



## **MSK-16**

# **Brine Injector Operation Manual**

## **Operation Manual**

Version 6.9.1

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# **MMSK-16 Brine Injector Introduction**

The Promax MMSK-16 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 MMSK-16 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 MMSK-16 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 : 60 times/min

Power : 380V 50Hz

Pressure : 35 Psi

Needle quantity : 16

Motor Power : 0.75KW

Brine Pump Power: 0.37KW

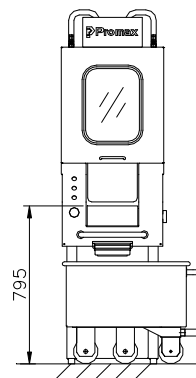
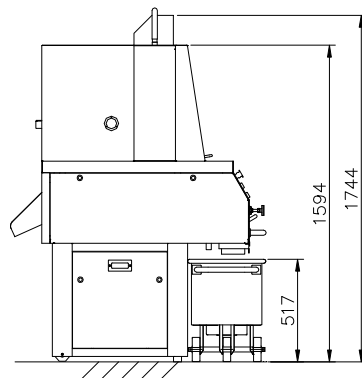
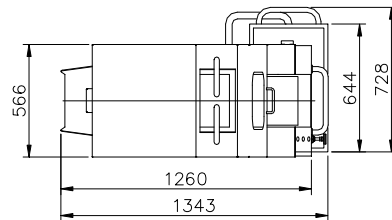
Walking Beam Width : 12"

Product Clearance : 8"

Brine Tank Capacity : 60 L

Machine Size : 55"L x 29" W x 67"H

Specification : MMSK-16



## 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 MMSK-16 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.

2.5 **Motor :** to look in front, the motor is revolved by clockwise

## 3. Items to Check Before Start Up

3.1 The four doors and the top-hoods must closed otherwise the machine cannot be run. The 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.

The needles of the injector need to be greased every beginning of operation.

The moving cylinders need to be greased every two weeks.

## 5. Maintenance

**5.1 Daily Visual Inspection:** The machine should be subject to a through 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.

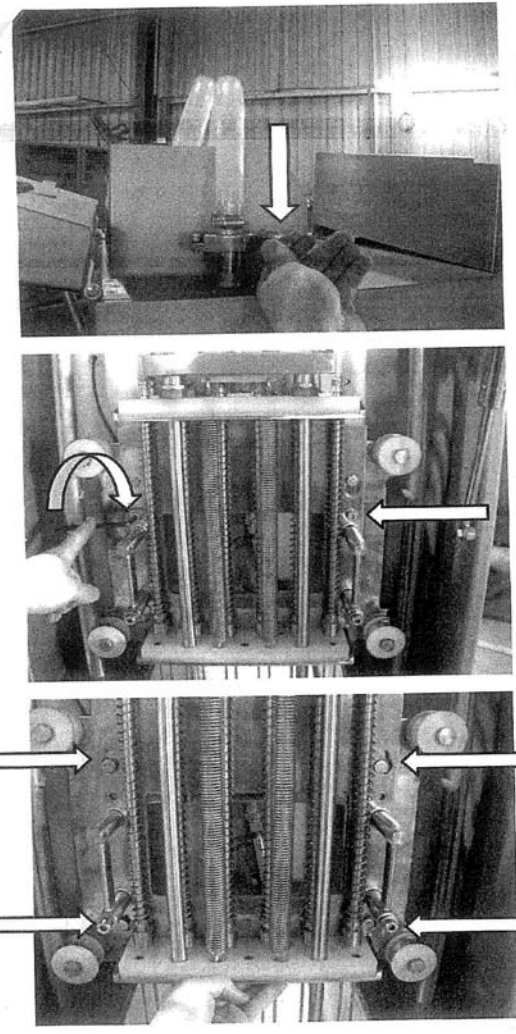
**5.2 Cleaning:** The machine should be washed at the end of each shift and all key operating parts should be oiled to prevent excess wear because of the wet environment.

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.

5.6 **Needle Head Removal:**



**Needle Head Removal**

Remove both the top hose clamps by unscrewing the wing nut counter clockwise.

Care must be taken not to lose or damage the seal in between the clamp.

Remove both the cap head screws counter clockwise with a 6mm Allen key.

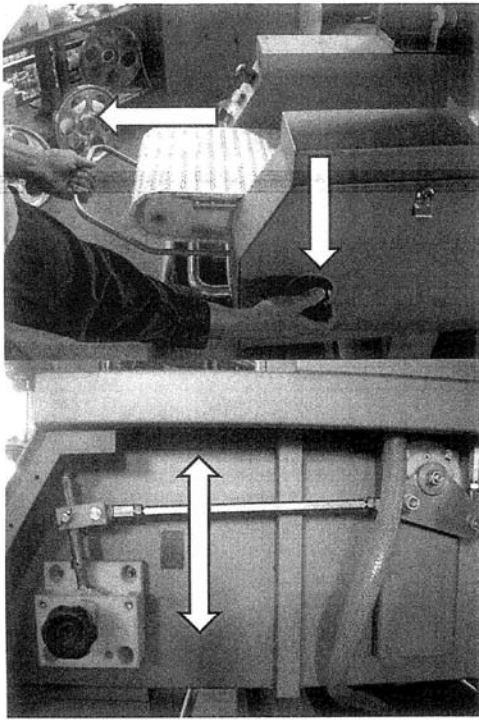
Lift the head until the four location pins are in the larger slots.

The head is free to remove from the machine care should be taken to feed the top hose through the machine.

Installation is the reverse of the Removal Procedure



## 5.7 Conveyor Assembly Removal:



### Conveyor Assembly Removal

Pull out the knob and then slid the complete assembly out.

