



# Typhoon GA-HGA

High performance carbide drills 3xD, 5xD, 8xD



WIDE RANGE  
FOR GENERAL APPLICATION

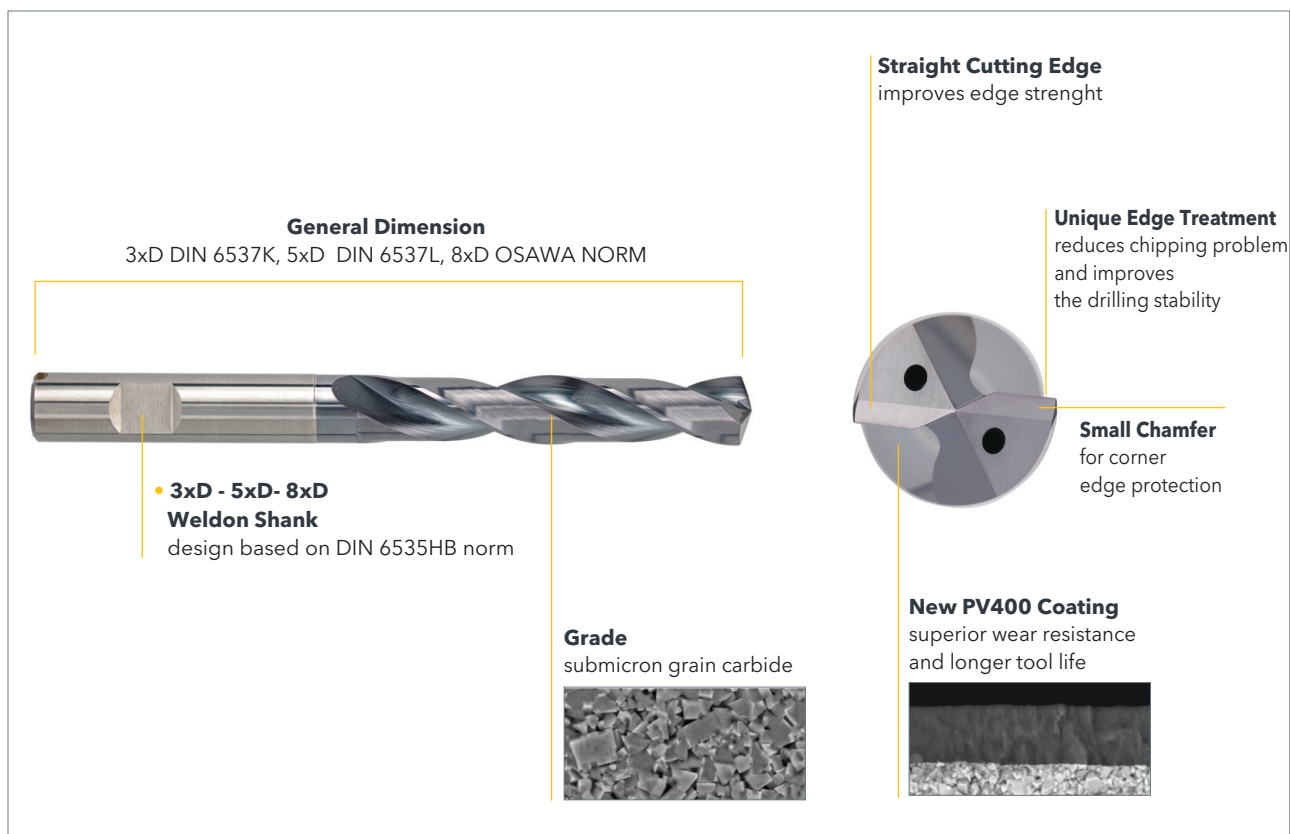
 **OSAWA**  
SORMA CUTTING SOLUTIONS



# GA-HGA

- Solid carbide drills for general machining.
- Made of submicron grain carbide and new PV400 coating for better wear resistance (lower cost per hole).
- Straight cutting edge design and unique edge treatment technology allow higher reliability.
- Optimized core diameter guarantees the straightness of the hole and wide flutes design allows smooth chip ejection.
- Range: D3 - D20, internal and external coolant, 3xD and 5xD with Weldon shank.
- Range: D3 - D20, internal coolant, 8xD with Weldon shank.

## FEATURES



# 373GA-HGA

General application, Weldon shank

3XD

DIN  
6537KMG  
PV400

373GA 373HGA



373GA



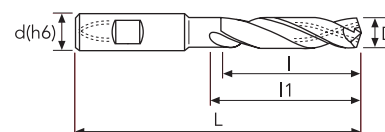
373HGA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ☆ | ★ |   |   |   |
| ★ | ★ | ★ |   |   |   |

