



**MSK-32**

# **Brine Injector Operation Manual**

## **Operation Manual**

Version 6.9.1

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QC SIGNATURE:

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# **MSK-32 Brine Injector Introduction**

The Promax MSK-32 brine injector has been designed and manufactured utilizing advanced technology and electronics. It has been designed to promote ease of operation and reliable performance. The machine incorporates a complete safety system for the protection of the operator.

The step feed system on the MSK-32 uses a gear drive for unsurpassed accuracy. The three piece removable feed shoe facilitates ease of cleaning. The machine utilizes an advanced air head design that produces a perfect injection effect for both bone in and boneless products.

The injection frequency, injection pressure, injection rate as well as the step spacing is all adjustable to meet your specific requirements.

The MSK-32 is equipped with a three stage filtration system that prevents scrap from clogging the needles and causing jamming. The brine tank is equipped with an agitator to help prevent the holes in the filter from becoming clogged and the unique pneumatic needle cleaning helps speed up the needle cleaning process.

# 1. Technical parameter

First injecting rate :  $\geq 140$

Second injecting rate :  $\geq 180$

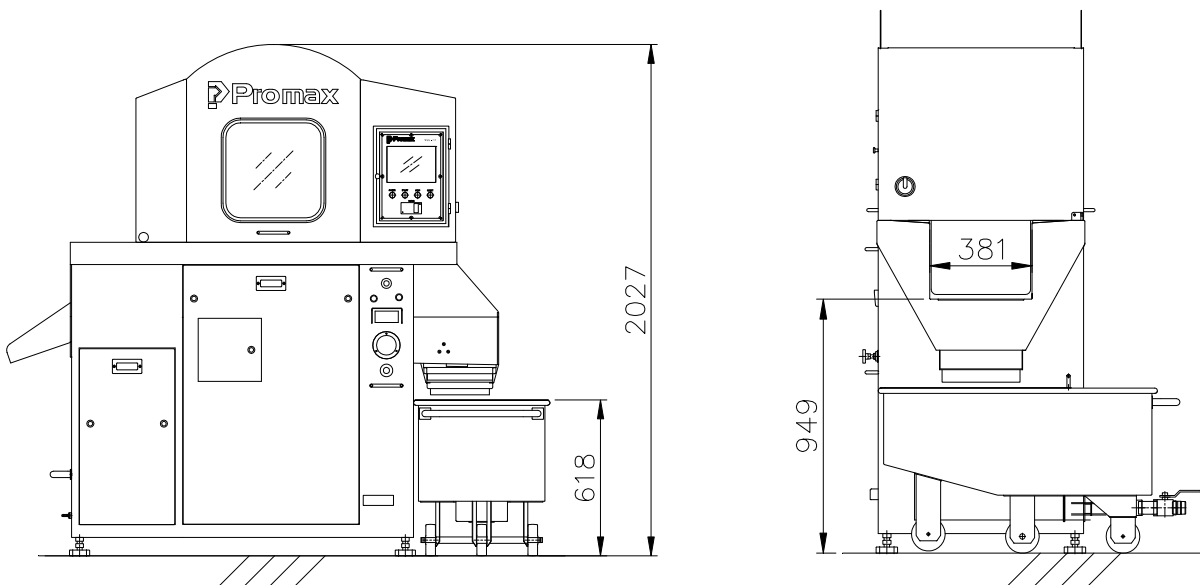
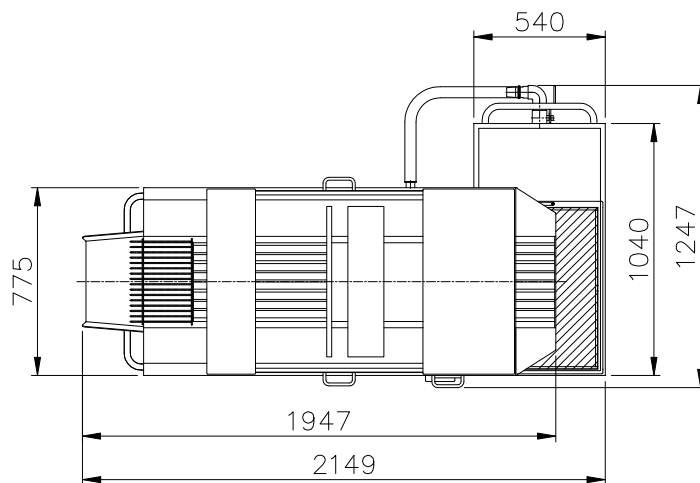
Injecting speed : 15-56 times/min

Power : 220V 60Hz

Pressure : 0.2-0.5Mpa

Needle quantity : 32

Specification : MSK-32



## 2. Installation

**2.1 Placing and Leveling the Machine:** There are four wheels and four spiral anchors on the bottom of the machine. When moving the machine, screw in the anchors and the four wheels can carry the machine. Once the machine is in the designated site, screw out the anchors counter clockwise, then the four wheels will lift off the ground and adjust the anchors to level the fuselage.

**2.2 Compressed Air Connection:** There is a compressed air hose union on the left bottom of the machine's back which can be used for this connection.

**2.3 Main Power Connection:** The MSK-32 comes with a power cord attached. The electrical requirements can be found on the machine's serial number plate located at the rear of the machine. Promax recommends that the main power connection be installed by a certified electrician who is familiar with your local building codes

**2.4 Brine Preparation:** Make sure the brine does not contain granules or long fibers and does not contain ingredients that will erode stainless steel or Teflon. Check to make sure that the quick change couplers on the hose that connects the brine tank to the injector are firmly fastened and that the level of brine in the tank is higher than the inlet of the brine pump.

## 3. Items to Check Before Start Up

**3.1** The four doors and the top-hoods must be closed otherwise the machine cannot be run. The PLC control system will indicate whether all the doors are closed and the safety interlocks engaged.

**3.2** Check the level of the brine in the brine tank. It must be above the height of the brine pump inlet. Caution: To run the pump with the brine level too low can cause the pump to fail.

3.3 Check to make sure that the brine in the tank is clean and free of any foreign debris.

## 4. Cleaning

4.1 **Cleaning the Brine Pipe:** Once the injection process has been completed another complete cycle should be run using clean water. This will remove any sediment or residue from the brine system.

4.2 **Cleaning the Housing:** Withdraw the lace bar first, then take out the gear frame and wash out the water channel.

### 4.3 Needle Cleaning Procedure

#### 4.3.1 Needle head removal

- a. Release air pressure from the needle head air valve.
- b. Remove ringed push pins, only two are removed so the head will hinge back to support.
- c. Carefully open needle head, tilt back and rest on rest support.
- d. Caution – needles may not all be in lower position. You may need to lower needles down one by one until all are down. Opening the head while needles are in the up position will damage or break them. If, when opening the head, you feel resistance, stop. Check the needle location

#### 4.3.2 Needle removal

- a. Pull upward on needles to remove them.

#### 4.3.3 Needle cleaning

- a. Insert needle into needle cleaner.
- b. Press needle cleaner button (on control board). Air will remove material from needle.

#### 4.3.4 Needle replacement

- a. Lightly lubricate the needle with food grade grease. This grease may be ordered from your dealer (reference part # 0123456) Important note:

This grease was specifically chosen for proper operation of the injector head. The warranty on the injector head depends on the proper use and application of this grease.

- b. Re-insert the needle into the head and lower scraper block. Make sure the needle is flush with the head.
- c. After all the needles are installed remove any excess grease. However make sure the heads of the needles are lightly greased.

#### 4.3.5 Needle Head Replacement

- a. Return the needle head carefully to the original position.
- b. Return ring push pins to the locking position.
- c. Lift air valve to return the air pressure to the needle head.

## 5. Maintenance

**5.1 Daily Visual Inspection:** The machine should be subject to a thorough visual inspection to determine if any parts are showing undue wear or damage. Repair or replace any such part before start up. If the machine has just been brought out of storage it should be completely lubricated before use.

**5.2 Cleaning:** The machine should be washed at the end of each shift and all key operating parts should be oiled to prevent excess wear because of the wet environment.

**5.3 Brine Considerations:** To ensure that the brine is clean do not use any insoluble ingredients, such as long fibers, minced meat or hard particles. To use such ingredients can easily cause jamming of the needles and the brine pump.

**5.4 Brine Filters:** Keep the two stage brine filter screens clean at all times and replace or repair them if they become worn.

**5.5 The Reducer:** The reducer must be oiled after the first 100 hours of use

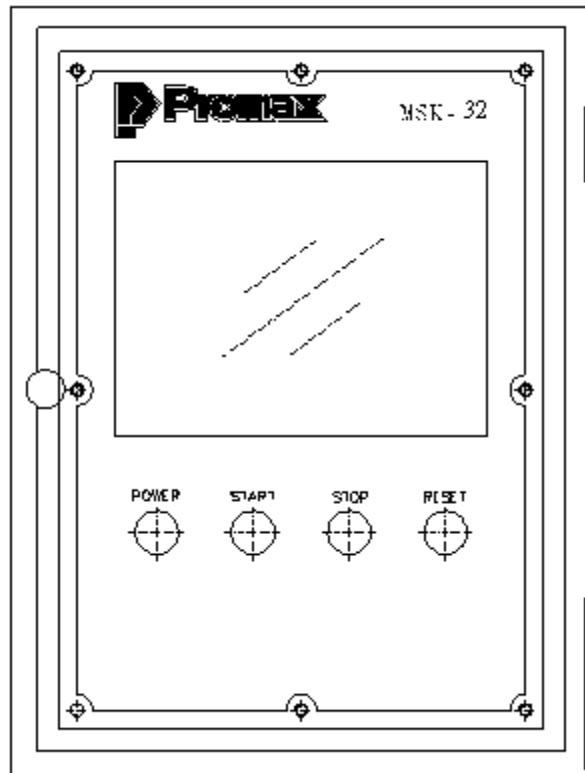
and then regularly every 2500 hours of use. Promax recommends the following lubricants: N220-320 for ambient.

## 6. Troubleshooting

| Problem                                 | Reason analysis                                                                     | Solution                                                                                                                             |
|-----------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| No water comes out from the needle tube | Brine pump jam<br>Needle tube jam<br>Brine pump motor trouble                       | Clean up obstruction on the brine pump<br>Blow out obstructions in the needles or change needles<br>Motor's wire error, brine pump's |
| Water yield is not enough               | Brine pump or needle tube jams<br>Pressure is too low                               | Clean up obstructions<br>Change spillway discharge                                                                                   |
| Noise from pressure regulating valve    | Pressure is in the range of jolting                                                 | Change the pressure out from the range of jolting                                                                                    |
| Brine chamber leaking                   | There is cleft in the needle tube<br>The joint ring in the brine chamber is damaged | Change needle<br>Replace with new joint ring                                                                                         |
| air chamber leaking                     | The joint ring in the air chamber is damaged                                        | Replace with new joint ring                                                                                                          |



## 7. Operating Parameters



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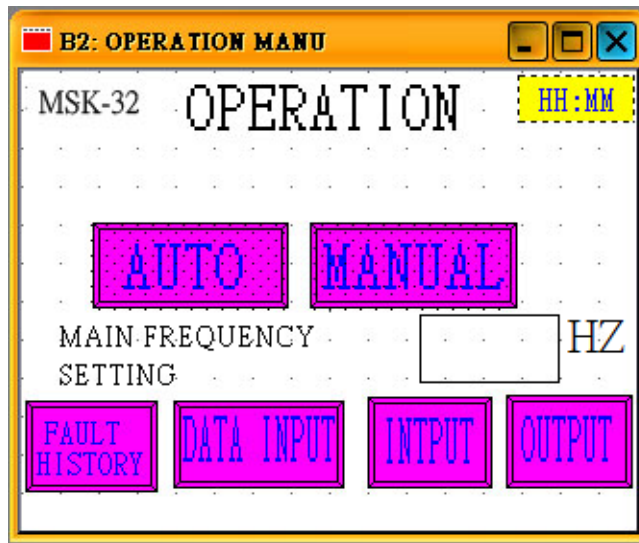
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When power is on, please check the display on the touch screen if there is any phase error showing. Once there is a phase error, please check the phase rotation.

7.1 Touch page B1 you can get into the page B2(Operation page)  
B2(Operation page)



7.1.1 Press AUT bottom, the equipment goes to the AUTO mode. The green START button (Located on the front panel) with the indicated light will be blinking.

7.1.2 Press the green START button. The light will stay on and the motors M1 M2 will activate by sequence.

7.1.3 Press the STOP button. The AUTO mode will stop and the STOP indicated light will stay on.

7.1.4 Press the MANUAL button. Then goes to the Manual mode.

7.1.5 Press DATA INPUT button. Goes to the parameter setting page(Password needed)

7.1.6 Press INPUT button. Goes to the PLC input page which shows the explanation of input signal.

7.1.7 Press OUTPUT button. Goes to the PLC output page which shows the explanation of output signal.

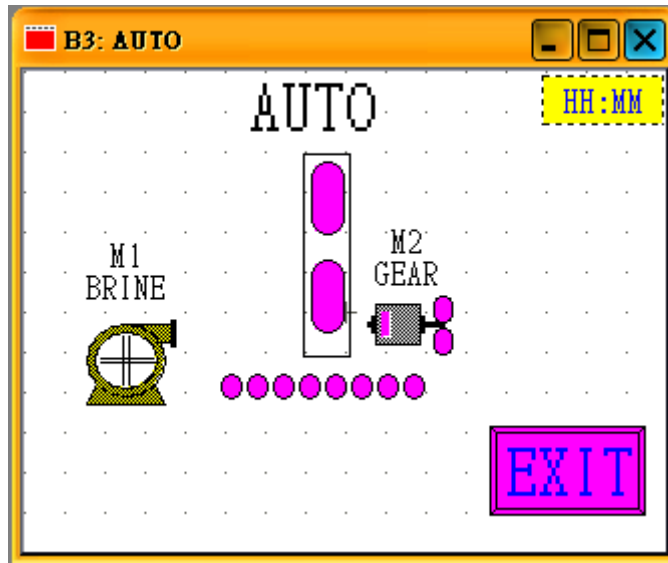
7.1.8 Press FAULT HISTORY button. Shows the fault records.

Please push the EMERGENCY STOP (on the front control box ) when is necessary to stop the equipment immediately.

When the ERROR signals appear on the touch screen, press the yellow alarm reset button (on the front control box) to reset (need to fix the error first)

7.2 On the AUTO mode page, you can't change the setting, just overview.

### B3 (AUT) Operation Page



#### AUTO mode

7.2.1 PRESS the START button. The Start button light will stay on and the STOP button will turn off.

7.2.2 The sequence of activating is: motor M1 activates first. After 2 seconds, the motor M2 will start to up/down and inject brine. (The time delay interval can be set on the parameter page).