Installation is the reverse of the Removal Procedure

### Adjustment of the Conveyor

Remove the side cover with the key

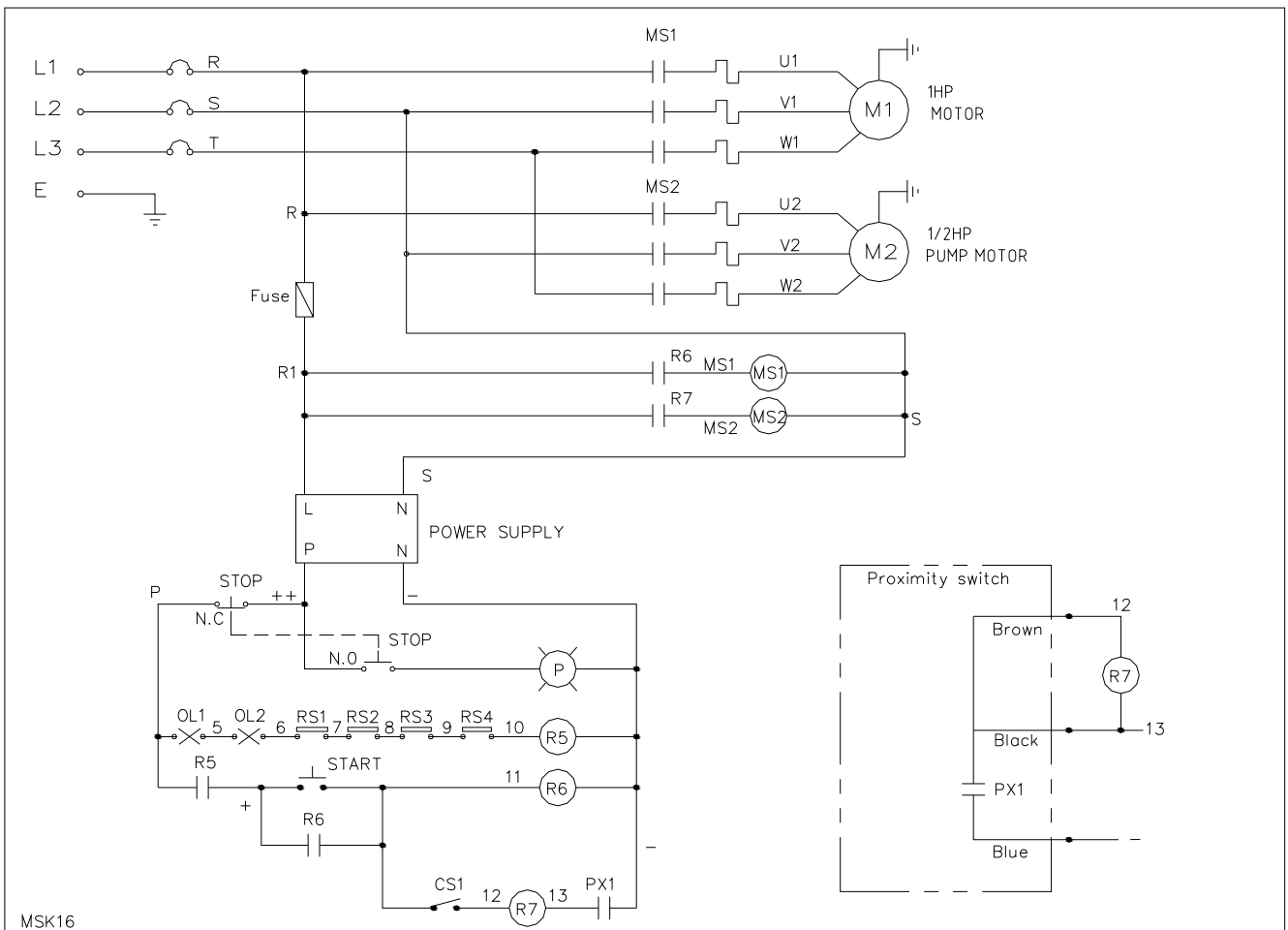
To adjust the speed simply undo the wing nut counter clockwise and slide the bar up or down.

