

# RadioProtection Cirkus

## Travaux dirigés de détection

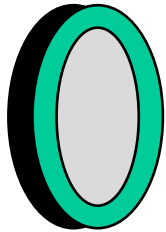
Nom de l'auteur : Marc AMMERICH

N° chrono : DOC-FO-16\_2

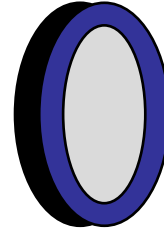
Version du : 29 avril 2018

Le portail de la RP pratique et opérationnelle  
[www.rpcirkus.org](http://www.rpcirkus.org) - [www.forum-rpcirkus.com](http://www.forum-rpcirkus.com)

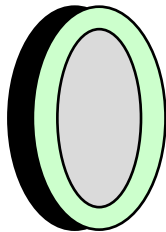
# LES SOURCES RADIOACTIVES



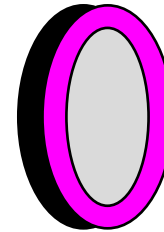
Am 241 T = 432 ans  
 $E_{\alpha} = 5,49 \text{ MeV}$  I  $\alpha = 85 \%$   
 $E_{\gamma} = 60 \text{ keV}$  I  $\gamma = 35 \%$



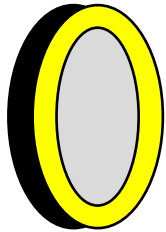
Fe 55 T = 2,68 ans  
 $E_X = 6 \text{ keV}$  I X = 25 %



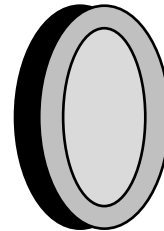
Cs137 T = 30 ans  
 $E_{\beta_{\max}} = 512 \text{ keV}$  I  $\beta_{\max} = 95 \%$   
 $E_{\gamma} = 662 \text{ keV}$  I  $\gamma = 85 \%$



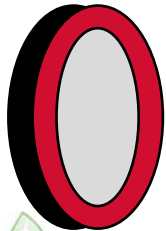
Na 22 T = 2,6 ans  
 $E_{\beta_{\max}} = 545 \text{ keV}$  I  $\beta_{\max} = 90 \%$   
 $E_{\gamma} = 511 \text{ keV}$  I  $\gamma = 180 \%$   
 $E_{\gamma} = 1274 \text{ keV}$  I  $\gamma = 100 \%$



Cl 36 T = 300 000 ans  
 $E_{\beta_{\max}} = 710 \text{ keV}$   
I  $\beta_{\max} = 98 \%$



Co 60 T = 5,3 ans  
 $E_{\beta_{\max}} = 318 \text{ keV}$  I  $\beta_{\max} = 99,9 \%$   
 $E_{\gamma} = 1173 \text{ keV}$  I  $\gamma = 99,9 \%$   
 $E_{\gamma} = 1332 \text{ keV}$  I  $\gamma = 100 \%$



C 14 T = 5730 ans  
 $E_{\beta_{\max}} = 156 \text{ keV}$  I  $\beta_{\max} = 100 \%$



Inconnue  
5000 ans > T > 1000 ans



# LES ÉLECTRONIQUES COURANTES

## MIP 10 Digital

Photo : MIRION



## Modèle Icto

Photo : Carmelec



**La version digitale remplace doucement la version analogique. La version analogique effectuant automatiquement certaines fonctions de l'ancienne version, il vaut mieux avoir les anciens réflexes et les appliquer aux modèles récents.**

# LES ÉLECTRONIQUES COURANTES

Le LB 124



Photo :Berthold

Le Como 170



Photo : Saphymo

Le PCM5 « Electra »

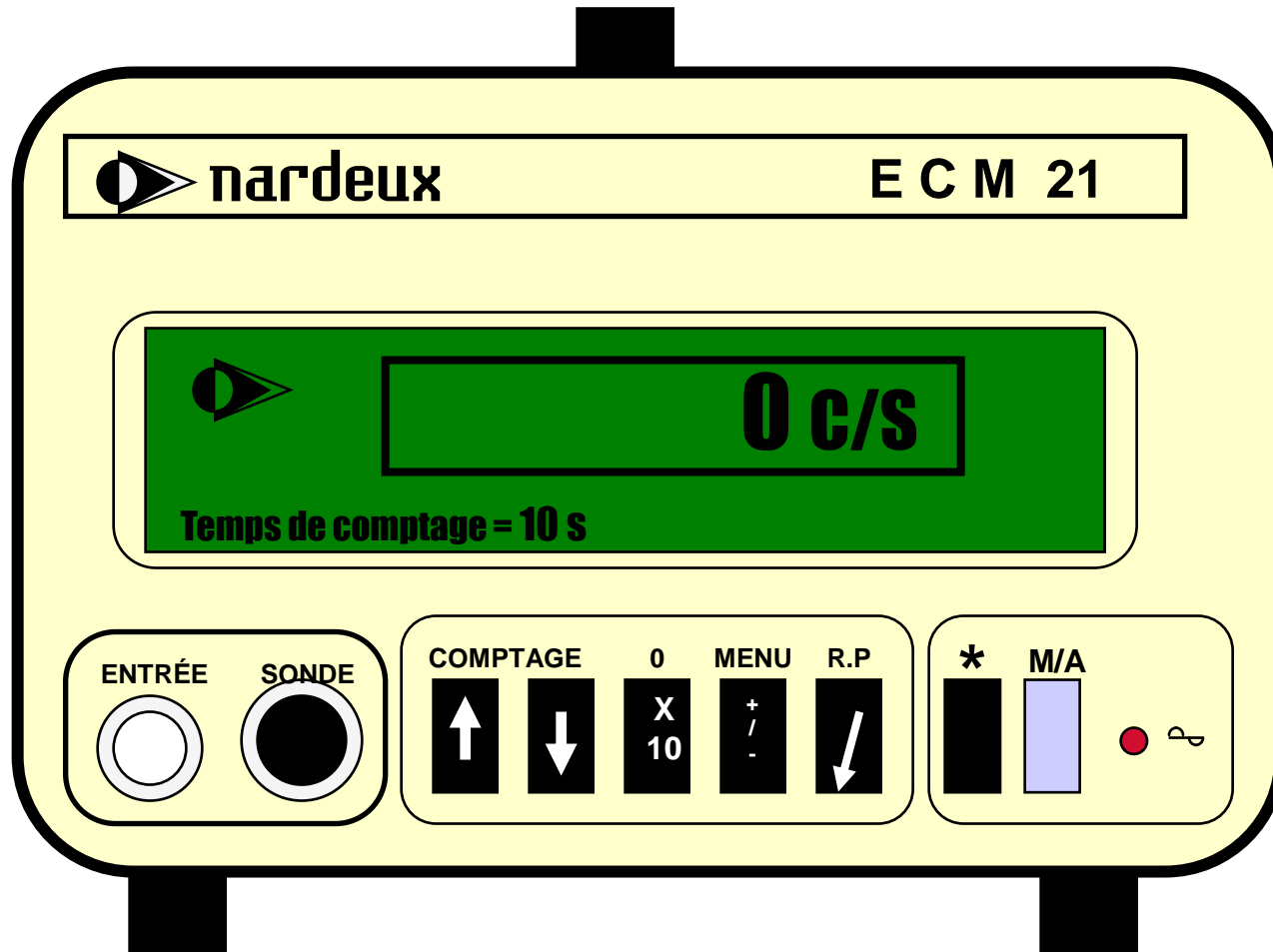


Photo: APVL

**Bien que le modèle sélectionné dans ce document pour les principes de mesure soit le MIP 10, les mêmes démarches sont applicables aux autres modèles de contaminamètres.**

