1 GENERAL

1.1 MACHINE NAME AND MODEL NO.

Pinhole Inspector for Plastic Ampuls, Model No. HDI-12

1.2 MACHINE FUNCTION AND BASIC OPERATION

The machine inspects plastic cards in strip for possible liquid leakage or seal detect by means of a non-destructive technique by applying high frequency high voltage to the solution-filled ampuls and rejects the leaky cards automatically.

Filled and sealed cards are placed on the machine lying horizontally on the infeed side.

The cards on the conveyor move past the inspection stations where leaky or empty containers are detected by the high frequency, high voltage principle. Reject cards are discharged through reject chute to the outside of the machine.

1.3 HDI-12 HIGH VOLTAGE INSPECTION METHOD

High voltage is applied to a product in a hermetically sealed container made of non-conductive material. If pinhole or crack is present on the container, the discharge current flows through the pinhole or crack into the product. The defective container is detected by the difference of the current from the current flows in the intact container.

When production starts, products are exposed to the high voltage at one inspection station. The station inspects the sealed base area of the container.

1.5 MACHINE DESIGN

1.5.1 Material and Finish

Product contact surface: Hairline or buffed stainless steel, Anodized aluminum, and plastic resin

Frame and product non-contact area: Epoxy painted electroplated steel, anodized aluminum, and plastic resin

Gearing, actuating machine, etc.: Phosphated steel and electroplated steel

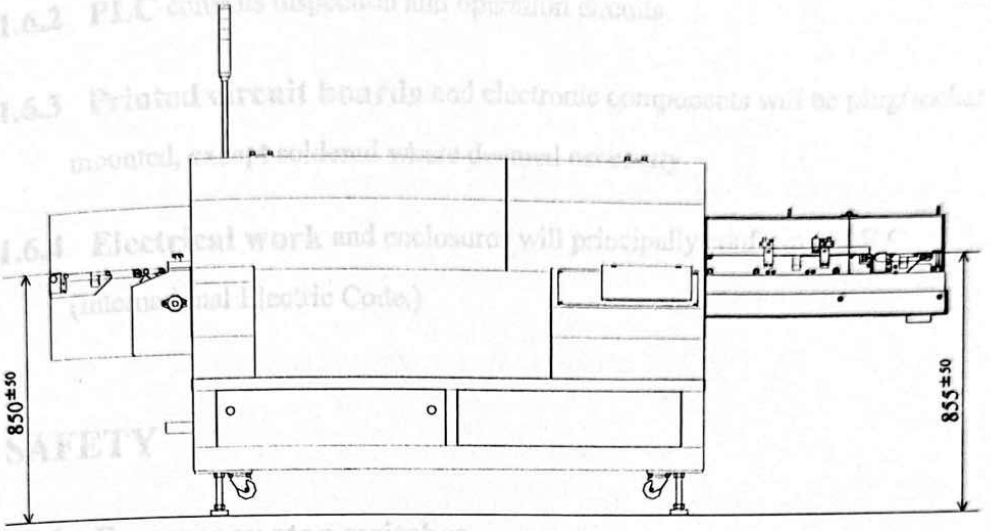
Exterior: Stainless steel and clear PVC where visibility is deemed necessary

Console Panel: Hairlined aluminum

1.5.2 Machine Height

Infeed Height: 855 ± 50mm

Discharge Height: 850 ± 50mm



1.5.3 Product Traveling Direction

Product traveling direction is from right to left viewed from the front of the machine.

1.5.4 Construction

Stainless steel machine heights adjust bolts with plastic discs at floor contact and plastic swivel casters will be provided.

Devices and components incorporated in product transferring units will be of simple drip-proof construction, but not of watertight construction.

IMPORTANT

If product should break during production, immediately stop the machine, remove the size parts wet with solution and wipe off with alcohol and water solution.

1.6 MACHINE ELECTRICAL SYSTEM

1.6.1 Control circuits (switches, sensors, solenoids, relays, etc.) are by DC 24V.

1.6.2 PLC controls inspection and operation circuits.

1.6.3 Printed circuit boards and electronic components will be plug/socket mounted, except soldered where deemed necessary.

