT VALVE GREASING PROCEDURE .....	19
4.4.2 VACUUM VALVE GREASING PROCEDURE .....	19-20
4.5 MAINTENANCE INTERVAL CHART .....	21
<b>5. TROUBLESHOOTING .....</b>	<b>22</b>
5.1 OPTIONAL DEVICE .....	22
5.2 25 PIN D TYPE TERMINAL WIRING CONNECTION INSTRUCTIONS .....	23
5.3 PNEUMATIC DIAGRAM .....	24
5.4 ELECTRICAL DIAGRAM .....	25-26
<b>6. FABRICATION .....</b>	<b>27</b>
6.1 BODY DIAGRAM .....	28-34
6.2 WORKING BED (BOTTOM) .....	35-37
6.3 SEALING BAR/ CUSHION BAR CONFIGURATIONS .....	38
6.3.1 CUSHION BAR (FB).....	38-39
6.3.2 CUSHION BAR (FBPK) .....	40-42
6.3.3 SEALING BAR (FBTBPK).....	43-45
6.4 CHAMBER LID,TOP DIAGRAM .....	46-47
6.5 SEALING BAR CONFIGUATIONS,TOP .....	48
6.5.1 SEALING BAR (FB).....	48-50
6.5.2 SEALING BAR (PK) .....	49-51
6.6 BELT CONVEYOR .....	51-53
6.7 WATER COOLING .....	54-56
6.8 OPERATOR BOX.....	59-60
6.9 ELECTRICAL BOXES.....	61

# **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), DC (Double Chamber) and BT(Continuous 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.

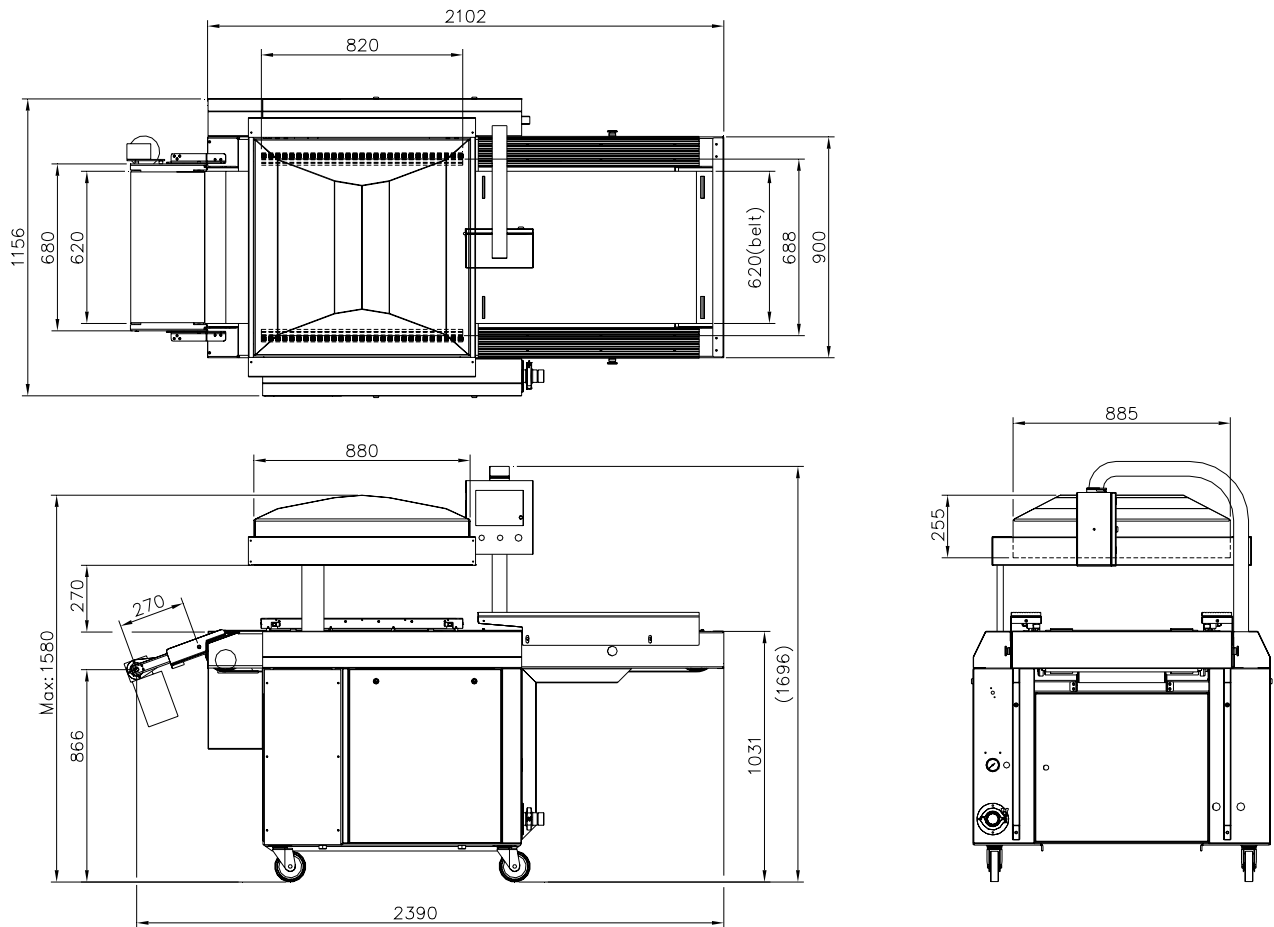
**SC Machines:** All SC units should be lifted from their wooden skid and moved to the location where they will be used with an approved fork lift. Be sure to take note of the points listed below.

**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.

**BTMachines:** All BT 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 BT-800K 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.

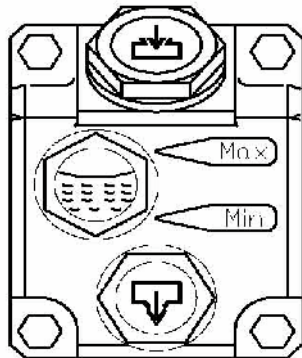


Figure 1

## 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.

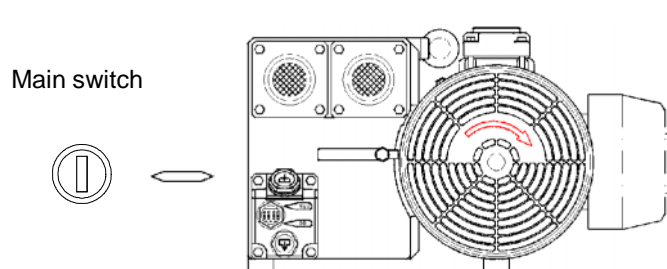


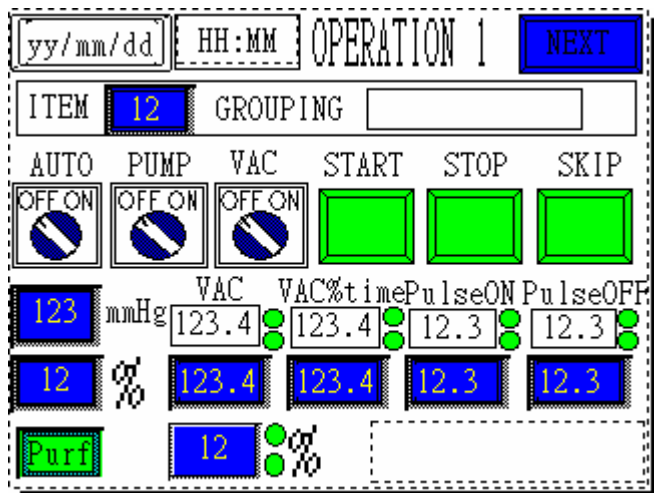
Figure 2



### 3. Operating Parameters

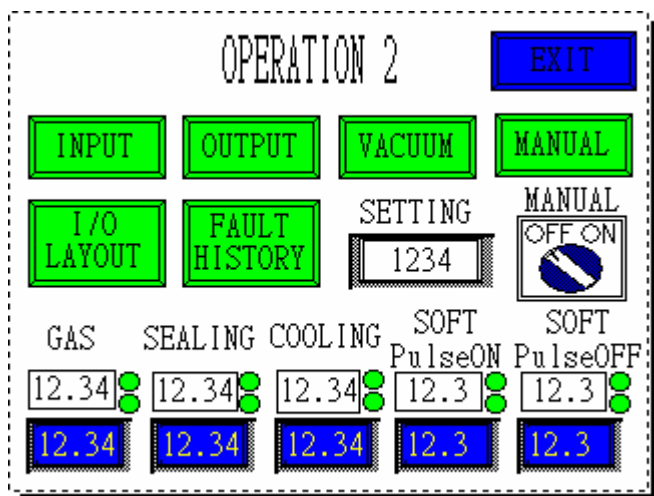


PRESS SCREEN INTO MAIN MENU  
LEFT → RIGHT  
UP → DOWN



#### MAIN MENU 1

1. AUTO/SEMI-AUTO ON → AUTO
2. PUMPING MOTOR ON/OFF SWITCH
3. VACUUM ON/OFF SWITCH
4. START → MACHINE OPERATING
5. STOP → MACHINE STOP
6. SKIP → NEXT ONE
7. DISPLAY PERCENTAGE & VACUUM DEGREE
8. VAC % TIME, INTERMITTENT TIME
9. PURF



#### MAIN MENU 2

1. EXIT → RETURN MAIN MENU
2. CHECK INPUT CONDITION
3. CHECK OUTPUT CONDITION
4. VACUUM STATE
5. MANUAL OPERATION MENU → MANUAL ON INPUT
6. I/O LAYOUT OPERATION
7. FAULT HISTORY → ERROR MESSAGE INSTRUCTIONS
8. ITEM, TIME, PASSWORD, NEED TO INPUT PASSWORD
9. MANUAL ON/OFF SWITCH
10. GAS, SEALING, COOLING, INTERMITTENT VACUUM TIME

BACK
NEXT
EXIT

TECHNICAL CHECK 1/2

VAC MOTOR
BELT MOTOR
OUT MOTOR

MANUAL CONTROL MENU 1  
 PRE-OPERATING NEED TO CHANGE  
 MENU 2 MANUAL ON  
 1.VAC MOTOR ON/OFF  
 2.BELT MOTOR ON/OFF  
 3.OUT MOTOR ON /OFF

BACK
NEXT
EXIT

TECHNICAL CHECK 2/2

LID CLOSE
VACUUM
GAS
SEAL

HEAT
VACUUM  
RELEASE
STRETCH

MANUAL CONTROL MENU 2  
 PRE-OPERATING NEED TO CHANGE  
 MENU 2 MANUAL ON  
 1.LID CLOSE ON/OFF  
 2.VACUUM ON/OFF  
 3.GAS ON/OFF  
 4.SEAL ON/OFF  
 5.HEAT ON/OFF  
 6.VACUUM RELEASE ON/OFF  
 7.STRETCE ON/OFF

EXIT

CHANGE PASSWORD

PASSWORD CONFIRM

1234

PASSWORD CHANGE MENU  
 1. MAIN MENU INPUT CORRECT  
 PASSWORD TO THE MENU  
 2. NEED TO INPUT SECOND PASSWORD  
 THEN ENTER 3 SETS PASSWORD  
 CONFIRM MENU  
 FIRST PASSWORD 3888,SECOND  
 PASSWORD 3588  
 (URGENCY STOP → ON).

NEXT

#1 CHANGE PASSWORD 1234

#2 CHANGE PASSWORD 1234

#3 CHANGE PASSWORD 1234

THREE SETS PASSWORD MANU  
 1.THIS MANU CAN MODIFY THREE SETS  
 PASSWORD FOR THE OPERATOR  
 2.FACTORY SETTING : 1234,3456,5678.

BACK ITEM 12 EXIT

OIL CHG SET TIME VAC 99% SET TIME

123 123 SETTING

Hour mmHg

OIL CHG RESET Purf Delay Purf TIME

CHG OK 1.2 1.2

PARAMETER TIME CHANGE MENU  
 MAIN MENU 2 INPUT ONE OF 3 SETS  
 CORRECT PASSWORD THEN TO HERE  
 TIME→ OPERATING MENU  
 SETTING→SETTING MENU  
 VAC99%SET  
 OIL CHG SET PRE-INSTALL 800 HOURS  
 OIL CHG RESET→PRESS OVER 3  
 SECONDS RETURN ALARM & OIL  
 CHANGE RESET TIME  
 Purf DELAY  
 Purf TIME

BACK NEXT EXIT

OPERATION SETTING

VACUUM SAFETY SECONDARY TRANSIT  
 RELEASE TIME CONTROL T STOP TIME

12.34 12.34 12.34

Every Index Heating Time Broken Element  
 Time Delay Limit Detector Off

12.34 12.34

TIME SETTING MENU  
 1.VACUUM RELEASE TIME  
 2.SAFETY CONTROL TIME  
 3.SECONDARY TRANSIT STOP TIME  
 4.EVERY INDEX TIME DELAY  
 5.HEATING TIME LIMIT(6 SECONDS )  
 6.BROKEN ELEMENT DETECTOR OFF  
 BYPASS

BACK

EXIT

INPUT DATA

INPUT X00~X07

INPUT X10~X17

INPUT MENU  
CHECK X00-X07  
CHECK X10-X17

BACK

EXIT

OUTPUT DATA

OUTPUT Y00~Y07

OUTPUT Y10~Y17

OUTPUT MENU  
CHECK Y00-Y07  
CHECK Y10-Y17

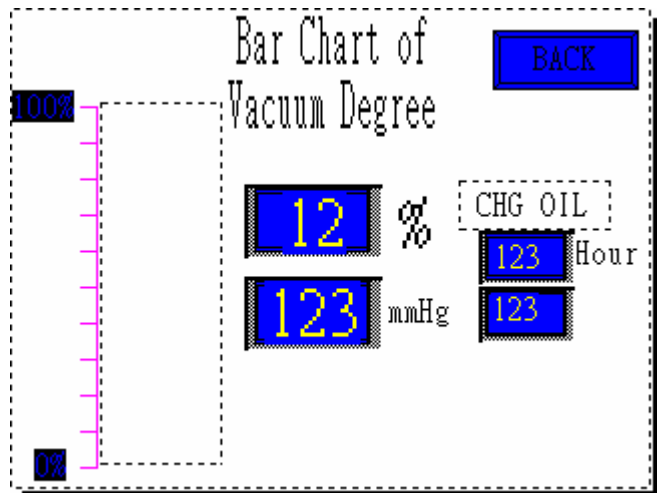
UP

DOWN

DEL

EXIT

ULVUSUAL MENU  
PRESS DEL TO CLEAR UNUSUAL  
MESSAGE



VACUUM DEGREE & PERCENTAGE  
OIL CHANGE TIME & READING-FINAL

INPUT 1

BACK NEXT EXIT

CODE	DESCRIPTION
X00	START
X01	STOP
X02	AUTOMATIC/MANUAL
X03	OPEN LID POSITION
X04	CLOSE LID POSITION
X05	SAFETY CONTROL FAIL
X06	SAFETY CONTROL
X07	BELT MOTOR DECELERATION LIMIT

