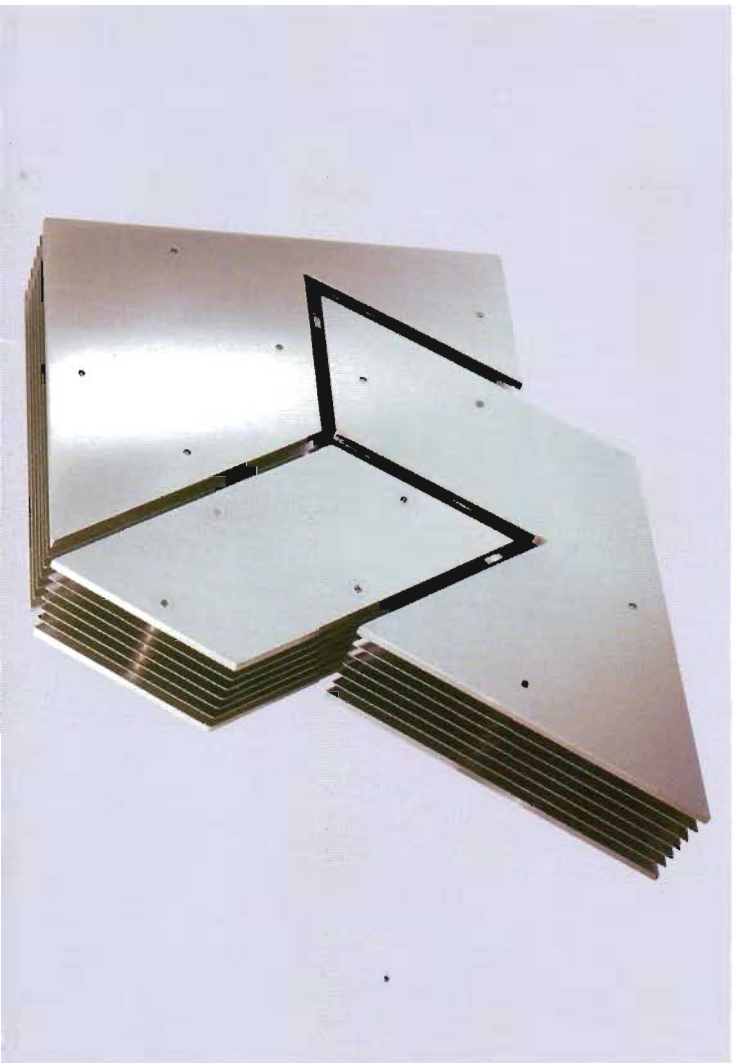
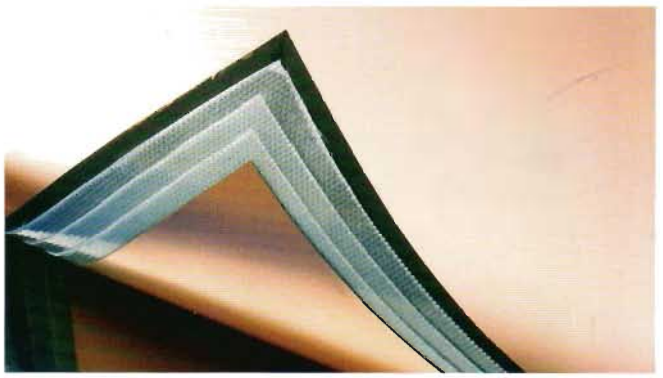


PLATE TECHNOLOGY

Press Tools and Plates



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INTERNATIONAL

C.A.PICARD® Press Tools and Separator / Press Plates

Press tools and separator / press plates for the production of copper clad laminates, multilayers and plastic cards demand care and attention. High hardness guarantees scratch-free surfaces and low deterioration during wet-cleaning and handling.

Besides the hardness, the proper alloy components and a homogeneous structure as well as our aligned hardening process ensure the necessary resistance against corrosion.
In particular, pitting causes surface corrosion and therefore insufficient quality of the end product. Furthermore, the surface has to be preferably homogeneous in order to easily remove resin spots from the pressing process.

A quick and commercial pressing process requires a good heat conductivity. A uniform heat conductivity assures high quality base material, printed circuit boards and plastic cards.

Below a review is given of the most important characteristics of the most popular materials used for press plates and separator plates.