373GA

373HGA

★ 1st choice ☆ suitable



| D(m7) | D Tol.        | d(h6) | l  | l1 | L  | 373GA<br>EDP No. | Stock | 373HGA<br>EDP No. | Stock |
|-------|---------------|-------|----|----|----|------------------|-------|-------------------|-------|
| 3.0   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0300        | ●     | 373HGA0300        | ●     |
| 3.1   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0310        | ●     | 373HGA0310        | ●     |
| 3.2   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0320        | ●     | 373HGA0320        | ●     |
| 3.3   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0330        | ●     | 373HGA0330        | ●     |
| 3.4   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0340        | ●     | 373HGA0340        | ●     |
| 3.5   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0350        | ●     | 373HGA0350        | ●     |
| 3.6   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0360        | ●     | 373HGA0360        | ●     |
| 3.7   | +0.004/+0.016 | 6     | 14 | 20 | 62 | 373GA0370        | ●     | 373HGA0370        | ●     |
| 3.8   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0380        | ●     | 373HGA0380        | ●     |
| 3.9   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0390        | ●     | 373HGA0390        | ●     |
| 4.0   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0400        | ●     | 373HGA0400        | ●     |
| 4.1   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0410        | ●     | 373HGA0410        | ●     |
| 4.2   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0420        | ●     | 373HGA0420        | ●     |
| 4.3   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0430        | ●     | 373HGA0430        | ●     |
| 4.4   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0440        | ●     | 373HGA0440        | ●     |
| 4.5   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0450        | ●     | 373HGA0450        | ●     |
| 4.6   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0460        | ●     | 373HGA0460        | ●     |
| 4.7   | +0.004/+0.016 | 6     | 17 | 24 | 66 | 373GA0470        | ●     | 373HGA0470        | ●     |
| 4.8   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0480        | ●     | 373HGA0480        | ●     |
| 4.9   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0490        | ●     | 373HGA0490        | ●     |
| 5.0   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0500        | ●     | 373HGA0500        | ●     |
| 5.1   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0510        | ●     | 373HGA0510        | ●     |
| 5.2   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0520        | ●     | 373HGA0520        | ●     |
| 5.3   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0530        | ●     | 373HGA0530        | ●     |
| 5.4   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0540        | ●     | 373HGA0540        | ●     |
| 5.5   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0550        | ●     | 373HGA0550        | ●     |
| 5.6   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0560        | ●     | 373HGA0560        | ●     |
| 5.7   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0570        | ●     | 373HGA0570        | ●     |
| 5.8   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0580        | ●     | 373HGA0580        | ●     |
| 5.9   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0590        | ●     | 373HGA0590        | ●     |
| 6.0   | +0.004/+0.016 | 6     | 20 | 28 | 66 | 373GA0600        | ●     | 373HGA0600        | ●     |
| 6.1   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0610        | ●     | 373HGA0610        | ●     |
| 6.2   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0620        | ●     | 373HGA0620        | ●     |
| 6.3   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0630        | ●     | 373HGA0630        | ●     |
| 6.4   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0640        | ●     | 373HGA0640        | ●     |
| 6.5   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0650        | ●     | 373HGA0650        | ●     |
| 6.6   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0660        | ●     | 373HGA0660        | ●     |
| 6.7   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0670        | ●     | 373HGA0670        | ●     |
| 6.8   | +0.006/+0.021 | 8     | 24 | 34 | 79 | 373GA0680        | ●     | 373HGA0680        | ●     |

● stock standard ○ non-standard stock

# 373GA-HGA

General application, Weldon shank



373GA 373HGA



373GA



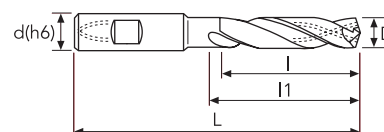
373HGA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ☆ | ★ |   |   |   |
| ★ | ★ | ★ |   |   |   |

373GA

373HGA

★ 1st choice ☆ suitable



| D(m7) | D Tol.        | d(h6) | l  | l1 | L   | 373GA<br>EDP No. | Stock | 373HGA<br>EDP No. | Stock |
|-------|---------------|-------|----|----|-----|------------------|-------|-------------------|-------|
| 6.9   | +0.006/+0.021 | 8     | 24 | 34 | 79  | 373GA0690        | ●     | 373HGA0690        | ●     |
| 7.0   | +0.006/+0.021 | 8     | 24 | 34 | 79  | 373GA0700        | ●     | 373HGA0700        | ●     |
| 7.1   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0710        | ●     | 373HGA0710        | ●     |
| 7.2   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0720        | ●     | 373HGA0720        | ●     |
| 7.3   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0730        | ●     | 373HGA0730        | ●     |
| 7.4   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0740        | ●     | 373HGA0740        | ●     |
| 7.5   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0750        | ●     | 373HGA0750        | ●     |
| 7.6   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0760        | ●     | 373HGA0760        | ●     |
| 7.7   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0770        | ●     | 373HGA0770        | ●     |
| 7.8   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0780        | ●     | 373HGA0780        | ●     |
| 7.9   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0790        | ●     | 373HGA0790        | ●     |
| 8.0   | +0.006/+0.021 | 8     | 29 | 41 | 79  | 373GA0800        | ●     | 373HGA0800        | ●     |
| 8.1   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0810        | ●     | 373HGA0810        | ●     |
| 8.2   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0820        | ●     | 373HGA0820        | ●     |
| 8.3   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0830        | ●     | 373HGA0830        | ●     |
| 8.4   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0840        | ●     | 373HGA0840        | ●     |
| 8.5   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0850        | ●     | 373HGA0850        | ●     |
| 8.6   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0860        | ●     | 373HGA0860        | ●     |
| 8.7   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0870        | ●     | 373HGA0870        | ●     |
| 8.8   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0880        | ●     | 373HGA0880        | ●     |
| 8.9   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0890        | ●     | 373HGA0890        | ●     |
| 9.0   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0900        | ●     | 373HGA0900        | ●     |
| 9.1   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0910        | ●     | 373HGA0910        | ●     |
| 9.2   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0920        | ●     | 373HGA0920        | ●     |
| 9.3   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0930        | ●     | 373HGA0930        | ●     |
| 9.4   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0940        | ●     | 373HGA0940        | ●     |
| 9.5   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0950        | ●     | 373HGA0950        | ●     |
| 9.6   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0960        | ●     | 373HGA0960        | ●     |
| 9.7   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0970        | ●     | 373HGA0970        | ●     |
| 9.8   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0980        | ●     | 373HGA0980        | ●     |
| 9.9   | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA0990        | ●     | 373HGA0990        | ●     |
| 10.0  | +0.006/+0.021 | 10    | 35 | 47 | 89  | 373GA1000        | ●     | 373HGA1000        | ●     |
| 10.1  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1010        | ●     | 373HGA1010        | ●     |
| 10.2  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1020        | ●     | 373HGA1020        | ●     |
| 10.3  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1030        | ●     | 373HGA1030        | ●     |
| 10.4  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1040        | ●     | 373HGA1040        | ●     |
| 10.5  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1050        | ●     | 373HGA1050        | ●     |
| 10.6  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1060        | ●     | 373HGA1060        | ●     |
| 10.7  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1070        | ●     | 373HGA1070        | ●     |

