

Turret Punch Press 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.



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Preface

This safety guide provides employers and employees with important safety information they should know when they purchase AMADA turret punch presses.

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

The turret punch press is categorized in the powered press machine (automatic press) under the Industrial Safety and Health Act.

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 tool and worksheet, 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.

The Industrial Safety and Health Act states that employers must take machine safeguarding measures.

(See "Responsibilities of employer" on the next page.)

We have prepared the safeguarding devices we recommend as options, so consider and adopt them according to your work content.

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.

Responsibilities of employer

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 turret punch presses, in order to reduce industrial accidents.

(1) Notifying of plans

- Notify the Labour Standards Office of plans.

Notify the Labour Standards Office of plans to install, relocate or alter machines, etc.

(Article 88 of Act and Article 85 of Ordinance)

Notify the Labour Standards Office of such plans, have the plans checked for safety, and receive guidance about the plans.

- Notify the competent government office of a specified facility and apply to the competent government office for permission to use the specified facility.

If the specified facility falls under the provisions of the Noise Control Act, the Vibration Control Act and the environmental conservation ordinance of the competent local government, notify the competent environmental conservation contact office of the specified facility.

Since the notification duties, control values, etc., vary from region to region, check the details at the competent environmental conservation contact office.

(2) Measures to prevent hazards by employer's responsibility

- Take appropriate safeguarding measures to ensure the safety of press operators. (Article 20 of Act and Article 131 of Ordinance)

- The employer shall take measures to prevent hazards when the stroke end of the machine may endanger workers. (Article 108-2 of Ordinance)

In order to prevent pinching and collision of the body by moving table, carriage, worksheet, install a fence, light curtain, auxiliary table, and so on.

(3) 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.

(4) Appointing chief operator

- Appoint a qualified chief operator. (Article 14 of Act and Article 16 of Ordinance)

In a workplace with five or more power presses, appoint a chief operator from among workers given technical training.

(5) Conducting safety and health education

- Conduct safety and health education to workers who operate the machine for the first time. (Article 35 of Ordinance)
- For workers who perform tool change and adjustment work, provide special education, using the text "Press Worker Safety Handbook". (Article 36 of Ordinance and Article 3 of Rules on Special Safety and Health Education)

(6) 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.

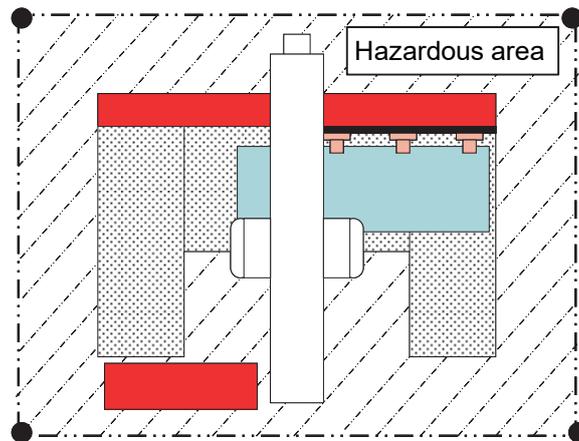
(7) Conducting special voluntary inspection

- Conduct legal inspection by qualified personnel once or more per year. (Article 135 of Ordinance)
- Repair any problems found by the inspection, and file the inspection results and repair records.

1. Measures to prevent hazards around machine

During operation of the machine, there is a risk of the body colliding with the table or the carriage, a risk of the body being caught between the carriage and the frame, a risk of the body being caught between the table, carriage or pillar and a placed cart, and a risk of hands put on the table colliding with a worksheet or carriage.

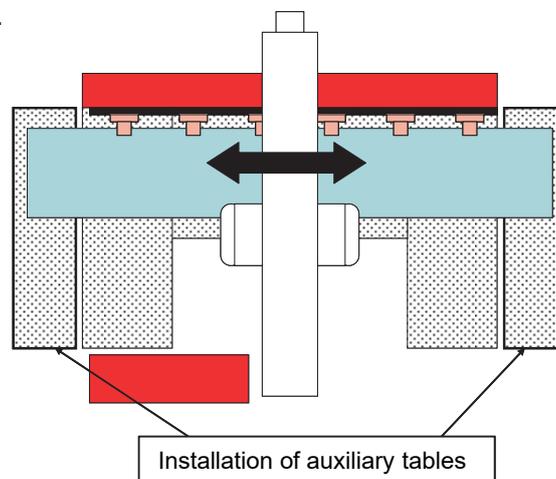
Establish the hazardous area by the employer's responsibility, taking account of the shop layout around the machine and the working method. Install a light curtain, safety fence, etc. for the hazardous area to prevent entry during operation of the machine. When entering such a hazardous area, be sure to stop the machine in advance. Also, to avoid being caught between the movable part and the support pillar, shelf, etc., secure avoidance space 500 mm or more apart from the moving end of the movable part.



