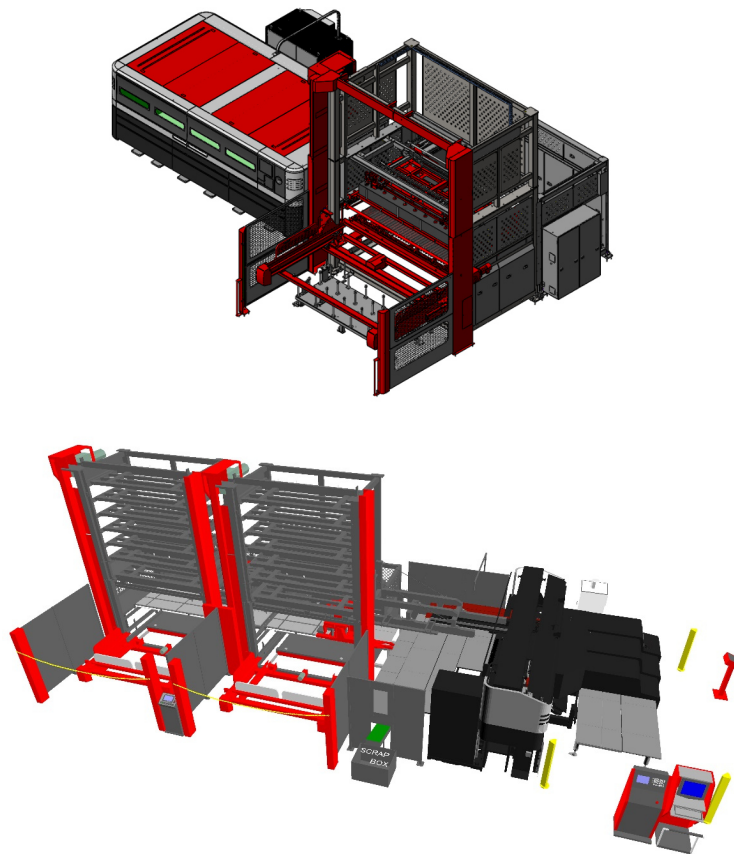


# Automation System Safety Guide

(For employers and employees)



This safety guide is an English translation of Japanese safety guide based on Japanese laws and regulations.  
Please comply with your country's laws and regulations if you are outside of Japan.



First edition  
September 2018

# Preface

This safety guide provides employers and employees with important safety information they should know when they purchase AMADA automation systems (line equipment).

Safety information for using line equipment is also available in the operator's manuals of line equipment and the warning labels affixed to the line equipment. Before you use the machine, fully understand all of these pieces of safety information.

Read the safety guides, "Turret Punch Press Safety Guide" and "Laser Cutting Machine Safety Guide" together.

Since this safety guide contains information on the residual risks of the machine, we advise you to fully understand the hazards involved in installation, setup of the worksheets, operation, inspection, cleaning, maintenance, etc. and carry out the risk reduction activities and provide safety and health education for workers according to the environment of your shop and the usage of the machine by the responsibility of the employer.

Safety measures against the hazards involved in machines are the responsibility of the employer under the Industrial Safety and Health Act. (Refer to "Overall management responsibilities" on the next page).

For risk reduction procedures by the employer, etc., refer to "Guidelines for the Comprehensive Safety Standards of Machinery" published by the Ministry of Health, Labour and Welfare (LSB Notification No. 0731001, revised on July 31, 2007).

This guideline can be searched from "Laws, Regulations and Notifications" of Japan Industrial Safety & Health Association <http://www.jaish.gr.jp/>.

When you retrofit safeguarding devices to your already installed machine, you may have to modify the machine and its controls. When you study what safeguarding devices to adopt, please contact AMADA.

# 1. Overall management responsibilities

The Industrial Safety and Health Act (hereinafter referred to as Act) and Ordinance on Industrial Safety and Health (hereinafter referred to as Ordinance) mainly impose the following duties on employers who have their workers use line equipment, in order to reduce industrial accidents.