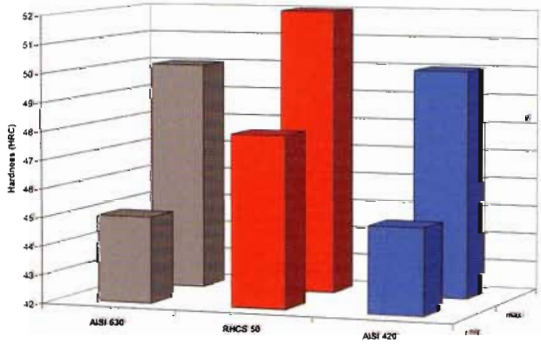

Fig. 1:
Hardness in Rockwell (HRC)

High hardness at uniform structure assures long life time and protects the press plate against damages and early wear.

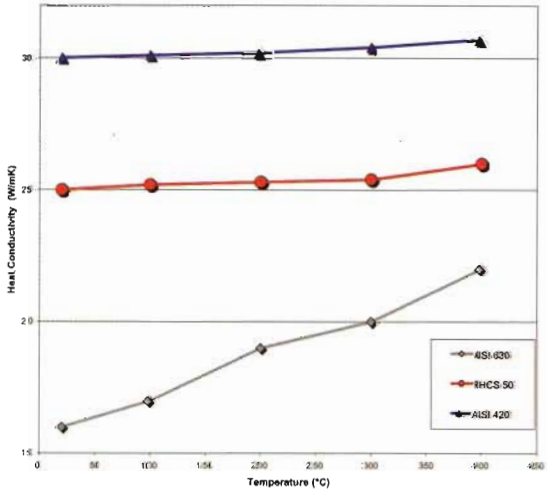

Fig. 2:
Heat conductivity in relation to temperature.

The heat conductivity is important for a fast and therefore economic press cycle.

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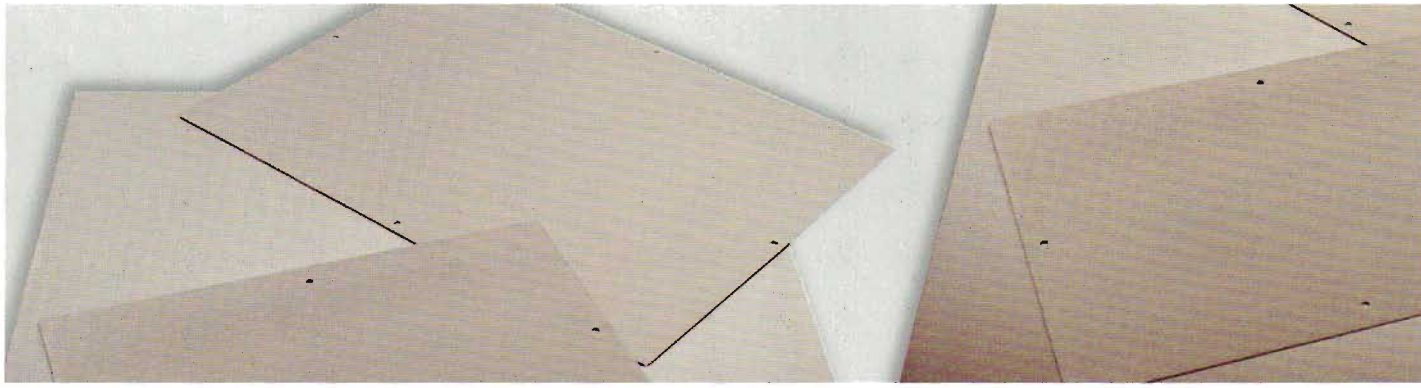
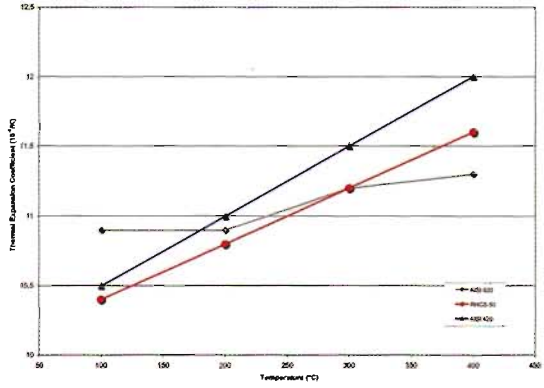


Fig. 3:
Thermal Expansion Coefficient in relation to temperature.



