

## CHAPTER 5

### INSPECTION & MAINTENANCE

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## 2) Wear and tear, or changes in appearance

## 2.1) Head Section

NO	Inspection Point and Method	Frequency
1	The head is the part which requires the most strenuous movement, so there is a possibility of parts wearing down or changing in appearance. Inspect for looseness, bending, or breaking of small parts such as nuts, bolts, and screws. -Re-tighten screws and change worn or deformed parts.	Daily
2	Check the mounter head nozzle for changes in appearance, and to make sure -Replace nozzle not worn or flat.	Daily
3	Make sure the positioning jaws for parts placing are not worn or rounded. -If it is, replace the jaw or chuck assembly.	Daily
4	Has the appearance of the dispensing head nozzle changed? what about the O-rings between the nozzle and the needle? -If necessary, change the nozzle and/or the O-rings.	Weekly
6	Are the heater and thermo sensor of the dispensing head normal? -Remove the front door and look at the temperature control unit display. If the temperature is rising and falling within the proper range there is no problem. If the temperature is staying consistently high or low, adjust the heater and/or thermo sensor.	Weekly
6	Is dispensing fluid flowing the wrong direction in the adhesion tube of the dispensing head? -Remove the front door, and adjust the air regulator to 0.1kg/cm <sup>2</sup> 0.2 kg/cm <sup>2</sup> .	Weekly
7	Is the nozzle guard of the dispensing head wearing down or changing in appearance? -Replace it.	Weekly

CAUTION!!

*Since the mounter head nozzle and chuck jaw are the most indispensable parts, make sure you always have spare units on hand.*

## 1.3) Head

**IMPORTANT!**

NO	Inspection Point and Method	Frequency
1	Is there any dirt or grease on the nozzle jaw of the mounter head? -Clean it with a cloth or sponge.	Daily
2	Is there any dirt on the nozzle or needle of the dispensing head? Is the nozzle opening plugged? -Clean the nozzle.	Daily
3	Is there any dispensing fluid on the syringe housing section of the dispensing head? -Clean the housing section.	Daily

## 1.4) Feeders

NO	Inspection Point and Method	Frequency
1	Is there any tape sediment, adhesive, or chip debris adhering to the tape travelling surface? -Remove any dirt with a tweezer or vacuum cleaner.	Daily
2	Tape feeder oil supply points (8, 12, 16mm tape) 1) Between tape, guide, shaft and tape guid 2) Between racking lever and racking roller 3) Winding lever shaft 4) Between pushrod and holder	Machine oil: Monthly Grease: Annually
3	Is there dirt or grease on the stick feeder ski slope surface? - Remove the cover and clean it with a soft cloth.	Weekly
4	Stick feeder oil supply points 1) Between the various levers and shafts 2) Between the pushrod and holder Caution: When pouring oil, make sure it does not get on the ski slope.	Machine oil: Monthly Grease: Annually
6	Oil supply points for 32mm adhesive tape feeder: 1) Between racking lever and metal 2) Between the push lever and push lever shaft 3) Between the joint pin and indexing lever	Same as above
6	When replacing feeders, make sure the bottom surface is clean.	Each time

## SECTION 1 INSPECTION AND MAINTENANCE

1-1  
MECHANICAL  
SECTION1.1) X-Y  
Axis

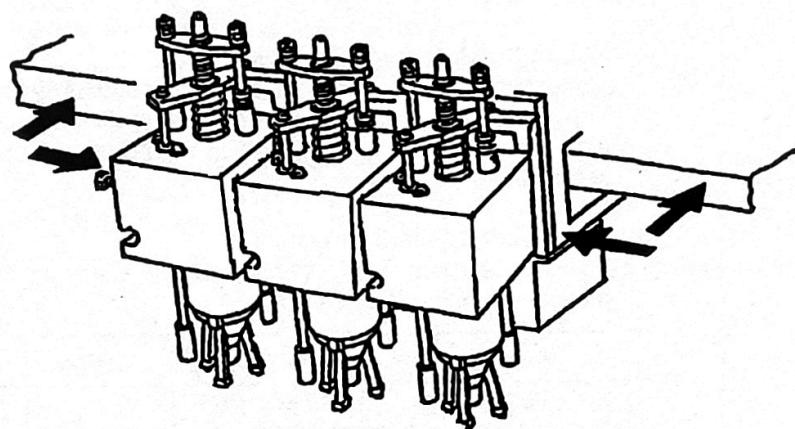
## (1) Lubrication &amp; Cleaning

NO	Inspection Point and Method	Frequency
1	After removing the dirt with a tweezer or tooth-stick, clean the area and the slide guides with a lint free cloth .	Once or twice a week
2	Has the ball screw grease run out? Use the accessory grease gun to supply it Is there dust or dirt on the ball screw?	Once or twice a week
3	Is the slide guide greased? -Use the accessory grease gun to supply it.	Once or twice a weeek

## 1.2) Conveyor

NO	Inspection Point and Method	Frequency
1	is there dust or dirt on the conveyor? -Use a soft cloth to remove any dirt, and apply a light coating of grease with you finger. Grease the adjusting screw.	Monthly
2	Remove any dirt with a soft lin-free cloth and apply a light coating of grease with your finger. Is the driving spline shaft greased, and free of dust and dirt?	Monthly
3	Remove with a soft lint-free cloth any dirt on the PCB travelling surface, or the standard surface when positioning?	Weekly





While Pushing it with your hand, check for the following abnormalities:

Fig 5-2

#### (4) Unusual Noise

##### 1) X-Y section

First, turn off the power.

Touch the head holder with your finger, and move it slowly in the X axis direction (left-right direction). Be careful not to push or pull it roughly, as strong impact may cause head positioning errors.

--- See Fig 5-2

##### a) Does movement suddenly become heavy?

Even in normal conditions there is some variation, but if movement is extremely heavy, bearings may be damaged, or some foreign matter may be obstructing the movement section.

##### b) Is there a regular clucking sound?

There may be some defect in the rolling areas of the ball screw nuts, the bearings at each end of the ball screws, or the linear bearings.

##### c) Even without applying pressure, does movement produce a clattering sound?

The screws may be loose in the connection sections.

Push and pull the X axis arm and check for the same kinds of problems in the Y axis direction.

During automatic operation, check whether any suddenly loud noises or unfamiliar noises are produced. The main cause of such noises is loose screws, so please inspect the screws before anything else.

##### 2) Conveyor

Move the conveyor using the Manual Key, and make sure the belt is moving smoothly and without unusual noise. Lightly push and pull the stoppers and positioning pins with your finger to make sure there are no rattling sounds.

##### 3) Head

Raise, lower, and rotate the head using the Manual Key, and make sure there is no unusual noise or vibration.

#### (5) Vibration

Usually abnormal vibration is accompanied by noise, and the causes can mostly be discovered through the checking procedures in (4). If the entire unit shakes, consider the following two possible causes:

- The adjusting bolts securing the machine are loose, or are not correctly adjusted.
- The floor is not firm enough to accommodate the machine.

#### (6) Preparation Before Initial Movement

Every morning, when at least 5 hours have passed without operation, check the ascending /descending and rotating movement of the head and the X-Y manipulator by moving them manually.

Afterwards, call the "Warming up Program" and, after about 10 minutes of pneumatic operation, start production. Each mechanical part reacts to its heat saturation level after about 30 minutes and achieves a stable condition, so ideally, about 30 minutes of warm-up time should be allowed before programming or automatic operation. This reduces charges of error.

However, the difference between 10 minutes and 30 minutes of warming-up time is a maximum of 0.05mm with regard to positioning error, so as far as actual operation is concerned, there is not that much effect on the machine.