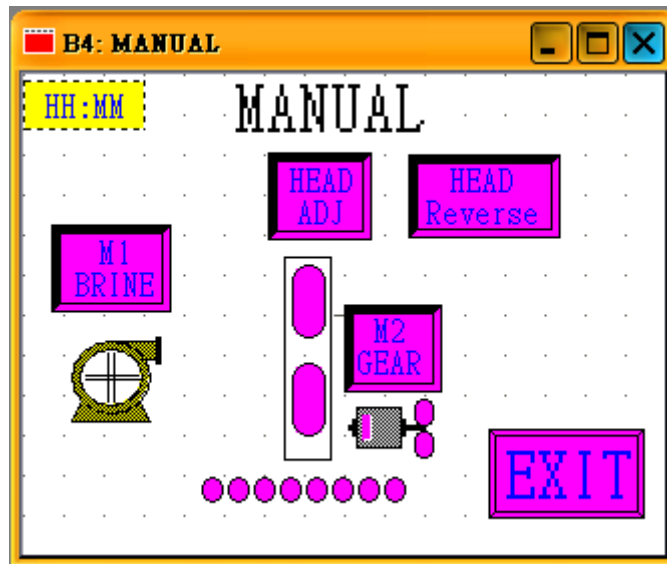
7.2.3 If any error signal comes on the bottom portion of touch screen, please refer the information to fix the error.

7.2.4 Under the AUTO mode, if you want to stop the operation.

- (1) Press the red STOP button on the front control box.
- (2) Press the MANUAL button on the operation page.
- (3) Press the EMERGENCY STOP button.

7.3 Press the EXIT button back to OPERATION page

### B4 (MANUAL) Operation Page



## MANUAL mode

7.3.1 Press M1 BINE start/stop BRINE PUMP

7.3.2 Press M2 GEAR start/stop UP and DOWN GEAR MOTOR

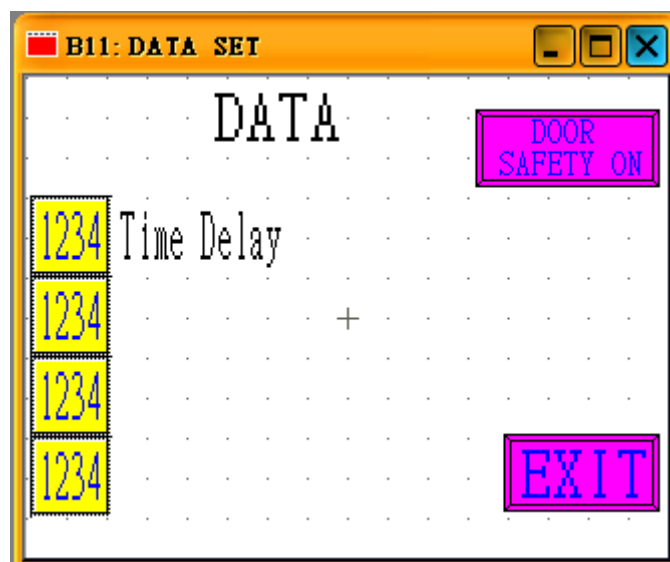
7.3.3 Press HEAD ADJ control the UP and DOWN GEAR MOTOR with slow movement to adjust the proper height for the products (Hold the button will keep moving, once leave from button will stop movement).

7.3.4 When not to work Press HEAD REVERSE control the UP and DOWN GEAR MOTOR with slow movement to adjust the proper height for the products.

7.3.5 If want to out of this page and go to OPERATION PAGE. Just press the EXIT button.

## 7.4 Parameter Setting Page

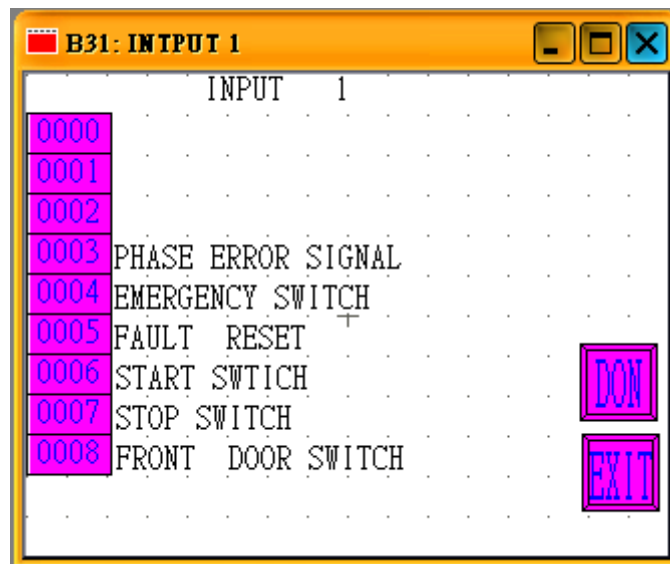
### B11 Parameter Setting Page



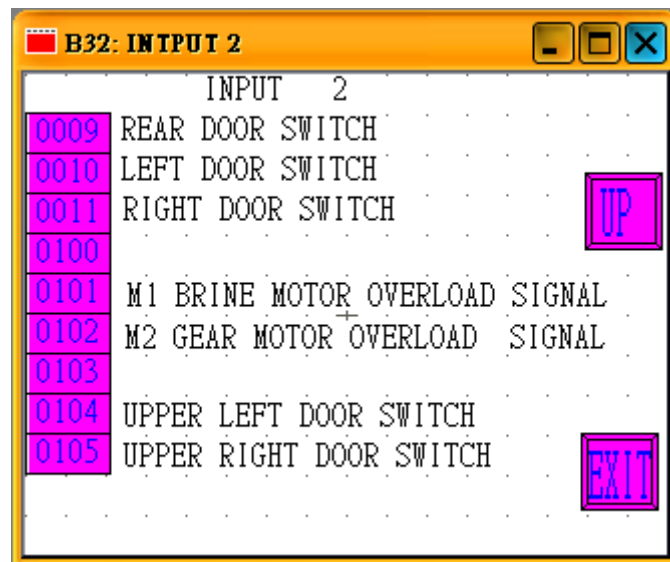
7.4.1 Press the left hand side button. The data will pop out as a keypad. Input the data you want and press ENT to save the setting.

7.4.2 Based on the machine service requirement, you can press the DOOR SAFETY ON/OFF button to dismiss the door safety.(The button shows DOOR SAFETY OFF. This means the DOOR SAFETY protection is off)

