

---

# MSE

---

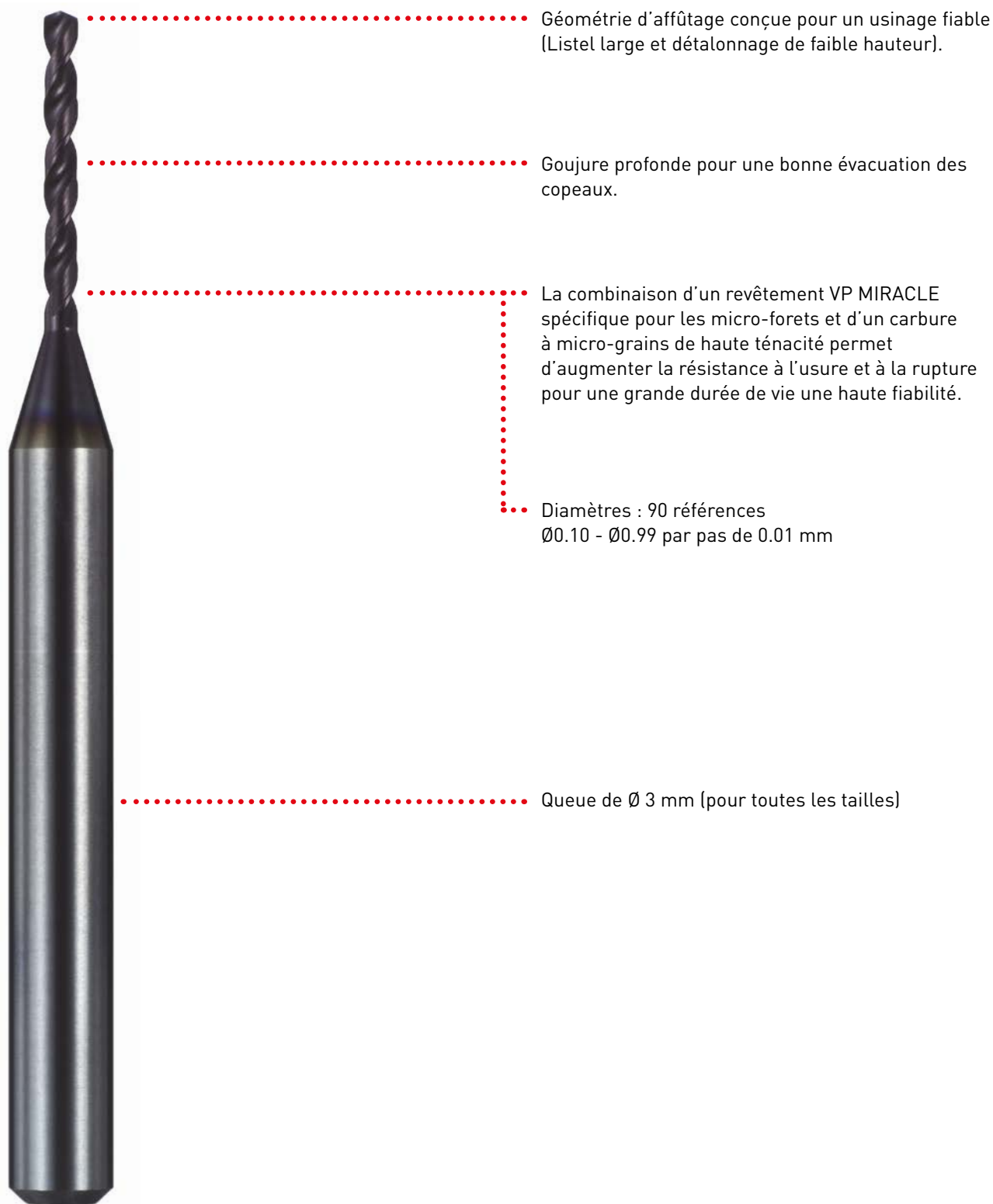
MICRO-FORETS CARBURE MONOBLOC  
PRÉCISION - PERFORMANCE - FIABILITÉ

---



# MSE

## MICRO-FORETS CARBURE MONOBLOC PRÉCISION - PERFORMANCE - FIABILITÉ

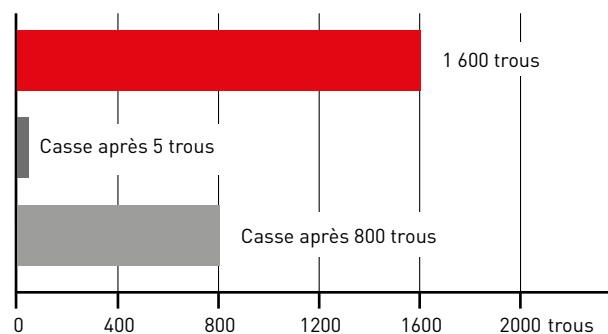


# PERFORMANCES DE COUPE

## ESSAI DE DURÉE DE VIE (ACIER INOXYDABLE)

- Résistance au collage et à l'usure augmentée
- Longue durée de vie et grande fiabilité

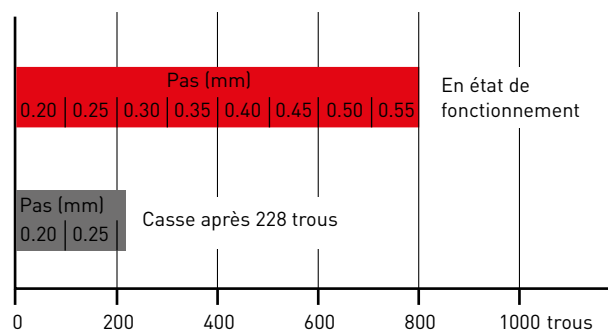
|                                |                   |
|--------------------------------|-------------------|
| Diamètre d'outil               | MSE0050SB         |
| Matière                        | Inox 304          |
| Vc (m/min)                     | 9.4               |
| n (min <sup>-1</sup> )         | 6.000             |
| f (mm/tr)                      | 0.015 (90 mm/min) |
| Profondeur du trou borgne (mm) | 5.0               |
| Pas (mm)                       | 0.16              |
| Arrosage                       | Huile soluble     |
| Machine                        | Centre d'usinage  |