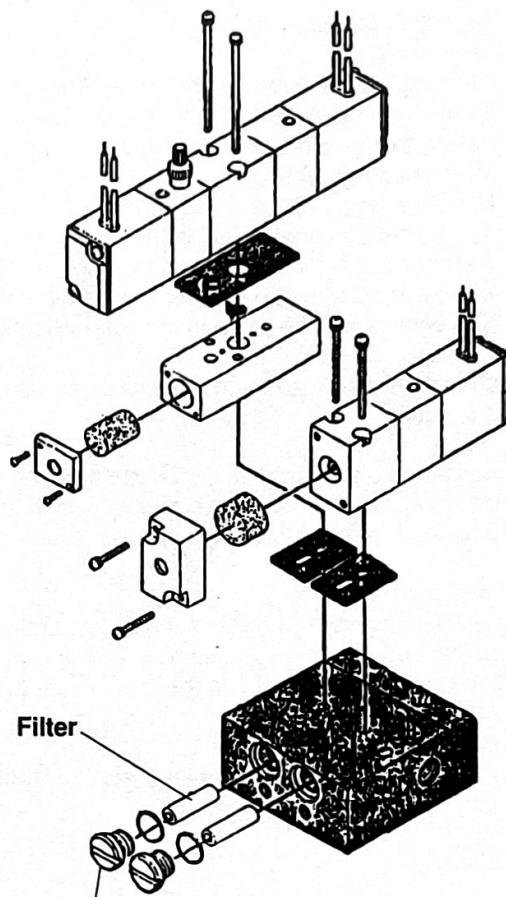


Fig 5-1

## 2.2) Feeders

NO	Inspection Point and Method	Frequency
1	Has pushing a the tape feeder's tape pushing plate deformed? -If the original shape cannot be regained by molding the plate with your hand, replace the plate.	Weekly
2	Remove the feeder and push the pushrod with your hand. Check whether each action moves smoothly. -If the movement is uneven, check for dirt, gouges or changes in appearance.	When feeder is replaced

## (3) Air Equipment

## 1) Air Filter

The air filter should be inspected and cleaned every three months, as a rule. If the filter is badly plugged, it should be replaced.

## 2) Air Supply Pressure

The operator should check the air supply pressure before starting each day's operations, and make sure it is maintained at 5kg/cm or higher.

## 3) Tubing

The unit should be checked before or after each day's operations, to make sure that air is not leaking and there is no tubing damage or disconnected joints. If air is leaking somewhere, the appropriate measures should be taken (repairing the tubing or replacing parts).

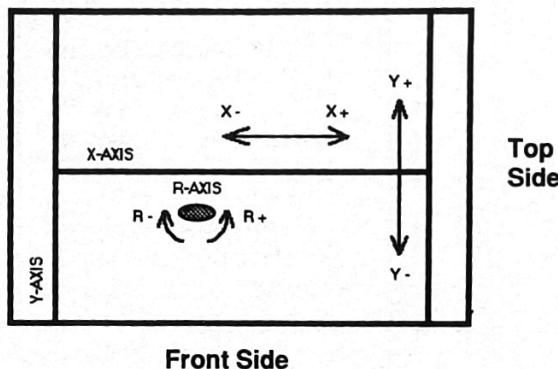
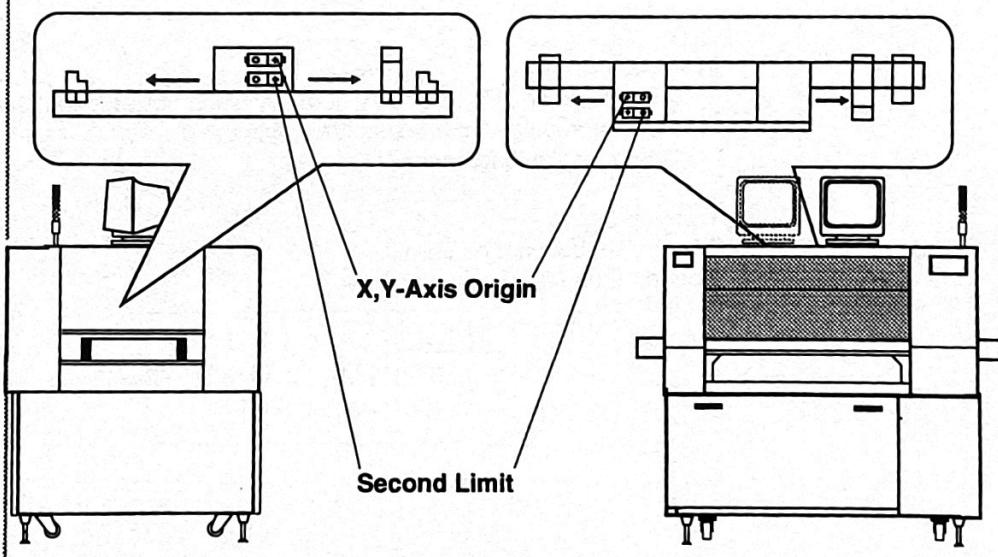
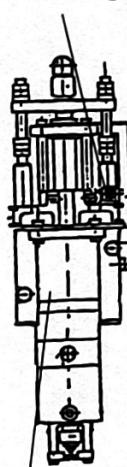
(However, there is usually some air output from the edge of the head in the X axis holder section. This is not a malfunction.)

## 4) Cleaning and replacing the air filter of the vacuum generator

The mounter heads use a vacuum produced by the vacuum generator to pick up parts. If there is dust in the environment, this is also picked up, and can eventually cause problems with the picking and mounting actions of the nozzle. Therefore, it is extremely important that the nozzle be kept clean, and also that the air filter of the vacuum generator be cleaned and replaced frequently.

When the filter cap is removed, as shown below, the white filter can be seen. Clean the filter with an air gun, or wipe it with a cloth. If it is extremely dirty, it should be replaced with a new one.

--- See Fig 5-1

**YPU-SC (hand-held keyboard) layout****Back Side****Fig 5-7****Fig 5-6****R-Axis Origin****Fig 5-8**

## 2) Hand-held keyboard --- See Fig 5-6

With the hand-held keyboard more functions can be carried out than with the operator panel at the CSM. Check the X-,X+,Y-,Y+,R-keys if they work according fig. 5-7

## (2) Sensor function

Make sure to confirm sensor function by lamp built in sensor & DI/DO monitor .

## 1) X-Y-Z-R

Check X-Y-Z-R origin and limit sensors as given in table below and fig. 5-8.

Position to be sensed	Abbreviation	DI Port	Connection
X-Axis origin	XORG	DI14	b
X-Axis second limit	2ND.LMT	(DI20)	b
Y-Axis origin	YORG	DI15	b
Y-Axis second limit	2ND.LMT	(DI20)	b
R-Axis origin	RORG	DI17	b
Z-Axis origin *	ZORG	DI16	b
Z-Axis second limit *	2ND. LMT	(DI20)	b

## \* NOTE:

*Z-Axis origin and second limits are only valid if a machine is equipped with the automatic width adjustment, or if the machine is a CSM84VZ. In the latter case the Z-Axis is the DC servo motor of Head 3.*

