

MACHINE SPECIFICATION

CNC PROFILE GRINDER MACHINE

(FOR PRODUCER)

Doc Nr. MS-006-7.62-PMN2023

Issue Date: 26 March 2024

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1. SCOPE

This specification covers the requirements and conditions of admission to the gauging machine.

2. APPLICABLE DOCUMENTS

The following lists the documents referred to in this specification. These documents shall form part of this specification to the extent specified herein. In the case of requirements in these documents differing from the requirements indicated in this specification, this specification shall always have precedence.

Applicable Drawings 2.1

12,7-CT4.100 - Drill profiles for dies assembly (MU3-TJ). - 1st stretch stamp (MU-3P).

3. REQUIREMENTS

- 3.1 Physical Characteristics
- 3.1.1 Basic Machine Equipment

1	Table				
1.1	Working surfa	ace (L x W)	400 x 250mm (min)		
1.2		Traverse feed	300mm (min)		
1.3	Travel	Cross feed	150mm (min)		
1.4	Travel	Minimum input increment	0.0001mm (min)		
1.5		Position detection system	Semi-closed loop		
2	Wheel Head				
2.1	Reciprocating	g slide stroke	0 ~ 155mm		
2.2	Reciprocation speed		30 ~ 400 min ⁻¹		
2.3		Traverse feed	200mm (min)		
2.4	Travel	Cross feed	150mm (min)		
2.5	Travel	Minimum input increment	0.0001mm (min)		
2.6		Position detection system	Full closed loop		
2.7	Police angle	Radial direction of wheel	−2 ~ +20°		
2.8	Relief angle	Axial direction of wheel	±15°		
2.9	Swivel slide swiveling angle		±15°		
3	Projector	-			
3.1	Screen size (W x H)		540 x 420 (min)		
3.2	Magnification	1	20X , 50X		
4	Wheel spind				
4.1	Size (O.D x Width x Bore)		Ø120~180 x 3~10 x Ø31.75mm		
			(min)		
4.2	Wheel spindle speed		$1000 \sim 6000 \mathrm{min^{-1}}$		
4.3	Motor capacity		1.5 ~4 kW-P		
5	CNC controller				
5.1	CNC unit model		FANUC / SIEMENS / SETARA		
5.2	Display		10.4 inches (min)		
5.3	Manual hand	lle	2: X,Y (Z,V)		
5.4	Pitch error m	odification	Standard		
5.5	Number of a		4 axis (simultaneous 2 axis)		

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- Operation for manufacturing molds, dies, formed tools and rollers.
- Frequency controlled motor.
- Automatic centralized lubrication system for the drawing operation consisting of a lubrication tank with recycling unit.
- Control panel with touch function like HMI with motion arm.
- Safety devices such as safety switches and emergency stop.
- Sensors and actuators on the machine to control and monitor
- English language on the display.
- Sound insulating housing, the working area is secured with an adequate protection in form of moveable covers with safety glass.
- Doors are electrical secured (locked) and in case of opening the machine stops automatically.
- Complete protection device above the working stations by translucent covers.
- Direction of input material is opposite with output material.
- · One set of production tools.
- One set of alignment / centering tools for each operation.
- · Sparepart : Mechanical & Elctrical parts.
- Color of all machine / equipment shall be agree upon contract (according RAL standard).
- Stabilizer 3 phase 380 Volts.
- · Set of Operator Tools.
- Automatic Work Swivel Unit (mounts to Ø1.26" [32 mm] hole).
- · Circular Grinding Attachment.
- Screen Loupe (P.A.T.).
- Auto balancer.

3.1.2 Electrical Power Supply

All electrical equipment is suitable for an ambient temperature between 18-40°C

- Three phase current 380 Volts / 50 Hz / AC
- Control voltage 24 VDC

3.1.3 Noise Level

The machine shall have a noise level at a maximum of 85 dB.

3.1.4 Compressed Air Supply

The machine shall be operating normally with compressed air supply at a maximum pressure of 6 bar.

3.1.5 Mechanical Tool Kit

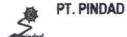
The machine shall be supplied together with mechanical tool kit consisting of:

- Hand tool like wrenches.
- Special tools.
- Special maintenance tools essential for removal of assembly / sub-assembly parts or tools (for maintenance or setting of the machine).

