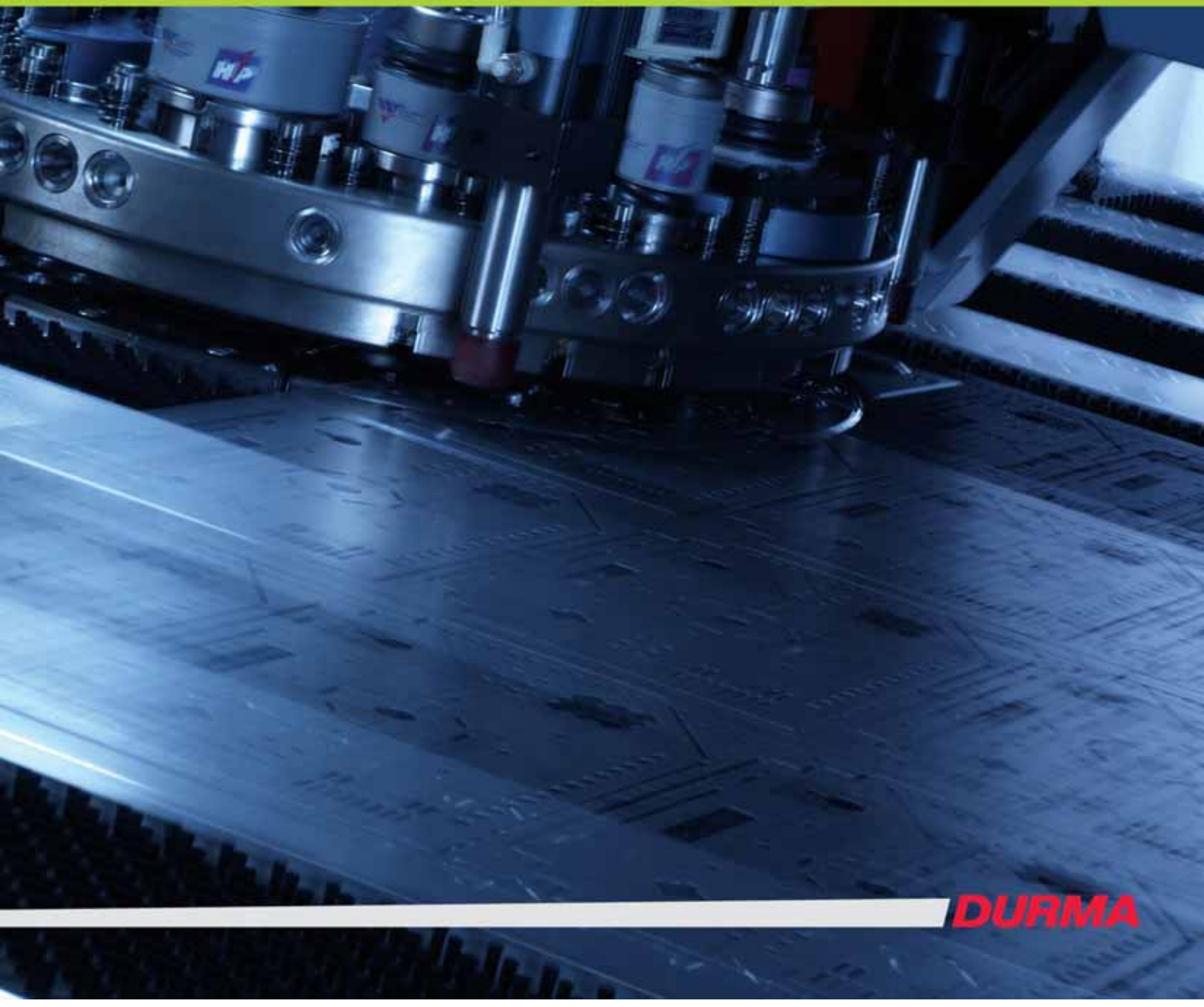
DURMA

TP SERIES

Turret Punching Machines



TP6 & TP9 SERIES
Hydraulic Turret Punch Press

Invest in Durma TP9 To Maximize Your Profits

With its high-tech TP6, TP9 Hydraulic Turret Punch Press; DURMA has embarked on the productive punching are with long term durability and affordable purchase price.

