



SPOT WELD REMOVAL ON HIGH STRENGTH SHEET METAL

DURADRILL



FASTDRILL

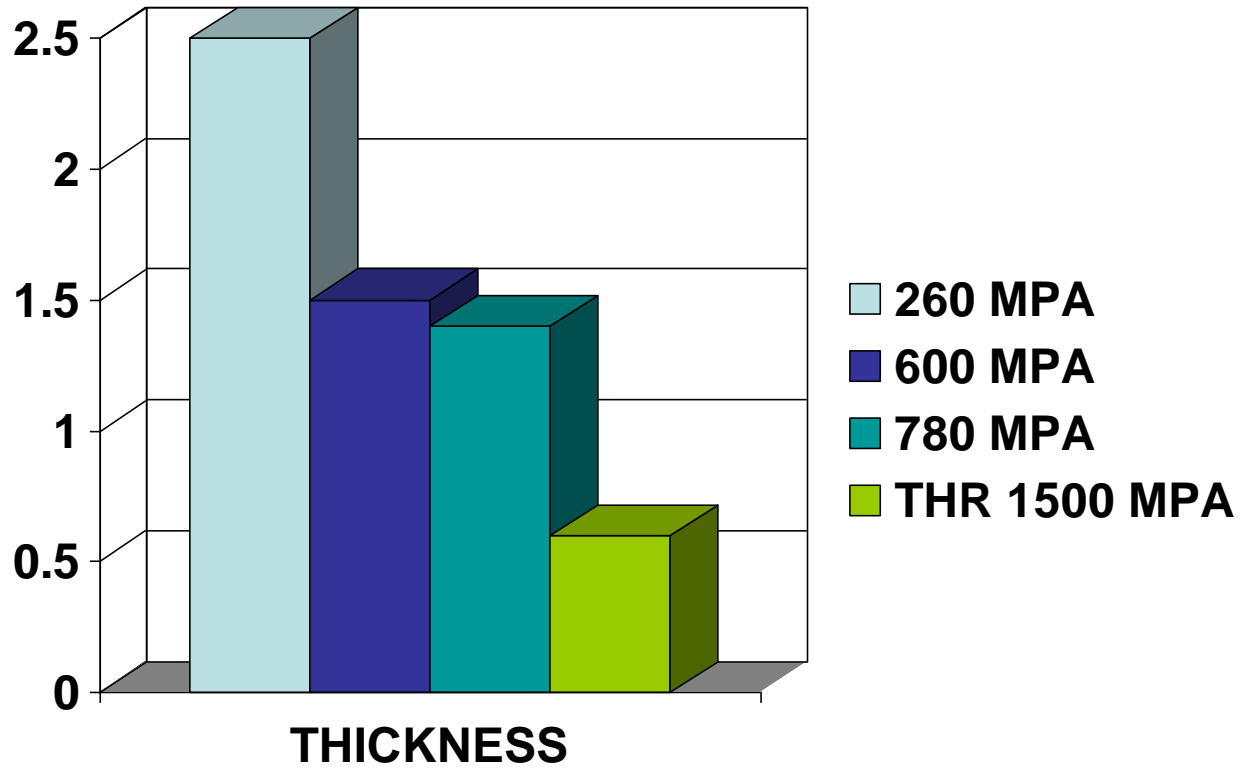


NEW METAL SHEETS

Used for applications such as cross pieces, door frames and bumpers, this new sheets used aim to

- Improve the vehicle resistance in crash tests
- Decrease the weight
 - By decreasing the thickness
 - Thanks to compositions allowing to decrease the density like sandwich sheet metal
- Improve the appearance of the surface
- Cut the costs of the raw material used

DECREASE IN THE THICKNESS COMPARED TO THE STRENGTH OF THE METAL SHEETS USED



MATERIALS USED

The different metal sheets used are generally composed of CARBON, MANGANESE, CHROMIUM, BORON, SILICON and NICKEL

The properties of these constituents give the steel
greater STRENGTH and HARDNESS.