INPUT MENU 1

1. ACTION - ON
2. NO ACTION - OFF

INPUT 2

BACK EXIT

CODE	DESCRIPTION
X10	BELT MOTOR LIMIT
X11	VACUUM RELEASE
X12	TRANSIT MOTOR OVERLOAD
X13	VACUUM MOTOR OVERLOAD
X14	SECONDARY TRANSIT MOTOR OVERLOAD
X15	PUM MOTOR OVERLOAD
X16	HEAT BREAK
X17	XXXX

INPUT MENU 2

1. ACTION - ON
- 2.NO ACTION - OFF

OUTPUT 1		BACK	NEXT	EXIT
CODE	DESCRIPTION			
Y00	TRANSIT ROTATION SIGNAL			
Y01	TRANSIT MULTI-SPEED 1 SIGNAL			
Y02	TRANSIT MULTI-SPEED 2 SIGNAL			
Y03	SECONDARY TRANSIT MOTOR			
Y04	VACUUM MOTOR			
Y05	LID VALVE			
Y06	VACUUM VALVE			
Y07	GAS VALVE			

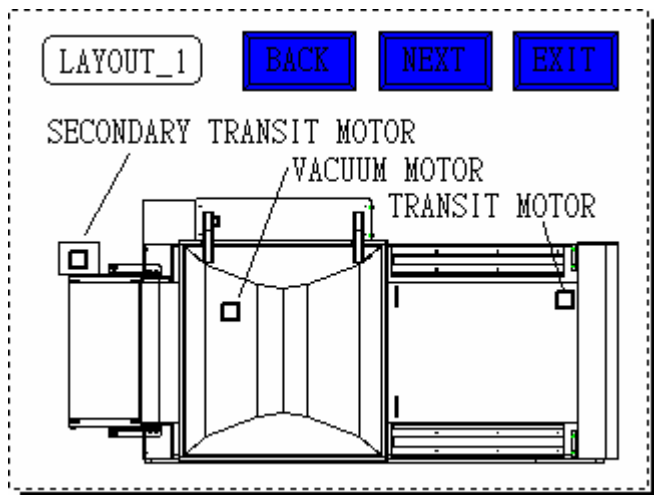
#### OUTPUT 1

1. ACTION - ON
2. NO ACTION - OFF

OUTPUT 2		BACK	EXIT
CODE	DESCRIPTION		
Y10	SEAL VALVE		
Y11	VACUUM RELEASE VALVE		
Y12	TRANSIT PRESSURE VALVE		
Y13	HEATING		
Y14	DESTROY VALVE		
Y15	STRETCH		
Y16	PUM MOTOR		
Y17	BUZZER		

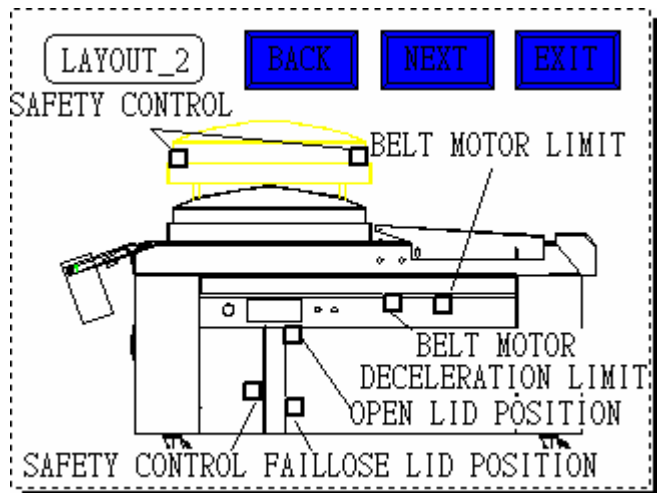
#### OUTPUT MENU 2

1. ACTION - ON
2. NO ACTION - OFF



#### INPUT-OUTPUT CONTROL MENU 1

1. MACHINE OPERATING CAN TO CONTROL CONDITION
2. ACTION → LIGHT ON



## INPUT-OUTPUT CONTROL MENU 2

- 1.MACHINE OPERATING CAN TO CONTROL CONDITION
- 2.ACTION → LIGHT ON

ITEM SETTING		CLEAR		BACK		EXIT	
ITEM TIME SET	CONFIRM	ITEM TIME SET	CONFIRM				
1	Enter	5	Enter				
2	Enter	6	Enter				
3	Enter	7	Enter				
4	Enter	8	Enter				

## ITEM SETTING MENU

- 1.CHANGE ITEM PRESS CLEAR → NEW ITEN → ENTER → LIGHT ON
- 2.ITEM TIME SET→8 SETS

ITEM 1		NEXT		EXIT	
VAC control	Disable	VAC %		12	
VAC TIME	123.4	VAC 99%+TIME		123.4	
GAS TIME	12.34	VAC PulseON		12.3	
SEAL TIME	12.34	VAC PulseOFF		12.3	
COOL TIME	12.34	Soft PulseON		12.3	
Purf	Disable	Soft PulseOFF		12.3	
DESCRIPTION					

## ITEM 1 SETTING MENU

1. VACUUM CONTROL
2. VACUUM TIME
3. GAS TIME
4. SEAL TIME
5. COOL TIME
6. Purf
7. VACUUM %
8. VACUUM 99% + TIME
9. VACUUM PULSE ON
10. VACUUM PULSE OFF
11. PRESS DESCRIPTION→ TO SET ITEN NAME

ITEM 2		BACK		NEXT		EXIT	
VAC control	Disable	VAC %	12				
VAC TIME	123.4	VAC 99%+TIME	123.4				
GAS TIME	12.34	VAC PulseON	12.3				
SEAL TIME	12.34	VAC PulseOFF	12.3				
COOL TIME	12.34	Soft PulseON	12.3				
Purf	Disable	Soft PulseOFF	12.3				
DESCRIPTION <input type="text"/>							

ITEM 2 SETTING MENU  
AS SAME AS MENU 1

ITEM 3		BACK		NEXT		EXIT	
VAC control	Disable	VAC %	12				
VAC TIME	123.4	VAC 99%+TIME	123.4				
GAS TIME	12.34	VAC PulseON	12.3				
SEAL TIME	12.34	VAC PulseOFF	12.3				
COOL TIME	12.34	Soft PulseON	12.3				
Purf	Disable	Soft PulseOFF	12.3				
DESCRIPTION <input type="text"/>							

ITEM 3 SETTING MENU  
AS SAME AS MENU 1

ITEM 4		BACK		NEXT		EXIT	
VAC control	Disable	VAC %	12				
VAC TIME	123.4	VAC 99%+TIME	123.4				
GAS TIME	12.34	VAC PulseON	12.3				
SEAL TIME	12.34	VAC PulseOFF	12.3				
COOL TIME	12.34	Soft PulseON	12.3				
Purf	Disable	Soft PulseOFF	12.3				
DESCRIPTION <input type="text"/>							

ITEM 4 SETTING MENU  
AS SAME AS MENU 1



ITEM 5		BACK		NEXT		EXIT	
VAC control	Disable	VAC %	12				
VAC TIME	123.4	VAC 99%+TIME	123.4				
GAS TIME	12.34	VAC PulseON	12.3				
SEAL TIME	12.34	VAC PulseOFF	12.3				
COOL TIME	12.34	Soft PulseON	12.3				
Purf	Disable	Soft PulseOFF	12.3				
DESCRIPTION <input type="text"/>							

ITEM 5 SETTING MENU  
AS SAME AS MENU 1

ITEM 6		BACK		NEXT		EXIT	
VAC control	Disable	VAC %	12				
VAC TIME	123.4	VAC 99%+TIME	12.3				
GAS TIME	12.34	VAC PulseON	12.3				
SEAL TIME	12.34	VAC PulseOFF	12.3				
COOL TIME	12.34	Soft PulseON	12.3				
Purf	Disable	Soft PulseOFF	12.3				
DESCRIPTION <input type="text"/>							

ITEM 6 SETTING MENU  
AS SAME AS MENU 1

ITEM 7		BACK		NEXT		EXIT	
VAC control	Disable	VAC %	12				
VAC TIME	123.4	VAC 99%+TIME	123.4				
GAS TIME	12.34	VAC PulseON	12.3				
SEAL TIME	12.34	VAC PulseOFF	12.3				
COOL TIME	12.34	Soft PulseON	12.3				
Purf	Disable	Soft PulseOFF	12.3				
DESCRIPTION <input type="text"/>							

ITEM 7 SETTING MENU  
AS SAME AS MENU 1

ITEM 8		BACK		EXIT	
VAC control	Disable	VAC %	12		
VAC TIME	123.4	VAC 99%+TIME	123.4		
GAS TIME	12.34	VAC PulseON	12.3		
SEAL TIME	12.34	VAC PulseOFF	12.3		
COOL TIME	12.34	Soft PulseON	12.3		
Purf	Disable	Soft PulseOFF	12.3		
DESCRIPTION <input type="text"/>					

ITEM 8 SETTING MENU  
AS SAME AS MENU 1

<input type="text"/>					◀	▶	EXIT
A	B	C	D	E			
F	G	H	I	J			
K	L	M	N	O			
P	Q	R	S	T			
U	V	Y	W	X			
Z	SPC	DEL	ENT				

#### ITEM SETTING KEY MANU

1. PRESS DISPLAY WINDOW (1234567)
2. ENTER ITEM NAME
3. PRESS ENTER TO COMPLETE
4. PRESS EXIT TO QUIT

## 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.

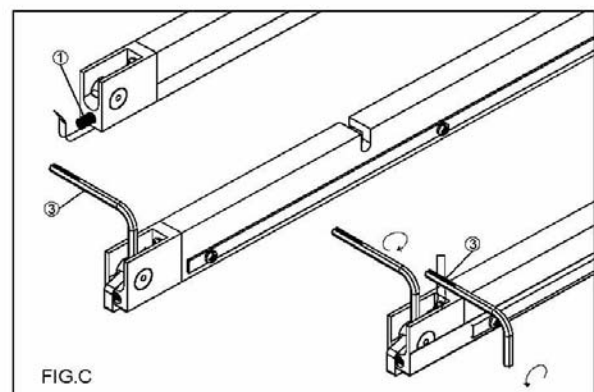
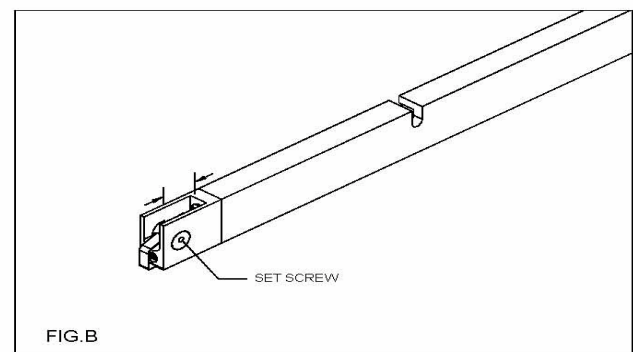
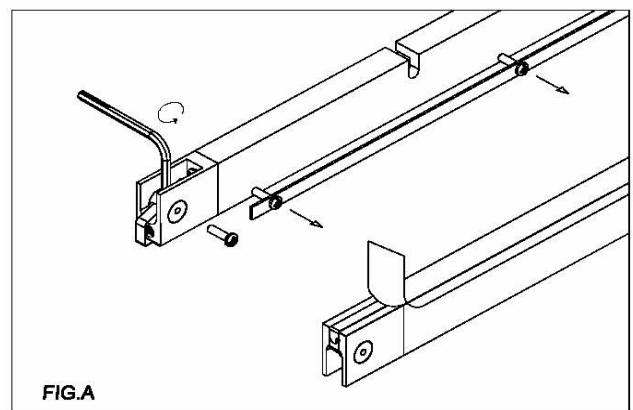
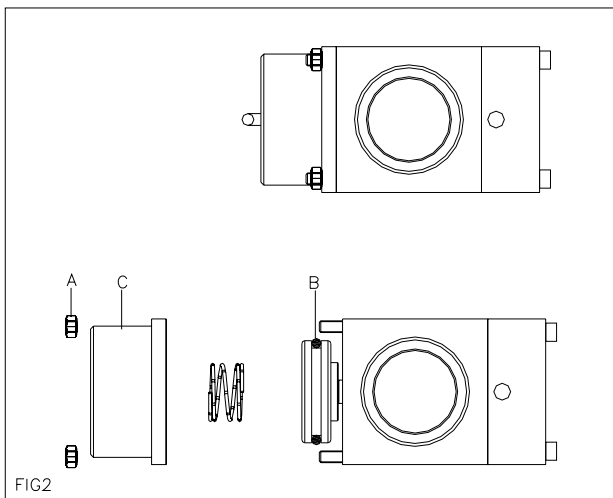
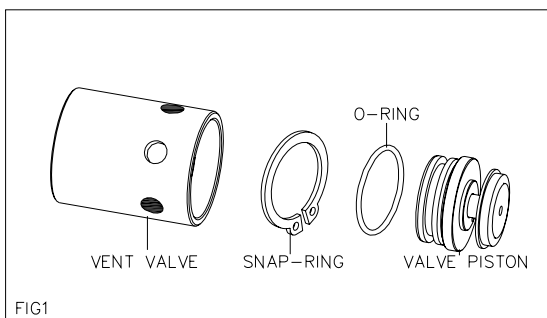
## **4.4 V A C U U M V A L V E M A I N T E N A C E**

### **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



## 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.	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.
<b>Note :</b> Mostly insufficient vacuum in bag is due to leakage of bag, but not the fault of machine.		
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



