

# THA



12 100 10400/1



## Automatic Nail Making Machine

TECHNOLOGY OF NAIL MANUFACTURE  
• TECHNOLOGIE VÝROBY HŘEBÍKŮ • TECHNOLOGIE DER DRAHTSTIFHERSTELLUNG

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# THA

## AUTOMATIC NAIL MAKING MACHINES OF THE THA - SERIES

The automatic nail making machines THA are designed for the manufacture of nails and other products from steel, copper, brass and aluminium alloys wire of round and square section. The nails manufactured suit for further machine processing. With adaptation or simple exchange of cutting tools, the automatic THA machines are able to manufacture different kinds of products as stated in the summary of assortment. The input material has to comply with the technical parameters of the various machines as specified in the table, page 6. As the range of manufacturing possibilities of the automatic THA machines is very wide, the manufacturer only gives a guarantee for the high quality of products providing the diameter-to-length ratios have been respected, in accordance with the nail standards, strength of the material to be processed and rate of production per time unit, for instance. In case of special products, previous consultations with the machine manufacturer are recommended.



The rational design is a guarantee for high utility value of the automatic machines noted for their large number of advantages:

- high output
- broad operating possibilities, easy attendance, fast and simple setting
- easy access to the individual mechanisms
- easy renovation of the working tools
- small area occupied, special foundations not required, possibility of installing the automatic machines on higher storeys
- low noise generation and little vibration thanks to shock absorbers installed
- high tool and component unification
- possibility of additionally completing the machines with a wide range of special accessories enlarging their operating possibilities



### Type designation comment:

#### THA 40/120 S - E

THA - horizontal automatic forming machine  
40 - tenfold maximum wire diameter  
120 - maximum product length (in mm)  
S - type of jaw box - circular

#### MODEL:

- C - oil
- D - grease
- E - frequency converter



# OPERATING TOOLS

## JAW BOXES

Jaw boxes are highly universal, because only two sizes cover the whole range (14/32+25/60 and 31/80 + 40/120). Identical fixing dimensions make it possible to use both single-position and multi-position jaw boxes without any adaptation of the machine.

Therefore depending on the type of product, it is operatively possible to choose the most convenient box - for instance, for common joiner's nails a multi-position box (and on the contrary, for some types of precision nails and special types of products, a single-position box). By this adaptation the operator modifies the "S" machine type into a type without "S".

The boxes can also be used as a fixture when reconditioning the jaws.

## SINGLE-POSITION JAW BOX

These automatic machines are especially suitable for manufacturing precision nails for further machine processing, and other special products. They are suitable for the manufacture of highly accurate products of high quality.

The advantages of automatic machines provided with single-position jaw boxes consist in their:

- Suitability for the manufacture of precision nails for further machine processing
- Suitability for manufacturing other special products
- Possibility of jaw renovation