### B31 PLC INPUT MONITORING PAGE 1

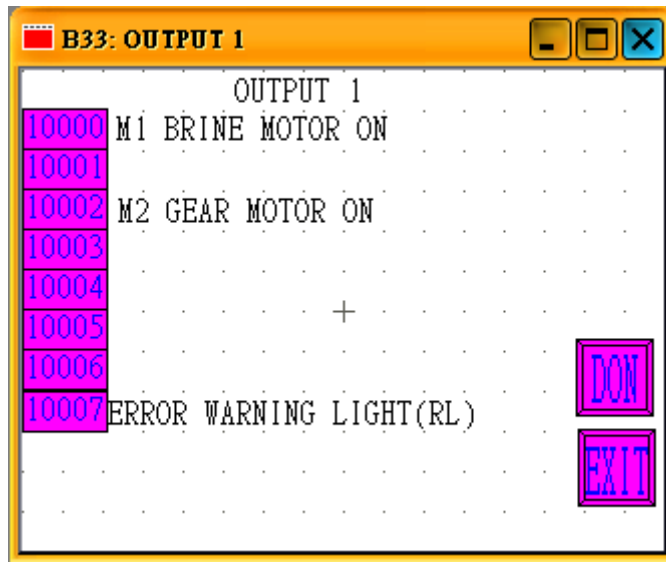


### B32 PLC INPUT MONITORING PAGE 2



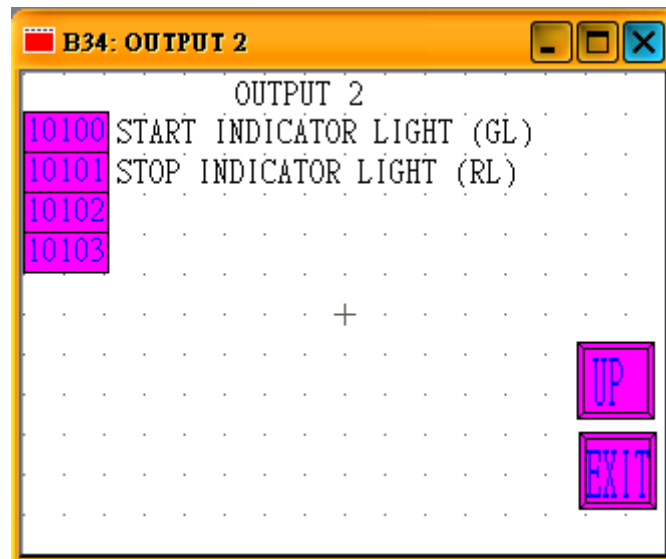
Monitor PLC OUT PUT SIGNAL ON / OFF

### B33 PLC OUTPUT MONITORING PAGE 1



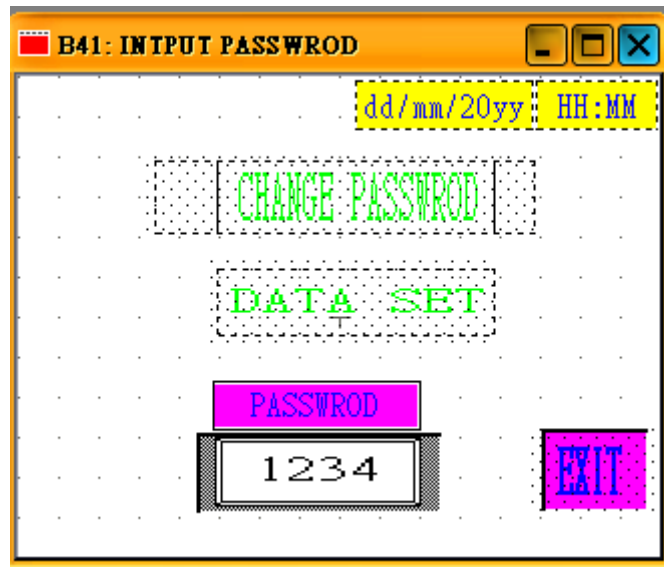
Monitor PLC OUT PUT SIGNAL ON / OFF

B34 PLC OUTPUT MONITORING PAGE 2



7.5 PASSWORD INPUT PAGE

B41 PASSWORD INPUT PAGE



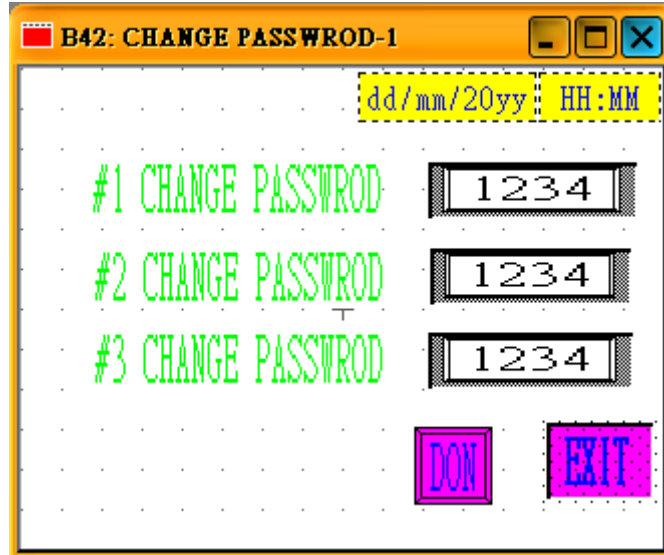
The password is 4 digital

7.5.1 Tap the PASSWORD window, then the keypad will pop out. Input the password and press ENT.

7.5.2 Basic password can access the DATA SET.

7.5.3 High end password can access CHANGE PASSWROD

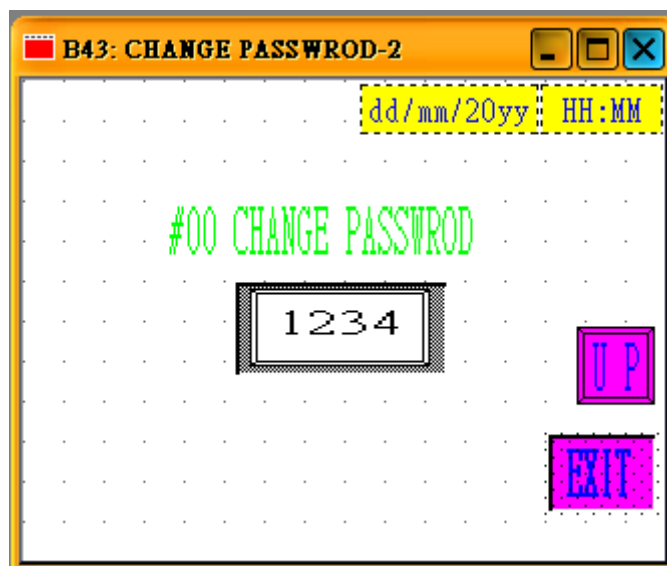
#### B42 BASIC PASSWORD CHANGE PAGE



7.5.4 Tap the right hand side number window and input the password you want.

7.5.5 Press “DON” button to the next page for high end password change.

#### B43 HIGH END PASSWORD CHANGE PAGE



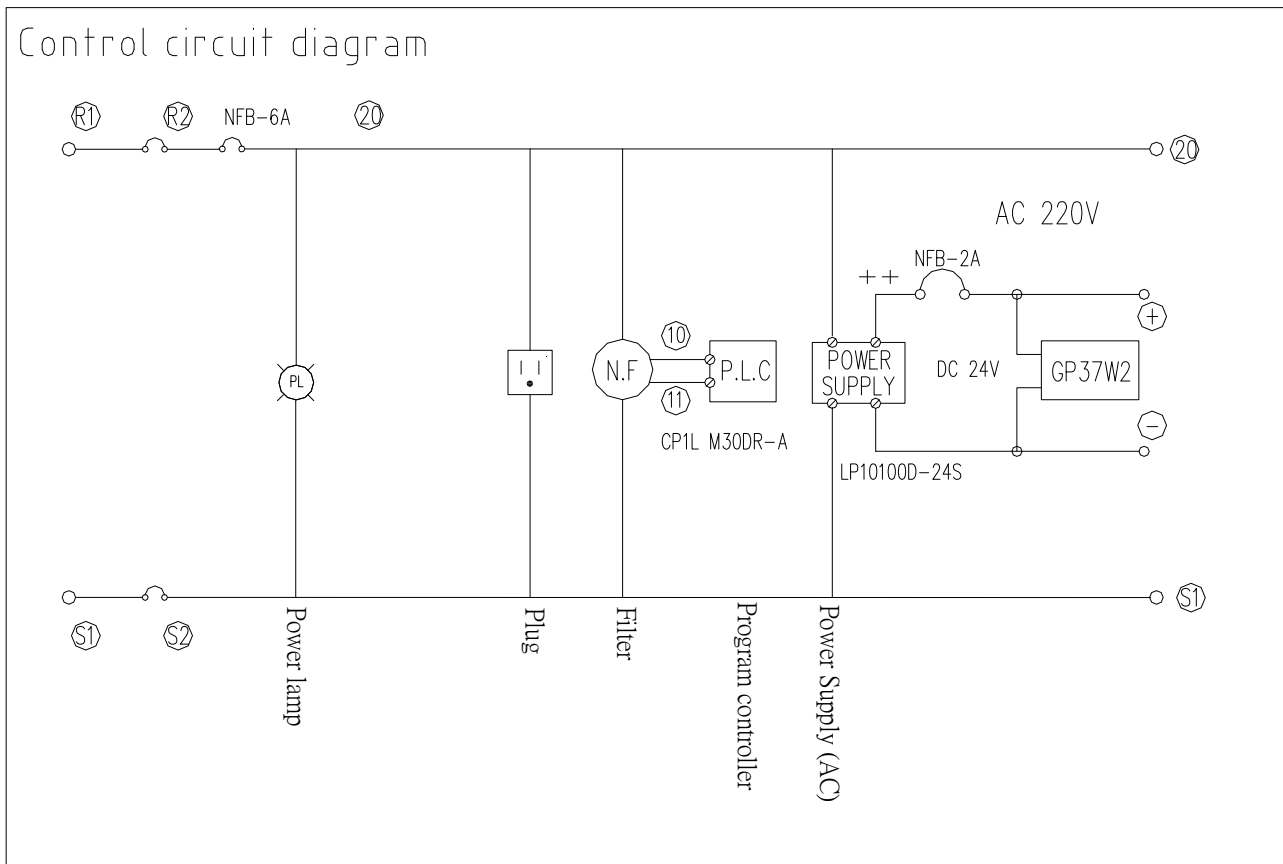
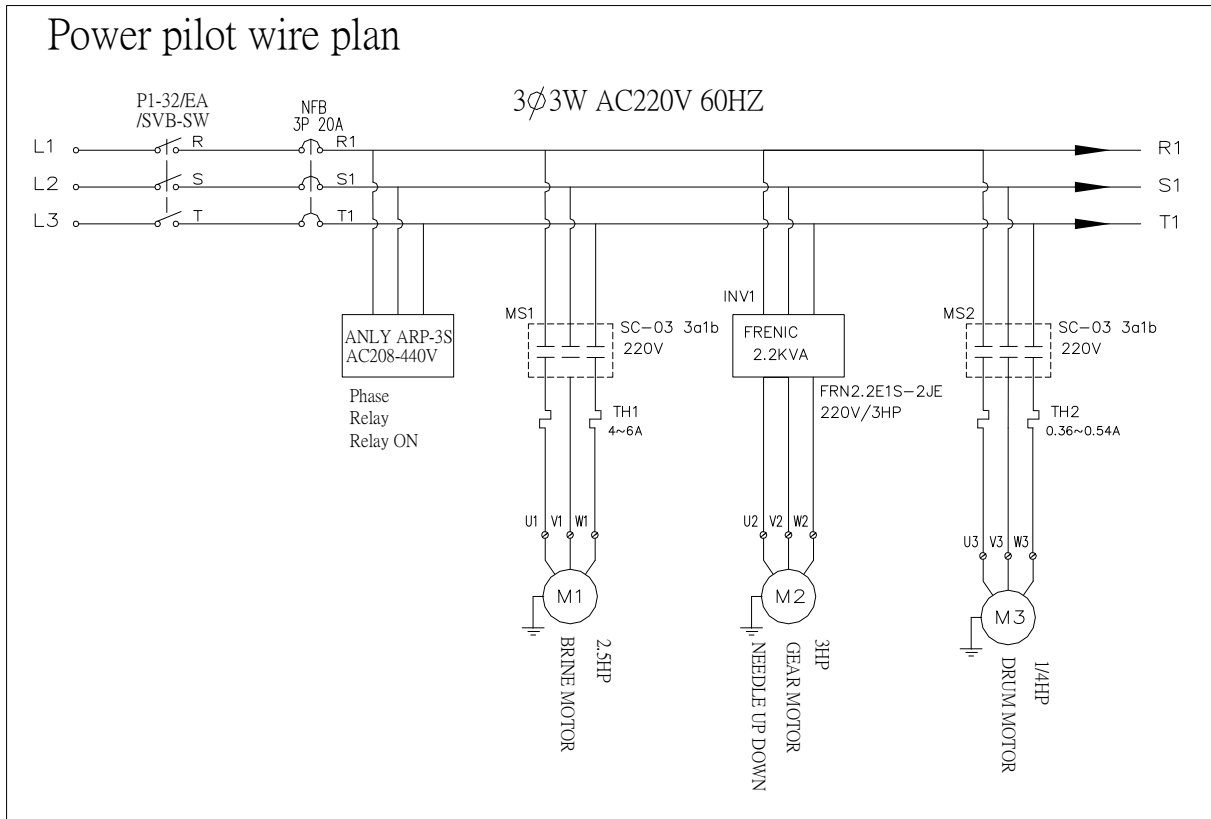
7.5.6 Tap the number window and input the password which you want to change with. Press ENT button to save.

#### 7.6 FAULT MESSAGE (ON THE TOUCH SCREEN EXPLANATION CHART

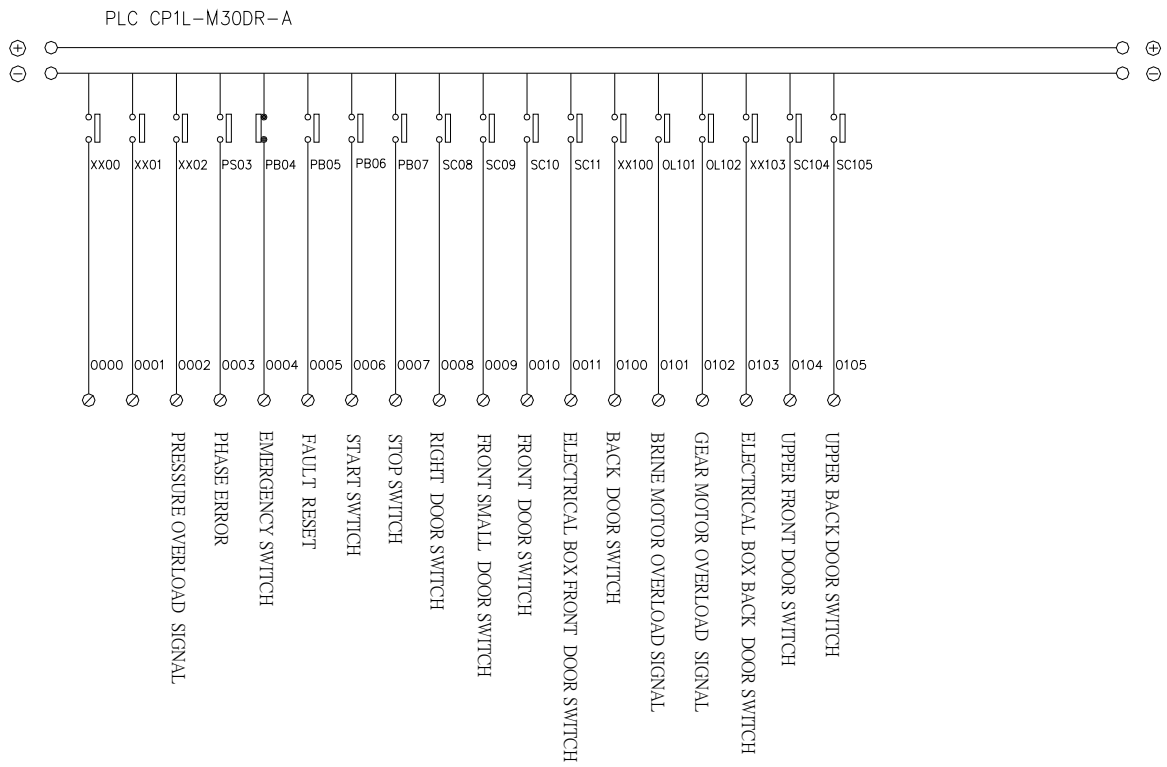
| PLC RELATED RELAY NUMBER | EXPLANATION OF FAULT MESSAGE |
|--------------------------|------------------------------|
| W2602                    | BRINE TANK LOWER WATER LEVEL |
| W2603                    | PHASE ERROR                  |
| W2604                    | EMERGENCY BUTTON ON          |
| W2608                    | FRONT DOOR OPEN              |
| W2609                    | REAR DOOR OPEN               |
| W2610                    | LEFT DOOR OPEN               |
| W2611                    | RIGHT DOOR OPEN              |
| W2612                    | PLC LOW Battery              |
| W2700                    | BRINE TANK COVER ERROR       |
| W2701                    | M1 BRINE MOTOR OVERLOAD      |
| W2702                    | M2 GEAR MOTOR OVERLOAD       |
| W2704                    | UPPER LEFT DOOR OPEN         |
| W2705                    | UPPER RIGHT DOOR OPEN        |
| H200                     | DOOR SAFETY OFF              |