AMADA recommends a light curtain. (Refer to Pages 5 and 6.)

2. Measures to prevent hazards of long worksheet from jumping out of table

In processing a long worksheet, the worksheet protrudes to the front and back of the machine. In particular, when the machine is zero-returning after repositioning (grasp change), the worksheet protrudes to the front of the machine. If the worksheet protrudes from the table, a worker may collide with the protruding worksheet, which may cause injury. When processing such a long worksheet, install the auxiliary tables taking account of the maximum protrusion length by the employer's responsibility.

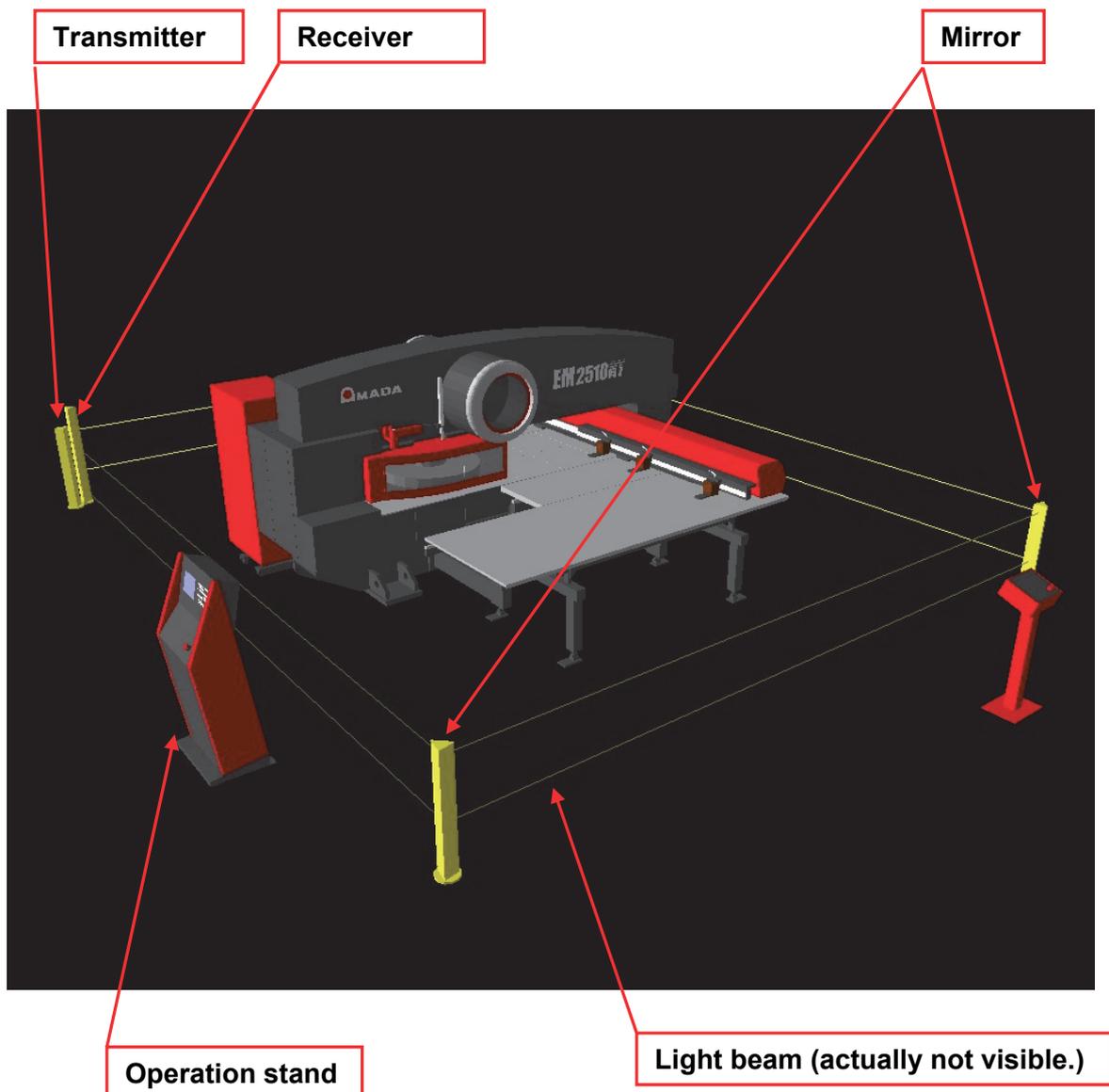


Auxiliary tables are available as an option feature. (Refer to Pages 7 and 8.)

(1) Light-curtain system

The light-curtain system encloses the movable part of the machine with multiple light beams (light curtain) and the operation stand is installed outside the light curtain. When the light beam is obstructed, the machine stops.

