TECHNICAL MANUAL

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SCRIBING STYLI

DIFFERENT MODELS

DIVISION MICRO-PERCUSSION

TECHNIFOR - IDENTIFICATION AND TRACEABILLITY SYSTEMS

Updates

The updating index A0 corresponds to the first edition of this manual.

The alphabetical character (A) represents the major index while the numeric character (0) represents the minor index.

The minor index will change after an isolated update (modification of only some pages in the manual).

Only the modified pages will bear the new updated index.

The major index will change after a complete updating of the manual, giving forth a new edition.

The minor index will then return to zero.

The chart below will provide a record of the various updates since the first edition.

It is recommended that this procedure be taken into account and and that you insert the modified pages in your manual as they are sent

REVISION DATE	UPDATED INDEX	MODIFIED PAGES
October 2004	0410A0	First edition
January 2006	0601B0	Change in certifying organization

Preamble

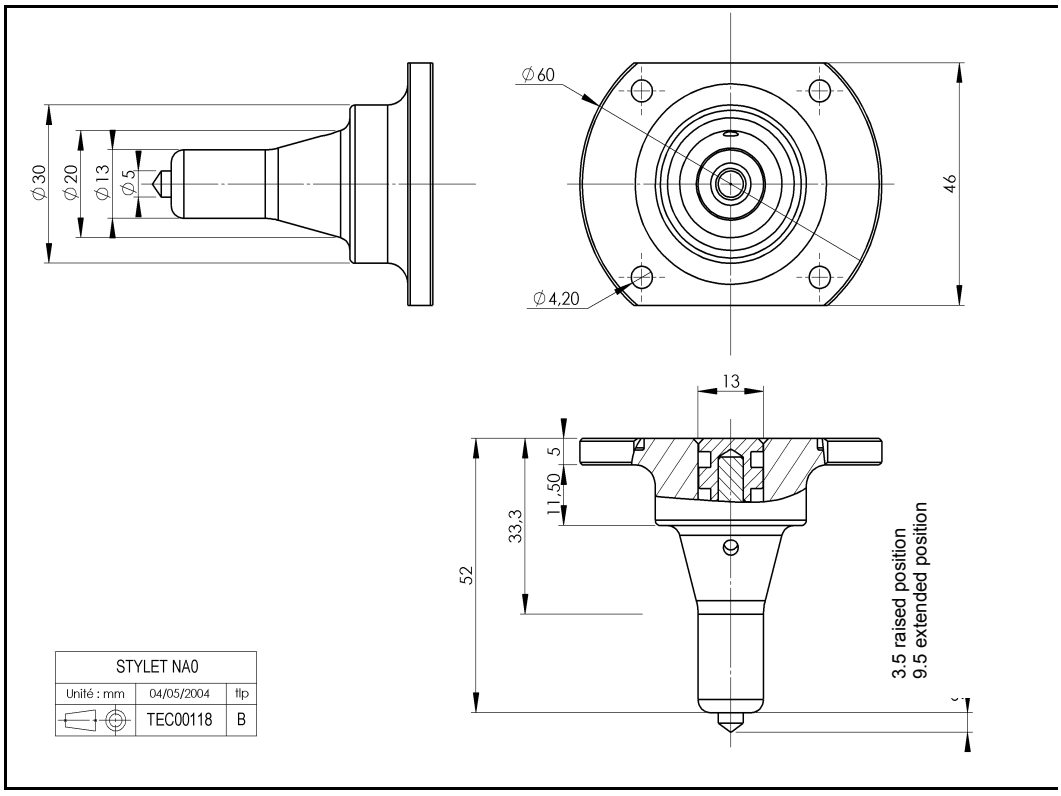
This objective of this document is to compile an inventory of the different types of styli that can be found at TECHNIFOR, to define the dimensions of operation for each of them, as well as the parameters influencing the quality and depth of marking under normal operating conditions. (see "Start up" chapter of the operation and maintenance manuals).

