

### Broca espiral ecoline, 3 x D

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| Ø m7<br>mm | Longitud<br>de la<br>espiral<br>mm | Longitud<br>total<br>mm | Ø de<br>vástago<br>mm | ACERO                                  |                    | Ref.    |
|------------|------------------------------------|-------------------------|-----------------------|--|--------------------|---------|
|            |                                    |                         |                       | < 700 N/mm <sup>2</sup><br>f<br>mm/rev | 1198<br>TiAlN<br>€ |         |
| 17.7       | 73                                 | 123                     | 18                    | 0.35                                   | 155,05             | ...1770 |
| 18         | 73                                 | 123                     | 18                    | 0.35                                   | 155,05             | ...1800 |
| 18.5       | 79                                 | 131                     | 20                    | 0.35                                   | 183,53             | ...1850 |
| 19         | 79                                 | 131                     | 20                    | 0.35                                   | 183,53             | ...1900 |

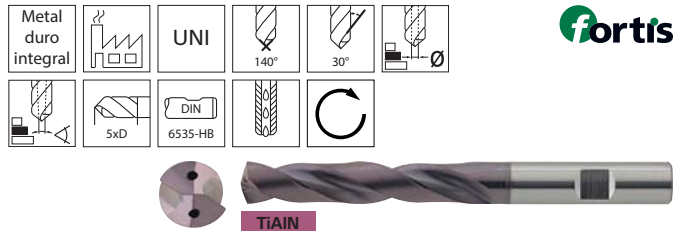
(W019)

| Ø m7<br>mm | Longitud<br>de la<br>espiral<br>mm | Longitud<br>total<br>mm | Ø de<br>vástago<br>mm | ACERO                                  |                    | Ref.    |
|------------|------------------------------------|-------------------------|-----------------------|--|--------------------|---------|
|            |                                    |                         |                       | < 700 N/mm <sup>2</sup><br>f<br>mm/rev | 1198<br>TiAlN<br>€ |         |
| 19.3       | 79                                 | 131                     | 20                    | 0.35                                   | 183,53             | ...1930 |
| 19.5       | 79                                 | 131                     | 20                    | 0.35                                   | 183,53             | ...1950 |
| 20         | 79                                 | 131                     | 20                    | 0.35                                   | 183,53             | ...2000 |

(W019)

### Broca espiral ecoline, 5 x D

Características: Versión Eco, con filo en S, broca espiral estable.



| Aplicación             | ACERO                   |                          | INOX                     |                   | FUNDICIÓN    |        | ALEACIONES ESPECIALES |     | METALES NO FÉRRICOS             |                   |                   | ACERO TEMPLADO             |                            |          | Ref. |          |          |
|------------------------|-------------------------|--------------------------|--------------------------|-------------------|--------------|--------|-----------------------|-----|---------------------------------|-------------------|-------------------|----------------------------|----------------------------|----------|------|----------|----------|
|                        | < 700 N/mm <sup>2</sup> | < 1000 N/mm <sup>2</sup> | < 1400 N/mm <sup>2</sup> | Ferrit./ martens. | Aus-tenítico | Duplex | GG/GTS                | GGG | Titanio > 850 N/mm <sup>2</sup> | Alumi-nio < 8% Si | Alumi-nio > 8% Si | Aleaciones de cobre y cinc | Grafito GFRP/CFRP/ Duropl. | < 55 HRC |      | < 60 HRC | > 60 HRC |
| V <sub>c</sub> [m/min] | 105                     | 70                       | 40                       | 45                | 30           | -      | 95                    | 85  | 45                              | 185               | 175               | 120                        | -                          | 30       | -    | -        | 1199     |

| Ø m7<br>mm | Longitud<br>de la<br>espiral<br>mm | Longitud<br>total<br>mm | Ø de<br>vástago<br>mm | ACERO                                  |                    | Ref.    |
|------------|------------------------------------|-------------------------|-----------------------|--|--------------------|---------|
|            |                                    |                         |                       | < 700 N/mm <sup>2</sup><br>f<br>mm/rev | 1199<br>TiAlN<br>€ |         |
| 3          | 28                                 | 66                      | 6                     | 0.08                                   | 58,44              | ...0300 |
| 3.1        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0310 |
| 3.2        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0320 |
| 3.3        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0330 |
| 3.4        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0340 |
| 3.5        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0350 |
| 3.6        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0360 |
| 3.7        | 28                                 | 66                      | 6                     | 0.12                                   | 58,44              | ...0370 |
| 3.8        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0380 |
| 3.9        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0390 |
| 4          | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0400 |
| 4.1        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0410 |
| 4.2        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0420 |
| 4.3        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0430 |
| 4.4        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0440 |
| 4.5        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0450 |
| 4.6        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0460 |
| 4.7        | 36                                 | 74                      | 6                     | 0.12                                   | 58,44              | ...0470 |
| 4.8        | 44                                 | 82                      | 6                     | 0.12                                   | 58,44              | ...0480 |
| 4.9        | 44                                 | 82                      | 6                     | 0.12                                   | 58,44              | ...0490 |
| 5          | 44                                 | 82                      | 6                     | 0.12                                   | 58,44              | ...0500 |
| 5.1        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0510 |
| 5.2        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0520 |
| 5.3        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0530 |
| 5.4        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0540 |
| 5.5        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0550 |
| 5.6        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0560 |
| 5.7        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0570 |
| 5.8        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0580 |
| 5.9        | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0590 |
| 6          | 44                                 | 82                      | 6                     | 0.16                                   | 58,44              | ...0600 |
| 6.1        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0610 |
| 6.2        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0620 |
| 6.3        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0630 |
| 6.4        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0640 |
| 6.5        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0650 |
| 6.6        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0660 |
| 6.7        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0670 |
| 6.8        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0680 |
| 6.9        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0690 |
| 7          | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0700 |