DURMA TP6 offers you more profitable production capabilities in market place by;

Low Machining Cost

Reduced maintenance, by lubrication of moving parts, and ensuring maximum possible material utilization.

Realiability

robust body frame,
hydraulics and control systems

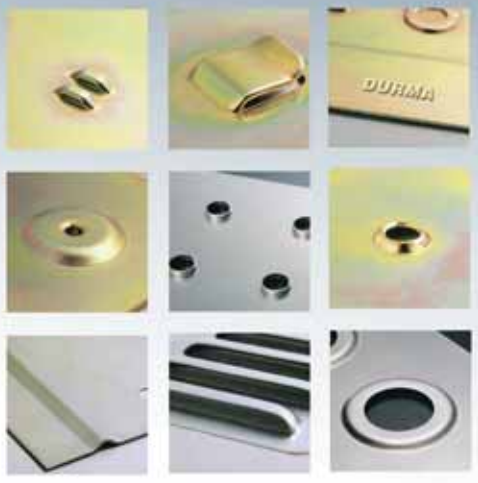
High Speed

The punching head stroke rates of 900 strokes per minute during punching and 1800 per minute during marking. Also can be forming at punching speed. The machine control adjusts stroke travel speed and position.

With its dynamic design, it is possible to obtain speeds of
96 m/min in X axis
75 m/min in Y axis
121 m/min simultaneously
High acceleration 10m/min2 (1g) is possible across the whole working range without any restriction.

Precision

Advanced ram positioning control by closed loop hydraulic Hartmann Lammle, table axis drive by Siemens servo motors acquire ± 0, 1 mm positioning accuracy and ± 0, 05 mm repeatable accuracy. Accurate index incremental (0, 02°) is provided by very precision bewel gears. Mechanical couplings and time belts eliminate the difference between upper and lower angular position.



High Quality Forming

Variable dwell time at bottom of stroke provides high quality, press brake-like forming, often eliminating secondary processing
Electronic adjustment simplifies setup of progressive forms, flanges, and embossments
With roller technology are possible not only on straight geometries but also on curved and round areas. This method is of particular interest for sectors such as air conditioning technology. (Wheel tools pat. Wilson)
High speed marking.

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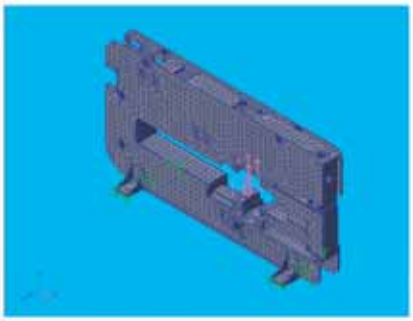


Robust Body Frame

Portal (O) type body frame consists of two fully enclosed box fabrications. Finite element analysis on high performance computers was used to simulate the design and thoroughly minimize openings, twist, deflection and shift of the frame. Body frame is also treated by high load and stress relieve during and after the welding The result is rigid frame that keeps vibration to minimum, allowing greater precision in punching, while substantially reducing tool wears and lowering noise levels. The body is robust and very strong, consists of two different parts. Because of its special design, the turret and tools are not affected from punching force even at maximum tonnage. No deflection occurs on the turret and tools, so the tool life become longer.

Turret

Turret consists of 27 stations as below:

11 pieces A station fix 0.8 mm to 12.7 mm
10 pieces B station fix 12.8 mm to 31.7 mm
2 pieces B station index 12.8 mm to 31.7 mm
1 piece C station fix 31.8 mm to 50.8 mm
1 piece C station index 31.8 mm to 50.8 mm
2 pieces D station fix 50.9 mm to 88.9 mm

3 Auto Index Stations

Three AI stations provide maximum flexibility by simplifying tooling inventories and reducing tool setup time
Tools are rotatable in 0.01o increments enabling the processing of complex shaped parts with the minimum number of tools

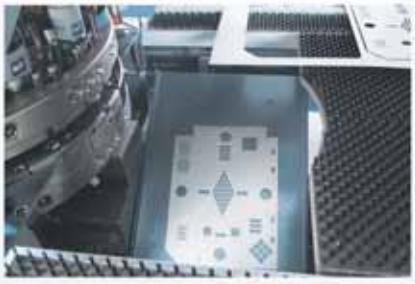
Tool change takes less than 3 seconds to complete total turret movement and just 0,6 seconds for single tool.