The separator plate material has to be resistant against corrosion, eventually caused by wet-cleaning process or other influences like high air humidity and temperature. Besides mechanical damages, pitting presents high risk for surface defects which can be avoided by adequate alloy elements.

Fig. 4:
E-modulus in relation to temperature.

A high E-modulus assures a high stability during the whole press cycle.

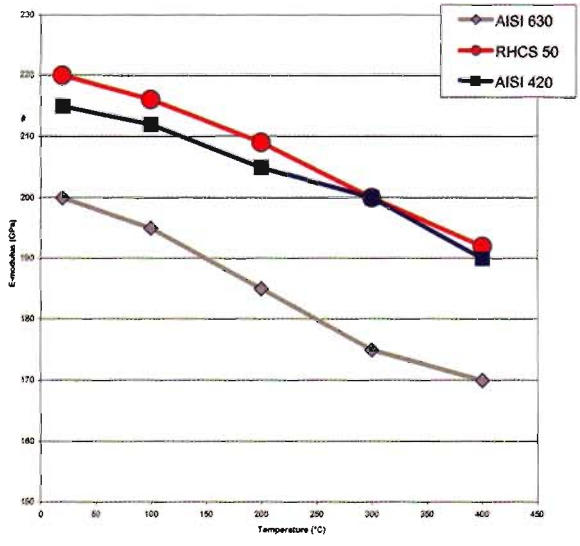


Fig. 5:
Resistance to corrosion.

AISI 630	Good corrosion resistance
AISI 420	Conditionally resistant to corrosion
RHCS 50	Good corrosion resistance by Mo-additive, especially to pitting

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C.A.PICARD®
Press and Separator Plates RHCS 50

- Trouble-free production is guaranteed due to no distortion caused by variations in temperature
- refurbishing is available quickly and at favourable costs
- high heat conductivity (less input of energy and time)
- favourable TEC (thermal expansion coefficient)
- high corrosion resistance
- high hardness (50 HRC = longer life time)
- usable for all types of cleaning / brushing machines

	Separator Plates with laser cut registration holes	Press Plates for technical laminates
Steel Quality:	RHCS 50 DIN X 20 CrMo 13	
Hardness:	50 ± 2 HRC	
Thermal Expansion Coefficient:	11 x 10^{-6} / °C	
Heat Conductivity:	25 W / mK	
Working Temperature:	≤ 400 °C	
Dimensions and Tolerances		
Length / Width:	± 0,5 mm / ± 0,019"	± 1,0 mm / 0,039"
Thickness:	± 0,1 mm / 0,0039"	
Hole-to-hole tolerance for registration holes:	± 0,05 mm / 0,0019"	–
Tolerances for registration slots:	+ 0,1 mm / 0,0039" - 0	–
Flatness:	≤ 3 mm / m / ≤ 0,118" / 39,37"	
Parallelism:	≤ 0,03 mm / 0,0011"	≤ 0,03 – 0,05 mm ≤ 0,0011" – 0,0019"
Surface Finish:	CAP Finish 5 Ra ≤ 0,14 µm, Rz ≤ 1,50 µm	CAP Finish 4 Ra ≤ 0,25 µm, Rz ≤ 2,40 µm CAP Finish 5 Ra ≤ 0,14 µm, Rz ≤ 1,50 µm CAP Finish 6 Ra ≤ 0,12 µm, Rz ≤ 1,00 µm
Available thickness:	1,0 – 2,0 mm 0,039" – 0,078"	1,0 – 3,0 mm 0,039" – 0,118"

Separator Plates with wire-cut registration holes on request. Variations to above mentioned tolerances and standard specifications possible on request. Subject to changes due to technical improvements without prior notice.

C.A.PICARD® INTERNATIONAL

C.A.PICARD® Carrier / Top Plates and Bonding Plates

- receive a special heat treatment to achieve longlife resistance to:
  - the thermal stress of heating and cooling cycles without any warp
  - mechanical stress
- the result is that trouble free production is guaranteed
- refurbishing and rework service is available quickly and at favourable costs

Variations to above mentioned tolerances and standard specifications possible on request. Subject to changes due to technical improvements without prior notice.