1- Different models of styli

1.1 . Standard Styli

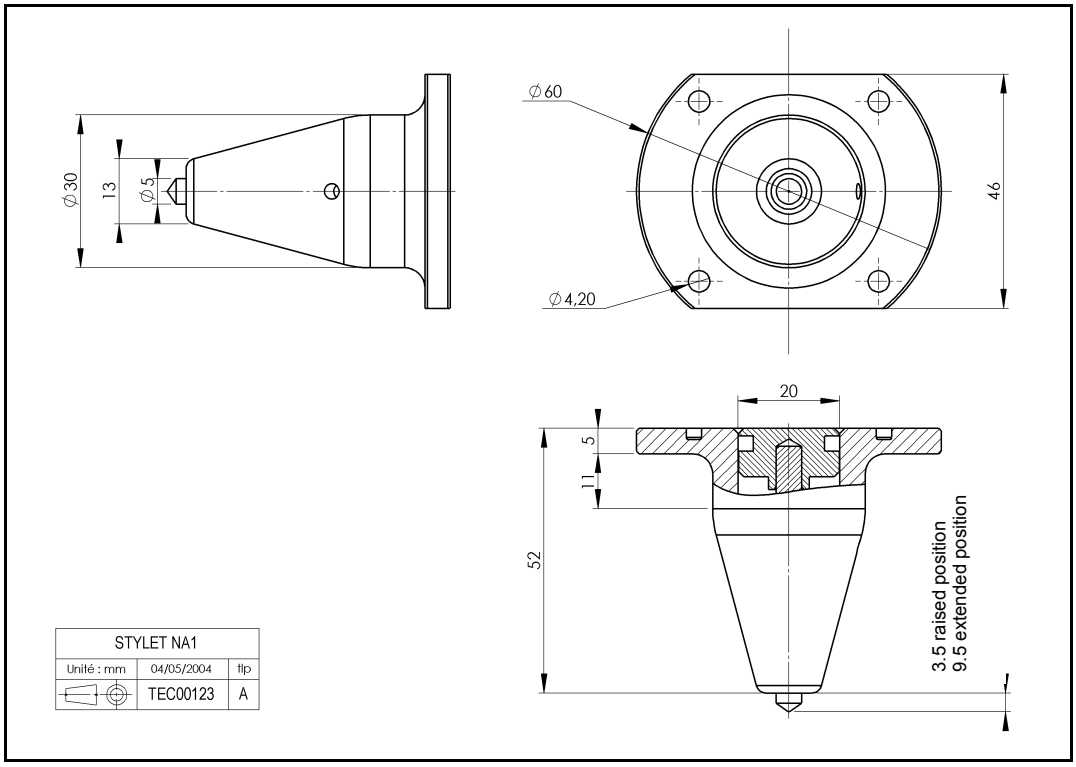
There are 4 different power pneumatic scribing styli: NA0, NA1, NA1-LG100 et N2.
From the least powerful, NA0, to the most powerful, N2, the power varies according to the piston diameter.
The NA0 is specially designed for marking plastic parts. .