## 6. Troubleshooting

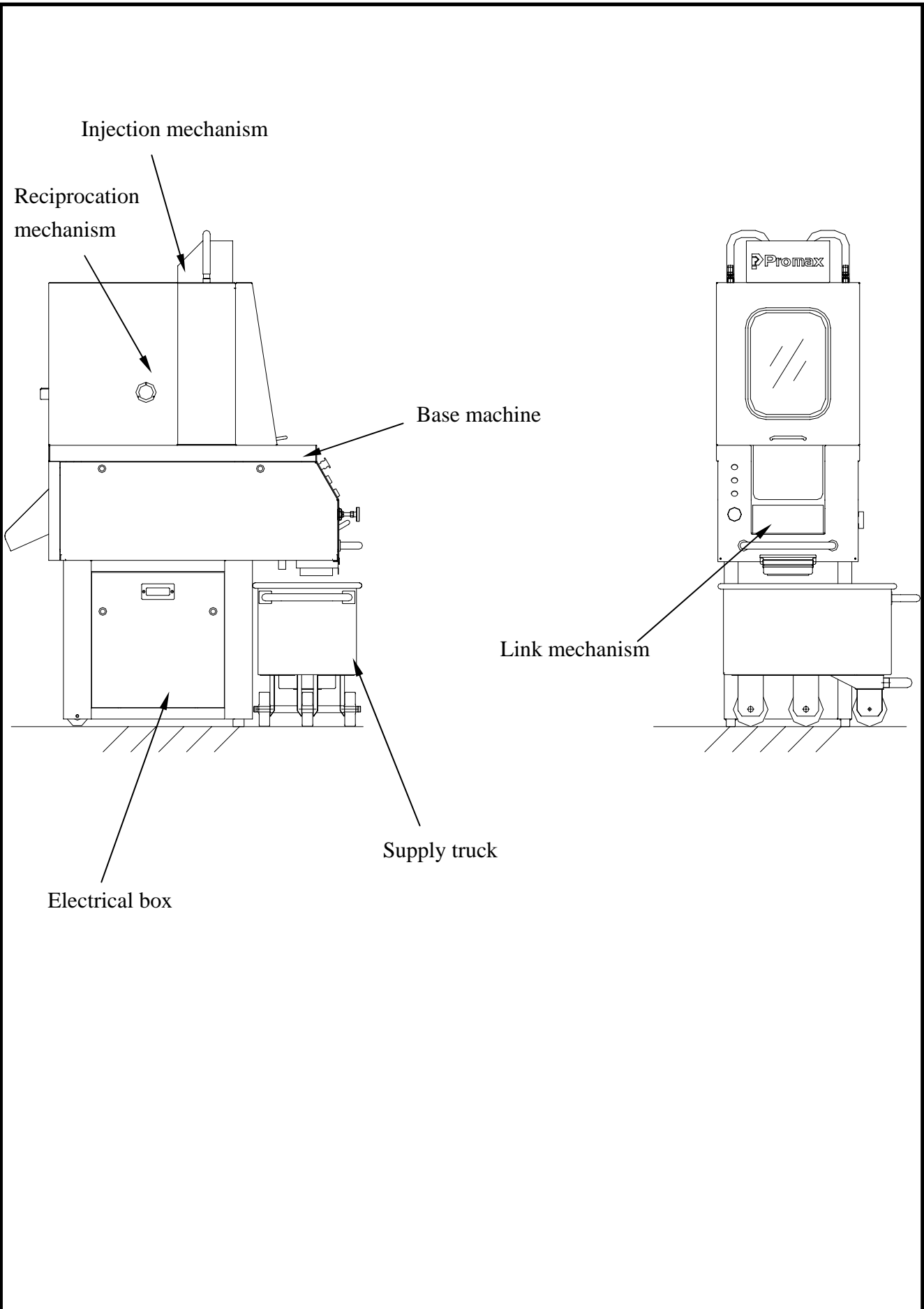
Problem	Reason analysis	Solution
No water comes out from the needle tube	Brine pump jam Needle tube jam Brine pump motor trouble	Clean up obstruction on the brine pump Blow out obstructions in the needles or change needles Motor's wire error, brine pump's
Water yield is not enough	Brine pump or needle tube jams Pressure is too low	Clean up obstructions 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	Change needle

	<p>needle tube</p> <p>The joint ring in the brine chamber is damaged</p>	Replace with new joint ring
air chamber leaking	<p>The joint ring in the air chamber is damaged</p>	Replace with new joint ring