	Carrier Plates, Top Plates, Bonding Plates		
Steel Quality:	DIN 42 CrMo4 AISI 4140 H	DIN 50 CrV 4 AISI 6150 H	RHCS 50 DIN X 20 CrMo13
Hardness:	ca 40 HRC	ca 40 / ca 50 HRC	50 + / -2 HRC
Thermal Expansion Coefficient:	12 x 10^{-6} / °C		11 x 10^{-6} / °C
Heat Conductivity:	42 W/mK		25 W / mK
Working Temperature:	≤ 400 °C	≤ 400°C / ≤ 250°C	≤ 400 °C
Dimensions and Tolerances			
Length / Width: For large formats 2000 mm:	± 0,5 mm / 0,019" + 3–5 /- 0 mm / + 0,118" – 0,196" / - 0"		
Thickness:	± 0,2 mm / 0,007"		
Hole-to-hole tolerance for registration holes:	± 0,02 mm / 0,0007"		
wire cut registration slots:	on request		
Flatness:	0,2 – 3,0 mm / 0,007" – 0,118" depending on size and thickness		
Parallelism: For large formats 2000 mm:	≤ 0,03 – 0,05 mm / 0,001" – 0,002" ≤ 0,1 mm / 0,003"		
Surface finish:	Grit 80 Ra ≤ 1,2 – 2,5 µm		
Available thickness:	2,0 – 15,0 mm 0,078" – 0,590"		up to 10 mm up to 0,393"