Figure  
5-1-1

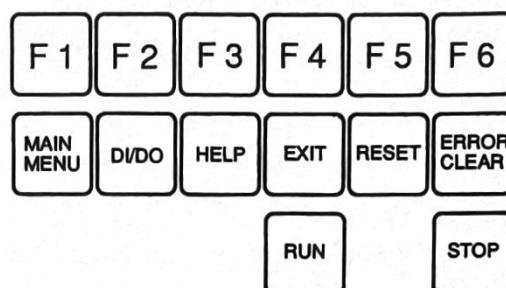
Operator Panel

Fig 5-3

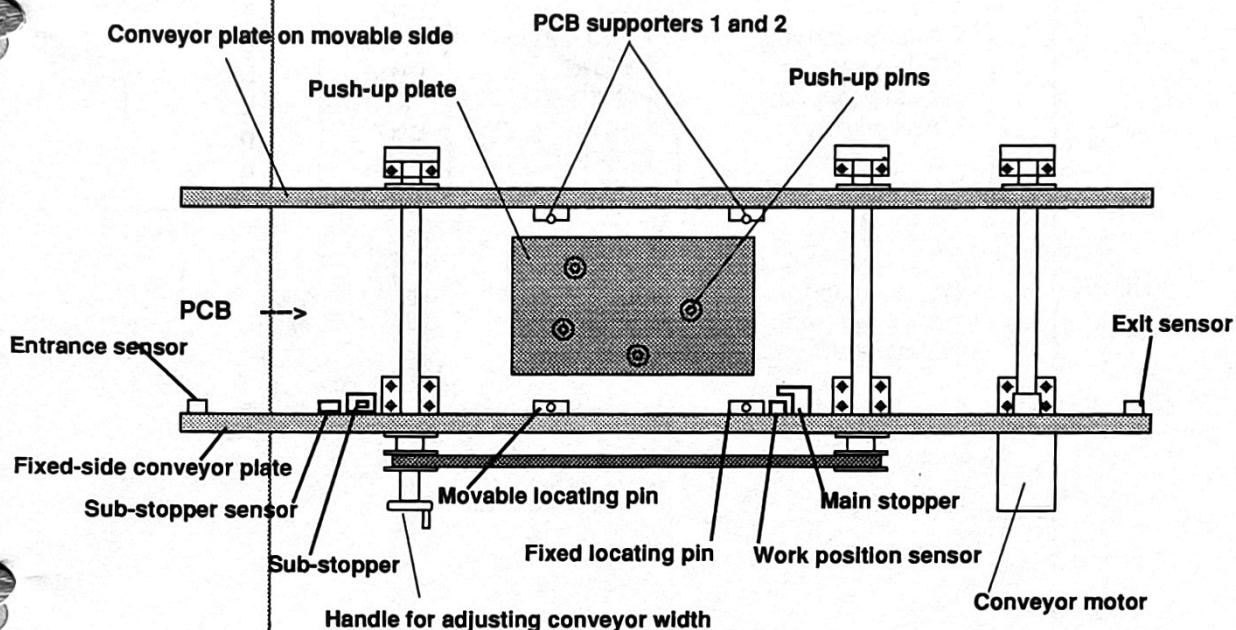
Conveyor peripheral actuators

Fig 5-4

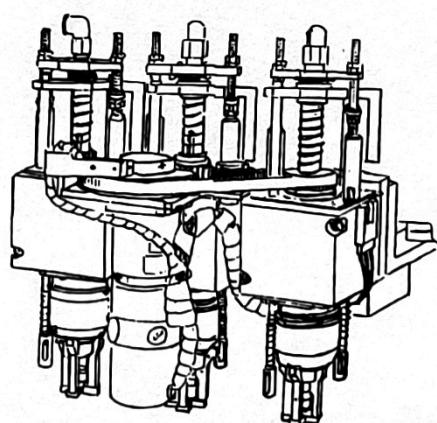
Head section (3 Head type)

Fig 5-5

1-2  
ELECTRICAL  
SECTION

**WARNING: When checking or doing an inspection at the CSM:**

- 1) SWITCH MAINS OFF when inspection is done without machine movement.
- 2) Don't touch inner section of controller within 5 seconds after main switch off.
- 3) Don't approach mounting head working area when inspection is done with machine movement.

(1) Operation key action

Check and or inspect next items:

- \* a smoothly movement of the X,Y,R axes.
- \* unusual or extensive machine noise
- \* extensive vibrations
- \* to have output signals on the DI/DO monitor

1) Operator panel --- See Fig 5-3

a. Return to X,Y,R machine origin

Make sure to return to origin after pushing origin key (page 0 screen)

Make sure that machine reference value is within allowance

(35%-65%) after X,Y,R machine origin-positioning, if out of tolerance readjustment has to be carried out.

b. Conveyor peripheral actuators

To inspect the conveyor peripheral actuators, use the function keys F1-F6 on the manual screen. --- See Fig 5-4

Function	CRT Display	Action	DO Port
Main conveyor motor	M-CONV	Alternate	DO06
Main stopper	M-STP.	↑	DO10
Positioning pin	LOCATE	↑	DO11
Reverse Conveyor	REVERS	↑	DO31
Sub-stopper	S-STP.	↑	DO00
PCB push-up	PUSHUP	↑	DO32
Edge clamping	CLAMP	↑	DO33
Conveyor speed change	C-SPD.	↑	DO34

c. Head

The Heads should be inspected same as the actuator of conveyor .

--- See Fig 5-5

Function	CRT display	Action	Port
Head 1 descending	H1 DOWN	momentary	DO20
Head 1 rotating	H1 TURN	alternate	DO22
Head 1 picking up	H1 VAC	alternate	DO24
Head 2 descending	H2 DOWN	momentary	DO21
Head 2 rotating	H2 TURN	alternate	DO23
Head 2 picking up	H2 VAC	alternate	DO25
Head 3 descending	H3 DOWN	momentary	DO40
Head 3 rotating	H3 TURN	alternate	DO42
Head 3 picking up	H3 VAC	alternate	DO44
Head 3 back light	DO(36)	alternate	DO36

CSM84VZ only

## SECTION 2 BREAKDOWN Diagnostics

This section describes how to pinpoint the cause of an error or problem with the CSM, and what to do about it. If an error occurs frequently it is wise to contact the PHILIPS service centre. Errors and problems are divided into three general categories, based on differences in screen displays.

- 1) Messages and errors detected in the system
- 2) Messages and errors in the program execution
- 3) Errors and problems that can be pinpointed by means of various symptoms

#### **1) Messages and errors detected in the system**

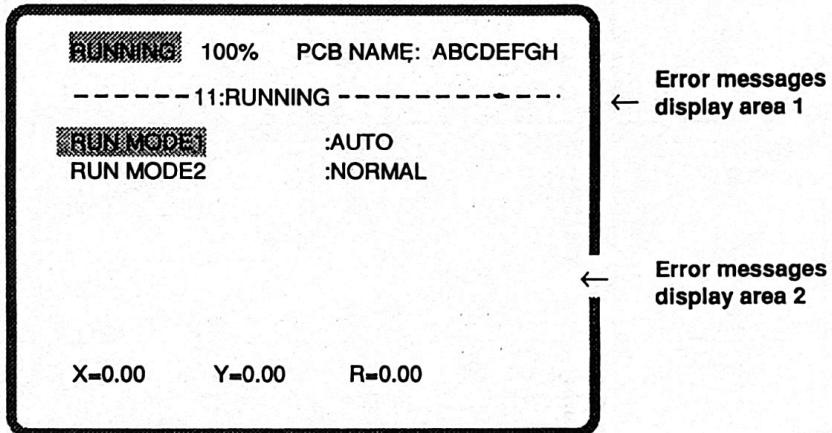
When the system detects an error, an error message is displayed in the Message Display Area 1 (see diagram below) of the CRT. If this happens, consult the message on the CRT and the tables on the following pages, to find the cause of the error and the way to correct it.

If a serious error occurs and the CPU in the controller stops operating, a red lamp lights. After eliminating the cause of the problem, turn the power supply off and then on again to clear the error. If other errors occur, a yellow lamp lights. Operation cannot be resumed until the ERROR CLEAR key has been pressed.

#### **2) Messages and errors during program execution**

If an error is detected during program detection, an error message is displayed in the Message Display Area 2 (see diagram below) of the CRT. If this happens, consult the message on the CRT and the tables on the following pages, to find the cause of the error and the way to correct it.

When an error occurs during program execution, a yellow lamp lights, and operation cannot be resumed until the ERROR CLEAR key has been pressed.

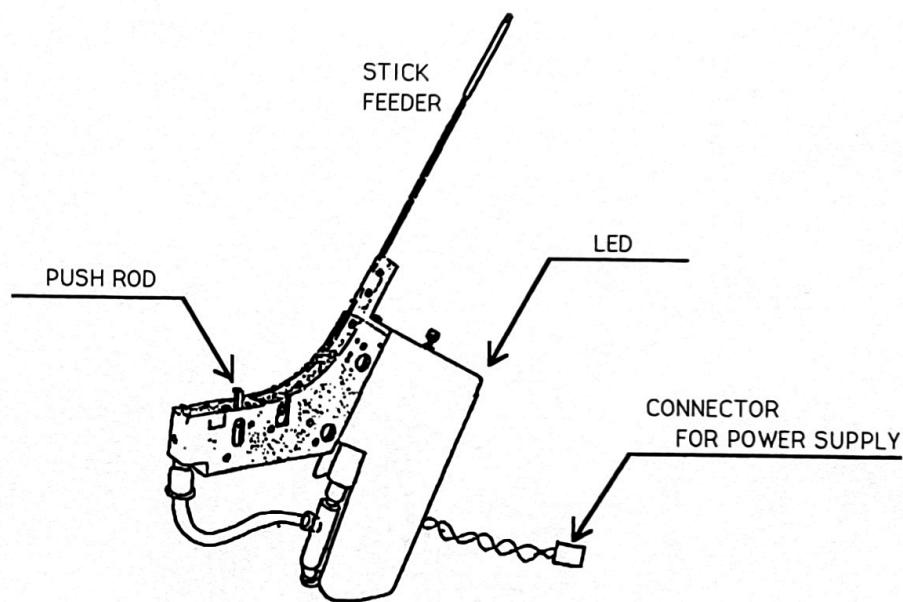


#### **3) Errors and problems that can be pinpointed by means of various symptoms**

In addition to 1) and 2), there are errors and problems which are not displayed by means of error lamps or the CRT screen. These are classified into errors related to the XY arm, the head and parts loading errors, conveyor-related errors, and others. In most cases these errors need assistance from trained service engineers. So call local Philips service centre.