## ÉVACUATION DES COPEAUX (ALLIAGE D'ALUMINIUM)

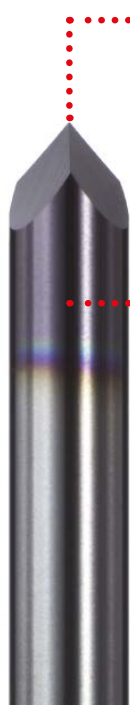
- Goujure profonde empêchant le bourrage des copeaux
- Essai de perçage : augmentation du pas de 0.05 mm tous les 100 trous

|                                |                            |
|--------------------------------|----------------------------|
| Diamètre d'outil               | MSE0050SB                  |
| Matière                        | Alliage d'aluminium A7075P |
| Vc (m/min)                     | 25                         |
| n (min <sup>-1</sup> )         | 16.000                     |
| f (mm/tr)                      | 0.075 (1.200 mm/min)       |
| Profondeur du trou borgne (mm) | 5.0                        |
| Arrosage                       | Huile soluble              |
| Machine                        | Centre d'usinage           |



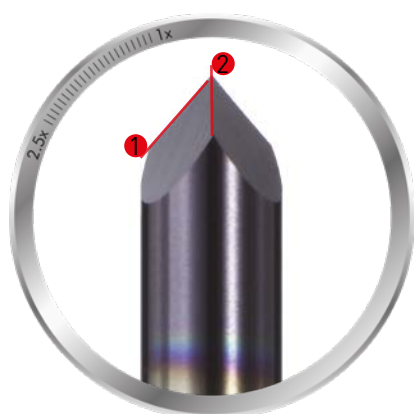
# FORET À POINTER MSP

UN POINTAGE PRÉCIS ASSURE LA FIABILITÉ DU PERÇAGE



Forme pyramidale idéale pour le pointage de haute précision.

Le revêtement MIRACLE VP assure une longue durée de vie de l'outil.



❶ Double utilisation : pointage et chanfreinage à 45°

❷ Outil polyvalent, adapté à une plage de diamètres de 0.1 à 3.0 mm.

# PERFORMANCES DE COUPE

## COMPARAISON DU DÉFAUT DE LOCALISATION

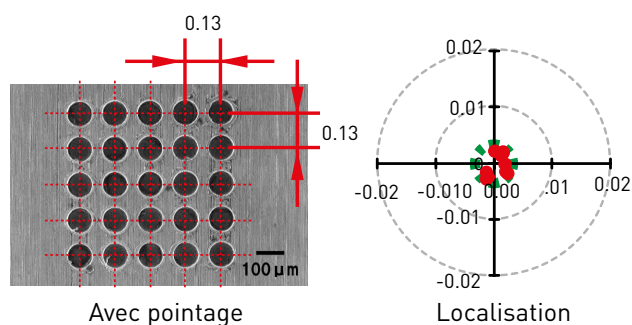
### Pointage

|                                  |               |
|----------------------------------|---------------|
| Diamètre d'outil                 | MSP0300SB     |
| Matière                          | Inox 304      |
| $n$ ( $\text{min}^{-1}$ )        | 10.000        |
| $V_f$ ( $\text{mm}/\text{min}$ ) | 5.0           |
| Diamètre de pointage (mm)        | 0.09          |
| Arrosage                         | Huile soluble |

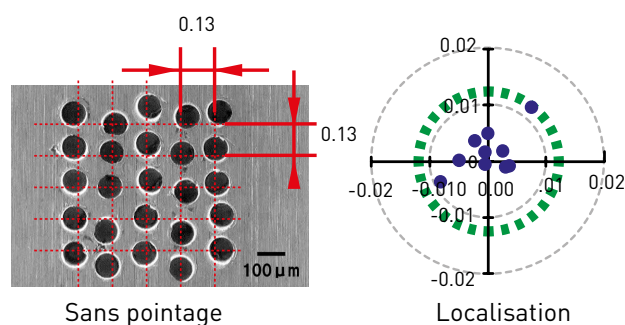
### Perçage

|                                |               |
|--------------------------------|---------------|
| Diamètre d'outil               | MSE0010SB     |
| $V_c$ (m/min)                  | 3.1           |
| $n$ ( $\text{min}^{-1}$ )      | 10.000        |
| $f$ (mm/tr)                    | 0.002         |
| $V_f$ (mm/min)                 | 20            |
| Profondeur du trou borgne (mm) | 0.8           |
| Pas (mm)                       | 0.01          |
| Arrosage                       | Huile soluble |

Défaut de localisation maximum de 0.003 mm.  
Bonne précision.



Les défauts de localisation allant jusqu'à 0.012 mm affectent la durée de vie et la fiabilité du process.