Stylus NA0



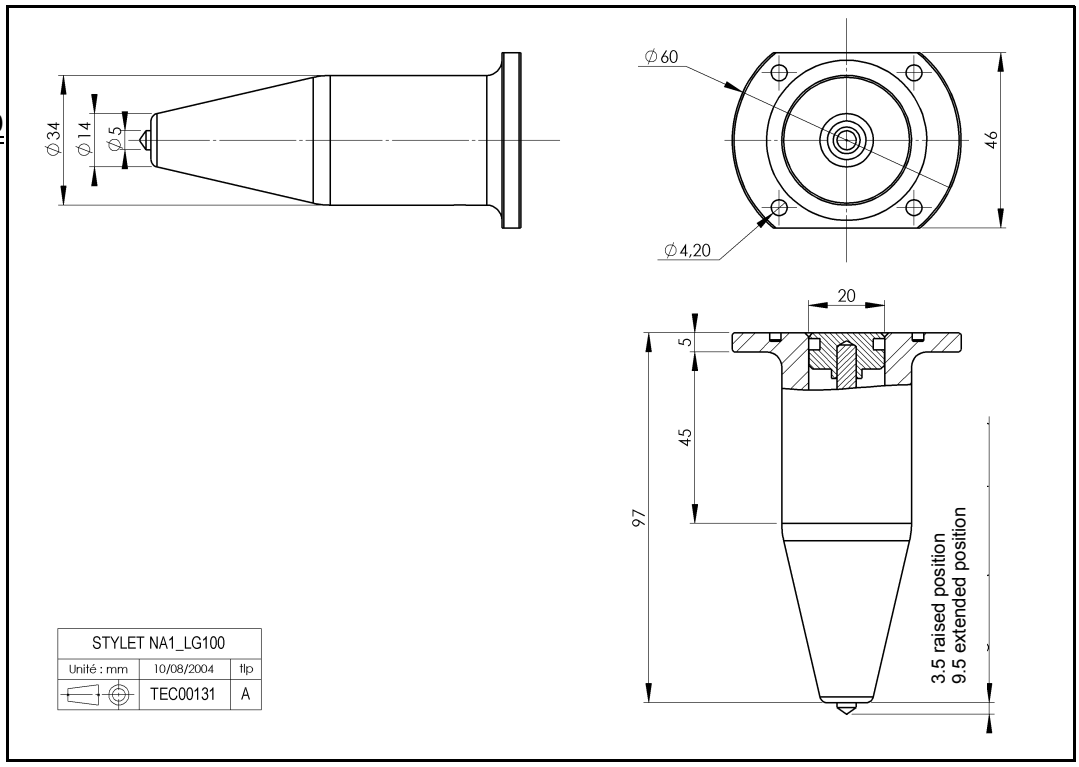
Stylus NA1

Length 55 mm

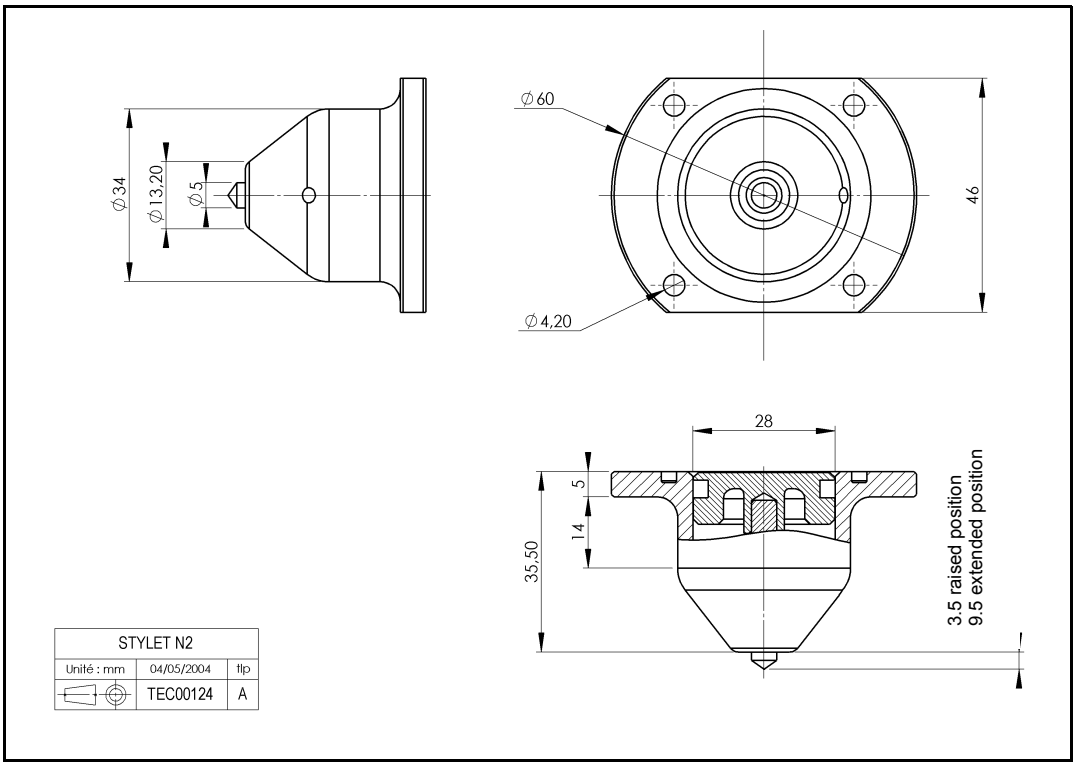


Stylus NA1-LG100

Length 100 mm



Stylus N2



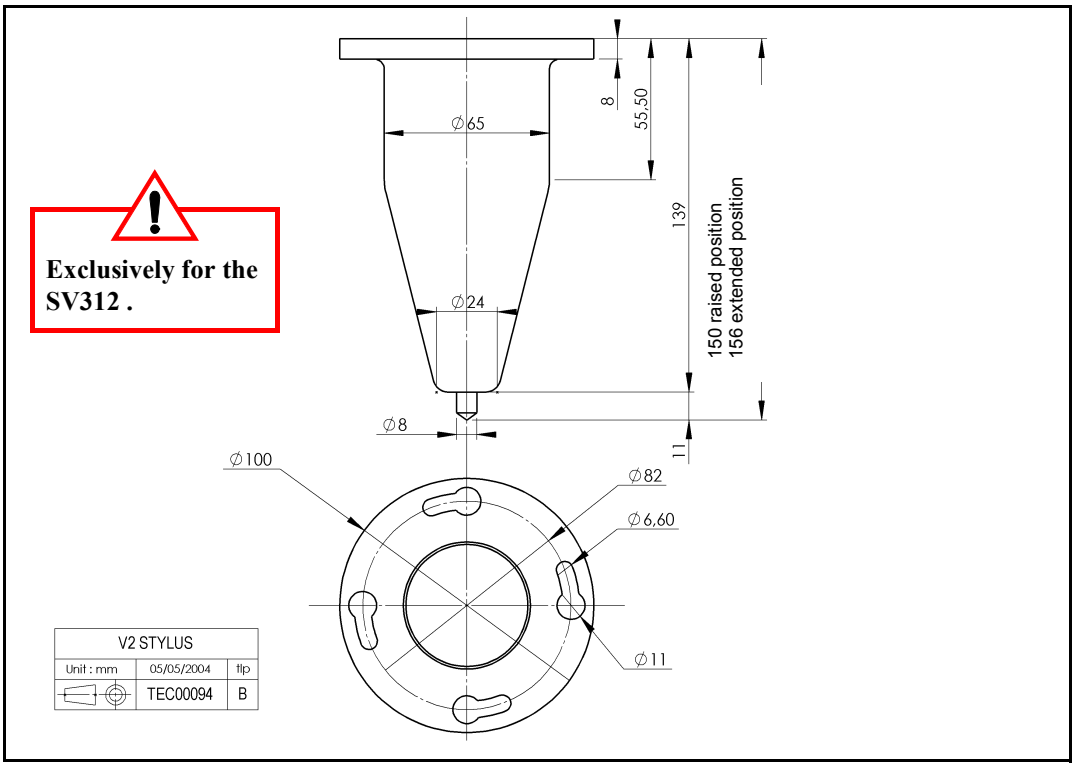
Taking into account the differences in size which are natural in manufacturing, the dimensions for the length may vary from one stylus to another (± 1 mm/ 0.04in.).

