

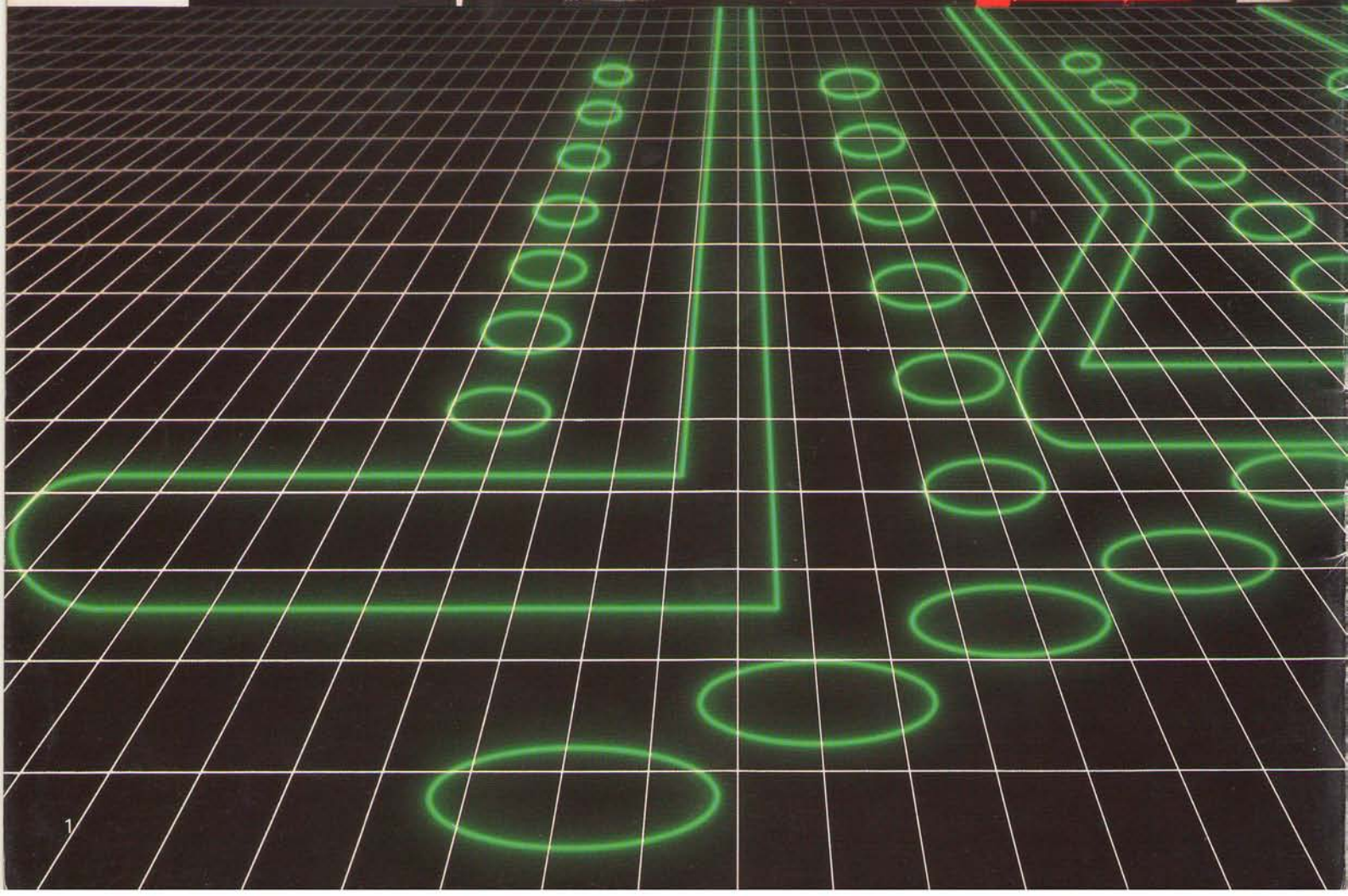
NCT NUMERICALLY CONTROLLED
TURRET PUNCH PRESS