## FIABILITÉ DE PERÇAGE

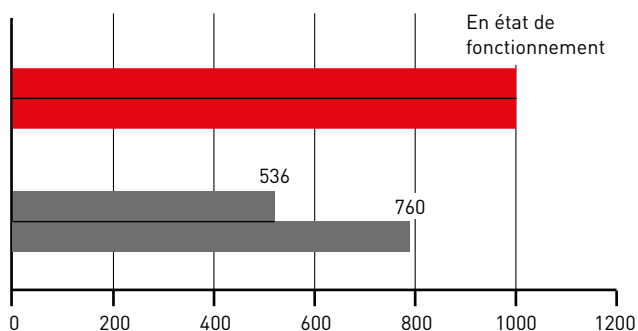
- La durée de vie stable assure la fiabilité du process de perçage.

### Perçage

|                                |               |
|--------------------------------|---------------|
| Diamètre d'outil               | MSE0020SB     |
| Matière                        | Inox 304      |
| $V_c$ (m/min)                  | 6.3           |
| $n$ ( $\text{min}^{-1}$ )      | 10.000        |
| $f$ (mm/tr)                    | 0.002         |
| $V_f$ (mm/min)                 | 20            |
| Profondeur du trou borgne (mm) | 1.6           |
| Pas (mm)                       | 0.02          |
| Arrosage                       | Huile soluble |

### Pointage

|                           |               |
|---------------------------|---------------|
| Diamètre d'outil          | MSP0300SB     |
| Matière                   | Inox 304      |
| $n$ ( $\text{min}^{-1}$ ) | 10.000        |
| $V_f$ (mm/min)            | 5.0           |
| Diamètre de pointage (mm) | 0.15          |
| Arrosage                  | Huile soluble |



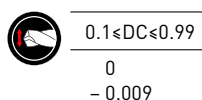
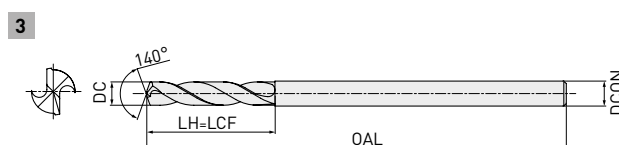
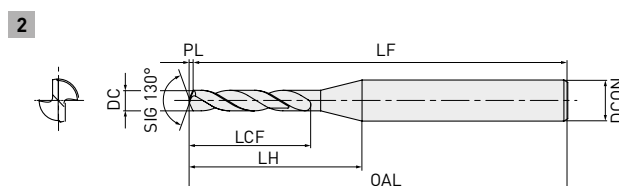
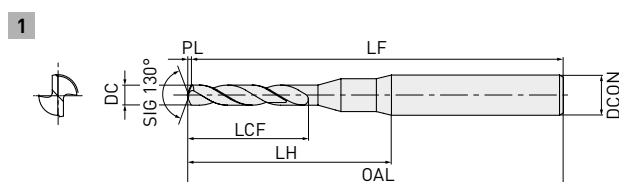
■ : Avec pointage ■ : Sans pointage

# MSE

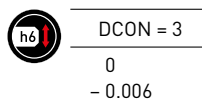


## MICRO-FORETS CARBURE MONOBLOC

P M K N S



0  
- 0.009



0  
- 0.006

- L'utilisation d'attachements par frettage est préconisée pour les forets MSE.

| Référence | VP20MF | VP15TF | ∅    | LCF  | LH   | OAL   | LF | PL   | DCON | Type |
|-----------|--------|--------|------|------|------|-------|----|------|------|------|
| MSE0010SB | ●      |        | 0.10 | 1.22 | 9.72 | 38.02 | 38 | 0.02 | 3    | 1    |
| MSE0011SB | ●      |        | 0.11 | 1.23 | 9.73 | 38.03 | 38 | 0.03 | 3    | 1    |
| MSE0012SB | ●      |        | 0.12 | 1.43 | 9.73 | 38.03 | 38 | 0.03 | 3    | 1    |
| MSE0013SB | ●      |        | 0.13 | 1.43 | 9.73 | 38.03 | 38 | 0.03 | 3    | 1    |
| MSE0014SB | ●      |        | 0.14 | 2.03 | 9.73 | 38.03 | 38 | 0.03 | 3    | 1    |
| MSE0015SB | ●      |        | 0.15 | 2.03 | 9.73 | 38.03 | 38 | 0.03 | 3    | 1    |
| MSE0016SB | ●      |        | 0.16 | 2.04 | 9.74 | 38.04 | 38 | 0.04 | 3    | 1    |
| MSE0017SB | ●      |        | 0.17 | 2.04 | 9.74 | 38.04 | 38 | 0.04 | 3    | 1    |
| MSE0018SB | ●      |        | 0.18 | 2.04 | 9.74 | 38.04 | 38 | 0.04 | 3    | 1    |
| MSE0019SB | ●      |        | 0.19 | 2.04 | 9.74 | 38.04 | 38 | 0.04 | 3    | 1    |
| MSE0020SB | ●      |        | 0.20 | 2.55 | 9.75 | 38.05 | 38 | 0.05 | 3    | 1    |
| MSE0021SB | ●      |        | 0.21 | 2.55 | 9.75 | 38.05 | 38 | 0.05 | 3    | 1    |
| MSE0022SB | ●      |        | 0.22 | 2.55 | 9.75 | 38.05 | 38 | 0.05 | 3    | 1    |
| MSE0023SB | ●      |        | 0.23 | 2.55 | 9.75 | 38.05 | 38 | 0.05 | 3    | 1    |
| MSE0024SB | ●      |        | 0.24 | 3.06 | 9.76 | 38.06 | 38 | 0.06 | 3    | 1    |
| MSE0025SB | ●      |        | 0.25 | 3.06 | 9.76 | 38.06 | 38 | 0.06 | 3    | 1    |
| MSE0026SB | ●      |        | 0.26 | 3.06 | 9.76 | 38.06 | 38 | 0.06 | 3    | 1    |
| MSE0027SB | ●      |        | 0.27 | 3.06 | 9.76 | 38.06 | 38 | 0.06 | 3    | 1    |
| MSE0028SB | ●      |        | 0.28 | 3.07 | 9.77 | 38.07 | 38 | 0.07 | 3    | 1    |
| MSE0029SB | ●      |        | 0.29 | 3.07 | 9.77 | 38.07 | 38 | 0.07 | 3    | 1    |

