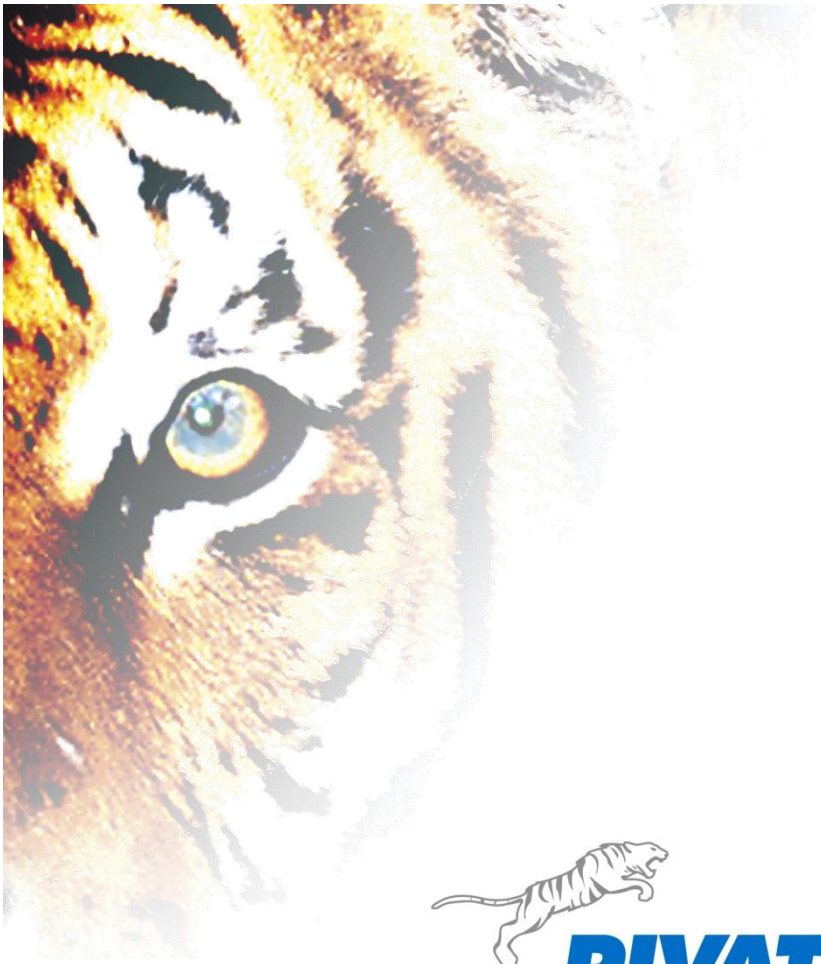

PIVATIC
An Ursviken Group Company

TECHNICAL SPECIFICATION (5278)

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Contents

A. General technical details of PivaPunch PCC125-e Electrical Punching Centre for Coils

Ambient temperature

- This equipment is designed for the max. ambient temperature of 45 °C.

Main connection details

• Electrical connection,			
• TN-S rated (3 phases and PE, N not required)			
• voltage		3*400	V
• fluctuation		+6,-10	%
• frequency		60±5	Hz
• Main fuses		63	A
• Pneumatic connection 800	l/min at	6	bar
• Hydraulic power (200 bar)		5.5	kW

Colour of line components

• Colour of the line is blue acc. to	5015	RAL
• Covers are light grey acc. to	7035	RAL

Configuration and lay-out

• The configuration of the tool stations according to drawing	PCC125 TTf Slide
• The line layout drawing acc. to drawing number	**ORD-01005-W9V2**

Material data

• Steel strip, strength up to	400	N/mm²
• Surface pre-painted, plastic covered, galvanised		
• Coil weight up to	10 000	kg
• Sheet thickness	0,5.... 1.50	mm
• The diameter of the inside hole of coils	508	mm
• The outside diameter of coils up to	1 600	mm
• Strip width	60...1 250	mm

Product data

• Cut blanks up to	2 500	mm
• Punched blanks up to	2 500	mm

- Accuracy of parts produced:
  When using proper material without chamber and internal stress and the strip being stiff enough (thickness/width), following tolerances apply:
  - PivaPunch incl. one Punching Station
    Hole-to-hole tolerance of up to 2 000 mm long punched blanks ± 0,15 mm in X and Y directions. The tolerances of your parts are confirmed on request.