**6) Stick feeders ( see fig. 5-11)**

Check the LED light to go on when the push-rod is pushed with the electric power connected.



*Fig 5-11*

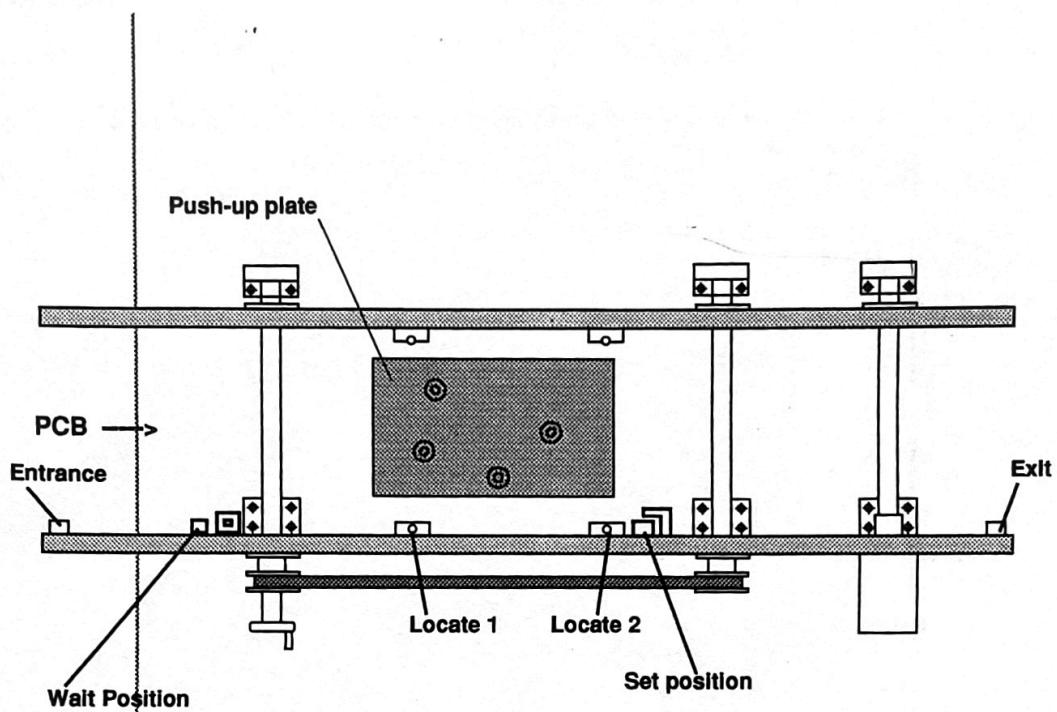
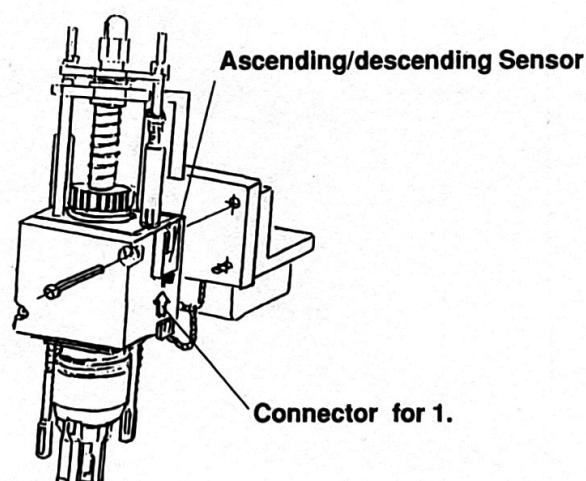


Fig 5-9



Sensor on head

Fig 5-10

**2) Conveyor section**

Make sure to inspection with actual PCB . --- See Fig 5-9

Position to be sensed	Abbreviation	DI Port	Connection
Entrance of main conveyor	ENTRANCE	DI23	a
Working position	SET POSITION	DI24	a
Exit of main conveyor	EXIT	DI25	a
positioning pin up 1	LOCATE 1	DI26	a
positioning pin up 2	LOCATE 2	DI27	a
PCB Push up	PUSHUP	DI42	a
waiting	WAIT POSITION	DI41	a

**3) Head**

--- See Fig 5-10

Items to be sensed	Name	DI port	Connection
Head 1 descending end	LS lower 1	DI30	b
Head 1 90° rotation	LS turn 1	DI32	b
Head 1 vacuum SW	PS 1	DI34	a
Head 2 descending end	LS lower 2	DI31	b
Head 2 90° rotation	LS turn 2	DI33	b
Head 2 vacuum SW	PS 2	DI35	a
Head 3 descending end	LS lower 3	DI60	b
Head 3 90° rotation	LS turn 3	DI62	b
Head 3 vacuum SW	PS 3	DI64	a

**(3) Wiring**

Check wiring on bad connections, dent, enforced bending.

**(4) CRT,Warning-Light****1) CRT****Inspection items**

Make sure for CRT to display normally when power is switched on

Make sure that all characters are within the display

Check display brightness.

**2) Warning-Lights**

Check light-bulb not be burnt.

Warning-Lamp display is as follows :

RED	CPU NG
YELLOW	ERROR
GREEN	RUN

## ERROR MESSAGES

No.	Message	Meaning	Cause	Solution
127	CK CMU CABLE OR EXT. UNIT STATUS	LCS is not operating correctly (RS232C).	Cable is not connected to EXT port. Communications cable is not connected on LCS side. Power to LCS is not turned on.	1. Connect communications cable to EXT terminal of mounter to send signals to LCS. 2. Connect communications cable from CSM to LCS host terminal. 3. Check power supply of LCS.
129	PARITY ERR	Communication parity error occurred during communication (RS232C).	Inconsistent communications parameters Environment	1. Set communications parameters correctly. 2. Take steps to eliminate noise.
141	CANNOT EXECUTE ROBOT IS RUNNING	Since mounter is running, online instructions cannot be executed (RS232C).	Online instruction was input which cannot be executed while mounter is running.	1. Send online instructions after stopping mounter.
143	NO RETURN CODE	When online instruction is input to communications port, no C/R (0DH) code is attached (RS232C).	Instruction exceeding 40 characters was input. Control code (00H-1FH) other than C/R code was input.	1. Input instructions of 40 characters or less. 2. Set CR/CRLF parameter correctly. 3. Input with correct format.
144	NO START CODE (@)	No start code exists for online instruction (RS232C).	Online instruction was input without being preceded by @ (40H).	1. Input with correct format.
145	BUFFER OVERFLOW	Reception buffer of communications port has overflowed (RS232C).	Busy control for XON/XOFF and DTR is not being used. Transmission speed is too rapid.	1. Carry out busy control. 2. If busy control is impossible, lower transmission speed by lowering baud rate, etc.
150	STOP EXECUTED	Work program execution has ended (not an error).		
203	MEMORY DESTROYED	Voltage of battery to back up CPU board is not appropriate value.	Drop in voltage of battery for CPU board backup Accidental loss of partial or entire memory contents	1. Replace lithium battery. 2. Initialize memory and recover originally backed up memory contents.
205	BATTERY NO GOOD	Voltage of battery to back up CPU board is not appropriate value.	Lithium battery lifetime has expired (approx. 10 years have passed).	1. Replace lithium battery. 2. Initialize memory and recover originally backed up memory contents.
206	CANNOT EDIT	An attempt was made to edit a parameter which cannot be input.	An attempt was made to edit a parameter which cannot be input.	1. Interrupt editing of that parameter.
210	SYSTEM ERROR 10	Internal system error	System processing impossible	1. Reset program currently in execution. 2. Initialize memory and recover originally backed up memory contents.
212	SYSTEM ERROR 30	Internal system error	System processing impossible	Same as above.