PEGA SERIES



 **AMADA**

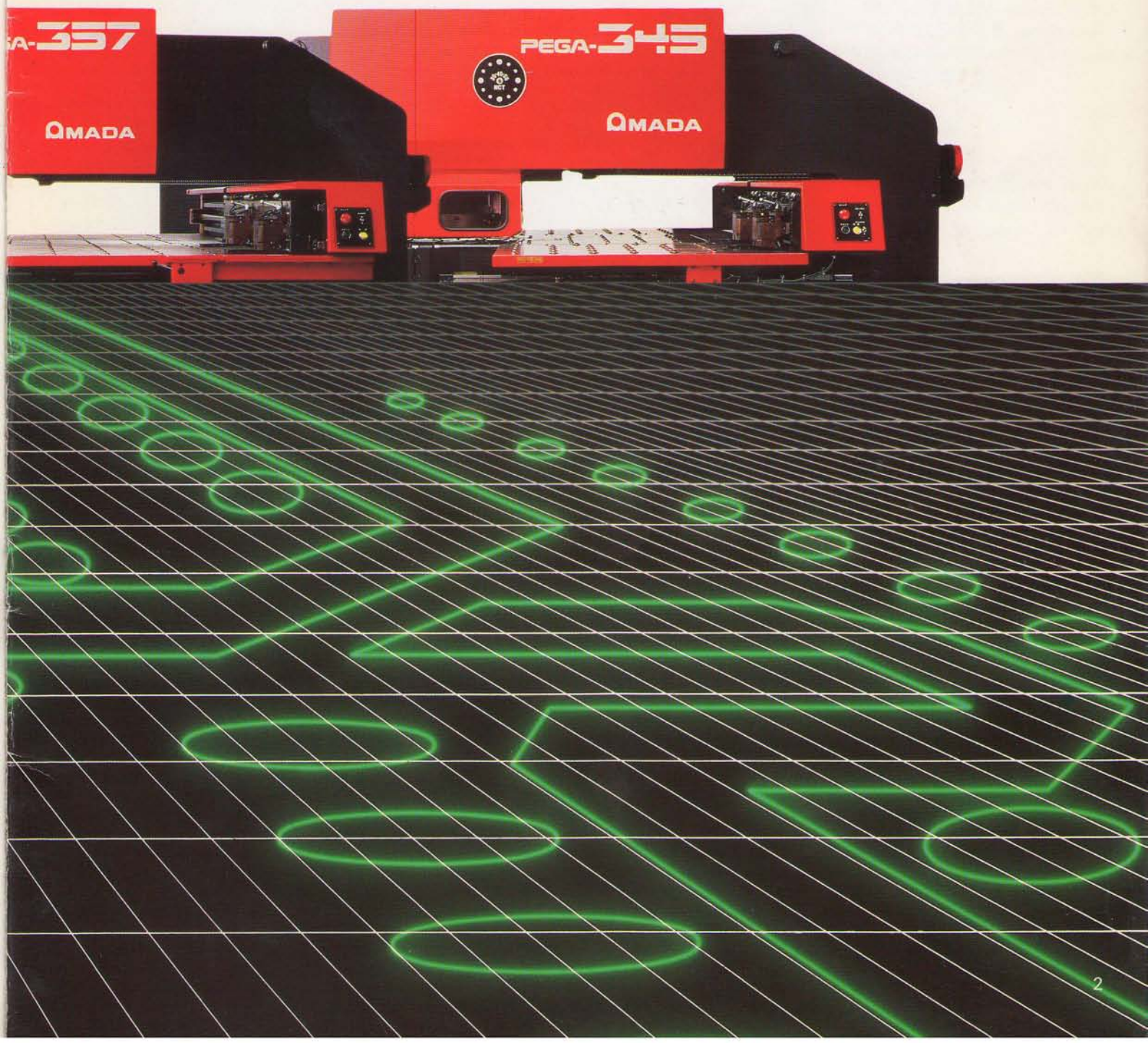
THE NCT PEGA SERIES-AMADA'S CONTRIBUTION SHEET METAL PROCESSING



TO OPTIMUM

The PEGA series CNC turret punch press has become the industry leader in sheet metal processing machines. The PEGA series provides high productivity for short delivery terms and is ideal for multi-item, small batch production.

A wide selection of models are available to respond to diversified demands.

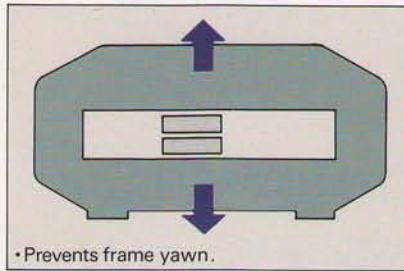
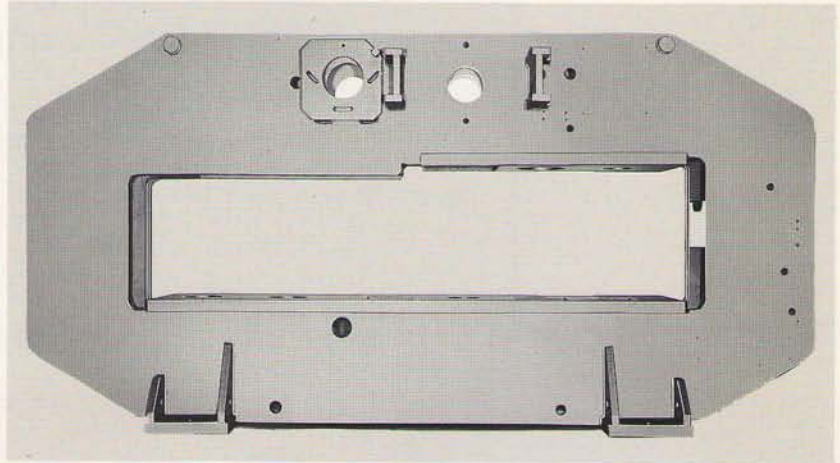


Excellent mechanism—the basis of efficient functionality and precision

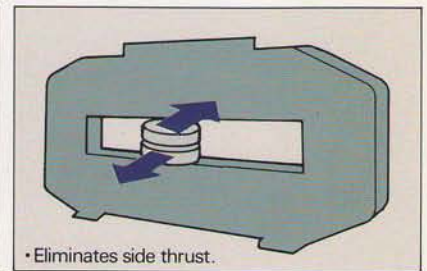
Bridge Frame

High precision and stability start with optimum frame rigidity. AMADA's patented ultra-rigid bridge frame extends tool life as well as machine longevity while maintaining precision in high speed procession.