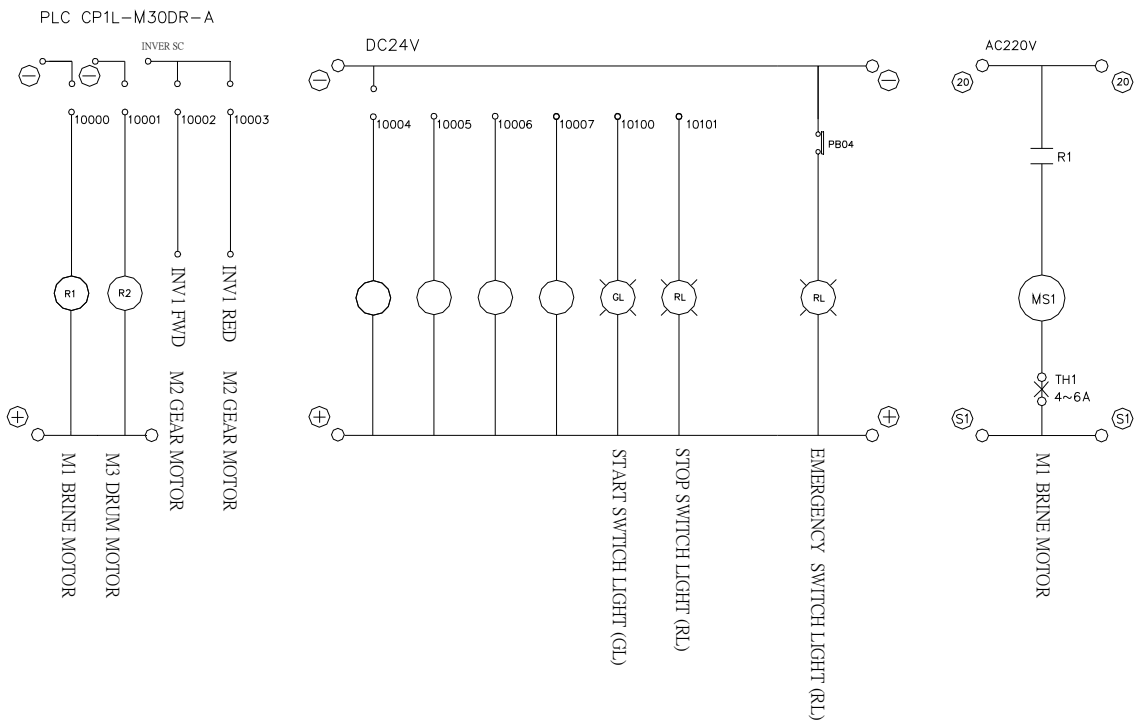
# 8. Electric diagram and introduction



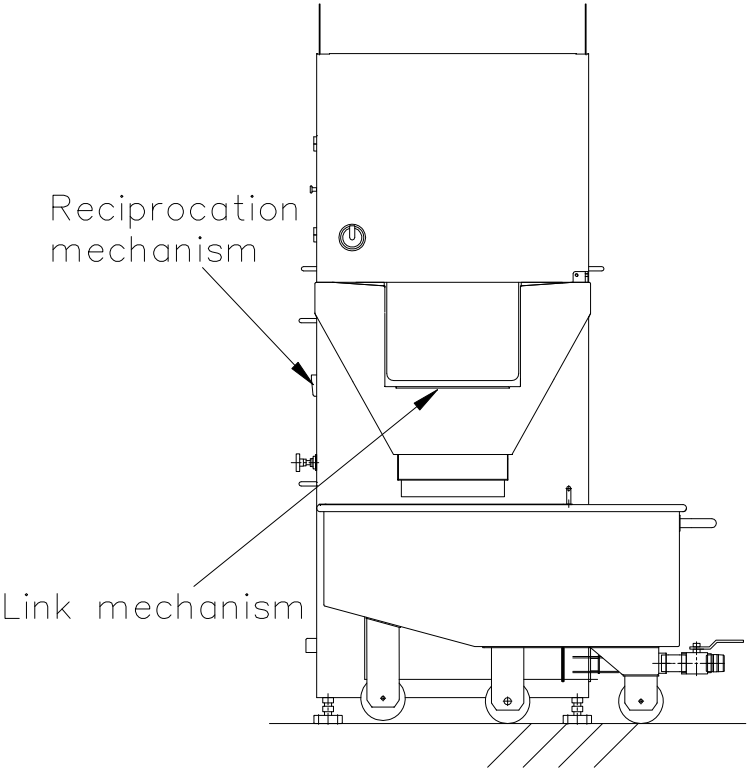
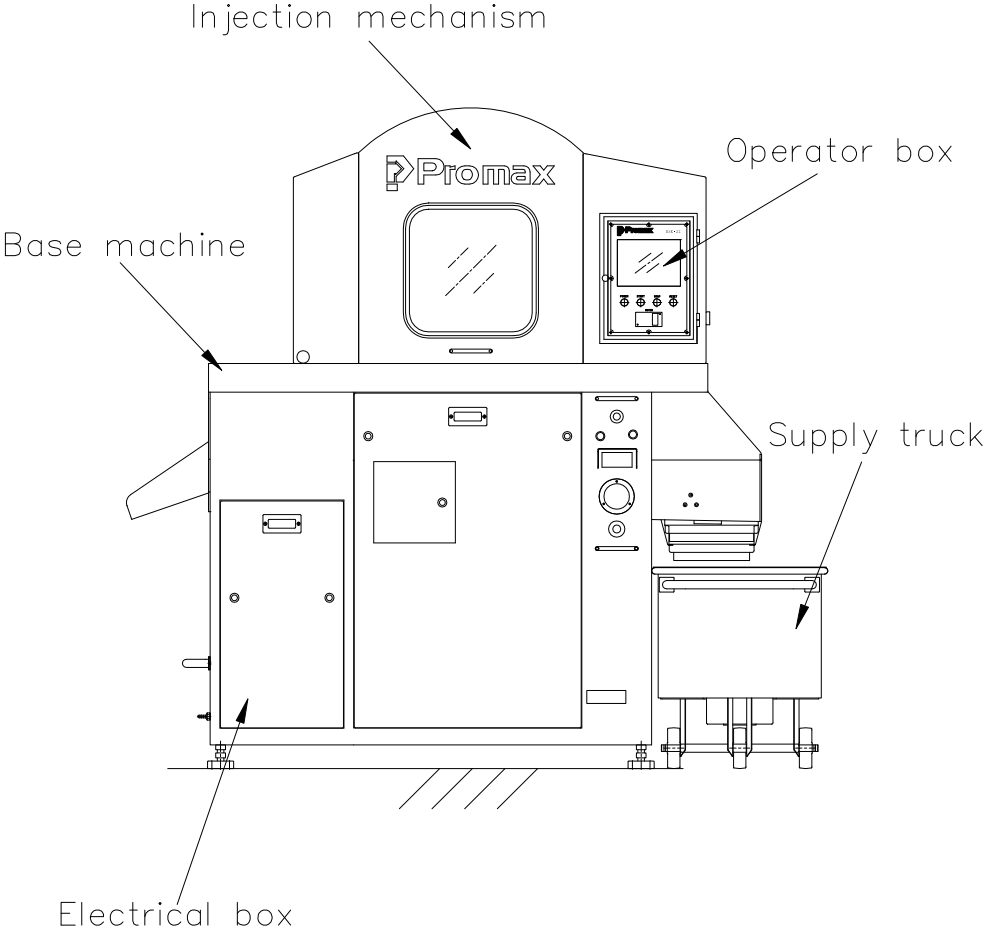
# Input wiring diagram