These tolerances are valid for blanks up to 2 000 mm long which camber does not exceed 1 mm.

B. The scope of delivery of the PivaPunch PCC125 Electrical Punching Centre for Coils

Pos.	Line Component	Pcs
PP01125	**Complete Line Controller and Electrical Systems**	
PP0112510	Complete Line Controller and Electrical Systems of the PCC125-e Including the following equipment: Electrical system -Electrical cabinet is placed next to the hydraulic unit. -Cables between the line components are laid in an overhead bridge between the Electrical cabinet and the Punching station, otherwise they are on the floor in aluminium covers. -Customer to supply and connect the mains. -Electrical components are installed on assembling plates leaving space for modifications. -The electrical components are mainly from Siemens, Omron and Telemecanique. Pneumatic system -Hoses between the service unitt, valves and cylinders are delivered. Customer to supply and connect the service unit and connection. Line controller Siemens Sinumerik 840 D -Siemens Sinumerik 840 D numerical control and integrated PLC acc. to the line set up.. -Step 7 programming language used. -Detailed specification available as separate document. -The Sinumerik controller is installed in a separate control cabin together with the PC. -Complete Keyboard for the Sinumerik controller. -Common colour display with the PC -All texts available for the operator are in English. Hydraulic system -There is a small power pack for the cylinder functions like: Mandrel expansion, opening & closing of the Straightener and the cylinders of the Feeder. -Complete pipe lines and hoses between the line components and the power pack are included. -Hydraulic pipes and cables are laid on the floor in aluminium covers. Industrial PC -For part programming and for the Pivatic Multimedia Machine Documentation: -Installed to the same control cabin with the Sinumerik controller -19” colour display in common for the Sinumerik controller and for the PC. -Windows 7 User System in English is supplied. -The PC is fully assembled and Pivatic specified programs included are fully assembled ready for the customer. The PC has been designed for Pivatic line control purposes and installation of non –Pivatic specified software must be agreed separately.	1

	Remote Control connection over the internet for de-bugging	1
	-Pivatic Help Desk becomes access to the PC and to the line controller as specified in the attached specification. -A separate internet connection of its own is required for this connection bypassing the Firewall of the customer.	
	Pivatic Help desk has access to the following:	
	-Part drawings when stored in the PC of the Pivatic PCC.	
	-Tooling set up used for the job.	
	-Part program used for the job.	
	-Stacking of the parts of the job.	
	-The Order file of the job.	
	-The down loading of the NC-blocks for the job.	
	-Line controller parameters like: --Stroke Upper Dead Centre and Stroke length --Stroke tonnage of the Station	
	--Stroke speed of the Punching station	
	-The In and Output statuses of the PLC -The Diagnostics Messages of the Sinumerik controller for trouble shooting. -The NC-Parameters of the Sinumerik controller for trouble shooting.	
	A detailed specification is available as a separate document.	
	User Manuals, Instructions and drawings -Multimedia User Manual, Maintenance Instructions, Electrical, Pneumatic and Hydraulic drawings and Bills of Material -Delivered in English on a CD disc	
PP02125	**For handling of coils:**	
PP0212501	Coil loading stand for 10 000 kg Coils	1
	One or several Stands can be used for loading and storing of coils.	
	-Made of steel plates incl. slots for 4 rods supplied to support narrow coils.	
PP03125	**Decoiler and Straightener with control panel:**	
PP0312501	Decoiler and Straightener, with electrical gear motor	1
	consisting of the following equipment for decoiling, threading and straightening of the strip:	
	Sheet thickness 0,5 ... 2,00 mm, Coil weight up to 10 000 kg	
	Pick-up Decoiler:	
	-Expansion range of the mandrel Ø 470…550 mm	
	-Expansion with a cylinder mounted outside of mandrel, key blocks and machined segments made of cast iron.	

-The Mandrel is lowered and lifted with a cylinder for loading and unloading of the coil.
-The Decoiler traverses on rails with gear motor drive for loading and unloading of coils. Positioning of the coil on the centre line acc. to a scale.
-Fixed brackets on the Mandrel for guiding of the backside of the coil.

-Mechanically fixed Brackets on the mandrel segments for guiding of the front side of the coil. No hand tools required.

Threading devices:

Following equipment are foreseen for threading of the strip from the Decoiler to the Straightener:
-Two Snubber rolls in a cradle with a cylinder fixed to the Decoiler to prevent the coil from loosening during threading and pullback of the strip.
-Peeler blade/Threading table with cylinders fixed to the Straightener for threading of the strip.