1.6.4 Electrical work and enclosures will principally conform to I.E.C. (International Electric Code.)

1.7 SAFETY

1.7.1 Emergency stop switches

1.7.2 Safety covers

1.7.3 Ozone decomposition and exhaust

1.7.4 Alarms

1.7.5 Grounding

1.7.6 Anti-overload function (torque limiter) will be built in.

1.8 UTILITY AND ROOM CONDITIONS

1.8.1 Electric Power: AC208V±10%

1.8.2 Consumption: 3 kVA

1.8.3 Air source: 3 kg/cm^2, 60Nl/min.

1.8.4 Grounding: Class D or better (with a grounding resistance of 100 Ω or less)

1.8.5 Operation Room Conditions

The cards must be dry (free or moisture) on its surface.

Room temperature: 10°C - 35°C

Room humidity: 20% - 80%

1.9 PRODUCT

Vial Card Size	Height	Width
2ml	58.5(mm)	52.3(mm)

1.10 PRODUCT CONDITIONS

1.10.1 Electric Conductivity of solution 50μScm (20kΩ)

1.10.2 Product surface shall be dry and free of dust and dirt.

1.10.3 Capacity of product and volume of solution should be as near as possible

1.11 INSPECTION PERFORMANCE

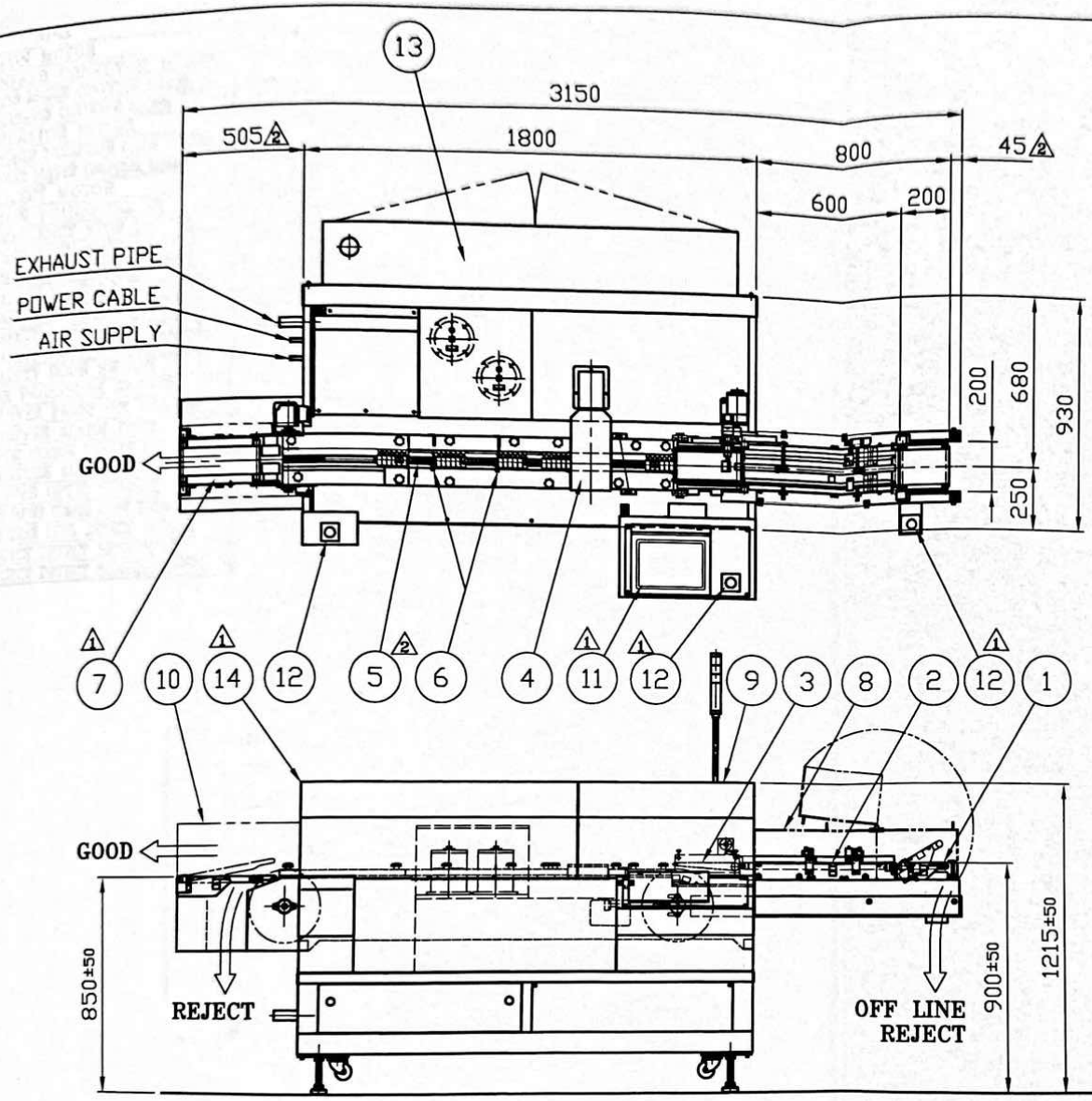
1.11.1 Inspection areas

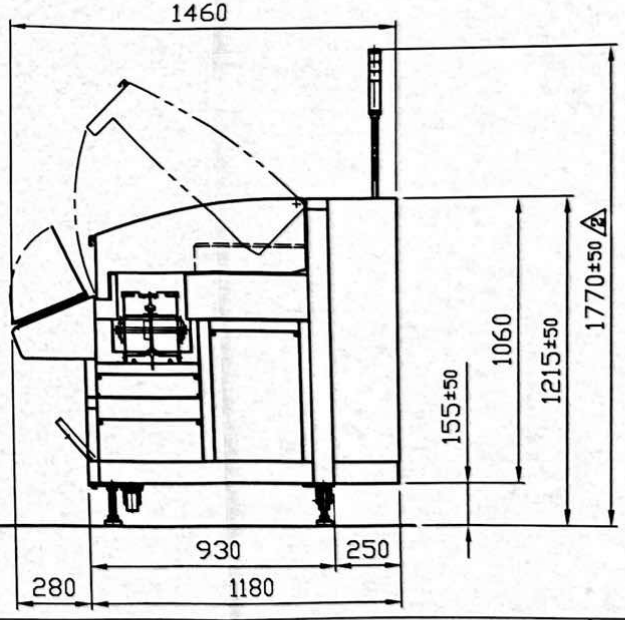
CH1: Twist-off ~ Joint line(8mm)

CH2: Bottom

1.11.2 Processing speed

50 Pieces/Minutes = 3000 Pieces/Hour





MARK	NAME	QTY
1	OFF LINE DISCHARGE DUMPER	1
2	INFEED CONVEYOR	1
3	AUTO LOADER	1
4	VIBRATOR UNIT	1
2 5	MAIN CONVEYOR	1
6	INSPECTION ELECTRODE	2
7	DISCHARGE CONVEYOR	1
8	INFEED COVER	1
1 9	INSPECTION COVER	1
10	DISCHARGE COVER	1
11	OPERATION PANEL	1
1 12	EMERGENCY STOP SWITCH	3
13	CONTROL BOX	1
1 14	INSPECTION SAFETY COVER	1

3			SCALE	DRAWING NAME	ORDER NO.
2 Description & Size correction '12.02.23 Y.I			1/20	HDI-12 Outside Drawing	3104-384
1 Change description '12.02.10 Y.I					
APPROVED	CHECKED	DESIGNED	DRAWN	DRAWING NUMBER	
Jun. J	Jun J	Y.Nagano	Y.Nagano	02-65219-3 2	NITTA
'12. 2. 23	'12. 2. 23	NOV.17'11	NOV.17'11		