# LES ÉLECTRONIQUES COURANTES

Les échelles de comptage

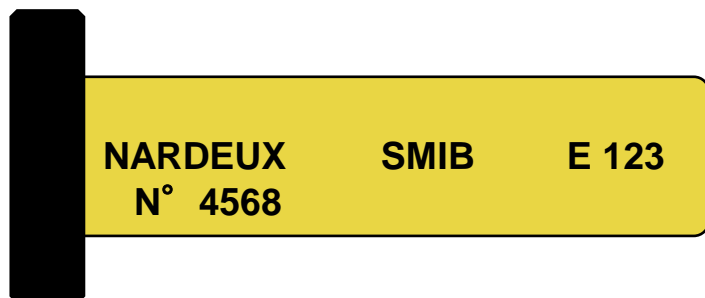


# LES SONDES



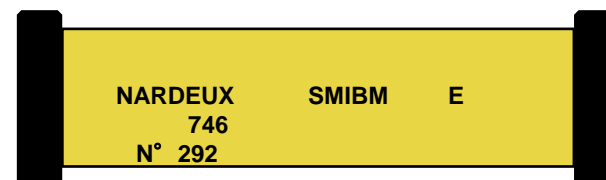
Sonde alpha

Mouvement propre = 0,05 c/s



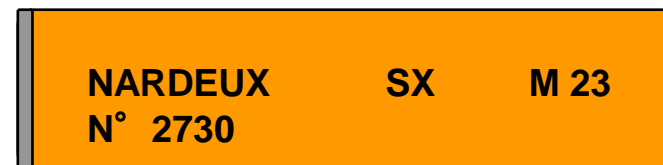
Sonde bêta

Mouvement propre = 1 à 2 c/s



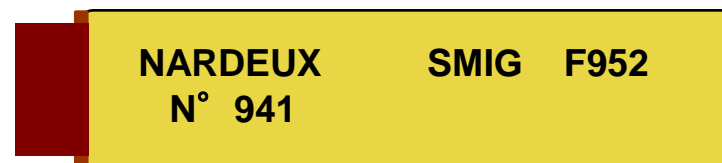
Sonde bêta mouss

Mouvement propre = 1 à 2 c/s



Sonde X

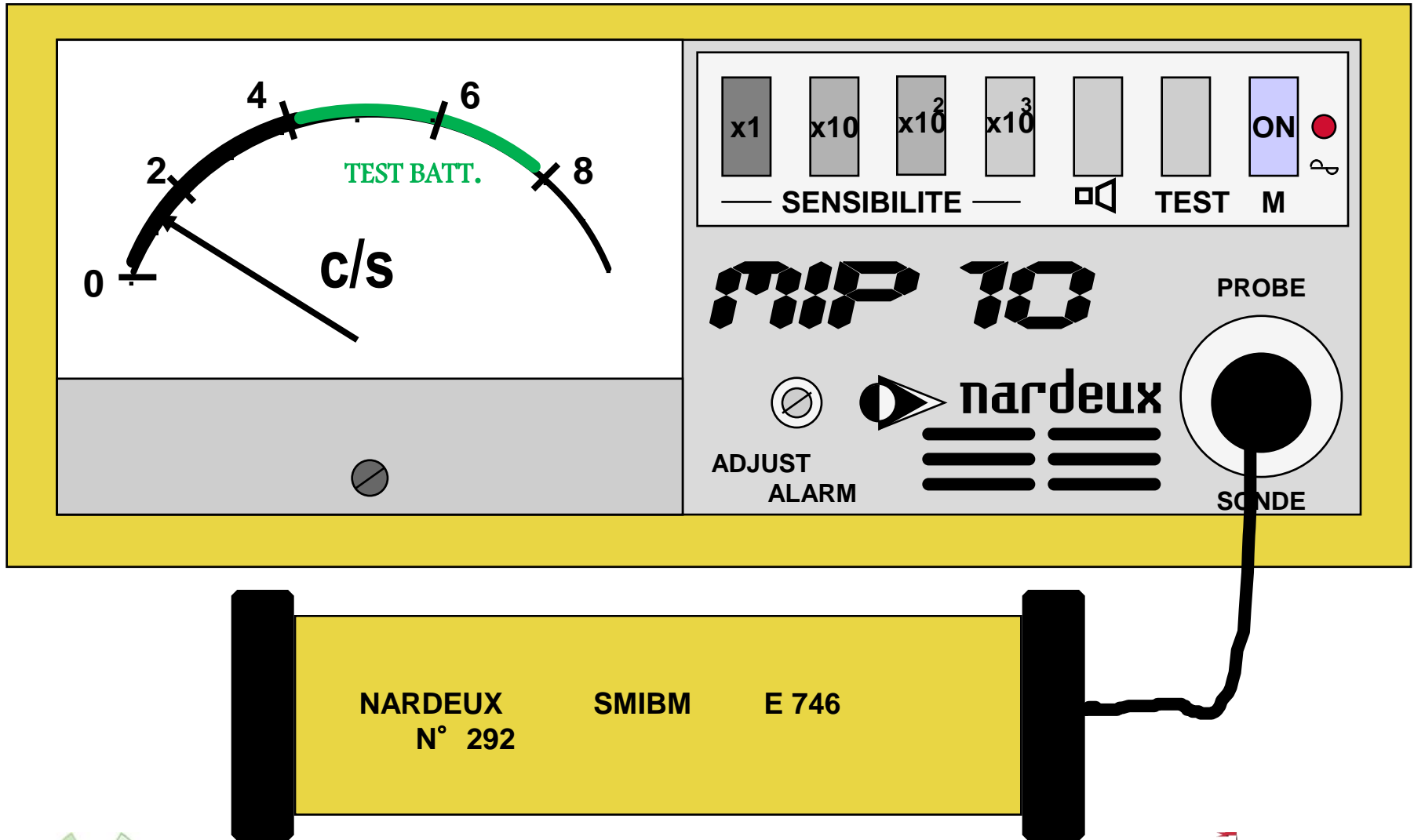
Mouvement propre = 10 à 20 c/s



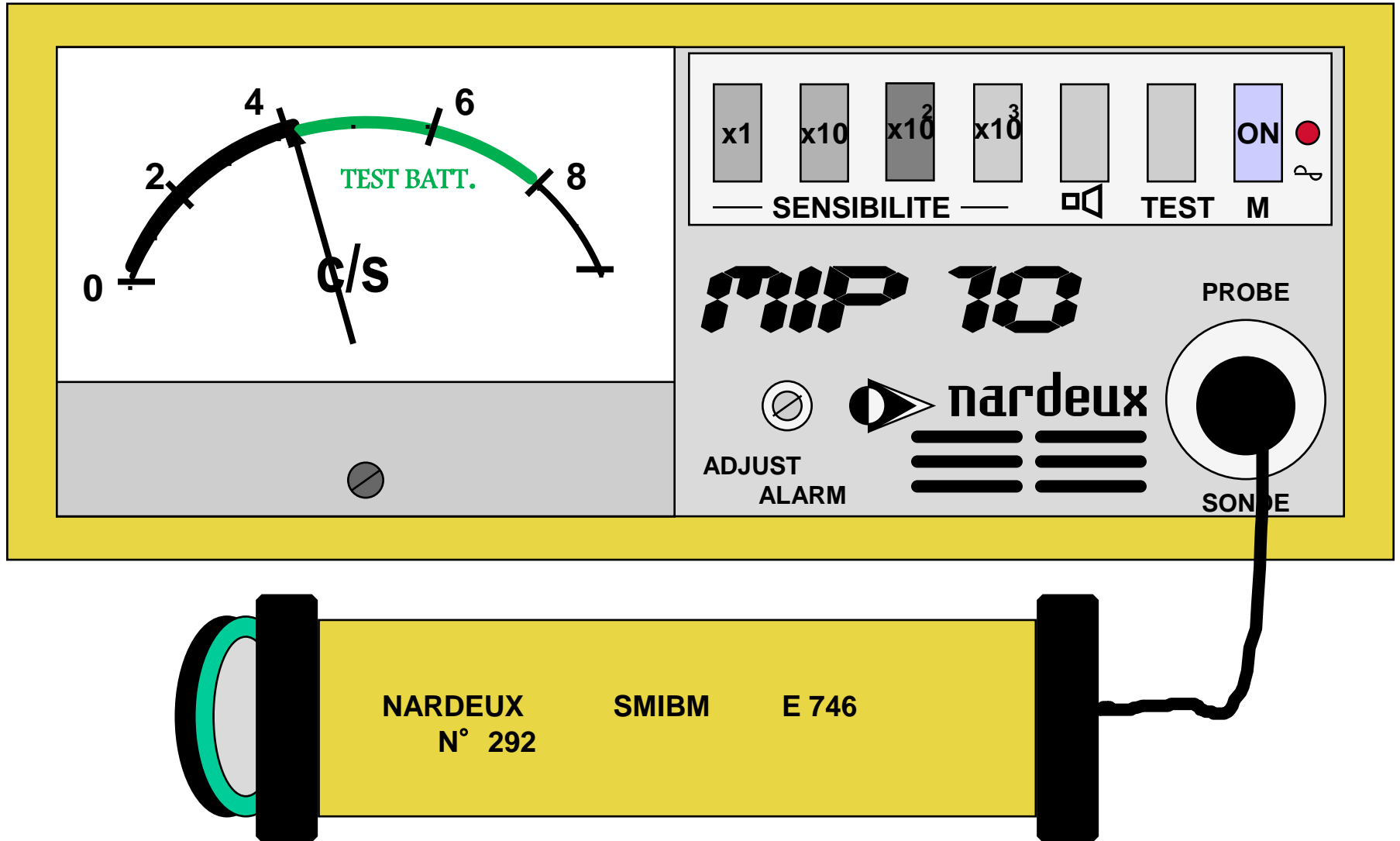