## 7. Electric diagram

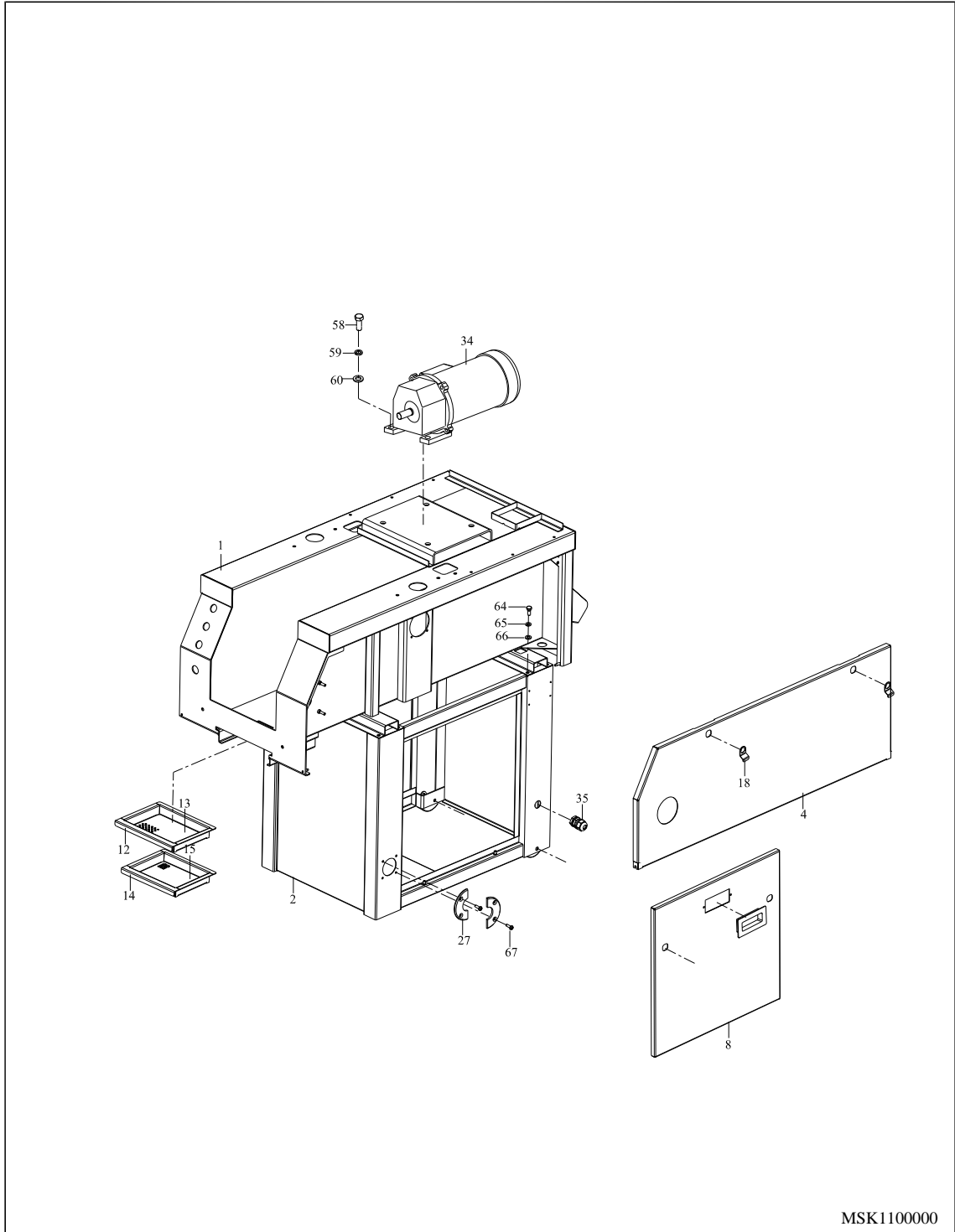


# 8. Fabrication





## 8.1 BASE MACHINE



MSK1100000



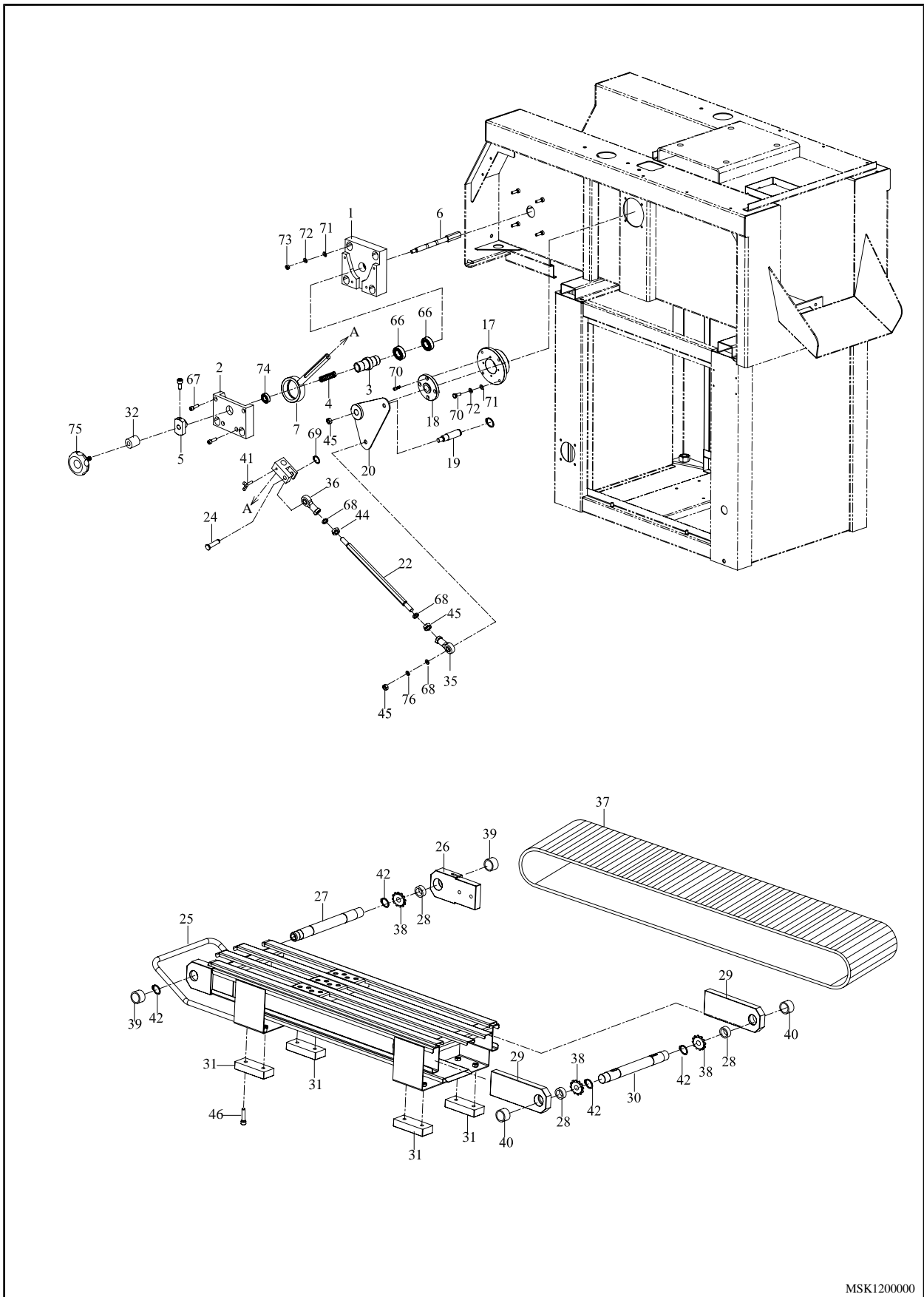
NO.	PART NO.	DESCRIPTION	QTY	
1	MSK1101002	Frame(12")	1	
2	MSK1102002	Frame	1	
3	MSK1103001	Side cover-F	1	
4	MSK1104001	Side cover-B	1	
5	MSK1105001	Motor cover	1	
6	MSK1106001	Motor cover door-L	1	
7	MSK1107001	Motor cover door-R	1	
8	MSK1108000	Side door-FB	2	
9	MSK1109000	Electrical panel	1	
10	MSK1110002	upper protection plate	1	
11	MSK1111001	handle	1	
12	MSK1112002	upper drawer	1	
13	MSK1113002	upper filter	1	
14	MSK1114002	lower drawer	1	
15	MSK1115002	lower filter	1	
16	MSK1118002	waterproof plate	1	
17	MSK1119000	Window	1	
18	MSK1120000	Arm	5	
19	MSK1121001	Rail guide	1	
20	MSK1122000	Pin	2	
21	MSK1123000	Bushing	2	
22	MSK1125000	Cover plate	1	
23	MSK1126000	Electrical protection plate	1	
24	MSK1127000	Hinge	2	
25	MSK1128000	Hinge	2	
26	MSK4116000	Gasket	1	
27	MSK4118001	Plate	2	
28	MSK1130000	Valve	1	
29	MSK4151001	Screw fitting	1	
30	SS25102000	Foot pad	2	
31	VP800G040	High pressure 1"	3	
32	2790302	High pressure 3/4"	2	
33	2858006	Pump	1	
34	2819990	Reduce LM-H-205-1-30-A	1	
35	2861028	Fitting MG-25A	1	