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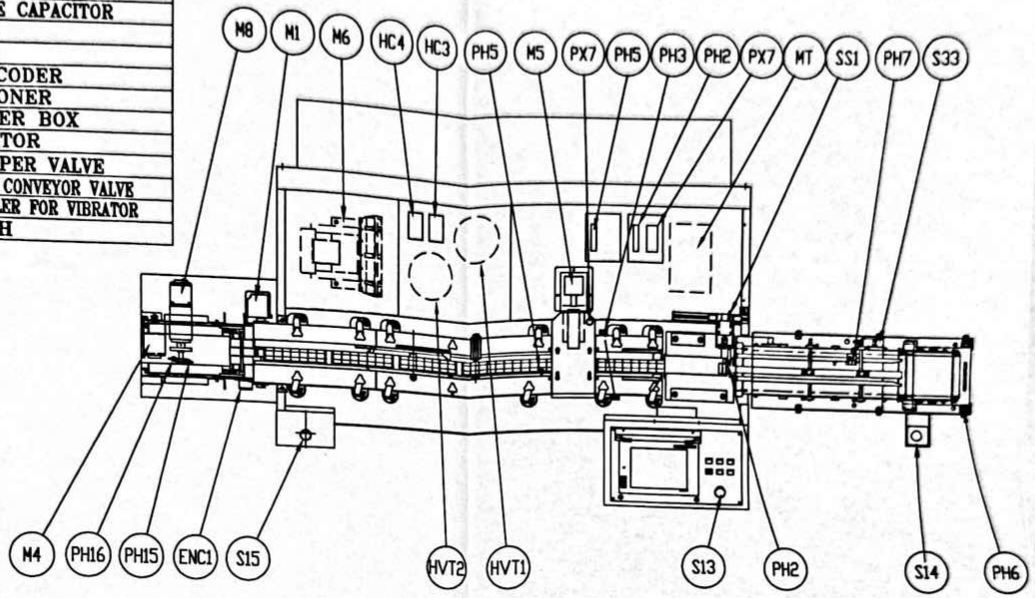
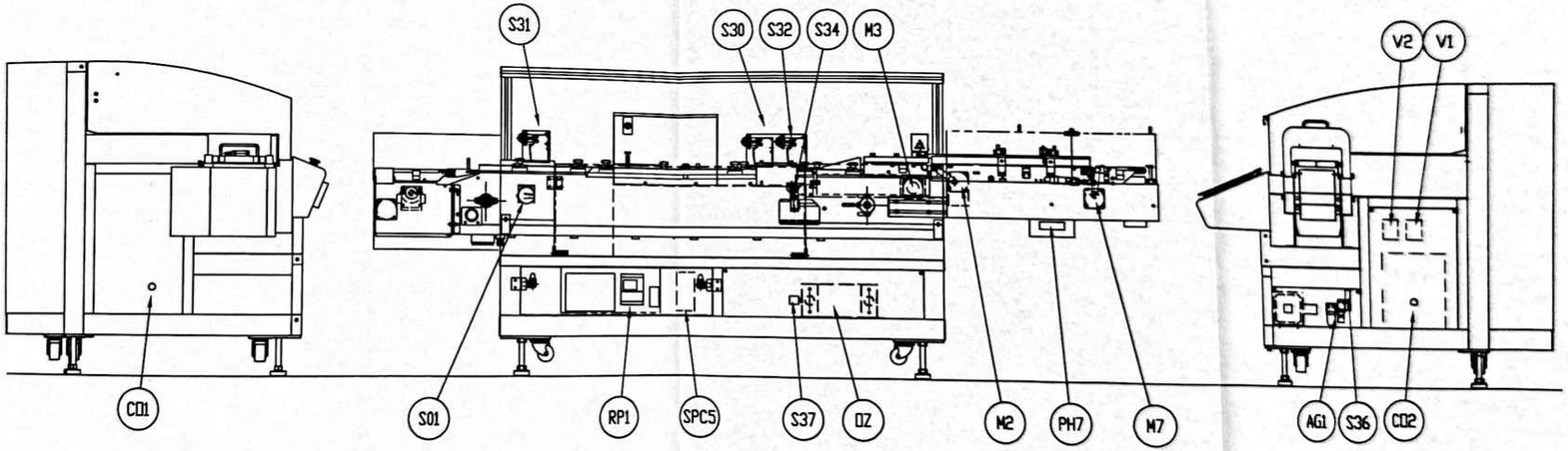
MARK	NAME
M1	MAIN MOTOR
M2	INFEED CONVEYOR MOTOR
M3	AUTO LOADER CONVEYOR MOTOR
M4	DISCHARGE CONVEYOR MOTOR
M5	VIBRATOR MOTOR
M6	EXHAUST DECOMPOSED OZONE BLOWER
M7	INFEED DUMPER CONVEYOR MOTOR
M8	REJECT MOTOR
MT	MAIN TRANSFORMER
S13	EMERGENCY STOP SWITCH
S14	EMERGENCY STOP SWITCH
S15	EMERGENCY STOP SWITCH
S30	SAFETY DOOR LOCK SWITCH
S31	SAFETY DOOR LOCK SWITCH
S32	SAFETY DOOR SWITCH
S33	SAFETY DOOR SWITCH
S34	SAFETY DOOR SWITCH
S36	AIR PRRESSURE SWITCH
S37	BLOWER PRESSURE SENSOR
SS1	STOPPER ALARM DETECT
PH2	OPTIC SENSOR (INFEED STOPPER)
PH3	POSTURE ALARM DETECT
PH5	INFEED OPTIC SENSOR
PH6	FOR INFEED DUMPER CLOSE TIMING SENSOR
PH7	REVERSE FEED DETECT SENSOR
PH15	REJECT DETECT SENSOR(UP)
PH16	REJECT DETECT SENSOR(DOWN)

