

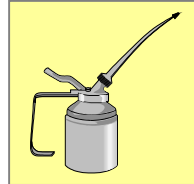


# Refinishing Instructions

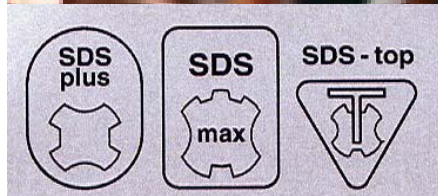
Accessory Tools for Pneumatic and Electric Hammers

*pneumatiline*

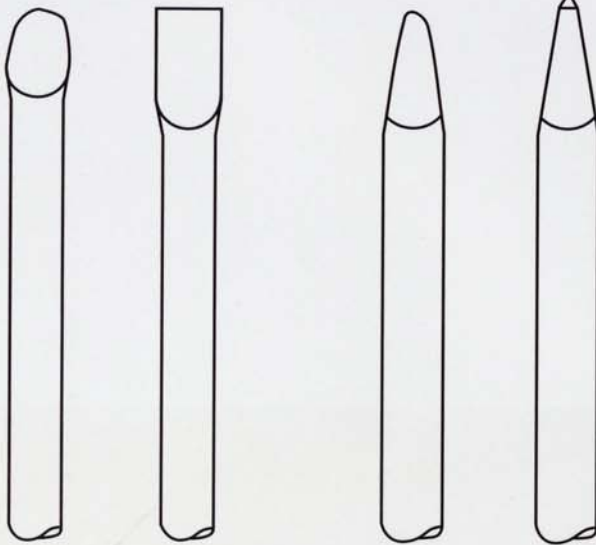
*electroline*



(Oil Hardening)



## Regrinding



### Regrinding

Tools which show slightly worn working ends (points, cutting edges) can be **carefully** reground. It is important to prevent any heat build-up, to avoid any loss in hardness or create grinding cracks.

Water-cooling is a must in this case! If the working end area is badly worn, fractured, or otherwise damaged, refinishing in the form of reforging with subsequent heat treatment will be the only way of reconditioning.

## Reforging

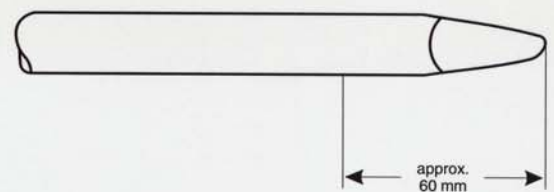
Temperature Color Chart		
	Temperature in °C approx.	Color Designation
	550°	dark - brown
	630°	brown - red
	680°	dark - red
	740°	dark cherry red
	780°	cherry - red
	810°	light cherry red
	850°	light - red
	900°	quite light red
	950°	yellow - red
	1000°	light yellow red
	1100°	yellow
	1200°	light - yellow
	1300°	yellowish white

### Reforging

Tools with excessively worn working edges should be reformed as follows:


Heat the working end over a length of approx. 60 mm to a temperature of 900° - 1000°C equal to the heat color of "quite light red" to "light yellow red".

Length of tool area to be heated:



# OIL HARDENING

## Rehardening

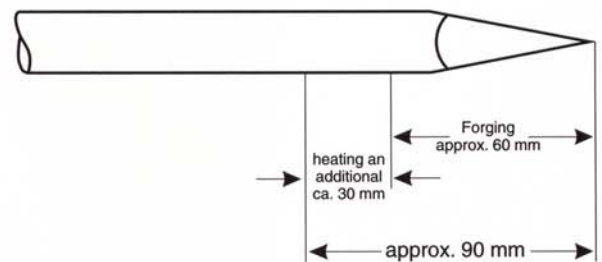
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### Rehardening

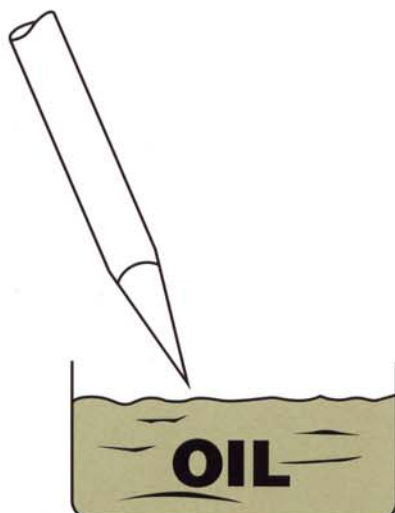
After forging, the tool must be rehardened as follows:

Reheat tool only over the area of reforging (i.e. 60 mm) and add 30 mm to it for an approx. total length of 90 mm to a temperature of 850° - 900°C equal to the heat color of "light - red" to "quite light red".

Length of tool area to be heated for rehardening process:



## Quenching



### Quenching

After the tool has been reheated the actual hardening starts.

Quench the tool in a light-weight hardening oil.

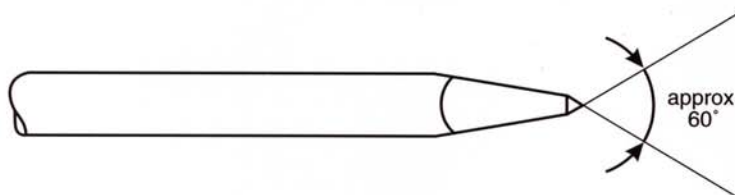
# Tempering

Tempering Color Chart		
	Temperature in °C approx.	Color Designation
	200°	pale yellow
	220°	straw - colored
	230°	golden - yellow
	240°	yellowish - brown
	250°	brown - red
	260°	red
	270°	purple - red
	280°	violet
	290°	dark - blue
	300°	cornflower - blue
	320°	light - blue
	340°	bluish - grey
	360°	grey

## Usage Hardness

Maintain a hardness of 54 - 56 HRc for field usage

## Regrinding



## Tempering

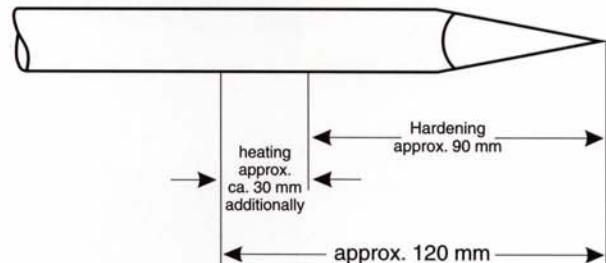
Tempering is an essential part of the whole reconditioning process which insures that the forging or hardening area receives the same hardness distribution as the untreated part of the tool!

Omission of the tempering process will inevitably lead to cracking and breakage within the transition area.

Tempering a tool means reheating the tool once again over the rehardened area (length of 90 mm) plus an additional 30 mm for an overall length of 120 mm to a temperature of 250° - 260°C equal to the heat color of "brown red" to "red" over a tempering time period of approx. one (1) to two (2) hours.

The temper-color is best checked over a bright ground surface.

## Heated Tempering Area:



## Sharpening / Regrinding

Before you reuse your tool, make sure to carefully regrind (sharpen) the tool first, also to remove the carbonization from the forging process. A resharpened tool greatly contributes to longer tool life.