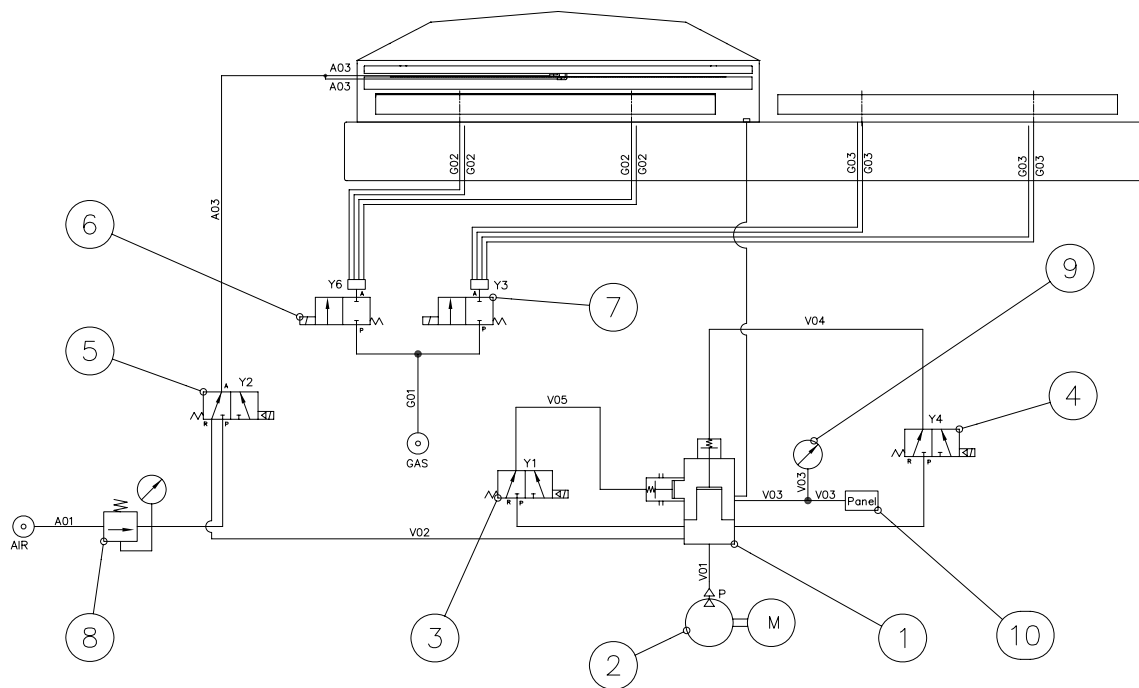
Problem	Cause	Correction
No or improper sealing.     <b>NOTE :</b> Please do not adjust sealing longer than regular time, or it will reduce the life of Teflon tape and silicone rubber.	Sealing wire is broken.	Replace it.
	Sealing wire is loose.	Tighten it.
	Insufficient pressure.	Pressure bar is damaged, 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.
Lid does not close.	Sealing pressure is too low.	Replace the pressure bag.
	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