1.2 . Angles and radii available for carbide and diamond points- Standard styli

Stylus NA0			Stylus NA1			StylusN2		
Point angle 110°								
Radius	Réf.		Radius	Réf.		Radius	Réf.	
	Carbide	Diamond		Carbide	Diamond		Carbide	Diamond
			0,2	NA1-110°	NDA1-110°	0,2	N2-110°	ND2-110°
0,7	NA0-110°							

The stylus NA0, with its point radius of 0.7, is specially designed for marking plastic parts. For other radii, contact us.

1.3 . Deep scribing stylus



1.4 . Angles and radii available for carbide and diamond points- Deep scribing stylus

Stylus V2		
Point angle 110°		
Radius	Réf.	
	Carbide	Diamond
0,2	V2-110°	VD2-110°

2- Defining marking dimensions of a scribing stylus

Theoretically, the maximum amplitude of scribing styli is 6mm (0.236in.). However, for optimum operating conditions, it is necessary to compensate for defects in the part (curve, irregularities in the height of the surface being marked...).
Therefore, the maximum applicable amplitude for scribing styli is 4mm (0.157in.).

Lower the head until the stylus lightly touches the part to be marked. Using feeler gauges, set the distance between the stylus point and the surface to be marked at Do--optimal distance. (**optimal distance:1 mm / 0.04in.**).

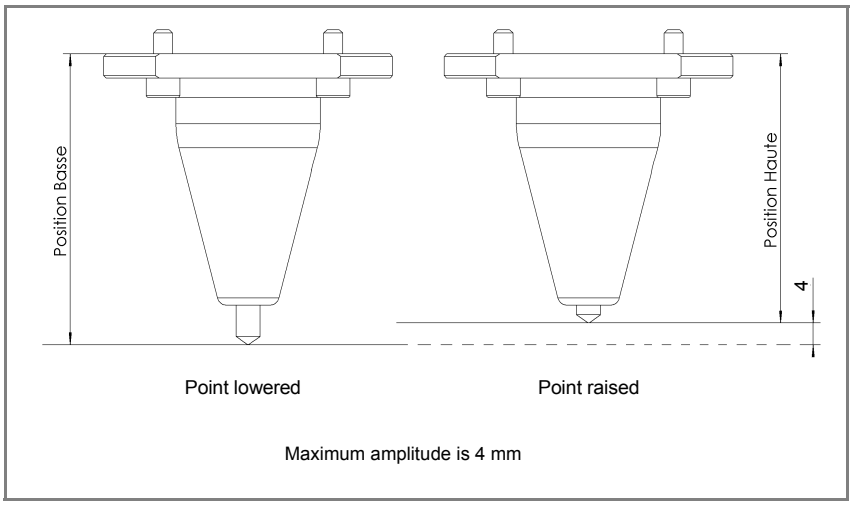


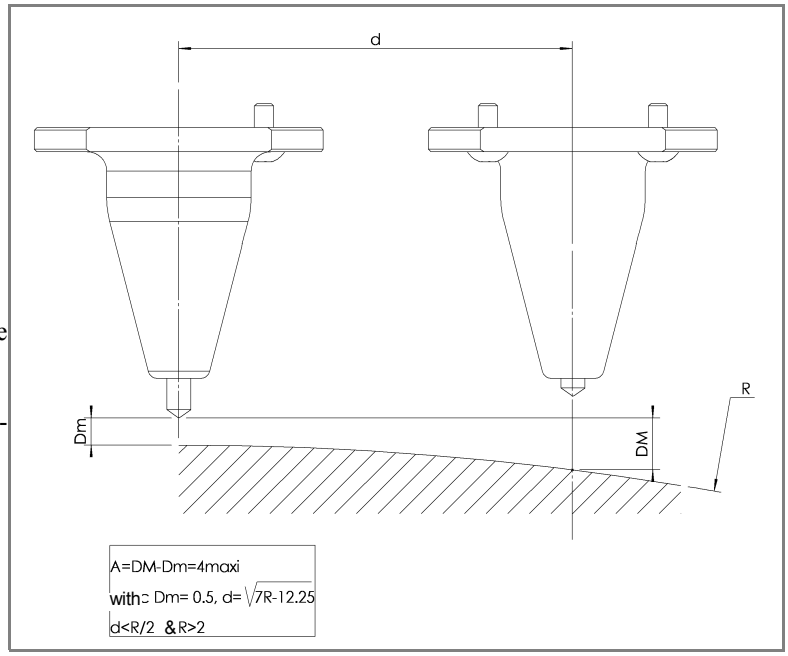
Fig. 1 - Amplitude of scribing styli NA1 et N2

When marking curved parts using the whole space between distances DM and Dm, remember to take into account these distances and the set the minimum height of the stylus at Dm above the highest point on the part.