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| Ø m7<br>mm | Longitud<br>de la<br>espiral<br>mm | Longitud<br>total<br>mm | Ø de<br>vástago<br>mm | ACERO                                  |                    | Ref.    |
|------------|------------------------------------|-------------------------|-----------------------|--|--------------------|---------|
|            |                                    |                         |                       | < 700 N/mm <sup>2</sup><br>f<br>mm/rev | 1199<br>TiAlN<br>€ |         |
| 7.1        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0710 |
| 7.2        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0720 |
| 7.3        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0730 |
| 7.4        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0740 |
| 7.5        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0750 |
| 7.6        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0760 |
| 7.7        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0770 |
| 7.8        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0780 |
| 7.9        | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0790 |
| 8          | 53                                 | 91                      | 8                     | 0.16                                   | 66,40              | ...0800 |
| 8.1        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0810 |
| 8.2        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0820 |
| 8.3        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0830 |
| 8.4        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0840 |
| 8.5        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0850 |
| 8.6        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0860 |
| 8.7        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0870 |
| 8.8        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0880 |
| 8.9        | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0890 |
| 9          | 61                                 | 103                     | 10                    | 0.16                                   | 74,28              | ...0900 |
| 9.1        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0910 |
| 9.2        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0920 |
| 9.3        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0930 |
| 9.4        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0940 |
| 9.5        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0950 |
| 9.6        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0960 |
| 9.7        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0970 |
| 9.8        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0980 |
| 9.9        | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...0990 |
| 10         | 61                                 | 103                     | 10                    | 0.21                                   | 74,28              | ...1000 |
| 10.2       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1020 |
| 10.3       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1030 |
| 10.5       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1050 |
| 10.8       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1080 |
| 11         | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1100 |
| 11.2       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1120 |
| 11.5       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1150 |
| 11.8       | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1180 |
| 12         | 71                                 | 118                     | 12                    | 0.21                                   | 105,98             | ...1200 |
| 12.2       | 77                                 | 124                     | 14                    | 0.27                                   | 144,16             | ...1220 |
| 12.5       | 77                                 | 124                     | 14                    | 0.27                                   | 144,16             | ...1250 |

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### Broca espiral ecoline, 5 x D

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| Ø m7<br>mm | Longitud de la espiral<br>mm | Longitud total<br>mm | Ø de vástago<br>mm | fortis  |                    | Ref.    |
|------------|------------------------------|----------------------|--------------------|---|--------------------|---------|
|            |                              |                      |                    | ACERO<br>< 700 N/mm <sup>2</sup><br>f<br>mm/rev | 1199<br>TiAIN<br>€ |         |
| 12.8       | 77                           | 124                  | 14                 | 0.27  | 144,16             | ...1280 |
| 13         | 77                           | 124                  | 14                 | 0.27  | 144,16             | ...1300 |
| 13.5       | 77                           | 124                  | 14                 | 0.27  | 144,16             | ...1350 |
| 13.8       | 77                           | 124                  | 14                 | 0.27  | 144,16             | ...1380 |
| 14         | 77                           | 124                  | 14                 | 0.27  | 144,16             | ...1400 |
| 14.2       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1420 |
| 14.5       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1450 |
| 14.8       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1480 |
| 15         | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1500 |
| 15.1       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1510 |
| 15.2       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1520 |
| 15.5       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1550 |
| 15.8       | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1580 |
| 16         | 83                           | 133                  | 16                 | 0.27  | 182,12             | ...1600 |
| 16.5       | 93                           | 143                  | 18                 | 0.35  | 288,11             | ...1650 |
| 17         | 93                           | 143                  | 18                 | 0.35  | 288,11             | ...1700 |
| 17.3       | 93                           | 143                  | 18                 | 0.35  | 288,11             | ...1730 |