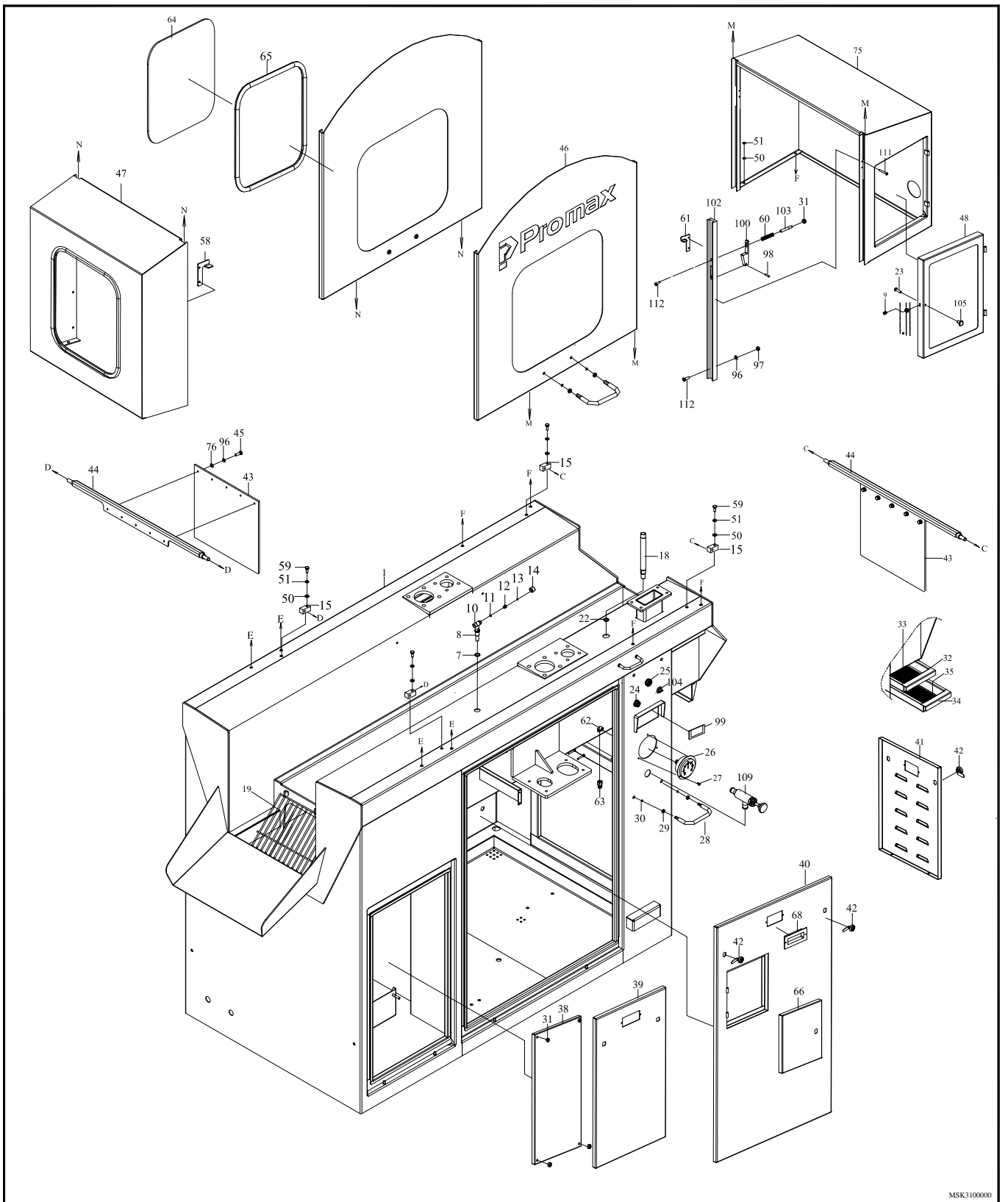
# Output wiring diagram



# 9. Fabrication

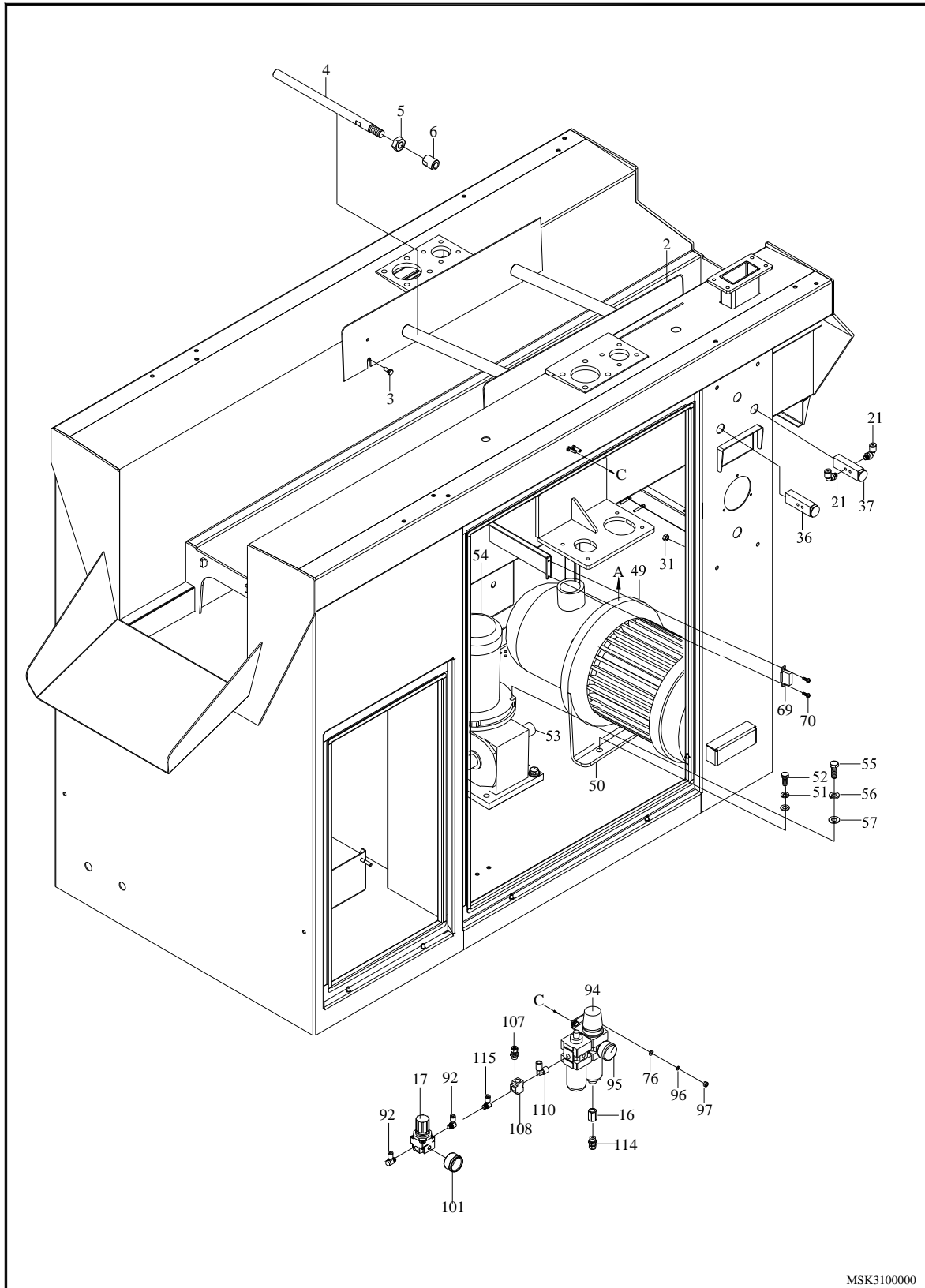


# 9.1 BASE MACHINE



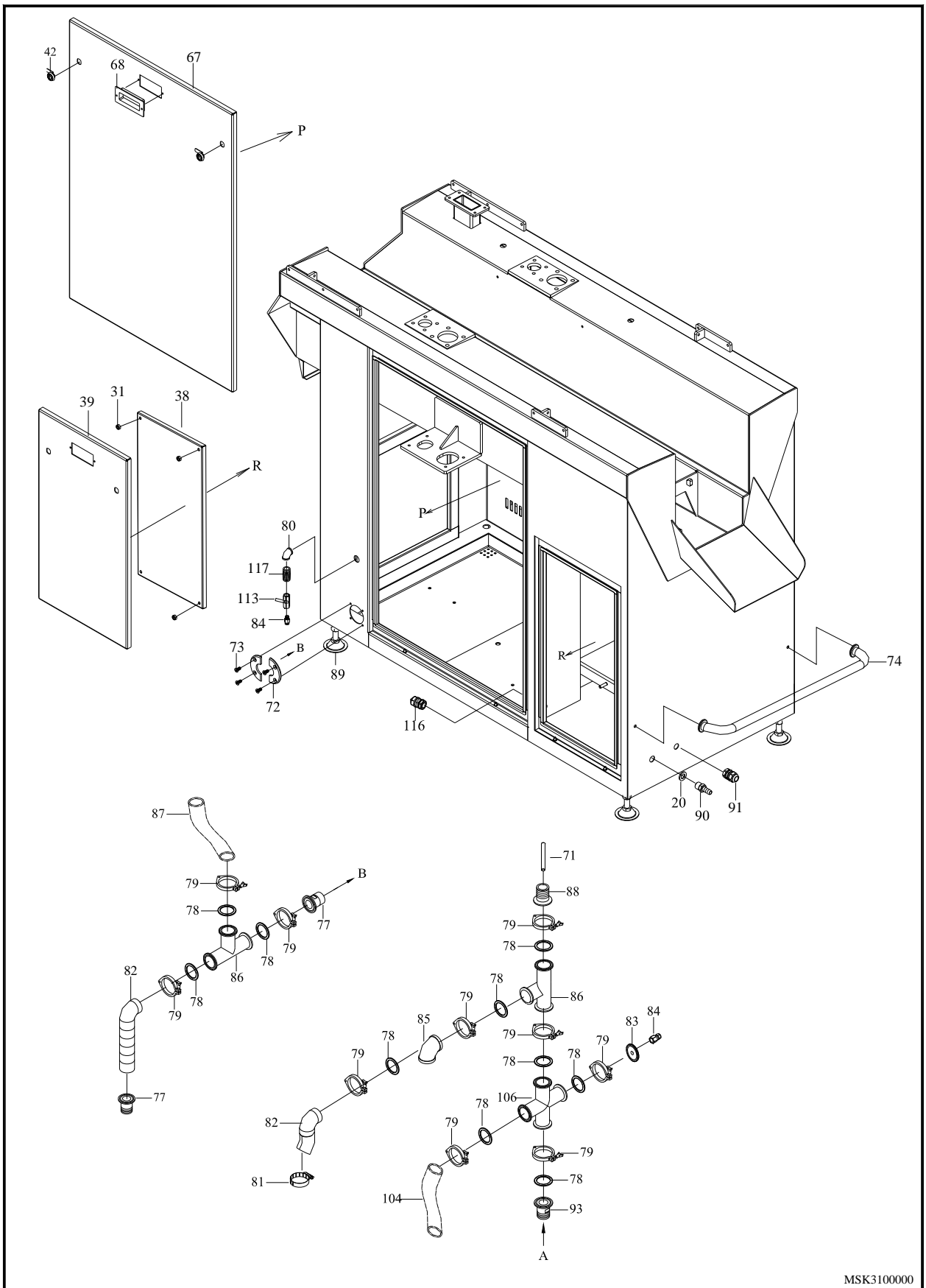
MSK310000

# 9.1 BASE MACHINE



MSK3100000

# 9.1 BASE MACHINE



MSK3100000

| NO. | PART NO.   | DESCRIPTION                                     | QTY |  |
|-----|------------|-------------------------------------------------|-----|--|
| 1   | MSK3101000 | Frame                                           | 1   |  |
| 2   | MSK4145000 | Protection plate                                | 2   |  |
| 3   | MSK4148000 | Screw shaft Positioning plate, H10x18, F/MSK-32 | 4   |  |
| 4   | MSK3146000 | Rod , Width Adjustment, F/MSK-32                | 2   |  |
| 5   | 27070126   | Nut, hex M18x2.5 (S)                            | 5   |  |
| 6   | MSK4147000 | Nut Width Adjustment rod, F/MSK-32              | 2   |  |
| 7   | MSK4144000 | Spacer $\varnothing$ 25x3                       | 2   |  |
| 8   | MSK4141011 | Shaft Needle Cleaner air blow F/MSK             | 1   |  |
| 9   | 2701809    | Setting ball M8x1.25                            | 1   |  |
| 10  | MSK4141000 | Cleaner needle air blow , T-shape , F/MSK       | 1   |  |
| 11  | 2740199    | O-Ring P9 (FPM.V.T)                             | 2   |  |
| 12  | MSK4142000 | O-Ring holder                                   | 2   |  |
| 13  | 2740149    | O-Ring P4 (FPM.V.T)                             | 2   |  |
| 14  | MSK4143000 | Cover                                           | 2   |  |
| 15  | MSK2164001 | Base , Shaft Curtain, F/MSK-32                  | 4   |  |
| 16  | 2909172    | Fitting, Copper P-52 1/4"x1/4"                  | 1   |  |
| 17  | 29100052   | Regulator SMC AR20-02H-B                        | 1   |  |
| 18  | MSK2163001 | Air tube mount                                  | 1   |  |
| 19  | MSK3119000 | Export net                                      | 1   |  |
| 20  | 2705155    | Washer, flat M14 (S)                            | 1   |  |
| 21  | 29093211   | Fitting JPL 8-02                                | 4   |  |
| 22  | MSK4168000 | Tube mount washer                               | 1   |  |
| 23  | 2701501    | Screw, oval hd M6x12 (S)                        | 1   |  |
| 24  | 2933094    | Valve, Mechanical MVMB-220-3PP-22               | 1   |  |
| 25  | 2870205    | Switch, illuminated mushroom AVLW43311-R 24V    | 1   |  |
| 26  | 2910577    | Pressure gauge                                  | 1   |  |
| 27  | 2701503    | Screw, oval hd M5x12 (S)                        | 3   |  |
| 28  | MSK2606000 | Handle, Protective F/MSK-32/56/98S              | 4   |  |
| 29  | MSK4607000 | Ring, Protective Handle                         | 8   |  |
| 30  | 27401570   | O-Ring P8 (FPM.V.T)                             | 8   |  |
| 31  | 2707203    | Nut, ST. M8                                     | 16  |  |
| 32  | MSK3102000 | Drawer(Big),Frame                               | 1   |  |
| 33  | MSK3103000 | Mesh Filter Big                                 | 1   |  |
| 34  | MSK3104000 | Drawer(Small),Frame                             | 1   |  |
| 35  | MSK3105000 | Mesh Filter Small                               | 1   |  |

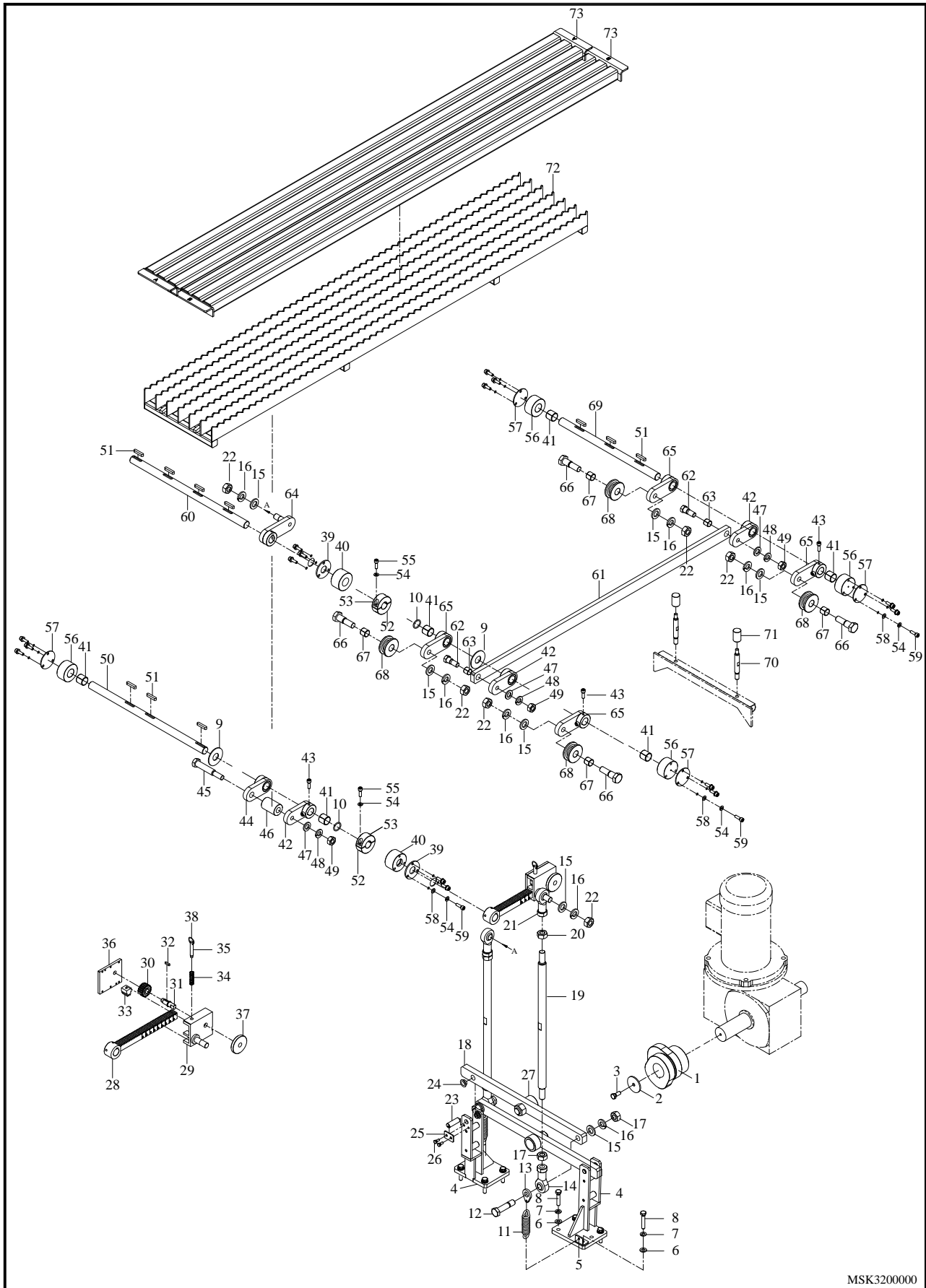
| NO. | PART NO.   | DESCRIPTION                                   | QTY |  |
|-----|------------|-----------------------------------------------|-----|--|
| 36  | 2933094    | Valve,Mechanical MVMB-220-3PP-22              | 1   |  |
| 37  | 2933097    | Selectot On/Off Air ,MVMB-220-3TB-22          | 1   |  |
| 38  | MSK4110001 | Panel F/Mounting Components                   | 2   |  |
| 39  | MSK2109011 | Door Electrical box                           | 2   |  |
| 40  | MSK2107001 | Door Front                                    | 1   |  |
| 41  | MSK2106011 | Door Side R                                   | 1   |  |
| 42  | 2883349    | Lock door                                     | 10  |  |
| 43  | MSK3112000 | Plate water Splash guard                      | 2   |  |
| 44  | MSK3117000 | Rack Clamping water Splash guard              | 2   |  |
| 45  | 27000362   | Screw, hex hd M5x12 (S)                       | 10  |  |
| 46  | MSK2111002 | Door Upper cover Front, Promax                | 2   |  |
| 47  | MSK3160000 | Frame Upper left cover                        | 1   |  |
| 48  | MSK2810001 | Door Frame Control box                        | 1   |  |
| 49  | 2858012    | Motor,Brine centrifugal MHI404 220V/380V-60HZ | 1   |  |
| 50  | 2705301    | Spring Washer, ST M8                          | 2   |  |
| 51  | 2705331    | Spring spacer ST M6                           | 2   |  |
| 52  | 2700408    | Screw, hex hd M8x20 (S)                       | 2   |  |
| 53  | 28143049   | Reducer LM-TMW-100-30-V-3                     | 1   |  |
| 54  | 2814349    | Motor, AEUL 3HP -4P 3ψ/220V                   | 1   |  |
| 55  | 27000610   | Screw, hex hd M14x20 (S)                      | 8   |  |
| 56  | 2705322    | Spring Washer ST M14                          | 8   |  |
| 57  | 27051541   | Washer, M20 (S)                               | 8   |  |
| 58  | MSK2162001 | Stoper L-shape Upper door                     | 2   |  |
| 59  | 2701179    | Screw socket hd M8x35                         | 4   |  |
| 60  | MSK4219000 | Spring, Door ,Hinge                           | 4   |  |
| 61  | MSK2161001 | Right stop block                              | 2   |  |
| 62  | 29091745   | Fitting P-7-1 3/8"x1/4"                       | 1   |  |
| 63  | 29091741   | Fitting, nylon tube A022                      | 1   |  |
| 64  | MSK4113000 | Window on door acrylic                        | 3   |  |
| 65  | MSK4115000 | Layering waterpro                             | 3   |  |
| 66  | MSK2108010 | Door small on panel                           | 1   |  |
| 67  | MSK2121011 | Door panel rear Window                        | 1   |  |
| 68  | 2883142    | Handle door panel K-508                       | 5   |  |
| 69  | 2852191    | Sensor Magnetic door safety OMRON GLS-1 OMS   | 6   |  |
| 70  | 2703308    | Screw, round hd M4x12                         | 12  |  |



| NO. | PART NO.   | DESCRIPTION                                                | QTY |  |
|-----|------------|------------------------------------------------------------|-----|--|
| 71  | 2856234    | Thermocouple brine temp- sensor                            | 1   |  |
| 72  | MSK4118001 | Plate holding brine connector                              | 2   |  |
| 73  | 2702216    | Screw,flat philips M6x8 (S)                                | 4   |  |
| 74  | MSK3154000 | Bumper gardard                                             | 1   |  |
| 75  | MSK3155000 | Cover up-frame,right                                       | 1   |  |
| 76  | 2705151    | Washer, flat M6 (S)                                        | 8   |  |
| 77  | 2909220    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/4"     | 1   |  |
| 78  | 2909188    | Gasket brine connector IDF-017 1-1/2"                      | 6   |  |
| 79  | 2909189    | Clamp brine connector band IDF-015 1-1/2"                  | 9   |  |
| 80  | 2740006Z   | Elbow L-type inner thread 1/4"                             | 1   |  |
| 81  | 29310178   | Clamp hose 1-1/2                                           | 3   |  |
| 82  | MSK4175001 | Elbow input soft tube 1-1/2"                               | 2   |  |
| 83  | MSK4151001 | Fitting brine pressure gauge                               | 1   |  |
| 84  | 29091742   | Fitting XL-802                                             | 1   |  |
| 85  | 2909222    | Elbow brine IDF-020 1-1/2"                                 | 2   |  |
| 86  | 2909190    | Tee brine 3-way IDF-022 1-1/2x1-1/2x1-1/2                  | 2   |  |
| 87  | MSK5173001 | Hose brine adjust soft tube 1-1/2                          | 1   |  |
| 88  | 2909207    | Connector F/Sensor thrmocouple brine IDF-016 1-1/2"x1-1/2" | 1   |  |
| 89  | 27M82533   | Leg pad                                                    | 4   |  |
| 90  | MSK4901000 | Fitting air inlet                                          | 1   |  |
| 91  | 2861028    | Gland, cable straight connector MG-25A-18G                 | 1   |  |
| 92  | 29091742   | Elbow fitting 1/4"x5/16N(S)                                | 2   |  |
| 93  | 2909187    | Tube quick-clamp IDF-016 1-1/2"x1"                         | 1   |  |
| 94  | 2910108    | Regulator, air main                                        | 1   |  |
| 95  | 2910550    | Gauge pressure 1/8"QPG40-11(P&K)                           | 1   |  |
| 96  | 2705302    | Spring washer, stainless steel M6 (S)                      | 8   |  |
| 97  | 2707204    | Nut, hex hd M6 (S)                                         | 2   |  |
| 98  | MSK4172000 | Stopper shaft                                              | 4   |  |
| 99  | 2856230    | Display Tempture                                           | 1   |  |
| 100 | MSK2158000 | Stopper                                                    | 4   |  |
| 101 | 2913502    | Switch safety pressure gauge                               | 1   |  |
| 102 | MSK2156001 | Fitting                                                    | 4   |  |
| 103 | MSK2157000 | Shaft spring fixed                                         | 4   |  |
| 104 | VP800G040  | Hose brine pressure 1"                                     | 1   |  |