No.	Message	Meaning	Cause	Solution
74	UNDEFINED PCB NAME	There is no PCB name, so operation cannot be carried out.	Run Mode was entered without specifying PCB name.	1. Input PCB name in Data Input mode.
75	TOP CHARACTER MUST BE A-Z	First character of PCB name must be a letter.	Character other than letter (A-Z) was entered as first character in PCB name.	1. Begin PCB name with a letter.
76	INPUT ORIGIN POINT	PCB origin and PCB block origin have not been input.	An attempt was made to edit loading data without input PCB origin and block origin.	1. First set PCB origin and PCB block origin.
77	PLEASE TEACH 2ND POINT	Teach 2nd of two points in 2-Point Teach mode.		1. Teach 2nd point so that target position is centered between two points.
79	OPERATION INTERRUPTED	Work program execution has been interrupted.	A different mode was entered during automatic operation, so LCS is not operating correctly.	1. To stop PCB loading, return to Run Mode and then reset. 2. Confirm LCS operation.
101	FORMAT ERR	Error in input format	Erroneous input of user data ENTER key was pressed without input anything.	1. Input again, with correct format.
102	DATA ERR	Error in numerical format	Erroneous numeric input	1. Input again, with correct format.
117	OVERFLOW	Overflow occurred in operation.	Error in input user data	1. Input again, with correct format.
119	MEMORY FULL	User data memory area is full.	An attempt was made to use memory when entire memory is already in use.	1. Back up unnecessary data and then delete it.
123	SOFT LIMIT OVER	— axis has exceeded soft limit in operation.	Arm exceeded soft limit in operation. Erroneous input of PCB loading or feeder picking position	1. Adjust coordinates of next point to be moved to. 2. Adjust so that first position to be moved to (standby, picking, loading, discard) is within movable range. 3. Confirm value set for soft limit.
125	COMMUNICATION ERR	Abnormality occurred during communication (RS232C).	Inconsistent communication parameters Environment	1. Set communication parameters correctly. 2. Take steps to eliminate noise.
126	CMU IS NOT READY	CSM is in Ready to Send status (RS232C).	Communications cable is not connected to external equipment. External equipment is in off line status. Reception speed of external equipment is too slow.	1. Set external equipment to Reception Ready (CTS and DSR ON on mounter side, or send XON code to mounter).

## ERROR MESSAGES

No.	Message	Meaning	Cause	Solution
20	NUMBER ERR	Inappropriate number has been input.	Incorrect numeric input	1. Enter correct number.
25	PLEASE WAIT A MOMENT	Please wait a moment (not an error)		1. Wait for a short time.
29	EMG. STOP ON	Emergency Stop input signal was input.	Emergency Stop button input has been received (DI(10) is 0).	1. Cancel Emergency Stop button lock and turn power off and on again.
30	COVER OPEN OR LOW AIR PRESSURE !	Interlock signal relating to cover and safety-switches or air has been input. (Air pressure is lower than sensor-set value (4 kgf/cm <sup>2</sup> )	Safety cover is open and limit switch input has been received. Source air pressure has dropped below rated value.	1. Check cover switch. 2. Check air pressure of regulator.
32	ORIGIN INCOMPLETE	Return to mechanical origin has not been carried out.	After turning on power, origin return was not carried out. Circuit for detecting drop in power voltage has reset CPU.	1. Press ORIGIN function key on main menu. 2. Reinforce power supply.
34	_ BAD POSITION	Origin of __ axis cannot be detected.	Defective or disconnected origin sensor for __ axis	1. Check __ axis sensor.
35	DRIFT CHECK	Driver drift check in progress (not an error)	SHIFT + MAIN MENU was pressed on main menu.	1. Press appropriate key to stop operation.
37	HEAD LOWER POS. SENSOR OFF !	Descent end sensor of head is off, so arm cannot move.	Head is descending. Defective or disconnected descent end sensor for head Non-existent head was specified in mechanical configuration.	1. Wait a moment. 2. Check sensor. 3. Confirm settings for mechanical configuration.
38	NOZZLE ST. IN UPPER POSITION !	Nozzle station is ascending, so arm cannot move.	Nozzle station is ascending. Defective ascent end sensor for nozzle station Non-existent station was specified in mechanical configuration.	1. Wait a moment. 2. Check sensor. 3. Confirm settings for mechanical configuration.
63	WARNING : OVERFLOW	Remaining memory space for production control data is running out (not an error).	Production control data has exceeded 90% of maximum value.	1. Reset production control data at appropriate point.

## 2-1 Messages and Errors detected in the System

No.	Message	Meaning	Cause	Solution
4	PROGRAM DESTROYED	Error occurred in system program.	Accidental loss of partial or entire memory contents	<ol style="list-style-type: none"> <li>Turn power off and on again, and re-do from beginning.</li> <li>Initialize memory and restore memory backed up beforehand.</li> <li>If problem occurs frequently, contact Phillips service centre.</li> </ol>
5	POINT DESTROYED	Error occurred in user data.	Power was turned off during data editing and automatic operation. Accidental loss of partial or entire memory contents	<ol style="list-style-type: none"> <li>Turn power off and on again, and re-do from beginning.</li> <li>Initialize memory and restore memory backed up beforehand.</li> <li>If problem occurs frequently, contact Phillips service centre.</li> </ol>
6	SECOND LIMIT OVER	The CSM exceeded secondary limit in operation.	Defective setting for soft limit	<ol style="list-style-type: none"> <li>Turn off power and free arm manually from secondary limit. Then turn on power again.</li> <li>Set soft limit within secondary limit.</li> </ol>
7	MOTOR DRIVER ERR	Abnormality detected in servo driver of __ axis.	Overload on __ axis motor Overcurrent to __ axis motor Faulty adjustment of __ axis motor driver	<ol style="list-style-type: none"> <li>Check abnormality display LED on motor driver PCB for __ axis and determine whether problem is overload or overcurrent.</li> <li>Check for mechanical overload on motor, motor wires, harness for motor, driver exterior.</li> <li>If problem occurs frequently, contact Phillips service centre.</li> </ol>
10	CANNOT EXECUTE	Instruction cannot be executed.	An attempt was made to execute an online instruction that cannot be executed. An attempt was made to execute an instruction that cannot be executed.	<ol style="list-style-type: none"> <li>Correct or delete online instruction which cannot be executed.</li> <li>If problem occurs frequently, contact Phillips service centre.</li> </ol>
11	RUNNING	Displayed while work program is running (not an error)	RUN key was pressed.	
14	FAN STOPPED	Controller cooling fan has stopped.	Controller cooling fan stopped.	<ol style="list-style-type: none"> <li>Check exterior, dust or dirt, operation of cooling fan.</li> </ol>
15	TEMP. ALARM	Temperature sensor in controller has detected abnormality.	Controller cooling fan abnormality Ambient temperature has risen.	<ol style="list-style-type: none"> <li>Check exterior, dust or dirt, operation of cooling fan.</li> <li>Lower ambient temperature.</li> </ol>
16	WATCH-DOG	CPU watchdog function has detected abnormality.	Accident such as electrical interference with intensity (power supply fluctuation noise) Mismatch between system and CPU	<ol style="list-style-type: none"> <li>Check grounding wire and power supply cable.</li> <li>Turn power off and on again, and check conditions.</li> <li>If problem occurs frequently, contact Phillips service centre.</li> </ol>

## ERROR MESSAGES

No.	Message	Meaning	Cause	Solution
8	NOZZLE STATION ERR FAILED TO CHANGE NOZZLE NOZZLE CLAMP ENABLE	Nozzle was not correctly replaced.	1) Offset in nozzle replacement position 2) Abnormality in nozzle replacement function	1) Offset in nozzle replacement position 2) Abnormality in nozzle replacement function
9	VISION FILE (BAD MARK) ERR	Vision file mode is not set to Binary, or fixed camera is being used.	Error in data input	Input data again (DATA INPUT -> PCB -> BAD MARK) or input vision file again.
10	PICK UP ERR FAILED TO FIND COMPONENT	Frequent part picking errors are occurring. Check condition of parts.	1) Parts have run out. 2) Faulty adjustment or breakdown of another head or feeder	1) Replenish parts. 2) See page 4-2-20.
11	VISION ERR IMAGE IS NOT GOOD	Parts are not being correctly vision processed.	1) Error in vision file of relevant part 2) Error in setting of vision file number. 3) Feet of parts are bent. 4) Number or pitch of parts feet is different from setting. 5) Part has moved out of field of vision. 6) Nozzle is detected. 7) Illumination lamp has deteriorated or illumination is inappropriate. 8) Defective calibration conditions	1) Correct vision file. 2) Set correct vision file number. 3) Use parts with no bent feet, or consult manufacturer of parts. 4) Use parts according to specifications. 5) Use parts that conform to the field of vision of the fixed camera, or slide the fixed camera until the part is centered in the field of vision. 6) Correct the picking point. 7) Replace the illumination lamp. 8) Recalibrate the vision file.
12	VISION ERR MARK SHAPE IS NOT GOOD	The specified size of mark cannot be detected.	1) Marks are rusted or otherwise difficult to detect. 2) Data for diameter or periphery of mark is wrong. 3) Error in setting of vision file number. 4) Illumination lamp has deteriorated or illumination is inappropriate. 5) Defective calibration conditions	1) Clean off rust, etc. so mark is easier to detect, or change mark itself. 2) Input data again. 3) Set correct vision file number. 4) Replace illumination lamp. 5) recalibrate the vision file.
13	FIDUCIAL ERR FAILED TO FIND MARK	The specified size of mark cannot be detected.	1) Marks are rusted or otherwise difficult to detect. 2) Data for diameter or periphery of mark is wrong. 3) Poor sensitivity for beam sensor	1) Clean off rust, etc. so mark is easier to detect, or change mark itself. 2) Input data again. 3) Adjust sensor sensitivity.