NO.	PART NO.	DESCRIPTION	QTY	
36	2712120	Casters	2	
37	27402012	Handle	1	
38	2929002	Spring cylinder	2	
39	D2320010	Hinge	2	
40	D2320020	Hinge	2	
41	2704958	Screw M6	2	
42	2883142	Arm C-408 Key	2	
43	2883349	Door lock	8	
44	MSK1133000	Clamping tee	1	
45	2909227	Clamping tee IDF-021 1-1/2"	1	
46	2909191	Clamping tee IDF-023 1-1/2"	1	
47	2909208	Clamping rubber hose adapter IDF-033 1"	3	
48	2909189	Heavy duty single pin clamp IDF-015 1-1/2"	8	
49	2909188	Gasket IDF-017 1-1/2"	8	
50	2909224	Adapter with threaded on the end IDF-016 1-1/2"x3/4"	2	
51	2909226	Clamping rubber hose adapter IDF-033 1"x3/4"	1	
52	29310178	Pipe hanger 1-1/2"	5	
53	2870075	Switch emergency	1	
54	2871702	Flat button ZB4-BA3	1	
55	2871722	Switch ZB4-BD2	1	
56	2910578	Pressure gauge	1	
57	27010773	Hex.socket head cap bolt M8x60	2	
58	2700472	Screw, hex hd M14x30 (S)	4	
59	2705322	Washer, split lock M14 (S)	4	
60	2705155	Washer, flat M14 (S)	4	
61	27060414	Hex hd screw M6x20	6	
62	2705302	Washer, split lock M6 (S)	6	
63	2705151	Washer, flat M6 (S)	6	
64	2700408	Hex hd screw M8x20	12	
65	2705301	Washer, split lock M8 (S)	12	
66	2705152	Washer, flat M8 (S)	12	
67	2701369	Screw oval hd M6x8	4	
68	29090591	Fitting A-032	1	
69	MSK1129000	Cover	1	
70	274000690	Elbow 1/4"	1	