Example :

Diameter of the tube : 30 mm,
Dm = 0.5 mm above the center line,
d = 9.6 mm from the axis of one tube to the other.

The marking of the text can extend over a distance of 19.2mm (0.76in.).



3- Parameters influencing marking

3.0.1. Power exerted by the stylus

This power depends essentially on:

. The air pressure,

. The physical characteristics of the stylus.

3.1 . Movement speeds of a stylus during operation

. "Marking speed", used when the point is in contact with the part,

. "Rapid movement speed", used for movements between characters and from the origin to the first character.

If these speeds are too high, the stylus will lose positioning accuracy.

3.2 . Time delay function of the stylus

In order to allow for the machine to be adaptaed to certain applications, it is possible to adjust the time delay values (see manual for UC112/UC122).

The up delay allows the stylus point to return to resting position before the stylus moves again. If this delay is too short, a trailing line is left by the point (see photo 1).

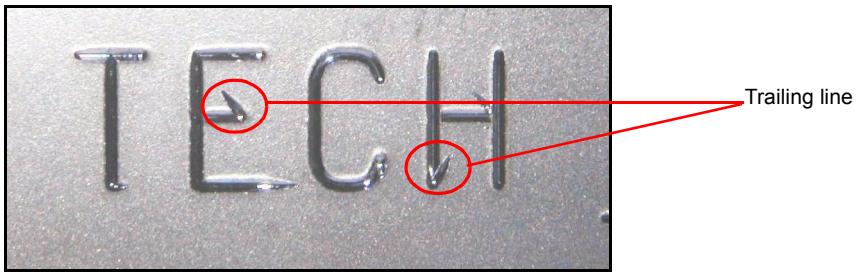


Photo 1

The down delay allows the stylus point to move to the part to be marked and to exert a minimal pressure before the stylus begins marking the character. If the time delay is too long, the beginning of the character is less deep or non-existant (see photo 2). .

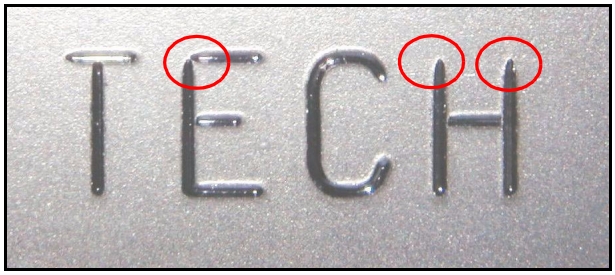


Photo 2

Photo 3 shows a marking with the time delay values correctly set. .

Photo 3

3.3 . Material to be marked

. Composition

. Condition of the surface (rough, presence of deposits...)

. Hardness

. Thickness of the part

. Surface treatment (composition, thickness...)

. Temperature of the material

3.4 . Point radius

Depending on the stylus, two radius sizes of the points are available (see table chapter 1).

The 0.7 radius gives a wider but more superfical mark than the 0.2 radius. The **0,7 radius** is best suited for marking on soft materials, such as plastics, or on other materials if a wide yet very superficial marking is needed.

However, this radius type is not suited for marking small characters since the marking becomes illegible.

3.5 . Criteria for choosing between a carbide point and a diamond point

The choice between the 2 types of points available (carbide and diamond) is based on the following criteria:

• Roughness:
- Carbide point for unfinished parts or for cast iron (3.2<Ra<12.5).
- Diamond point for machine-finished surfaces (Ra<3.2).

• Material:

For marking on cast iron parts, it is essential to use a carbide point.

• Aesthetics:

For marking steel parts, a diamond point (if the roughness condition complies) gives a better marking quality than a carbide point because the marking is bright, and therefore contrast and legibility are improved.

Contrary to a carbide point, a diamond point reduces burrs on the material.

A diamond point must not be used if the marking is re-traced several times, as this will result in a rapid deterioration of the point.
It is best to choose the stylus most adapted for the desired depth and to do the marking just one time.

3.6 . Marking depth

The choice of the stylus is based on the desired depth of the marking.