## (2) Error Messages During Program Execution (mounting or dispensing in progress)

No.	Message	Meaning	Cause	Solution
1	PCB ORIGIN DATA ERR	No. 0 or No. 1 origin data is undefined.	Data input was forgotten.	Input origin data. (DATA INPUT -> PCB -> ORIGIN)
2	PCB FIXING ERR PUSH UP SENSOR NO GOOD	Pushup feeder sensor does not go on and off properly.	1) Sensor breakdown 2) When pushup ascends, it catches on something partway up. 3) Faulty sensor position	1) Replace sensor. 2) Free the caught pushup and make sure it moves smoothly to the ascent end. 3) Change sensor position.
3	PCB FIXING ERR LOCATE PIN NO GOOD	Locating pin sensor does not go on and off properly.	1) Sensor breakdown 2) Locating pin has not been fitted into positioning hole in PCB. 3) An attempt was made to use pin reference positioning with edge-reference PCBs. 4) Faulty sensor position	1) Replace sensor. 2) Change position of locating pin or main stopper. 3) Change setting data. 4) Change sensor position.
4	PCB TRANSPORTING ERR REMOVE PCB	Error occurred during PCB transport. Please remove PCB.	1) PCB is not transported to specified location within a given amount of time. 2) PCB Request has been received from subsequent machine, and PCB was transported, but was not received by subsequent machine. (Defective operation or stopping of subsequent machine, or timing of subsequent machine is off.) 3) PCBs are present at both conveyor entrance and sub-stopper section.	1) Adjust conveyor width to prevent PCB from catching or dropping during transport. 2, 3) Compare conditions of PCB transport between this unit and previous/subsequent machines, and improve timing and/or system.
5	PCB DATA ERR	Error in PCB data	Erroneous creation of data	Use PIC program to check and then input data again.
6	TRAY HANDLING ERR	Error occurred in LCS or triple-tray feeder.	1) Tray pallet is catching on something. 2) Abnormality in sensor detecting tray pallet 3) Traverser is not moving smoothly. 4) Abnormal sensor in traverser section 5) Tray cannot be sent because of abnormality in tray unit itself.	1) Adjust width of guides in tray pallet transport section. 2) Replace sensor or change position. 3) Replace traverser or adjust speed controller. 4) Replace sensor or change position. 5) Check for abnormalities in tray unit and correct them. (See separate manual or chapter on trays.)
7	NOZZLE STATION ERR MISSSED SOME NOZZLE	There is a station where the nozzle is not reacting to the sensor.	1) There is no nozzle in the station. 2) Sensor cannot detect nozzle.	1) Insert nozzle in station. 2) Replace sensor or adjust sensor position.

## ERROR MESSAGES

## 2-2 Messages and Errors in the Program Execution

## (1) Messages During Program Execution (during mounting or dispensing)

No.	Message	Meaning
1	NG -> RETRY	Error has occurred; re-try in progress.
2	NG -> PLS	Error has occurred. Take steps to correct problem in response to displayed cause, and then press ERR CLEAR and RUN.
3	ROM1=ROM-00SM-E55	Display of ROM1 version
4	ASSURE SAFE AND PUSH RUN KEY I	To start LCS, check safety on LCS side and press RUN.
5	COMPLETED	Mounting operation has ended.
6	PCB COUNTER IS FULL WAITING N54 (RESET)	Specified maximum number of PCB's has been reached. System is waiting for reset signal from unloader. (DATA INPUT → SYSTEM → PARAMETER → COUNTER → MAX. NO. OF PCB's)
7	TRANSPORTING PCB	PCBs currently being loaded
8	PCB FIDUCIAL	PCB fiducial operation currently running
9	PCB TOTAL	Display of current PCB count
10	WAITING N22 (REQUEST)	In order to eject PCB's, system is waiting for PCB Request signal from downward flow side of machine.
11	WAITING P&P TO START	Start instruction has been sent to LCS. System is waiting for LCS to start.
12	INITIALIZE	Data is being checked and initialized.
13	WAITING NEXT PCB	System is waiting for next PCB to arrive at entrance.
14	DATA COMMUNICATION	Data is being sent to LCS.
15	DOT DISPENSE	Dispense operation currently in progress
16	BAD MARK SENSING	Bad mark detection operation currently in progress
17	PRE. DISFENSE	Pre-dispense operation currently in progress
18	BLOCK FIDUCIAL	Block fiducial in progress
19	POINT FIDUCIAL	Point fiducial in progress
20	MOUNT DATA NO.	No. ___ mounter data being executed
21	LINE DISPENSE	Line dispense operation currently in progress
22	TRAY EMPTY	The last row & column was accessed on the tray. The orange warning light is on. The operator must refill the empty tray.

## ERROR MESSAGES

	MESSAGE	Meaning	Cause	Solution
213	SYSTEM ERROR 40	Internal system error	System processing impossible	1. Reset program currently in execution. 2. Initialize memory and recover originally backed up memory contents.
214	SYSTEM ERROR 50	Internal system error	System processing impossible	Same as above
215	SYSTEM ERROR 60	Internal system error	System processing impossible	Same as above
242	_ ENCODER ZERO NO GOOD	0 phase signal of encoder for __ axis has not been input, so origin return is not possible.	Disconnected 0 phase of __ axis encoder Defective __ axis encoder	1. Check cable of __ axis encoder. 2. Replace __ axis servo motor. 3. If problem occurs frequently, contact sales outlet or manufacturer.
243	_ DRIFT ADJUSTMENT NO GOOD	Poor adjustment of __ axis drift inhibits correct positioning.	Poor adjustment of __ axis drift	1. Readjust drift of __ axis. 2. If problem occurs frequently, contact sales outlet or manufacturer.
250	DIP SWITCH ERR	Error in DIP switch settings	Error in mounter model setting or axis specification setting	1. If problem occurs frequently, contact sales outlet or manufacturer.
252	_ FEED BACK ERR	Incorrect feedback for __ axis	Defective encoder signal for __ axis Defective __ axis motor Mechanical load on __ axis	1. Turn on power and check conditions. 2. Check encoder signal harness and connector for __ axis. 3. Check __ axis encoder. 4. Check __ axis motor. 5. Check __ axis mechanical system (deterioration, deformation, wearing away, sticking, etc.). 6. If problem occurs frequently, contact sales outlet or manufacturer.
254	ROBOT DIS- CONNECTION	No motor connection, so arm cannot move.	An attempt was made to move the arm with DIP switches set for no motor connection.	1. To move arm, change settings of DIP switches 1-7.