Straightener:

Following equipment have been mounted on the Entry side of the Straightener:

-Strip guide with 2 hardened rolls, manual adjustment acc. to read-out.

-Two Pinch rolls, upper having diameter of Ø120 mm is lifted and pressed down with pneumatic cylinders and the supported lower roll has a diameter of Ø 60 mm and is driven.

The lower part of the Straightener:

-5 rolls, diameter Ø 60 mm, all driven, supported with double rolls set in one row in the middle.
-All lower rolls are driven by an electrical gear motor, controlled acc. to the height of the loop with an encoder.

The upper part of the Straightener:

-Four straightening rolls having diameter of Ø 60 mm are manually adjustable as a block by lifting, lowering and tilting acc. to mechanical read outs. All upper rolls are supported with double rolls set in one row in the middle.
Opening of the Straightener opens for cleaning of the rolls with cylinders to 35 °.
The Straightener is kept closed with the opening cylinders.

PP0312507 Extension rings for the Decoiler 1

-Four (4) rings made of rubber are placed on the mandrel for 570 … 650 mm expansion range for 610 mm coil inside diameter.

PP04125 **For threading of the strip over pit**

PP0412501 Threading tables between the Straightener and the Gripper Feeder

-Designed for sheet thickness 0,50 … 1,50 mm.

-With cylinders operated two Threading tables between the Straightener and the Gripper Feeder. Loop in the pit.

PP05125 **For feeding of the strip:**

PP0512501 Gripper feeder for feeding of strip 1

Strip is positioned for punching using a Gripper feeder designed to operate with all material types and thicknesses with same parameters.

The Gripper feeder mounted on a solid steel frame as follows:

-Designed for sheet thickness 0,50 … 2,00 mm.

-Hydraulic clamp set on the middle of the strip, 1 pc.

-The clamp is set on a bridge moving on precision guides in the feeding direction with an AC-Servomotor and rack and pinion.
-The stroke of the Gripper feeder up to 940 mm.

-The speed of the feeder is up to 100 m/min.

The strip is guided with guiding elements on the entry and on the exit sides of the feeder bed. On the entry side there is clamp to hold down the strip during the return stroke of the feeder. The side guide elements are positioned manually for the strip to be processed.

PP0712514 Electrical Punching station TTf (Thick Turret Tooling) with TTf Slides 1

Designed for parts and part families demanding flexibility and versatility.

Punching, nibbling, embossing, piercing jobs carried out as standard.

DTP (Double Tool Punch) feature minimises cycle times since two tools activated simultaneously when punching symmetric hole patterns like corner notching.

-Solid O-frame made of thick machined steel plates with precision guides for ram plate.
-Ram plate is guided on all four corners with precision guides.

-Ram plate driven by a linear servo motor, key and a roller.

-Punching force is 300 kN.

-Stroke length is programmable with parameters for different kind of jobs like punching, nibbling, piercing and embossing.
-Two with servomotors and ball screws traversing slides with Tool Selector Systems and attachments for tool cassettes.

Thick Turret type tools are set in easy-to-change cassettes, which is an ideal solution for product families.
-The Punching station TTf is designed for the following tool cassettes:
* When using TTf Slide;
--Tool cassettes TTf, 2 off, each including 21 tool stations of size A to F.
--Tool cassettes may be used as even and odd pairs.

PP08125 **For cutting-to-length:**

PP0812503 Electrical Shear for cutting-to-length 1

mounted on the exit side of the last punching station.
-Designed for sheet thickness 0,50 … 2,00 mm.

-Down stroking Shear driven by the ram of the punching press incl. a hold down beam loaded with gas springs.
-Blade clearance can be set on both ends of the upper blade

-Blades can be turned ones for another sharp edge.

-Manually adjustable Strip guide with a read out in front of the Shear.

-Day light opening is 14 mm.

PP09125 **For discharging of blanks behind the shear**

PP0912502 Discharge conveyor and Chute for small blanks 1

-Motor driven conveyor belt, length for up to 2 500 mm long blanks.
-Blanks smaller than 300*200 mm are guided down in a box through a pneumatic Chute.
-Blanks up to 700 mm length can be discharged through the chute.
- There is a scrap box set on front of conveyor / behind the shear for short off-cuts.