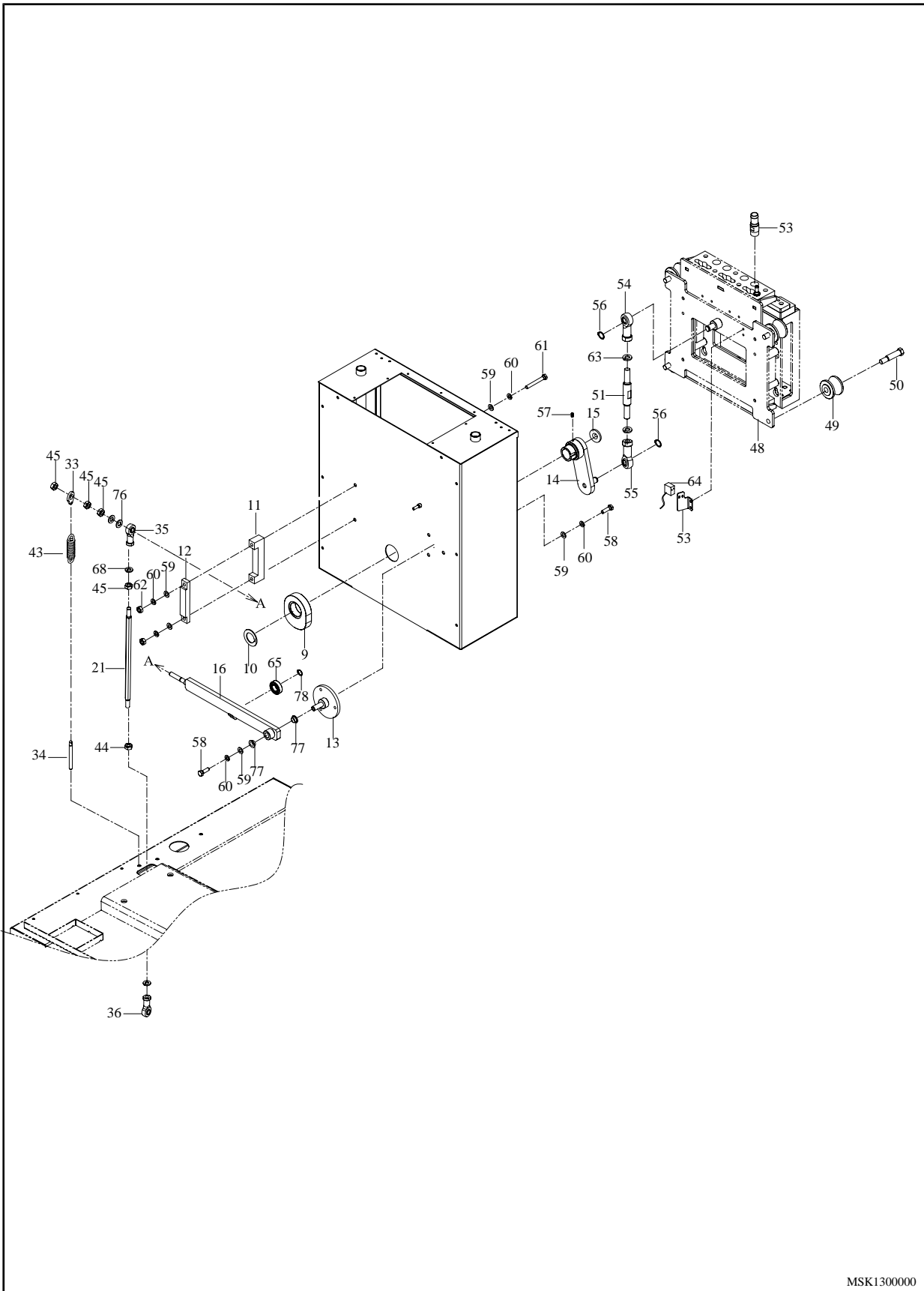




## 8.2.1 LINK MECHANISM



## 8.2.2 RECIPROCATION MECHANISM



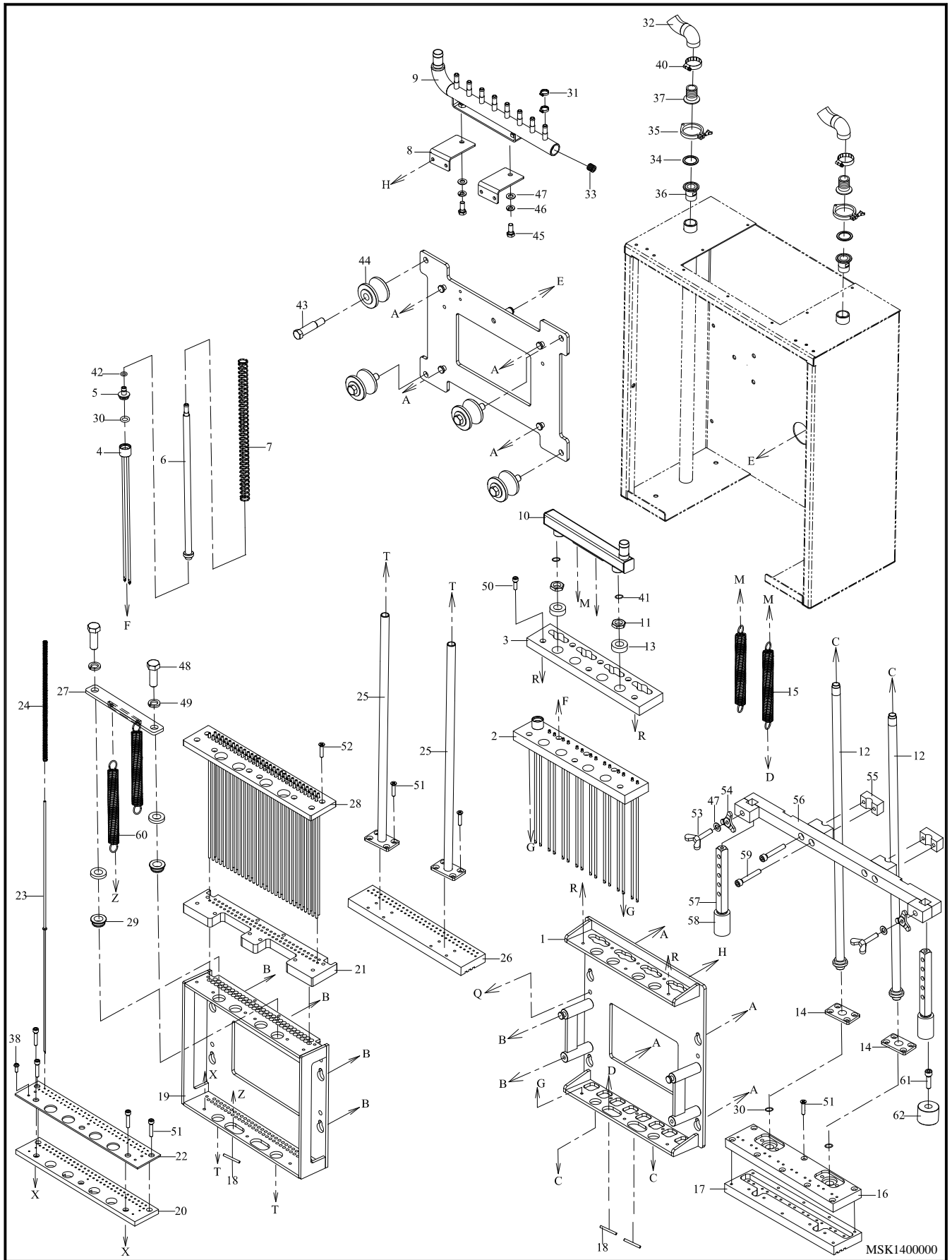
MSK130000

NO.	PART NO.	DESCRIPTION	QTY	
1	MSK1201000	Axle, Fixed seat	1	
2	MSK1202000	Axle,Fixed seat ,cover plate	1	
3	MSK1203000	Feed shaft	1	
4	MSK1204000	Spring	1	
5	MSK1205000	Shaft seat	1	
6	MSK1206000	Feed connecting shaft	1	
7	MSK1207000	Feed swing arm	1	
8	MSK1208000	Shaft sleeve	1	
9	MSK1209000	Cam wheel	1	
10	MSK1210000	Spacer ring	1	
11	MSK1211000	Swing arm limited seat	1	
12	MSK1212000	Limited seat, cover plate	1	
13	MSK1213000	Swing arm shaft seat	1	
14	MSK1214000	Lift arm	1	
15	MSK1215000	Axle, fender	1	
16	MSK1216001	Cam wheel, support rod	1	
17	MSK1217000	Bearing seat	1	
18	MSK1218000	Bearing pressure plate	1	
19	MSK1219000	Swing arm,axle	1	
20	MSK1220001	Swing arm	1	
21	MSK1221000	Connecting rod fulcrum	1	
22	MSK1222001	Connecting rod fulcrum	1	
23	MSK1223000	Feed adjusted block	1	
24	MSK1224000	Axle adjusted block	1	
25	MSK1225001	Conveyour	1	
26	MSK1226000	Bearing seat	2	
27	MSK1227001	Driving shaft	1	
28	MSK1228000	Spacer ring	4	
29	MSK1229000	Net adjusted plate	2	
30	MSK1230001	Driven shaft	1	
31	MSK1231000	Conveyour leg	4	
32	MSK1232000	Connecting shaft sleeve	1	
33	MSK4209000	Spring hook	1	
34	MSK4248000	Spring adjusted screw	1	
35	2728443	Rod eye, PHS M10x1.5 ( R )	2	