## ERROR MESSAGES

No.	Message <PIC>	Meaning	Solution
25	HEAD CAN NOT TRAVEL TO PARTS NO. HEAD NO.	When specified head goes to get specified part, it exceeds soft limit, inhibiting picking.	Check whether wrong head is selected, part position (X, Y data) is accurate, and tray size and pitch are correct.
26	ILLEGAL HEAD NO. HEAD NO.	Specified head does not exist.	For specified head number, always select one of existing heads (1, 2, 3).
27	ILLEGAL POINT FIDUCIAL DATA NO. FIDUCIAL DATA NO.	Fiducial data number is not within range of 1-7.	Always select point fiducial number from between 1-7.
28	VISION FILE FOR POINT FIDUCIAL VFILE UNDEFINED	Vision file for point fiducial has not been defined.	Create point fiducial vision file by copying. (DATA INPUT → PCB → MOUNT)
29	HEAD IS NOT FOR MOUNT HEAD NO.	Specified head is not used for mounting.	Input mounting head number that fits application at hand.
30	NO <MOUNT> TYPE DATA SKIP <MOUNT> JOB	Since there is no mount data, set to "Skip" on Run Mode screen.	Create mount data, or set to "Skip" on operation screen.
31	NO <DISPENSE> DATA SKIP <DISPENSE> JOB	Since there is no dispense data, set to "Skip" on Run mode screen.	Create dispense data, or set to "Skip" on operation screen.
32	HEAD ISN'T FOR M.CENT HEAD NO.	An attempt was made to carry out mechanical alignment, but head is not mechanical alignment head.	When using fixed centering unit, always specify precision head or QFP head.
33	ILLEGAL M.CENTERING NO. M.CENTERING NO.	Specified mechanical alignment number is not 1 or 2.	Specify No. 1 or No. 2 for fixed centering unit, depending on size of parts being loaded.
34	NO <LINE DISPENSE> DATA SKIP <LINE DISPENSE> JOB	Since there is no line dispense data, set to "Skip" on Run mode screen.	Create line dispense data, or set to "Skip" on operation screen.
35	SUB DATA ISN'T DEFINED DATA NO. SUB NO.	Line dispense sub data being read has not been defined.	Create line dispense data, or use different data.

No.	Message <PIC>	Meaning	Solution
13	ILLEGAL CAMERA NO. IN VIS. FILE NO. CAMERA NO.	Vision file mode does not match camera number.	In vision file, use camera 1 for fiducial (FID) and bad mark (BINARY) modes, and use cameras 2 and 3 for other modes.
14	ILLEGAL MODE IN VISION FILE NO.	Abnormal vision file mode. Bad mark mode is BINARY, fiducial mode is FID, and parts mode is any other mode.	Input correct number for vision file being used.
15	HEAD IS NOT FOR VISION HEAD NO. VISION NO.	An attempt was made to carry out vision recognition with a head other than the vision head.	Input data again so that vision recognition will be done with vision head (No. 3 head).
16	ILLEGAL FEEDER TYPE	Data for type of feeder is erroneous.	Correctly set type of feeder to be used.
17	NO FIDUCIAL DATA FIDUCIAL DATA NO.	Specified fiducial data is undefined.	Create fiducial data.
18	ILLEGAL MODE IN VISION FILE NO.	Mode of vision file for fiducial is not FID.	Fiducial mode is contained in vision file; correct to FID.
19	VISION FILE FOR ORIGIN FIDUCIAL VFILE UNDEFINED	Vision file specified by fiducial No. 0 data does not exist.	Correct vision file to fiducial value, or specify different fiducial file for No. 0 data of fiducial.
20	VISION FILE FOR ORIGIN FIDUCIAL <MODE> IN VISION FILE IS NOT GOOD	Mode of vision file specified by fiducial No. 0 data is not set to FID.	Fiducial mode is contained in vision file; correct to FID.
21	ILLEGAL PARTS NO.	Part number is not within range of 1-120.	Always set number of part to be loaded between 1 and 120.
22	ILLEGAL CHECK LEVEL	Part check level value is abnormal.	Value for vacuum sensor check level for part to be loaded must be set to either 0, 1, 2, or 3, whichever is correct.
23	PARTS DATA NOT DEFINED PARTS NO.	No data has been entered for specified part number.	Input data for specified part number, or specify different part number.
24	NO <PRE. DISPENSE> DATA SKIP <MOUNT> JOB	Since there is no pre-dispense data, set to "Skip" on Run mode screen.	Create pre-dispense data, or set to "Skip" on operation screen.

## ERROR MESSAGES

## (3) Error Messages During "PIC" Program Execution

After data has been created, the utility program called "PIC" is run. This program is extremely useful in detecting any errors in the data automatically.

No.	Message <PIC>	Meaning	Solution
1	NO.0 FIDUCIAL DATA IS NOT DEFINED. PLS. SKIP <ORIGIN FIDUCIAL>	No. 0 data for origin fiducial is undefined. On the operation screen, set origin fiducial to "Not Used".	On the operation screen, set origin fiducial to "Not Used", or, to use the function, set No. 0 data. (DATA INPUT -> PCB -> FIDUCIAL)
2	IN <CHECK>, <PASS>, SUB-STOPPER CAN NOT BE ACTIVATED	When Run Mode 2 is dry run or pass mode, sub-stopper cannot be used. On the operation screen, set sub-stopper to "Not Used".	On the operation screen, set sub-stopper to "Not Used".
3	<EDGE> IS NOT ON MACHINE PLS. USE ANOTHER	Although edge-type PCBs (optional) are not being mounted, securing method is set to "Edge Clamp".	On the operation screen, set Edge item ("Edge Clamp") to "Not Used".
4	ORIGIN DATA NO.0, NO1 IS NOT DEFINED	No. 0 or No. 1 data is undefined.	Input No. 0 or No. 1 of origin coordinate data. (DATA INPUT -> PCB -> ORIGIN)
5	ILLEGAL OPTIMIZE-DIGIT OPT-DIGIT	Optimization data is abnormal.	Check data created with optimization software, or correct the data.
6	ILLEGAL NOZZLE NO. NOZZLE NO.	Nozzle number is set to something other than 1, 2, or 3.	Select nozzle that fits part size, and input the correct number (1, 2, 3) for that nozzle.
7	TO SKIP ALL JOB, PLS. USE <PASS> IN <RUN MODE 2>	On the operation screen, all operations are set to "Skip". If there is no operation, set "Pass".	On the operation screen, set "Pass" when there is no operation.
8	VISION FILE FOR BAD-MARK VFILE UNDEFINED	Vision file specified in bad mark data does not exist.	Create vision file number specified in bad mark data.
9	VISION FILE FOR BAD-MARK <MODE> IN VISION FILE IS NOT GOOD	Vision file number specified in bad mark data is erroneous, or vision file data is erroneous.	Specify correct vision file number, or correct vision file data.
10	BECAUSE MACHINE DON'T HAVE CAMERA, BEAM-S., SKIP <BAD-MARK>	Since there is no vision or beam sensor, bad mark check cannot be carried out. On the Run Mode screen, set bad mark check to "Not Used".	On the operation screen, set bad mark to "Not Used".
11	BECAUSE MACHINE DON'T HAVE CAMERA, BEAM-S., SKIP <ORIGIN FIDUCIAL>	Since there is no vision or beam sensor, fiducial cannot be carried out. On the Run Mode screen, set fiducial to "Not Used".	On the operation screen, set fiducial to "Not Used".
12	ILLEGAL VISION FILE NO. VISION FILE NO.	Vision file number is not within range of 0-29.	Select number between 0-29 for specified vision file.

No.	Message	Meaning	Cause	Solution
14	VISION FILE (FIDUCIAL) ERR	Vision file mode is not FID, or fixed camera is being used.	Error in data setting	Input data again (DATA INPUT -> PCB -> FIDUCIAL)
15	COMP. POS. LIMIT OVER	An attempt was made to pick up parts with a head that cannot be used for that part.	Error in data setting	Check parts position data, tray pitch, matrix size, head number data.
16	VISION FILE (COMPONENT) ERR	Vision file mode is not parts mode, or fixed camera is being used.	Error in data setting	Input data again (DATA INPUT -> PCB -> MOUNT).
17	COMP. DISCARDING ERR	Parts are discarded erroneously, or vacuum sensor of head does not go off.	1) Part was discarded erroneously. 2) The vacuum sensor of the head sometimes goes on when there is no part.	1) Clean nozzle and jaws, or increase volume of air dispensed from tip of nozzle. 2) Readjust vacuum sensor of head.
18	MOUNT ERR FAILD TO MOUNT COMP. MOUNT DATA NO. HEAD NO. COMPONENT NO. SET POS. NO.	There are frequent errors in parts mounting. Check conditions of head and vacuum sensor.	Faulty adjustment of head, vacuum sensor, or PCB positioning	See adjustments.
19	M. CENTERING ERR COMPONENT DROP DOWN	A part has fallen onto fixed centering unit. Remove it.	1) Diameter of nozzle is too small for parts. 2) Generated negative pressure is too low.	1) Use nozzle the right size for parts. 2) Replace vacuum generator, or check for leaks in negative pressure line.
20	PREP. HEAD ERR FAILED TO MOUNT COMP.	Vacuum sensor of spare head does not go off.	Vacuum sensor does not go off.	Replace or readjust vacuum sensor.
21	PREP. HEAD ERR FAILED TO PICK UP COMP.	Parts are not picked up correctly by spare head.	Poor adjustment of spare head	Readjust.
22	PREP. HEAD ERR PREP. HEAD DATA ERR	Check data of spare head.	Wrong order of data	Input data again.