„S“ machines  
THA 14/32 S, THA 25/60 S-C, THA 31/80 S-C, THA 40/120 S-C



\* Wire diameter and nail head form should be specified

\*\* Head form should be specified

## MULTI-POSITION JAW BOX

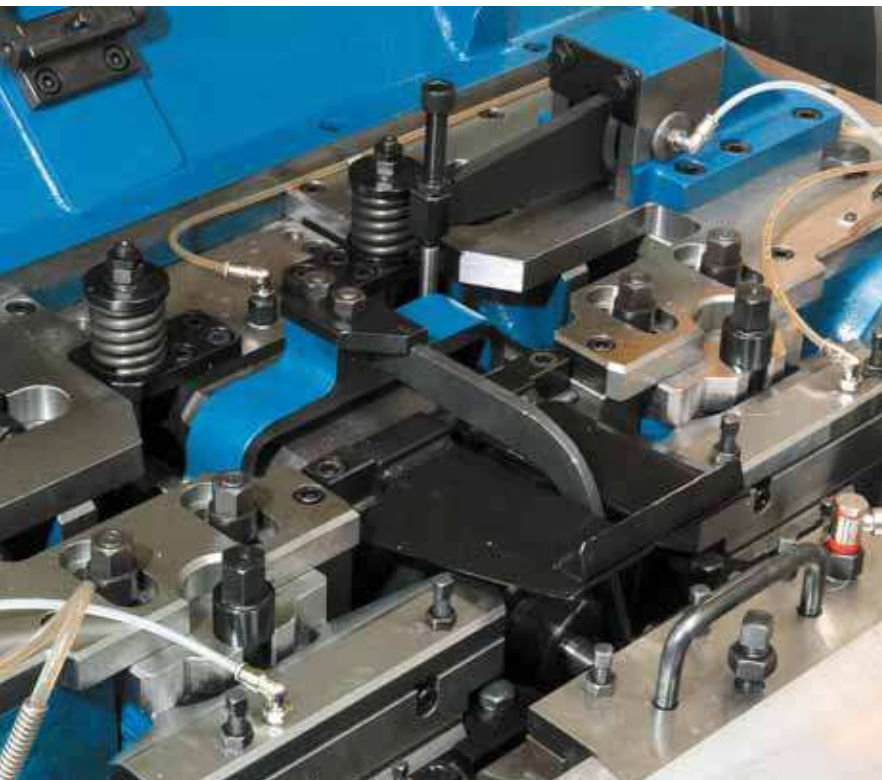
The automatic machines provided with multi-position jaw boxes are especially suitable for new-comers and less equipped nail manufacturers. But the use of such automatic machines improves the economy of production even of experienced and traditional nail manufacturers, too.

The advantages of automatic machines provided with fourteen - position jaw boxes consist in their:

- Suitability for joiner's nail manufacture
- Improvement of production economy
  - Fourteen times longer service life of jaws
  - Better utilization of the expensive tool steel
  - Shorter idle time for exchanging the worn-out drawing dies
- Simpler jaw manufacture



# THA MACHINE MAKES



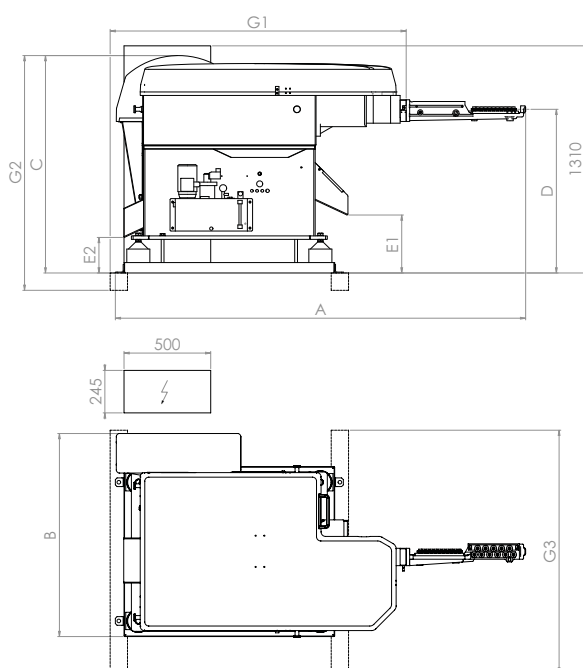
## NAIL MANUFACTURE

The nail manufacture takes place within the space of hammer, jaw box and shearing knives. These mechanisms perform the head forming, feed step, cut-off and knocking down of the finished nail to the evacuating chute. The product length is steplessly adjustable.

Any modification of product shape or wire diameter requires an exchange of tools or an adaptation of the machine. In certain cases, the speed of the automatic machine should be reduced. As the automatic machine design is continuously being adapted to the newest knowledge of development, ask the manufacturer for more information in case you are planning to manufacture parts that are not included in the summary.