## 9.2 LINK MECHANISM



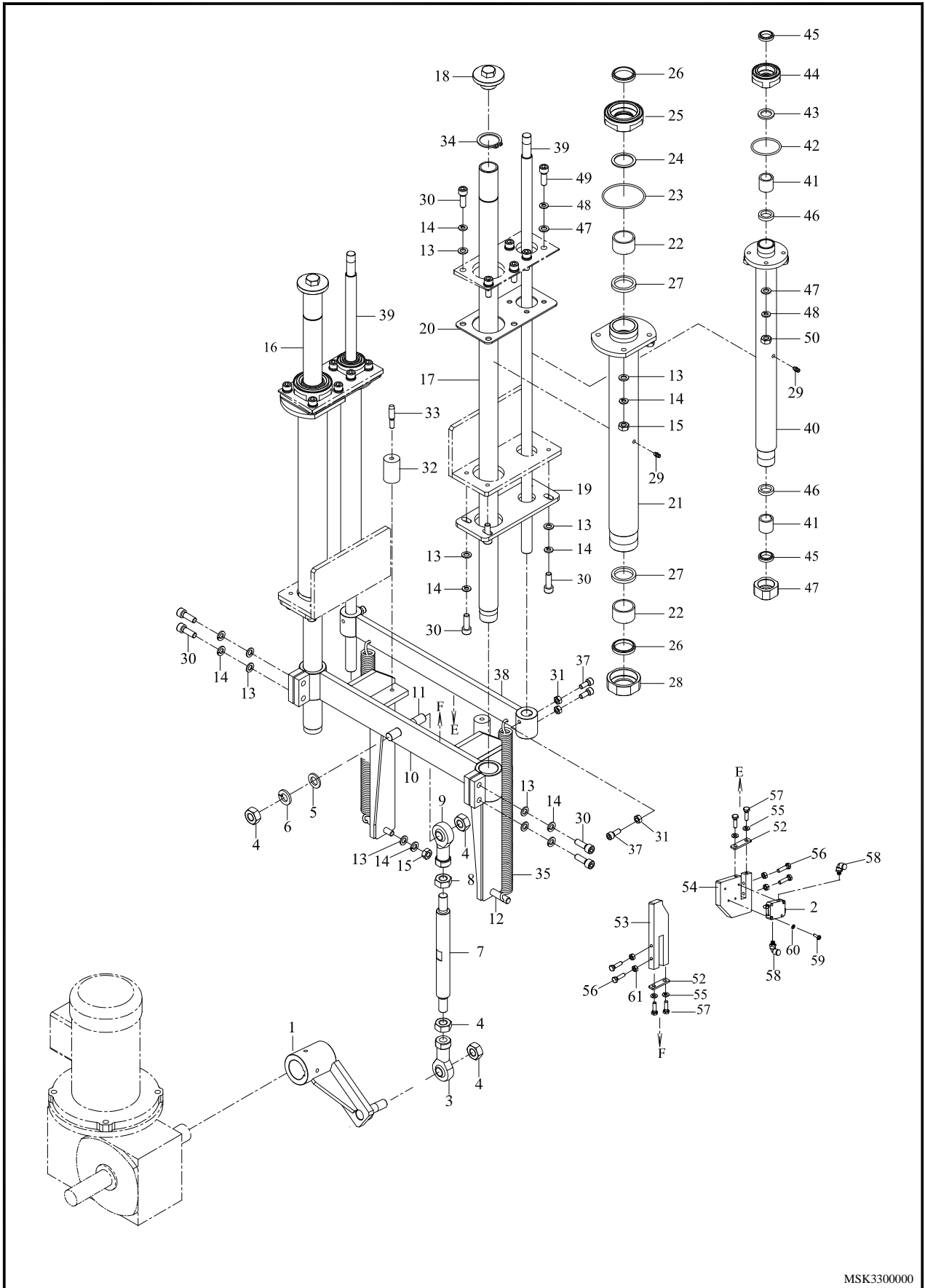
MSK320000

| NO. | PART NO.   | DESCRIPTION                               | QTY |  |
|-----|------------|-------------------------------------------|-----|--|
| 1   | MSK2201001 | Cam walking beam                          | 1   |  |
| 2   | MSK4202000 | Washer                                    | 1   |  |
| 3   | 2700415    | Screw, hex hd M8x16 (S)                   | 1   |  |
| 4   | MSK2203001 | Guide block                               | 2   |  |
| 5   | MSK2204000 | Plank                                     | 3   |  |
| 6   | 2705152    | Washer,flat M8 (S)                        | 10  |  |
| 7   | 2705301    | Spring washer M8 (S)                      | 10  |  |
| 8   | 2700420    | Screw, hex hd M8x40 (S)                   | 8   |  |
| 9   | MSK3247000 | Spacer                                    | 1   |  |
| 10  | 27401563   | O-ring P20                                | 2   |  |
| 11  | 10096-2S   | Tension spring                            | 1   |  |
| 12  | MSK4207000 | Shaft                                     | 2   |  |
| 13  | MSK4209000 | Hanger, spring                            | 3   |  |
| 14  | 2728439    | Bearing rod eye, PHS M14x2 R (S)          | 2   |  |
| 15  | 2705155    | Washer,flat M14 (S)                       | 8   |  |
| 16  | 2705322    | Spring Washer M14 (S)                     | 8   |  |
| 17  | 2707218    | Nut, hex M14x2 R (S)                      | 11  |  |
| 18  | MSK3208000 | Arm lifting roller cam conveyor           | 2   |  |
| 19  | MSK2210001 | Shaft rod                                 | 2   |  |
| 20  | 27070095   | Nut, hex M14x2 L (S)                      | 2   |  |
| 21  | 2728440    | Bearing rod eye, PHS M14x2 L (S)          | 2   |  |
| 22  | 2707122    | Nut, hex nylon lock M14x2.0 (S)           | 4   |  |
| 23  | MSK2205000 | Shaft                                     | 2   |  |
| 24  | 27283121   | Bearing, oilless BM1212F20                | 4   |  |
| 25  | MSK4206000 | Plate, shaft stop                         | 2   |  |
| 26  | 2700401    | Screw, hex hd M6x12 (S)                   | 4   |  |
| 27  | 2728834    | Bearing, cam CF12-1                       | 2   |  |
| 28  | MSK4211001 | Rack adjust injecting spacing             | 1   |  |
| 29  | MSK4212001 | Rack set bracket                          | 1   |  |
| 30  | MSK4213000 | Gear M1.5x20T                             | 1   |  |
| 31  | MSK4214001 | Gear shaft                                | 1   |  |
| 32  | MSK4249000 | Key 4x4x12                                | 1   |  |
| 33  | MSK4217000 | Rack, position lock                       | 1   |  |
| 34  | MSK4219000 | Spring, lock and unlock position rack set | 1   |  |
| 35  | MSK4218000 | Pin handle release and lock               | 1   |  |

| NO. | PART NO.   | DESCRIPTION                            | QTY |  |
|-----|------------|----------------------------------------|-----|--|
| 36  | MSK4215000 | Plate F/rack assembly                  | 1   |  |
| 37  | MSK4216000 | Wheel adjust rack                      | 1   |  |
| 38  | MSK4423030 | Ring                                   | 1   |  |
| 39  | MSK4227000 | Washer                                 | 2   |  |
| 40  | MSK4228000 | Housing, bearing                       | 2   |  |
| 41  | 2728309    | Bearing, dry BM2020                    | 6   |  |
| 42  | MSK4224000 | Arm                                    | 2   |  |
| 43  | 2701195    | Screw socket hd M6x10 (S)              | 18  |  |
| 44  | MSK4223001 | Arm                                    | 1   |  |
| 45  | MSK4225000 | Roller shaft                           | 1   |  |
| 46  | MSK4226000 | Roller                                 | 1   |  |
| 47  | 2705137    | Washer, flat M12 (S)                   | 3   |  |
| 48  | 2705305    | Split lock washer M12 (S)              | 3   |  |
| 49  | 2707209    | Nut, ST. M12 (S)                       | 3   |  |
| 50  | MSK3222000 | Shaft beam feed                        | 1   |  |
| 51  | MSK4250000 | Key 6x6x32                             | 10  |  |
| 52  | MSK4239000 | Plate, shaft stop                      | 2   |  |
| 53  | MSK4238000 | Retaining ring                         | 2   |  |
| 54  | 2705302    | Split lock washer M6 (S)               | 18  |  |
| 55  | 2701152    | Hexagon socket head cap bolt M6X16 (S) | 4   |  |
| 56  | MSK4229000 | House, bearing                         | 4   |  |
| 57  | MSK4231000 | Washer                                 | 4   |  |
| 58  | 2705151    | Washer, flat M6 (S)                    | 18  |  |
| 59  | 2701153    | Hexagon socket head cap bolt M6X20 (S) | 18  |  |
| 60  | MSK3230000 | Beam lift shaft                        | 1   |  |
| 61  | MSK4232000 | Link                                   | 1   |  |
| 62  | MSK2233000 | Socket                                 | 2   |  |
| 63  | 27283141   | Bearing, oilless BM1412                | 2   |  |
| 64  | MSK4221001 | Arm                                    | 1   |  |
| 65  | MSK2234000 | Arm                                    | 4   |  |
| 66  | MSK2235000 | Socket                                 | 4   |  |
| 67  | 2728311    | Bearing, oilless BM1620                | 4   |  |
| 68  | MSK4236000 | Roller                                 | 4   |  |
| 69  | MSK3237000 | Beam lift shaft                        | 1   |  |



# 9.3 RECIPROCATION MECHANISM



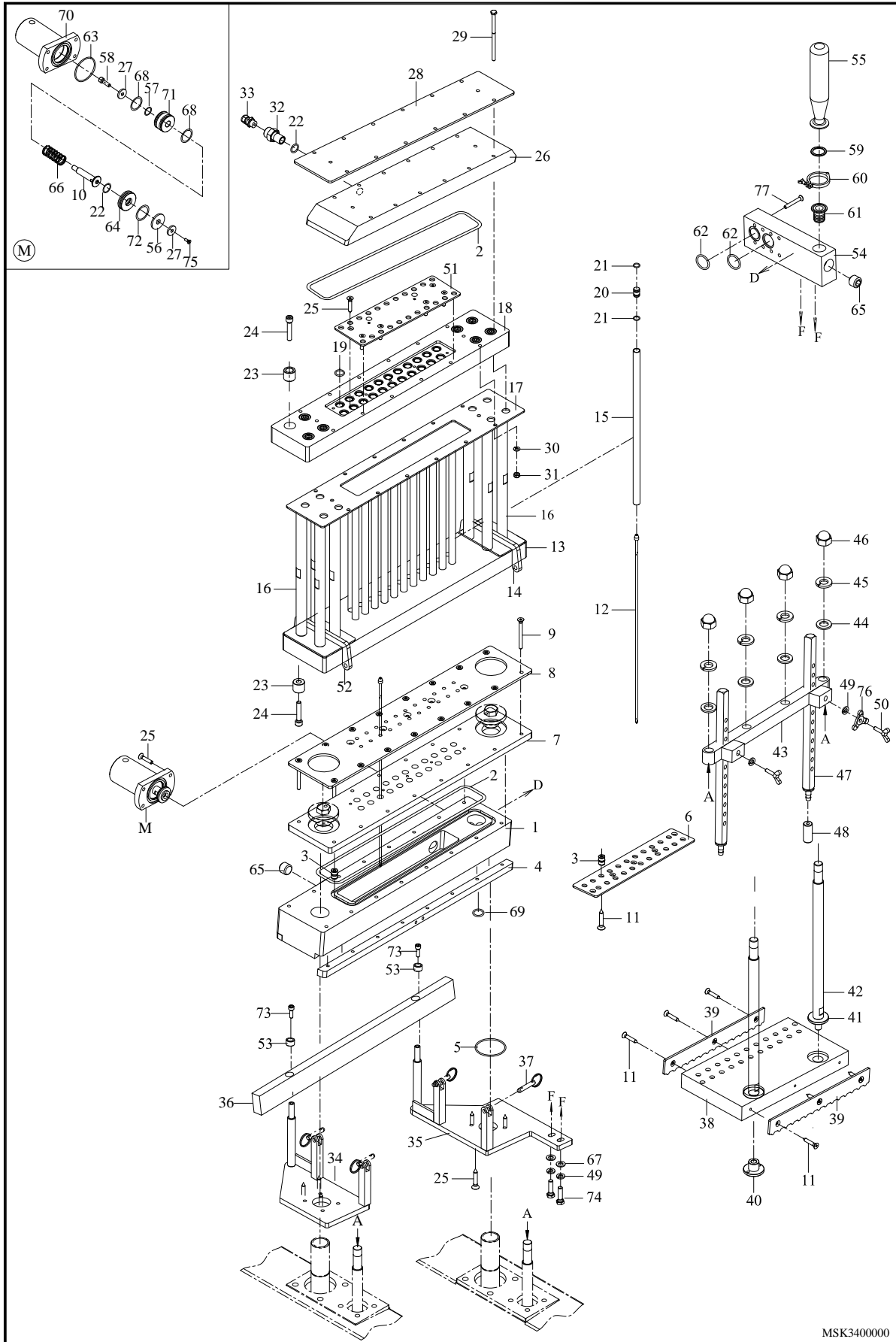
MSK3300000

| NO. | PART NO.   | DESCRIPTION                             | QTY |  |
|-----|------------|-----------------------------------------|-----|--|
| 1   | MSK2301002 | Arm                                     | 1   |  |
| 2   | MSK4903000 | Valve,MVMC-210-8A-3R1                   | 1   |  |
| 3   | 2728441    | Rod eye, PHS M16x2 R (S)                | 1   |  |
| 4   | 27070123   | Nut, hex M16x2 R (S)                    | 5   |  |
| 5   | 2705329    | Washer,flat M16 (S)                     | 2   |  |
| 6   | 2705328    | Spring washer M16 (S)                   | 2   |  |
| 7   | MSK2303000 | Connecting rod                          | 2   |  |
| 8   | 2707027    | Nut, hex M16x2 L (S)                    | 1   |  |
| 9   | 2728442    | Rod eye, PHS M16x2 L (S)                | 1   |  |
| 10  | MSK3304000 | Strocke cross beam                      | 1   |  |
| 11  | MSK4306000 | Socket                                  | 1   |  |
| 12  | MSK4305001 | Hexagon nut lid spring threaded rod     | 2   |  |
| 13  | 2705189    | Washer,flat M10 (S)                     | 28  |  |
| 14  | 2705332    | Spring washer M10 (S)                   | 28  |  |
| 15  | 2707017    | Nut, hex M10 (S)                        | 10  |  |
| 16  | MSK2307002 | Towbar                                  | 1   |  |
| 17  | MSK2322002 | Towbar                                  | 1   |  |
| 18  | MSK4308001 | Colume pipe                             | 2   |  |
| 19  | MSK2309000 | Plate, shaft base                       | 2   |  |
| 20  | MSK2310000 | Washer                                  | 2   |  |
| 21  | MSK3313000 | Colume pipe                             | 2   |  |
| 22  | 2730296    | Bushing, JUM-02-40                      | 4   |  |
| 23  | 27401533   | O-ring G60(FPM.V.T)                     | 2   |  |
| 24  | MSK4311000 | Spacer                                  | 2   |  |
| 25  | MSK4312000 | Nut                                     | 2   |  |
| 26  | 274005221  | Oil sealer DH-35(FPM.V.T)               | 4   |  |
| 27  | 274005331  | Oil sealer UHS-35(FPM.V.T)              | 4   |  |
| 28  | MSK4314000 | Bushing                                 | 2   |  |
| 29  | 2740140    | Nipple, grease 1/8T                     | 4   |  |
| 30  | 27004004   | Hexagon socket head cap bolt M10x30 (S) | 18  |  |
| 31  | 2707203    | Nut, hex M8 (S)                         | 10  |  |
| 32  | MSK2438001 | Stopper                                 | 2   |  |
| 33  | MSK2357000 | Stopper fixed shaft                     | 2   |  |
| 34  | 2706034    | Ring S35                                | 2   |  |
| 35  | MSK2321001 | Spring                                  | 2   |  |