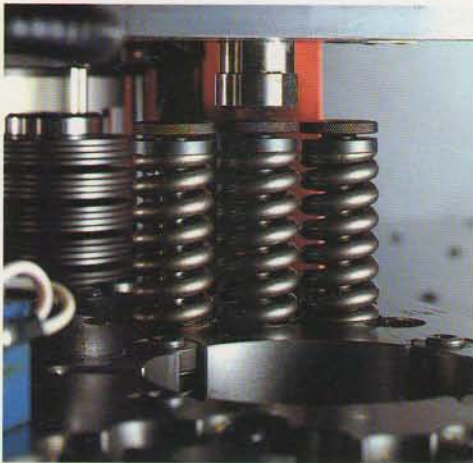
- Minimal frame deflection, eliminating distortion from side thrust loads during nibbling.
- Reinforces tooling alignment for longer tool life.
- Press mechanism and carriage incorporated within frame for greater stability.



• Prevents frame yawn.



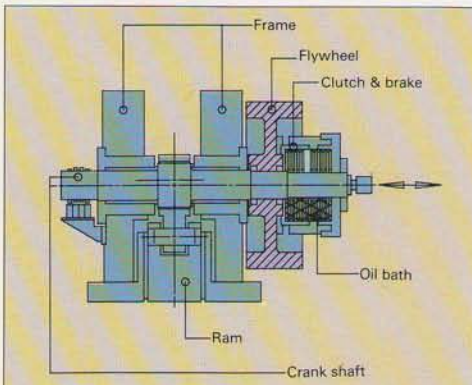
• Eliminates side thrust.



Triple-track turret

Amada's exclusive triple track turret greatly reduces tool selection time.

- Split-second tool selection between tracks by pneumatic striker system.
- High power AC servo motor and compact turret disc allows increased turret rotation speed.
- Bi-directional turret rotation reduces tool selection time.



Hydraulic clutch & brake (except PEGA345K)

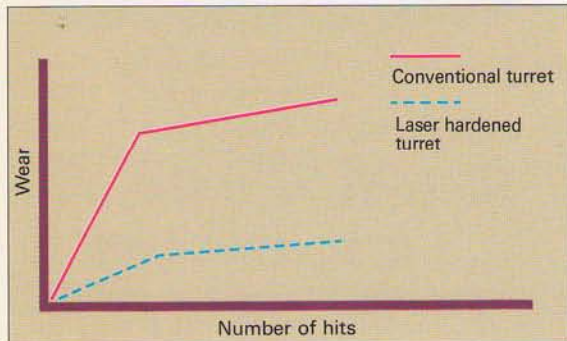
The multiple disc friction clutch and brake ensure constant and stable punching under high speed and high frequency conditions for long production runs.

Solenoid valves controlled by semi conductor relays ensure fast, extremely reliable clutch and brake operations.

- Extended service life and greatly reduced maintenance.



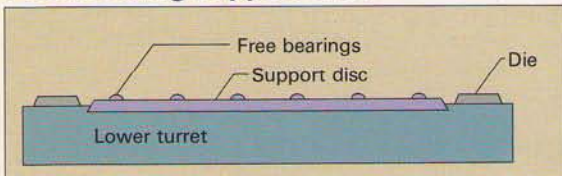
Laser hardened turret



Amada has utilized the latest laser hardening techniques for its turret discs to give extended tool life and reduced tool guide wear.

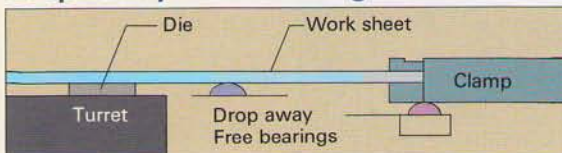
- Eight-Fold reduction in bore wear compared to conventional turrets.

Free bearing support disc

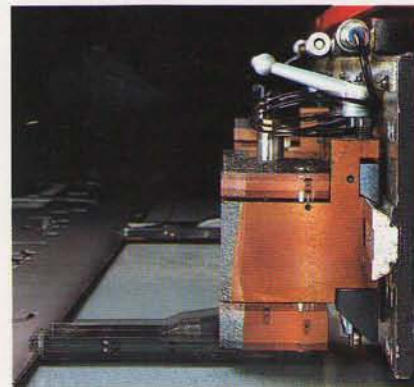
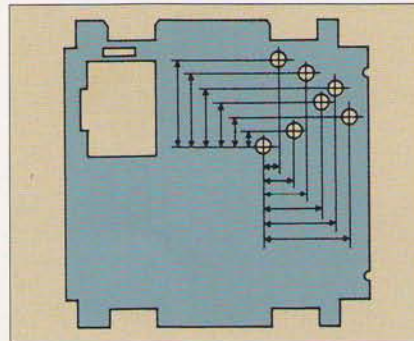


A lower turret support disc with integrated bearings ensures smooth high speed material movement through the turret.

Drop Away Free Bearings



The drop away free bearings in the centre table ensure smooth sheet traverse even when punching nears the work clamps.



High Precision Processing

The hole to hole accuracy described in this catalogue is guaranteed even after one repositioning. This enables precision processing of large work-sheets.

• Clamps

Powerful worksheet clamps with built-in bearings follow the vertical movement of the work resulting in precise performance during high speed processing.

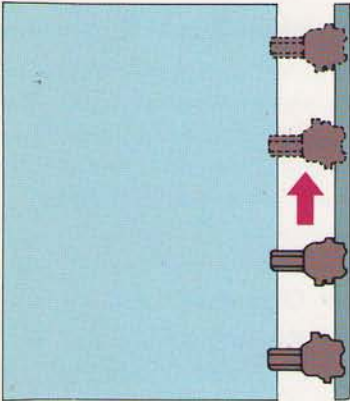
• Carriage

The carriage frame consists of a lightweight, yet highly rigid square pipe structure for high precision at high speeds.