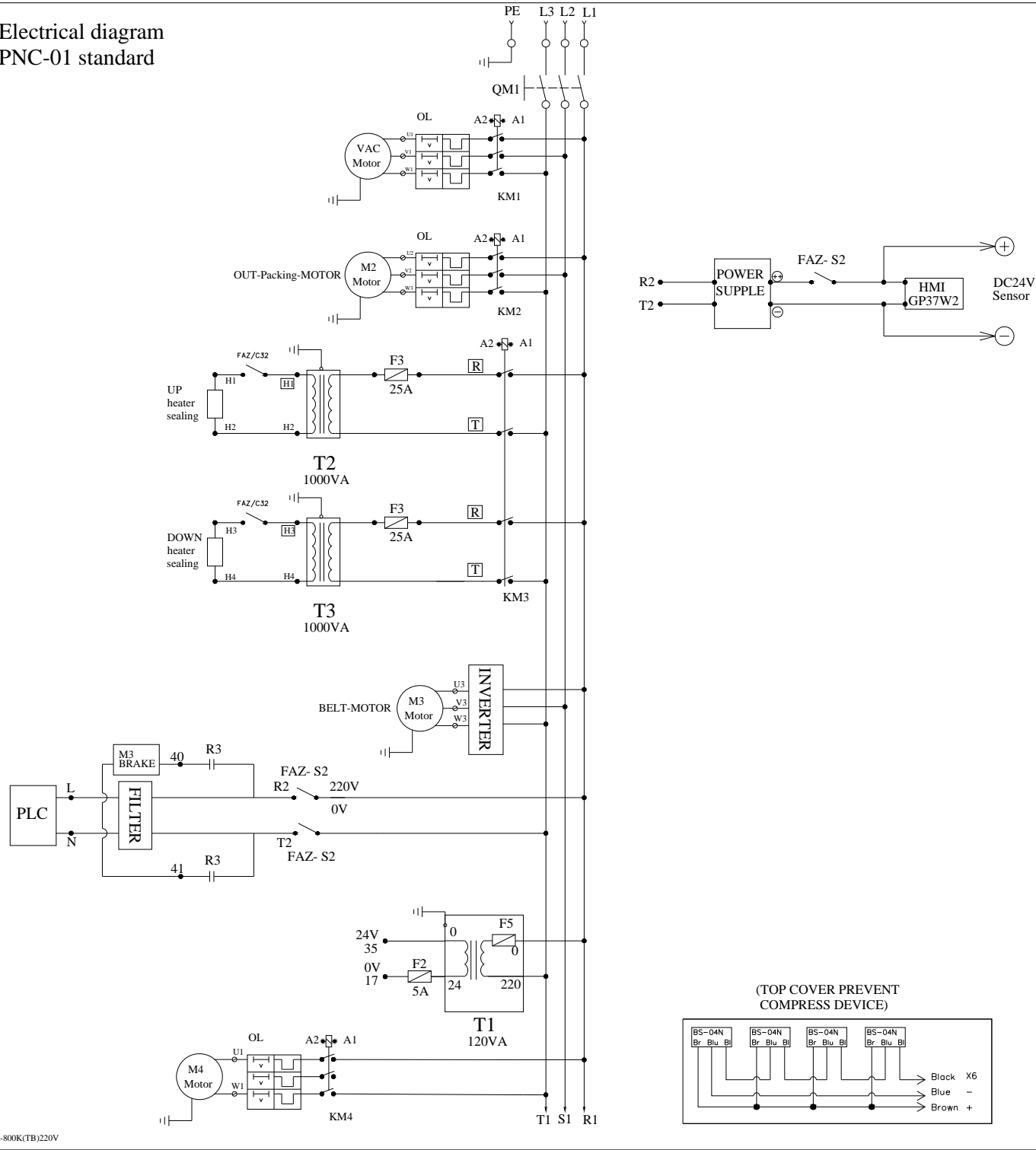
## 5.3 PNEUMATIC DIAGRAM

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



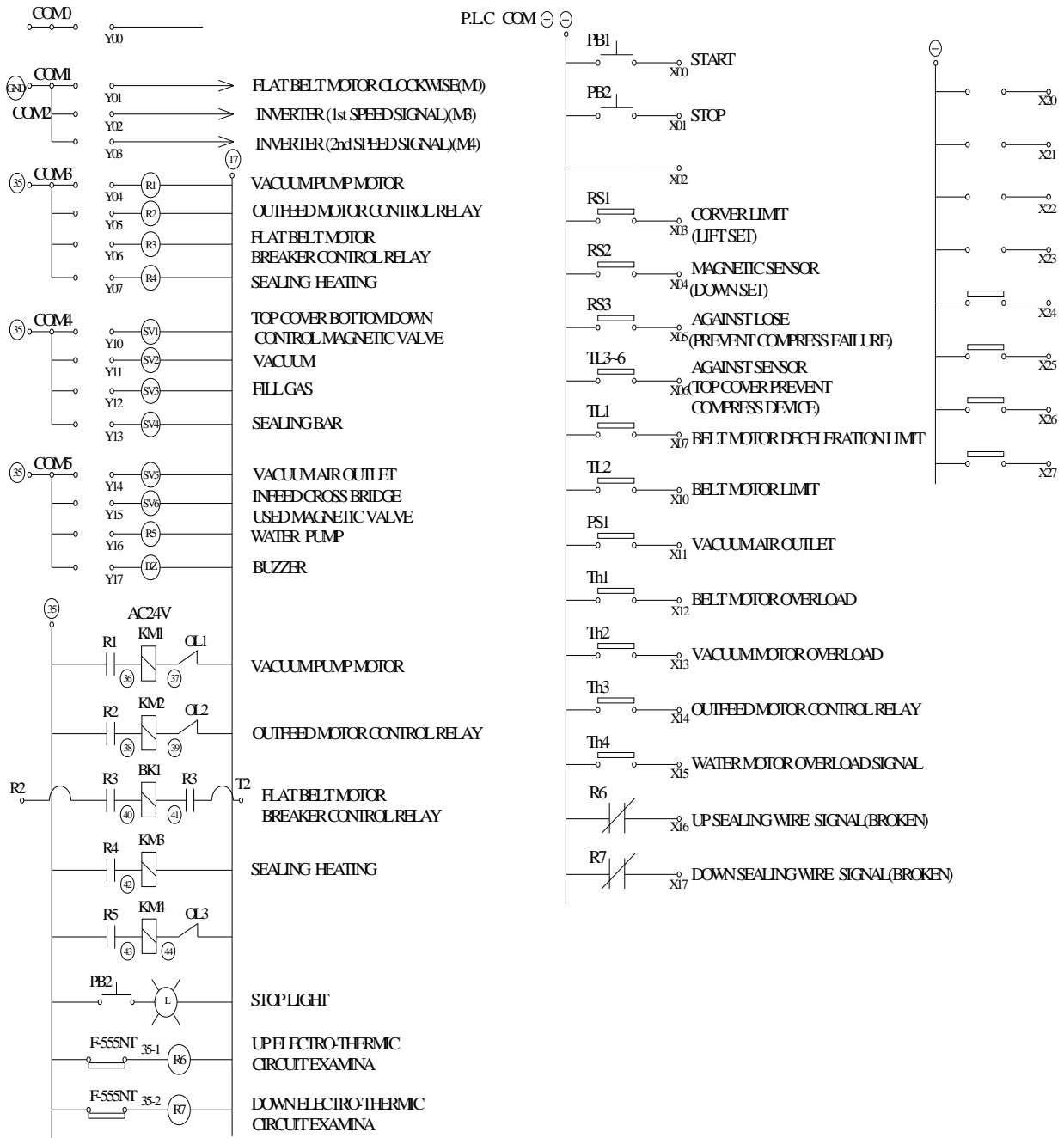
# 5.4 ELECTRICAL DIAGRAM

Electrical diagram  
PNC-01 standard



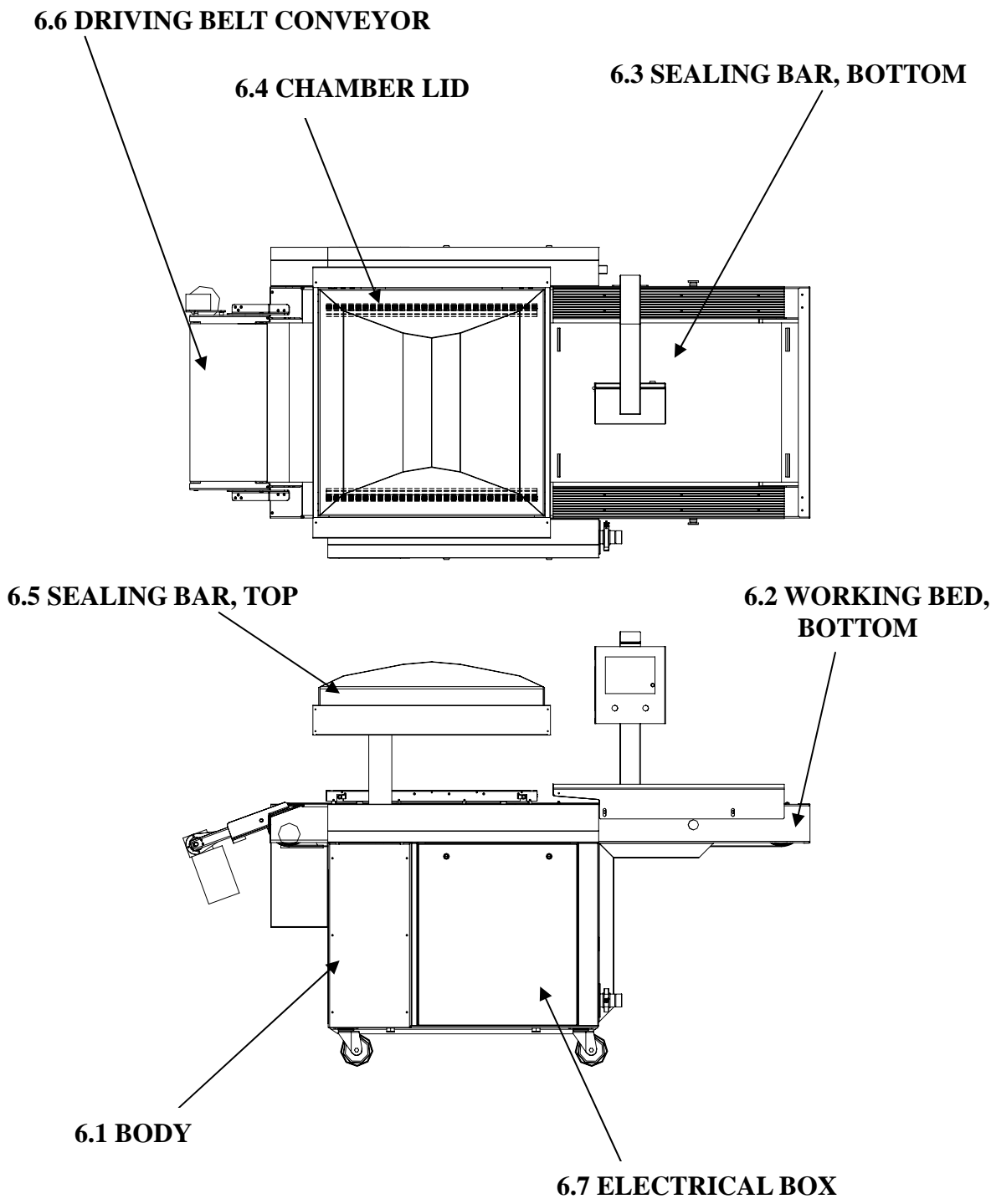
BT-800K(TB)220V

# Electrical diagram BT-800K standard



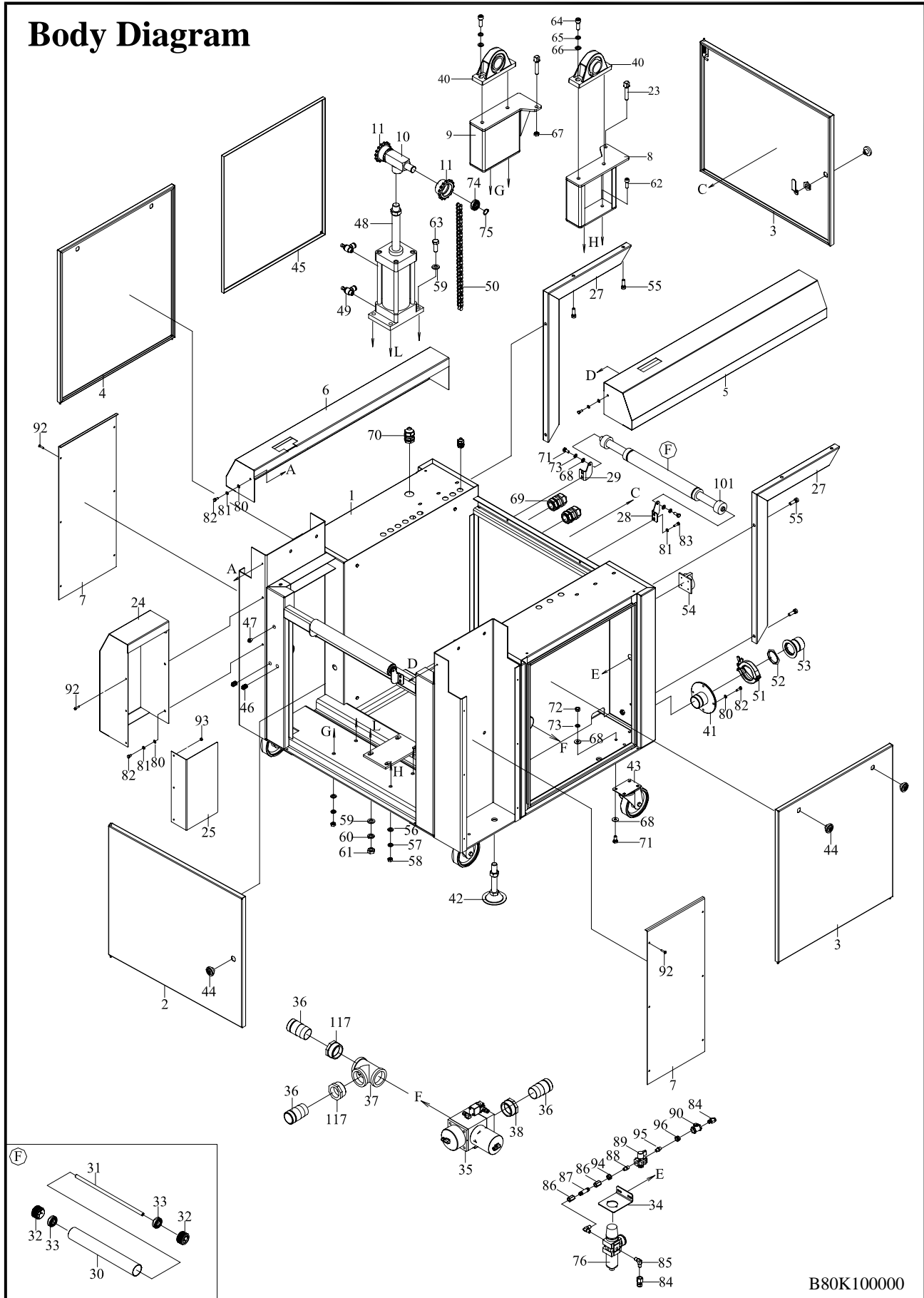
BT-800K719

# 6. FABRICATION



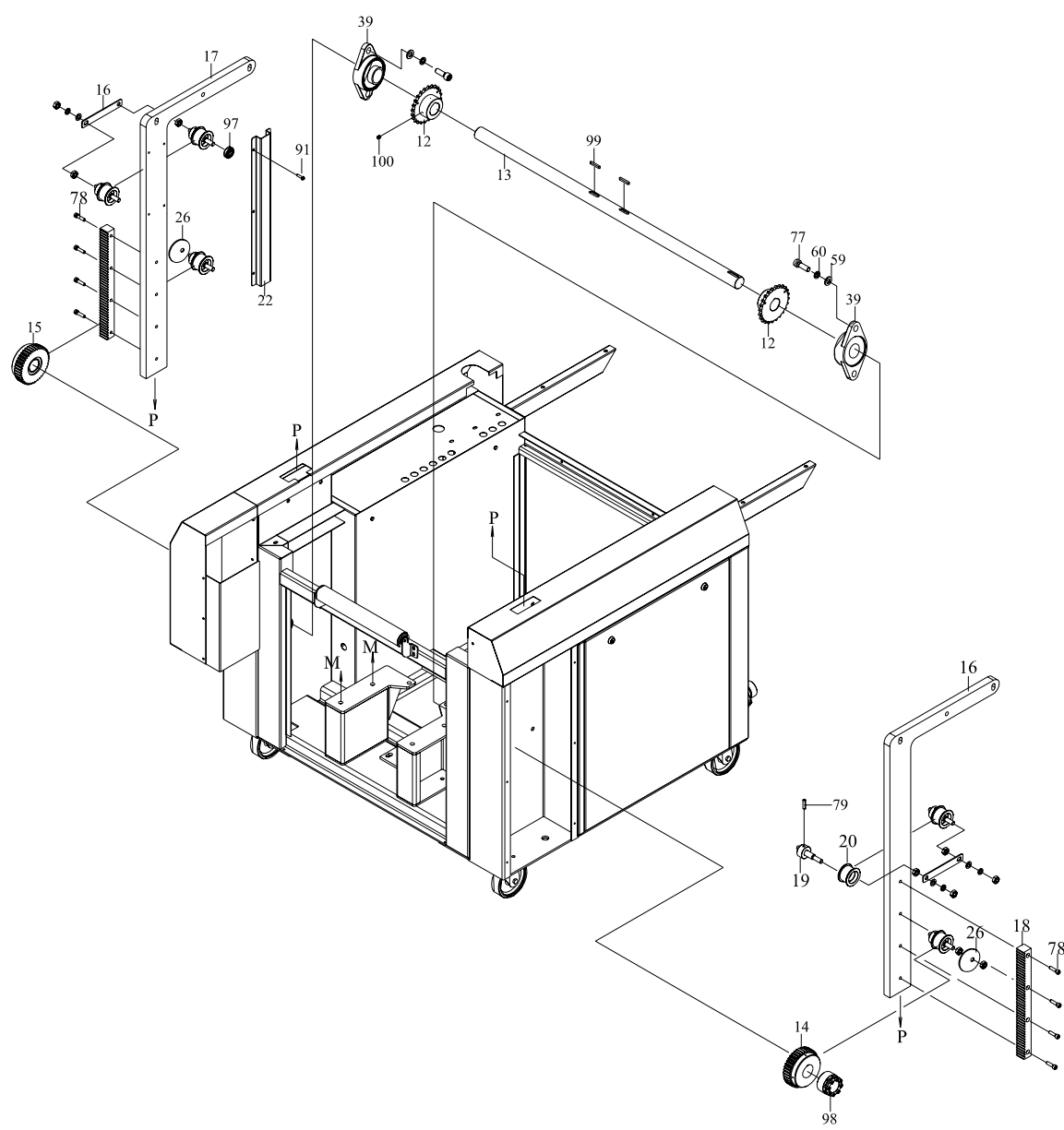
## 6.1 BODY

### Body Diagram



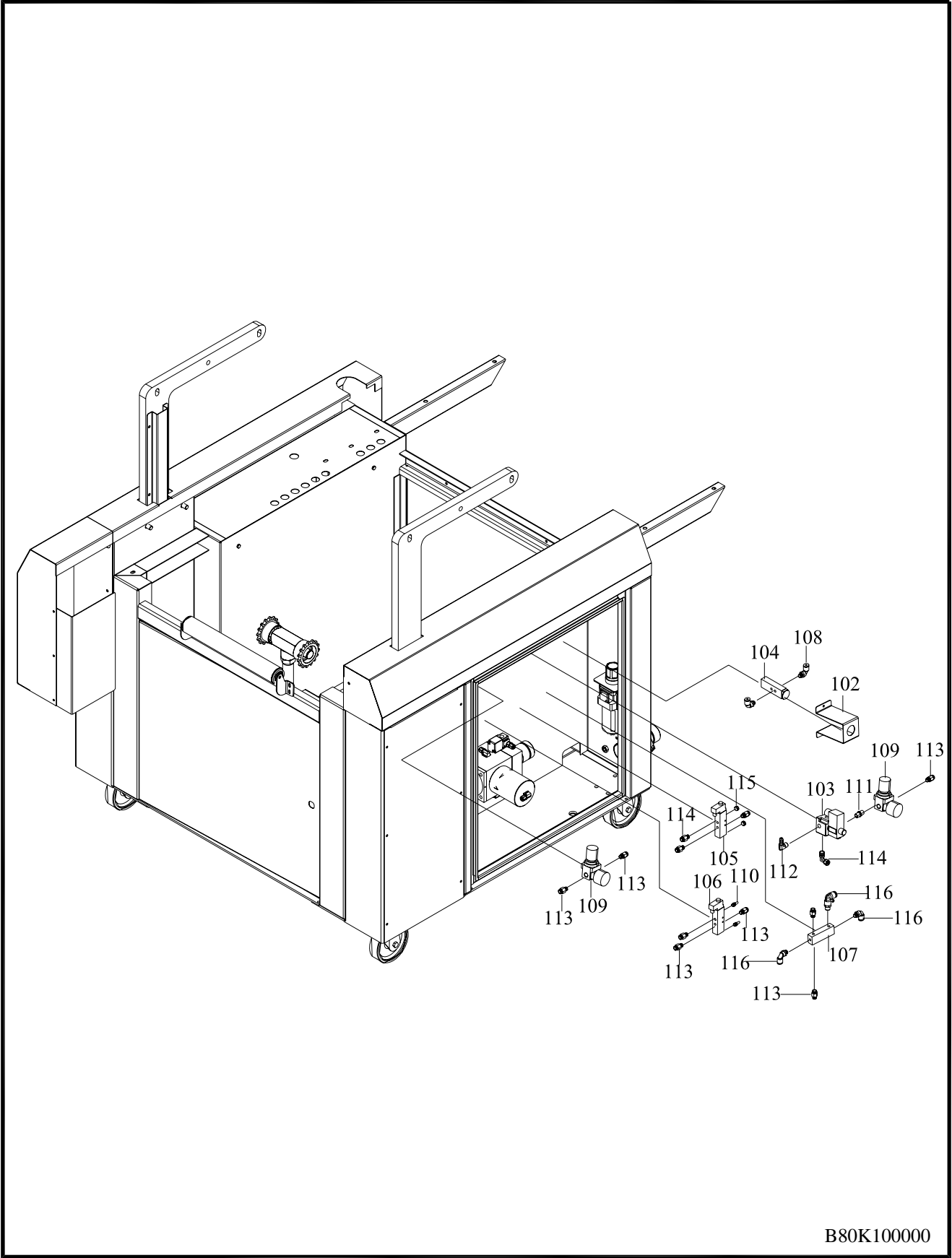
6.1 BODY

Body Diagram



B80K100000

6.1 BODY



B80K100000



NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K101000	Frame	1	
2	B80K102000	Side door-L	1	
3	B80K103000	Side door-R	1	
4	B80K104000	Front Back door	2	
5	B80K105000	Front cover plate	1	
6	B80K106000	Back cover plate	1	
7	B80K107000	Lift cover plate	2	
8	B80K108000	Bearing fixed mount	1	
9	B80K109000	Bearing fixed mount	1	
10	B80K100000	Sprocket fixed mount	1	
11	B80K111000	Sprocket RS50x15T	2	
12	B80K112000	Sprocket RS50x24T	2	
13	B80K113000	Main shaft	1	
14	B80K114000	Gear	1	
15	B80K115000	Gear	1	
16	B80K117000	Lift fixed plate	1	
17	B80K118000	Lift fixed plate	1	
18	B80K119000	Chain	2	
19	B80K120000	Roller shaft	6	
20	B80K121000	Roller	6	
21	B80K122000	Fixed plate	2	
22	B80K123000	Cover-electric conduit	1	
23	B80K124000	Adjust bolt	2	
24	B80K126000	Cover plate	1	
25	B80K127000	Cover plate	1	
26	B80K128000	Fixed plate	2	
27	B80K130000	Welded support plate	2	
28	B80K134000	Roller fixed mount	1	
29	B80K135000	Roller fixed mount	1	
30	B80K137010	Roller assembly	1	
31	B80K137020	Roller shaft	1	
32	2H327010	Bushing	2	
33	27280084	Bearing 6201ZZ	2	
34	D1KK291000	Bracket mounting	1	
35	D80K235000	Vacuum valve assembly 2"	1	

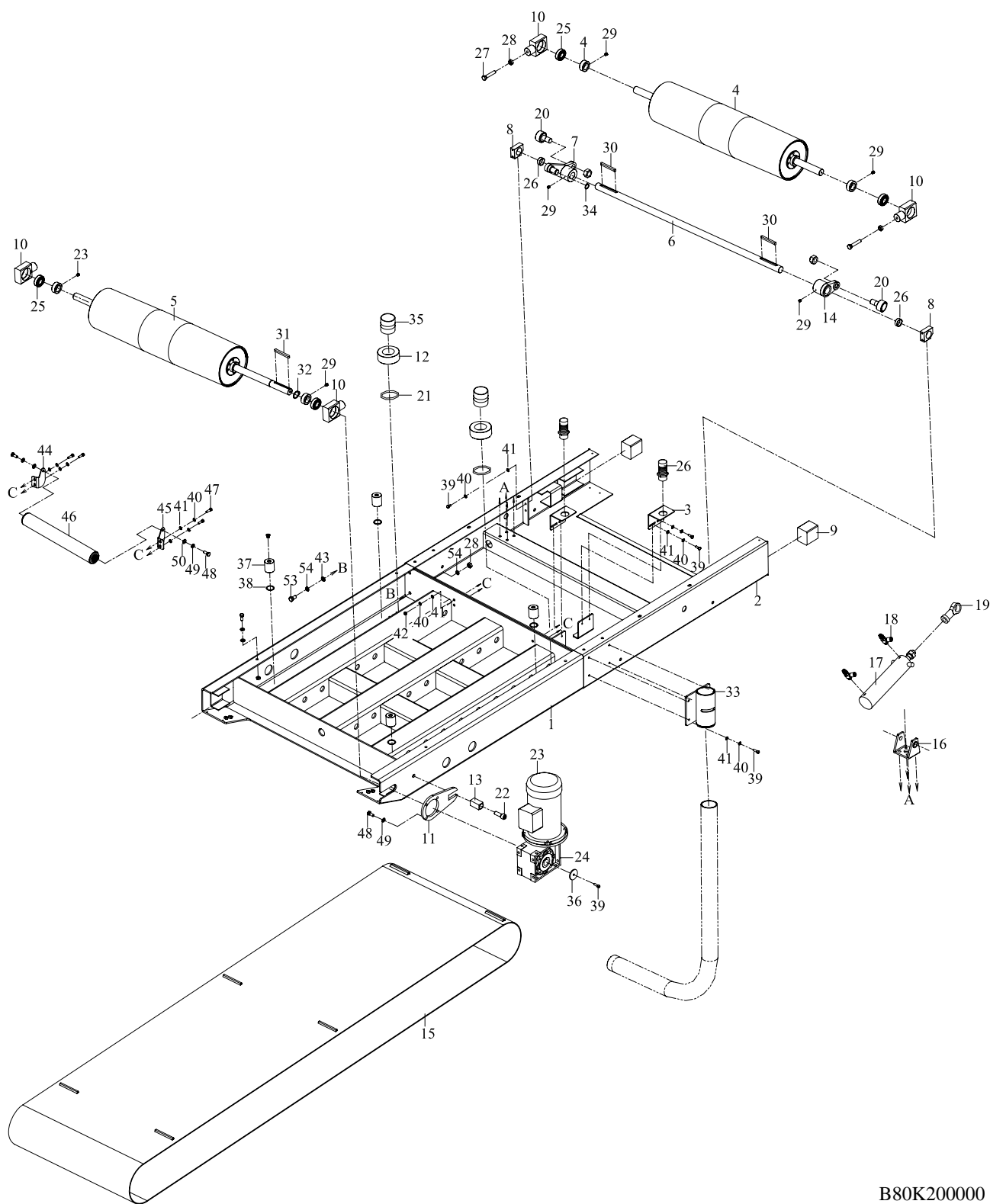
NO.	PART NO.	DESCRIPTION	QTY	NOTES
36	D80K235101	Nipple 1-1/2"	3	
37	29090096	Tee branch 2"	1	
38	29090072	Fitting, 2"x1-1/2"	1	
39	2728540	Bearing, pillow block UCFL208	2	
40	27285353	Bearing, pillow block UCPH208	2	
41	B80K901000	Pipe	1	
42	27M82536	Base, leg	4	
43	27121181	Casters	4	
44	2883349	Door lock C408K	6	
45	B80K802000	Panel	1	
46	2861037	Fitting MG-16A-10G	2	
47	2892003	Metal connector 16x4	1	
48	2920678	Cylinder MCQA-11-100-150M-FBC	1	
49	2908019	Fitting JSC10-3	2	
50	2713024	Chain	1	
51	2909951	Clamp KF-50	1	
52	2909950	Gasket KF-50	1	
53	B80K902000	Pipe	1	
54	2807126	Switch	1	
55	2701174	Socket set screw M8x30	8	
56	2705189	Flat washer M10	4	
57	2705304	Split lock washer M10	4	
58	2707205	Nut M14	4	
59	2705155	Flat washer M14	12	
60	2705322	Split lock washer M14	8	
61	27070094	Nut M14	4	
62	27011591	Socket set screw M10x25	4	
63	27000610	Hex hd screw M14x55	4	
64	27004574	Socket set screw M12x50	4	
65	2705305	Split lock washer M12	4	
66	2705137	Flat washer M12	4	
67	2707024S	Nut M12x1.75	4	
68	2705152	Flat washer M8	34	
69	2861029	Straight connector MG-32A	2	
70	2861028	Straight connector MG-25A	1	