1/3

## MSE - MICRO-FORETS CARBURE MONOBLOC

| Référence | VP20MF | VP15TF | Ø    | LCF  | LH    | OAL   | LF | PL   | DCON | Type |
|-----------|--------|--------|------|------|-------|-------|----|------|------|------|
| MSE0030SB |        | ●      | 0.30 | 5.07 | 10.27 | 38.07 | 38 | 0.07 | 3    | 2    |
| MSE0031SB |        | ●      | 0.31 | 5.07 | 10.27 | 38.07 | 38 | 0.07 | 3    | 2    |
| MSE0032SB |        | ●      | 0.32 | 5.07 | 10.27 | 38.07 | 38 | 0.07 | 3    | 2    |
| MSE0033SB |        | ●      | 0.33 | 5.08 | 10.28 | 38.08 | 38 | 0.08 | 3    | 2    |
| MSE0034SB |        | ●      | 0.34 | 6.08 | 11.28 | 38.08 | 38 | 0.08 | 3    | 2    |
| MSE0035SB |        | ●      | 0.35 | 6.08 | 11.18 | 38.08 | 38 | 0.08 | 3    | 2    |
| MSE0036SB |        | ●      | 0.36 | 6.08 | 11.18 | 38.08 | 38 | 0.08 | 3    | 2    |
| MSE0037SB |        | ●      | 0.37 | 6.09 | 11.19 | 38.09 | 38 | 0.09 | 3    | 2    |
| MSE0038SB |        | ●      | 0.38 | 6.09 | 11.19 | 38.09 | 38 | 0.09 | 3    | 2    |
| MSE0039SB |        | ●      | 0.39 | 6.09 | 11.19 | 38.09 | 38 | 0.09 | 3    | 2    |
| MSE0040SB |        | ●      | 0.40 | 7.09 | 12.19 | 38.09 | 38 | 0.09 | 3    | 2    |
| MSE0041SB |        | ●      | 0.41 | 7.10 | 12.10 | 38.10 | 38 | 0.10 | 3    | 2    |
| MSE0042SB |        | ●      | 0.42 | 7.10 | 12.10 | 38.10 | 38 | 0.10 | 3    | 2    |
| MSE0043SB |        | ●      | 0.43 | 7.10 | 12.10 | 38.10 | 38 | 0.10 | 3    | 2    |
| MSE0044SB |        | ●      | 0.44 | 7.10 | 12.10 | 38.10 | 38 | 0.10 | 3    | 2    |
| MSE0045SB |        | ●      | 0.45 | 7.10 | 12.10 | 38.10 | 38 | 0.10 | 3    | 2    |
| MSE0046SB |        | ●      | 0.46 | 7.11 | 12.01 | 38.11 | 38 | 0.11 | 3    | 2    |
| MSE0047SB |        | ●      | 0.47 | 7.11 | 12.01 | 38.11 | 38 | 0.11 | 3    | 2    |
| MSE0048SB |        | ●      | 0.48 | 7.11 | 12.01 | 38.11 | 38 | 0.11 | 3    | 2    |
| MSE0049SB |        | ●      | 0.49 | 7.11 | 12.01 | 38.11 | 38 | 0.11 | 3    | 2    |
| MSE0050SB |        | ●      | 0.50 | 7.12 | 12.02 | 38.12 | 38 | 0.12 | 3    | 2    |
| MSE0051SB |        | ●      | 0.51 | 7.12 | 11.92 | 38.12 | 38 | 0.12 | 3    | 2    |
| MSE0052SB |        | ●      | 0.52 | 7.12 | 11.92 | 38.12 | 38 | 0.12 | 3    | 2    |
| MSE0053SB |        | ●      | 0.53 | 7.12 | 11.92 | 38.12 | 38 | 0.12 | 3    | 2    |
| MSE0054SB |        | ●      | 0.54 | 7.13 | 11.93 | 38.13 | 38 | 0.13 | 3    | 2    |
| MSE0055SB |        | ●      | 0.55 | 7.13 | 11.93 | 38.13 | 38 | 0.13 | 3    | 2    |
| MSE0056SB |        | ●      | 0.56 | 7.13 | 11.93 | 38.13 | 38 | 0.13 | 3    | 2    |
| MSE0057SB |        | ●      | 0.57 | 7.13 | 11.83 | 38.13 | 38 | 0.13 | 3    | 2    |
| MSE0058SB |        | ●      | 0.58 | 7.14 | 11.84 | 38.14 | 38 | 0.14 | 3    | 2    |
| MSE0059SB |        | ●      | 0.59 | 7.14 | 11.84 | 38.14 | 38 | 0.14 | 3    | 2    |
| MSE0060SB |        | ●      | 0.60 | 7.14 | 11.84 | 38.14 | 38 | 0.14 | 3    | 2    |
| MSE0061SB |        | ●      | 0.61 | 7.14 | 11.84 | 38.14 | 38 | 0.14 | 3    | 2    |
| MSE0062SB |        | ●      | 0.62 | 7.14 | 11.74 | 38.14 | 38 | 0.14 | 3    | 2    |
| MSE0063SB |        | ●      | 0.63 | 7.15 | 11.75 | 38.15 | 38 | 0.15 | 3    | 2    |
| MSE0064SB |        | ●      | 0.64 | 7.15 | 11.75 | 38.15 | 38 | 0.15 | 3    | 2    |
| MSE0065SB |        | ●      | 0.65 | 7.15 | 11.75 | 38.15 | 38 | 0.15 | 3    | 2    |
| MSE0066SB |        | ●      | 0.66 | 7.15 | 11.75 | 38.15 | 38 | 0.15 | 3    | 2    |
| MSE0067SB |        | ●      | 0.67 | 7.16 | 11.66 | 38.16 | 38 | 0.16 | 3    | 2    |
| MSE0068SB |        | ●      | 0.68 | 7.16 | 11.66 | 38.16 | 38 | 0.16 | 3    | 2    |
| MSE0069SB |        | ●      | 0.69 | 7.16 | 11.66 | 38.16 | 38 | 0.16 | 3    | 2    |
| MSE0070SB |        | ●      | 0.70 | 8.16 | 12.66 | 38.16 | 38 | 0.16 | 3    | 2    |
| MSE0071SB |        | ●      | 0.71 | 8.17 | 12.67 | 38.17 | 38 | 0.17 | 3    | 2    |
| MSE0072SB |        | ●      | 0.72 | 8.17 | 12.67 | 38.17 | 38 | 0.17 | 3    | 2    |
| MSE0073SB |        | ●      | 0.73 | 8.17 | 12.57 | 38.17 | 38 | 0.17 | 3    | 2    |
| MSE0074SB |        | ●      | 0.74 | 8.17 | 12.57 | 38.17 | 38 | 0.17 | 3    | 2    |
| MSE0075SB |        | ●      | 0.75 | 8.17 | 12.57 | 38.17 | 38 | 0.17 | 3    | 2    |
| MSE0076SB |        | ●      | 0.76 | 8.18 | 12.58 | 38.18 | 38 | 0.18 | 3    | 2    |
| MSE0077SB |        | ●      | 0.77 | 8.18 | 12.58 | 38.18 | 38 | 0.18 | 3    | 2    |
| MSE0078SB |        | ●      | 0.78 | 8.18 | 12.48 | 38.18 | 38 | 0.18 | 3    | 2    |
| MSE0079SB |        | ●      | 0.79 | 8.18 | 12.48 | 38.18 | 38 | 0.18 | 3    | 2    |