Composition or equivalent : 25 Mn 4

The combination of carbon (C) and manganese (Mn) give the steel the properties of great strength and resistance to wear.

STRENGTH AND HARDNESS

The compositions used to make these materials provide the sheet metal with 2 distinct qualities.

- The Strength, which is measured by yield strength and tensile strength. (**MPA**)
- The Hardness, which is measured by the wear and abrasion. (**HRC**)

During the stamping process of these metal sheets, a molecular transformation increases the strength, which can reach up to **2200 MPA** i.e. a hardness of **50 to 52 HRC**.

On the other hand, spot welding increases the hardness in the welding spot up to **2600 MPA** i.e. a hardness of **60 to 62 HRC**

- **FASTDRILL – SPOT WELD DRILLING MACHINE**

Technical Specs:

-Weight	: 2,4kg
-Lenght	: 315mm
-Rpm free speed	: 1000
-Rpm under load	: 700
-Adapter	: ¼"
-Air consumption	: 370 l/min.

Approvals today:

- VW
- Audi
- Porsche
- Seat
- Skoda



- **ADVANTAGES**

Excellent properties at drilling in standard and high strength steels:

- **Special transmission with high torque**
- **Reduced Rpm in order not to overheat drill bits**
*(Standard machines air flow has to be reduced in order to reduce Rpm's.
The result is loss of torque)*
- **Pneumatic piston combined with a mechanical push function.**
- **Pressure to drill bit min. 240kg:**
(Standard machines have a pressure of only 60-80kg)
- **Comfortable work – less tired because less force has to be applied**
- **Reinforced hook which does not allow to open even at high pressure.**
- **The drill bit can be placed to the surface before they start to spin.**
- **This means not having an uncontrolled impact on the surface of the drill bit which could damage the center tip or the blades on the drill bits.**

- **COMPARISON OF PNEUMATIC SPOT WELD DRILLS**

High strength steels for example (BOR / BTR)

- **Fastdrill in combination with carbide drill bits Duradrill can drill out spot welds on steels with up to 62 HRC (Rockwell).**
- **On a test sample of 55 HRC the Fastdrill performed 62 drills without any problem. Compared to a standard machine which was able to drill out only 9 spot welds the performance of the drill bits was 7 times higher (+ 589%)**



- ***Setting of the drilling depth***

Turn the black adjustment ring until the drill bit edges are on the same line as the laser marked calibration lines (Abb.1).