PP1212503 Turning drum for punched blanks up to length of 2 500 mm. 1

for turning blanks to get the burr inside of the product.

-Two motorised conveyor belts pressed/released with cylinders

-Motorised turning of the conveyor belts

-Dimensioned for parts, X*Y, 300*200 to 2 500*1 250 mm

PP13125 **Stacker**

PP1312505 Stacker for piling of punched blanks up to length of 2500 mm incl. one Lifting table 1

-Motorised conveyor for transporting the blank against a gauge in the rear
-There is adjustable one address only.
-Hydraulic **motorized Lifting table** fitted for the pallet for blanks to be piled.
-Min width 200mm, min length 300 mm.
-Stationary magnets in the center line to support the blank for the stacking

Accessories for PivaPunch PCC125 Punching Centre for Coils

Pos.	Line Component	Pcs
PP14000	**Tool Cassettes for the Punching station selected**	
	Designed for Punching stations TTf for Thick Turret tools as follows: -10 A stations up to Ø12,7 mm diameter -6 B stations up to Ø31,75 mm diameter -2 C stations up to Ø 50,80 mm diameter -1 D station up to Ø 88,90 mm diameter -1 E station up to Ø 114,0 mm diameter -1 F station up to Ø 152,4 mm diameter -Reach of all stations, min. 625 mm -Delivered complete with C-frame, Punch attachment, Die plate and Die support -The Day-light opening between the punch and the die 10 mm as standard for punching or 20 mm for embossing. To be specified in the order. -One support plate under the tool cassette is delivered. This plate must be changed when other type tool cassettes are used. Tooling quoted on request.	
PP17000	**Tool trolleys**	
PP1700001	Trolley for handling of Tool Cassettes	2
	Designed for handling of all cassette types. -Carries one cassette. Movable on wheels. Incl. a table for the Die plate. -Incl. locks for fixing to the punching station during the cassette change.	
PP18000	**Conveyors for discharging of slug in a container**	
PP1800001	Motor driven metallic conveyor belts for conveying of slug to a container in front of the machine	1
	-Designed for handling of slug coming from one punching station only -Scrap parts of the Shear are guided in a separate scrap box supplied. -Slug container does not belong to the scope of delivery -Max slug size which can be handeled 200x200 mm	
PP19000	**Programming software**	
PP1900001	PivaCam Software Package	1
	- Runs in Windows 7 user systems. Availability for other user systems proved on request. -Includes software for Part programming, Order file and down loading of NC-blocks	

Part programming software including the following features:

-Introduction of 2D .dxf files for programming

-Tool library and Tool list for the current job

-Tool definition and sorting of tools acc. to shape

-Automatic programming of matching tools

-Programming of odd shapes with macros and subroutines

-Programming of hits with macros and subroutines

-Graphical editing of the punching program

-Down loading of product specific Flexpuch code

Definition of the Order list and calculation of NC-blocks

-Selection of parts and batch sizes. Several batches can be ordered at the same time.
-Postprocessor for calculation of the NC blocks

-Down loading of NC blocks to the controller

-Parts are run in accordance with the Order list created.

Parts can be run on Off-Line basis as follows:

-The part program including stacking data is stored in the controller as NC blocks.

-The number of parts to be produced in the batch defined as a manually input R-parameter value.
-The first good part achieved after cutting-to-length the partially punched length of the strip.
-When the number of program repeats (The R-parameter value) run, there is punched strip between the tools and the shear.

Parts can be run on On-Line basis as follows:

-An Order list is created either in PivaCam or using the Flexpunch Order Manager and the CNC program is calculated of the part programs included in the Order list.
-The NC blocks are down loaded as soon as they have been generated and executed without storing in the controller. The NC program is generated in parts acc. to the content of the Order list.
-The first good part achieved after cutting-to-length the partially punched length of the strip.
-When the Order list is completed, there is un-punched strip between the tools and the shear.
-More parts can be added to the Order list prior to its completion.

One PivaCam licence is included in the scope of delivery.

PP20125	**Safety devices fulfilling the requirements of 2006/42/EY directive acc. to the lay-out drawing:**	
PP2012501	Safety fence of the Pivatic PCC consisting of:	1
	-Light curtain components including transmitters, mirror units and receivers mounted in posts made of section steel. -Fence elements made of steel net and section steel tube frames, Height 2 000 mm, Width 1 000 ... 1 500 mm	