2/3

## MSE - MICRO-FORETS CARBURE MONOBLOC

| Référence | VP20MF | VP15TF | ∅    | LCF   | LH    | OAL   | LF | PL   | DCON | Type |
|-----------|--------|--------|------|-------|-------|-------|----|------|------|------|
| MSE0080SB |        | ●      | 0.80 | 10.19 | 14.49 | 38.19 | 38 | 0.19 | 3    | 2    |
| MSE0081SB |        | ●      | 0.81 | 10.19 | 14.49 | 38.19 | 38 | 0.19 | 3    | 2    |
| MSE0082SB |        | ●      | 0.82 | 10.19 | 14.49 | 38.19 | 38 | 0.19 | 3    | 2    |
| MSE0083SB |        | ●      | 0.83 | 10.19 | 14.49 | 38.19 | 38 | 0.19 | 3    | 2    |
| MSE0084SB |        | ●      | 0.84 | 10.20 | 14.40 | 38.20 | 38 | 0.20 | 3    | 2    |
| MSE0085SB |        | ●      | 0.85 | 10.20 | 14.40 | 38.20 | 38 | 0.20 | 3    | 2    |
| MSE0086SB |        | ●      | 0.86 | 10.20 | 14.40 | 38.20 | 38 | 0.20 | 3    | 2    |
| MSE0087SB |        | ●      | 0.87 | 10.20 | 14.40 | 38.20 | 38 | 0.20 | 3    | 2    |
| MSE0088SB |        | ●      | 0.88 | 10.21 | 14.41 | 38.21 | 38 | 0.21 | 3    | 2    |
| MSE0089SB |        | ●      | 0.89 | 10.21 | 14.31 | 38.21 | 38 | 0.21 | 3    | 2    |
| MSE0090SB |        | ●      | 0.90 | 10.21 | 14.31 | 38.21 | 38 | 0.21 | 3    | 2    |
| MSE0091SB |        | ●      | 0.91 | 10.21 | 14.31 | 38.21 | 38 | 0.21 | 3    | 2    |
| MSE0092SB |        | ●      | 0.92 | 10.21 | 14.31 | 38.21 | 38 | 0.21 | 3    | 2    |
| MSE0093SB |        | ●      | 0.93 | 10.22 | 14.32 | 38.22 | 38 | 0.22 | 3    | 2    |
| MSE0094SB |        | ●      | 0.94 | 10.22 | 14.22 | 38.22 | 38 | 0.22 | 3    | 2    |
| MSE0095SB |        | ●      | 0.95 | 10.22 | 14.22 | 38.22 | 38 | 0.22 | 3    | 2    |
| MSE0096SB |        | ●      | 0.96 | 10.22 | 14.22 | 38.22 | 38 | 0.22 | 3    | 2    |
| MSE0097SB |        | ●      | 0.97 | 10.23 | 14.23 | 38.23 | 38 | 0.23 | 3    | 2    |
| MSE0098SB |        | ●      | 0.98 | 10.23 | 14.23 | 38.23 | 38 | 0.23 | 3    | 2    |
| MSE0099SB |        | ●      | 0.99 | 10.23 | 14.23 | 38.23 | 38 | 0.23 | 3    | 2    |

3/3

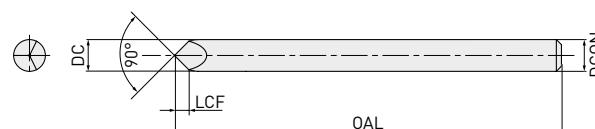
1. Veuillez contacter votre filiale européenne (coordonnées en 4ème de couverture) pour des nuances ou des géométries spéciales telles que des longueurs ou diamètres spécifiques.