● stock standard ○ non-standard stock

# 373GA-HGA

General application, Weldon shank



373GA 373HGA



373GA



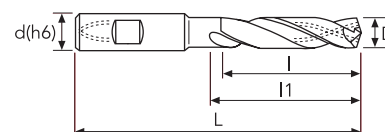
373HGA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ☆ | ★ |   |   |   |
| ★ | ★ | ★ |   |   |   |

373GA

373HGA

★ 1st choice ☆ suitable



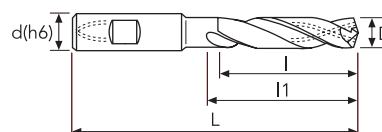
| D(m7) | D Tol.        | d(h6) | l  | l1 | L   | 373GA<br>EDP No. | Stock | 373HGA<br>EDP No. | Stock |
|-------|---------------|-------|----|----|-----|------------------|-------|-------------------|-------|
| 10.8  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1080        | ●     | 373HGA1080        | ●     |
| 10.9  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1090        | ●     | 373HGA1090        | ●     |
| 11.0  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1100        | ●     | 373HGA1100        | ●     |
| 11.1  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1110        | ●     | 373HGA1110        | ●     |
| 11.2  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1120        | ●     | 373HGA1120        | ●     |
| 11.3  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1130        | ●     | 373HGA1130        | ●     |
| 11.4  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1140        | ●     | 373HGA1140        | ●     |
| 11.5  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1150        | ●     | 373HGA1150        | ●     |
| 11.6  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1160        | ●     | 373HGA1160        | ●     |
| 11.7  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1170        | ●     | 373HGA1170        | ●     |
| 11.8  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1180        | ●     | 373HGA1180        | ●     |
| 11.9  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1190        | ●     | 373HGA1190        | ●     |
| 12.0  | +0.007/+0.025 | 12    | 40 | 55 | 102 | 373GA1200        | ●     | 373HGA1200        | ●     |
| 12.1  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1210        | ○     | 373HGA1210        | ●     |
| 12.2  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1220        | ●     | 373HGA1220        | ●     |
| 12.3  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1230        | ○     |                   |       |
| 12.4  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1240        | ○     |                   |       |
| 12.5  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1250        | ●     | 373HGA1250        | ●     |
| 12.6  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1260        | ○     |                   |       |
| 12.7  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1270        | ●     | 373HGA1270        | ●     |
| 12.8  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1280        | ●     | 373HGA1280        | ●     |
| 12.9  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1290        | ○     |                   |       |
| 13.0  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1300        | ●     | 373HGA1300        | ●     |
| 13.5  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1350        | ●     | 373HGA1350        | ●     |
| 13.7  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1370        | ●     | 373HGA1370        | ○     |
| 13.8  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1380        | ●     | 373HGA1380        | ○     |
| 14.0  | +0.007/+0.025 | 14    | 43 | 60 | 107 | 373GA1400        | ●     | 373HGA1400        | ●     |
| 14.2  | +0.007/+0.025 | 16    | 45 | 65 | 115 | 373GA1420        | ●     | 373HGA1420        | ●     |
| 14.5  | +0.007/+0.025 | 16    | 45 | 65 | 115 | 373GA1450        | ●     | 373HGA1450        | ●     |
| 14.7  | +0.007/+0.025 | 16    | 45 | 65 | 115 | 373GA1470        | ●     | 373HGA1470        | ○     |
| 14.8  | +0.007/+0.025 | 16    | 45 | 65 | 115 | 373GA1480        | ●     | 373HGA1480        | ●     |
| 15.0  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1500        | ●     | 373HGA1500        | ●     |
| 15.2  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1520        | ●     | 373HGA1520        | ●     |
| 15.3  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1530        | ●     | 373HGA1530        | ●     |
| 15.5  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1550        | ●     | 373HGA1550        | ●     |
| 15.7  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1570        | ●     | 373HGA1570        | ○     |
| 15.8  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1580        | ●     | 373HGA1580        | ●     |
| 16.0  | +0.007/+0.025 | 16    | 49 | 65 | 115 | 373GA1600        | ●     | 373HGA1600        | ●     |
| 16.5  | +0.007/+0.025 | 18    | 52 | 73 | 123 | 373GA1650        | ●     | 373HGA1650        | ●     |