By Isolating the operation stand that activates automatic operation from the hazardous area (machine movable part), reduces danger of a person colliding with the moving table and a hand carelessly put on the table getting pinched with the worksheet, carriage, etc.



You need to determine the installation position of the light curtain so that the machine stops before a person reaches the hazardous area of the machine.

Calculation method of safety distance of light curtain (from ISO13855)

$$S = K (t1 + t2) + C$$

Here, supposing:

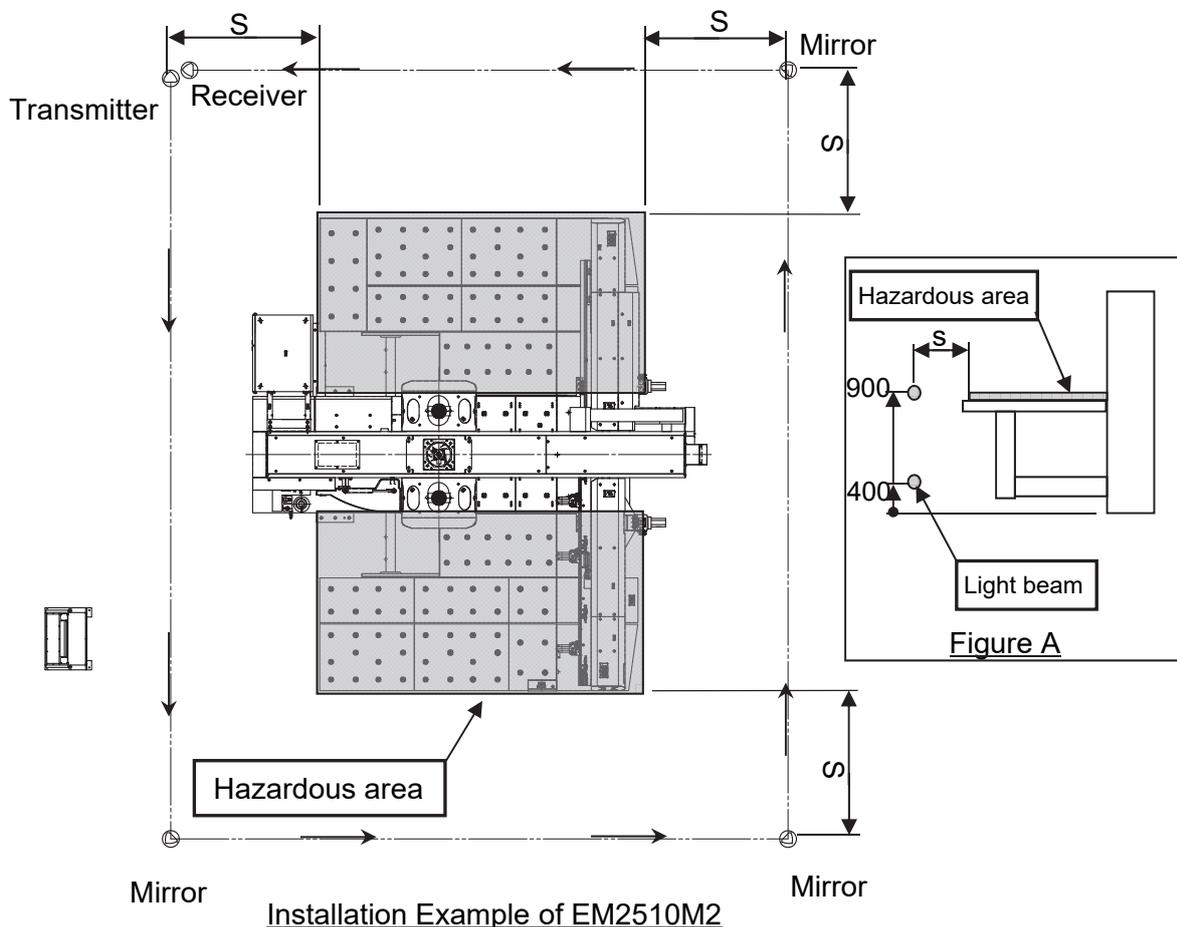
S: Safety distance (mm).....Minimum distance from hazardous area when light curtain is installed

K: Approach speed of human (mm/s) = 1600 (mm/s)

t1: Sensor response time (ms) = 8 to 24 (ms)....according to light curtain manufacturer.

t2: Max. stop time of machine (ms) = 375 to 520 (ms)....differs depending on machine.