# FORET MSP



## FORET À POINTER SPÉCIFIQUE



| Référence | VP15TF | LCF | DC | OAL | DCON | Diamètre de pointage (mm) |
|-----------|--------|-----|----|-----|------|---------------------------|
| MSP0300SB | ●      | 1.5 | 3  | 38  | 3    | 0.1-3.0                   |

1. Veuillez contacter votre filiale européenne (coordonnées en 4ème de couverture) pour des nuances ou des géométries spéciales telles que des longueurs ou diamètres spécifiques.





# MSE

## CONDITIONS DE COUPE RECOMMANDÉES

| Matière  | DC   | Vc | n     | f                     | Vf  | Passe |
|--|------|----|-------|-----------------------|-----|-------|
| Acier doux (≤180HB)                            | 0.1  | 6  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.12 | 8  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.16 | 10 | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.2  | 13 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.25 | 16 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.32 | 20 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.4  | 25 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.5  | 31 | 20000 | 0.006 [0.005 – 0.007] | 120 | 0.1   |
|  | 0.63 | 40 | 20000 | 0.008 [0.006 – 0.01 ] | 160 | 0.1   |
|  | 0.8  | 50 | 20000 | 0.02 [0.015 – 0.025]  | 400 | 0.3   |
| Acier carbone,<br>Acier allié<br>(180 – 280HB) | 0.1  | 6  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.12 | 8  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.16 | 10 | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.2  | 13 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.25 | 16 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.32 | 20 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.4  | 25 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.5  | 31 | 20000 | 0.006 [0.005 – 0.007] | 120 | 0.1   |
|  | 0.63 | 40 | 20000 | 0.008 [0.006 – 0.01 ] | 160 | 0.1   |
|  | 0.8  | 50 | 20000 | 0.015 [0.012 – 0.018] | 300 | 0.3   |
| Acier carbone,<br>Acier allié<br>(280 – 350HB) | 0.1  | 6  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.12 | 8  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.16 | 10 | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.2  | 13 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.25 | 16 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.32 | 20 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.4  | 25 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.5  | 31 | 20000 | 0.006 [0.005 – 0.007] | 120 | 0.1   |
|  | 0.63 | 40 | 20000 | 0.008 [0.006 – 0.01 ] | 160 | 0.1   |
|  | 0.8  | 50 | 20000 | 0.015 [0.012 – 0.018] | 300 | 0.3   |
| Acier pré-traité (35 – 45HRC)                  | 0.1  | 6  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.12 | 8  | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.16 | 10 | 20000 | 0.002 [0.001 – 0.003] | 40  | 0.02  |
|  | 0.2  | 13 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.25 | 16 | 20000 | 0.003 [0.002 – 0.004] | 60  | 0.04  |
|  | 0.32 | 20 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.4  | 25 | 20000 | 0.004 [0.003 – 0.005] | 80  | 0.05  |
|  | 0.5  | 31 | 20000 | 0.006 [0.005 – 0.007] | 120 | 0.1   |
|  | 0.63 | 40 | 20000 | 0.008 [0.006 – 0.01 ] | 160 | 0.1   |
|  | 0.8  | 50 | 20000 | 0.015 [0.012 – 0.018] | 300 | 0.3   |
|  | 0.99 | 62 | 20000 | 0.02 [0.015 – 0.025]  | 400 | 0.3   |