## **(1) Measures to prevent hazards by employer's responsibility**

- Take necessary measures to prevent hazards to the workers of the line equipment.

(Article 20 of Act)

- When the stroke ends (travel ends) of the line equipment are liable to cause hazards to workers, take necessary measures to prevent the hazards. (Article 108-2 of Ordinance, enforced from July 1, 2011)

In order to prevent crushing and collision of the body with moving lifter, loader, unloader, pallet or processing machine, install a fence, light curtain, auxiliary table, and so on.

## **(2) Investigating hazardousness and harmfulness**

- Investigate the hazardousness and harmfulness of tasks and duties (or assess the risks of tasks and duties). Also, make efforts to take necessary measures to prevent hazards to workers and prevent their physical disorders. (Article 28-2 of Act)

For data concerning residual risks peculiar to specific machines and required to perform risk assessment, contact AMADA.

## **(3) Responsible work manager**

- To ensure the safety of workers and adhere strictly to the matters stipulated by laws and regulations, assign a responsible line equipment manager.

- When not using the line equipment, remove the keys from the MAINTENANCE keyswitches of the processing machine and line equipment, and the responsible line equipment manager must keep the key.

## **(4) Conducting safety and health education**

- Conduct safety and health education to workers who operate the line equipment for the first time (Article 35 of Ordinance)

- Allow only the workers who have received the safety and health education and the education how to operate the machine to operate and maintain the line equipment.

## **(5) Inspecting before start of day's work**

- Inspect the machine before the start of the day's work. (Article 136 of Ordinance)

- Try to find equipment failures and faults as soon as possible. If a problem is found, repair it or take any other necessary measure to prevent an accident.

- Make sure that the safety fences and various covers are installed in the specified positions.

- Check that the safeguarding devices, plug switches, various interlocks operate properly.

**(6) Preventing malfunction or failure of medical devices**

- Do not allow people wearing a cardiac pacemaker or other implanted medical devices access to the line equipment. Medical devices may malfunction or fail near the line equipment.

**(7) Precautions concerning clothing during operation**

- Do not operate the line equipment while wearing loose clothing and ornaments. They may be snagged or caught in the component units of line equipment or the processing machine.

- Wear personal protective equipment as required, such as a safety hat, safety goggles, safety shoes, ear plugs, and gloves.

## 2. Observances to use machines safely

### (1) Do not modify safeguarding devices.

- Do not modify the component units and control circuits of the line. Doing so will not only cause the failure or breakage of the line equipment, but also cause the improper operation of the line.

### (2) Do not disable any interlock

- Do not operate line equipment by removing or disabling various interlocks. Otherwise, serious accident may occur.

### (3) Do not operate line equipment with its covers removed.

- Do not remove safety fences, light curtains, and covers and do not change their installation positions.

### (4) Do not use line equipment beyond specified loading mass.

- Loading worksheets beyond the specified loading mass may cause a failure or damage of line equipment.

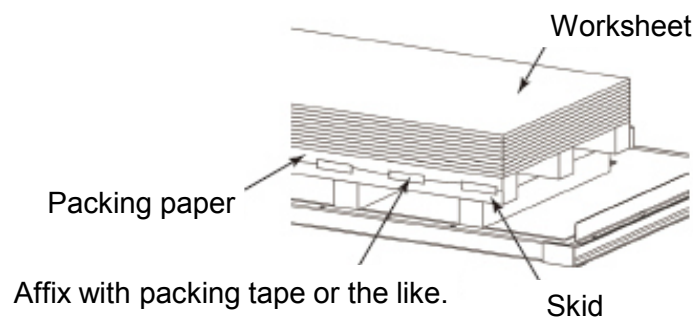
Also, it may cause a collapse of the load, causing danger to workers.

### (5) Precautions when using packing materials

- In the case of a line equipment that automatically picks up a worksheet and feeds it to the processing machine, remove the packing paper on the lower side of the worksheet loaded on the skid of the pallet or affix it to the skid with packing tape or the like so as not to stick to the worksheet.