• Ball Screw & LM guide (PAT.)

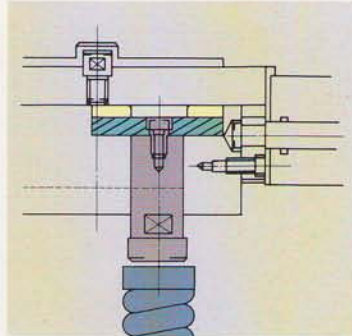
This exclusively patented AMADA design ball screw bearing system is capable of handling heavy workloads at high speeds. The servo motor-driven ball screw transfer system assures smooth and repeatably accurate material handling.





• Auto re-positioning

Extended processing range can be achieved with NC controlled work clamp repositioning. The work holders firmly secure the worksheet while clamps reposition ensuring processing accuracy.



Operation safety features

• Tool change key switch

The switch deactivates the press motor and axis drive for safe tool loading and unloading.

Machine safety features

• Overload safety device

Should overload occur during punching, a shear plate in the striker protects the press mechanism and machine frame from damage.

• Work clamp punch protection

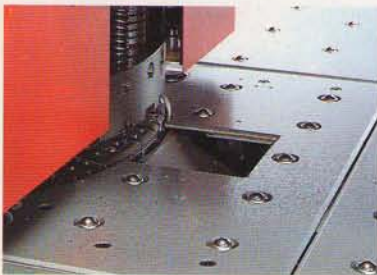
A detection system prevents accidental punching of the work clamp due to programmer operational errors.

• Stripping sensor (PAT.)

The sensor monitors punching operations for abnormal conditions. Should a problem occur, the machine is automatically stopped, preventing damage to both machine and tool.

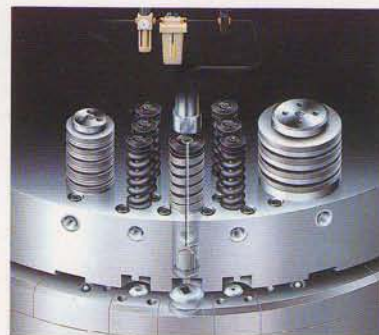
Options (standard in certain countries)

Work chute



Automatic removal of work and scrap without disrupting machine operation. The work chute allows for corner radii processing.

Air blow system



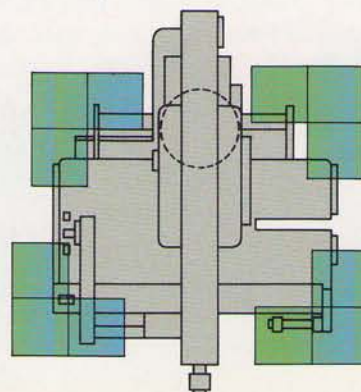
The programmable air blow system injects a stream of oil mist into the air blow tool. This system lubricates the essential moving parts, ejects fine particles and extends tool life.

Tool balancer and punch assembly jig

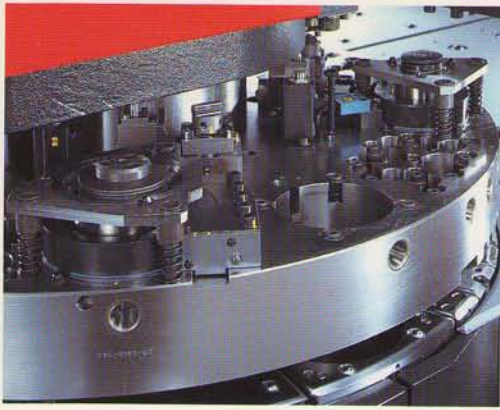


A built-in pneumatic tool balancing device enables safe and quick replacement of 3-1/2" and 4-1/2" station punch guides. The punch assembly jig enables fast and easy tooling assembly and disassembly.

Safety mat



When stepped on, this safety mat placed under the machine mobile area, stops the machine immediately.



Increase productivity by freely selectable 360 degree die rotation Auto-Index (Optional)

(2 Auto Specifications, 4 Auto Specifications)