## BASIC DIMENSIONS OF THE AUTOMATIC MACHINES



## BASIC DIMENSIONS OF THE AUTOMATIC MACHINES (mm)

Type	THA 14/32	THA 25/60	THA 31/80	THA 40/120
A	1250	1820	2320	2370
B	880	960	1120	1180
C	1140	1080	1270	1260
D	930	850	930	940
E1	530	350	380	330
E2	190	200	230	200
G1	1080	1300	1660	1710
G2	1240	1180	1370	1360
G3	1300	1300	1400	1400

The machines are supplied partially disassembled (straightening mechanism).  
The machines can be delivered in wooden oversea packaging.  
G1 - transport. length, G2 - transport. height, G3 - transport. width

# ASSORTMENT OF PRODUCTS

## SUMMARY OF ASSORTMENT SUITABLE FOR THE NAIL MANUFACTURE IN AUTOMATIC MACHINES

- Lost-head joiner's nail



- Flat-head joiner's nail



- Nail for machine nailing



- Cartwright's nail



- Moulder's pin



- Lost-head square shank nail



- Angle-iron nail



- Lost-head nail



- Locksmith's nail



- Upholstery tack



- Reed clasp pin



- Stub nail



- Wire dowel



- Shoemaker's tack



- Shoemaker's tack



- Bordered nail



- „U“ staple



- „U“ staple with oblique cut



- Al-alloy rivet



- Al-alloy nail, max. dia = 3d



- Knurled-shank nail



- T-head nail



- Half-head nail



- Concrete nail



- Twisted nail \*



- Semiproduct of nail to be rolled



- a) Rolled helical nail for pallets \*\*



- b) Convex rolled nail for pallets \*\*



\* Providing that the wire has been twisted in advance, because the machine is not able to do such an operation

\*\* Providing a complementary machine (roller) is available

### SUITABLE WIRE STOCK

Wire diameter	Recommended max. strength (MPa)
Up to 1 mm	1030
1 to 1,6 mm	981
1,6 to 2,2 mm	883
2,2 to 3,5 mm	785
3,5 to 4 mm	735

# THA

## BASIC TECHNICAL PARAMETERS

### BASIC DATA VALID FOR THE MANUFACTURE OF JOINER'S NAILS FROM SEMI-HARD STEEL WIRE

	THA 14/32 S THA 14/32	THA 25/60 S-C THA 25/60 C	THA 31/80 S-E THA 31/80 E	THA 40/120 S-E THA 40/120 E
Maximum output				
Number of nails manufactured (pcs.min <sup>-1</sup> )	900	700	600 (*660)	500 (*550)
Material processed				
Maximum diameter of steel wire (mm)	1,4	2,5	3,15 (**3,6)	4,0 (***4,6)
Maximum diameter of Al-alloy wire (mm)	-	4,0	5,0	6,0
Minimum diameter of wire (mm)	0,7	1,0	2,2	2,5
Wire nominal diameter tolerance (mm)****	± 0,03	± 0,03	± 0,04	± 0,05
Products parameters				
Min. length of nail (mm)	6	10	10	10
Max. length of nails (mm)	35	63	80 (**90)	120 (***130)
Max. diameter of head (mm)****	3,5	6,0	8,0	10
Parameters of machines				
Maximum input (kW)	3,5	3,4	5,9	5,9
Standard electrical equipment supplied	400 V/50 Hz, 3 phases (modifications to special order)			
Min. protection of supply leads (A) for stand. el. equipment	20	25	80	80
Machine weight without accessories (kg)	510	820	1540	1540
Machine weight with accessories (kg)	541	881	1604	1604
Lubrication system				
Lubrication	electronic	electronic	electronic	electronic
Min. oil consumption (l.8 h <sup>-1</sup> )	0,1 l.8 h <sup>-1</sup>	0,1 l.8 h <sup>-1</sup>	0,036 l/ 20000 pcs of nails	0,024 l/ 20000 pcs of nails
Oil tank no.1 approx. capacity (l)	16	16	16	16
Tank no. 2 approx. capacity (l)	3 l of oil		2 l of grease	

Specification of suitable oil fill	oil		grease NLGI 00
Oil for ambient temperature	up to 25 °C	more than 25 °C	-30° to 140 °C
Kinematic viscosity at 50°C (mm <sup>2</sup> .s <sup>-1</sup> )	76	114	at 40° to 133 °C
Kinematic viscosity at 100°C (mm <sup>2</sup> .s <sup>-1</sup> )	11	15	at 100° to 13 °C
Viscosity index	80	80	95
Inflammation point (°C)	230	240	>280
Point of congelation (°C)	-12	-8	-30