Forming almost at punching speed by closed loop hydraulic by Bosch - Rexroth. A variable forming position ensures that forming operations can be carried out with minimal stroke travel.

The dies are positioned below the table surface, preventing sheets from being scratched or caught, therefore micro tags can be reduced to minimum for more precision parts.

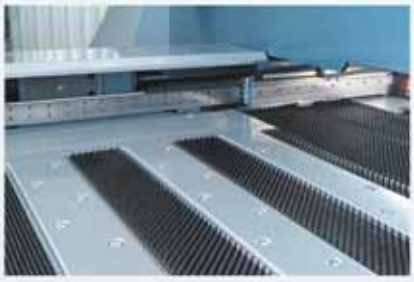
Coordinate Table

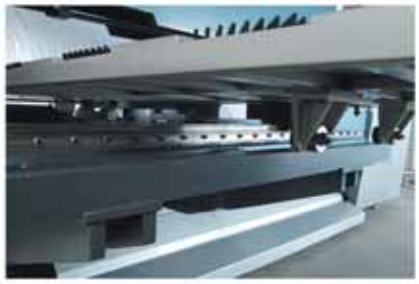
It is possible to process up to 2000x1250 mm sheets without need to reposition. When punching thinner material, one of the problem is to control the sheet movement at non clamping area. To eliminate this matter 3 clamps or more is available.

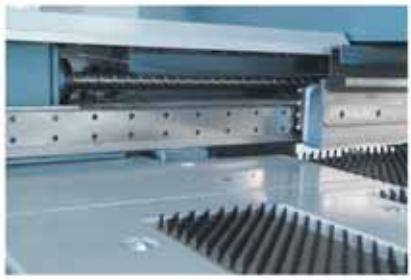


Work chute to evacuate parts during punching also with sorting and stacking capacity.

The parts chute, small parts up to 400 x 600 mm can be ejected directly in to a parts container. An optional conveyor system.







A new design of X and Y axis, direct drive technology is used. This will increase the performance and eliminates any loses from belts, gears or any transmission systems.

Ball table mainly easy movement of the sheet, brush table is generally for sensitive and soft material punching for not to scratch the sheet. Both is available according customer demands.

Control System

Siemens Sinumerik 840 DI control system is applied for punching with strategic alliance with Siemens. Controls and screen are mounted on a mobile control panel. The computer and other hardware are mounted in a separate cabinet. Machining can be started with just a few steps. Network (Ethernet or RS 232), COM-Port connection is available as well as programming on the control panel. UPS system prevents the control unit from the voltage fluctuations and cuts.
Integrated online help messages answers all questions at the location they arise. The diagnostic concept provides visual depictions of any function faults. Tele service is a matter of course over Internet for diagnostics options for machine controller.
The control ensures that optimal acceleration values can be attained at every stage of machining, depending on the actual masses that need to be moved.

The automatic repositioning system

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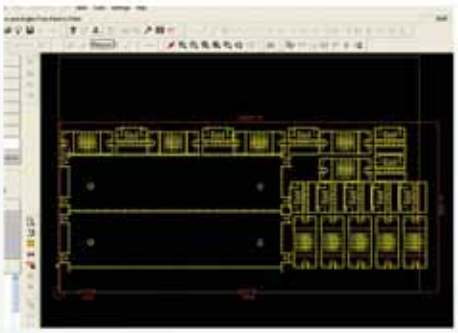


SOFTWARES

Metalix CNC CAD
Computes Punch 5

With the programming system, Durma provides a start to finish concept for flexible production, software's, controller and TP6 precisely tailored to one another.