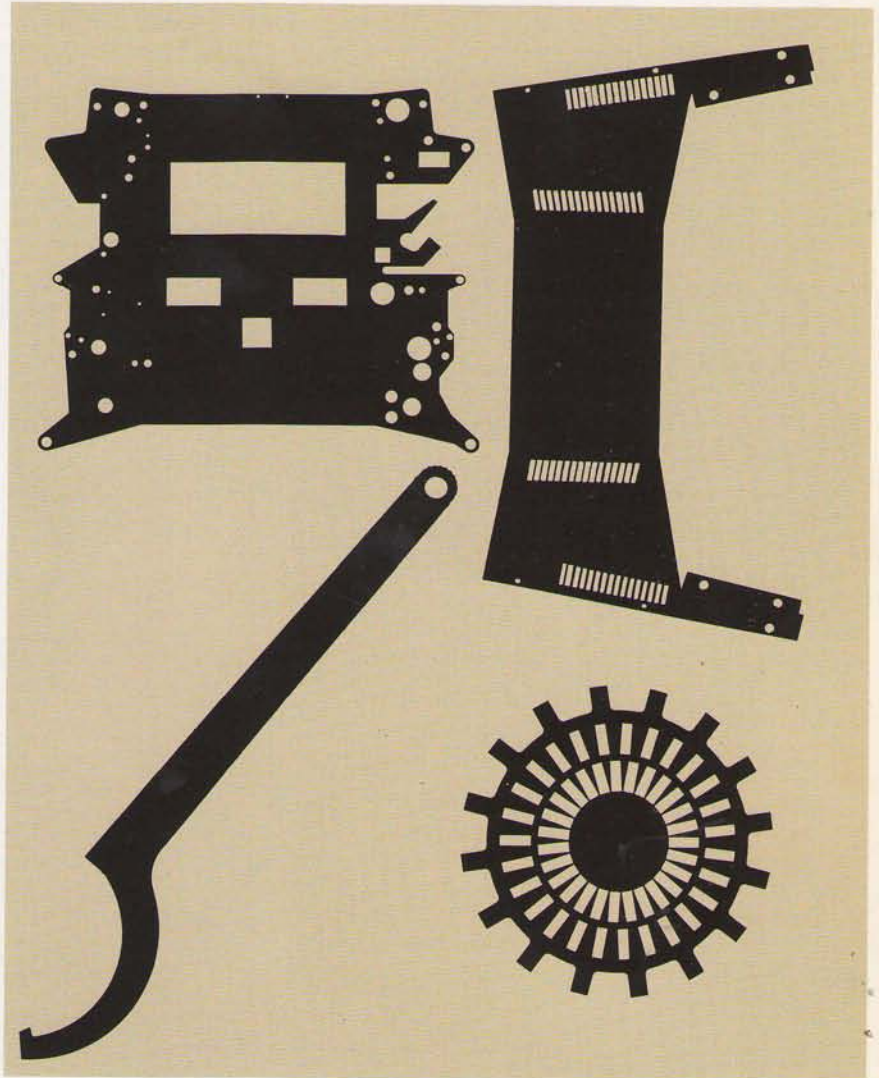
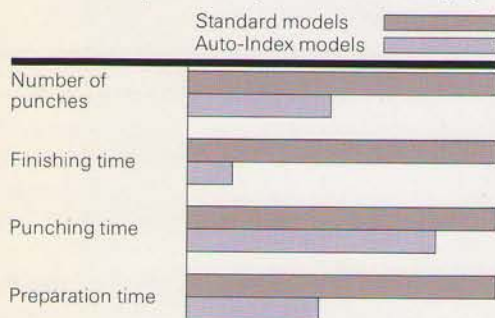
The Auto-Index System features multiple tool stations controlled by NC commands which can rotate through 360 degrees in 0.01 degree increments.

The system enables the processing of complex shaped products with the minimum number of tools in the shortest possible time for.

- Reduced Processing Time
- Reduced Tooling
- Improved Quality

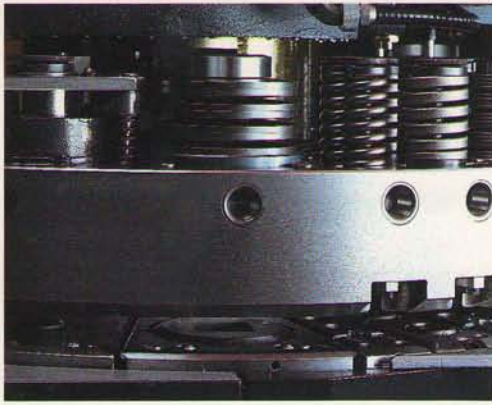
- The Auto-Index System enables punching at any angle with one tool, thus eliminating the need for special key angle tooling.
- Combined with special shaped tooling, the Auto-Index System enables complex shapes to be processed.
- Punching with Auto-Index System reduces processing time significantly compared to nibbling.
- 2 Auto Specifications can be mounted with 2 dies (1-1/4")
- 4 Auto Specifications can be mounted with 2 dies (1-1/4" X 2 dies, 2" X 2 dies)

TIME comparison (based on 2" A/I)



Specifications

Angle reference	Absolute	
Angular increment	0.01°	
Rotation direction	Bi-directional/shortest path	
Drive	AC servo-motor	
Auto-Index stations	2 Auto-Index	
	4 Auto-Index	
Maximum punch size	2 Auto-Index	31.7 mm(1-1/4") 2 stations
	4 Auto-Index	31.7 mm(1-1/4") 2 stations
		50.8 mm(2") 2 stations
Punch rotation speed	60 rpm	
Maximum nibbling angle change	8°	
Maximum worksheet thickness	6.35 mm(1/4"), mild steel	

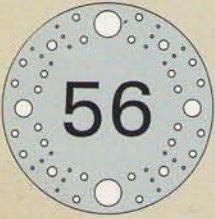


Turret layout

High capacity turret allows optimum tool selection for high productivity and minimum tool changing.

Standard

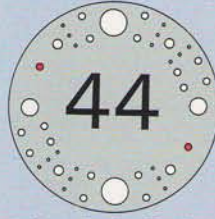
H-type



Nominal punch size	Standard punch size	No. of stations
1/2"	1.6–12.7mm dia. (0.063"–0.5" dia.)	24
1-1/4"	12.8–31.7mm dia. (0.501"–1.25" dia.)	24
2"	31.8–50.8mm dia. (1.251"–2" dia.)	4
3-1/2"	50.9–88.9mm dia. (2.001"–3.5" dia.)	2
4-1/2"	89.0–114.3mm dia. (3.501"–4.5" dia.)	2