If a worksheet with packaging paper sticking to it is laser-cut, a fire may occur.

Also, not only the laser cutting machine but each of line equipment may cause malfunction.



## (6) Precautions during maintenance

- If you start the line equipment and processing machine without noticing a maintenance worker in a difficult-to-see place inside the line, the line equipment may suddenly move and pinch the maintenance worker. Post a sign to notify other workers that you are performing maintenance.
- If a MAINTENANCE keyswitch is furnished on the control panel, switch it to the "O" side and carry its key when performing maintenance.
- If a plug switch is furnished on the safety fence, carry the plug switch when performing maintenance.

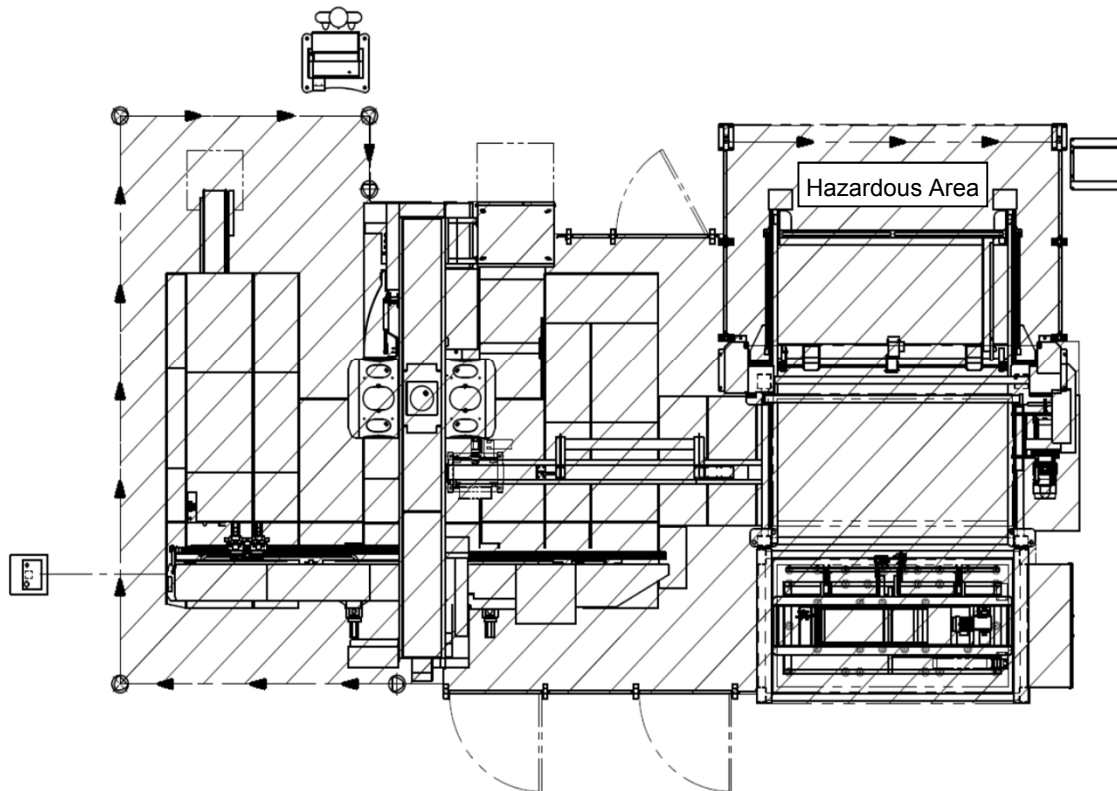


- When compressed air is supplied to the line equipment, the line equipment may start to move unexpectedly and pinch other workers. Lock out the residual pressure relief valve.
- If you touch live parts, you may get electric shock. Turn the circuit breaker switch to OFF and lock it out.