● stock standard ○ non-standard stock

## General application, Weldon shank



★ 1st choice    ☆ suitable



● stock standard    ○ non-standard stock

## CUTTING PARAMETERS

## 373GA

| <br>Ø RUN OUT<br><0.02mm | Material Group<br>ISO 513 | P1                     | P2                        | P3 P4                      | P5 P6                      | P7                     | P8                         |
|-----------------------------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|----------------------------|----------------------------|------------------------|----------------------------|
|                                                                                                           | Hardness/Rm               | <500 N/mm <sup>2</sup> | 500÷700 N/mm <sup>2</sup> | 600÷1000 N/mm <sup>2</sup> | 900÷1480 N/mm <sup>2</sup> | <700 N/mm <sup>2</sup> | 850÷1200 N/mm <sup>2</sup> |
|                                                                                                           | Vc (m/min)                | <b>70÷90</b>           | <b>60÷80</b>              | <b>60÷80</b>               | <b>50÷70</b>               | <b>40÷60</b>           | <b>35÷55</b>               |
|                                                                                                           | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)             | fn<br>(mm/rev)             | fn<br>(mm/rev)         | fn<br>(mm/rev)             |
|                                                                                                           | 3                         | 0.143                  | 0.143                     | 0.124                      | 0.105                      | 0.076                  | 0.057                      |
|                                                                                                           | 4                         | 0.143                  | 0.143                     | 0.124                      | 0.105                      | 0.076                  | 0.057                      |
|                                                                                                           | 6                         | 0.181                  | 0.181                     | 0.162                      | 0.133                      | 0.114                  | 0.095                      |
|                                                                                                           | 8                         | 0.209                  | 0.209                     | 0.190                      | 0.152                      | 0.133                  | 0.124                      |
|                                                                                                           | 10                        | 0.209                  | 0.209                     | 0.190                      | 0.152                      | 0.133                  | 0.124                      |
|                                                                                                           | 12                        | 0.266                  | 0.266                     | 0.219                      | 0.181                      | 0.171                  | 0.171                      |
|                                                                                                           | 14                        | 0.304                  | 0.304                     | 0.238                      | 0.209                      | 0.190                  | 0.190                      |
|                                                                                                           | 16                        | 0.304                  | 0.304                     | 0.238                      | 0.209                      | 0.190                  | 0.190                      |
|                                                                                                           | 18                        | 0.361                  | 0.361                     | 0.285                      | 0.228                      | 0.228                  | 0.228                      |
|                                                                                                           | 20                        | 0.361                  | 0.361                     | 0.285                      | 0.228                      | 0.228                  | 0.228                      |

## 373HGA

| <br>Ø RUN OUT<br><0.02mm | Material Group<br>ISO 513 | P1                     | P2                        | P3 P4                      | P5 P6                      | P7                     | P8                         |
|-------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|----------------------------|----------------------------|------------------------|----------------------------|
|                                                                                                             | Hardness/Rm               | <500 N/mm <sup>2</sup> | 500÷700 N/mm <sup>2</sup> | 600÷1000 N/mm <sup>2</sup> | 900÷1480 N/mm <sup>2</sup> | <700 N/mm <sup>2</sup> | 850÷1200 N/mm <sup>2</sup> |
|                                                                                                             | Vc (m/min)                | <b>90÷110</b>          | <b>70÷90</b>              | <b>70÷90</b>               | <b>50÷70</b>               | <b>50÷70</b>           | <b>40÷60</b>               |
|                                                                                                             | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)             | fn<br>(mm/rev)             | fn<br>(mm/rev)         | fn<br>(mm/rev)             |
|                                                                                                             | 3                         | 0.150                  | 0.150                     | 0.130                      | 0.110                      | 0.080                  | 0.060                      |
|                                                                                                             | 4                         | 0.150                  | 0.150                     | 0.130                      | 0.110                      | 0.080                  | 0.060                      |
|                                                                                                             | 6                         | 0.190                  | 0.190                     | 0.170                      | 0.140                      | 0.120                  | 0.100                      |
|                                                                                                             | 8                         | 0.220                  | 0.220                     | 0.200                      | 0.160                      | 0.140                  | 0.130                      |
|                                                                                                             | 10                        | 0.220                  | 0.220                     | 0.200                      | 0.160                      | 0.140                  | 0.130                      |
|                                                                                                             | 12                        | 0.280                  | 0.280                     | 0.230                      | 0.190                      | 0.180                  | 0.180                      |
|                                                                                                             | 14                        | 0.320                  | 0.320                     | 0.250                      | 0.220                      | 0.200                  | 0.200                      |
|                                                                                                             | 16                        | 0.320                  | 0.320                     | 0.250                      | 0.220                      | 0.200                  | 0.200                      |
|                                                                                                             | 18                        | 0.380                  | 0.380                     | 0.300                      | 0.240                      | 0.240                  | 0.240                      |
|                                                                                                             | 20                        | 0.380                  | 0.380                     | 0.300                      | 0.240                      | 0.240                  | 0.240                      |

## 373HGA

| <br>Ø RUN OUT<br><0.02mm | Material Group<br>ISO 513 | M1                     | M2                        | M3                        |  |  |  |
|-------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|---------------------------|--|--|--|
|                                                                                                             | Hardness/Rm               | <750 N/mm <sup>2</sup> | 550÷850 N/mm <sup>2</sup> | 650÷950 N/mm <sup>2</sup> |  |  |  |
|                                                                                                             | Vc (m/min)                | <b>50÷70</b>           | <b>50÷70</b>              | <b>35÷55</b>              |  |  |  |
|                                                                                                             | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)            |  |  |  |
|                                                                                                             | 3                         | 0.080                  | 0.060                     | 0.060                     |  |  |  |
|                                                                                                             | 4                         | 0.100                  | 0.080                     | 0.080                     |  |  |  |
|                                                                                                             | 6                         | 0.120                  | 0.080                     | 0.080                     |  |  |  |
|                                                                                                             | 8                         | 0.130                  | 0.100                     | 0.100                     |  |  |  |
|                                                                                                             | 10                        | 0.150                  | 0.110                     | 0.110                     |  |  |  |
|                                                                                                             | 12                        | 0.170                  | 0.130                     | 0.130                     |  |  |  |
|                                                                                                             | 14                        | 0.180                  | 0.130                     | 0.130                     |  |  |  |
|                                                                                                             | 16                        | 0.200                  | 0.140                     | 0.140                     |  |  |  |
|                                                                                                             | 18                        | 0.220                  | 0.140                     | 0.140                     |  |  |  |
|                                                                                                             | 20                        | 0.240                  | 0.160                     | 0.160                     |  |  |  |