Sonde gamma

Mouvement propre = 20 à 40 c/s

# LE MOUVEMENT PROPRE

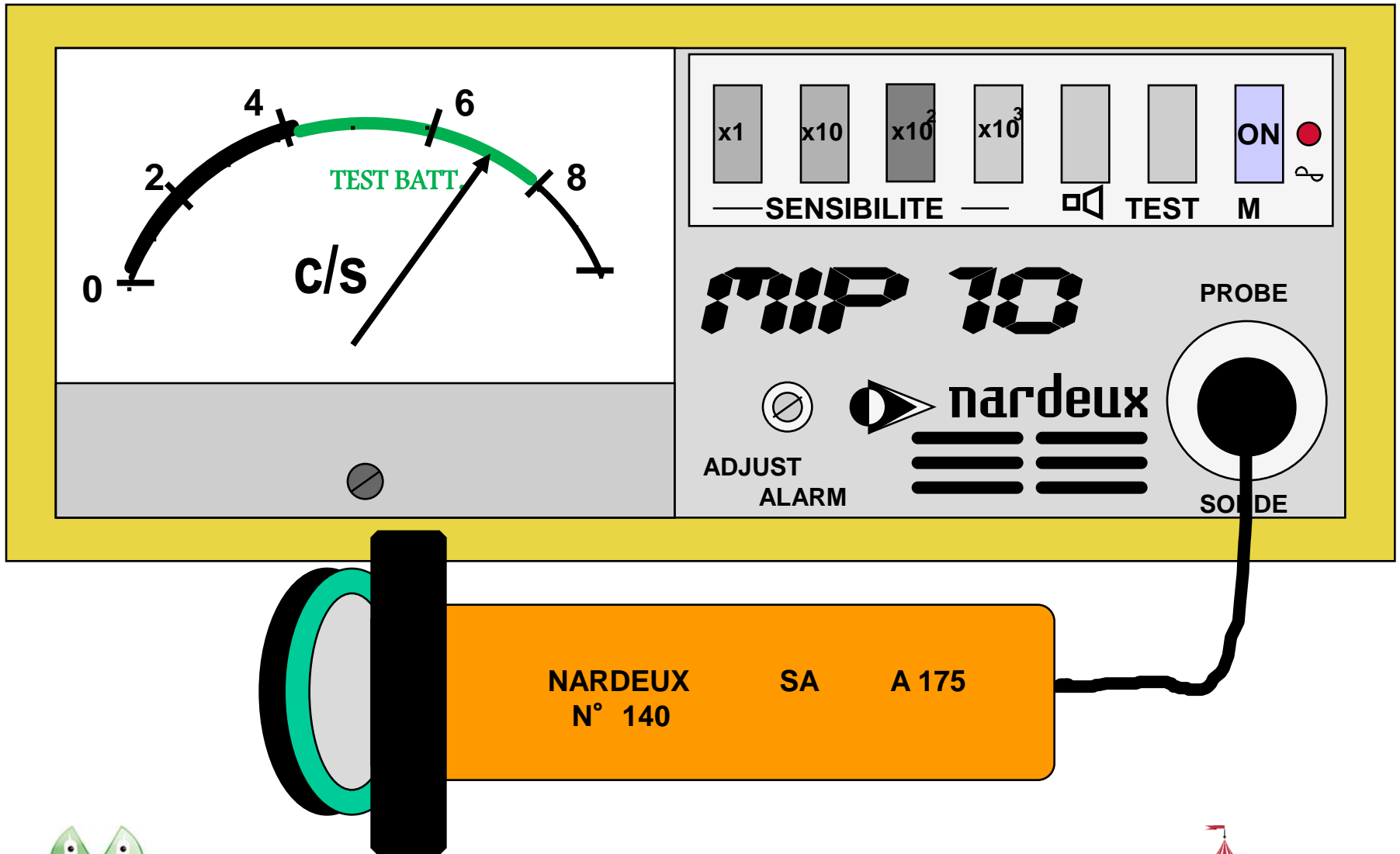


# LA MESURE

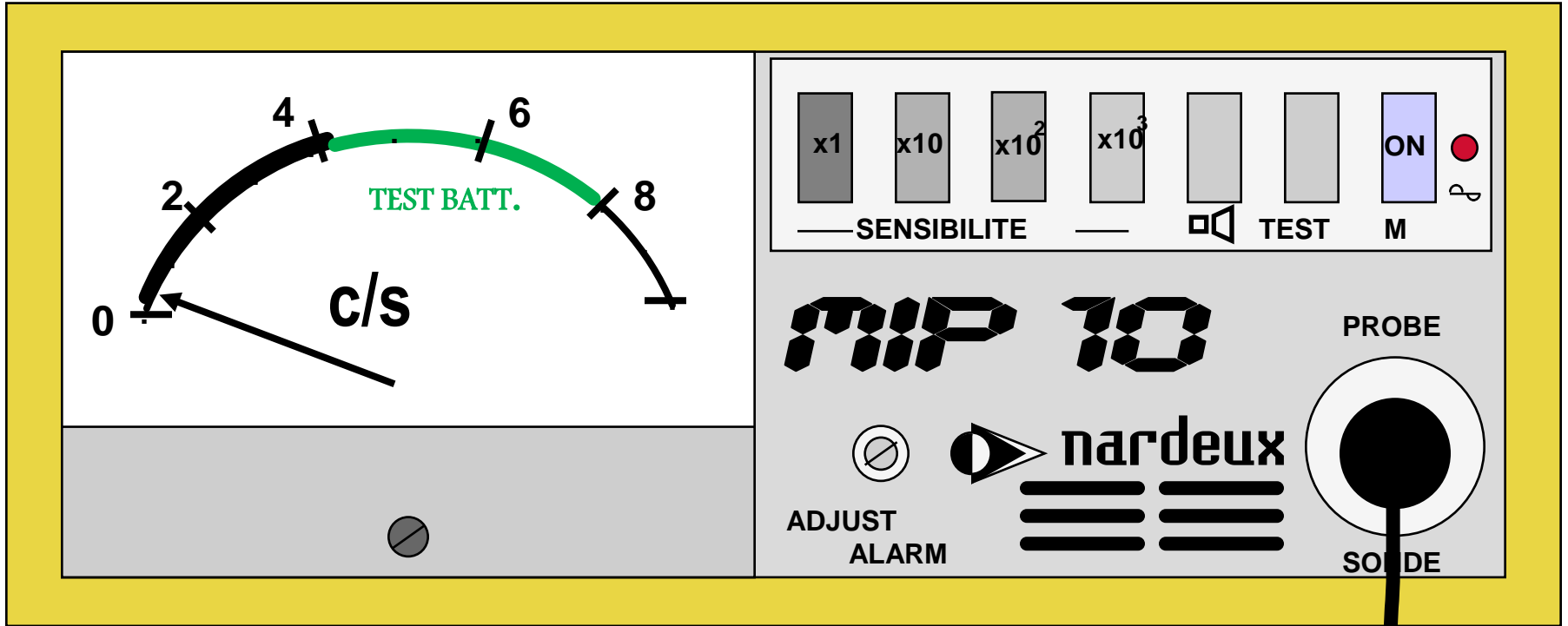




# LA MESURE ALPHA



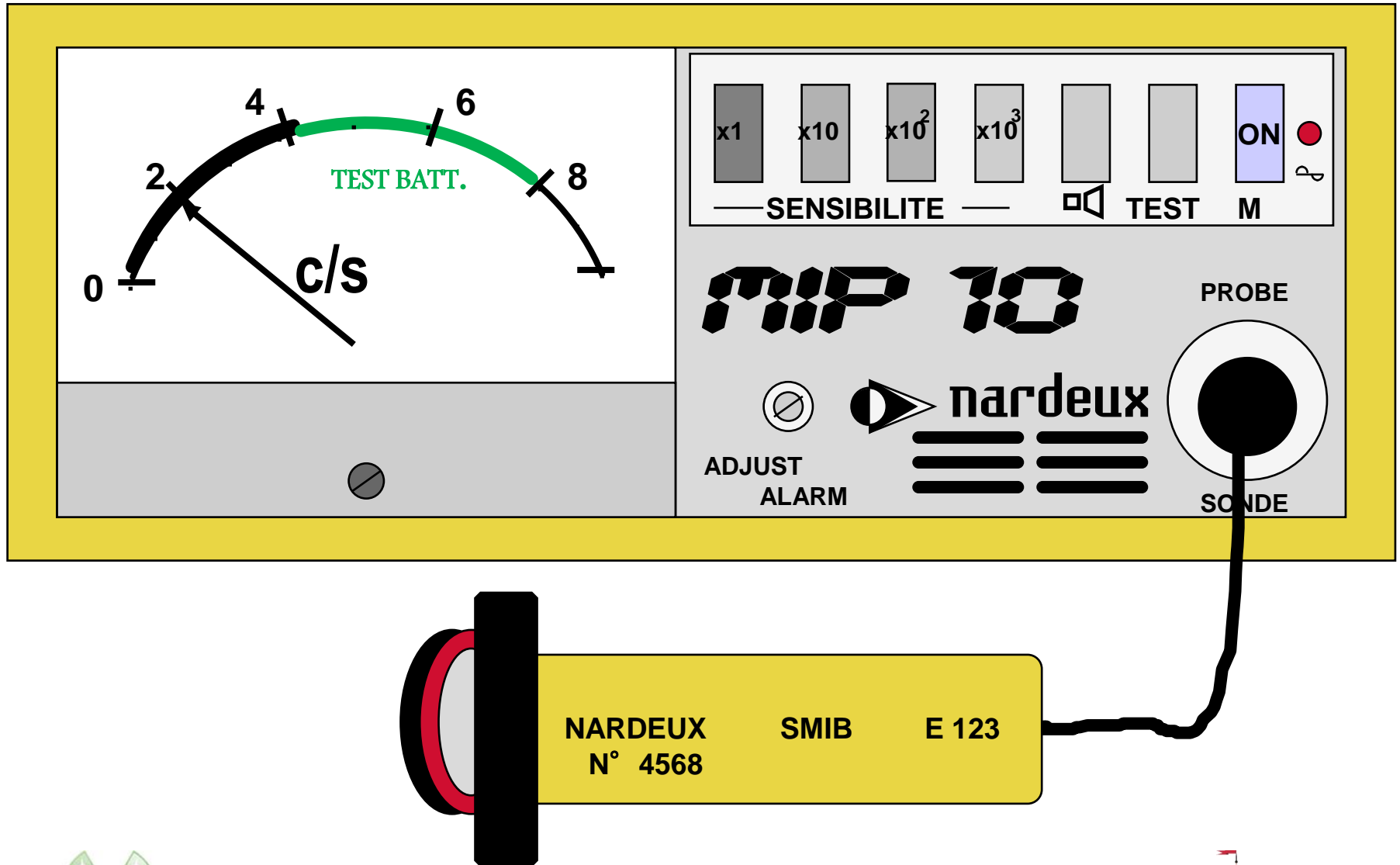
# LA MESURE ALPHA



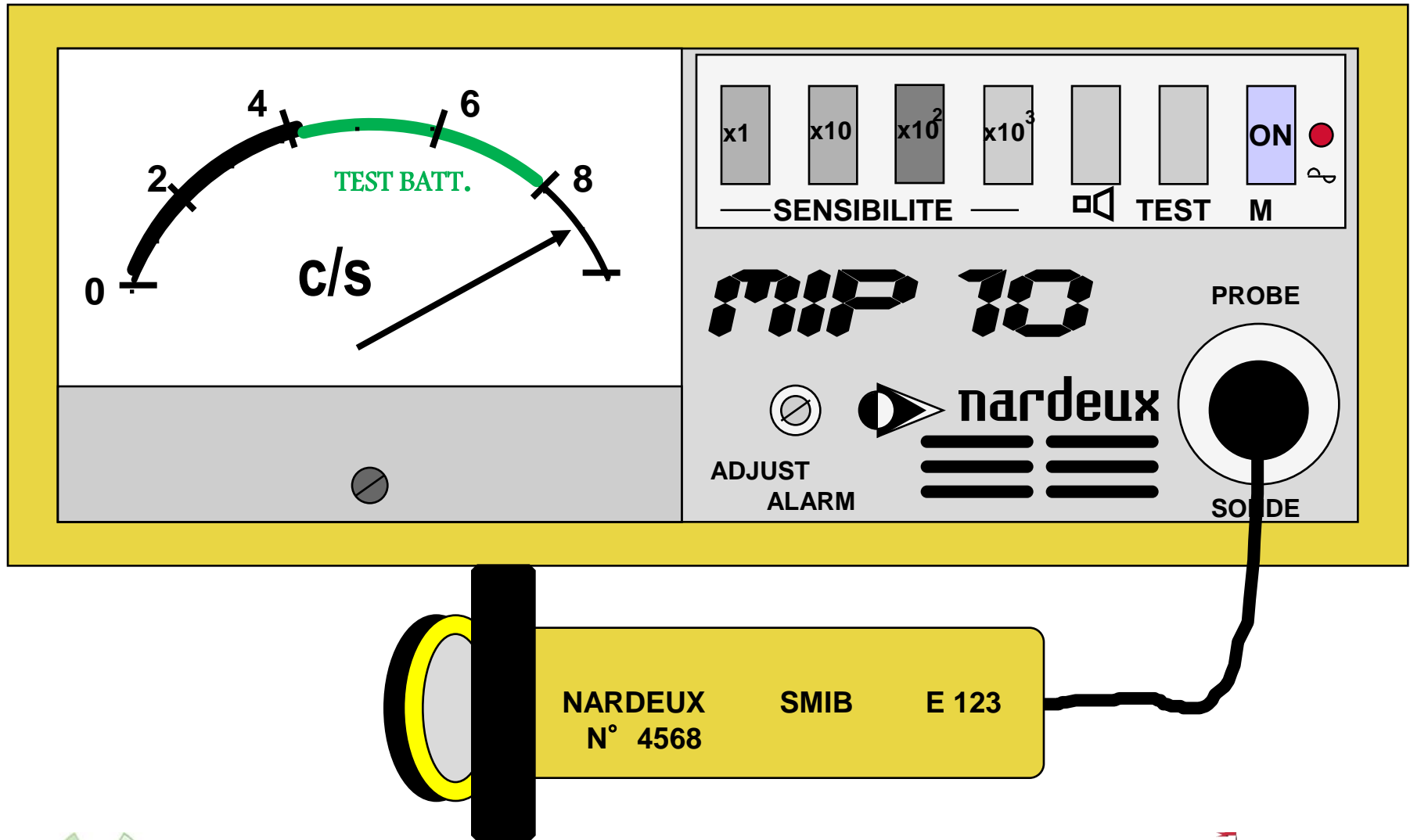
Ecran : feuille de papier



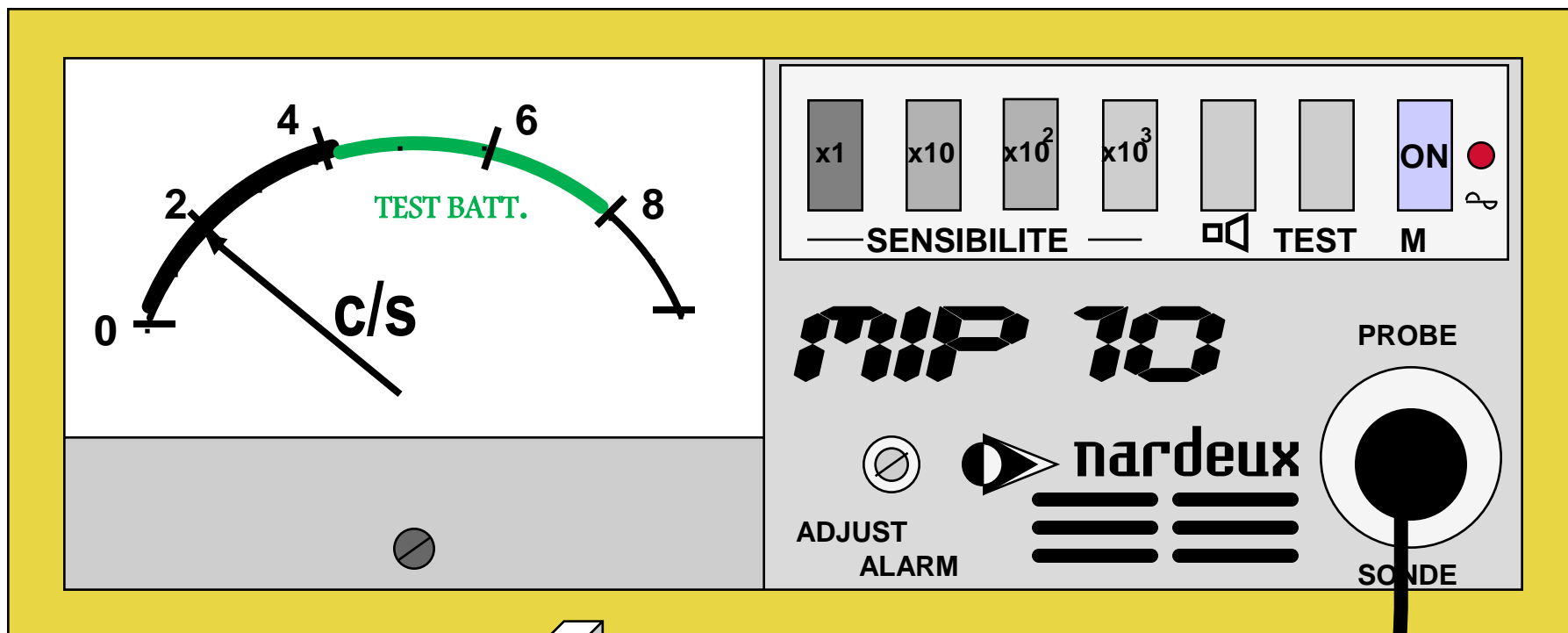
# LA MESURE BÊTA SCINTILLATEUR



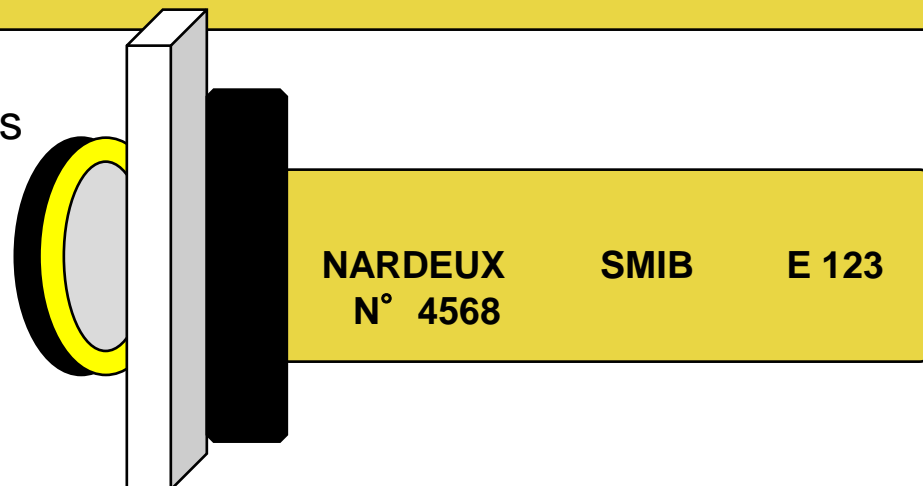
# LA MESURE BÊTA SCINTILLATEUR



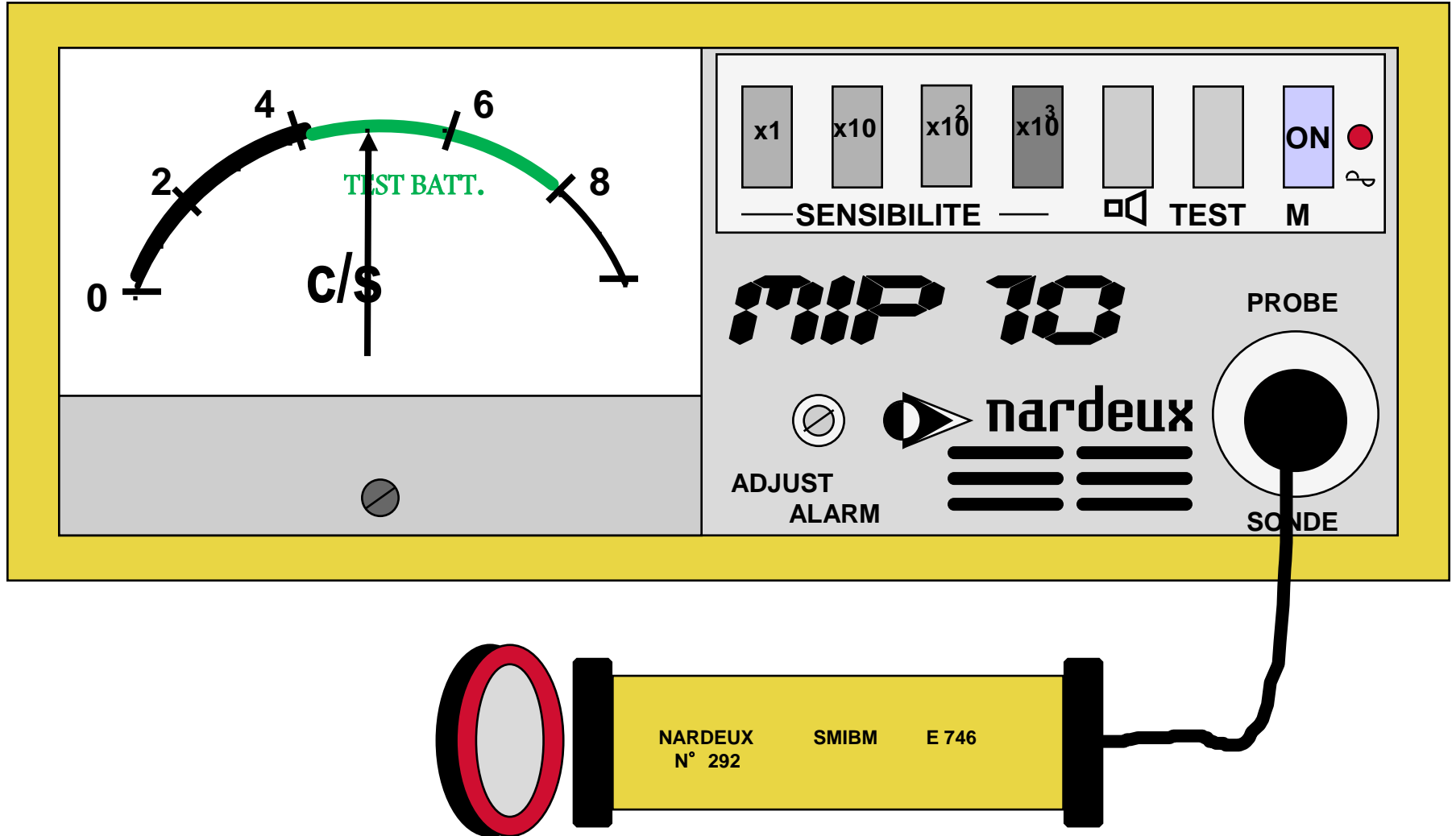