### 3. Retrofitting safety measures to already delivered line equipment

In order to prevent workers from entering hazardous area during operation of the line equipment (peripheral equipment), getting pinched in or colliding with the processing machine or peripheral equipment, AMADA has currently standardized the installation of safety fences and light curtains. Do not enter this hazardous area during operation of the peripheral equipment. When entering the hazardous area, stop the peripheral equipment, remove the MAINTENANCE key or plug switch, and carry it.



AMADA can retrofit hazard prevention measures such as addition of light curtains to processing machine with peripheral equipment, addition of safety fences between processing machine and peripheral equipment, addition of light curtain to the safety fence at the worksheet store/retrieve section, etc., taking account of the customer's factory layout and already delivered peripheral equipment.

(Refer to P7 to P9 for reference.)

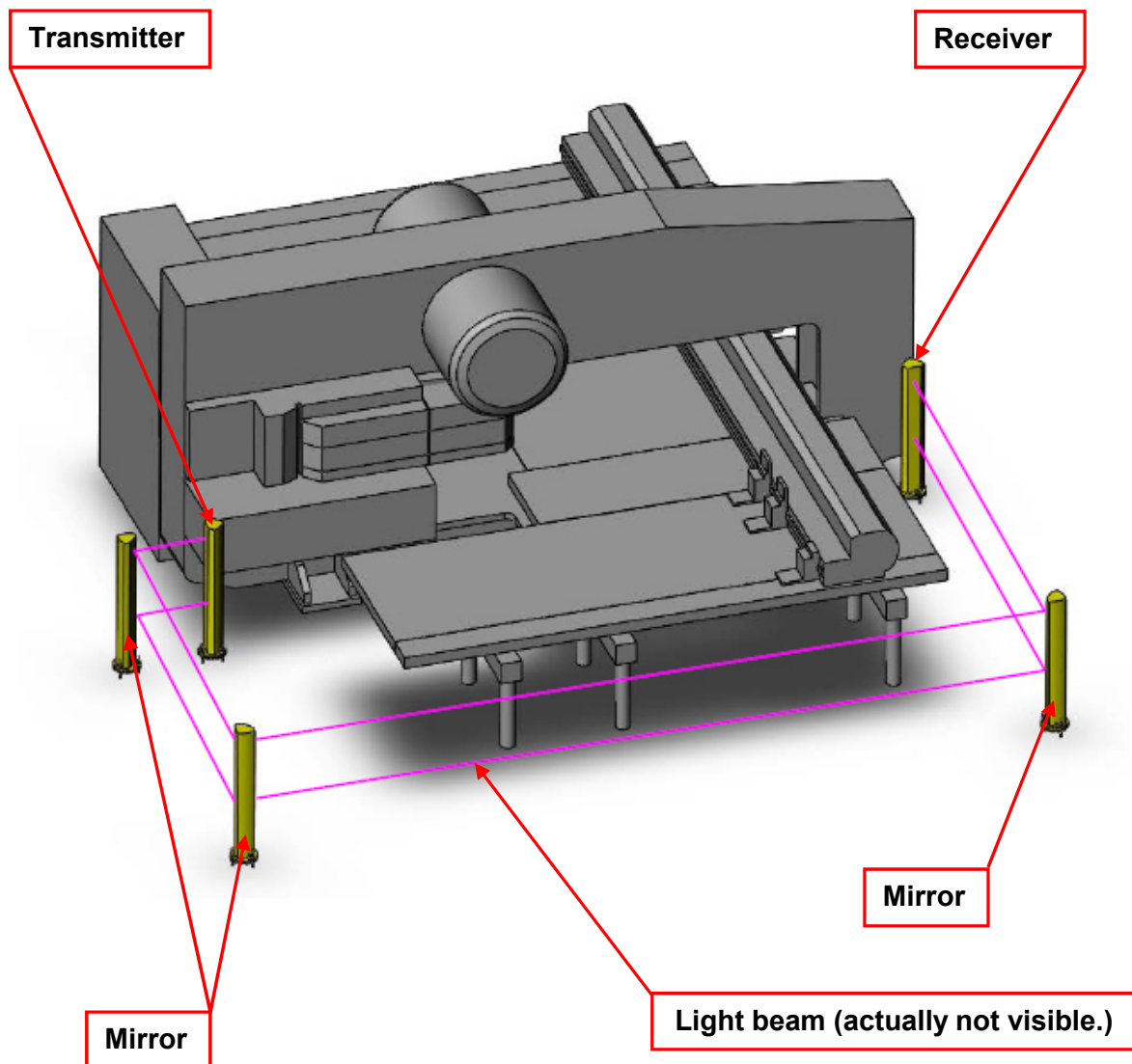
Contact AMADA for details.