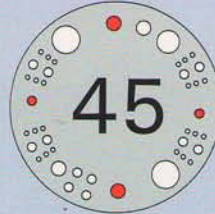
Optional

H-type 2 Auto-Index



Nominal punch size	Standard punch size	No. of stations
1/2"	1.6–12.7mm dia. (0.063"–0.5" dia.)	18
1-1/4"	12.8–31.7mm dia. (0.501"–1.25" dia.)	16
2"	31.8–50.8mm dia. (1.251"–2" dia.)	4
3-1/2"	50.9–88.9mm dia. (2.001"–3.5" dia.)	2
4-1/2"	89.0–114.3mm dia. (3.501"–4.5" dia.)	2
Auto-Index	12.8–31.7mm dia. (0.501"–1.25" dia.)	2

H-type 4 Auto-Index



Nominal punch size	Standard punch size	No. of stations
1/2"	1.6–12.7mm dia. (0.063"–0.5" dia.)	24
1-1/4"	12.8–31.7mm dia. (0.501"–1.25" dia.)	12
2"	31.8–50.8mm dia. (1.251"–2" dia.)	2
3-1/2"	50.9–88.9mm dia. (2.001"–3.5" dia.)	1
4-1/2"	89.0–114.3mm dia. (3.501"–4.5" dia.)	2
1-1/4" Auto-Index	12.8–31.7mm dia. (0.501"–1.25" dia.)	2
2" Auto-Index	31.8–50.8mm dia. (1.251"–2" dia.)	2



Tooling

Amada's genuine tooling performs high precision processing on thin and thick materials.

Excellent tool durability ensures low cost processing.

The long tool guide system extends the turret down to the face of the worksheet minimizing eccentric loads.

Close-fitting strippers eliminate sheet puckering and facilitates easy microjoint processing.

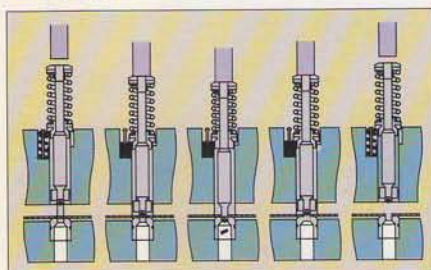
Forming applications, including burring and louvering can also be performed.

Standard features Simple tooling replacement



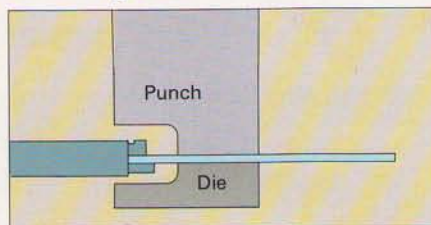
The use of standard 'tool sets' minimises setting time and eliminates the need for tool alignment. Processing can be restarted immediately after tool replacement.

Slug ejectors



As illustrated, slug ejectors eject the slugs after punching. This ensures the slug is not pulled back onto the top of the lower turret.

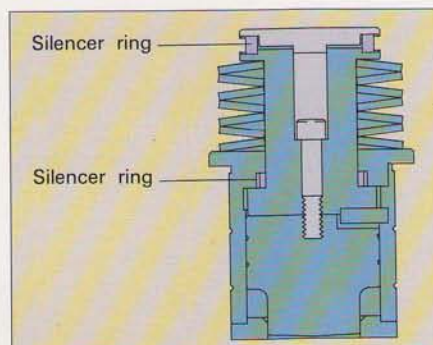
Application tooling Shearing tool



Allows sheet slitting to within 25 mm of the edge along the clamp held side.

This tool which eliminates most of the dead zone simplifies programming and improves material utilization.

Silent tool

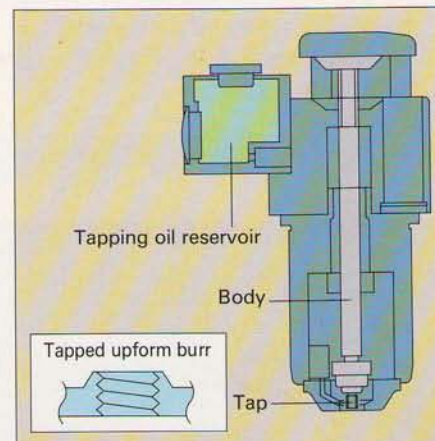


The silent tool incorporates two silencer rings and a special shear angle to considerably reduce punching noise levels.

OHP tools

The life of an OHP tool is longer than a comparable standard tool. OHP tools are used for thick material and high usage applications.

Tapping tools



Tapping tools available in 2" & 1.1/4" station sizes can produce quality tapped holes at a rate of up to 220 taps/minute.

For additional thread-strength, tapping tools can be used in conjunction with upform burrs.

32 bit control system offering outstanding performance combined with operational simplicity.

This innovative controller is available with an MMC (Man Machine Control) option to facilitate interfacing between the operator and the controller. MMC, a new concept in CNC system design, operates in two ways :

- (1) As a G-Code Simulator, to facilitate the arrangement of G-codes for processing ;
- (2) As an interactive input system, to facilitate programming.