# LA MESURE BÊTA SCINTILLATEUR



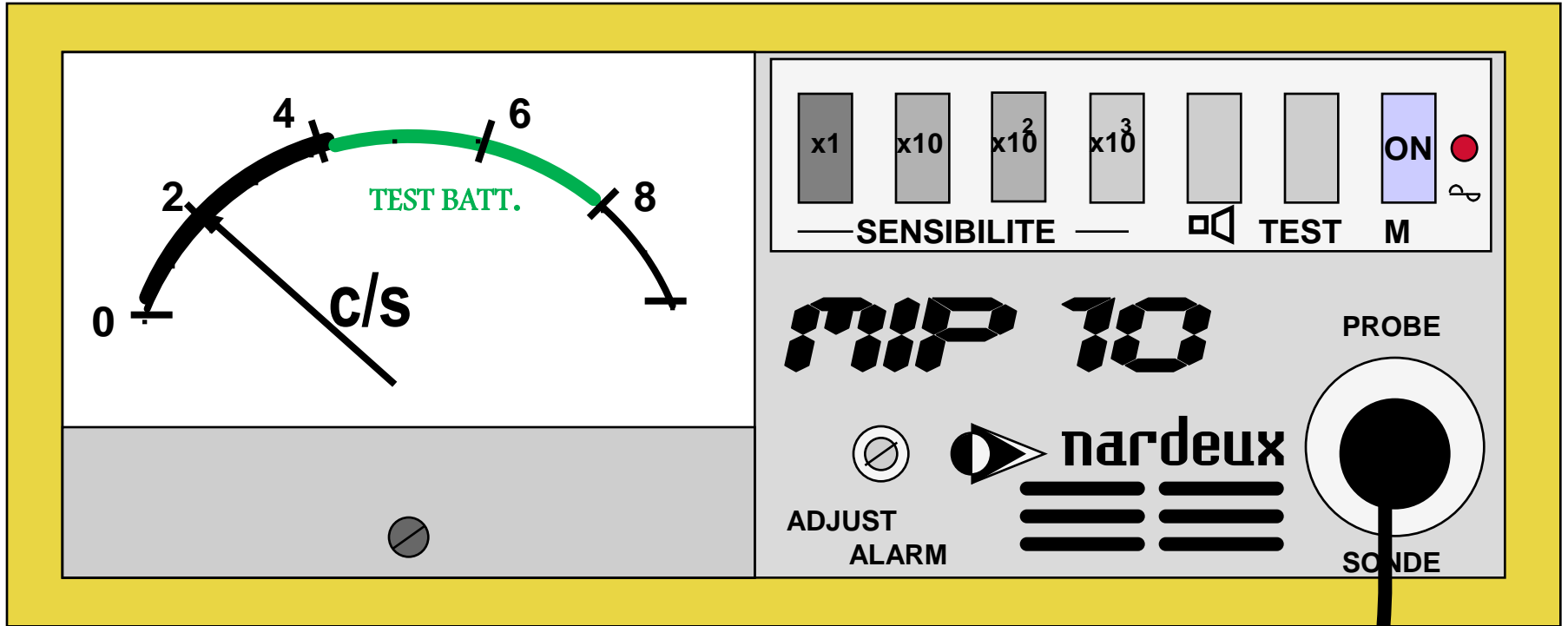
1 cm de plexiglas



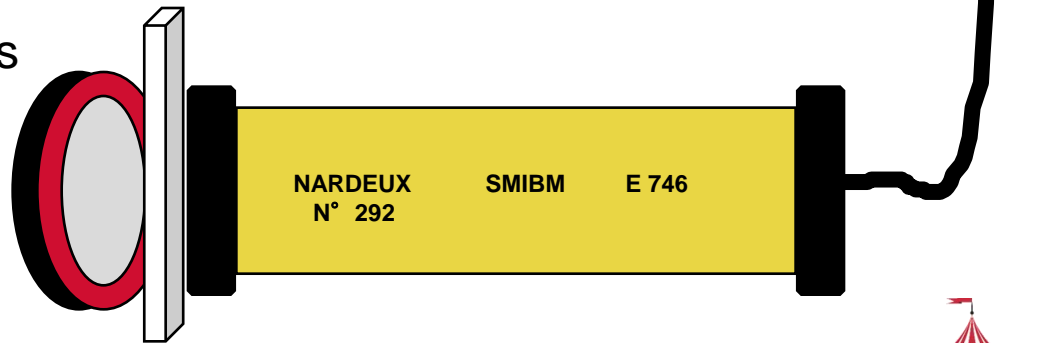
# LA MESURE BÊTA GEIGER-MÜLLER



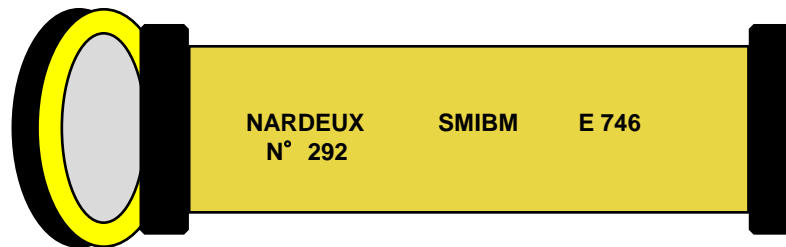
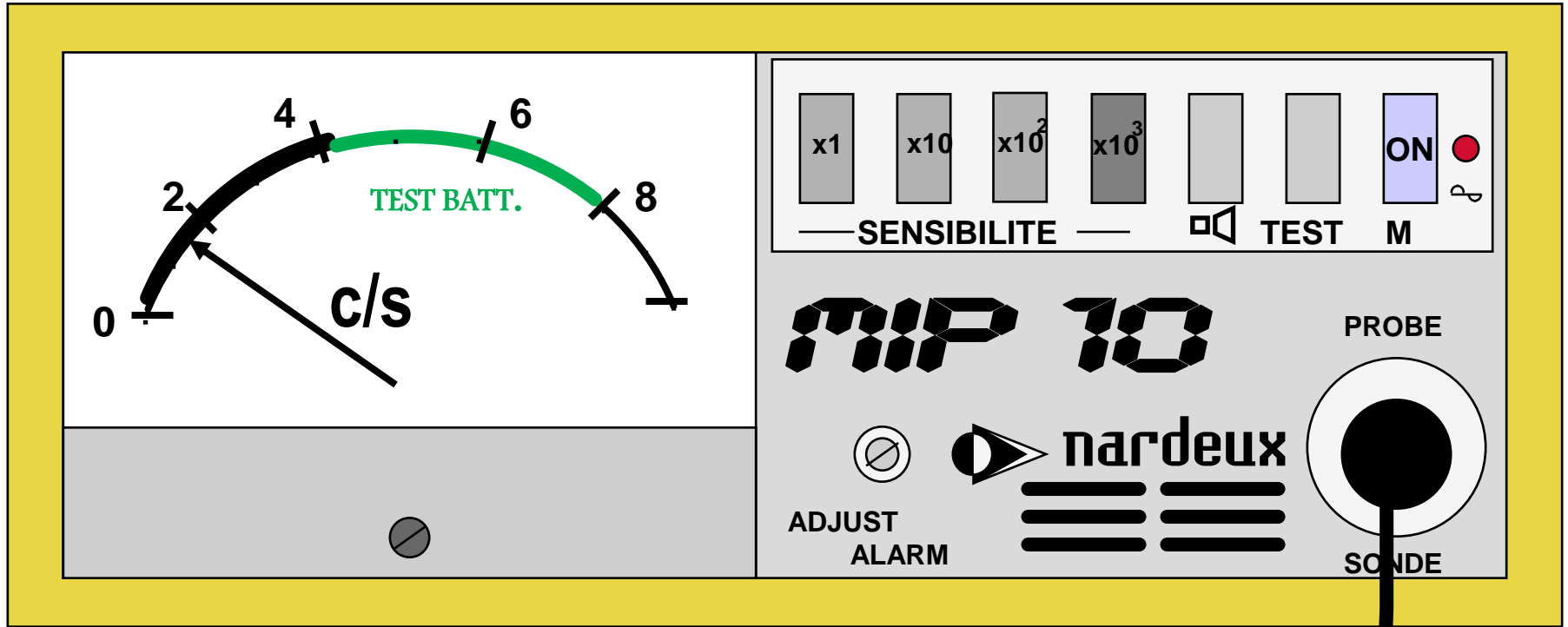
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1 mm de plexiglas

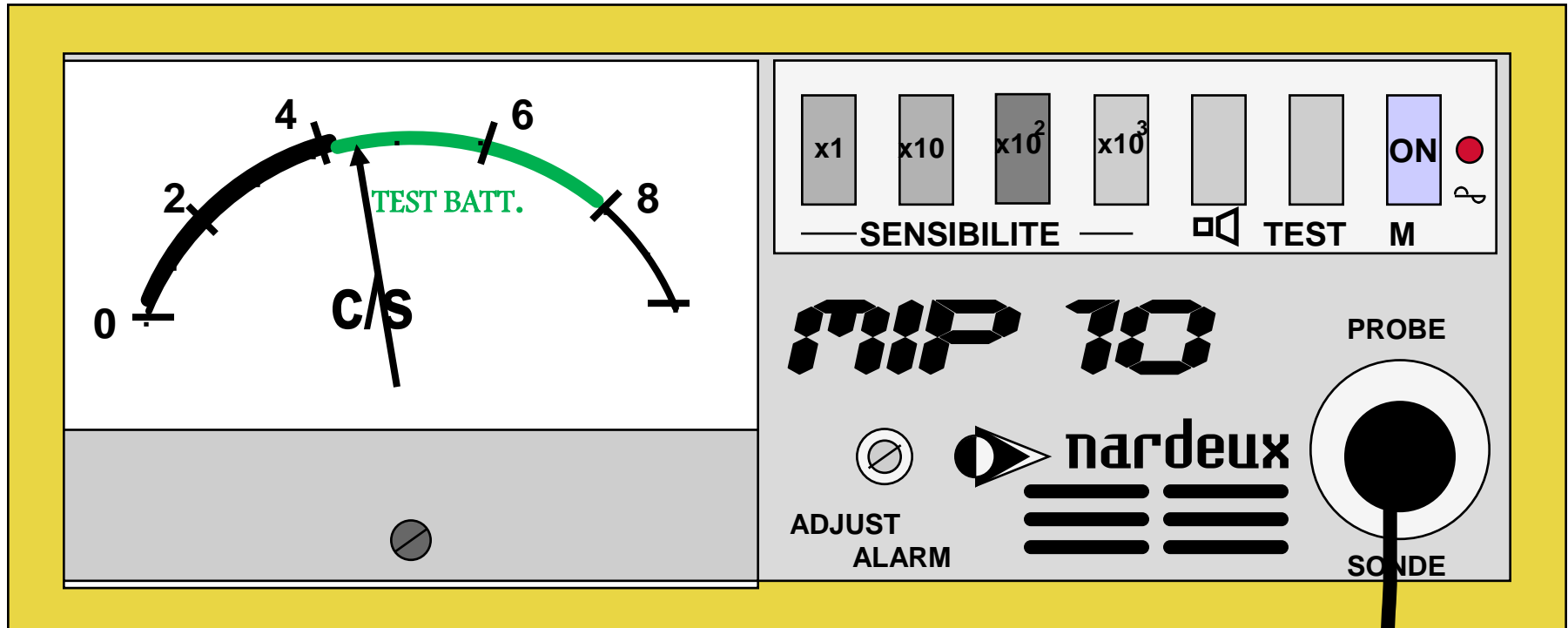


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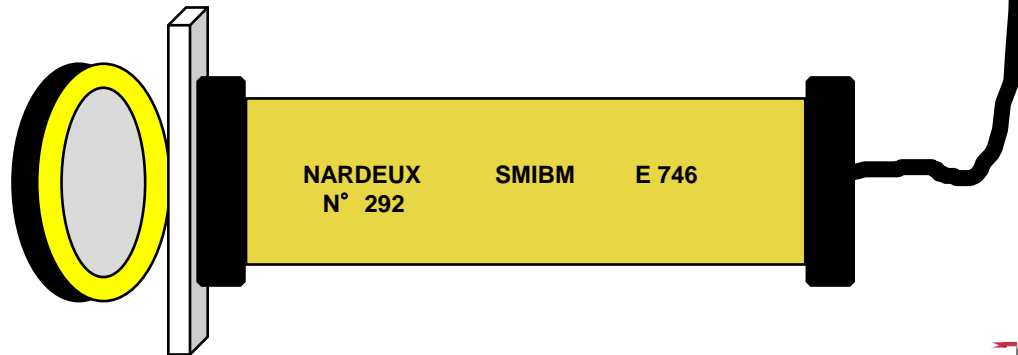