## (1) Addition of light curtains to processing machine with peripheral equipment

The following is an example of a front-open type processing machine with peripheral equipment. (Front-open type layout: A type of layout in which the workability on the front side of the processing machine is the same as that of the processing machine alone by arranging peripheral equipment on the rear side of the processing machine)

By installing light curtains on the front side of the processing machine, the machine stops when the light beam is obstructed.

This safety measure reduces danger of workers colliding with the moving table and a hand carelessly put on the table getting pinched by the worksheet, carriage, etc.



Depending on the factory layout and the type of the processing machine/peripheral equipment, the number of the transmitters/receivers and mirrors differs.

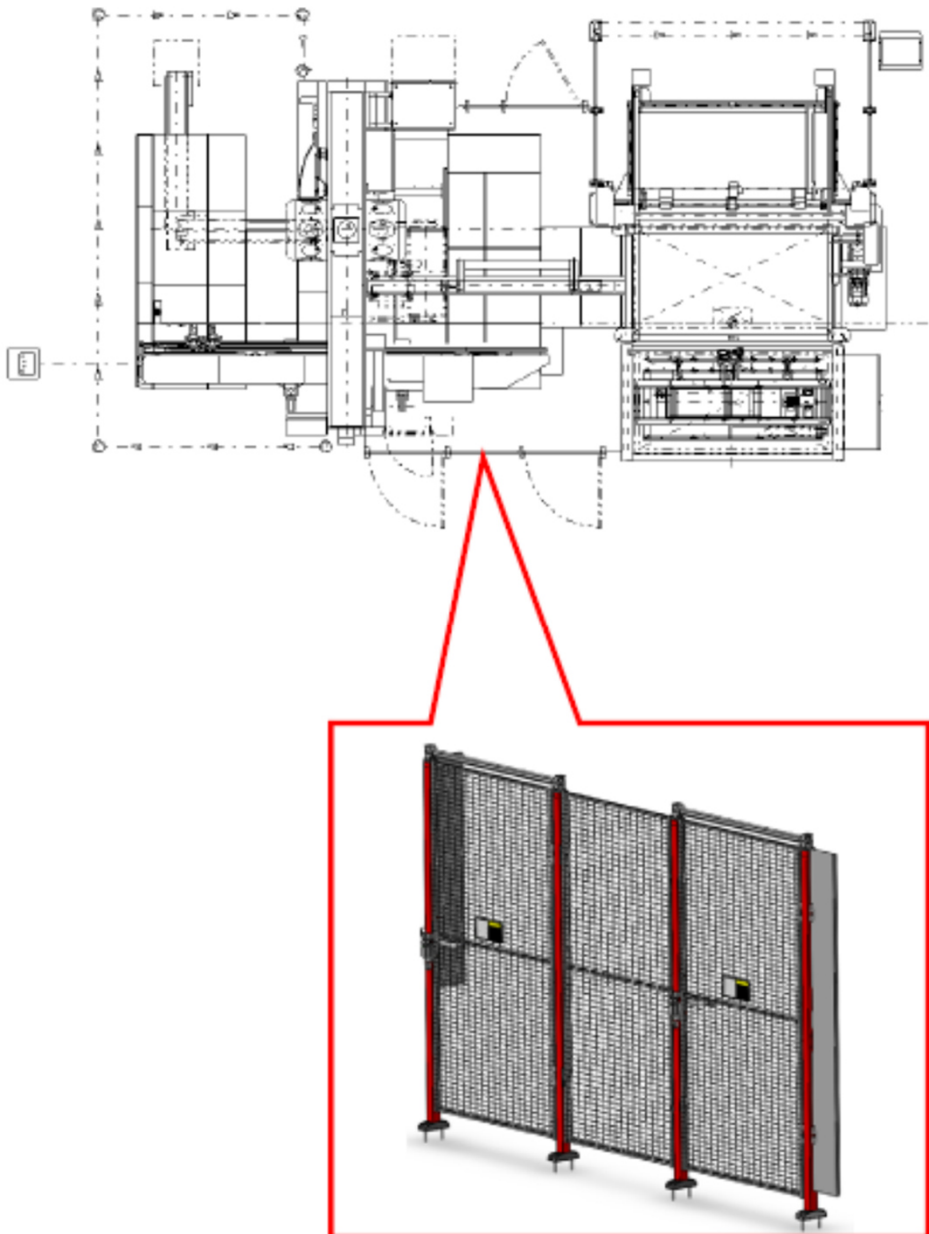
You can also install safety fences.