MARK	NAME
PX7	VIBRATOR ALARM DETECT
HVT1	HIGH VOLTAGE TRANSFORMER
HVT2	HIGH VOLTAGE TRANSFORMER
HC3	HIGH VOLTAGE CAPACITOR
HC4	HIGH VOLTAGE CAPACITOR
C01	CONNECTOR
C02	CONNECTOR
ENC1	ROTARY ENCODER
RP1	CAM POSITIONER
OZ	OZONE FILTER BOX
AG1	AIR REGULATOR
V1	INFEED STOPPER VALVE
V2	INFEED DUMPER CONVEYOR VALVE
SPC5	SPEED CONTROLLER FOR VIBRATOR
S01	MAIN SWITCH





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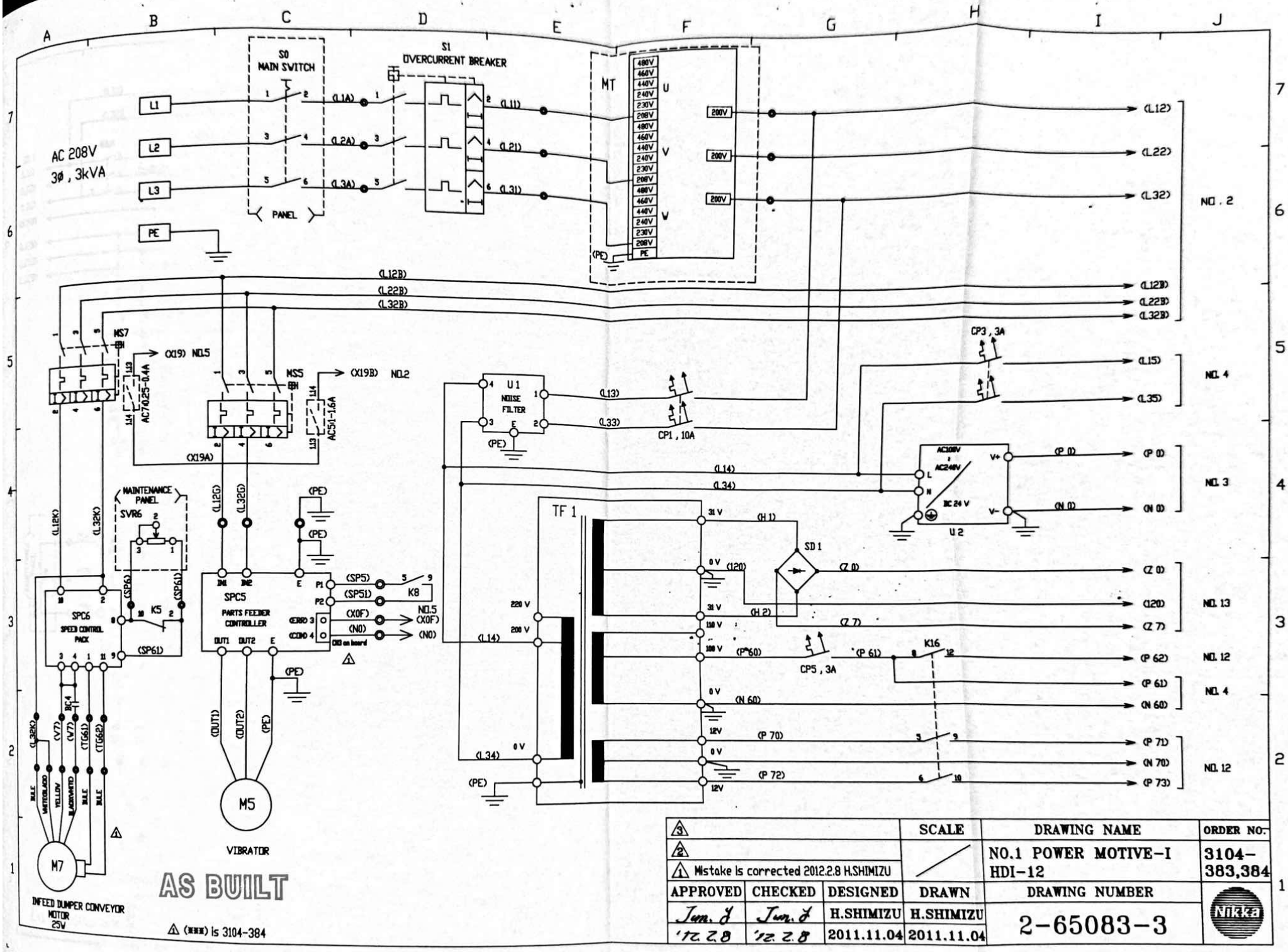
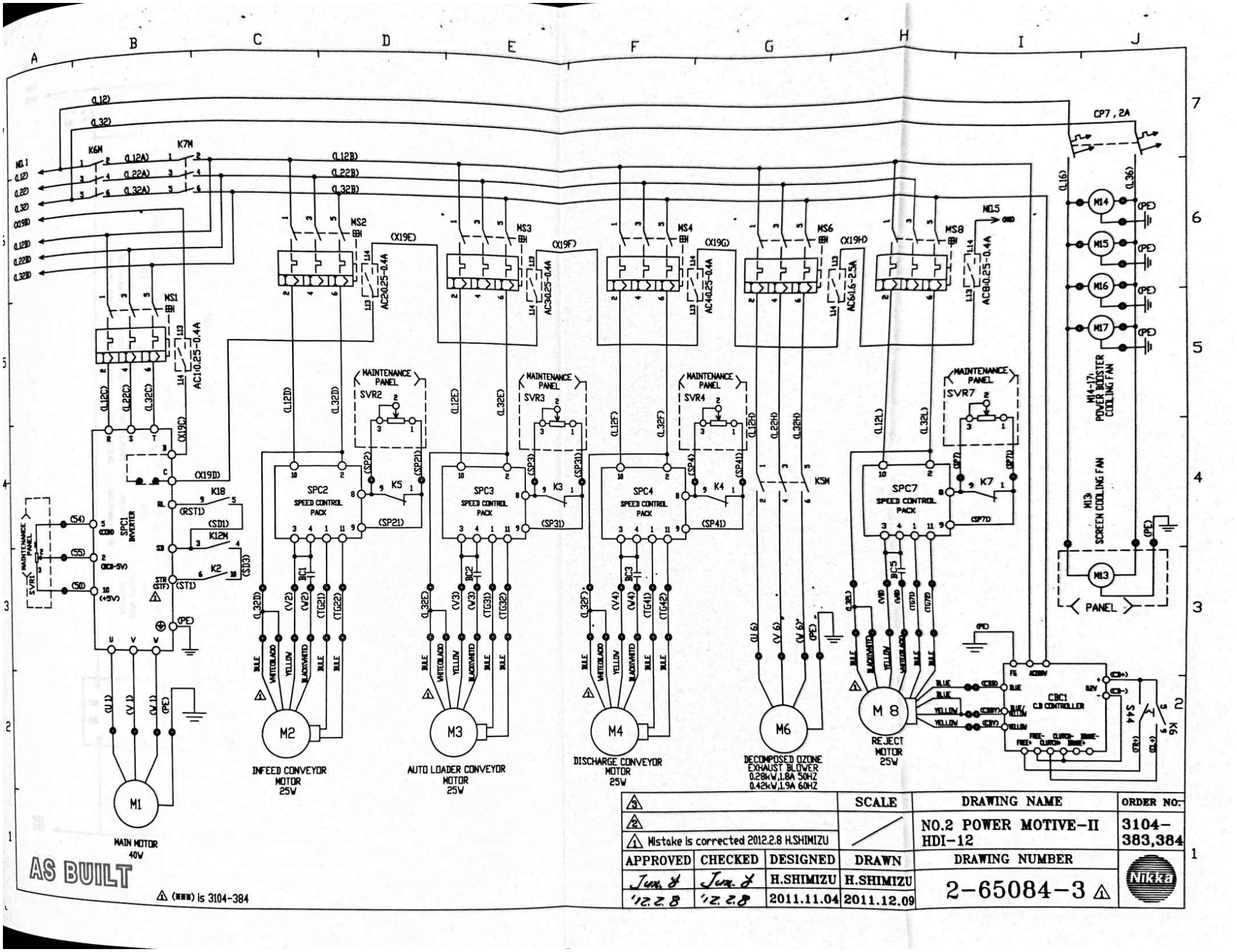