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| Ø m7<br>mm | Longitud de la espiral<br>mm | Longitud total<br>mm | Ø de vástago<br>mm | fortis  |                    | Ref.    |
|------------|------------------------------|----------------------|--------------------|---|--------------------|---------|
|            |                              |                      |                    | ACERO<br>< 700 N/mm <sup>2</sup><br>f<br>mm/rev | 1199<br>TiAIN<br>€ |         |
| 17.5       | 93                           | 143                  | 18                 | 0.35  | 288,11             | ...1750 |
| 17.7       | 93                           | 143                  | 18                 | 0.35  | 288,11             | ...1770 |
| 18         | 93                           | 143                  | 18                 | 0.35  | 288,11             | ...1800 |
| 18.5       | 101                          | 153                  | 20                 | 0.35  | 315,06             | ...1850 |
| 19         | 101                          | 153                  | 20                 | 0.35  | 315,06             | ...1900 |
| 19.3       | 101                          | 153                  | 20                 | 0.35  | 315,06             | ...1930 |
| 19.5       | 101                          | 153                  | 20                 | 0.35  | 315,06             | ...1950 |
| 20         | 101                          | 153                  | 20                 | 0.35  | 315,06             | ...2000 |

(W019)

### Broca espiral, SuperLine, 3 x D

**Características:** Con afilado especial. La broca tiene un comportamiento de autocentraje muy bueno y genera viruta corta incluso en materiales de viruta larga.

**Aplicación:** Para perforaciones con gran precisión de concentricidad con margen estrecho de tolerancia de Ø y buen acabado superficial. Brocas espirales de uso versátil para taladrar agujeros de hasta 3 x D con valores de corte máximos.

Metal duro integral

DIN 6537

RT 100 U

140°

3xD

**GUHRING**

DIN 6535-HA

1200  
Fire

DIN 6535-HE

1203  
Fire

DIN 6535-HA

1206  
Fire

DIN 6535-HE

1209  
Fire

| Aplicación             | ACERO                   |                          |                          | INOX             |             |        | FUNDICIÓN |     | ALEACIONES ESPECIALES           |                  | METALES NO FÉRRICOS |                            |                    | ACERO TEMPLADO |          |          | Ref. |
|------------------------|-------------------------|--------------------------|--------------------------|------------------|-------------|--------|-----------|-----|---------------------------------|------------------|---------------------|----------------------------|--------------------|----------------|----------|----------|------|
|                        | < 700 N/mm <sup>2</sup> | < 1000 N/mm <sup>2</sup> | < 1400 N/mm <sup>2</sup> | Ferrit./martens. | Austenítico | Duplex | GG/GTS    | GGG | Titanio > 850 N/mm <sup>2</sup> | Aluminio < 8% Si | Aluminio > 8% Si    | Aleaciones de cobre y cinc | GFRP/CFRP/ Duropl. | < 55 HRC       | < 60 HRC | > 60 HRC |      |
| V <sub>c</sub> [m/min] | 120                     | 110                      | 100                      | 40               | 15          | 35     | 155       | 125 | 40                              | 220              | 180                 | 270                        | -                  | 45             | 25       | 15       | 1200 |
|                        | 120                     | 110                      | 100                      | 40               | 15          | 35     | 155       | 125 | 40                              | 220              | 180                 | 270                        | -                  | 45             | 25       | 15       | 1203 |
|                        | 130                     | 120                      | 105                      | 60               | 55          | 45     | 160       | 128 | 45                              | 260              | 220                 | 325                        | -                  | 55             | 35       | 25       | 1206 |
|                        | 130                     | 120                      | 105                      | 60               | 55          | 45     | 160       | 128 | 45                              | 260              | 220                 | 325                        | -                  | 55             | 35       | 25       | 1209 |

| Ø d <sub>1</sub> = m7<br>mm | Longitud de la espiral l <sub>2</sub><br>mm | Longitud de vástago l <sub>3</sub><br>mm | Longitud total l <sub>1</sub><br>mm | Ø vástago d <sub>2</sub> = h6<br>mm | GHRING   |                   |                   |                   |                   | Ref.    |
|-----------------------------|---|--|-------------------------------------|-------------------------------------|--|-------------------|-------------------|-------------------|-------------------|---------|
|                             |   |  |                                     |                                     | ACERO<br>< 1400 N/mm <sup>2</sup><br>f<br>mm/rev | 1200<br>Fire<br>€ | 1203<br>Fire<br>€ | 1206<br>Fire<br>€ | 1209<br>Fire<br>€ |         |
| 3                           | 20  | 36                                       | 62                                  | 6                                   | 0.08   | 36,29             | 37,59             | 45,64             | 46,92             | ...0300 |
| 3.1                         | 20  | 36                                       | 62                                  | 6                                   | 0.08   | 36,29             | 37,59             | 45,64             | 46,92             | ...0310 |
| 3.17                        | 20  | 36                                       | 62                                  | 6                                   | 0.1  | 36,29             | 37,59             | 45,64             | a consultar       | ...0317 |
| 3.2                         | 20  | 36                                       | 62                                  | 6                                   | 0.1  | 36,29             | 37,59             | 45,64             | 46,92             | ...0320 |
| 3.25                        | 20  | 36                                       | 62                                  | 6                                   | 0.1  | 36,29             | 37,59             | 45,64             | a consultar       | ...0325 |
| 3.3                         | 20  | 36                                       | 62                                  | 6                                   | 0.1  | 36,29             | 37,59             | 45,64             | 46,92             | ...0330 |
| 3.4                         | 20  | 36                                       | 62                                  | 6                                   | 0.1  | 36,29             | 37,59             | 45,64             | 46,92             | ...0340 |

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