## MSE

| Matière  | DC   | Vc    | n                    | f                      | Vf   | Passe |
|--|------|-------|----------------------|------------------------|------|-------|
| M<br>Acier inoxydable austénitique<br>(≤200HB) | 0.1  | 6     | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.02  |
|  | 0.12 | 8     | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.02  |
|  | 0.16 | 10    | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.02  |
|  | 0.2  | 11    | 18000                | 0.003 (0.002 – 0.004)  | 54   | 0.04  |
|  | 0.25 | 14    | 18000                | 0.003 (0.002 – 0.004)  | 54   | 0.04  |
|  | 0.32 | 15    | 15000                | 0.004 (0.003 – 0.005)  | 60   | 0.05  |
|  | 0.4  | 19    | 15000                | 0.004 (0.003 – 0.005)  | 60   | 0.05  |
|  | 0.5  | 16    | 10000                | 0.006 (0.005 – 0.007)  | 60   | 0.1   |
|  | 0.63 | 20    | 10000                | 0.008 (0.006 – 0.01 )  | 80   | 0.1   |
|  | 0.8  | 15    | 6000                 | 0.015 (0.012 – 0.018)  | 90   | 0.2   |
| 0.99   | 19   | 6000  | 0.02 (0.015 – 0.025) | 120                    | 0.2  |       |
| K<br>Fonte grise (≤350MPa)                     | 0.1  | 6     | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.02  |
|  | 0.12 | 8     | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.02  |
|  | 0.16 | 10    | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.02  |
|  | 0.2  | 13    | 20000                | 0.003 (0.002 – 0.004)  | 60   | 0.04  |
|  | 0.25 | 16    | 20000                | 0.003 (0.002 – 0.004)  | 60   | 0.04  |
|  | 0.32 | 20    | 20000                | 0.004 (0.003 – 0.005)  | 80   | 0.05  |
|  | 0.4  | 25    | 20000                | 0.004 (0.003 – 0.005)  | 80   | 0.05  |
|  | 0.5  | 31    | 20000                | 0.006 (0.005 – 0.007)  | 120  | 0.1   |
|  | 0.63 | 40    | 20000                | 0.008 (0.006 – 0.01 )  | 160  | 0.1   |
|  | 0.8  | 50    | 20000                | 0.02 (0.015 – 0.025)   | 400  | 0.3   |
| 0.99   | 62   | 20000 | 0.04 (0.03 – 0.05 )  | 800                    | 0.3  |       |
| N<br>Alliage aluminium (Si<5%)                 | 0.1  | 6     | 20000                | 0.002 (0.001 – 0.003)  | 40   | 0.05  |
|  | 0.12 | 8     | 20000                | 0.003 (0.002 – 0.004)  | 60   | 0.05  |
|  | 0.16 | 10    | 20000                | 0.004 (0.003 – 0.005)  | 80   | 0.05  |
|  | 0.2  | 13    | 20000                | 0.006 (0.005 – 0.007)  | 120  | 0.1   |
|  | 0.25 | 16    | 20000                | 0.008 (0.006 – 0.01 )  | 160  | 0.1   |
|  | 0.32 | 20    | 20000                | 0.01 (0.008 – 0.012)   | 200  | 0.3   |
|  | 0.4  | 25    | 20000                | 0.02 (0.015 – 0.025)   | 400  | 0.3   |
|  | 0.5  | 31    | 20000                | 0.03 (0.025 – 0.035)   | 600  | 0.5   |
|  | 0.63 | 40    | 20000                | 0.04 (0.035 – 0.045)   | 800  | 0.5   |
|  | 0.8  | 50    | 20000                | 0.05 (0.045 – 0.055)   | 1000 | 0.8   |
| 0.99   | 62   | 20000 | 0.06 (0.055 – 0.065) | 1200                   | 0.8  |       |
| S<br>Alliage réfractaire                       | 0.1  | 2     | 7000                 | 0.001 (0.0005 – 0.001) | 7    | 0.02  |
|  | 0.12 | 3     | 7000                 | 0.001 (0.0005 – 0.001) | 7    | 0.02  |
|  | 0.16 | 4     | 7000                 | 0.001 (0.0005 – 0.001) | 7    | 0.02  |
|  | 0.2  | 3     | 5000                 | 0.002 (0.001 – 0.002)  | 10   | 0.04  |
|  | 0.25 | 4     | 5000                 | 0.002 (0.001 – 0.002)  | 10   | 0.04  |
|  | 0.32 | 4     | 4000                 | 0.002 (0.001 – 0.002)  | 8    | 0.05  |
|  | 0.4  | 5     | 4000                 | 0.002 (0.001 – 0.002)  | 8    | 0.05  |
|  | 0.5  | 5     | 3000                 | 0.003 (0.001 – 0.003)  | 9    | 0.1   |
|  | 0.63 | 6     | 3000                 | 0.004 (0.002 – 0.004)  | 12   | 0.1   |
|  | 0.8  | 5     | 1800                 | 0.006 (0.004 – 0.006)  | 10.8 | 0.2   |
| 0.99   | 6    | 1800  | 0.01 (0.008 – 0.01 ) | 18                     | 0.2  |       |

2/2

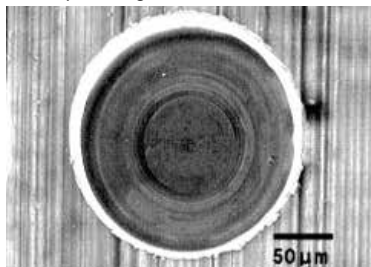
1. L'utilisation d'un foret à pointer est préconisée.
2. Modifier les conditions de coupe en fonction de la rigidité de la pièce et de la machine.
3. L'utilisation d'huile soluble (à 5%) est recommandée pour percer en appliquant les conditions de coupe ci-dessus.  
Baisser la vitesse de rotation, si vous utilisez de l'huile entière ou la pulvérisation.

# MSE

## PERFORMANCES D'USINAGE

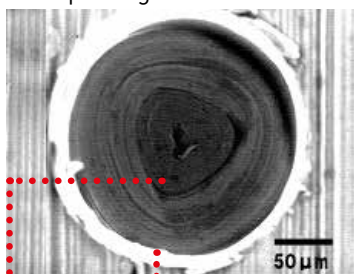
Le pointage améliore la précision du foret MSE.

Avec pointage



Perçage de haute précision

Sans pointage



Bavure importante

Le fond du trou est irrégulier car le foret chasse.

### Pointage

|                           |               |
|---------------------------|---------------|
| Diamètre d'outil          | MSP0300SB     |
| Diamètre de pointage (mm) | 0.15          |
| $n$ ( $\text{min}^{-1}$ ) | 10.000        |
| $V_f$ (mm/min)            | 5.0           |
| Arrosage                  | Huile soluble |

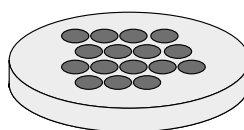
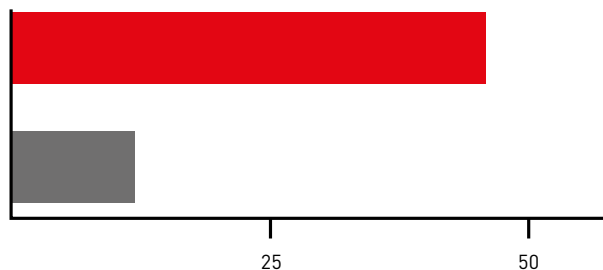
### Perçage

|                                |               |
|--------------------------------|---------------|
| Diamètre d'outil               | MSE0020SB     |
| $V_c$ (m/min)                  | 6.3           |
| $n$ ( $\text{min}^{-1}$ )      | 10.000        |
| $f$ (mm/tr)                    | 0.002         |
| $V_f$ (mm/min)                 | 20            |
| Profondeur du trou borgne (mm) | 0.3           |
| Pas (mm)                       | 0.02          |
| Arrosage                       | Huile soluble |