## CUTTING PARAMETERS

## 373GA

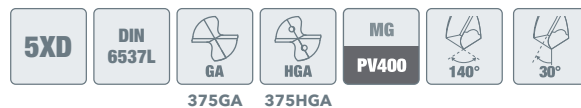
|  | Material Group<br>ISO 513 | <b>K1</b>      | <b>K2</b>      | <b>K3</b>      |  |  |  |
|-----------------------------------------------------------------------------------|---------------------------|----------------|----------------|----------------|--|--|--|
|                                                                                   | Hardness/Rm               | 150÷250 HB     | 150÷350 HB     | 120÷260 HB     |  |  |  |
|                                                                                   | Vc (m/min)                | <b>90÷110</b>  | <b>70÷90</b>   | <b>60÷80</b>   |  |  |  |
|                                                                                   | D<br>(mm)                 | fn<br>(mm/rev) | fn<br>(mm/rev) | fn<br>(mm/rev) |  |  |  |
|                                                                                   | <b>3</b>                  | 0.162          | 0.143          | 0.086          |  |  |  |
|                                                                                   | <b>4</b>                  | 0.190          | 0.162          | 0.095          |  |  |  |
|                                                                                   | <b>6</b>                  | 0.238          | 0.190          | 0.124          |  |  |  |
|                                                                                   | <b>8</b>                  | 0.257          | 0.238          | 0.152          |  |  |  |
|                                                                                   | <b>10</b>                 | 0.285          | 0.266          | 0.190          |  |  |  |
|                                                                                   | <b>12</b>                 | 0.314          | 0.285          | 0.209          |  |  |  |
|                                                                                   | <b>14</b>                 | 0.342          | 0.314          | 0.228          |  |  |  |
|                                                                                   | <b>16</b>                 | 0.380          | 0.333          | 0.247          |  |  |  |
|                                                                                   | <b>18</b>                 | 0.399          | 0.361          | 0.266          |  |  |  |
|                                                                                   | <b>20</b>                 | 0.428          | 0.380          | 0.266          |  |  |  |

## 373HGA

|  | Material Group<br>ISO 513 | <b>K1</b>      | <b>K2</b>      | <b>K3</b>      |  |  |  |
|-------------------------------------------------------------------------------------|---------------------------|----------------|----------------|----------------|--|--|--|
|                                                                                     | Hardness/Rm               | 150÷250 HB     | 150÷350 HB     | 120÷260 HB     |  |  |  |
|                                                                                     | Vc (m/min)                | <b>110÷130</b> | <b>90÷110</b>  | <b>70÷90</b>   |  |  |  |
|                                                                                     | D<br>(mm)                 | fn<br>(mm/rev) | fn<br>(mm/rev) | fn<br>(mm/rev) |  |  |  |
|                                                                                     | <b>3</b>                  | 0.170          | 0.150          | 0.090          |  |  |  |
|                                                                                     | <b>4</b>                  | 0.200          | 0.170          | 0.100          |  |  |  |
|                                                                                     | <b>6</b>                  | 0.250          | 0.200          | 0.130          |  |  |  |
|                                                                                     | <b>8</b>                  | 0.270          | 0.250          | 0.160          |  |  |  |
|                                                                                     | <b>10</b>                 | 0.300          | 0.280          | 0.200          |  |  |  |
|                                                                                     | <b>12</b>                 | 0.330          | 0.300          | 0.220          |  |  |  |
|                                                                                     | <b>14</b>                 | 0.360          | 0.330          | 0.240          |  |  |  |
|                                                                                     | <b>16</b>                 | 0.400          | 0.350          | 0.260          |  |  |  |
|                                                                                     | <b>18</b>                 | 0.420          | 0.380          | 0.280          |  |  |  |
|                                                                                     | <b>20</b>                 | 0.450          | 0.400          | 0.280          |  |  |  |

# 375GA-HGA

General application, Weldon shank



375GA



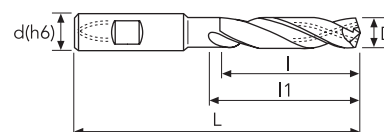
375HGA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ☆ | ★ |   |   |   |
| ★ | ★ | ★ |   |   |   |