NO.	PART NO.	DESCRIPTION	QTY	NOTES
71	2700408	Hex hd screw M8x20	18	
72	27072032	Nut M8	16	
73	2705301	Split lock washer M8	18	
74	27280222	Bearing 6205ZZ	4	
75	27060171	Ring S25	2	
76	29119056	Regualtor,air main AW40-04BD	1	
77	27010795	Socket set screw M14x40	4	
78	2700464	Socket set screw M10x40	8	
79	2708016	Spring pin	6	
80	2705151	Flat washer M6	10	
81	2705302	Split lock washer M6	10	
82	27004011	Hex hd screw M6x20	10	
83	2701153	Socket set screw M6x20	4	
84	29081004	Fitting SPC10-04	2	
85	29092023	Fitting P77	2	
86	2909133	Fitting B-30	2	
87	290932562	Nipple 1/2"x70	1	
88	2909114	Fitting P13(3/8"x3/8")	1	
89	2932004	Mechanical valve VHS30-02	1	
90	2920231	Valve check 1/2"	1	
91	2701501	Round hd screw M6x12	6	
92	2701503	Round hd screw M5x12	15	
93	2707208	Nut M5	3	
94	2909007	Fitting 1/2"x3/8"	1	
95	29091121	Fitting P12(1/4"x1/4")	1	
96	29090070	Fitting 1/4"x1/2"	1	
97	27280103	Bearing 6203ZZ	12	
98	2728D17	Shaft bushing YS-AA-40	1	
99	2709211	Key 10x8x35	2	
100	2704618	Set M8x10	4	
101	B80K137030	Bushing	2	
102	BT80107000	Valve fixed plate	1	
103	2911805	Solenoid valve VT317-9D-02 AC24V	1	
104	2933095	Mechanical valve MSV86522TB	1	
105	2911221	Splenoid valve MVSC300-4E1-AC24	1	

[illegible]

6.2 WORKING BED (BOTTOM)

Working bed, Bottom  
Diagram



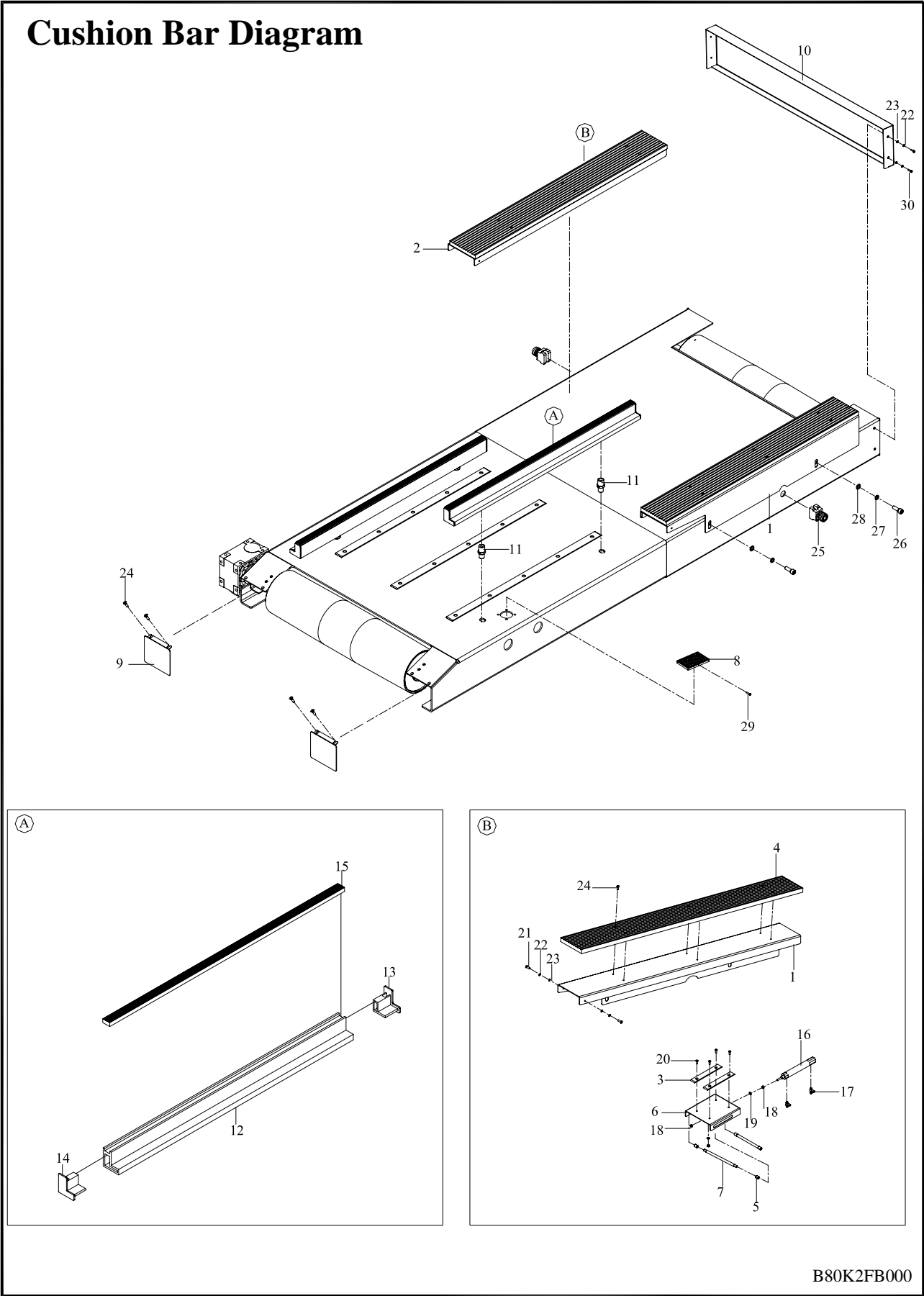
B80K200000

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K201000	Welded body	1	
2	B80K202000	Welded body Front	1	
3	B80K225000	Belt adjust plate	2	
4	B80K227000	Roller	1	
5	B80K228000	Roller	1	
6	B80K231000	Adjust arm shaft	1	
7	B80K233000	Belt adjust arm	1	
8	BT80205000	Bearing holder	2	
9	BT80206000	Belt adjust slide block	2	
10	BT80215000	Roller bearing mount	4	
11	BT80218000	Motor fixed plate	1	
12	BT80230002	Air out	2	
13	BT80232000	Fixed plate	1	
14	BT80234000	Belt adjust arm	1	
15	BT80240002	Belt 4320Lx620Wx1.2t	1	
16	2921201	Cylinder plate	1	
17	2920182	Cylinder CDG1UA50-150	1	
18	2908017	Fitting JSC 8-02	2	
19	27453118	Rod eye PHS18	1	
20	27453112	Bearing CF18UU	2	
21	27401654	O-ring P70	2	
22	27004574	Hex hd screw M12x50	1	
23	2814501-1	Motor MV-40200SM-11 1/4HP	1	
24	2814811	WS-050-020-050-71B5	1	
25	28270454	Bearing 6005ZZ	4	
26	2851031	Proximity Scan	2	
27	270106942	Hex hd screw M10x60	2	
28	2707205	Nut M10	4	
29	2704618	Set M8x10	4	
30	B80K241000	Key	2	
31	BT80272000	Key	1	
32	27060171	Ring S25	1	
33	B80K805000	Support arm mount	1	
34	27060221	Ring S18	1	
35	D80K235101	Nipple 1-1/2"	2	

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6.3.1 CUSHION BAR (FB)

Cushion Bar Diagram

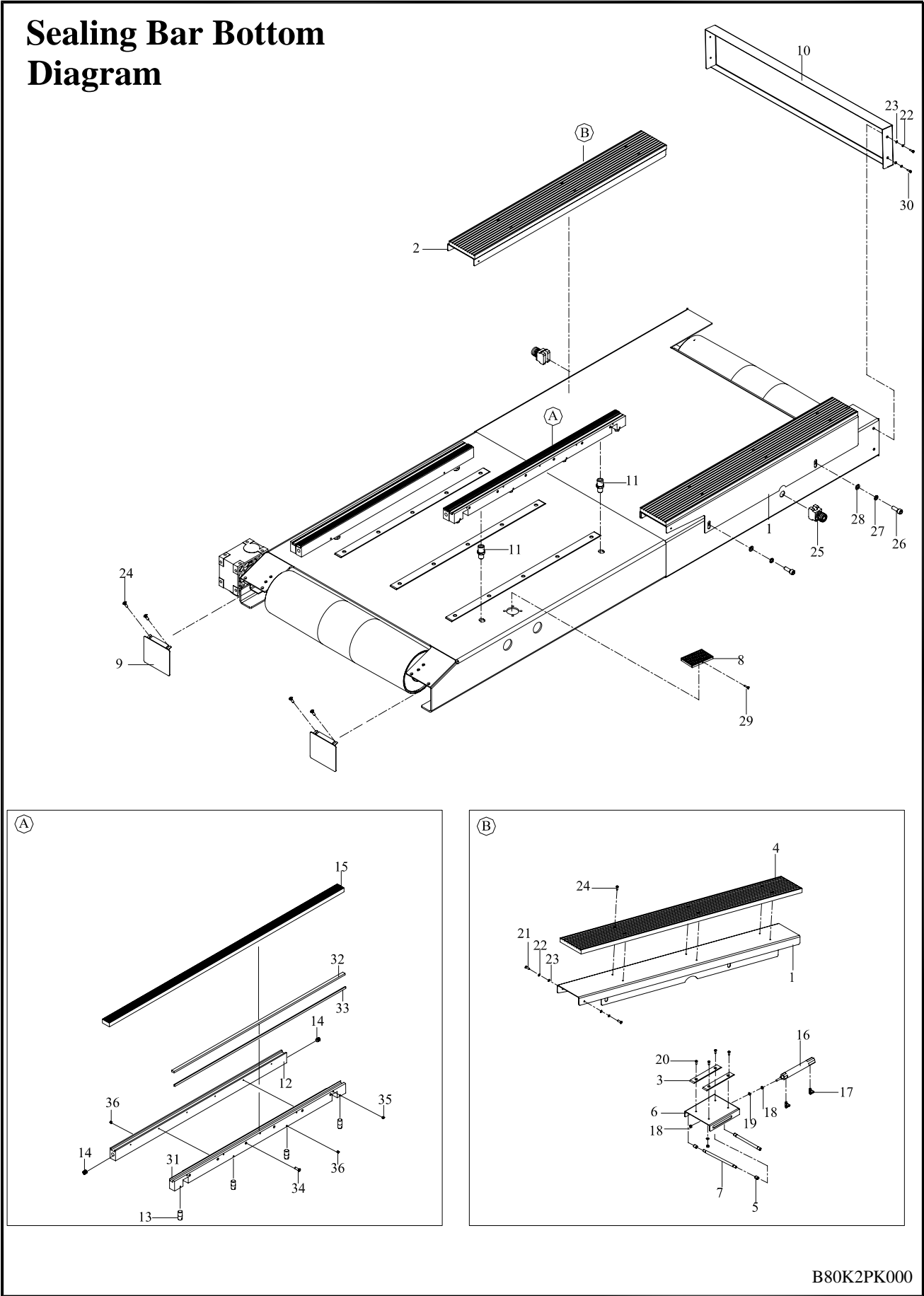




NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K209001	Support mount(L)	1	
2	B80K210001	Support mount(R)	1	
3	BT80211000	Anti-rub washer	4	
4	B80K212001	Anti-rub guide	2	
5	BT80213000	Shaft bushing	8	
6	B80K214000	Flexible plate	2	
7	B80K215000	Shaft	4	
8	BT80236002	Filter plate	2	
9	B80K203000	Fixed plate	2	
10	B80K223000	Cover	1	
11	DC64221000	Support shaft - bottom sealing bar	4	
12	B80K251000	Sealing bar(FB)	2	
13	D80K226000	Cushion bar end insert-L	2	
14	D80K225000	Cushion bar end insert-R	2	
15	3114463	Sealing silicon	2	
16	2920202	Cylinder CJ2D16-75	2	
17	2908021	Fitting JSC6-M5	4	
18	2707208	Nut M5	2	
19	2704615	Flat washer M5	2	
20	2702265	Flat hd screw M4x8	8	
21	2702261	Flat hd screw M4x12	8	
22	2705306	Split lock washer M4	12	
23	2705154	Flat washer M4	12	
24	2703342	Flat hd screw M4x16	16	
25	2870068	Button	2	
26	2701158	Socket set screw M10x15	4	
27	2705304	Split lock washer M10	4	
28	2705189	Flat washer M10	4	
29	27022141	Flat hd screw M3x6	4	
30	2703308	Round hd screw M4x12	4	
A	B80K2FB000	Cushion bar assembly	2	