3.1.6 <u>Gauges</u>

 One (1) set Working Gauges in the form of a micrometer (equivalent to mitutoyo brand).

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3.1.7 Manual Book

Two (2) sets of technical documentation in English language supplied in print (hard copies) as well as two (2) copies saved on CD and constituting of :

- Equipment layout and installation drawings with power supply points.
- Installation instructions.
- Operation and programming instructions.
- Safety and preventive maintenance instructions.
- Complete trouble-shooting list with remedies.
- Diagrams for structure of electric and pneumatic circuits.
- · Time moving diagram of the cam control.
- General machine assembly drawings indicating the structure of the machine Incl. devices, mechanical components and sub. components with technical data sheets of ancillary equipment, such as motors, speed controller etc.
- Detailed list of tools and spare parts specifications and ordering information with identification number (manufacturing drawings for spare part are not in the scope of documentation).
- · Logic diagram (FUP or AWL) for electrical control program.
- Specification of oil, grease, etc. required to be used in the machines / equipment.
- CE Declaration of Conformity.
- Pneumatic Plan.
- Technical documentation of all the additional equipment.

3.2 Performance characteristic

3.2.1 Efficiency

- With good quality of input materials, the expected machine capacity shall be 5 tools per-hours. The efficiency of 85% shall be calculated on good tool only.
- The efficiency factor does not include down time due to non-availability of utilities(electrical power, compressed air, water and other service facilities) as well as non-availability of materials(input materials quantity, quality and conseumables) and breakdown time of the machine due handling mistake by the operator.

3.2.2 Product Output

The product output shall meets Pindad's requirements(Tool drawing)

3.3. Marking

The containers containing primed case each lot shall have markings showing the following:

- a) Machine name
- b) The production code of the machine
- c) The manufacturing date and year of the machine
- d) The producer
- e) The quatity in each container
- f) The contract number

3.4 Preservation and Packaging

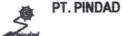
The cartridge shall be packed in seaworthy packing and shall be able to prevent any damages and corrosion during transportation and storage for 6 months as from date of shipment. The packing details issued by Producer/Suplier and agreed by Buyer. The supplier shall ensure no short packing of equipment or components.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Conformance to requirements

> The supplier shall be resposible to ensure that the supplied components conform to all the requirements stated in paragraph 3 of this specification and Pindad quality requirements.

Commissioning Procedures 42

4.2.1 Visual Inspection

Checking for the completeness (quality and quantity) of parameters as :

- Machine physical conditions, according to part 3 (requirements) of this machine specification.
- Spare part, tools and gauges, according to part list from OEM (Original 2. Equipment Manufacturer).
- Documents supplied together with the machine.

4.2.2 Functional Inspection

Checking for the full functioning of the machine supplied, with steps as following::

Try out / production test Machine shall be running with product feeding to produce try out lots. This sample product will be inspected to check whether it conforms to pindad's requirements (product drawing).

1. Tryout for making Drill profile 12,7-CT4.100(Tool 1): 22 pcs

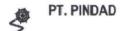
2. Tryout for making 1st stretch stamp step12,7-CH4.20406(Tool 2): 22 pcs

Note: 2 pcs tools of each variant tool shall be done in producer place. 20 tools of each variant tool will be done in pindad. With the hope that the time spent on the tool making tryout between the first and second tryouts is the same(5Tools/Hour)

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No (Nr)	Mata Uji (Inspection Item)	Spesifikasi (Specification)	Alat Ukur (Equipment)	Frekuensi (Frequency)	Prosedur/Dokumen (Reference/Document)	Sensus/Sampling Census/Sampling	Kriteria Mutu (K/MA/MI) Criteria (C/Ma/Mi)
A	Visual Inspection Visual Conditions	 Physical Machine Sparepart Tools & Gauge Document : Manual Book Technical Data Specification 	Visual	100%	N/A	Census	С
В	Function Inspection						
1	Try Out: 1st step : 22 pcs 2nd step : 22 pcs	Product results according to specifications 1. Drill profile 12,7-CT4.100 2. 1st stretch stamp step 12,7-CH4.20406	Caliber, Digital scale, Optical profile projector	100%	-	Census	MA
2	Effciciency	Min. 85%(4 Tools/Hour)	SPC	100%	-	Census	MA
3	Machine	Completely Good	Visual	100%	-	Sampling	MA
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