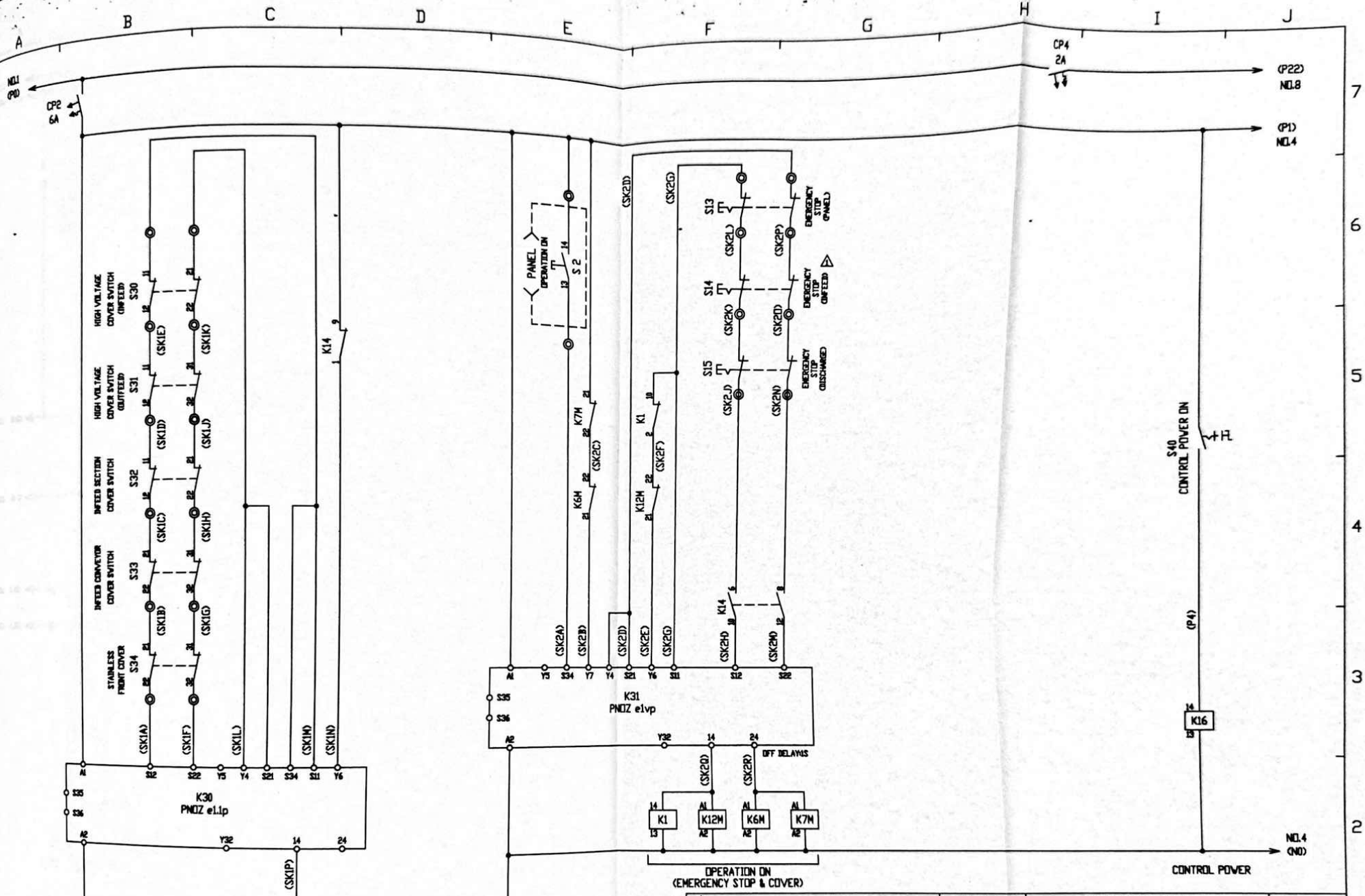
			SCALE	DRAWING NAME	ORDER NO.
3			1/20	HDI-12 DEVICE LAYOUT	3104-384
2					
1					
APPROVED	CHECKED	DESIGNED	DRAWN	DRAWING NUMBER	
Jun. 8 '12.2.23	Jun. 8 '12.2.23	IIZUKA Feb.10.2012	IIZUKA Feb.23.2012	02-65692-3	Nikka