- | | |
|--|---|
| ① 14" color CRT | ② MMC and CNC switching key |
| ③ Alphabet keys to input program name and comments | ④ Data input and editing keys |
| ⑤ Display selection keys | ⑥ Function keys to select specific operations on each display |

CNC+MMC

MMC features(Optional)

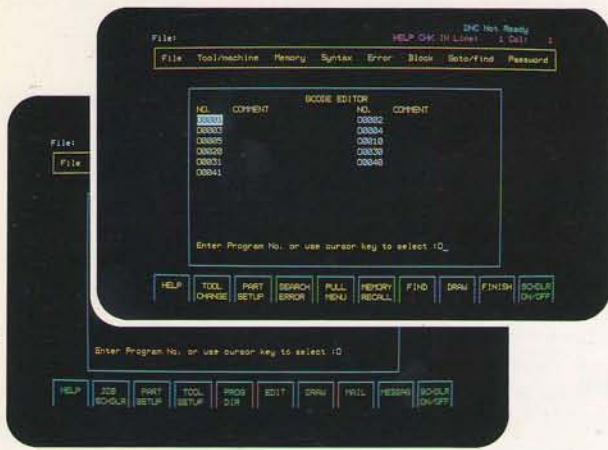
G-code simulator

- 14 inch Color CRT – Bigger instructions can be easily followed on full color monitor.
- Multitasking – Control has the ability to process more than one set of commands at the same time.
- Smart DNC – Has the ability to send receive data to the control without interruption punching process and disturbing the operator.
- MMC Help/Error Message – A help menu with any easy to read, step-by-step format.
- Memory / File Management – 64 kb of user memory with 95 maximum programs in storage.
- Control Graphics – Full part color plotting.
- Ampunch 1 E editor
- Job Scheduler
- Communication with Host Computer via RS 232 C
- Setup Data – Including tools, clamps, materials. etc.

Machine operation panel



MMC function display



1. Main menu display



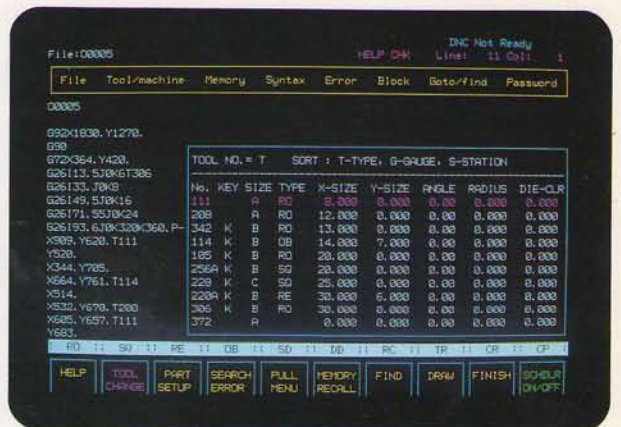
4. On-line help

During G-code input, this editor displays the meaning of each G-code address in help window.



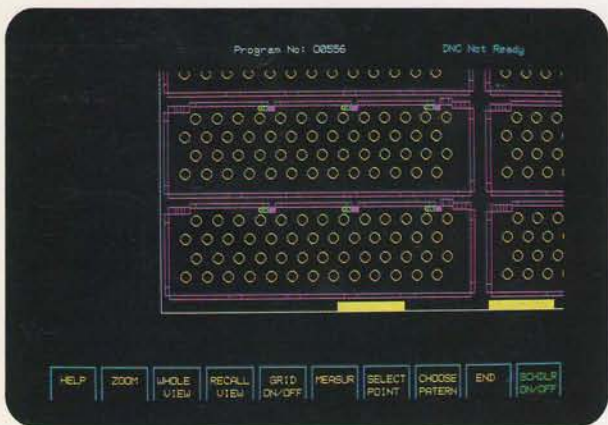
2. Help function

Content of G-code and M-code is displayed.



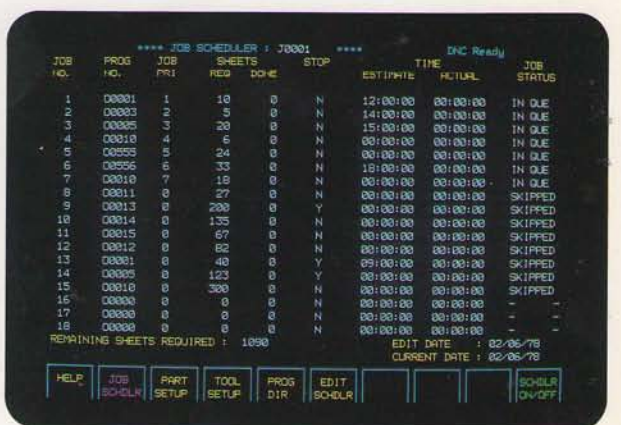
5. Used tool list

The tools in turret or in program are displayed and also the data of tools are able to change easily in this function.



3. Graphics display

Graphic display shows actual programmed parts drawing and the enlargement function is helpful for confirmation of fine processing area.



6. Job scheduler

The scheduled operation can be controlled according to the job schedule. The schedule may also be changed, added and deleted during machine operation.



7. DNC (SMART DNC)

DNC enables transmission/reception of the parts program, tool data, job schedule, and mail to/from the AMPUNCH software installed host computer during machine operation.

CNC function display



1. Set mode

Various counter and setting data are displayed.



2. Set mode

Punching number of every tools can be display for easy management of tool life.

