

TAMPING MACHINE

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1) Manually Operated Tamping Machine Type HST 1



Design:

Simple stand of welding construction.

Cam disk manually driven by a crank for getting the tamping movement.

Force of impact determined by tension springs which can be quickly exchanged.

Attached scissor unit - also manually operated.

Sturdy table for taking the carbon brush movable up and down for the cable length by means of a foot pedal

Short set up time, thus suitable for small batches.

Principle of the tamping contact:

From the copper cable length, which protrudes of the tubular ram, a knot is made at the bottom of the drill hole. Copper powder is now inserted uniformly on top of the knot and between drill hole wall and copper cable and tamped firm, until the drill hole is filled to the requested level.

With the foot pedal the tamped carbon brush is brought to the down position of the table which makes the set cable length and the cable is cut by the scissor unit.

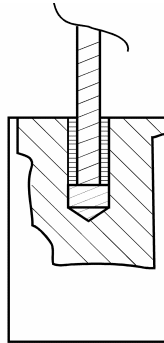
Interchangeable parts:

For each copper cable diameter one set interchangeable parts are necessary. It consists of:

- 1 clamp
- 1 tubular ram
- 1 bottom plate

Application:

For processing tamping contacts on carbon brushes and cutting the copper cable to the required length.



Range of use:

$$a = 4 - 55 \text{ mm} = .157 - 2.165''$$

$$t = 4 - 40 \text{ mm} = .157 - 1.575''$$

$$r = 12 - 70 \text{ mm} = .472 - 2.756''$$

Copper cable diameter:

$$1.0 - 5.0 \text{ mm}$$

Cross section of copper cable:

$$1.0 - 10 \text{ mm}^2$$

Length of copper cable:

$$20 - 80 / 200 \text{ mm}$$

Drill hole depth:

$$5 - 20 \text{ mm}$$

Capacity: Approx. 300 tamping contacts per hour

- Dependant on:
- Drill hole depth
 - Drill hole diameter
 - Quantity of powder per stroke
 - Required pull test
 - Required millivolt drop test
 - Quality of brush material
 - Length of copper cable
 - Skill of operator

Technical data:

- Drill hole diameter: 2.6 - 6.5 mm = .102 - .256"
- Cable drum diameter: max. 250 mm = 9.843"
- Length of cable drum: max. 200 mm = 7.874"
- Travel of tamping tube: 15 - 27 mm = .591 - 1.063"
- Tamping frequency: dependant on operator
- Space requirement: 600 x 500 x 1400 mm (24 x 20 x 56")
- Net weight: approx. 100 kg = (220 lbs)
- Gross weight: approx. 170 kg = (374 lbs)

Standard accessories:

- 1 tamping unit
- 1 cam disk for tamping
- 1 crank drive
- 1 set tension springs for tamping
- 1 scissor unit
- 1 stop for cable length
- 1 cable run off frame
- 1 powder container
- 1 set tamping tools consisting of:
 - 1 collet, consisting of two parts
 - 1 tubular ram
 - 1 bottom plate

- 1 table
- 1 stop for carbon brush
- 1 foot pedal for table movement
- 1 set of tools
- 1 operating instructions

Special accessories

- Collets
- Tubular rams
- Bottom plates - straight type
- Bottom plates - oblique type
- Tension springs for tamping
- Scissor blades
- Fast action vice

2) Tamping Machine Type SE 7V



Tamping Machine Type SE 7 V

This machine is used for fixing copper cables into carbon brushes by tamping. It is the succession type of our Tamping Machine Type SE 5.

Design:

Machine body of aluminium profiles. Attached electric switch box with a programmable processor. Attached pneumatic switch box with solenoid valves. Compressed air maintenance unit. Moveable table running on ball sleeves. Two table lifting cylinders. Oil brake cylinder for slow movement of the last 10 mm of stroke. Full digital precision tamping frequency (9 steps) by means of a fast switching valve. The force of impacts is determined by tension springs, which can be exchanged quickly. Depending on the application there are 4 types of tamping heads available:

1. Standard type tamping head for chopper cables 0.5-6.5mm diameter
2. Soft tamping head for chopper cables 0.3-3.4 mm diameter
3. Ultra light tamping head for chopper cables 0.3-2.4mm diameter
4. Heavy tamping head for copper cables 2,8-8,6mm diameter

Short set up time and therefore also suitable for short run production.

Method of operation:

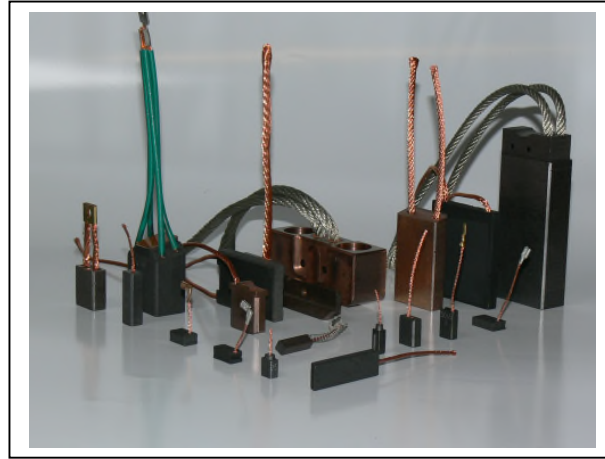
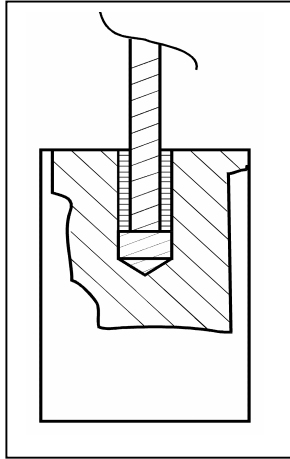
After the set up of the machine the drilled carbon brush has to be placed manually in a pneumatic valve and the tamping cycle has to be started by means of the pedal switch. The brush will be clamped – the table moves to its top position and made a knot itself at the end of the copper cable at the bottom of the drill hole. The clamping cylinder opens and the tamping starts. Tamping powder is now inserted uniformly on top of the knot. Between the drill hole wall and the copper cable and tamped firm to the set level in drill hole. The tamping powder quantity for stroke is adjustable. After reaching the tamping level the tamping stops and the table descends to its start position. The copper cable get clamped and the scissors cut the copper cable to the required length. After that the pneumatic vice opens and the finished carbon brush can be taken.