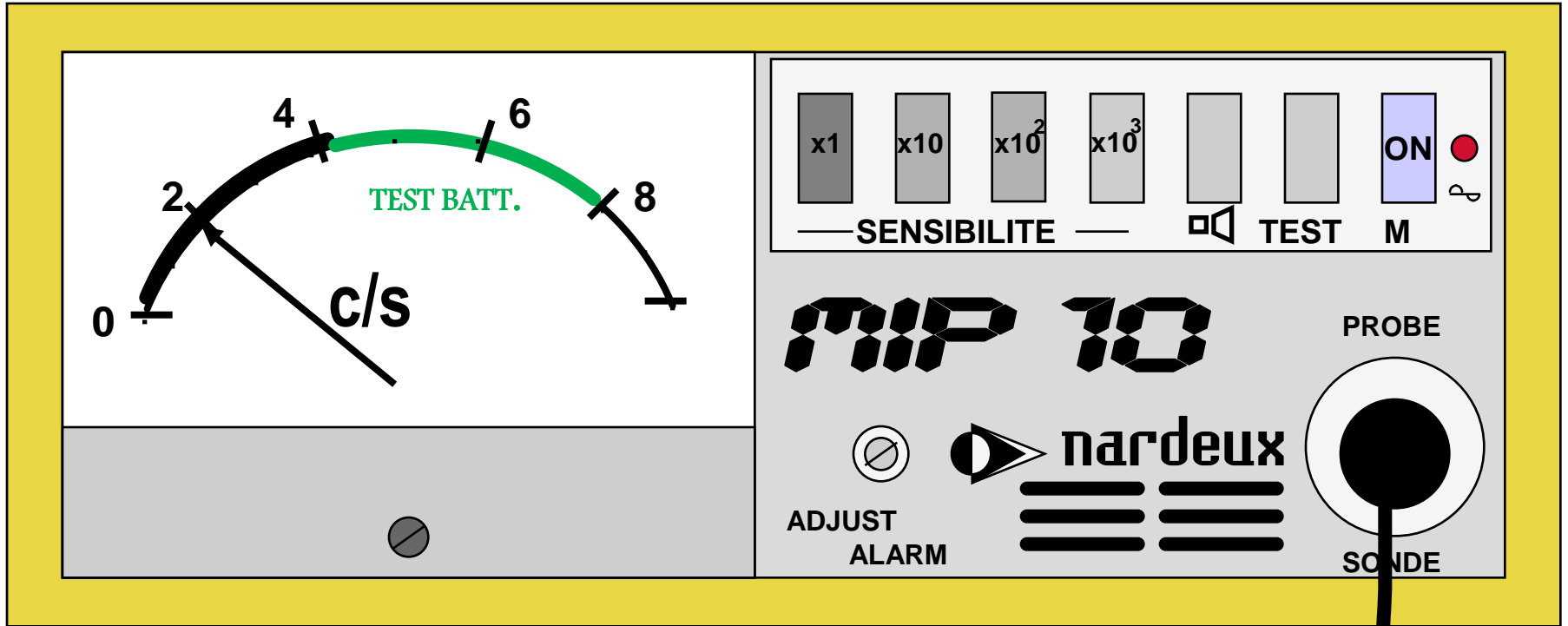
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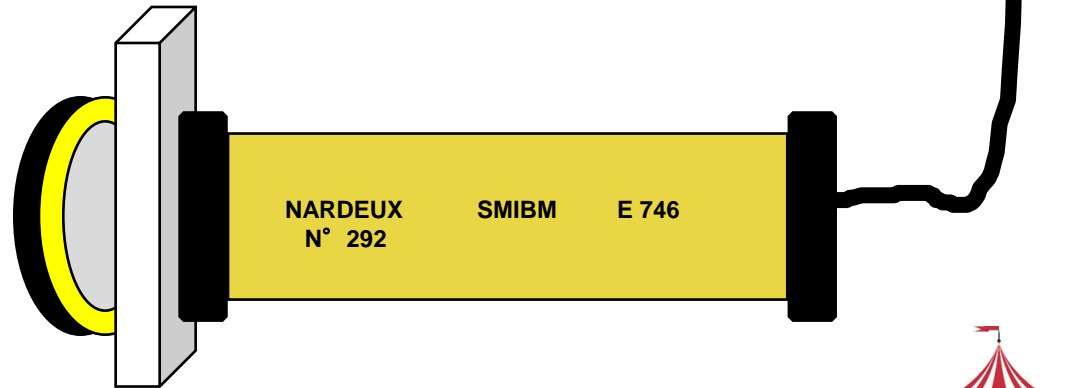
1 mm de plexiglas



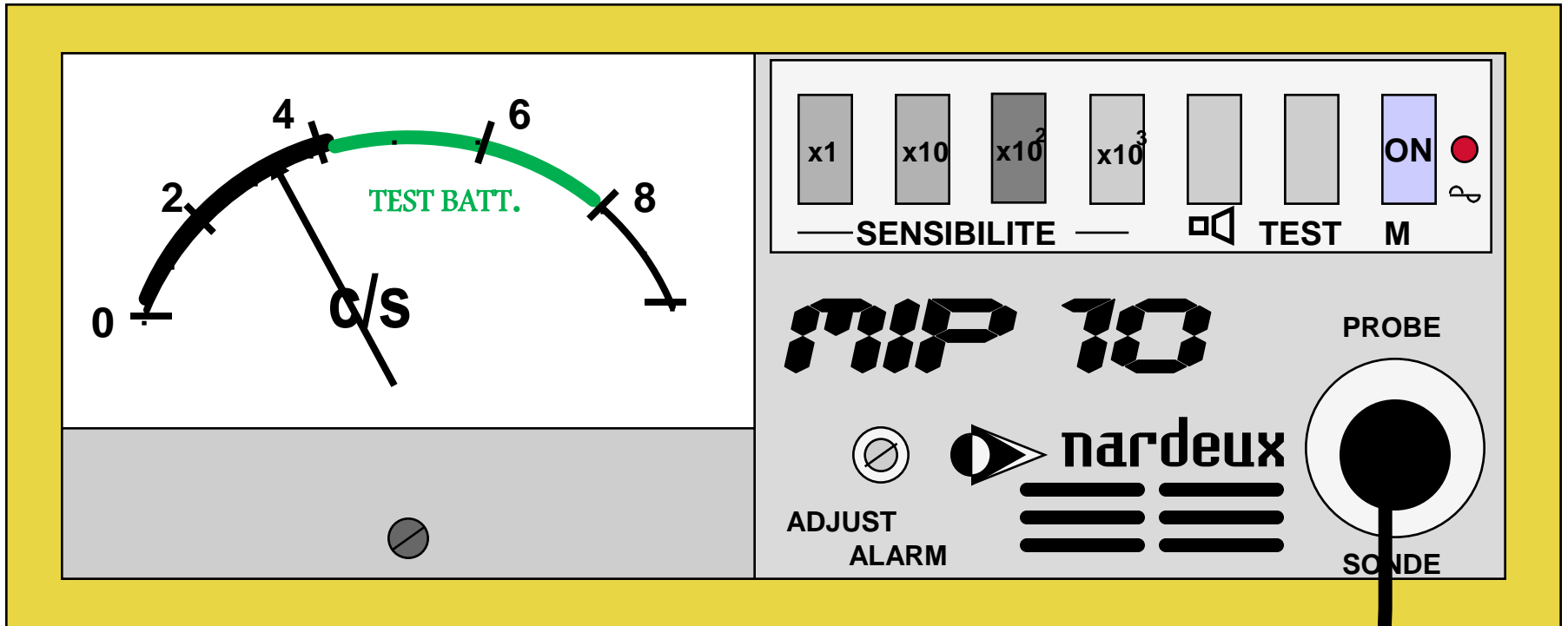
# LA MESURE BÊTA GEIGER-MÜLLER



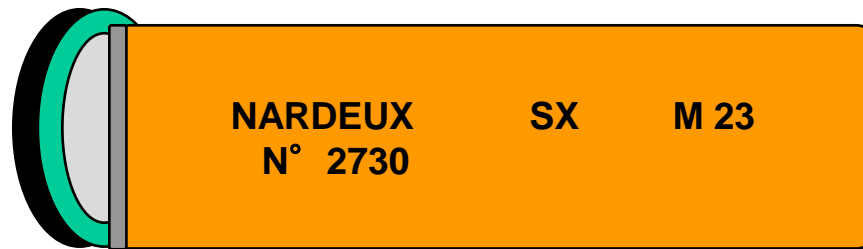
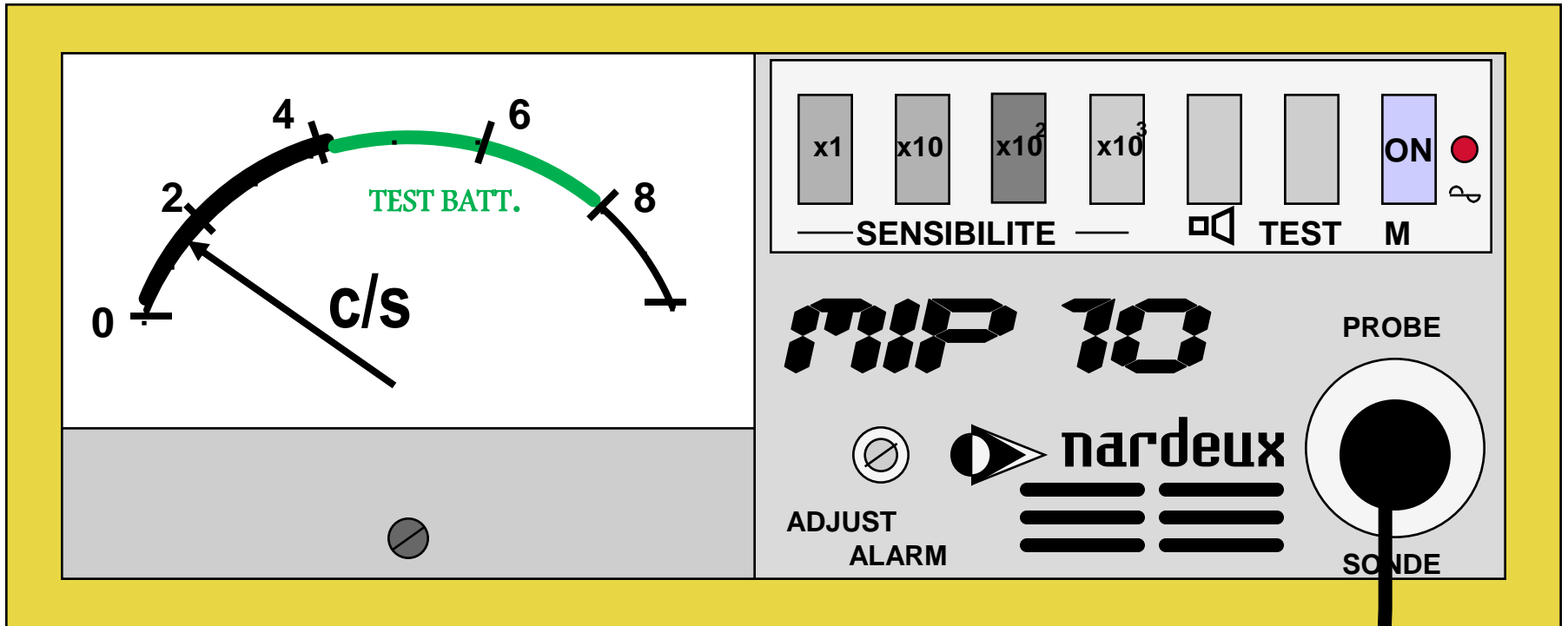
1 cm de plexiglas