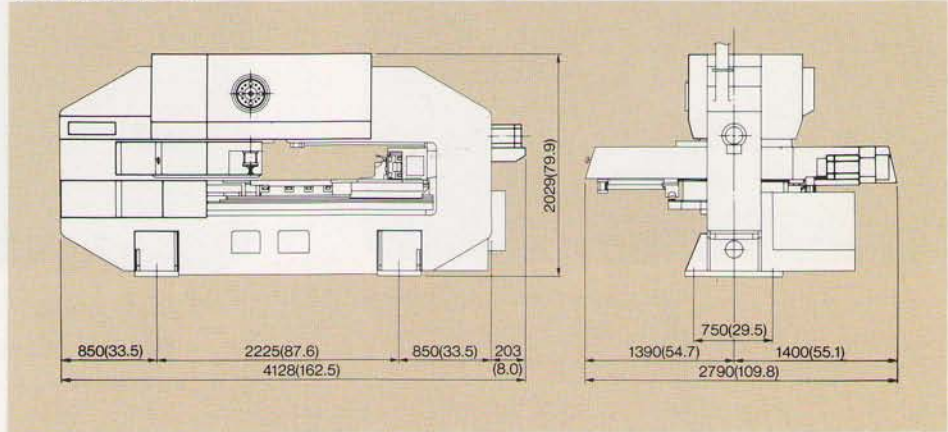


3. Memory mode

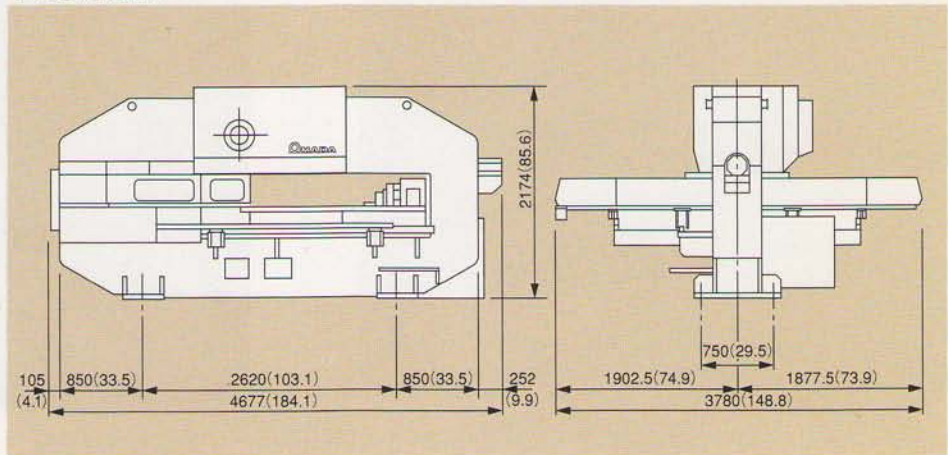
G-code program and current position are displayed.

PEGA-345Q

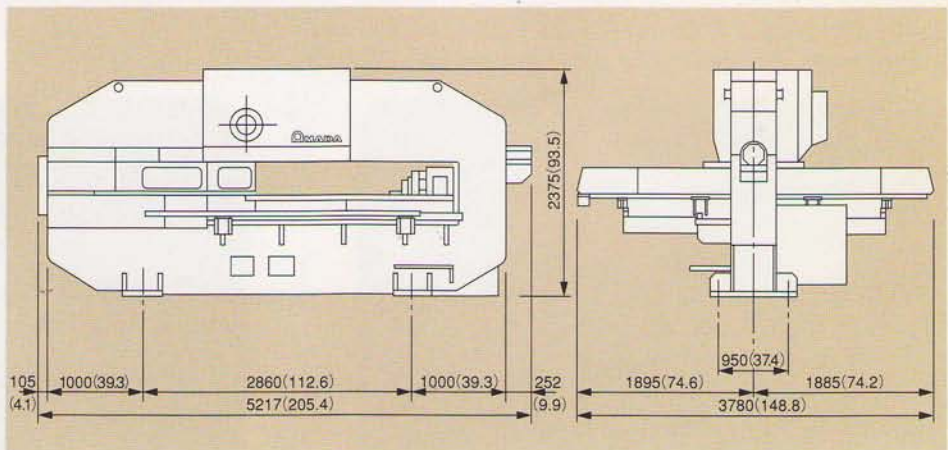
Unit:mm (in.)



PEGA-357



PEGA-367



3
 5
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 3
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	Unit	PEGA-304050Q	PEGA-305072	PEGA-306072
Press capacity	kN(ton)	294(30)		
Max. traverse	mm(in.)	1000×1270(39.37×50)	1270×1830(50×72)	1525×1830(60×72)
Max. sheet size	mm(in.)	1000×2540(39.37×100)	1270×3660(50×144)	1525×3660(60×144)
Max. sheet thickness	mm(in.)	6.35(0.25)		
Max. sheet weight	kg (lb)	80(175)	100(220)	120(260)
Strokes per minute	s. p. m.	350		
Max. hit rate	h. p. m. (25 mm increment)	220	200	
Max. feed speed	m/min. (in./min.)	70.7(2795) (With simultaneous 2-axis specifications)		
Turret speed	r. p. m.	H-Type-30		
Punching accuracy	mm(in.)	±0.1(0.004)		
Air supply	kg/cm ² (psi), [l/min. (ft ³ /min.)]	5.0(70), [80(2.8)]		
Electric power	kVA	18		
Main motor	kW	5.5		
Weight	kg (lb)	10200(22500)	12000(26500)	14000(30900)

Specifications are subject to change without prior notice.

■ Numerical control

Model	AMADAN 04 P-C
Control axis	3-Axes simultaneous
Program code	ISO/EIA
Program format	Variable block word, address format
Min. program dimension	0.01 mm(0.001 in.) 0.01 deg.
Memory capacity	160 m
Environmental conditions	Ambient temperature 0° ~40° C Humidity max. 75%

■ Options

- Auto Index [①2 Auto ②4 Auto]
- Tool balancer [short or long]
- Hydraulic clamp system(except PEGA 345 Q)
- Work chute
- Pneumatic X-block gauge
- Punch assembling jig
- Sub table
- MMC
- Large tool alignment jig
- Safety mat interface
- Memory capacity 320 m
- Tool end grinder
- Designated color
- Auto clamp positioner
- Airblow



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