★ 1st choice ☆ suitable

375GA

375HGA



| D(m7) | D Tol.        | d(h6) | l    | l1 | L  | 375GA<br>EDP No. | Stock | 375HGA<br>EDP No. | Stock |
|-------|---------------|-------|------|----|----|------------------|-------|-------------------|-------|
| 3.0   | +0.004/+0.016 | 6     | 23,5 | 28 | 66 | 375GA0300        | ●     | 375HGA0300        | ●     |
| 3.1   | +0.004/+0.016 | 6     | 23,4 | 28 | 66 | 375GA0310        | ●     | 375HGA0310        | ●     |
| 3.2   | +0.004/+0.016 | 6     | 23,2 | 28 | 66 | 375GA0320        | ●     | 375HGA0320        | ●     |
| 3.3   | +0.004/+0.016 | 6     | 23,1 | 28 | 66 | 375GA0330        | ●     | 375HGA0330        | ●     |
| 3.4   | +0.004/+0.016 | 6     | 22,9 | 28 | 66 | 375GA0340        | ●     | 375HGA0340        | ●     |
| 3.5   | +0.004/+0.016 | 6     | 22,8 | 28 | 66 | 375GA0350        | ●     | 375HGA0350        | ●     |
| 3.6   | +0.004/+0.016 | 6     | 22,6 | 28 | 66 | 375GA0360        | ●     | 375HGA0360        | ●     |
| 3.7   | +0.004/+0.016 | 6     | 22,5 | 28 | 66 | 375GA0370        | ●     | 375HGA0370        | ●     |
| 3.8   | +0.004/+0.016 | 6     | 30,3 | 36 | 74 | 375GA0380        | ●     | 375HGA0380        | ●     |
| 3.9   | +0.004/+0.016 | 6     | 30,2 | 36 | 74 | 375GA0390        | ●     | 375HGA0390        | ●     |
| 4.0   | +0.004/+0.016 | 6     | 30,0 | 36 | 74 | 375GA0400        | ●     | 375HGA0400        | ●     |
| 4.1   | +0.004/+0.016 | 6     | 29,9 | 36 | 74 | 375GA0410        | ●     | 375HGA0410        | ●     |
| 4.2   | +0.004/+0.016 | 6     | 29,7 | 36 | 74 | 375GA0420        | ●     | 375HGA0420        | ●     |
| 4.3   | +0.004/+0.016 | 6     | 29,6 | 36 | 74 | 375GA0430        | ●     | 375HGA0430        | ●     |
| 4.4   | +0.004/+0.016 | 6     | 29,4 | 36 | 74 | 375GA0440        | ●     | 375HGA0440        | ●     |
| 4.5   | +0.004/+0.016 | 6     | 29,3 | 36 | 74 | 375GA0450        | ●     | 375HGA0450        | ●     |
| 4.6   | +0.004/+0.016 | 6     | 29,1 | 36 | 74 | 375GA0460        | ●     | 375HGA0460        | ●     |
| 4.65  | +0.004/+0.016 | 6     | 29,0 | 36 | 74 |                  |       | 375HGA0465        | ●     |
| 4.7   | +0.004/+0.016 | 6     | 29,0 | 36 | 74 | 375GA0470        | ●     | 375HGA0470        | ●     |
| 4.8   | +0.004/+0.016 | 6     | 36,8 | 44 | 82 | 375GA0480        | ●     | 375HGA0480        | ●     |
| 4.9   | +0.004/+0.016 | 6     | 36,7 | 44 | 82 | 375GA0490        | ●     | 375HGA0490        | ●     |
| 5.0   | +0.004/+0.016 | 6     | 36,5 | 44 | 82 | 375GA0500        | ●     | 375HGA0500        | ●     |
| 5.1   | +0.004/+0.016 | 6     | 36,4 | 44 | 82 | 375GA0510        | ●     | 375HGA0510        | ●     |
| 5.2   | +0.004/+0.016 | 6     | 36,2 | 44 | 82 | 375GA0520        | ●     | 375HGA0520        | ●     |
| 5.3   | +0.004/+0.016 | 6     | 36,1 | 44 | 82 | 375GA0530        | ●     | 375HGA0530        | ●     |
| 5.4   | +0.004/+0.016 | 6     | 35,9 | 44 | 82 | 375GA0540        | ●     | 375HGA0540        | ●     |
| 5.5   | +0.004/+0.016 | 6     | 35,8 | 44 | 82 | 375GA0550        | ●     | 375HGA0550        | ●     |
| 5.55  | +0.004/+0.016 | 6     | 35,7 | 44 | 82 |                  |       | 375HGA0555        | ●     |
| 5.6   | +0.004/+0.016 | 6     | 35,6 | 44 | 82 | 375GA0560        | ●     | 375HGA0560        | ●     |
| 5.7   | +0.004/+0.016 | 6     | 35,5 | 44 | 82 | 375GA0570        | ●     | 375HGA0570        | ●     |
| 5.8   | +0.004/+0.016 | 6     | 35,3 | 44 | 82 | 375GA0580        | ●     | 375HGA0580        | ●     |
| 5.9   | +0.004/+0.016 | 6     | 35,2 | 44 | 82 | 375GA0590        | ●     | 375HGA0590        | ●     |
| 6.0   | +0.004/+0.016 | 6     | 35,0 | 44 | 82 | 375GA0600        | ●     | 375HGA0600        | ●     |
| 6.1   | +0.006/+0.021 | 8     | 43,9 | 53 | 91 | 375GA0610        | ●     | 375HGA0610        | ●     |
| 6.2   | +0.006/+0.021 | 8     | 43,7 | 53 | 91 | 375GA0620        | ●     | 375HGA0620        | ●     |
| 6.3   | +0.006/+0.021 | 8     | 43,6 | 53 | 91 | 375GA0630        | ●     | 375HGA0630        | ●     |
| 6.4   | +0.006/+0.021 | 8     | 43,4 | 53 | 91 | 375GA0640        | ●     | 375HGA0640        | ●     |
| 6.5   | +0.006/+0.021 | 8     | 43,3 | 53 | 91 | 375GA0650        | ●     | 375HGA0650        | ●     |
| 6.6   | +0.006/+0.021 | 8     | 43,1 | 53 | 91 | 375GA0660        | ●     | 375HGA0660        | ●     |

● stock standard ○ non-standard stock

# 375GA-HGA

General application, Weldon shank

5XD

DIN  
6537L

375GA 375HGA



375GA



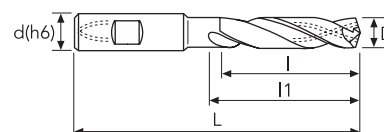
375HGA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ☆ | ★ |   |   |   |
| ★ | ★ | ★ |   |   |   |