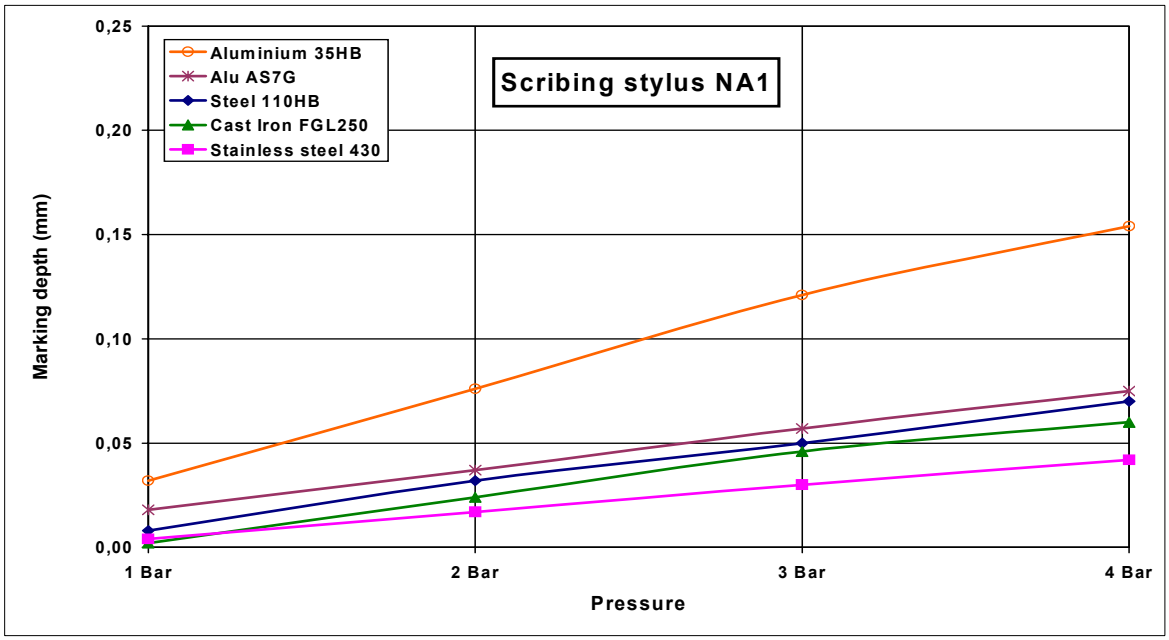
The following diagrams match the marking depth with the suitable stylus and operating pressure.

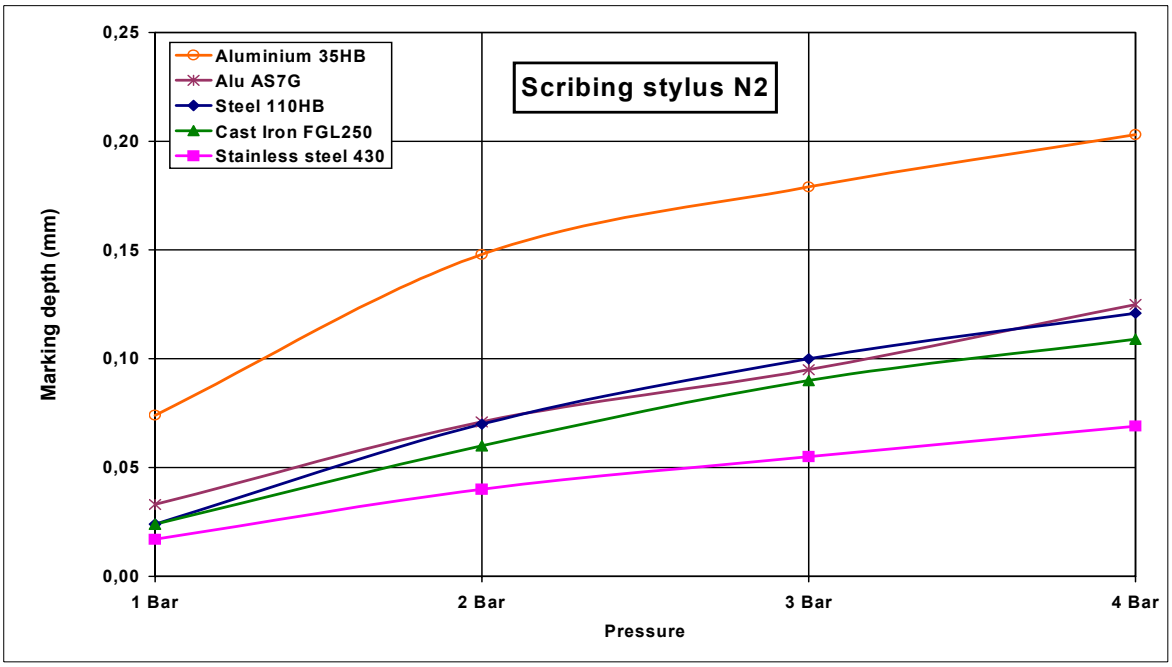
REMARK

When there is a choice between two styli, it is recommended that you choose the one which uses the higher pressure as this will make the stylus more responsive.