Steps to the NC program;

- Generate & import drawings
- Sheet layout and automatic machining definition.
- Auto Nesting

Automatic generation of NC program

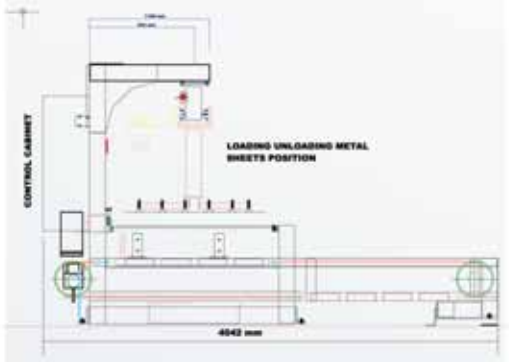
Standard Equipment

- 2 pieces Clamps
- 1 piece command pedal
- 1 piece CAD, CAM software and activator
- Control unit, Siemens Sinumerik 840 DI
- Pentium 3, 500 MHz, 12" screen.
- Programming on the control panel
- Auto checks clamp position.
- Network, Ethernet communication.
- Automatic lubrication system for tooling.
- Movable scrap box
- Warning lamp
- Ball and brush table.
- External Cooler unit
- Floppy driver + VSB Driver
- Light barriers three sides

Optional Equipment

- Tools
- Tool holders
  A station
  B station
  C station
  D station
- Additional clamps
- Coated tool
- Trumpf tool adaptor for D station
- Different types of software options
- Second activator (dongle)
- Extra table
- Auto Nesting
- CE certificate and light barriers

Durma Punch
Loading Unloading System



The loading-unloading systems in the range free the operator from working at the same speed as the machine and make the processing of sheet steel more economically viable and rational. Manipulators are available. The loading and unloading cycles of the punching machine are completely automated and they can also be integrated into more complex processing systems.

OPTIMISATION OF RESOURCES

Using manipulators fitted to new or pre-existing (NCT) punching machines can increase production and optimise machine use.
1) Machine down-time is reduced and production can be organised continuously over different shifts and also during work breaks;
2) Unit costs are lower: the increased number of work hours/year, compared to the use of an NCT alone leads to high earnings.
3) The entire production flow can be planned.

TECHNICAL SPECIFICATIONS	1225
Dimensions sheet steel max	1250x2500
Min	500x1000
Material	Ferrous/non ferrous
Thickness of steel	0.5 – 6
Max weight of sheet	150
Loading pallet	
Max loading capacity (Kg/pallet)	3000
Max height of stack (mm/pallet)	300
Separating magnets per pallet	3
Sheet separation:	
Magnetic/shaking/air	Standard
Loader	
No. suction pads	28
Motor power kW	0.75
Unloader	
Clamps (No)	2
Motor power kW	0.25
SPT table	
Motor power kW	0.25
Stacking table	
Max load capacity (kg)	3000
Control unit	PLC
Compressed air supply	6 bar – 600 lt/min
Electrical supply (three phase + neutral)	380V/50Hz 10A
Weight approx (Kg)	1900
Dimensions of base (LxPxH) approx mm	5300x4042x2400

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DESCRIPTION OF THE MANIPULATOR

The manipulator is installed on the loading side of the punching machine and consists of two synchronised but independent units; a work section (with two loading carriages and a work surface) and a processed steel storage rack.
This versatile, modular system offers significant advantages.
1) loading and unloading formed steel in the work area of the punching machine is simplified and there is no interference with the NCT work area.
2) loading-unloading packs of sheet steel is simple and straight forward.
3) logistics operations, handling and any possible servicing can be carried out easily and safely.