- \* When using the frequency converter (model „E„)
- \*\* maximum 400 rpm
- \*\*\* maximum 350 rpm
- \*\*\*\* maximum 2.5 times the diameter of steel wire

# INFORMATIVE OUTPUT OF THE MACHIN

## THEORETICAL OUTPUT OF THA SERIES AUTOMATIC MACHINES IN pcs.h<sup>-1</sup> FOR JOINER S NAILS

	THA 14/32	THA 25/60	THA 31/80	THA 40/120
Output (pcs.h <sup>-1</sup> )	54 000	42 000	36 000	30 000

## THEORETICAL OUTPUTS OF THA SERIES AUTOMATIC MACHINES IN KILOGRAMS PER ONE HOUR (kg.h<sup>-1</sup>) FOR JOINER'S NAIL ACCORDING TO ČSN STANDARDS

diameter d (mm)*	Nail length l (mm)**																			
THA 14/32	6	8	10	12	16	20	25	32												
0,71	1,35	1,67																		
0,80		2,21	2,65	3,08	3,89	4,81														
0,90			3,41	4,00	5,08	6,16														
1,00			4,32	5,02	6,32	7,61														
1,25					10,21	12,31	14,9													
1,40						15,71	18,9	23,42												
THA 25/60			10	12	16	20	25	32	36	40	45	50	56	63						
1,00			3,36	3,91	4,91	5,92														
1,25					7,94	9,58	11,59													
1,40						12,22	14,70	18,27												
1,60						16,42	19,74	24,40	29,61											
1,80							27,55	30,87	34,23											
2,00										42,84	47,88									
2,24											60,06	66,36								
2,50												82,74	92,82	104,16						
THA 31/80			10	12	16	20	25	32	36	40	45	50	56	63	70	80				
2,24											51,48	56,88								
2,50												70,92	79,56	89,28						
2,80													100,1	105,5	118,1					
3,15														112,3	125,6	141,1	156,6	178,2		
THA 40/120			10	12	16	20	25	32	36	40	45	50	56	63	70	80	90	100	110	120
2,50												59,10	66,3	74,4						
2,80													83,4	87,9	98,4					
3,15												93,6	104,7	117,6	130,5	148,5				
3,55															165,3	188,7	211,8			
4,00																243,0	272,4	315,0	333,0	378,0
4,20***																		366,0	384,0	405,0

\* On demand tools for other wire diameter can also be supplied.

\*\* Nail length can be steplessly changed by modifying the eccentric eccentricity

\*\*\* Diameter 4,2 mm is not included in the ČSN Standard.

# THA

## SPECIAL ACCESSORIES

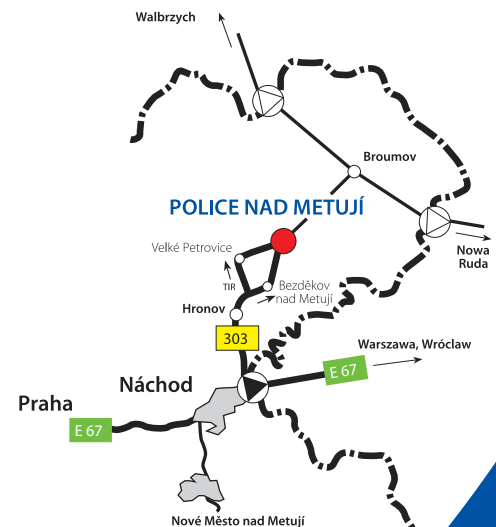


For the THA automatics we recommend to order special accessories which are supplied upon separate order only.

- 1 | Shearing knives sharpener
- 2 | Wire twisting machine
- 3 | Pay-Off stand
- 4 | Tumbling drum
- 5 | Exhausting equipment for the tumbling drum
- 6 | Anti-noise covers
- 7 | Special operating tools and devices



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