			SCALE	DRAWING NAME	ORDER NO.
③					
②					
① Mistake is corrected 2012.2.8 H.SHIMIZU				NO.1 POWER MOTIVE-I HDI-12	3104-383,384
APPROVED	CHECKED	DESIGNED	DRAWN	DRAWING NUMBER	
Jun. J	Jun. J	H.SHIMIZU	H.SHIMIZU	2-65083-3	Nikka
'12.2.8	'12.2.8	2011.11.04	2011.11.04		



			SCALE	DRAWING NAME	ORDER NO.
△3				NO.2 POWER MOTIVE-II HDI-12	3104-383,384
△2					
△1 Mistake is corrected 2012.2.8 H.SHIMIZU					
APPROVED	CHECKED	DESIGNED	DRAWN	DRAWING NUMBER	
Jun. Y	Jun. Y	H.SHIMIZU	H.SHIMIZU	2-65084-3 △1	Nikka
'12.2.8	'12.2.8	2011.11.04	2011.12.09		



			SCALE	DRAWING NAME	ORDER NO.
3					
2				NO.3 RELAY CIRCUIT HDI-12	3104-383,384
1 Mistake is corrected 2012.2.8 H.SHIMIZU					
APPROVED	CHECKED	DESIGNED	DRAWN	DRAWING NUMBER	
Jun. Y	Jun. Y	H.SHIMIZU	H.SHIMIZU	2-65085-3	
'12.2.8	'12.2.8	2011.11.04	2011.11.04		

AS BUILT

Nikka