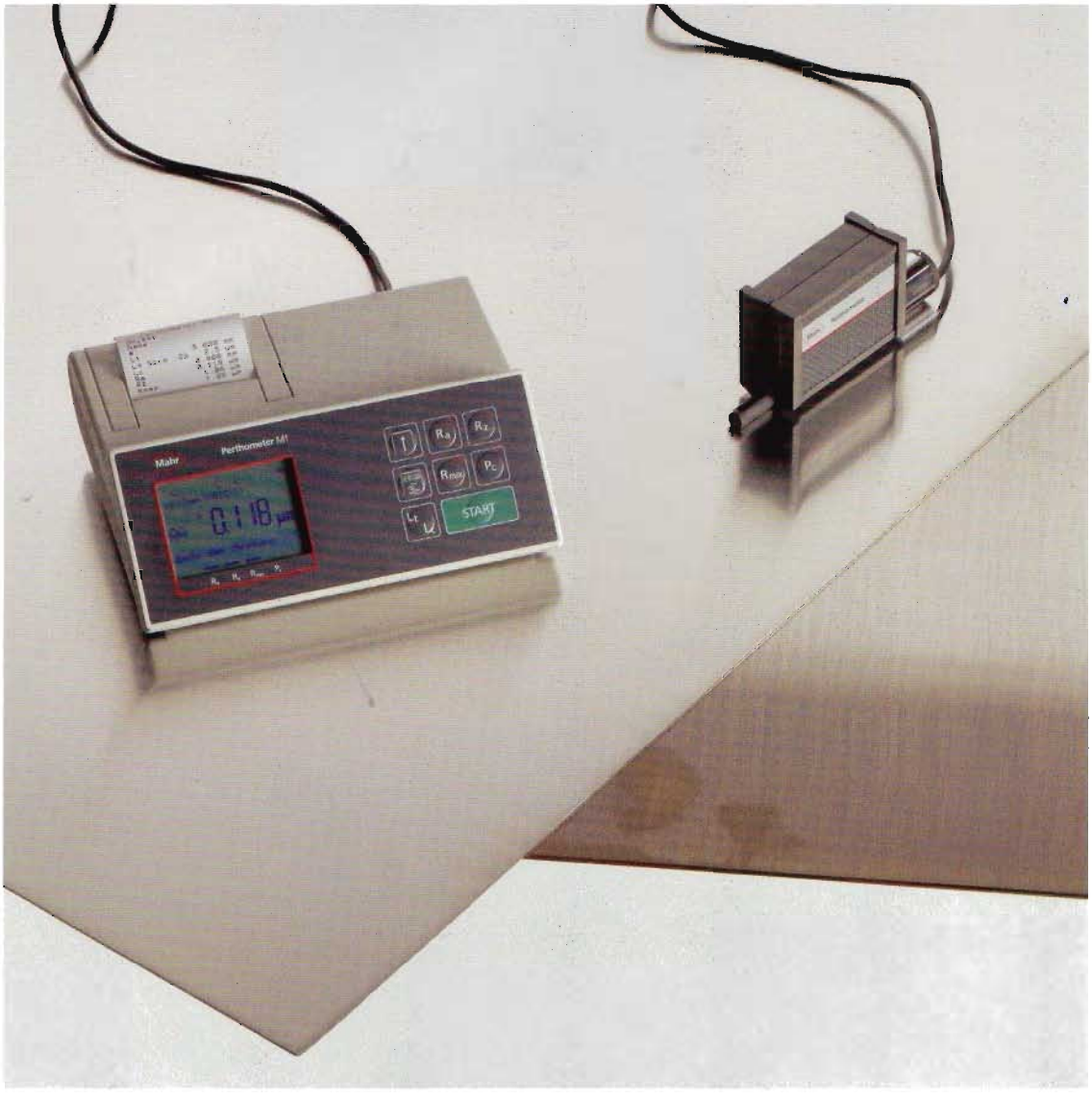
C.A.PICARD® INTERNATIONAL

C.A.PICARD®
Refurbishing & Rework Service

Carrier Plates, Lamination/Bonding Plates and also Separator Plates are working tools which demand care and attention. Even the hardest and toughest surface will eventually start to show the effects of every day use. To ensure that you maintain optimum quality standards, C.A.PICARD offers re-conditioning facilities in five locations world wide. In practice, your tooling is restored to an almost new condition quickly and at favourable costs.

This service is available for all kinds of steel tools and plates, not only for C.A.PICARD products!

On request, we will provide suitable instructions on how to exchange Lamination / Bonding Plate Tooling Bushings.



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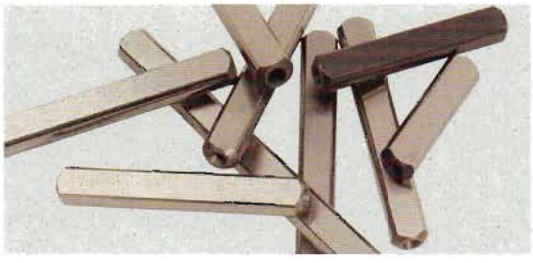
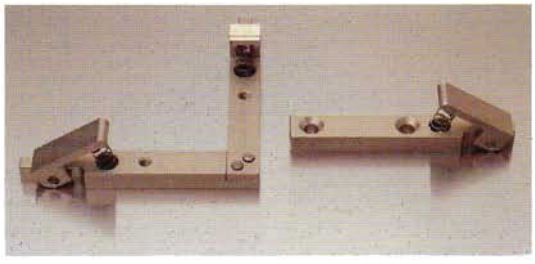
C.A.PICARD® Bushings and Registration Pins

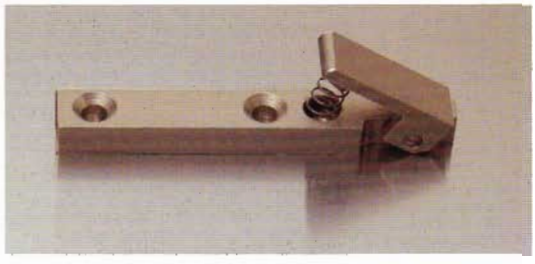
C.A.PICARD accessories complete the program. The bushings are arranged so that they can be exchanged, if necessary, without adverse effect upon the guaranteed accuracy. Bushing inserts are available not only for the standard slotted hole, but also for other configurations. C.A.PICARD registration pins are provided with centering facilitators so that de-pinning will be easier and quicker.

Variations to above mentioned tolerances and standard specifications possible on request. Subject to changes due to technical improvements without prior notice.

	Standard Bushing OP-37-003/B	Registration Pins
Hardness:	58-59 HRC	56-58 HRC
Dimensions and Tolerances		
Standard Slot:	Ø 6,368 x 4,77 mm Ø 0,250" x 0,187"	Ø 6,35 x 4,76 mm Ø 0,25" x 0,187"
Diameter:	+ 0,012 mm / 0,0004" - 0 mm	+ 0 mm - 0,005 mm /0,0002"
Width:	+ 0,012 mm / 0,0004" - 0 mm	+ 0 mm - 0,005 mm / 0,0002"
Available standard lengths:	9,5 mm / 0,374"	19, 25, 32, 35, 38, 44, 51, 57, 63 mm / 0,748", 0,984", 1,259", 1,377", 1,496", 1,732", 2,007", 2,244", 2,480"







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