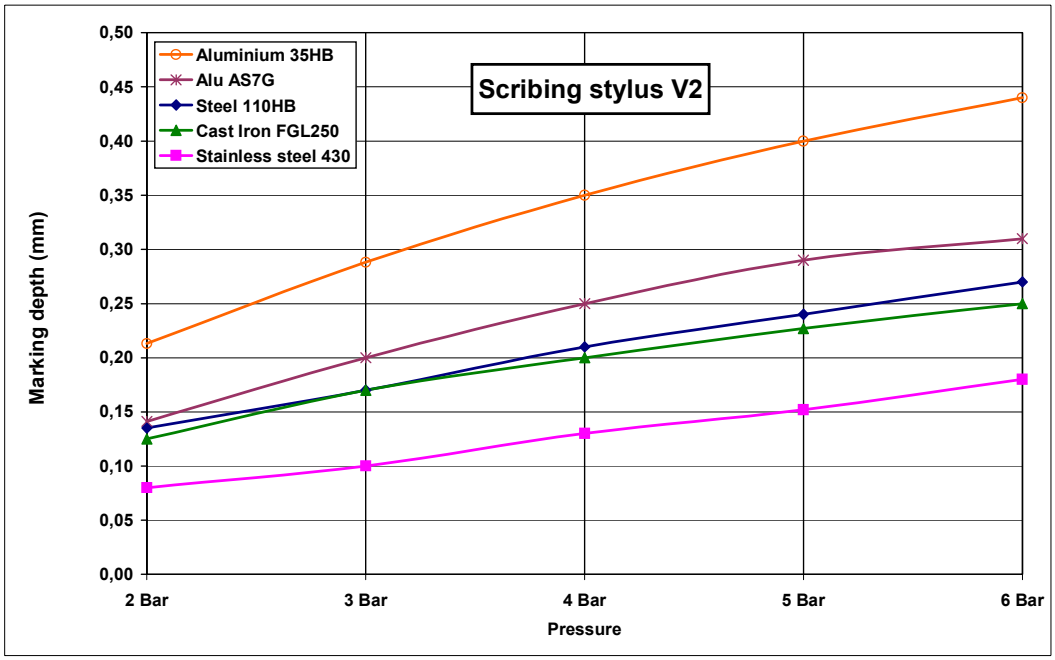
Keep in mind the maximum and minimum operating pressure of the stylus. See paragraphs 3.7 and 3.8.

3.6.1. Standard stylus





3.6.2. Deep scribing stylus



3.7 . Maximum pressure according to machine and stylus used

All scribing machines cannot withstand the same scribing pressure.

Depending on the stylus and machine used, the maximum recommended air pressure is indicated in the table below:
.

	NA0	NA1	NA1_LG100	N2	V2
CN312Cr	4 Bar	4 Bar	2 Bar	3 Bar	
CN312Sr	4 Bar	4 Bar	3 Bar	4 Bar	
SV312					6 Bar

Non-compliance with these pressures could result in premature wear of the machine guide rails.

3.8 . Minimum pressure according to stylus used

Scribing styli require a minimum pressure in order to function correctly. If the pressure is below this limit, the stylus cannot move.

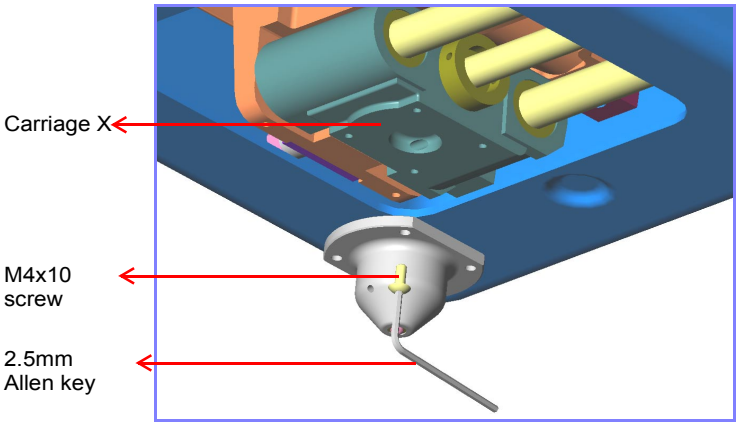
	NA0	NA1	NA1_LG100	N2	V2
Minimum pressure	2 Bar	1 Bar	1 Bar	1 Bar	2 Bar

4- Postioning the stylus

4.1 . Standard stylus

Verify that the O-ring is properly seated in the groove on the top of the stylus.

Place the stylus on the X carriage and attach it using the 4 M4x10 screws



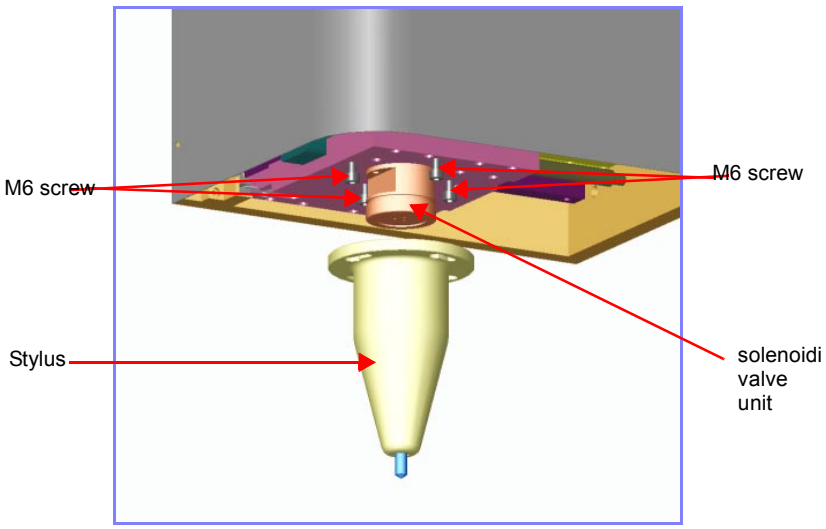
4.2 . Deep scribing stylus

Place the stylus on the solenoid valve unit, taking care to not damage the o-ring.