## EXEMPLES D'APPLICATIONS

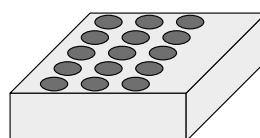
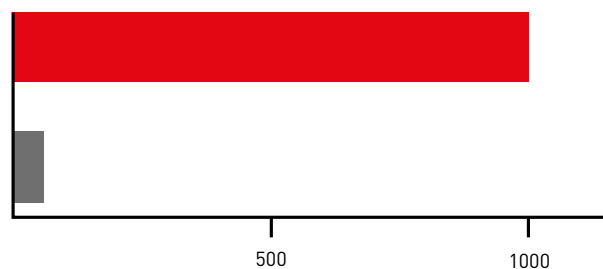
### ALLIAGE RÉFRACTAIRE (INCONEL®718)

|                        |  |
|------------------------|--|
| Diamètre d'outil       | MSE0050SB  |
| Component              | Plaque   |
| Vc (m/min)             | 4.7  |
| n (min <sup>-1</sup> ) | 3.000  |
| f (mm/tr)              | 0.005  |
| Vf (mm/min)            | 15   |
| Pas (mm)               | 0.1  |
| Arrosage               | Huile soluble  |
| Machine                | Centre d'usinage   |
| Résultats              | Casse du produit concurrent après 15 trous. Le foret MSE a pu usiner 47 trous. |



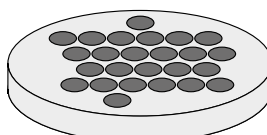
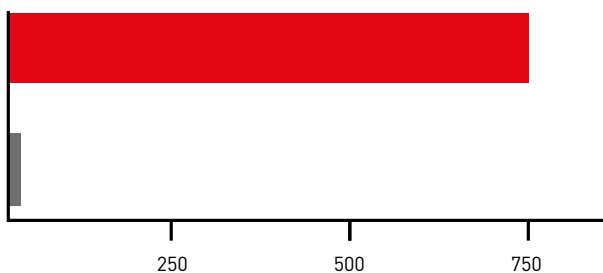
### ACIER PRÉTRAITÉ (45 HRC)

|                        |   |
|------------------------|---|
| Diamètre d'outil       | MSE0050SB   |
| Component              | Plaque  |
| Vc (m/min)             | 24  |
| n (min <sup>-1</sup> ) | 15.000  |
| f (mm/tr)              | 0.01  |
| Vf (mm/min)            | 150   |
| Pas (mm)               | 0.1   |
| Arrosage               | MQL   |
| Machine                | Centre d'usinage  |
| Résultats              | Casse du produit concurrent après 13 trous. Le foret MSE était en bon état après 100 trous. |



### ALLIAGE D'ALUMINIUM (7075)

|                        |   |
|------------------------|---|
| Diamètre d'outil       | MSE0100SB   |
| Component              | Plaque  |
| Vc (m/min)             | 80  |
| n (min <sup>-1</sup> ) | 25.000  |
| f (mm/tr)              | 0.08  |
| Vf (mm/min)            | 2.000   |
| Pas (mm)               | 1.0   |
| Arrosage               | Huile soluble   |
| Machine                | Centre d'usinage  |
| Résultats              | Casse du produit concurrent au premier trou suite au bourrage de copeaux. Percage fiable avec le foret MSE même en utilisant des pas longs. |









## FILIALES DE VENTE EUROPÉENNES

### GERMANY

MMC HARTMETALL GMBH  
Comeniusstr. 2 . 40670 Meerbusch  
Phone +49 2159 91890 . Fax +49 2159 918966  
Email admin@mmchg.de

### U.K.

MMC HARDMETAL U.K. LTD.  
Mitsubishi House . Galena Close . Tamworth . Staffs. B77 4AS  
Phone +44 1827 312312  
Email sales@mitsubishicarbide.co.uk

### SPAIN

MITSUBISHI MATERIALS ESPAÑA, S.A.  
Calle Emperador 2 . 46136 Museros /Valencia  
Phone +34 96 1441711 . Fax +34 96 1443786  
Email comercial@mmevalencia.es

### FRANCE

MMC METAL FRANCE S.A.R.L.  
6, Rue Jacques Monod . 91400 Orsay  
Phone +33 1 69 35 53 53 . Fax +33 1 69 35 53 50  
Email mmfsales@mmc-metal-france.fr

### POLAND

MMC HARDMETAL POLAND SP. Z O.O  
Al. Armii Krajowej 61 . 50-541 Wrocław  
Phone +48 71335 1620 . Fax +48 71335 1621  
Email sales@mitsubishicarbide.com.pl

### ITALY

MMC ITALIA S.R.L.  
Viale Certosa 144 . 20156 Milano  
Phone +39 0293 77031 . Fax +39 0293 589093  
Email info@mmc-italia.it

### TURKEY

MMC HARTMETALL GMBH ALMANYA - İZMİR MERKEZ ŞUBESİ  
Adalet Mahallesi Anadolu Caddesi No: 41-1 . 15001 35530 Bayraklı /İzmir  
Phone +90 232 5015000 . Fax +90 232 5015007  
Email info@mmchg.com.tr

[www.mmc-carbide.com](http://www.mmc-carbide.com)

DISTRIBUÉ PAR:


□

□

┌

└

B052F 

Publié par : MMC Hartmetall GmbH – A Sales Company of  MITSUBISHI MATERIALS | 2024.01