## ERROR MESSAGES

## (4) Other

No.	CONDITION	POSSIBLE CAUSE	COUNTERMEASURE
1	The power does not go on.	1. The power connector or cables are disconnected. 2. The non-fuse breaker is OFF. 3. The specified voltage is not being supplied. 4. A fuse is blown.	Check the power connector and cables. After discovering the source of the problem, turn the breaker on. Supply the indicated voltage. Replace the blown fuse.
2	The CRT screen display suddenly blanks out and then displays the same screen as when power is turned on (Program Mode is indicated). This naturally terminates arm operation.	1. Power has been interrupted 2. The system has detected a reduction in voltage to below 90% of the specified value and has reset.	Check the power voltage and capacity.
3	Operation panel keys are not effective.	1. The door to the connector connecting section is open. 2. The door switch is defective.	Close the door. Replace the switch.
4	For output, even though they are turned on, the solenoid and conveyor motors do not operate. (Can be checked with I/O monitor.)	1. Break in the signal cable or faulty connector contact. 2. Defective solenoid. 3. The motor circuit protector was opened. 4. Defective I/O output circuit.	1. Check the signal cable and connectors. 2. Replace the solenoid. 3. After finding the source of the problem, react the circuit protector. 4. Replace the CPU board and/or I/O board.

## (3) Conveyor

No.	CONDITION	POSSIBLE CAUSE	COUNTERMEASURE
1	The positioning pin or stopper does not operate.	1. Insufficient air pressure. 2. Speed controller is tightened too far. 3. Defective electromagnetic valve. 4. Defective I/O output circuit (when there is output to I/O monitor without electromagnetic value operation)	1. Check the air pressure (5 kg/cm). 2. Adjust the speed controller. 3. Replace the electromagnetic valve. 4. Replace the CPU board or extension I/O board.
2	The conveyor motor does not rotate.	1. The motor cable is disconnected, or connectors are not securely connected. 2. Defective motor. 3. The circuit protector is operating.	1. Replace the motor cable and connect all connectors securely. 2. Replace the motor. 3. Return the circuit protector after investigating the source of the problem.
3	The conveyor motor rotates, but the belt does not move.	1. The belt is slipping. 2. The conveyor is too narrow.	1a Tighten the belt tension. 1b Clean off any oil on the backside of the belt. 2. Adjust the conveyor width.
4	The conveyor motor does not rotate even when there is a PCB at the conveyor entrance.	1. Faulty operation of conveyor entrance sensor. 2. The PCB is ignored by the sensors because of incorrect sensitivity either of the sub stopper sensor or the main stopper sensor.	1. Adjust or replace the sensors. 2. Adjust the sensor sensitivity.
5	The PCB is not output after mounting.	Check input signal by the I/O monitor.	1. Check the GATE-IN signal from the succeeding equipment. 2. When a GATE-IN signal is not being used, short the NO.2 and NO.3 pins in the connector.
6	The PCB passes directly from the entrance to the exit.	Incorrect sensitivity adjustment of main stopper sensor.	Adjust the sensitivity.
7	There is a gap between the PCB upper surface and the PCB push plate.	Incorrect positioning pin height.	Adjust the height of the positioning pin.

## ERROR MESSAGES

## (2) Head (chapter4, section2)

No.	CONDITION	POSSIBLE CAUSE	COUNTERMEASURE
1	<p>During chip mounting in automatic operation, "RUNNING" is displayed on the CRT screen, but the green patrol-light stays on and operation stops. Press the Temporary Stop Key. The CRT screen displays either "WAIT HEAD UP" or "WAIT HEAD DOWN"</p>	<ol style="list-style-type: none"> <li>1. Air pressure is too low.</li> <li>2. Incorrect adjustment of the plate for lower edge detection on the head.</li> <li>3. Incorrect attachment of head lower edge sensor, or defective sensor.</li> <li>4. Disconnected sensor cable or incorrect connector contact.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the air pressure (5 kg/cm).</li> <li>2. Adjustment the plate.</li> <li>3. Adjust the sensor attach, or replace it.</li> <li>4. Repair or replace the cables and connectors.</li> </ol>
2	<p>During chip picking/placing in automatic operation, the CRT screen displays "RUNNING" but the green patrol-light stays lit and operation stops. Press the Temporary Stop key. The CRT displays "WAIT HEAD ROTATING"</p>	<ol style="list-style-type: none"> <li>1. Air pressure is too low.</li> <li>2. Incorrect adjustment of head location.</li> <li>3. Incorrect attachment of head location sensor, or defective sensor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the air pressure (5 kg/cm).</li> <li>2. Readjust.</li> <li>3. Adjust the sensor attachment, or replace the sensor.</li> </ol>
3	<p>the mounting position is within the dispensing position range, but the entire X or Y direction is shifted.</p>	<ol style="list-style-type: none"> <li>1. the position of the main stopper or front positioning pin has been changed, the range has shifted, or there is a lot of clattering in the range.</li> <li>2. Insufficient system setting.</li> </ol>	<ol style="list-style-type: none"> <li>1a Teach the PCB origin again.</li> <li>1b If there is a lot of clattering, replace the part.</li> <li>2. Re-specify the head offset amount (machine config. file).</li> </ol>
4	<p>the dispensing angle range and mounting angle have uniformly shifted.</p>	<p>For a pneumatic head:</p> <ol style="list-style-type: none"> <li>1. Insufficient rotation angle adjustment (90, stroke).</li> </ol> <p>For an R-DC head:</p> <ol style="list-style-type: none"> <li>2. Insufficient system setting.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the rotation stopper.</li> <li>2. Re-specify the head offset amount (machine config. file).</li> </ol>

## 2-3 Errors & Trouble Assumed on the basis of various symptoms

### (1) X-Y axis

No.	CONDITION	POSSIBLE CAUSE	COUNTERMEASURE
1	When the arm operates, unusual noise or vibration is generated from the arm section.	1. Something mechanical is loose or clattering. 2. Lubricating oil is insufficient in the guide and ballscrew. 3. Friction in the motor brush. 4. Incorrect adjustment, or breakdown, of the servo driver. 5. Incorrect setting of weight parameters.	1. Tighten each section more securely. 2. Supply lubricating oil. 3. Replace the brush. 4a Lower the speed loop gain (See the servo driver manual) 4b Replace the servo driver. 5. Re-specify the weight parameters. (The correct value is 7kg)
2	The point data position suddenly shifts.	1. A mechanical position error was generated by something colliding with the arm or head section. 2. Because of incorrect machine reference adjustment, a position error 1 Lead length (20mm) was generated. 3. The PCB positioning unit shifted (positioning pin, main stopper), or was not fixed securely enough.	1. Create the point data again. If the position error was caused by the motor rotation direction, it can be corrected by input the incorrect number of pulses to the origin shift parameters. 2. Adjust the machine reference amount. 3a Teach the PCB origin again. 3b Teach Locate Pin XY and PCB corner XY data.
3	During operation, the point data position shifts, little by little.	When the origin can be retrieved by redoing "return to origin" 1. Defective encoder 2. Mis-operation because of noise. When the erroneous positioning is not corrected even by redoing the "return to origin" 3. Mechanical drift or looseness.	1. Replace the motor. 2a Check the grounding resistance of the motor case. If it is not below 0.1 Ohms, Check the connections of the encoder cable shield wire. 2b If welding or electrical equipment which generates electrical noise is being operated nearby, move it to another location. If relocation is impossible, at least separate the power source as much as possible. 3. Tighten each section securely.
4	When power is turned on, the arm operates at high speed.	1. After replacing the ROM, parameters were destroyed because the power was turned back on immediately.	When replacing the ROM, before turning on the power, be sure to set DIP switches #1-NO.7 to OFF on the CPU board (servo off). When power is turned on, first initialize the parameters. Then, when power is turned off, return DIP switch #1 to its original position. (See the manual for ROM replacement.)
5	The arm moves in the + direction even if a "return to origin" is performed from a point other than the origin.(X,Y shared axis)	1. Disconnection of origin sensor 2. Defective origin sensor	1. Repair the cable. 2. Replace the sensor.

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