## (2) Safety fences between processing machine and peripheral equipment

By blocking the hazardous area between the processing machine and the peripheral equipment with safety fences, the risk of collision between the processing machine and peripheral equipment and workers is reduced.

A MAINTENANCE key is installed on the door, and by carrying the key when entering a hazardous area, a worker can prevent the peripheral equipment from being activated by another worker.

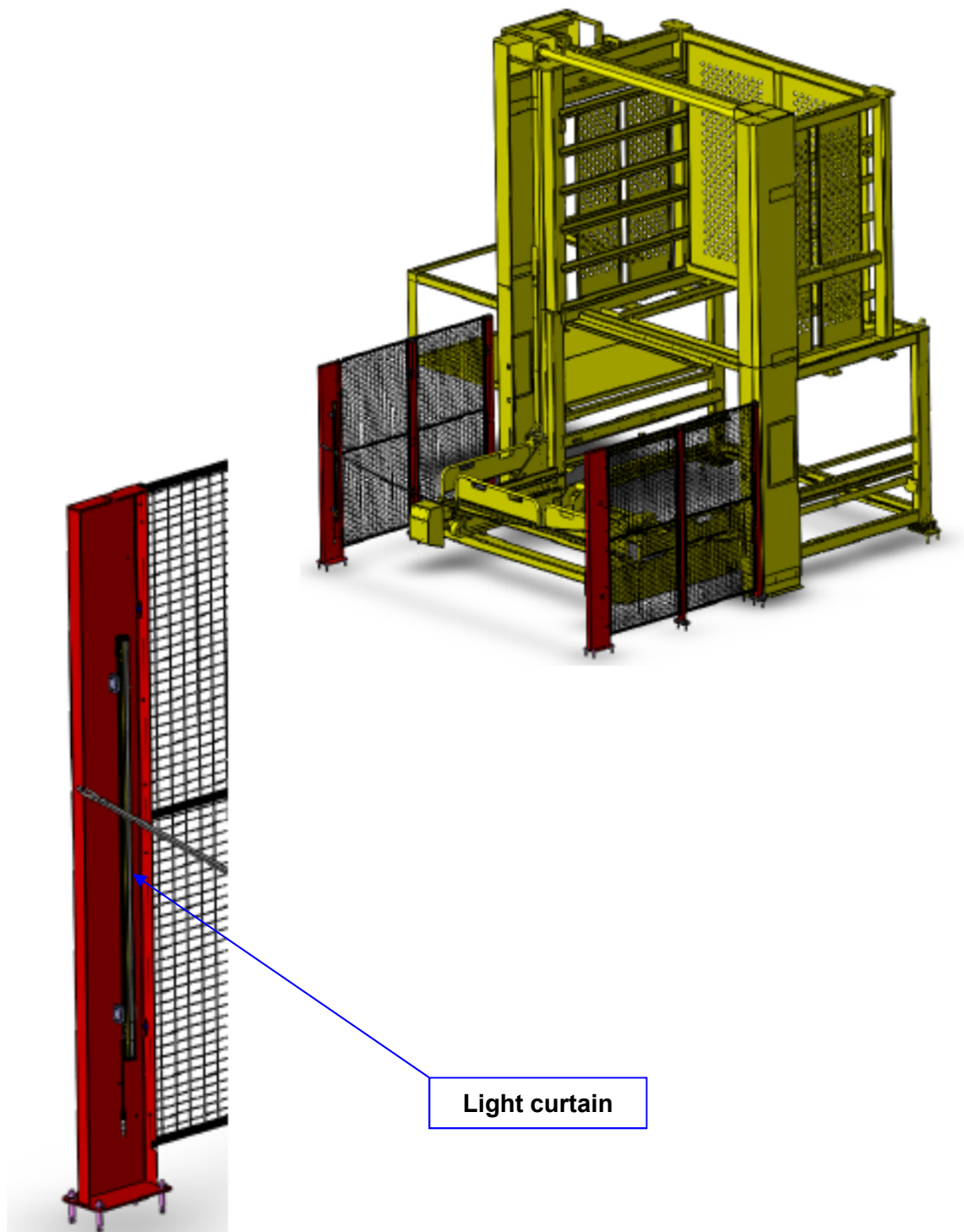


Depending on the factory layout and the type of the processing machine, the layout of the safety fence differs.

### (3) Light curtain to safety fence at worksheet store/retrieve section

By adding a light curtain to the worksheet store/retrieve section, entry of workers or objects is detected.

This measure reduces the danger of workers colliding with the lifter or movable lifter table.



## Request for provision of accident information

On April 15, 2014, the Labour Standards Bureau of the Ministry of Health, Labour and Welfare issued the LSB Notification No. 0415-1 "Procedure for Promoting Provision of Disaster Information, etc., from Machine Users to Machine Manufacturers, etc."

The notification obligates machine manufacturers to clearly state contact points, contact methods and accident information and other contact items in instruction manuals, etc., and machine users to furnish information to machine manufacturers and to take measures for preventing the recurrence of accidents, etc., in coordination with machine manufacturers.

Following the notification, Amada intends to collect accident information from our customers and use it to prevent the recurrence of similar accidents with our machines and to promote greater safety in the design and manufacturing stages of our machines. We kindly ask for your cooperation.