NO.	PART NO.	DESCRIPTION	QTY	
36	2728444	Rod eye, PHS M10x1.5(L)	2	
37	2729021	PP-CNB-18%-W292.4mm	1	
38	27140310	Gear 3-CNB-12T	4	
39	2730292	Bushing ASM-2430-15	2	
40	2730293	Bushing ASM-2430-20	2	
41	2704958	Butterfly hd screw M6x30	1	
42	27060171	Ring S25	4	
43	10096-2S	Spring	1	
44	27070171	Nut M10x1.5(L)	2	
45	2707017	Nut M10x1.5	7	
46	2701174	Hex socket head screw M8x25	8	
47	MSK1301002	Upper frame	1	
48	MSK1302001	Lift seat	1	
49	MSK1303000	Sliding roller	4	
50	MSK1304000	Roller shaft	4	
51	MSK1305000	Connecting rod fulcrum	1	
52	MSK1306000	Tube connector	2	
53	MSK1307000	Switch sensor seat	1	
54	2728439	Rod eye PHS M14x2(R)	1	
55	2728440	Rod eye PHS M14x2(L)	1	
56	27060071	Ring S14	2	
57	2704603	Socket set screw M6x10	1	
58	2700415	Hex hd screw M8x16	4	
59	2705152	Washer flat M8	5	
60	2705301	Washer split lock M8	5	
61	2700406	Hex hd screw M8x65	1	
62	2707224	Nut M8	2	
63	2705322	Washer split lock M14	2	
64	2851005	Sensor	1	
65	27280333	Bearing 6301	1	
66	27280108	Bearing 6203	2	
67	2701208	Hex socket head screw M6x30	4	
68	2705304	Washer split lock M10	9	
69	2706060	Ring S10	1	
70	2701166	Hex socket head screw M5x16	4	