TP SERIES		TP6	TP63	TP9	TP93	TPL93	TP123
Maximum tonnage	ton	30	30	20	20	30	20
Frame type	–	0 frame	0 frame	0 frame	0 frame	0 frame	0 frame
X axis movement	mm.	2000 + R	2000/2500 + R	2000 + R	2000/2500 + R	3000 + R	2000 + R
Y axis movement	mm.	1250	1250	1250	1250	1500	1250
Automatic positioning range	mm.	10000*	10000*	10000*	10000*	10000*	10000*
Speed of Y axis	m/min	60	70	75(0.6 g)	70(0.6 g)	96	70
Speed of X axis	m/min	75	90	96(1.2 g)	90/70(1.2 g)	80	90
Lateral speed Y + X	m/min	90	114	121	114/96	124	114
Max. working cycles (in 1 mm step, 1 mm thickness)	strok/min	600	600	800	900	900	1200
Max. working cycles (in 25 mm step, 1 mm thickness)	strok/min	300	350/300	350	350/300	300	400
Max.Marking speed	strok/min	–	600	1200	900/850	–	–
Main cylinder stroke	mm.	40	40	40	40	40	40
Maximum punching stroke	mm.	25	25	25	25	25	25
Workchute for scrap removale X =	mm.	600	600	600	600	–	600
Y =	mm.	400	400	400	400	–	400
Max. cutting thickness with fix station	mild steel	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm
	Stainless steell	3 mm	6 mm	3 mm	6 mm	6 mm	6 mm
Max. cutting thickness with auto index station	mild steel	3 mm	4 mm	3 mm	4 mm	4 mm	4 mm
	Stainless steell	1.5 mm	2.5 mm	1.5 mm	2.5 mm	2.5 mm	2.5 mm
Turret (27 station without tool and holder)		11 pieces A station fix 0.8 mm to 12.7 mm					
		10 pieces B station fix 12.8 mm to 31.7 mm					
		2 pieces B station index 12.8 mm to 31.7 mm					
		1 pieces C station fix 31.8 mm to 50.8 mm					
		1 pieces C station index 31.8 mm to 50.8 mm					
		2 pieces D station fix 50.9 mm to 88.9 mm					
Positioning accuracy	mm.	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
Repeatable accuracy	mm.	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Turret rotation speed	rpm	22	22	22	22	22	22
Auto index rotational speed	rpm	75	75	75	75	75	75
Auto index rotational speed	–	Control by LVTD and HNC 100 control card	–	Control by LVTD and HNC 100 control card	–	Control by LVTD and HNC 100 control card	Control by LVTD and HNC 100 control card
Max. weight of sheet	kg	100	120/150	120	120/150	200	120
Hard disk	Gbyte	40	40	40	40	40	40
RAM	mb SDRAM	256	256	256	256	256	256
Network system	–	Windows XP	Windows XP	Windows XP	Windows XP	Windows XP	Windows XP
LCD colorscreen Super VGA	–	12.1"	15.1"	12.1"	15.1"	15.1"	15.1"
Floopy disk	–	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
USB	–	2.0	2.0	2.0	2.0	2.0	2.0
Ethernet	–	10/100	10/100	10/100	10/100	10/100	10/100
Machine dimension							
Height (H)	mm.	2500	2500	2500	2500	2310	2310
Width (without light barrier) (W)	mm.	4200	4300/5360	4200	4300/5360	6300	4270
Width (with light barrier)	mm.	6200	6270/7260	6200	6270/7260	8300	6270
Length (without light barrier) (L)	mm.	5200	5750	6000	5750	6650	4800
Length (with light barrier)	mm.	6200	6800	7000	6800	7650	5800
Table height	mm.	940	940	940	940	940	940
Weight approx.	kg	12500	12500	12500	12500	19500	13800
Motor	kw	15	11	15	7	7.5(11)	7.5(11)
Oil tank	lt	180	180	200	180	200	180
Air pressure	bar	6-7	6	6-7	6	6	6
Maximum punching diameter (D station)	mm.	88.9	88.9	88.9	88.9	88.9	88.9
Workholder number (standard)	pcs	2	2	2(3)	2	4	2
Workholder force	kg	1000	1000	1000	1000	1000	1000
Table type	–	Ball	Ball	Ball	Ball	Ball	Ball
	–	Bursh**	Bursh**	Bursh**	Bursh**	Bursh**	Bursh**
	–	Ball+Brush**	Ball+Brush**	Ball+Brush**	Ball+Brush**	Ball+Brush**	Ball+Brush**

** : Special table must be added to the machine and the light barriers must be located the correct position. Max.weight 100 kg.
* : Optional

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