6.3.2 CUSHION BAR (FBPK)

Sealing Bar Bottom  
Diagram

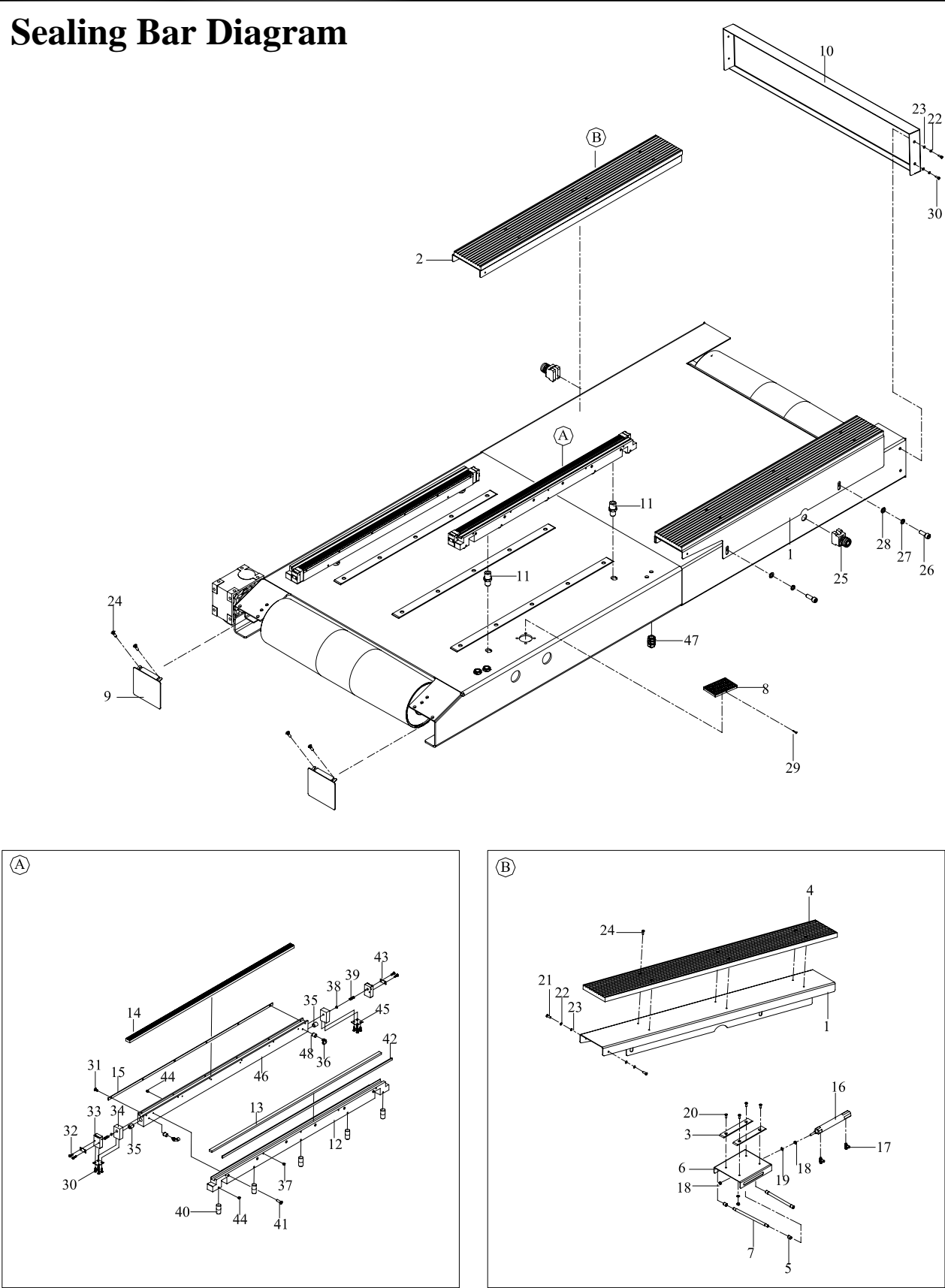


NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K209001	Support mount(L)	1	
2	B80K210001	Support mount(R)	1	
3	BT80211000	Anti-rub washer	4	
4	B80K212001	Anti-rub guide	2	
5	BT80213000	Shaft bushing	8	
6	B80K214000	Flexible plate	2	
7	B80K215000	Shaft	4	
8	BT80236002	Filter plate	2	
9	B80K203000	Fixed plate	2	
10	B80K223000	Cover	1	
11	BT80250001	Support shaft - bottom sealing bar	4	
12	BT80251000	Cushlion bar(FBPK)	2	
13	BT80255001	Support shaft	4	
14	2909013	Cap 1/4"	2	
15	3114462	Sealing silicon	2	
16	2920202	Cylinder CJ2D16-75	2	
17	2908021	Fitting JSC6-M5	4	
18	2707208	Nut M5	2	
19	2704615	Flat washer M5	2	
20	2702265	Flat hd screw M4x8	8	
21	2702261	Flat hd screw M4x12	8	
22	2705306	Split lock washer M4	12	
23	2705154	Flat washer M4	12	
24	2703342	Flat hd screw M4x16	16	
25	2870068	Button	2	
26	27004008	Round hd screw M10x15	4	
27	2705304	Split lock washer M10	4	
28	2705189	Flat washer M10	4	
29	27002241	Flat hd screw M3x6	8	
30	2703308	Round hd screw M4x12	4	
31	BT80253000	Sealing bar bottom	2	
32	3114471	Sealing silicon(PK)	2	
33	BT80260000	Sealing silicon partition board	2	
34	27030072	Round hd screw M4x35	6	
35	2704604	Set screw M5x10L	5	

[illegible]

6.3.3 CUSHION BAR (FBTBPK)

Sealing Bar Diagram



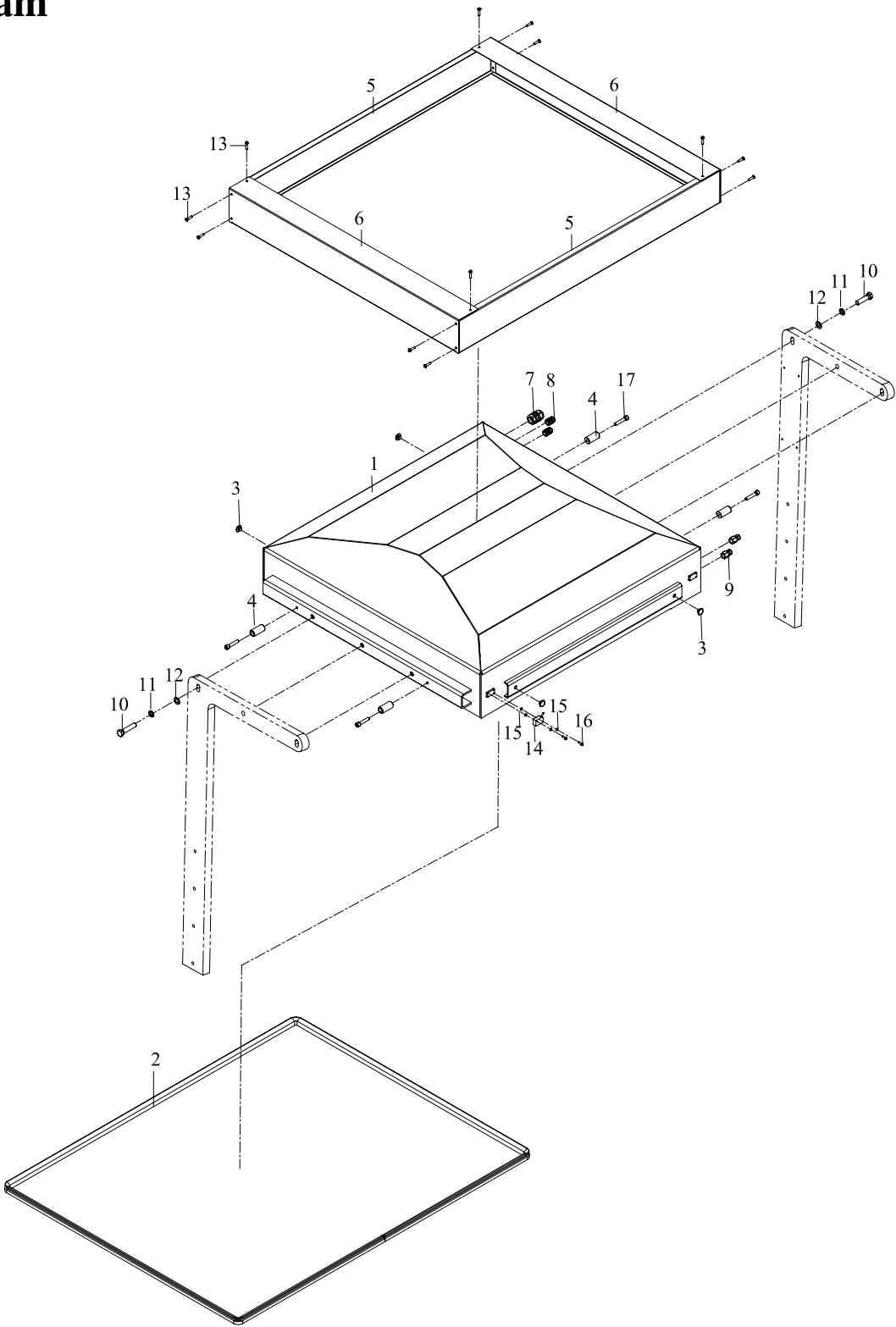
B80K2TK000

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K209001	Support mount(L)	1	
2	B80K210001	Support mount(R)	1	
3	BT80211000	Anti-rub washer	4	
4	B80K212001	Anti-rub guide	2	
5	BT80213000	Shaft bushing	8	
6	B80K214000	Flexible plate	2	
7	B80K215000	Shaft	4	
8	BT80236002	Filter plate	2	
9	B80K203000	Fixed plate	2	
10	B80K223000	Cover	1	
11	BT80250001	Support shaft - bottom sealing bar	4	
12	B80K246000	Sealing bar(FB)	2	
13	3114471	Sealing silicon(PK)	2	
14	3114462	Sealing silicon	2	
15	B80K247000	plate	2	
16	2920202	Cylinder CJ2D16-75	2	
17	2908021	Fitting JSC6-M5	4	
18	2707208	Nut M5	2	
19	2704615	Flat washer M5	2	
20	2702265	Flat hd screw M4x8	12	
21	2702261	Flat hd screw M4x12	4	
22	2705306	Split lock washer M4	12	
23	2705154	Flat washer M4	12	
24	2702261	Flat hd screw M4x12	16	
25	2870068	Button	2	
26	27004008	Round hd screw M10x20	4	
27	2705304	Split lock washer M10	4	
28	2705189	Flat washer M10	4	
29	27022141	Flat hd screw M3x6	4	
30	2703308	Round hd screw M4x12	20	
31	2703325	Round hd screw M4x8	12	
32	2703307	Round hd screw M4x10	10	
33	DC12287000	Fitting heating	4	
34	DC12286000	Isolated plate-heating	4	
35	2909013	Cap 1/4"	4	

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6.4 CHAMBER LID DIAGRAM

Chamber Lid, Top  
Diagram



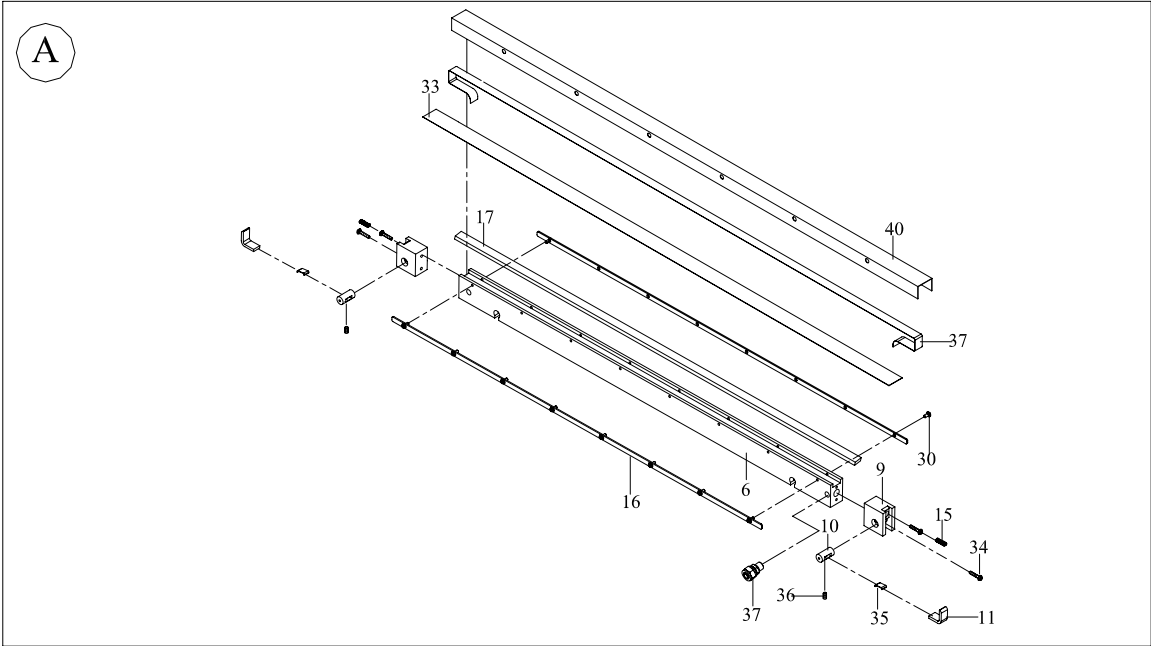
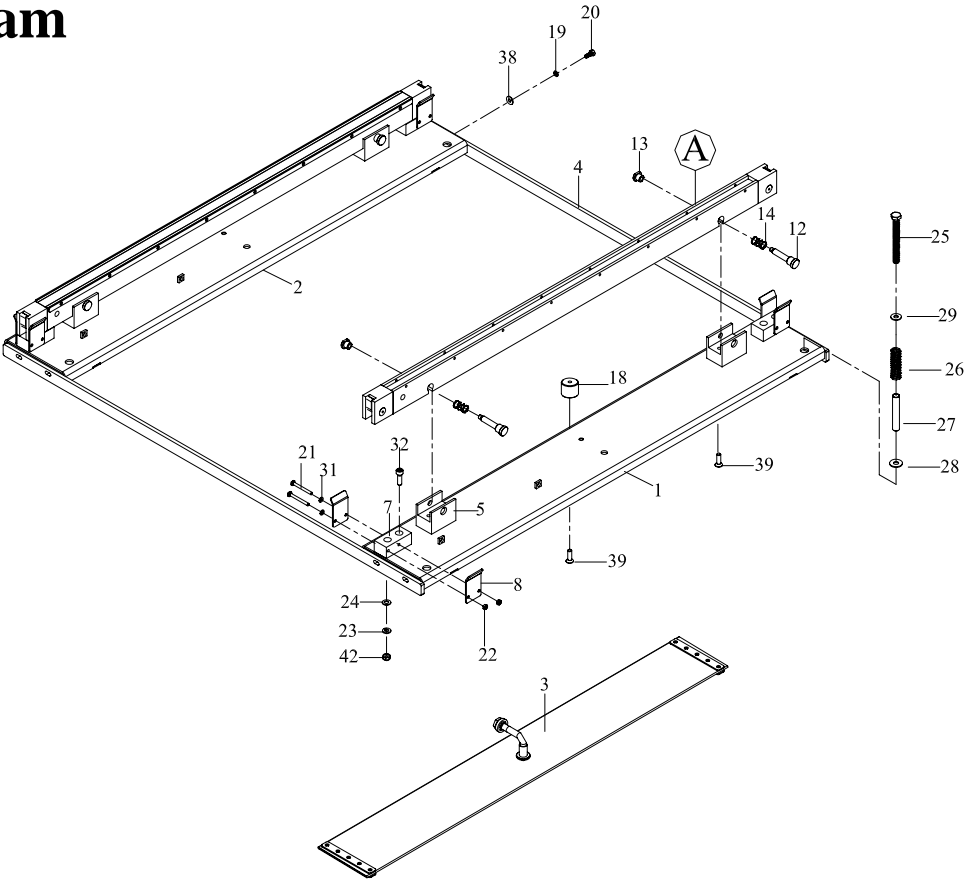
B80K400000