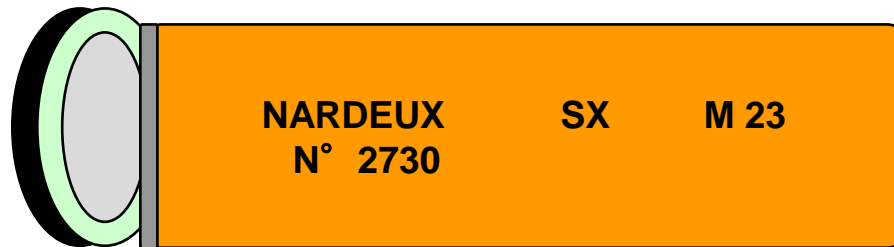
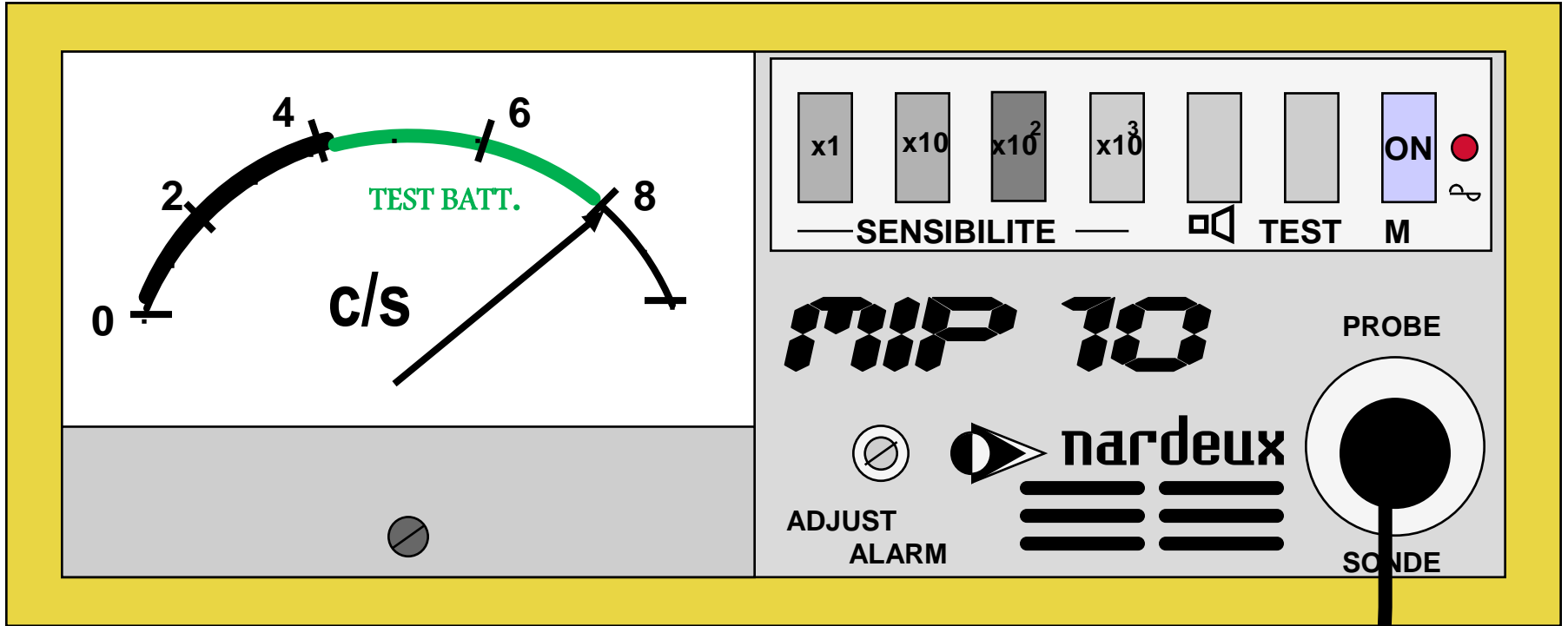
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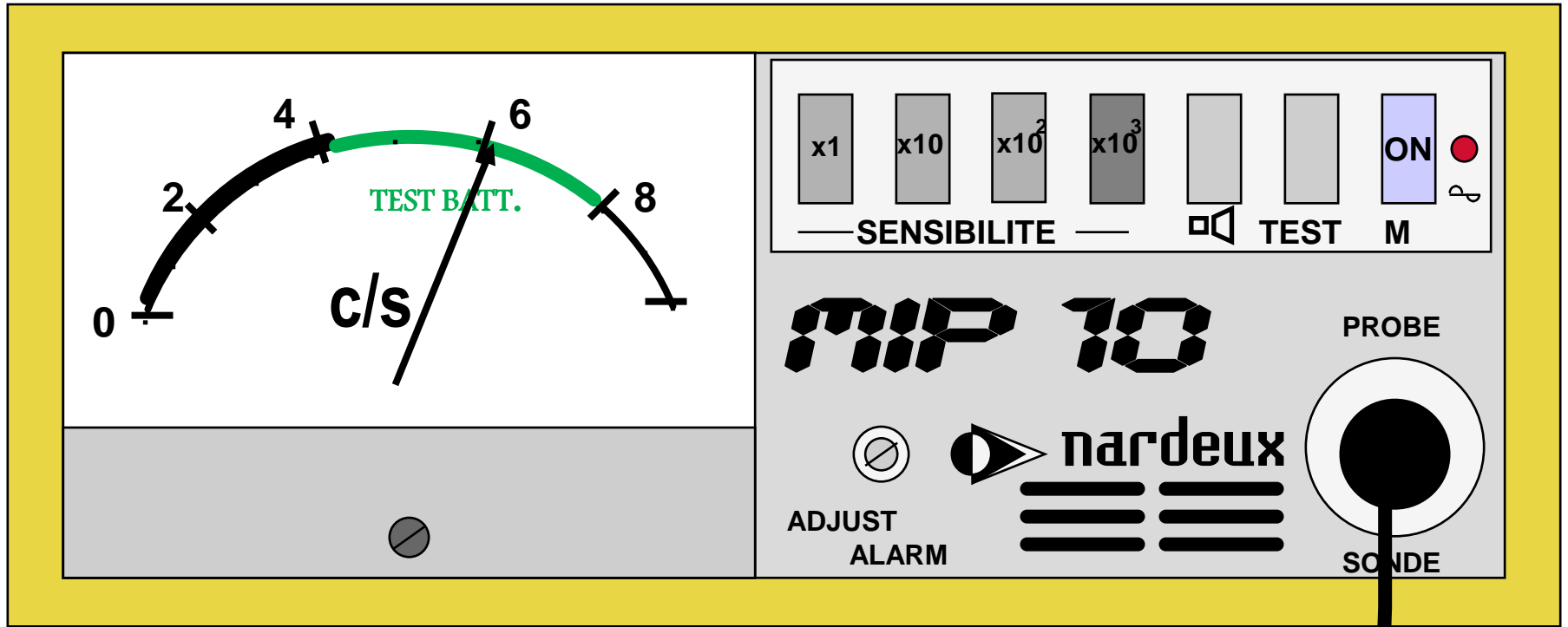
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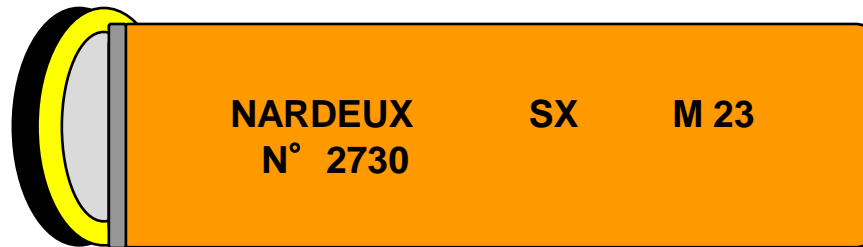
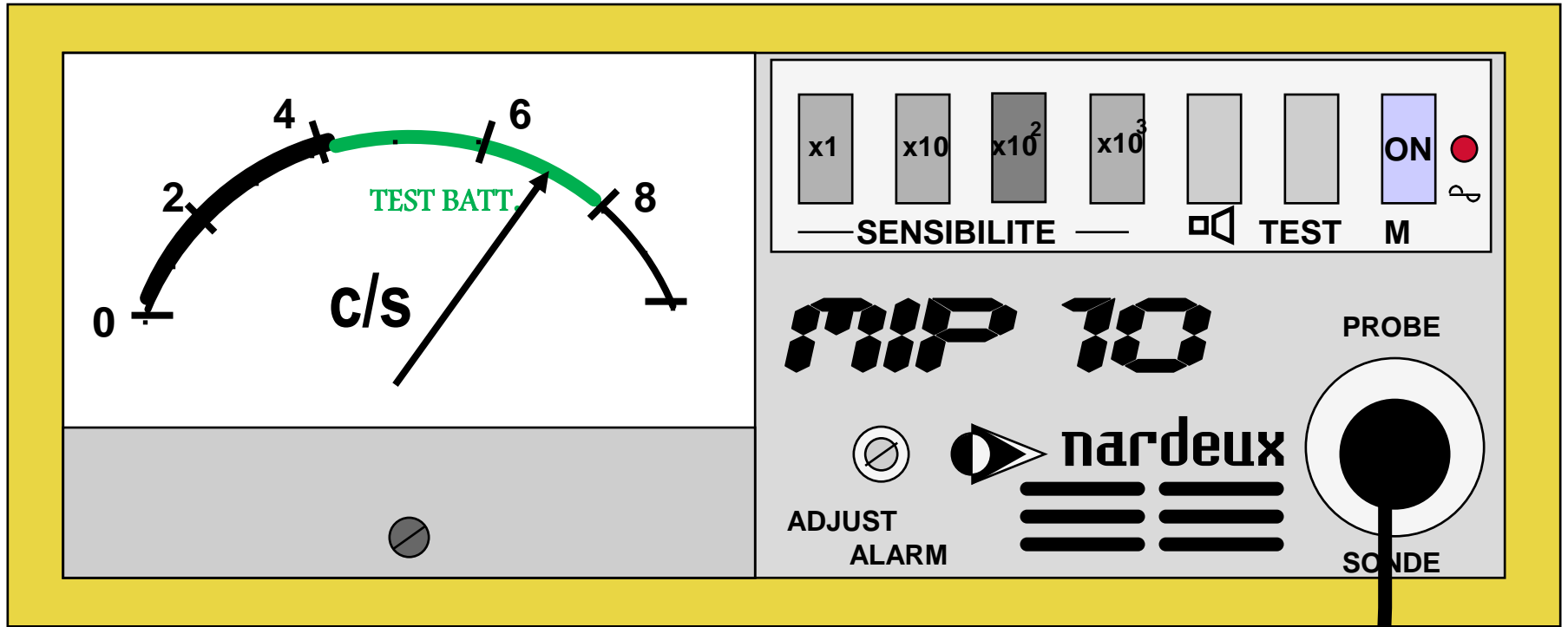
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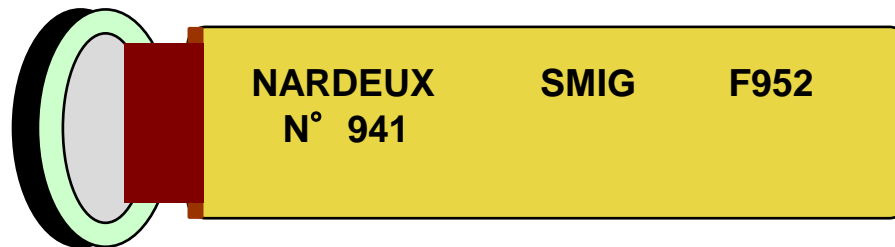
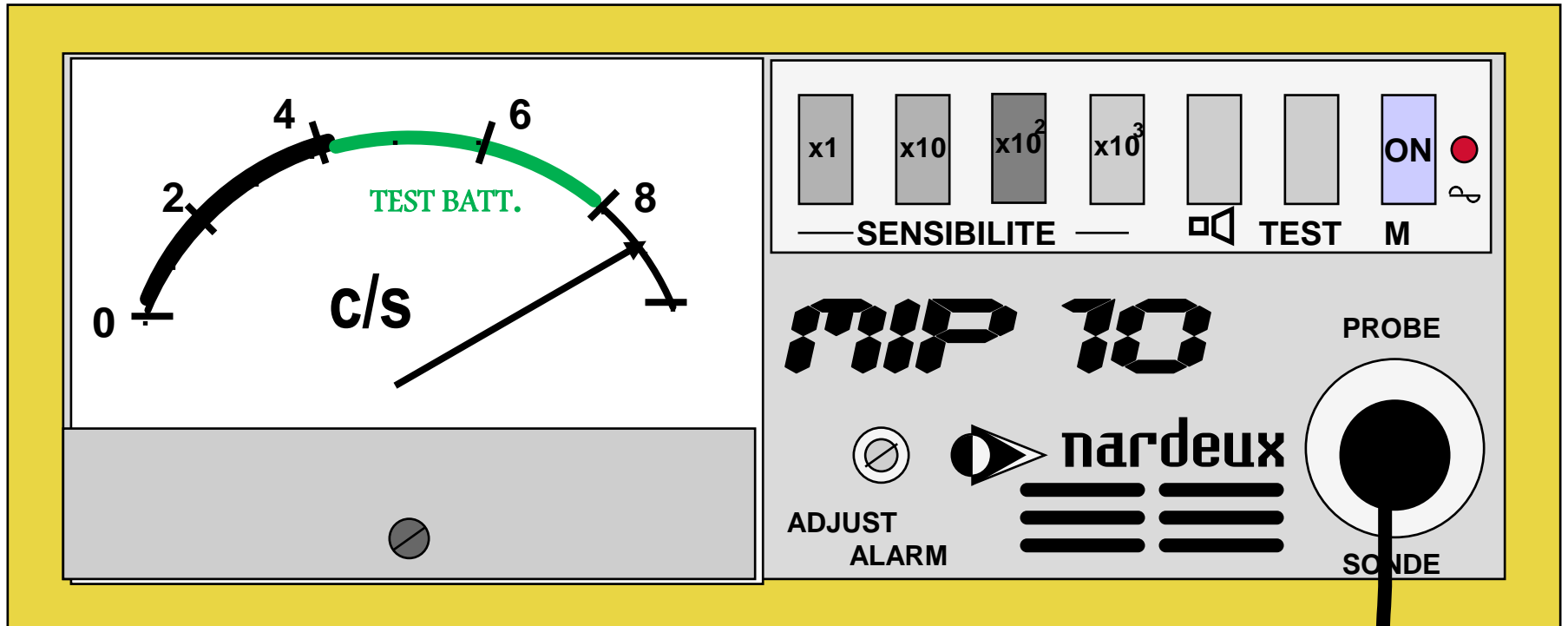
# LA MESURE X