For each copper cable diameter is needed :

- 1 clamp
- 1 tubular ram
- 1 bottom plate

further more a insert for the pneumatic vice to hold the product in correct position.

Application: For processing tamping contacts on carbon brushes and cutting the copper cable to the required length.



Range of use:

a = 3 - 60 mm
t = 3 - 40 mm
r = 4 - 80 (101)mm

Copper cable diameter:

0.3 – 6.5 mm

copper cable length:

15 – 200 mm (180mm outside of the brush)

Drill hole depth:

3 – 21 mm

Capacity:

dependant on:

- drill hole depth
- drill hole diameter
- quantity of powder per stroke
- required joint strength
- required millivolt drop
- length of copper wire
- quality of brush materials
- skill of operator

In automatic mode with pneumatic vice approx. 500 -600 tamping contacts per hour.

Technical data:

- cable drum diameter: max. 250 mm
- cable drum length: max. 200 mm
- travel of tamping tube: 15 - 27 mm
- force of impacts: 2 - 80 N
- tamping frequency/minute: 390 - 840
- tamping frequency/second: 6.5 - 14
- required air pressure: 4 - 6 bar
- compressed air consumption: 45 L/min
- space requirements: 1000 x 1000 x 1600 mm
- net weight approx.: 230 kg
- gross weight approx.: 400 kg
- box dimensions - outside: 110 x 100 x 195 cm

Standard accessories

- 1 electric switch box with a programmable controller
- 1 text display multi language
- 1 batch counter with reset
- 1 electronic control counter
- 1 LED machine light
- 1 light beam curtain
- 1 pneumatic solenoid valve terminal
- 1 compressed air maintenance unit
- 1 machine base of aluminium profiles
- 1 front plate
- 1 table with ball sleeves
- 1 cross slide
- 2 table lifting cylinders
- 1 oil brake cylinder
- 1 tamping head in standard design
- 1 cable brake
- 1 electronic level switch
- 1 set tamping tools consisting of:
 - 1 clamp
 - 1 tubular ram - hardened steel
 - 1 bottom plate

- 1 cable run off frame
- 1 scissor unit
- 1 set scissor blades – hardened steel
- 1 set tension springs for tamping
- 1 pedal switch
- 1 powder container
- 1 stop nut – short type
- 1 stop nut – long type
- 1 clamping tube with or without thread as per desire
- 1 light beam curtain
- 1 set of tools for set up
- 1 documentation

Special accessories

Clamp
Tubular ram
Tubular ram carbide
Bottom plate – straight type
Bottom plate – oblique type
Tension springs for tamping
Small pneumatic vice
Inserts for small pneumatic vice
Big pneumatic vice
Inserts for big pneumatic vice
Cross table with ball guide
Angle table
Soft type tamping head
Ultra light tamping head
Heavy tamping head
Powder hopper with cross slide
Scissor blades – hardened steel
Scissor blades - tipped with carbide
Rotating tamping tube
Cable drum feed
Automatic powder dosing system
program for longer cable
Upgrade for 300mm cable length (SE7 V 300)
Upgrade for servo driven table (SE7 NC)

3) Technical data comparison table

	HST 1	SE 7 V
range :		
a	6 - 55 mm	3 - 60 mm
t	6 - 40 mm	3 - 40 mm
r	12 - 70 mm	4 - 80 mm
Copper cable length	20 - 200 mm	15 - 200 mm
Drill hole depth	5 - 20 mm	3 - 20 mm
capacity : *		
with manual vice	~300 / h	/
with pneumatic vice	-	-600 / h
recommend for batch size :	1-100	5 - 6000
tamping head :		
standard type for cable dia 0.5 - 6.5mm	1.0 - 5.0 mm	+
small type for cable diameter 0.3 - 3.4 mm	-	Option / changeable
ultra light type for cable diameter 0.3 -2.4 mm	-	Option / changeable
heavy type for cable diameter 2,8 - 8,6 mm	-	Option / changeable
scissor unit:		
operated	manual	pneum. cylinder
cut position adjustable in X direction	+	+
cut position adjustable in Y direction	+	-
adjustable overlapping	+	+
table unit:		
operated	manual	pneum. cylinder
cross slide	-	+
operating modes:		
step by step	manual	-
one cycle	manual	+
configuration:		
cable brake	-	spring loaded
limit switch	electronic	electronic
tamping frequency	manual	6.5 - 14 / sec
adjusting tamping frequency	by operator	8 steps
batch counter	-	+
electronic stroke control counter	-	+
automatic powder dosing system	-	option
angle table	-	option
program switch for longer cable	-	option
Upgrade for 300mm cable length	-	option
cable drum feed	-	option
light beam safety curtain	-	+