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6.5.1 SEALING BAR, TOP (FB)

Sealing Bar-Top  
Diagram



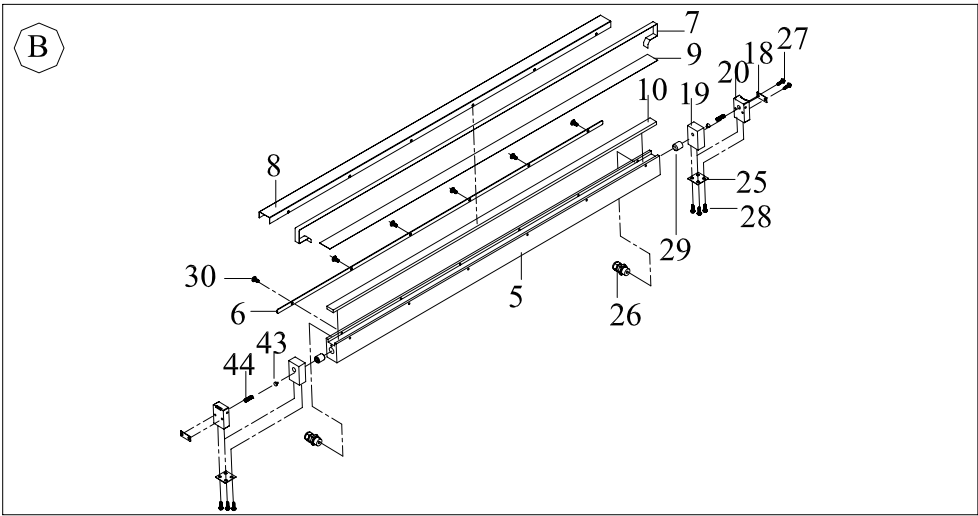
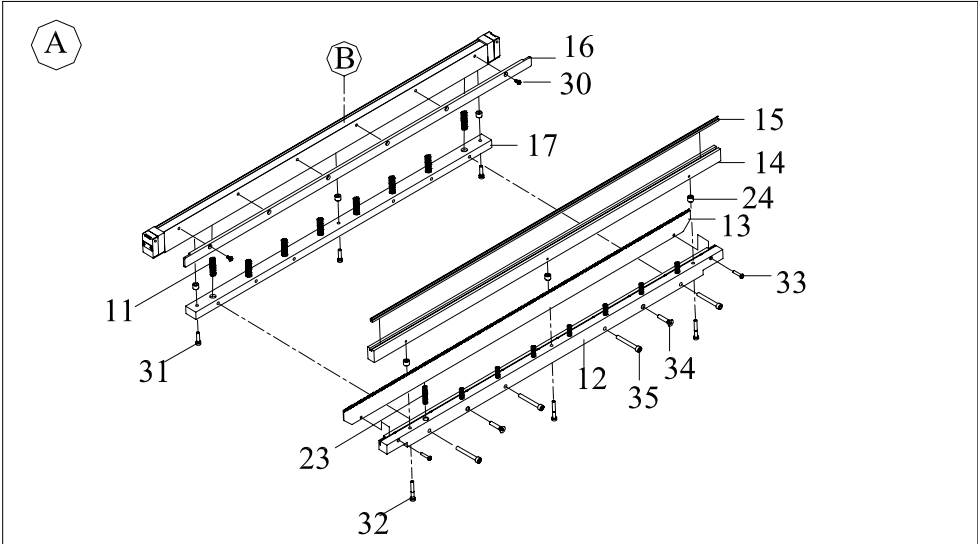
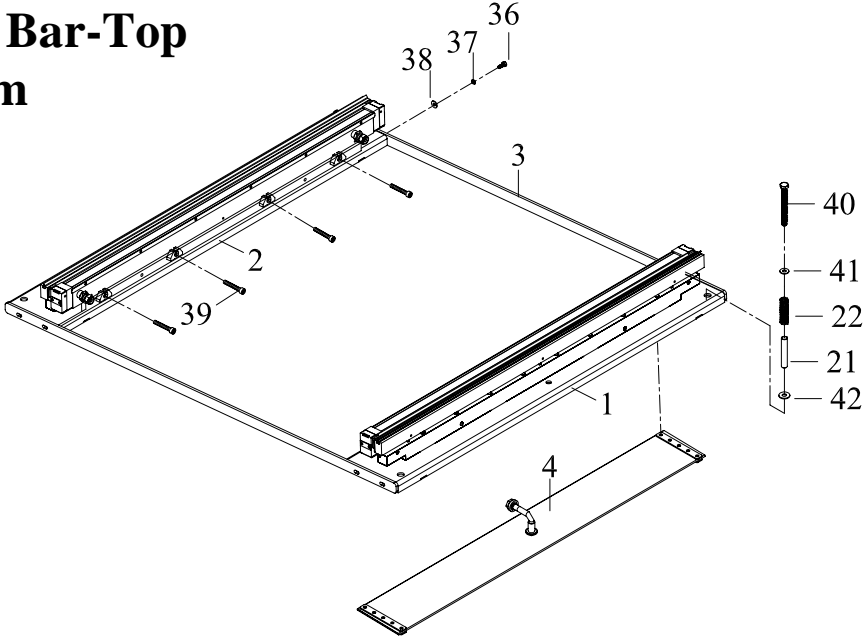
B80K312A00

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K302000	Holder-sealing bar (F)	1	
2	B80K303000	Holder-sealing bar (B)	1	
3	BT80304A00	Pressure bag assembly	2	
4	B80K307000	Jointer-sealing bar	2	
5	B80K311001	Holder-sealing bar	4	
6	B80K312000	Sealing bar-top	2	
7	B80K313000	Fixed mount	4	
8	B80K314000	Electrode plate	8	
9	B80K315000	Copper connector-sealing	4	
10	B80K316000	Connecting copper shaft	4	
11	B80K317000	Spring fixed plate	4	
12	B80K319000	Fixed shaft	4	
13	B80K320000	Fixed bushing	4	
14	B80K321000	Spring	4	
15	B80K322000	Spring	4	
16	B80K323000	Sealing element plate	4	
17	B80K324000	Flat plate	2	
18	B80K325000	Bushing	2	
19	2705303	Split lock washer M5	4	
20	2700414	Hex hd screw M5x12	4	
21	2703310	Round screw hd M4x30	8	
22	2707210	Nut M4	8	
23	2705302	Hex nylock nut M6	8	
24	2705151	Flat washer M6	8	
25	2701199	Hex hd screw M8x75	4	
26	D80K309001	Compression spring	4	
27	D80K308000	Bushing	4	
28	2705304	Flat washer M10	4	
29	2705301	Flat washer M8	4	
30	2703325	Round screw hd M4x8	32	
31	2705306	Split lock washer M4	8	
32	2701153	Hex socket hd screw M6x20	8	
33	B80K327000	Teflon tape	2	
34	2703308	Round screw hd M4x12	8	
35	D80K377000	Lining plate	4	

[illegible]

6.5.2 SEALING BAR, TOP (PK)

Sealing Bar-Top  
Diagram

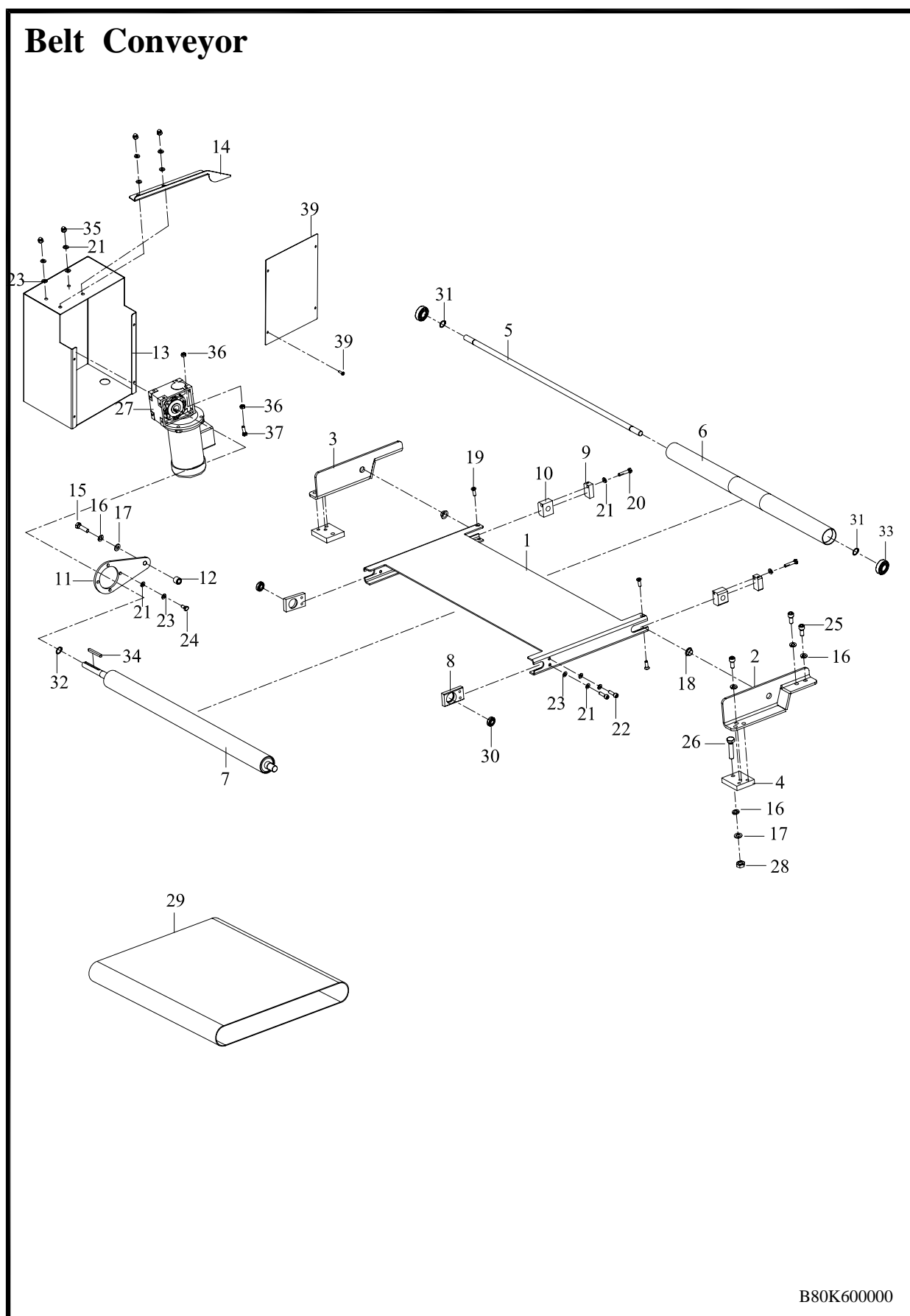


BT80350A01

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K336000	Sealing bar plate(F)	1	
2	B80K33700	Sealing bar plate(B)	1	
3	B80K307000	Joint plate-plate	2	
4	BT80304A00	Pressure bag assembly	2	
5	BT80312001	Sealing bar-bottom	2	
6	BT80313000	Sealing element plate	2	
7	BT80318000	Sealing element	2	
8	BT80319000	Teflon tape	2	
9	BT80320000	Teflon tape	2	
10	BT80356001	Sealing silicon	2	
11	DC8035A000	Compression spring	16	
12	BT8035B001	Cushion	2	
13	BT8035C001	Sraight perf knife	2	
14	BT8035F000	Teflon tape bar	2	
15	BT8035G000	Lid gasket	2	
16	BT80357000	Teflon tape clamp	2	
17	BT80358000	Knife mold stand	2	
18	DC12284000	Sealing wire plate	4	
19	DC12286000	Isolated plate-heating	4	
20	DC12287000	Fitting -heating	4	
21	D80K308000	Bushing	4	
22	D80K309001	Compression spring	4	
23	DC8035D000	Compression spring	16	
24	DC80359000	Sealing bar bushing	12	
25	D88K288000	Joint plate -fitting	4	
26	29010317	Speed control valve -L type VSL-6	4	
27	2703307	Round head screw M4x10	8	
28	2703308	Round head screw M4x12	16	
29	2909013	Cap 1/4"	4	
30	2703325	Round head screw M4x8	12	
31	2701160	Socket set screw M5x25	6	
32	2701189	Socket set screw M5x30	6	
33	2703303	Round head screw M3x30	4	
34	2702272	Flat head screw M6x30	4	
35	2701182	Socket set screw M6x50	8	

[illegible]