Pass the M6 screws through the holes in the collar around the stylus.

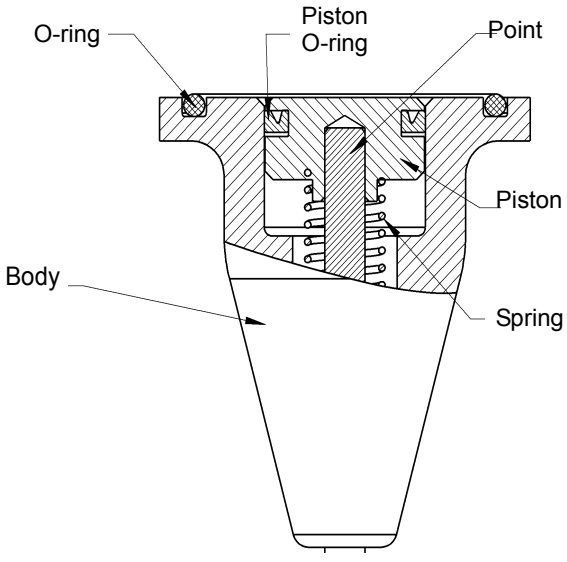
Turn the stylus so that the screws slide into the grooves.

Tighten the 4 M6 screws.



5- Naming stylus components

5.1 . Profile of a standard stylus



6- Replacement Parts

DESCRIPTION	ITEM CODE
Styli NA to N2	
Scribing styus NA0 – 110° carbide point - radius 0,7	MSY152RA712
Scribing styus NA1 – 110° carbide point - radius 0,2	MSY157RA212
Scribing styus NA1–LG100 – 110° carbide point - radius 0,2	MSY152RA212
Scribing styus NDA1 – 110° diamond point - radius 0,2	MSY157RA222
Scribing styus NDA1–LG100 – 110° diamond point - radius 0,2	MSY152RA222
Scribing styus N2 – 110° carbide point - radius 0,2	MSY151RA212
Scribing styus ND2 – 110° diamond point - radius 0,2	MSY151RA222
Replacement point NA0 RNA0 – 110° carbide point – radius 0,7	MRS72T1712
Replacement point NA1 RNA1 – 110° carbide point – radius 0,2	MRS72T1212
Replacement point NA1 RNA1–LG100 110°– carbide point – radius 0,2	MRS75T1212
Replacement point NA1 RNDA1 – 110° diamond point – radius 0,2	MRS72T1222
Replacement point NA1 RNDA1–LG100 – 110° diamond point – radius	MRS75T1222
Replacement point N2 RN2 – 110° carbide point – radius 0,2	MRS72T2212
Replacement point N2 RND2 – 110° diamond point – radius 0,2	MRS72T2222
Repair kit* for stylus NA0	SESY001/35
Repair kit* for stylus NA1	SESY001/22
Repair kit* for stylus N2	SESY001/21
Aluminium body for stylus NA0	MCM01/3909
Aluminium body for stylus NA1	MCM01/3684
Aluminium body for stylus NA1– LG100	MCM01/3988
Aluminium body for stylus N2	MCM01/3687
Styli V2	
Scribing styus V2 – 110° carbide point - radius 0,2	MSY15VRA212
Scribing styus VD2 – 110° diamond point - radius 0,2	MSY15VRA222
Replacement point V2 RNV2 - carbide point - radius 0,2 – 110°	MRS7VT2212
Replacement point V2 RNDV2 - diamond point – radius 0,2 – 110°	MRS7VT2222
Repair kit* for stylus V2	SESY001/34
Aluminium body for stylus V2	MCM01/3875

* The repair kit is composed of:
  . 1 piston o-ring
  . 1 spring,
  . 1 o-ring.

Scribing stylus points cannot be resharpened.

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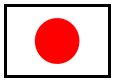
	**Gravograph Malaysia SDN BHD - Malaysia** Block A12-17 (Lobby 5), Damansara Intan n°1 Jalan SS20/27 47400 PETALIG JAYA, SELANGOR Tel. : (60) 3 71 18 3303 Fax : (60) 3 77 10 3305		**Technifor KK - Japan** 1-25 Takahata-Cho Nishinomiya-SHI 663-8202 HYOGO Tel. : (81) 798 63 7325 Fax : (81) 798 63 6280 **E-mail: tfkk@jp.technifor.com**
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