### (1) Contact point

Report accident information, etc., by telephone or otherwise to our sales office service center in your area.

### (2) Information to be provided

Furnish to us accident information concerning the contact items described in the following accident report.

## Accident report

Date reported	mm/dd/yy	● Overview of accident
Classification of accident:		Date and time of accident occurrence: mm/dd/yy
1. Occurrence or likelihood of injury or fatal accident		Approximately hh:mm
2. Occurrence or likelihood of fire accident		[Injury or fatal accident]
● Customer		Victim: 1. Operator
Company name (department name):		2. Other than operator ( )
Name (position):		Sex (age): 1. Male 2. Female (xx years old)
Address:		Accident situation (body part and degree of injury):
Telephone number:		[Fire accident]
Fax number:		Ignition source and ignited material (if determinable):
E-mail address:		Burnt range:
● Amada machine used (Information stamped on serial plate)		Work and process leading to accident:
Model:		Usage of protective equipment:
Manufacture number:		Comment from customer:
Manufacture date:	mm/yy	



AMADA hopes that this safety guide book will help you to provide a safe workplace for your automation system operators.

As for the measures to prevent hazards of the automation system, feel free to contact AMADA if you have something to know from the standpoint of the employer or need more information or proposals.

You can also find this content on the following our web page.

<http://www.amada.co.jp/>

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