## 6.5 BELT CONVEYOR



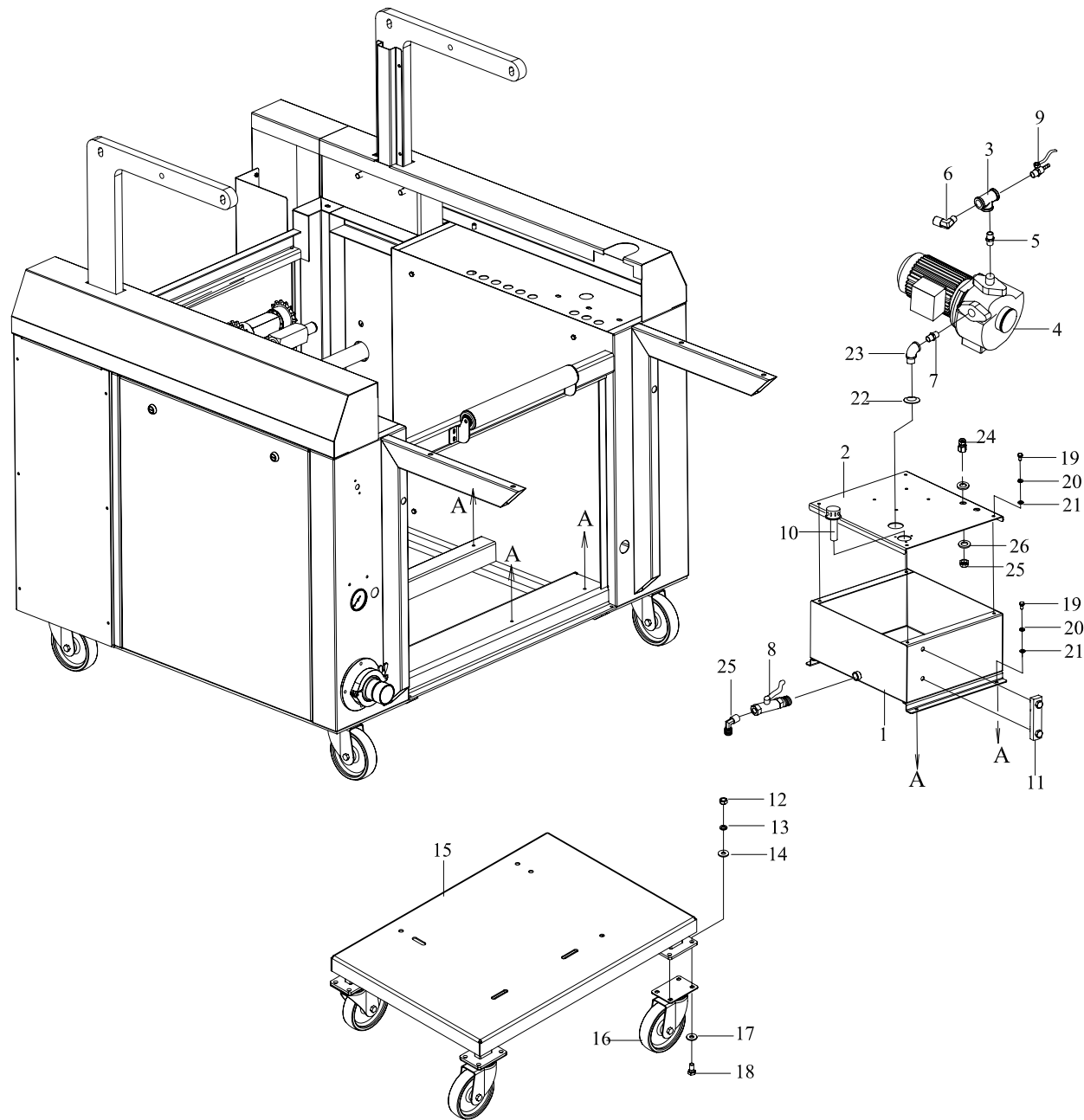


NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	BT80601010	Conveyor frame	1	
2	B80K602000	Fixed plate(L)	1	
3	B80K603000	Fixed plate(R)	1	
4	BT80604000	Adjust plate	2	
5	BT80605000	Roller shaft	1	
6	BT80606000	Adjust roller	1	
7	BT80607000	Rubber roller	1	
8	BT80608000	Roller bearing mount	2	
9	BT80609000	Belt adjust plate	2	
10	BT80610001	Belt adjust plate	2	
11	BT80611000	Motor fixed plate	1	
12	BT80612000	Motor fixed plate bushing	1	
13	BT80613002	Cover plate	1	
14	BT80614001	Guiding plate	1	
15	2700441	Hex hd screw M8x35	1	
16	2705301	Split lock washer M8	7	
17	2705152	Flat washer M8	3	
18	2728312	Dried bearing BM1206F20	2	
19	2702252	Flat hd screw M6x12	4	
20	2700403	Hex hd screw M6x50	2	
21	2705302	Split lock washer M6	12	
22	2700402	Hex hd screw M6x16	4	
23	2705151	Flat washer M6	12	
24	2700401	Hex hd screw M6x12	4	
25	2700408	Hex hd screw M8x20	4	
26	2700406	Hex hd screw M8x65	2	
27	2814814	WM-030-010-015S(200/400V)	1	
28	27072030	Nut M8	2	
29	2710872	Transportation belt	1	
30	27280135	Bearing 6902ZZ	2	
31	27060021	Ring S12	2	
32	27060071	Ring S14	1	
33	27280333	Bearing 6301ZZ	2	
34	2709040	Key 5x5x40	1	
35	27071102	Bag nut M6	4	

[illegible]

6.7 WATER COLLING

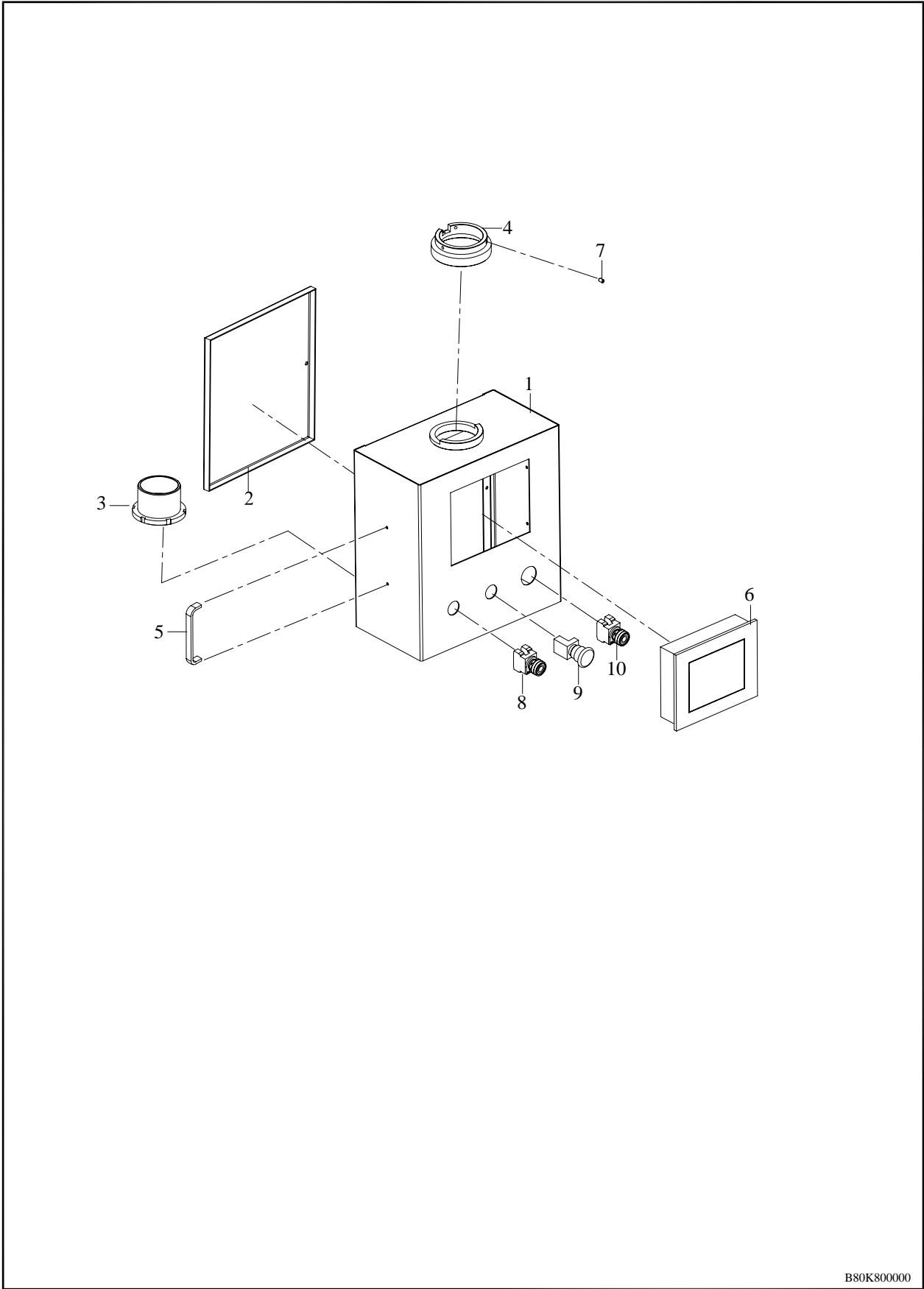
Water Cooling & Pump mount Diagram



B80K700000

NO.	PART NO.	DESCRIPTION	QTY	NOTES
1	B80K401000	Tank	1	
2	B80K402000	Plate	1	
3	29090082	Fitting 1/2"	1	
4	2740449	Pump	1	
5	29091361	Fitting 1/2"x3/4"	1	
6	29093433	Fitting 1/2"x3/8"	1	
7	29092183	Nipple 3/4"x3cm	1	
8	29093266	Fitting	1	
9	290932661	Fitting	1	
10	2910609	Oil gun	1	
11	29202351	Oil gauge	1	
12	27072032	Nut M8	16	
13	2705301	Split lock washer M8	16	
14	2705151	Flat washer M6	8	
15	B80K903000	Pump fixed mount	1	
16	271211812	Casters	4	
17	2705152	Flat washer M8	32	
18	2700408	Hex hd screw M8x20	16	
19	2700401	Hex hd screw M6x12	8	
20	2705302	Split lock washer M6	8	
21	2705151	Flat washer M6	8	
22	2714734	Dust sheet	1	
23	2909298	Fitting	1	
24	2909043	Fitting	1	
25	2909006	Fitting	1	
26	2705333	Flat washer M14	2	

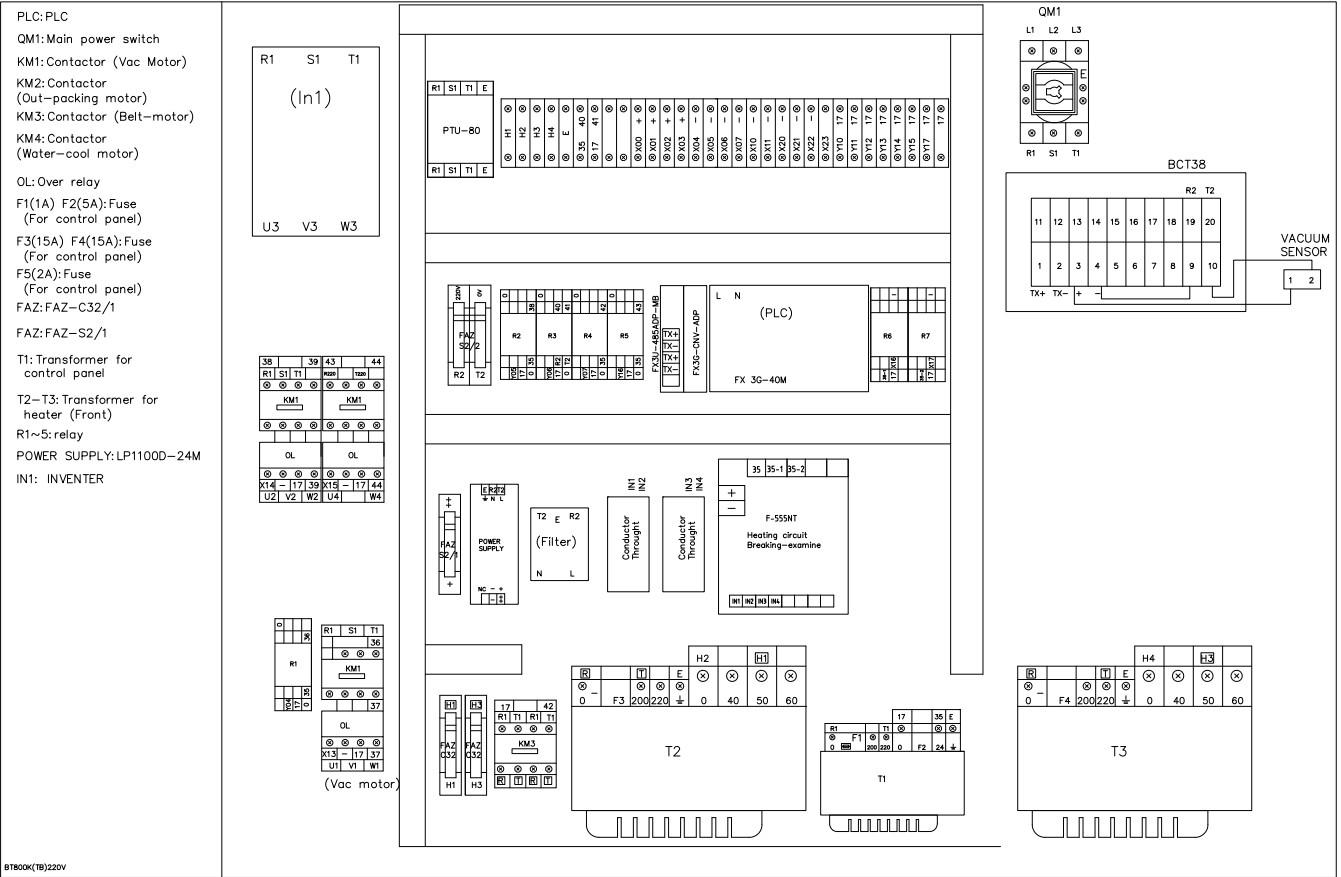
6.8 OPERATOR BOX



B80K800000

[illegible]

# 6.9 ELECTRICAL BOX



ITEM	PART NO.	DESCRIPTION	SPECIFICATION	Q'TY	NOTE
KM1	2810739	Contactor	TE CU11-B5 AC24	2	Option
	2810746		TE LC1D32B7(AC24V)	1	
KM2 KM3 KM4	2810758	Contactor	MOELLER DILMP20(AC24V)	1	
OL	2811511	Overload Relay	TE RHN-10K 0.67-1A	1	Option
	2811518		LR3D216 12-18A		
	2811531		TE RHU-10K (2.3-3.2A)		
	2810639		TE LR3D22(16-24A)		
R1	2830132	Relay	RU4S-C-A24	5	
	2831106	Socket, Relay	SY4S-05D	5	
	2850635	Hook	FM-4	10	
PLC	2823563	PLC	FX3G-40MR/ES-A	1	
	2823541		FX3U-485ADP	1	
	28233004		FX3G-CNV-ADP	1	

Filter	2896571	Filter wave	YC03T1L2	1	
KM	2801812	Switch	FAZ-2-S2	1	
KM	2801822	Switch	FAZ-S2 1P2A	1	
FAZ1~2	2801734	Breaker	FAZ-C32/1	2	
FAZ1~3				3	TB
INV1	2805147	Inverter	ANLY AMY-2 6S AC24V	1	
SWITCH	2913548	Switch	FFUBA FPT1-0010-A-A-D-N	1	
	2856034	Switch	FFUBA BCT38L-M-2-C	1	
T1	28960020	Transformer TBSW-1I-120VA	0F-200-220V/0-24V.OF-24	1	Option
	28960023		0F-400-440V/0-24.0F-24V		
	28960022		OF-380-415/0-24 OF-24		
T2	28960041	Transformer TBSW-1I-350VA	0F-400-440/0-220 UL	1	
T3	28960073	Transformer TBSW-1I-1000VA	0F-400-440/0-40-50-60 UL	2	
POWER	2896530-3	POWER SUPPLY	LP1100D-24M	1	
QM1	2807126	Switch, Selector	P1-32/V/SVB-SW	1	Option
	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	2843204	Terminal Block	PUW-20	26	
	2843209	Terminal Block	PTU-30	5	
	2843213	Plate, Terminal Block	PTU-80	4	
	2843207	Brake, Terminal Block	SBN-20(TA-002)	2	