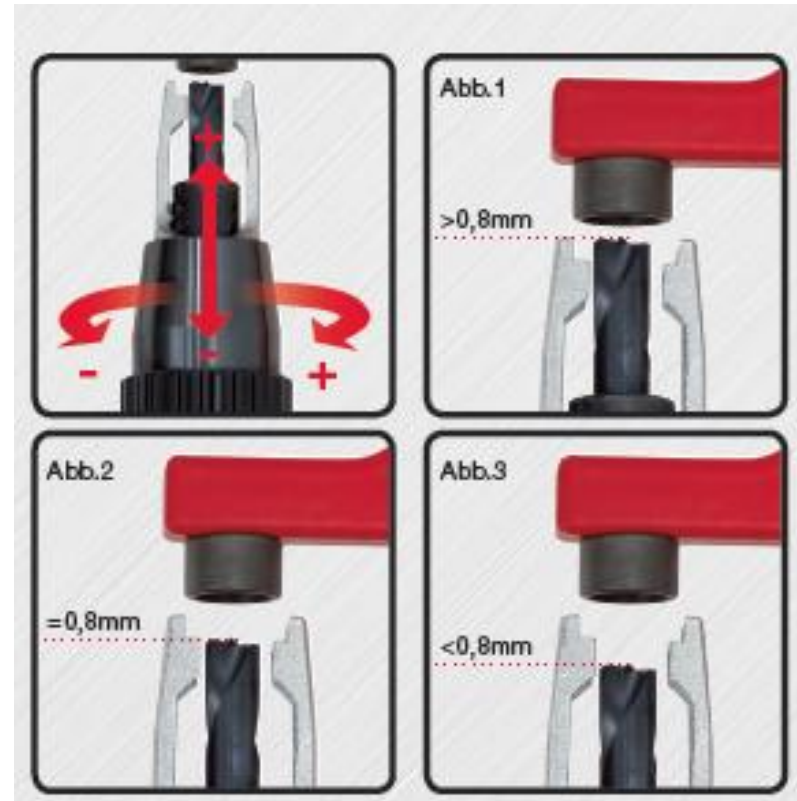
- **A drilling depth of 0.8mm is set**

To increase the drilling depth turn the black adjustment ring to the right in order the drill bit edges are above the calibration lines (Abb.2).

- **A drilling depth of >0.8mm is set.**

To decrease the drilling depth turn the black adjustment ring to the left in order the drill bit edges are below the calibration lines (Abb.3).

- **A drilling depth of <0.8mm is set.**



- **FASTDRILL SETTING**



1. Turn on the set screw clock wise until the end

2. Press the rear handle gently up to the point when the drill bit is touching the surface



3. Keep the rear handle gently pressed while turning at the same time the set screw counter clock wise (drill bit still touching the panel) (Abb.7). As soon as you feel that the drill bit starts turning the Fastdrill is set. Now you can start to drill out the spot welds.

NOTE! Step 1-3 have to be repeated if the total thickness of the sheet metal will change

COMPOSITION OF THE DRILLS:

NOTA : It is no longer possible to use HSS steel drills, their hardness being lower than or equal to that of the sheet metal.

Tungsten carbide

This material, obtained by sintering, can reach an extreme hardness, considerably higher than that of the sheet metal. Hardness greater than 75 HRC, which we measure in VICKERS : 1400HV

PVD coating (PHASE VAPOR DEPOSIT in vacuum)

In order to improve the lifetime of this product, a coating is deposited so as to increase the hardness and protect it against a rise in temperature while drilling.

Hardness: 3000 HV

Protection up to 1100°

Advantages

Drilling capacity

Lifetime : 60 – 80 drills on 60 HRC

Drawbacks

Fragility and price

DURADRILL



USE AND RECOMMENDATIONS

Carbide being a fragile material, several precautions are to be taken in order to ensure a lengthy lifetime of the drill :

- **Do not work with just any machine.**
- **Avoid all impacts and excessive vibrations.**
- **Watch out for any abnormal heating (molten shavings during use)**

Type	:	2 Lever Drill
Material Drill head	:	Tungsten Carbid
Material support	:	Steel
Connection	:	Soldering
Coating	:	PVD (Vacuum)
Hardness		
Tungsten Carbid	:	1400 HV / +75 HRC
PVD Coating	:	3000 HV / HRC out of range
Temp. protection of coating		
	:	1100 C°
Operation Area	:	Ultra high strenght steel up to 62 HRC

New drills should be used on a material which has at least 235 HV / 20 HRC / 800 Mpa. After wear it can be used on standard steel.

Rpm max.	:	1000 Rpm
Rpm ideal	:	600-800Rpm

ADVANTAGE DURADRILL COMPARED OT OTHER CARBIDE DRILLS

- **Special PVD coating with temp. Protection of 1100°C**
- **Hardness of 3000 HV (Vickers)**
- **Low price due to special production.**
(Only the head is tungsten carbide made which is soldered to a standard steel base. Using less than 60% of expensive material compared to a full body carbide drill bit).
- **Two blade technology.**
(The two blade technology improves the resistance and stability of the blades on the drill bit. Compared to a 3 bladed drill bit the blades are more massive and therefore less sensitive to impacts and vibration).

3 blades



2 blades



- **Approvals of : VW, Audi, Porsche, Seat, Skoda, Renault, PSA Group**