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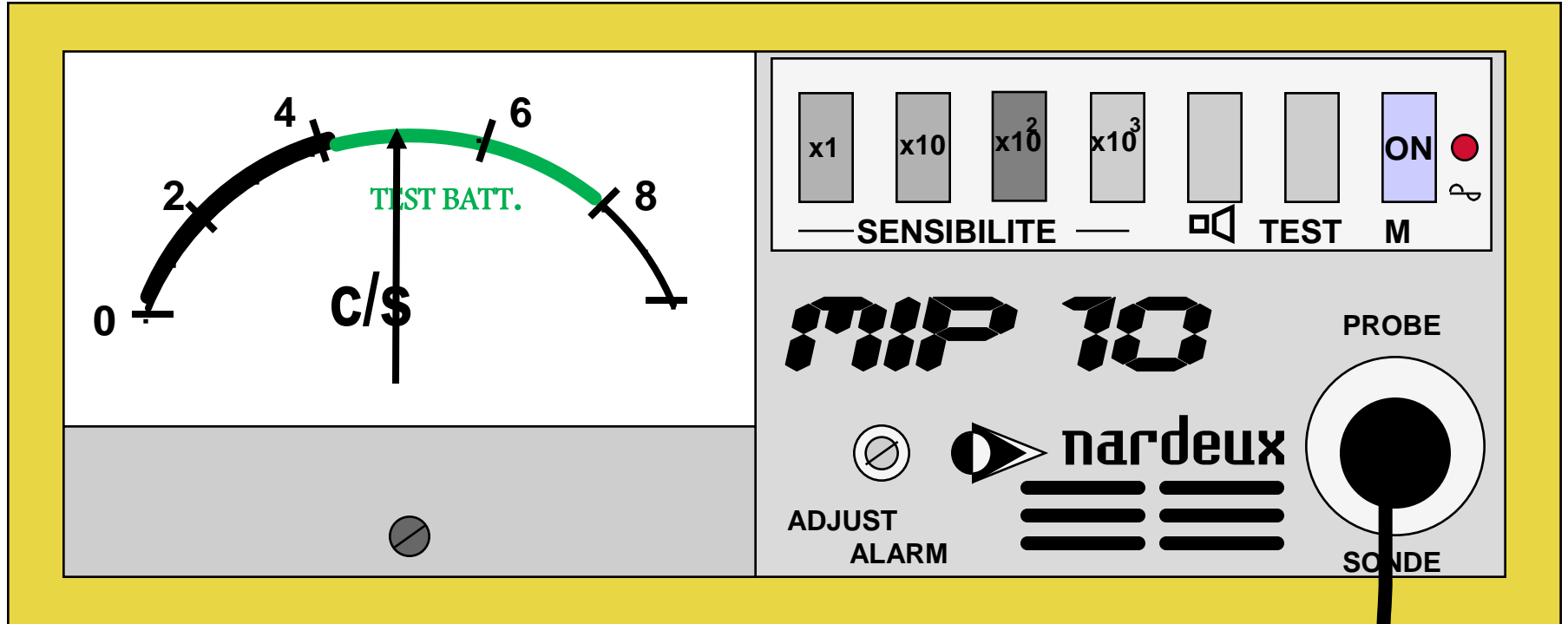