# 9.4 INJECTION MECHANISM



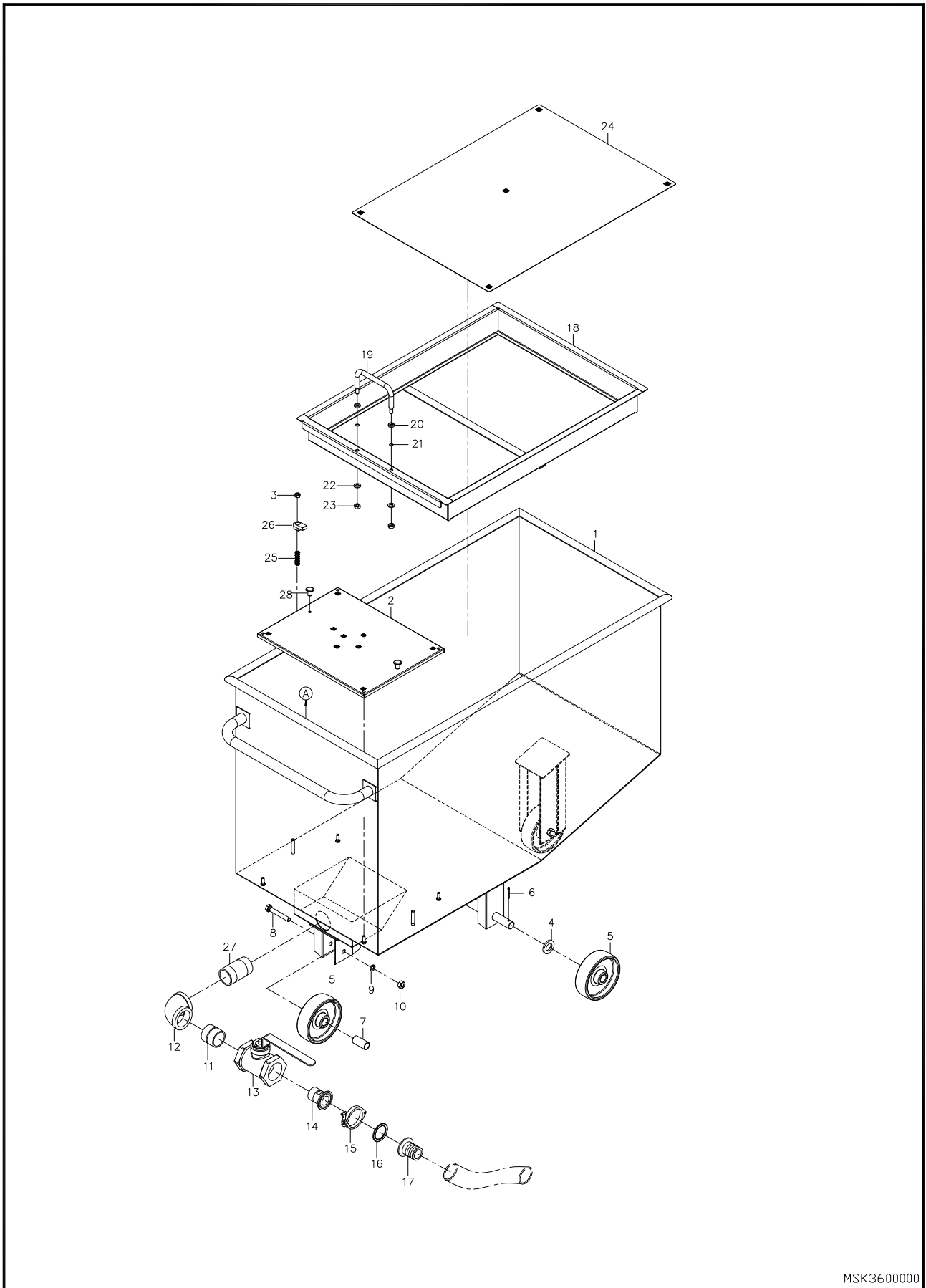
MSK3400000

| NO. | PART NO.   | DESCRIPTION                       | QTY |  |
|-----|------------|-----------------------------------|-----|--|
| 1   | MSK3401000 | Holder, guider cover              | 1   |  |
| 2   | 27401987   | O-ring G280                       | 2   |  |
| 3   | MSK4421A00 | Bushing, needle set               | 64  |  |
| 4   | MSK3406000 | Plate                             | 2   |  |
| 5   | 27401885   | O-ring Ø32                        | 2   |  |
| 6   | MSK3407000 | Plate, guider needle              | 2   |  |
| 7   | MSK3402000 | Holder, guider cover              | 1   |  |
| 8   | MSK3408000 | Plate, guider needle              | 1   |  |
| 9   | 2700410    | Hex socket hd screw M6x80(S)      | 16  |  |
| 10  | MSK2444000 | Valve, mounting                   | 1   |  |
| 11  | 27004116   | Screw, flat philip M6x20(S)       | 32  |  |
| 12  | MSK4461001 | Needle(SUS304)                    | 32  |  |
| 13  | MSK3403000 | Bracket, mounting tube            | 1   |  |
| 14  | MSK2413001 | Hinge                             | 1   |  |
| 15  | MSK2411000 | Mounting tube                     | 32  |  |
| 16  | MSK2415000 | Post                              | 8   |  |
| 17  | MSK3419000 | Pad                               | 1   |  |
| 18  | MSK3404000 | Plate, mounting tube              | 1   |  |
| 19  | 27401574   | O-ring P13                        | 32  |  |
| 20  | MSK4412000 | Piston                            | 32  |  |
| 21  | 27401582   | O-ring Ø2xØ8                      | 64  |  |
| 22  | 27401573   | O-ring P16                        | 2   |  |
| 23  | MSK4414000 | Bushing                           | 16  |  |
| 24  | 2701157    | Hex.socket head cap bolt M8x40(S) | 16  |  |
| 25  | 27004114   | Screw, flat philip M6x30(S)       | 12  |  |
| 26  | MSK3405000 | Plate                             | 1   |  |
| 27  | MSK2446000 | Touch plate                       | 1   |  |
| 28  | MSK3410000 | Plate, cover                      | 1   |  |
| 29  | 27004102   | Screw, hex hd M6x90 (S)           | 12  |  |
| 30  | 2705302    | Washer, split lock M6 (S)         | 14  |  |
| 31  | 2707110    | Nut, hex nylon lock M6 (S)        | 12  |  |
| 32  | MSK4420000 | Fitting                           | 1   |  |
| 33  | 29090429   | Fitting, nylon tube A-015         | 1   |  |
| 34  | MSK2416002 | Bracket                           | 1   |  |
| 35  | MSK2417003 | Bracket                           | 1   |  |

| NO. | PART NO.   | DESCRIPTION                                          | QTY |  |
|-----|------------|------------------------------------------------------|-----|--|
| 36  | MSK3418010 | Spacer, needle                                       | 1   |  |
| 37  | MSK4423000 | Pin set                                              | 4   |  |
| 38  | MSK3431000 | Plate meat                                           | 1   |  |
| 39  | MSK3432000 | Plate                                                | 2   |  |
| 40  | MSK8433000 | Plate, nut                                           | 2   |  |
| 41  | MSK8434000 | Disc                                                 | 2   |  |
| 42  | MSK5435000 | Shaft                                                | 2   |  |
| 43  | MSK3436000 | Bracket                                              | 1   |  |
| 44  | 2714118    | Washer, flat M16 (S)                                 | 4   |  |
| 45  | 2705328    | Washer, split lock M16 (S)                           | 4   |  |
| 46  | 27071104   | Acorn nut M16 (S)                                    | 4   |  |
| 47  | MSK2437000 | Support                                              | 2   |  |
| 48  | MSK2438001 | Files block                                          | 2   |  |
| 49  | 2705301    | Washer, split lock M8 (S)                            | 4   |  |
| 50  | 2704957    | Screw, butterfly type M8x30 (S)                      | 2   |  |
| 51  | MSK3409000 | Bracket, mounting                                    | 1   |  |
| 52  | MSK2414001 | Hinge                                                | 1   |  |
| 53  | MSK2418020 | Bushing                                              | 2   |  |
| 54  | MSK2425002 | Store press fixed mount                              | 1   |  |
| 55  | MSK3426000 | Store press bottle                                   | 1   |  |
| 56  | MSK2445000 | Pad                                                  | 1   |  |
| 57  | 27401568   | O-ring P12                                           | 1   |  |
| 58  | 2701153    | Hex socket hd screw M6x20                            | 1   |  |
| 59  | 2909188    | Gasket IDF-017 1-1/2"                                | 1   |  |
| 60  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"           | 1   |  |
| 61  | 2909224    | Adapter with threaded on the end IDF-016 1-1/2"x3/4" | 1   |  |
| 62  | 27401541   | O-ring G25                                           | 2   |  |
| 63  | 27401569   | O-ring P45                                           | 2   |  |
| 64  | MSK2443000 | Side cover                                           | 1   |  |
| 65  | 2867298    | Cap 3/4"                                             | 2   |  |
| 66  | MSK2447000 | Spring                                               | 1   |  |
| 67  | 2705152    | Washer, flat M8                                      | 4   |  |
| 68  | 27401577   | O-ring P29                                           | 2   |  |
| 69  | 27401885   | O-ring $\psi$ 32x $\psi$ 4                           | 2   |  |
| 70  | MSK2442000 | Cylinder body                                        | 1   |  |



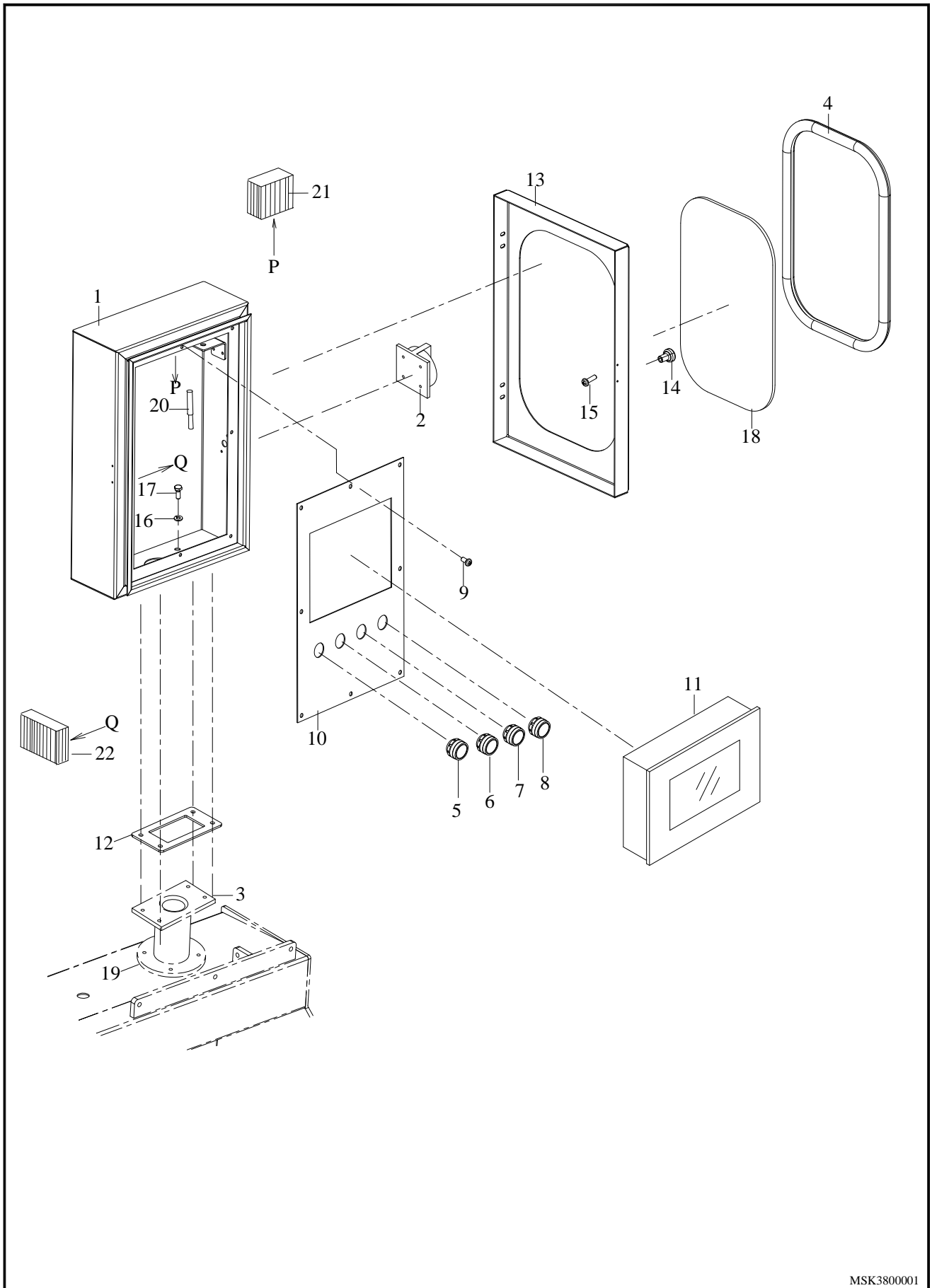
## 9.5 SUPPLY TRUCK



MSK3600000

| NO. | PART NO.   | DESCRIPTION                                            | QTY |  |
|-----|------------|--------------------------------------------------------|-----|--|
| 1   | MSK2601002 | Barrel                                                 | 1   |  |
| 2   | MSK4608001 | Sift net                                               | 1   |  |
| 3   | 27070222   | Nut, hex hd M8 (S)                                     | 2   |  |
| 4   | 2705185    | Washer, flat M20 (S)                                   | 2   |  |
| 5   | PB20102000 | Caster                                                 | 4   |  |
| 6   | 27433227   | Pin                                                    | 2   |  |
| 7   | PB20103000 | Bushing                                                | 2   |  |
| 8   | 274531202  | Screw, hex hd M10x60 (S)                               | 2   |  |
| 9   | 2705304    | Washer, split lock M10 (S)                             | 2   |  |
| 10  | 2707017    | Nut, hex hd M10 (S)                                    | 2   |  |
| 11  | 2909218    | Nipple 1-1/2"x5cm                                      | 1   |  |
| 12  | 2909217    | Elbow 90°L 1-1/2"                                      | 1   |  |
| 13  | 2909206    | Valve 1-1/2"                                           | 1   |  |
| 14  | 2909207    | Adapter with threaded on the end IDF-016 1-1/2"x1-1/2" | 1   |  |
| 15  | 2909189    | Heavy duty single pin ciamp IDF-015 1-1/2"             | 1   |  |
| 16  | 2909188    | Gasket IDF-017 1-1/2"                                  | 1   |  |
| 17  | MSK4175000 | Clamp rubber hose adapter IDF-033 1-1/2"               | 1   |  |
| 18  | MSK4605000 | Frame                                                  | 1   |  |
| 19  | MSK2606000 | Handle                                                 | 1   |  |
| 20  | MSK4607000 | Noose                                                  | 2   |  |
| 21  | 27401570   | O-Ring P8 (FPM.V.T)                                    | 2   |  |
| 22  | 2705301    | Washer, flat M8 (S)                                    | 2   |  |
| 23  | 2707203    | Nut, hex hd M8 (S)                                     | 2   |  |
| 24  | MSK4616000 | Sift net                                               | 1   |  |
| 25  | MSK4219000 | Spring                                                 | 2   |  |
| 26  | MSK2618000 | Press block                                            | 2   |  |
| 27  | 290921821  | Nipple 1-1/2"x12cm                                     | 1   |  |
| 28  | MSK2617000 | Handle                                                 | 2   |  |
|     |            |                                                        |     |  |
|     |            |                                                        |     |  |
|     |            |                                                        |     |  |
|     |            |                                                        |     |  |
|     |            |                                                        |     |  |
|     |            |                                                        |     |  |
|     |            |                                                        |     |  |