375GA

375HGA

★ 1st choice ☆ suitable

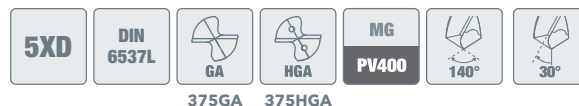


| D(m7) | D Tol.        | d(h6) | l    | l1 | L   | 375GA<br>EDP No. | Stock | 375HGA<br>EDP No. | Stock |
|-------|---------------|-------|------|----|-----|------------------|-------|-------------------|-------|
| 6.7   | +0.006/+0.021 | 8     | 43,0 | 53 | 91  | 375GA0670        | ●     | 375HGA0670        | ●     |
| 6.8   | +0.006/+0.021 | 8     | 42,8 | 53 | 91  | 375GA0680        | ●     | 375HGA0680        | ●     |
| 6.9   | +0.006/+0.021 | 8     | 42,7 | 53 | 91  | 375GA0690        | ●     | 375HGA0690        | ●     |
| 7.0   | +0.006/+0.021 | 8     | 42,5 | 53 | 91  | 375GA0700        | ●     | 375HGA0700        | ●     |
| 7.1   | +0.006/+0.021 | 8     | 42,4 | 53 | 91  | 375GA0710        | ●     | 375HGA0710        | ●     |
| 7.2   | +0.006/+0.021 | 8     | 42,2 | 53 | 91  | 375GA0720        | ●     | 375HGA0720        | ●     |
| 7.3   | +0.006/+0.021 | 8     | 42,1 | 53 | 91  | 375GA0730        | ●     | 375HGA0730        | ●     |
| 7.4   | +0.006/+0.021 | 8     | 41,9 | 53 | 91  | 375GA0740        | ●     | 375HGA0740        | ●     |
| 7.45  | +0.006/+0.021 | 8     | 41,8 | 53 | 91  |                  |       | 375HGA0745        | ●     |
| 7.5   | +0.006/+0.021 | 8     | 41,8 | 53 | 91  | 375GA0750        | ●     | 375HGA0750        | ●     |
| 7.6   | +0.006/+0.021 | 8     | 41,6 | 53 | 91  | 375GA0760        | ●     | 375HGA0760        | ●     |
| 7.7   | +0.006/+0.021 | 8     | 41,5 | 53 | 91  | 375GA0770        | ●     | 375HGA0770        | ●     |
| 7.8   | +0.006/+0.021 | 8     | 41,3 | 53 | 91  | 375GA0780        | ●     | 375HGA0780        | ●     |
| 7.9   | +0.006/+0.021 | 8     | 41,2 | 53 | 91  | 375GA0790        | ●     | 375HGA0790        | ●     |
| 8.0   | +0.006/+0.021 | 8     | 41,0 | 53 | 91  | 375GA0800        | ●     | 375HGA0800        | ●     |
| 8.1   | +0.006/+0.021 | 10    | 48,9 | 61 | 103 | 375GA0810        | ●     | 375HGA0810        | ●     |
| 8.2   | +0.006/+0.021 | 10    | 48,7 | 61 | 103 | 375GA0820        | ●     | 375HGA0820        | ●     |
| 8.3   | +0.006/+0.021 | 10    | 48,6 | 61 | 103 | 375GA0830        | ●     | 375HGA0830        | ●     |
| 8.4   | +0.006/+0.021 | 10    | 48,4 | 61 | 103 | 375GA0840        | ●     | 375HGA0840        | ●     |
| 8.5   | +0.006/+0.021 | 10    | 48,3 | 61 | 103 | 375GA0850        | ●     | 375HGA0850        | ●     |
| 8.6   | +0.006/+0.021 | 10    | 48,1 | 61 | 103 | 375GA0860        | ●     | 375HGA0860        | ●     |
| 8.7   | +0.006/+0.021 | 10    | 48,0 | 61 | 103 | 375GA0870        | ●     | 375HGA0870        | ●     |
| 8.8   | +0.006/+0.021 | 10    | 47,8 | 61 | 103 | 375GA0880        | ●     | 375HGA0880        | ●     |
| 8.9   | +0.006/+0.021 | 10    | 47,7 | 61 | 103 | 375GA0890        | ●     | 375HGA0890        | ●     |
| 9.0   | +0.006/+0.021 | 10    | 47,5 | 61 | 103 | 375GA0900        | ●     | 375HGA0900        | ●     |
| 9.1   | +0.006/+0.021 | 10    | 47,4 | 61 | 103 | 375GA0910        | ●     | 375HGA0910        | ●     |
| 9.2   | +0.006/+0.021 | 10    | 47,2 | 61 | 103 | 375GA0920        | ●     | 375HGA0920        | ●     |
| 9.3   | +0.006/+0.021 | 10    | 47,1 | 61 | 103 | 375GA0930        | ●     | 375HGA0930        | ●     |
| 9.35  | +0.006/+0.021 | 10    | 47,0 | 61 | 103 |                  |       | 375HGA0935        | ●     |
| 9.4   | +0.006/+0.021 | 10    | 46,9 | 61 | 103 | 375GA0940        | ●     | 375HGA0940        | ●     |
| 9.5   | +0.006/+0.021 | 10    | 46,8 | 61 | 103 | 375GA0950        | ●     | 375HGA0950        | ●     |
| 9.6   | +0.006/+0.021 | 10    | 46,6 | 61 | 103 | 375GA0960        | ●     | 375HGA0960        | ●     |
| 9.7   | +0.006/+0.021 | 10    | 46,5 | 61 | 103 | 375GA0970        | ●     | 375HGA0970        | ●     |
| 9.8   | +0.006/+0.021 | 10    | 46,3 | 61 | 103 | 375GA0980        | ●     | 375HGA0980        | ●     |
| 9.9   | +0.006/+0.021 | 10    | 46,2 | 61 | 103 | 375GA0990        | ●     | 375HGA0990        | ●     |
| 10.0  | +0.006/+0.021 | 10    | 46,0 | 61 | 103 | 375GA1000        | ●     | 375HGA1000        | ●     |
| 10.1  | +0.007/+0.025 | 12    | 55,9 | 71 | 118 | 375GA1010        | ●     | 375HGA1010        | ●     |
| 10.2  | +0.007/+0.025 | 12    | 55,7 | 71 | 118 | 375GA1020        | ●     | 375HGA1020        | ●     |
| 10.3  | +0.007/+0.025 | 12    | 55,6 | 71 | 118 | 375GA1030        | ●     | 375HGA1030        | ●     |