# LA MESURE GAMMA

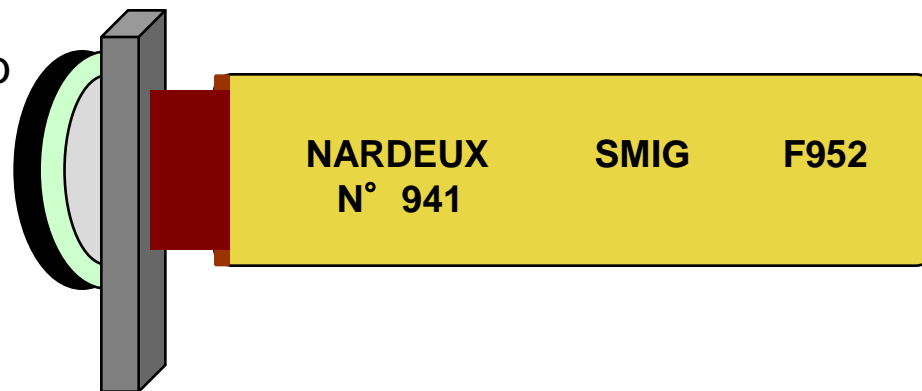




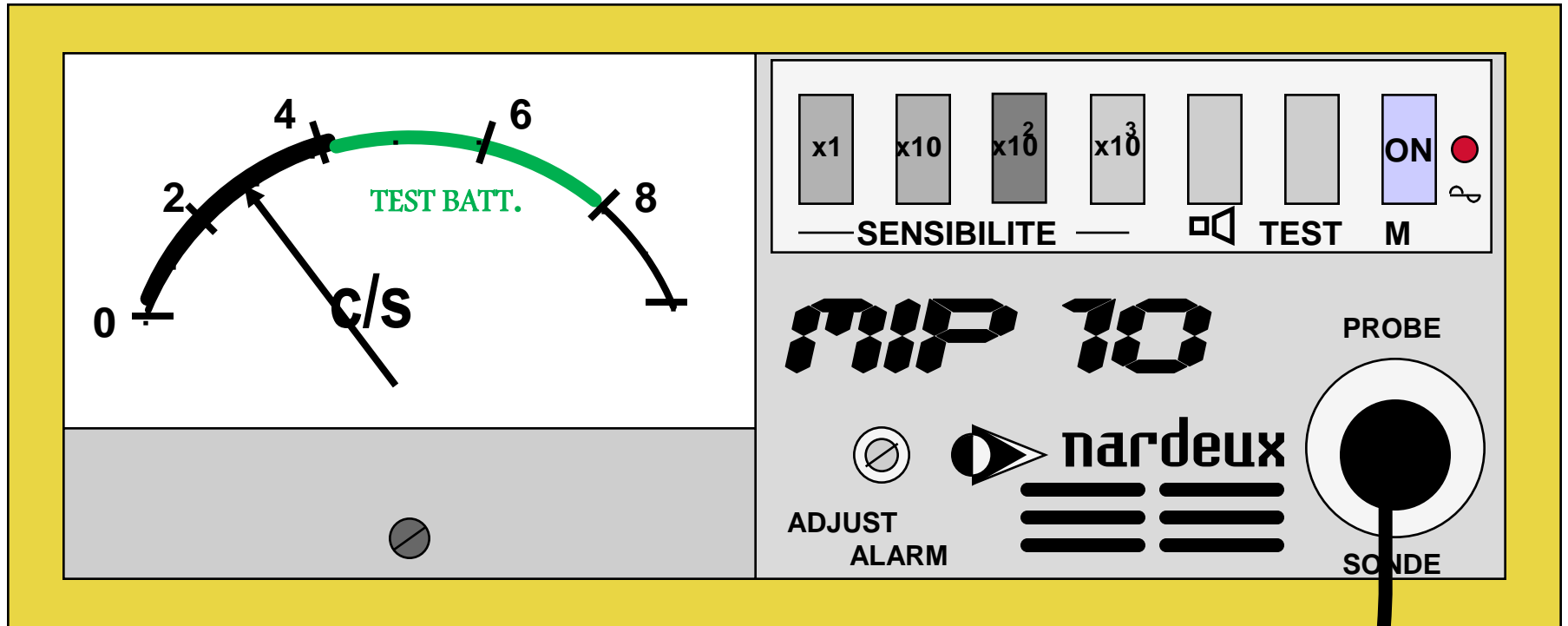
# LA MESURE GAMMA



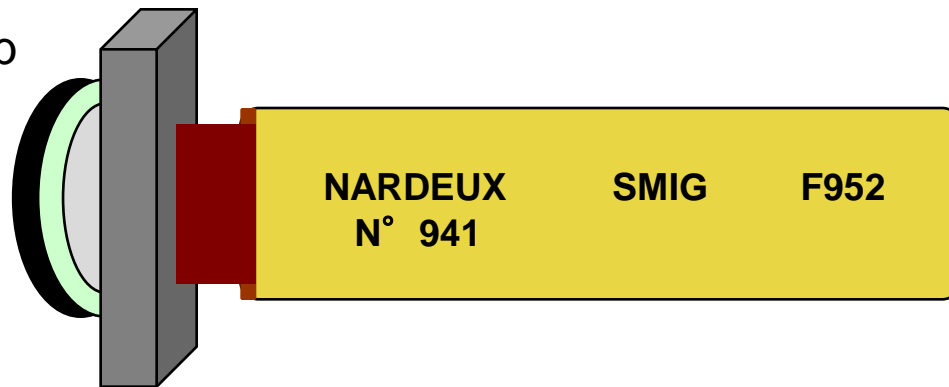
0,5 cm de plomb



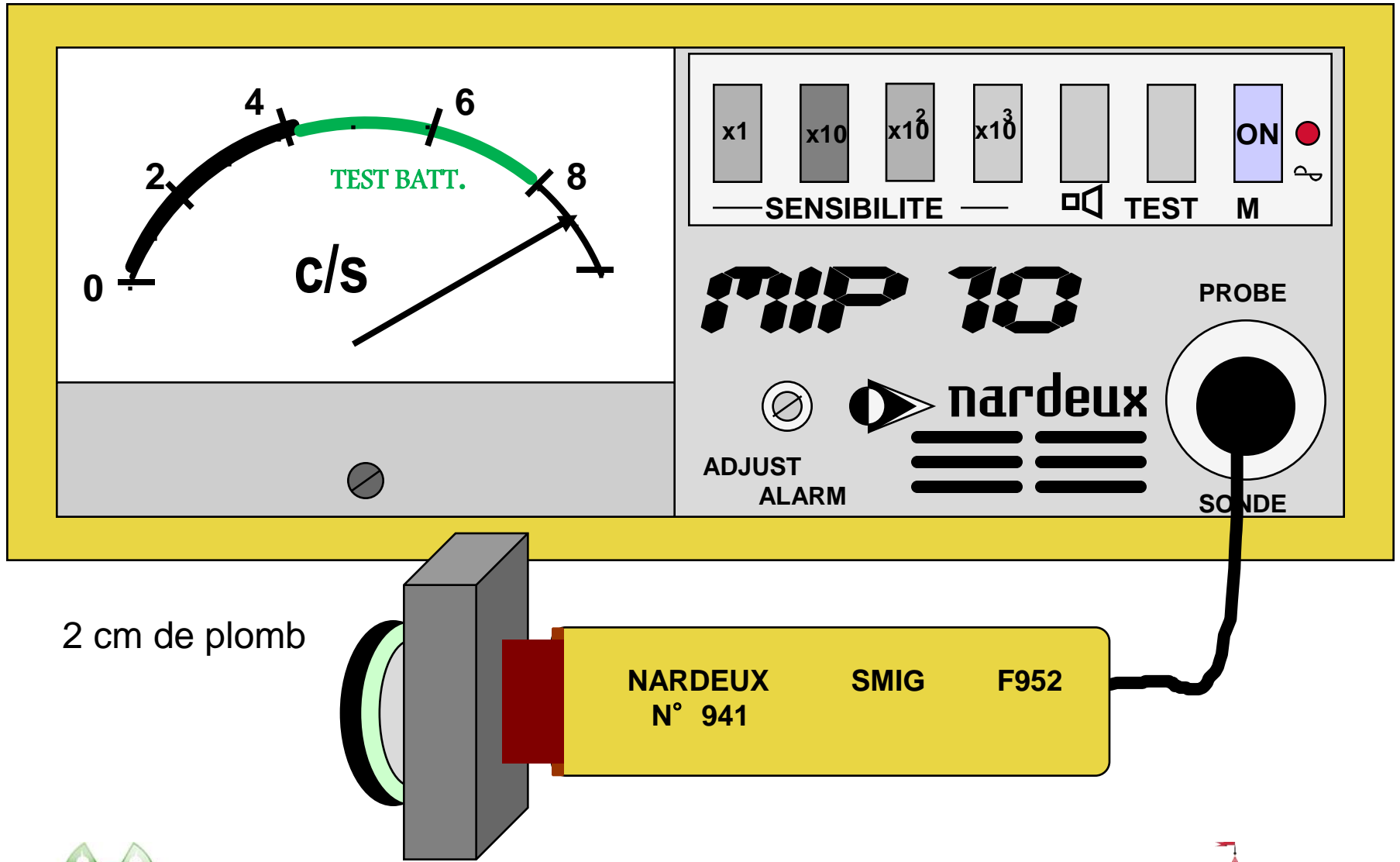
# LA MESURE GAMMA



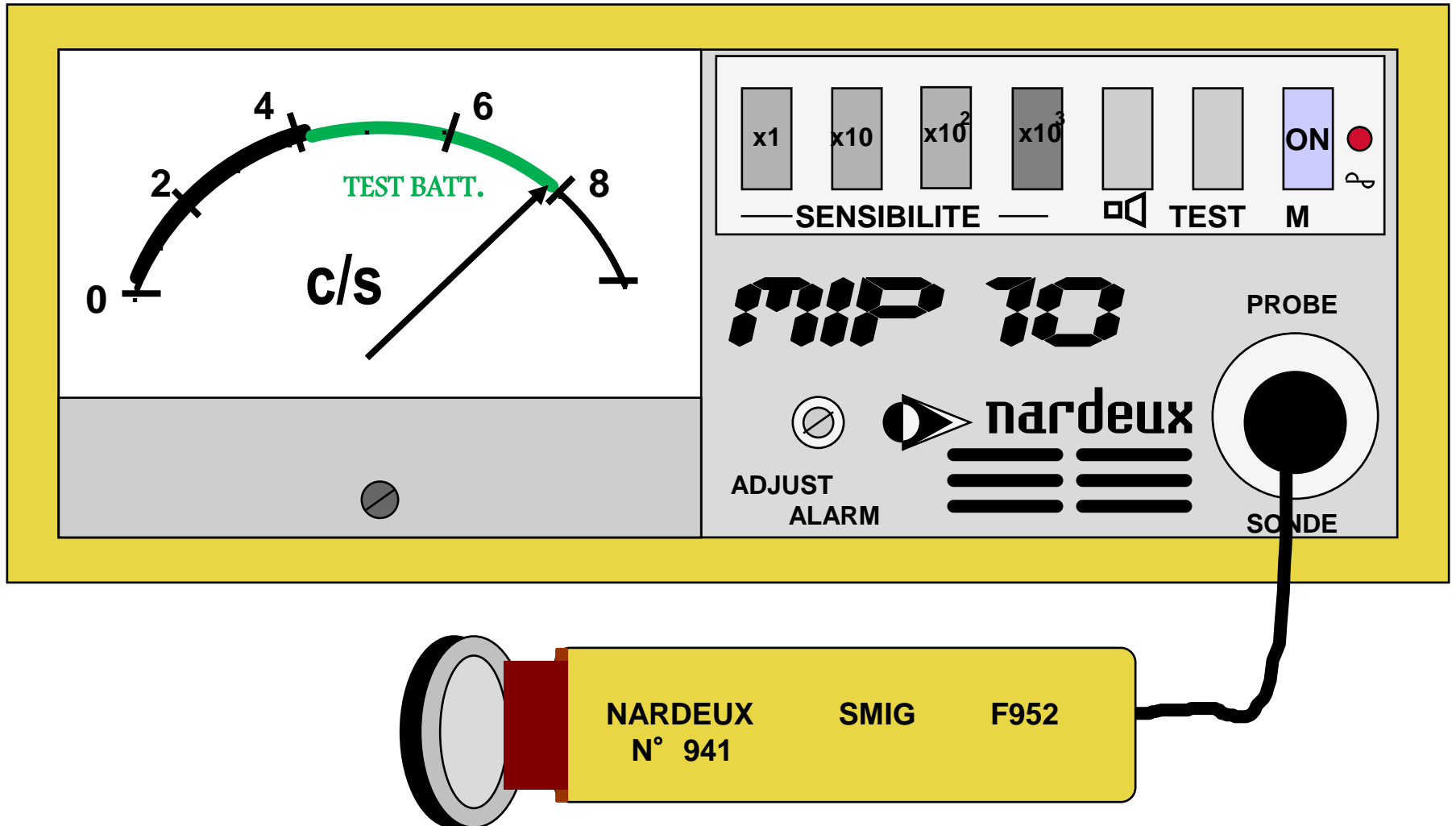
1 cm de plomb



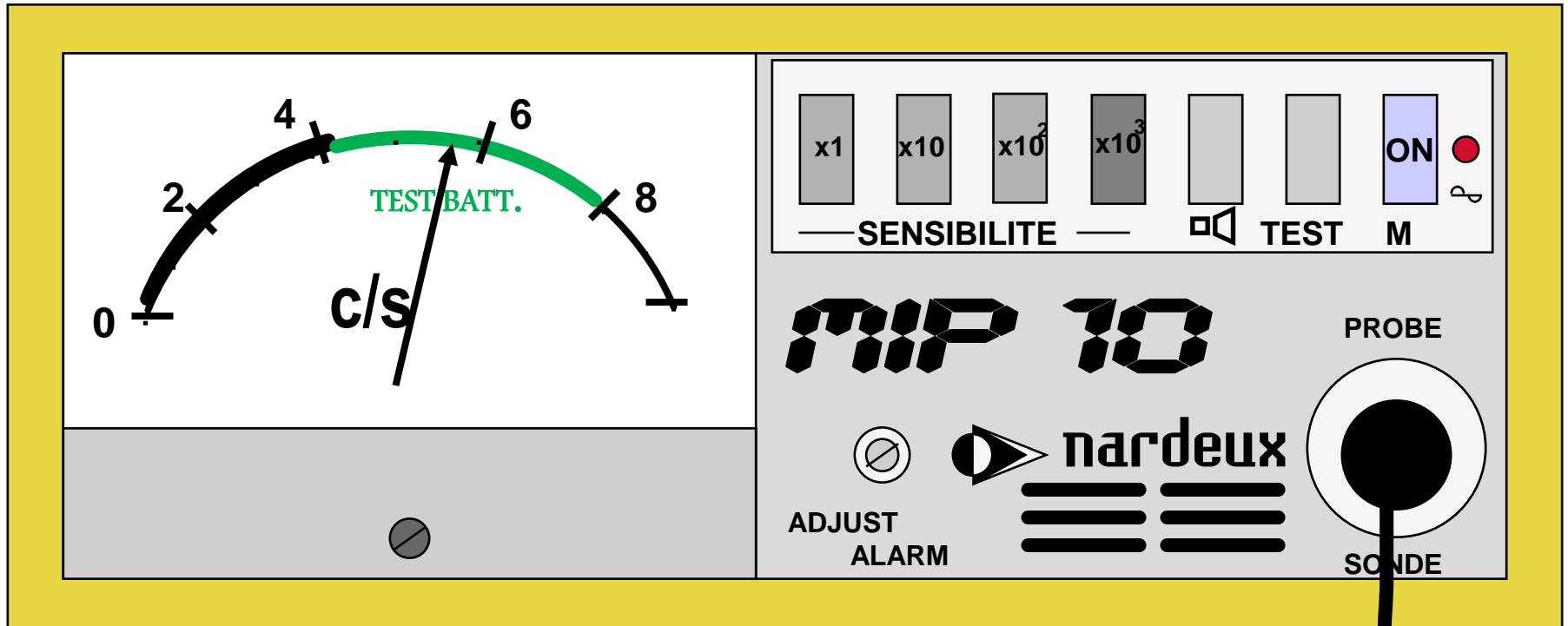
# LA MESURE GAMMA



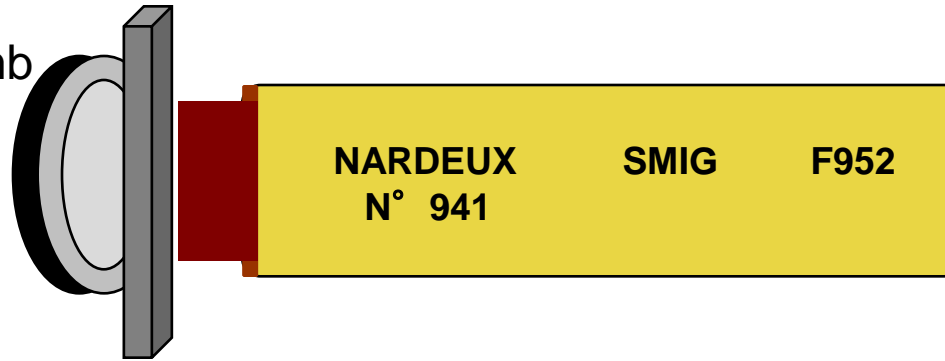
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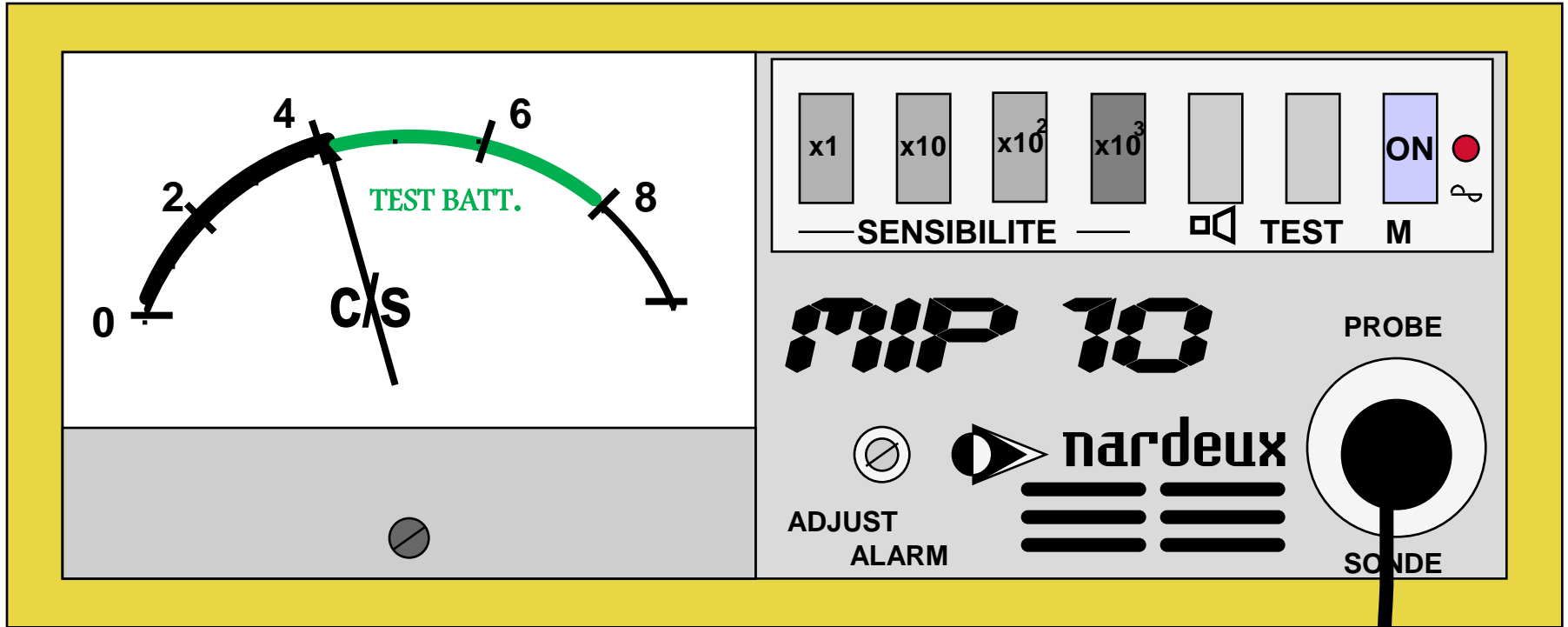
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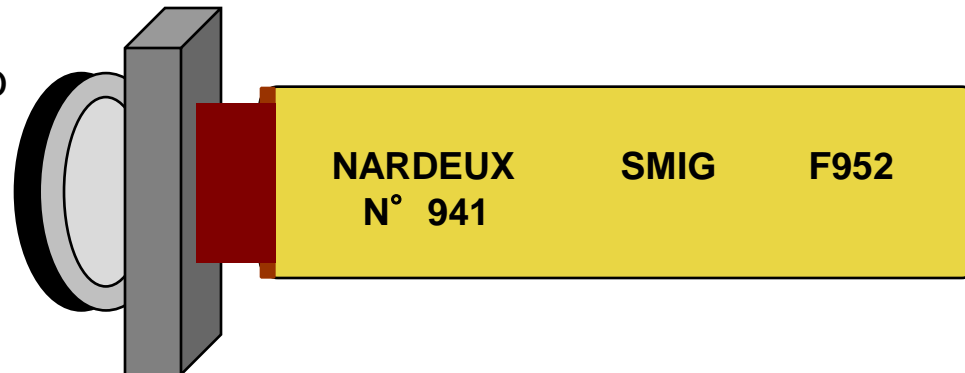
0,5 cm de plomb



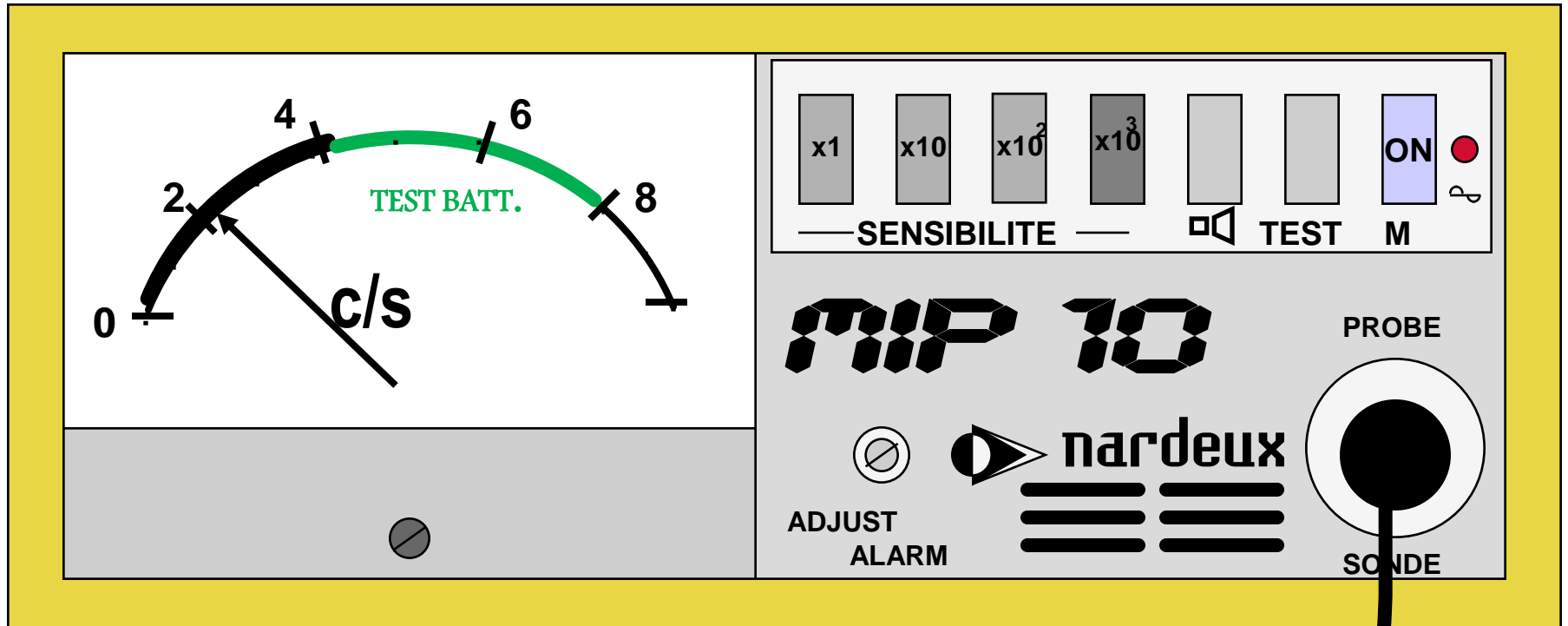
# LA MESURE GAMMA



1 cm de plomb



# LA MESURE GAMMA



2 cm de plomb