C: Additional distance (mm) considered from minimum detection object and light beam height = 850 (mm) (a value when two light beams are installed vertically at the height shown in Figure A)



Calculation example of EM2510M2

[when light sensor manufactured by SICK Corporation is used]

$$S = 1600 (0.015 + 0.45) + 850 \approx 1600 \text{ (mm)}$$

If the distance S is set smaller than the above, the carriage or worksheet may collide with the operator before the moving carriage or worksheet stops even if the operator obstructs the light curtain and the stop device is activated.

(2) Auxiliary table

(Option)

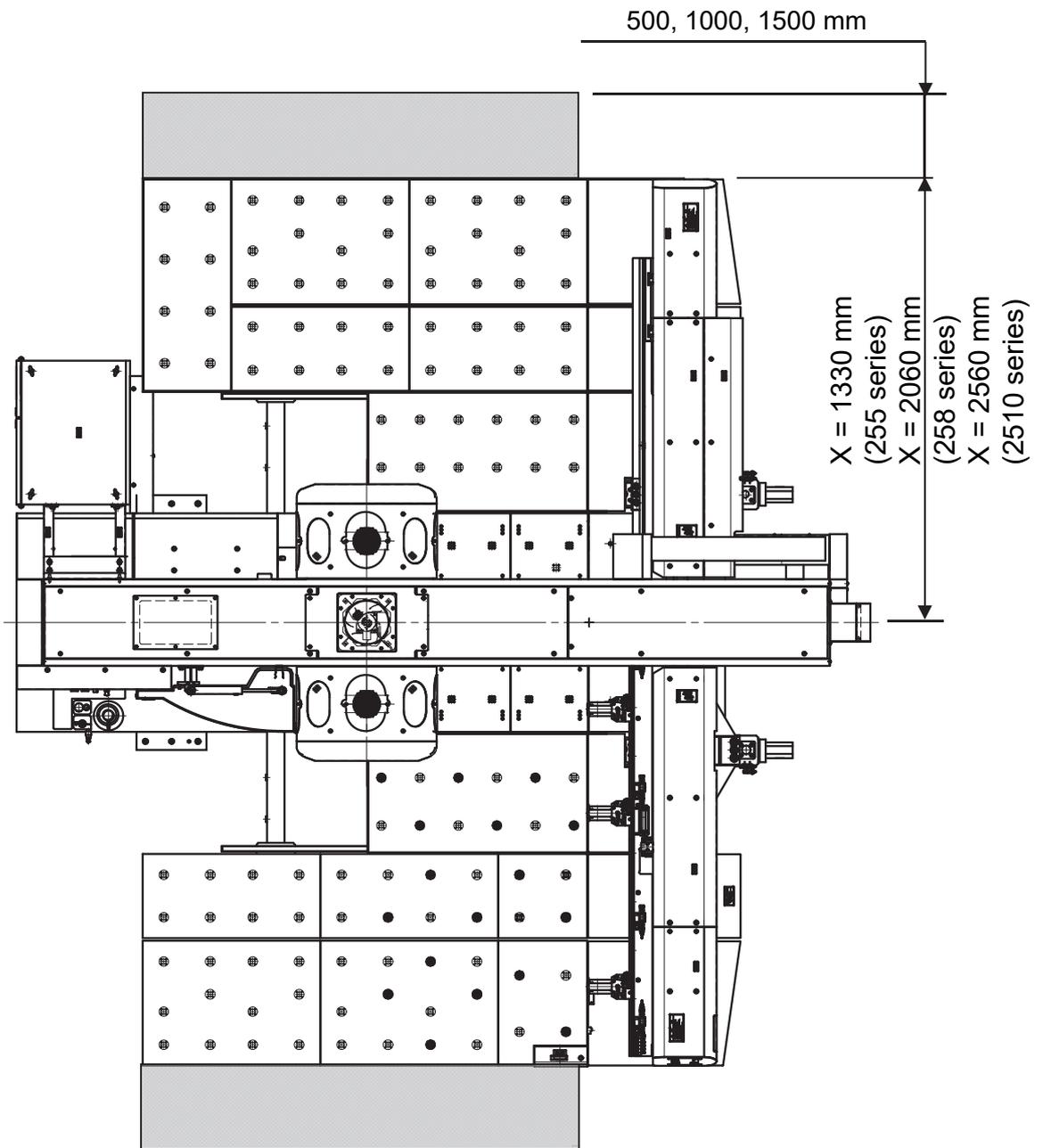
By placing the auxiliary table on the side of the machine table, you can reduce the risk of the worksheet jumped out of the table colliding with a person when performing repositioning of the worksheet.



Installation Example at Our Exhibition Hall

Auxiliary table

Depending on the table size and the size of the worksheet to be processed, select the 500 and 1000 wide auxiliary tables in combination.



Installation Example of EM2510M2

Contact AMADA when purchasing a light curtain and an auxiliary 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 turret punch press operators.

As for the measures to prevent hazards of the turret punch press, 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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