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H+L Punch System ECO *plus*

Design and Funktion

The ECO*plus* punch system with integrated stroke position programming is the logical further development of the successful, field proven ECO punch system.

The compact, application optimised drive design hasn't changed, neither has the robust and proven valve technique. Standard ECO valve components are compatible with the updated ECO*plus* punch drive. New is the integrated analog position sensor. Together the analogue positioning sensor and the optimised electronic drive control HS2 offers variable stroke final position programming. With this feature it is possible to define exactly and optimise the stroke lenght, without the need for proximity switches.

The new standardised mounting intersection between the punch drive and the machine frame is a useful development. This interface is now identical for the new generation of H+L punch systems. So in future it is possible, without design adaption on the machine frame, to mount all H+L punch systems.

Specifications:

- robust valve technique, simple functions, high process safety
- energy optimised punch via the differential valve
- short switching times via high speed pilot valves
- integrated positioning sensor, programmable final stroke positions
- compact design resulting in reduced pipe-work

Quotation:

- Punch Drive ECO *plus*
  - application optimised punch cylinder
  - valve technique, damping elements
  - analog positioning sensor
- Electronics HS2
  - intelligent punch control
  - data interface - RS232
- Power Pack
  - application optimised dimensioning
  - integrated cooling and filtering circuit

Options:

- additional punch force steps
- conventional control with electronic proximity switch
- cylinder with alternative fastening possibility
- power packs in conformity to customers specification

The specifications given herein are subject to alteration

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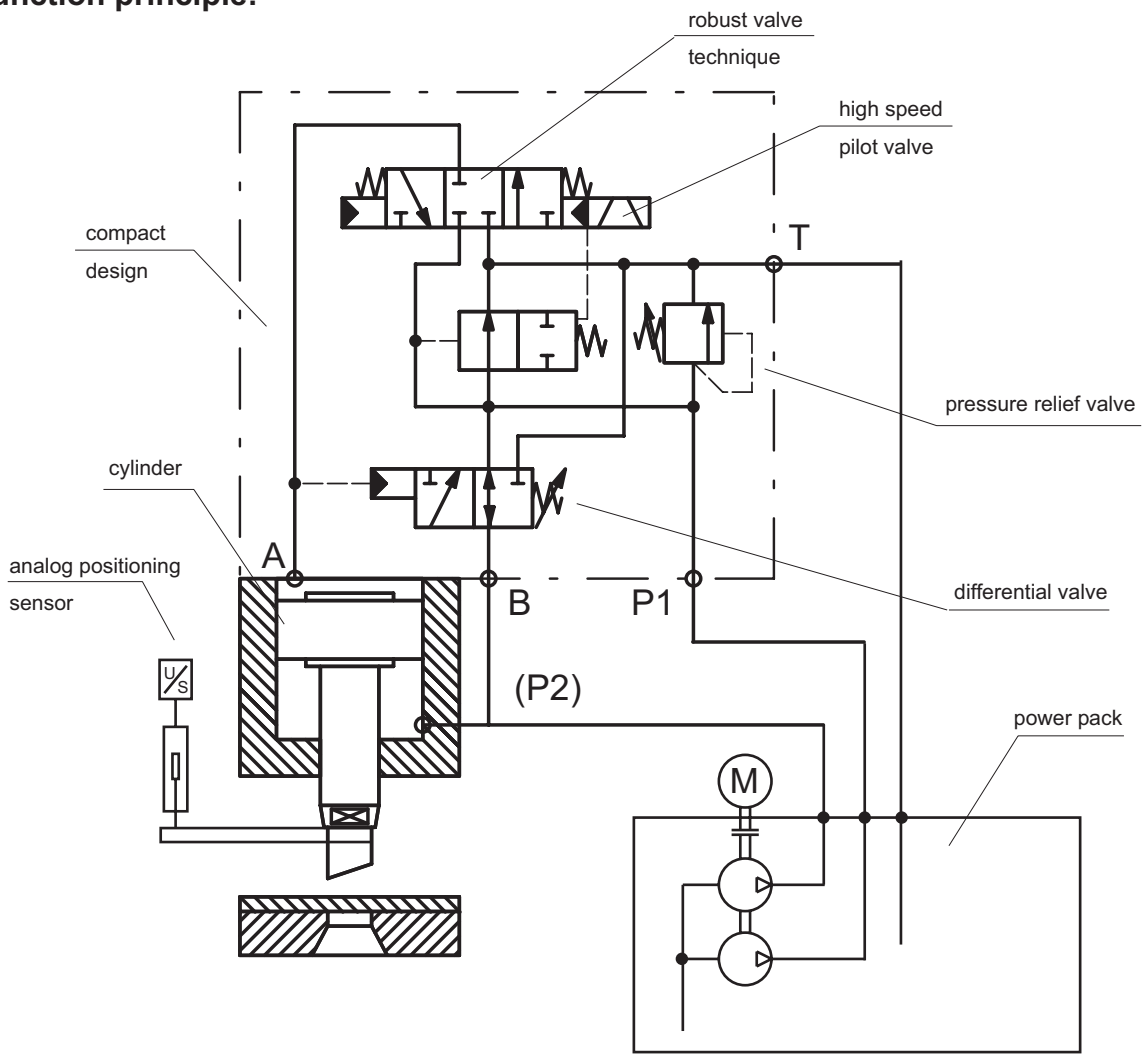
Function principle:



Power Table ECO *plus* 20to / 30to / 40to*:

	20 to	30 to	40 to
working pressure max.	280 bar	280 bar	280 bar
max. effective power	220 kN	317 kN	431 kN
effective power (partial load)	73 kN	108 kN	149 kN
cylinder stroke	40 mm	40 mm	40 mm
installed motor power	11 kW	11 kW	11 kW
cycle time punch stroke 6 mm	105 ms	130 ms	160 ms
cycle time punch stroke 8 mm	125 ms	160 ms	205 ms
cycle time punch stroke 10 mm	165 ms	220 ms	280 ms

*additional power data according dimensioning protocol

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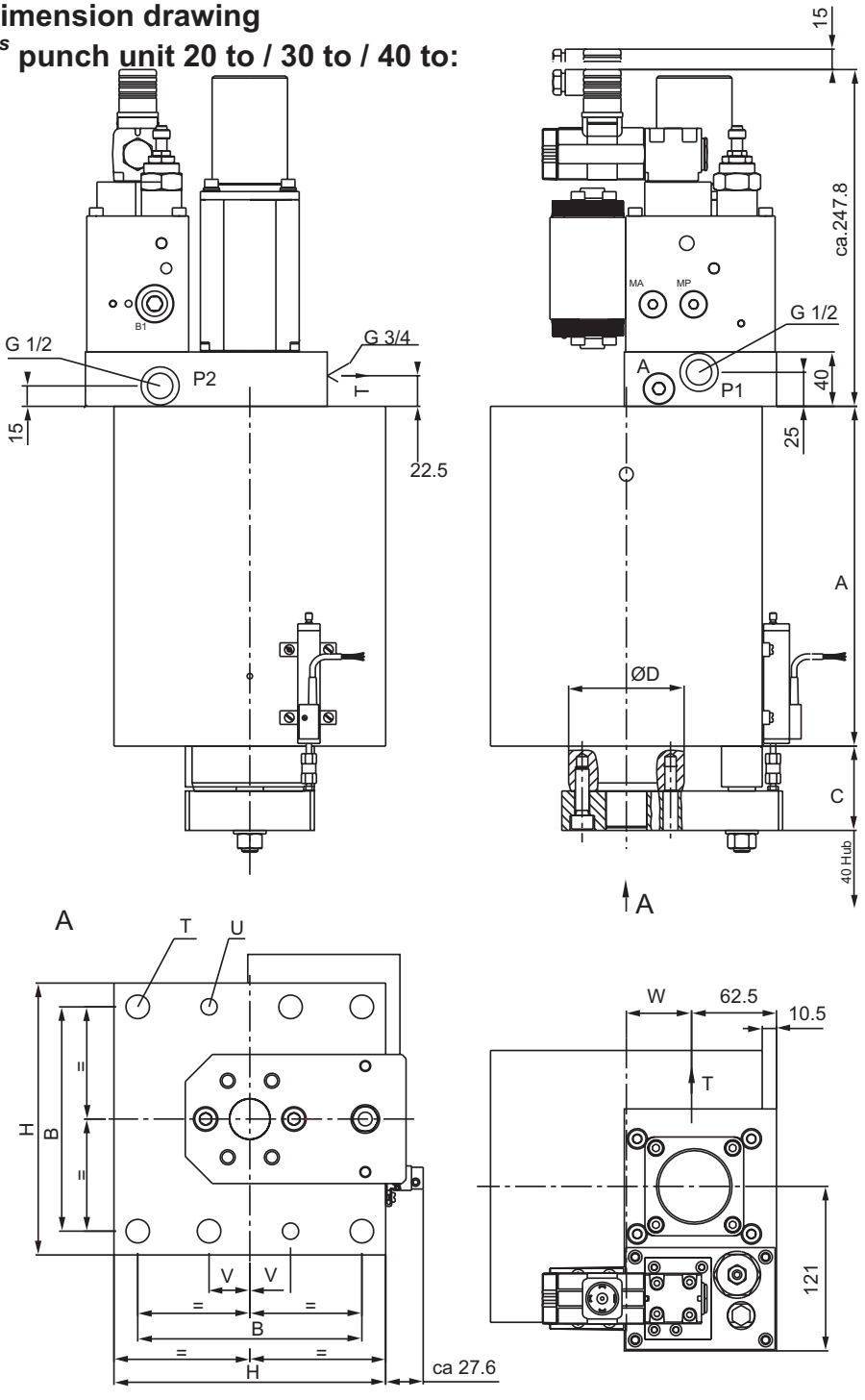
Basic dimension drawing
ECO *plus* punch unit 20 to / 30 to / 40 to:



Basic dimensions:

	A	B	C	D	H	T	U	V	W
ECO*plus* 20 to	240	145	62	70	180	6xM20	2xØ12	30	38
ECO*plus* 30 to	250	165	62	85	200	6xM20	2xØ12	30	48
ECO*plus* 40 to	260	170	62	100	210	8xM20	-	45	53

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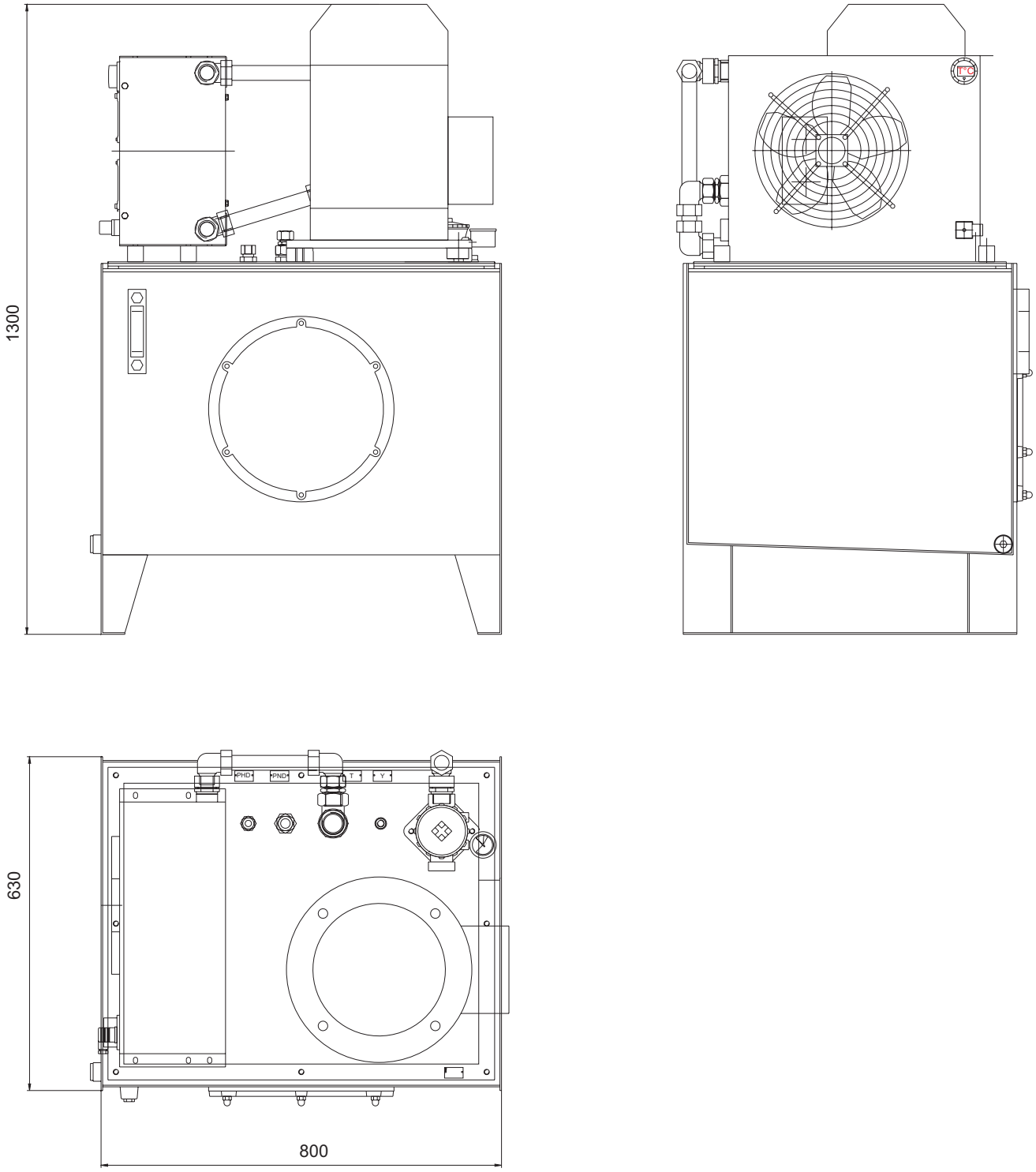
Basic dimension drawing ECO *plus* power pack 20 to / 30 to / 40 to:



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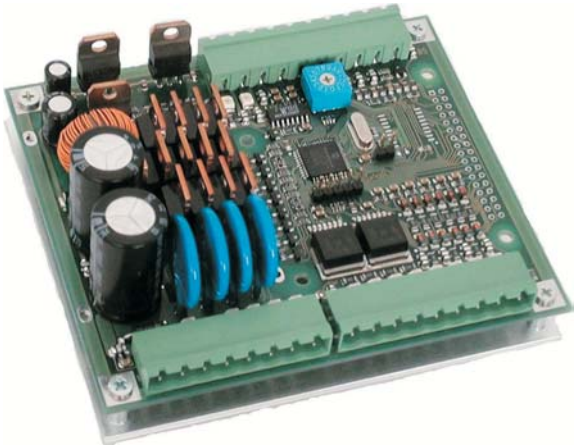
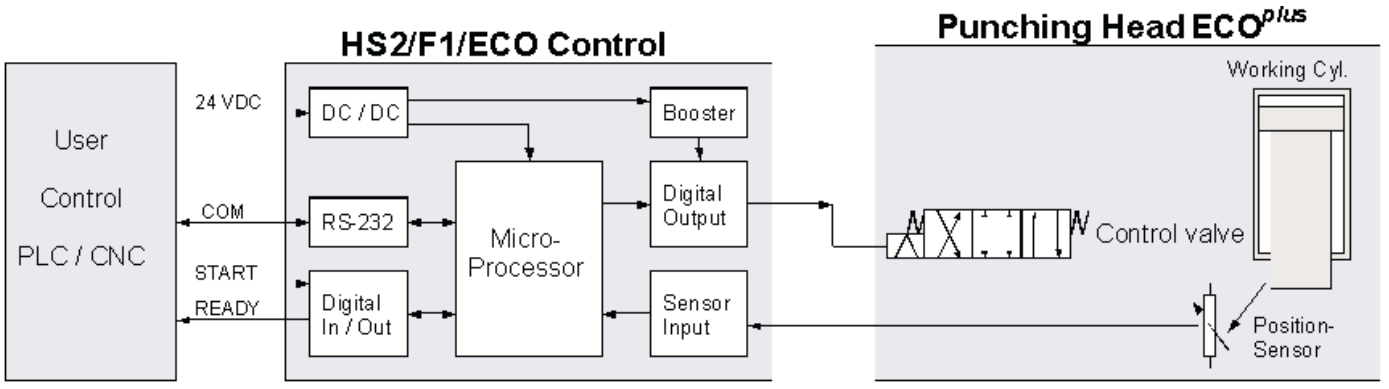
Electronic Control HS2



- **Optimum Control for punching unit ECO^{plus}**
- **Fast valve switching by “Boosting”**
- **Data interface: RS-232**
- **Mounts on 35 mm DIN rail**
- **Cycle time: 0,2 ms**

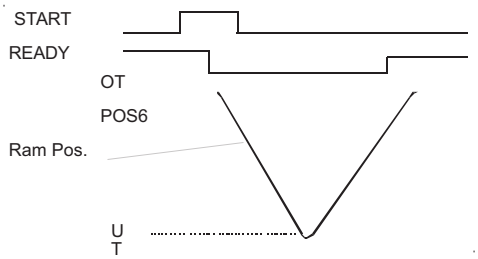
The device HS2/F1/ECO (called HS2 in this document) is used to control H+L punching systems ECO$^{plus.}$ All specific processes of ECO are defined in the firmware of HS2. Thus, the user control (CNC / PLC) does not need to implement these processes. Integration of the punching system ECO into the user machine is very simple. Only a few digital I/O signals and a data channel connection is necessary. For the data channel, there is a RS-232 interface. All hydraulic actors and sensors are processed by the HS2. The following diagram shows the system structure from the CNC / PLC view.



Parameters
The ram idle position (high up for tool change or close to the sheet for punching) can be defined and controlled. Also, the stroke length (lower deadpoint UT) can be user selected over the data interface.

Punching
A punching cycle is started with the signal START. HS2 controls and monitors the complete process.

The ram will move with maximum speed down to bottom dead centre and back up to top dead centre. The finish of the movement will be indicate by the signal Ready.



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