# 8.3 INJECTION MECHANISM



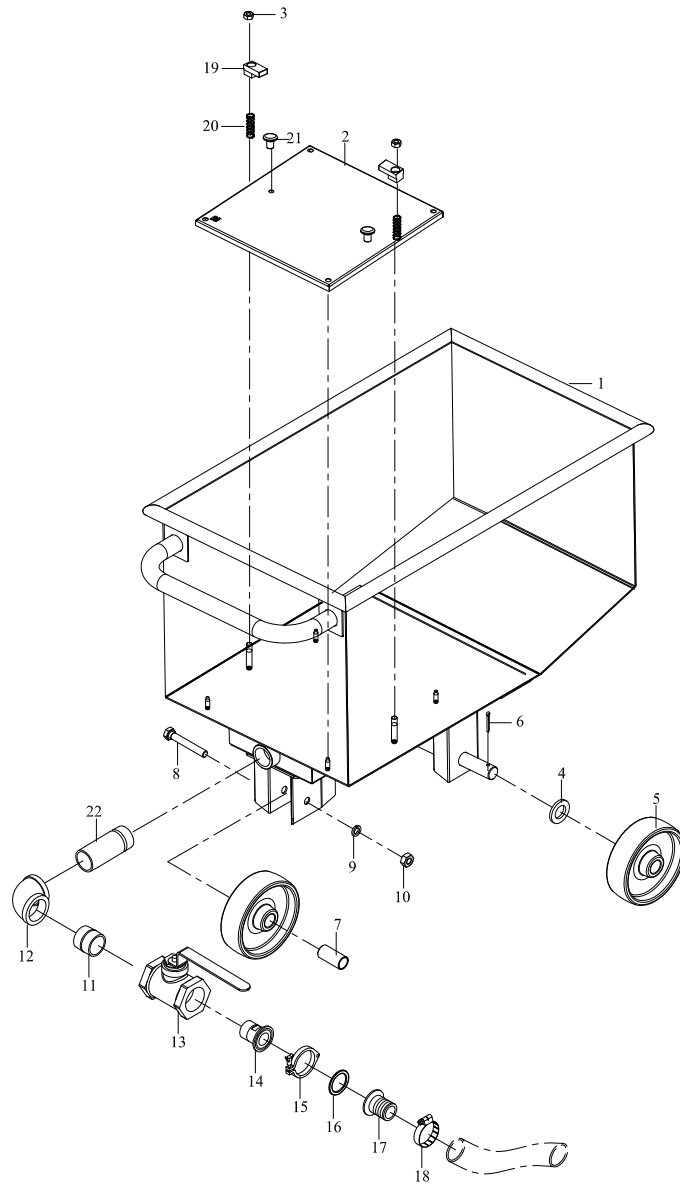
MSK140000

NO.	PART NO.	DESCRIPTION	QTY	
1	MSK1401003	Needle sets fixed rack	1	
2	MSK1402002	Needle guide seat	1	
3	MSK1403002	Guide rod, fixed seat	1	
4	MSK1404000	Needle	8	
5	MSK1405000	Needle connector	8	
6	MSK1406001	Spring fixed shaft	8	
7	MSK1407002	Compression spring	8	
8	MSK1408000	Divergence fixed seat	2	
9	MSK1409002	Divergence valve	1	
10	MSK1410001	Return collector seat	1	
11	MSK1411000	Screw nut	2	
12	MSK1412001	Water-return guide tube	2	
13	MSK1413000	Cushion gasket	2	
14	MSK1414000	Pressure plate	2	
15	MSK1415001	Tension spring	2	
16	MSK1416002	Meat plate upper cover	1	
17	MSK1417002	Meat plate	1	
18	MSK1418000	Tension spring fixed shaft	4	
19	MSK1430003	Knife sets fixed rack	1	Option
20	MSK1431001	Knife guide seat	1	Option
21	MSK1432003	Guide rod fixed seat	1	Option
22	MSK1433002	Knife locating board	1	Option
23	MSK1434002	Knife	47	Option
24	MSK1435001	Spring	47	Option
25	MSK1436001	Meat plate fixed rod	2	Option
26	MSK1437001	Knife meat plate	1	Option
27	MSK1438002	Fixed plate, connecting plate	1	Option
28	MSK1439002	Guide rod fixed seat	1	Option
29	MSK1440001	Guide shaft sleeve	2	Option
30	27401573	O-ring P16	8	
31	27400024	Pipe hanger 1/2	16	
32	2790301	Hight pressure 5/16	1	
33	2867299	Cap PT1/2	1	
34	2909188	Gasket IDF-017 1-1/2	2	
35	2909189	Heavy duty single pin ciamp IDF-015 1-1/2	2	



NO.	PART NO.	DESCRIPTION	QTY	
36	2909225	Adapter with threaded on the end IDF-014 1-1/2	2	
37	2909226	Clamp rubber hose adapter IDF-033 1x3/4	2	
38	2704909	Flat philip screw 5/32x1/2	8	
39	2909234	Adapter with threaded on the end IDF-014 1-1/2	2	
40	29310184	Pipe hanger 1"	4	
41	27401581	O-ring P14	2	
42	27401586	O-ring P6	8	
43	MSK1304000	Roller shaft	4	
44	MSK1303000	Sliding roller	4	
45	2700408	Hex screw M8x20	2	
46	2705301	Washer split lock M8	2	
47	2705152	Washer flat M8	4	
48	2700472	Hex screw M14x30	2	
49	2705322	Washer split lock M14	2	
50	2701152	Hex socket hd screw M6x16	5	
51	27004114	Flat philip screw M6x30	12	
52	27004116	Flat philip screw M6x20	8	
53	2704957	Screw butterfly type M8x30	2	Option
54	MSK3451000	Plate nut	2	Option
55	MSK1471000	Fixed block	2	Option
56	MSK1470000	Fixed rod	1	Option
57	MSK1472000	Support	2	Option
58	MSK2438001	Files block	2	Option
59	27010773	Hex socket hd screw M8x60	4	Option
60	MSK1415000	Tension spring	2	Option
61	2701179	Hex socket hd screw M8x35	2	Option
62	MSK1473000	Washer	2	Option

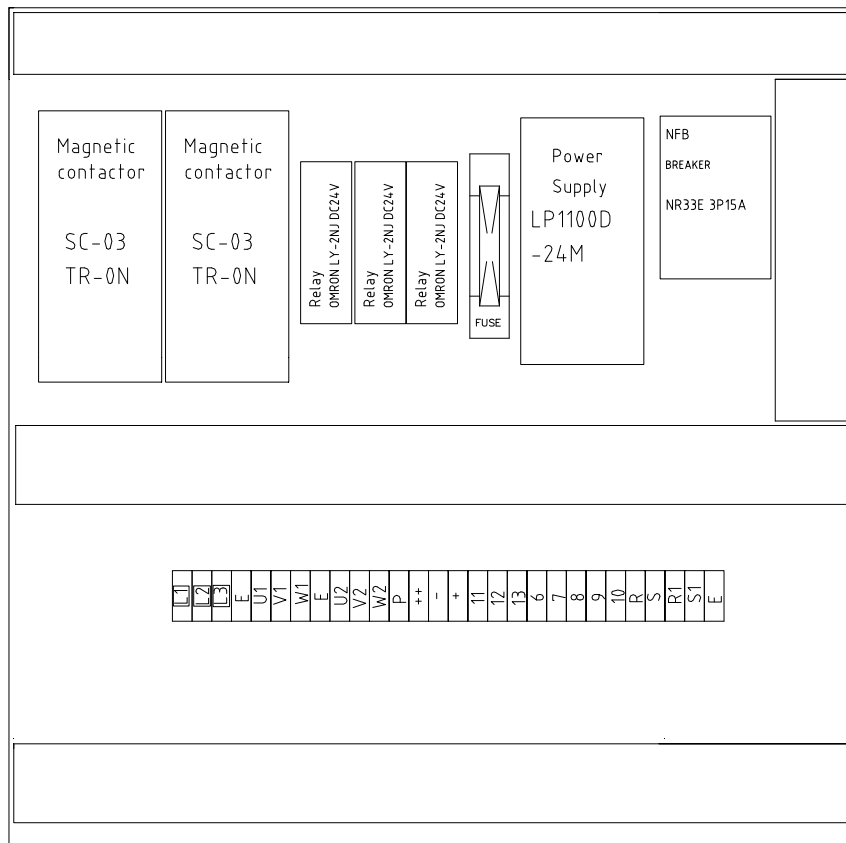
## 8.4 SUPPLY TRUCK



MSK140000



## 8.5 ELECTRICAL BOX



NO.	PART NO.	DESCRIPTION	SPECIFICATION	Q'TY	NOTE
1	2802005	Breaker	NR-33E 3P/15A	1	
2	2811187	Relay overload	TRON 1.7-2.6A	1	
3	2811188	Relay overload	TRON 2.2-3.4A	1	
4	2810217	Relay	SC-03 4a 220V	2	
5	2830110	Relay	OMRON LY-2NJ DC24V	7	
6	2831201	Socket, relay	ANLY PF083A	1	
7	2831204	Socket, relay	STF-08AM	1	
8	2843201	Terminal, block	PTU-20	23	
9	2843209	Terminal, block	PTU-30	4	
10	2896530-3	Supply, power	LP1100D-24M	1	