## 9.6 OPERATOR BOX

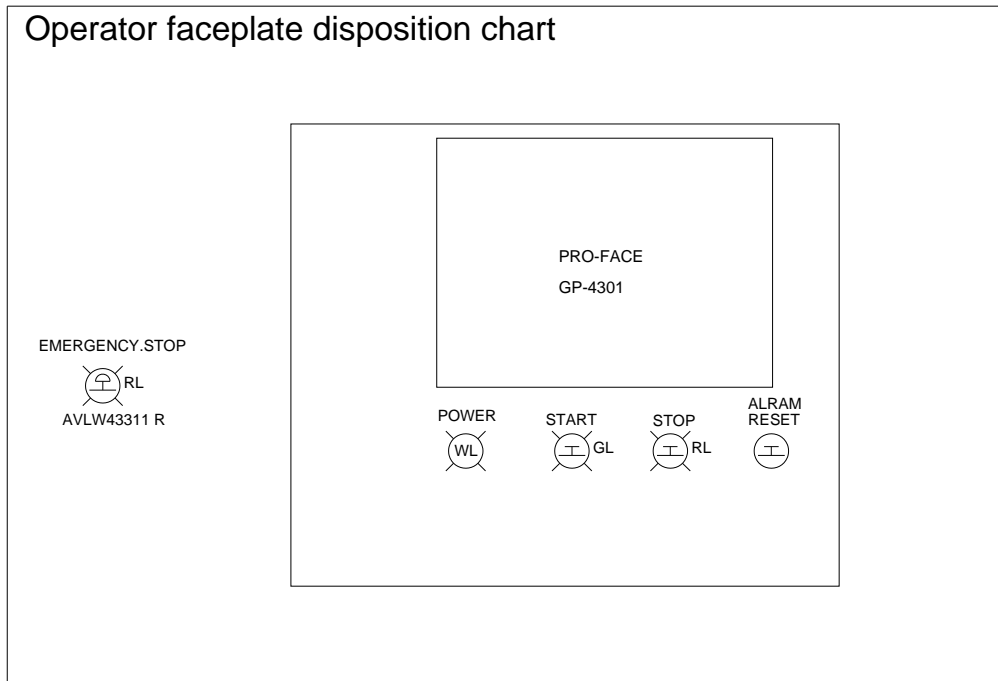




| NO. | PART NO.   | DESCRIPTION                             | QTY | NOTE |
|-----|------------|-----------------------------------------|-----|------|
| 1   | MSK3801000 | Operator box                            | 1   |      |
| 2   | 28017051   | Switch MOELLER P1-32/EA/SVB/SW          | 1   |      |
| 3   | MSK3806000 | Support arm mount                       | 1   |      |
| 4   | MSK3803030 | Gasket                                  | 1   |      |
| 5   | 2871740    | Indicator lamp, white TE ZB4-BV01       | 1   |      |
|     | 2871748    | Body, indicator lamp TE ZB4-BV6         | 1   |      |
|     | 2871752    | bulb TE DL1-CF220                       | 1   |      |
| 6   | 2871761    | illuminated pushbutton head TE ZB4-BW33 | 1   |      |
|     | 2871748    | Body, indicator lamp TE ZB4-BV6         | 1   |      |
|     | 28704981   | bulb AB-9G-DC24V LED24V                 | 1   |      |
|     | 2871737    | circuit breaker                         | 8   |      |
| 7   | 2871762    | illuminated pushbutton head             | 1   |      |
|     | 2871748    | Body, indicator lamp TE ZB4-BV6         | 1   |      |
|     | 28704984   | bulb AB-9R-DC24V LED24V                 | 1   |      |
|     | 2871732    | circuit breaker                         | 1   |      |
| 8   | 2871704    | Button TE ZB4-BA5                       | 1   |      |
|     | 2871732    | Switch, contact TE ZB4-BZ101            | 1   |      |
| 9   | 2703332    | Screw, round hd M6x10                   | 4   |      |
| 10  | MSK3802000 | control fixed plate                     | 1   |      |
| 11  | 2827042    | Human interface                         | 1   |      |
| 12  | MSK3807000 | Washer                                  | 1   |      |
| 13  | MSK3803000 | Operator plate cover                    | 1   |      |
| 14  | MSK2617000 | Handle                                  | 1   |      |
| 15  | 2701501    | Screw, round hd M6x12                   | 1   |      |
| 16  | 2705313    | Split lock washer                       | 1   |      |
| 17  | 2700415    | Screw, hex hd M8x16                     | 1   |      |
| 18  | MSK3803020 | Window                                  | 1   |      |
| 19  | MSK3804000 | Support arm mount                       | 1   |      |
| 20  | 2856228    | THERMOCOUPLE                            | 1   |      |
| 21  | 28560224   | HEATER                                  | 1   |      |
| 22  | 2827307    | CONTROLLER ,TEMP, NT-22R                | 1   |      |
|     |            |                                         |     |      |
|     |            |                                         |     |      |
|     |            |                                         |     |      |



## 9.7 ELECTRICAL BOX



| NO. | PART NO.  | DESCRIPTION     | SPECIFICATION           | Q'TY | NOTE |
|-----|-----------|-----------------|-------------------------|------|------|
| 1   | 2801822   | Switch          | KM FAZ-S2 1P2A          | 1    |      |
| 2   | 2801825   | Switch          | KM FAZ-S6 1P6A          | 1    |      |
| 3   | 28020106  | CIRCUIT BREAKER | EW32EAG 3P20A           | 1    |      |
| 4   | 28050463  | Inverter        | FRN 2.2E1S-2JE 200V/3HP | 1    |      |
| 5   | 2810218   | Relay           | SC-03 3a1b 220V         | 2    |      |
| 6   | 2811193   | RELAY,THERMAL   | FUJI TRON 7-11A         | 1    |      |
| 7   | 28201004  | PLC             | CP1E-N30DR-A            | 1    |      |
| 8   | 2843202   | Terminal, block | PTU-20L                 | 1    |      |
| 9   | 2830110   | Relay           | OMRON LY-2NJ DC24V      | 1    |      |
|     | 2831204   | relay base      | STF-08AM                | 1    |      |
| 10  | 2830154   | Relay           | ANLY APR-3S             | 1    |      |
| 11  | 2843201   | Terminal, block | PTU-20                  | 25   |      |
| 12  | 2843204   | Terminal, block | PUW-20                  | 27   |      |
| 13  | 2843205   | Terminal, block | PTU-30                  | 4    |      |
| 14  | 2895103   | Socket          | WK3001K                 | 1    |      |
| 15  | 2896107   | Filter, wave    | YUNPEN YG06T5-6A        | 1    |      |
| 16  | 2896530-8 | Supply, power   | ACRO TR-AD1072-24F      | 1    |      |
| 17  | 2827307   | CONTROLLER      | TEMP,NT-22R             | 3    |      |
| 18  | 2856228   | HEATER          | TS-2-PT-5-20-M8-PVC-2M  | 4    |      |
| 19  | 28560224  | CONTROLLER      | TEMP, F/ST-10           | 3    |      |

## 10. Packing List

| NO.                | PART NO.   | DESCRIPTION                           | QTY | NOTE   |
|--------------------|------------|---------------------------------------|-----|--------|
| 1                  | @MSK-32    | MSK-32 brine injector                 | 1   |        |
| 2                  | MSK3601000 | Brine vessel                          | 1   |        |
| 3                  | MSK2609A00 | Agitator                              | 1   | Option |
| 4                  | MSK3111000 | Side door                             | 2   |        |
| 5                  | MSK3155001 | Upper Right door                      | 1   |        |
| 6                  | MSK3160001 | Upper Left door                       | 1   |        |
| 7                  | MSK-32     | Brine injector introduction           | 1   |        |
|                    |            |                                       |     |        |
|                    |            |                                       |     |        |
| Vulnerable parts : |            |                                       |     |        |
| 1                  | 2740149    | O-ring P4                             | 50  |        |
| 2                  | 27401582   | O-ring $\phi$ 2x $\psi$ 8             | 50  |        |
| 3                  | 27401569   | O-ring P45                            | 1   |        |
| 4                  | 27401885   | O-ring $\phi$ 32x $\psi$ 4            | 1   |        |
| 5                  | 274005331  | Oil sealer UHS-35(FPM.V.T)            | 4   |        |
| 6                  | 274005221  | Oil sealer DH-35(FPM.V.T)             | 4   |        |
| 7                  | 274005321  | Oil sealer UHS-20(FPM.V.T)            | 4   |        |
| 8                  | 274005243  | Oil sealer DH-20(FPM.V.T)             | 4   |        |
| 9                  | 2730290    | Bushing JSM-3539-20                   | 4   |        |
| 10                 | 2730291    | Bushing JSM-2026-20                   | 4   |        |
| 11                 | MSK4412000 | Piston                                | 12  |        |
| 12                 | MSK4461001 | Needle (include spare 6 pieces)SUS304 | 50  |        |
|                    |            |                                       |     |        |
|                    |            |                                       |     |        |

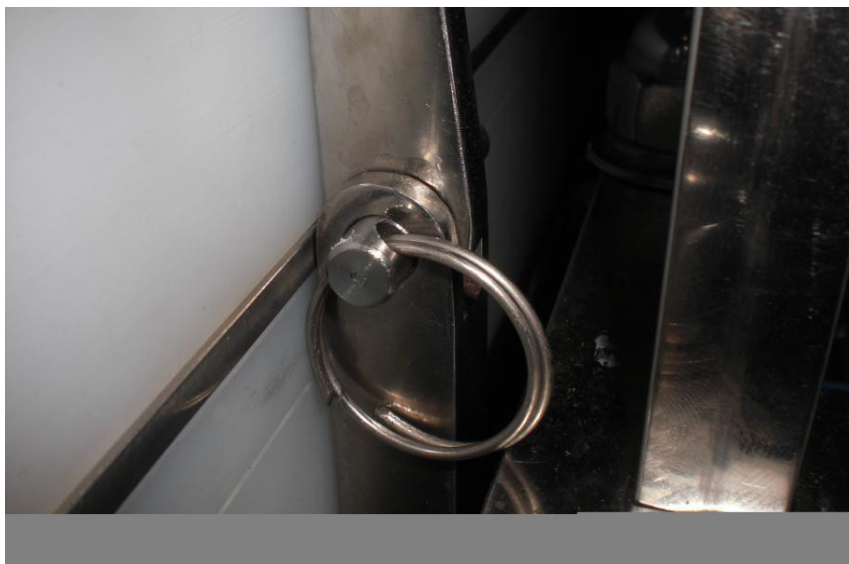
## **11. Needle Cleaning and Lubrication Procedure**

### **Caution/Alert**

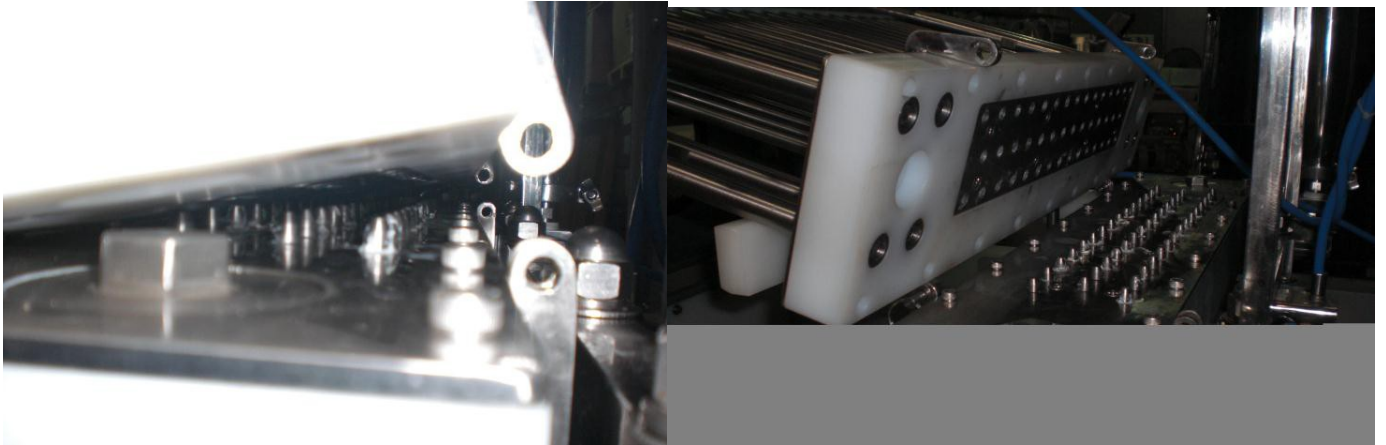
Step 1 – Turn “Needle Air” switch to off position.



Step 2 – Locate Push pins. Remove the two pins on the head, on the in-feed side.



Step 3 – Carefully open the head, only enough to verify all needles are in the down position.  
if any needles are still in the raised position in the head, pull them down. Next finish opening the head until it rests on the white resting blocks.



Step 4 – Remove all needles by pulling straight up on the needle tops.



Step 5 – Insert each needle into the needle cleaner and press the “ Needle Clean” button to remove food material from inside the needles.



Step 6 – Before re-installing needles you must apply a thin coat of lube to each needle.



Step 7 – Re-install needles, insuring they are pushed all the way down firmly.



Step 8 – Add a small amount of lube to top tip of needles to lube the upper needle cylinders.



Step 9 – Additionally add a small amount of lube to each piston cylinder





Step 10 – Close head and re-install push pins.



Step 11 – Turn “Needle Air” switch back to “On” position



**Note:** Never operate machine with the “Needle Air” Switch in the “Off” position or without air connected to the machine. As this will cause damage to the needles and other components.

## 12. Water flow Diagram