● stock standard ○ non-standard stock

# 375GA-HGA

General application, Weldon shank



375GA



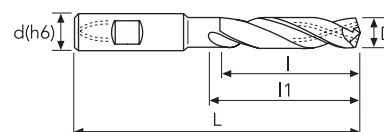
375HGA

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ☆ | ★ |   |   |   |
| ★ | ★ | ★ |   |   |   |

★ 1st choice ☆ suitable

375GA

375HGA



| D(m7) | D Tol.        | d(h6) | l    | l1 | L   | 375GA<br>EDP No. | Stock | 375HGA<br>EDP No. | Stock |
|-------|---------------|-------|------|----|-----|------------------|-------|-------------------|-------|
| 10.4  | +0.007/+0.025 | 12    | 55,4 | 71 | 118 | 375GA1040        | ●     | 375HGA1040        | ●     |
| 10.5  | +0.007/+0.025 | 12    | 55,3 | 71 | 118 | 375GA1050        | ●     | 375HGA1050        | ●     |
| 10.6  | +0.007/+0.025 | 12    | 55,1 | 71 | 118 | 375GA1060        | ●     | 375HGA1060        | ●     |
| 10.7  | +0.007/+0.025 | 12    | 55,0 | 71 | 118 | 375GA1070        | ●     | 375HGA1070        | ●     |
| 10.8  | +0.007/+0.025 | 12    | 54,8 | 71 | 118 | 375GA1080        | ●     | 375HGA1080        | ●     |
| 10.9  | +0.007/+0.025 | 12    | 54,7 | 71 | 118 | 375GA1090        | ●     | 375HGA1090        | ●     |
| 11.0  | +0.007/+0.025 | 12    | 54,5 | 71 | 118 | 375GA1100        | ●     | 375HGA1100        | ●     |
| 11.1  | +0.007/+0.025 | 12    | 54,4 | 71 | 118 | 375GA1110        | ●     | 375HGA1110        | ●     |
| 11.2  | +0.007/+0.025 | 12    | 54,2 | 71 | 118 | 375GA1120        | ●     | 375HGA1120        | ●     |
| 11.3  | +0.007/+0.025 | 12    | 54,1 | 71 | 118 | 375GA1130        | ●     | 375HGA1130        | ●     |
| 11.4  | +0.007/+0.025 | 12    | 53,9 | 71 | 118 | 375GA1140        | ●     | 375HGA1140        | ●     |
| 11.5  | +0.007/+0.025 | 12    | 53,8 | 71 | 118 | 375GA1150        | ●     | 375HGA1150        | ●     |
| 11.6  | +0.007/+0.025 | 12    | 53,6 | 71 | 118 | 375GA1160        | ●     | 375HGA1160        | ●     |
| 11.7  | +0.007/+0.025 | 12    | 53,5 | 71 | 118 | 375GA1170        | ●     | 375HGA1170        | ●     |
| 11.8  | +0.007/+0.025 | 12    | 53,3 | 71 | 118 | 375GA1180        | ●     | 375HGA1180        | ●     |
| 11.9  | +0.007/+0.025 | 12    | 53,2 | 71 | 118 | 375GA1190        | ●     | 375HGA1190        | ●     |
| 12.0  | +0.007/+0.025 | 12    | 53,0 | 71 | 118 | 375GA1200        | ●     | 375HGA1200        | ●     |
| 12.1  | +0.007/+0.025 | 14    | 58,9 | 77 | 124 |                  |       | 375HGA1210        | ●     |
| 12.2  | +0.007/+0.025 | 14    | 58,7 | 77 | 124 |                  |       | 375HGA1220        | ●     |
| 12.3  | +0.007/+0.025 | 14    | 58,6 | 77 | 124 |                  |       | 375HGA1230        | ●     |
| 12.4  | +0.007/+0.025 | 14    | 58,4 | 77 | 124 |                  |       | 375HGA1240        | ●     |
| 12.5  | +0.007/+0.025 | 14    | 58,3 | 77 | 124 | 375GA1250        | ●     | 375HGA1250        | ●     |
| 12.6  | +0.007/+0.025 | 14    | 58,1 | 77 | 124 |                  |       | 375HGA1260        | ●     |
| 12.7  | +0.007/+0.025 | 14    | 58,0 | 77 | 124 |                  |       | 375HGA1270        | ●     |
| 12.8  | +0.007/+0.025 | 14    | 57,8 | 77 | 124 |                  |       | 375HGA1280        | ●     |
| 13.0  | +0.007/+0.025 | 14    | 57,5 | 77 | 124 | 375GA1300        | ●     | 375HGA1300        | ●     |
| 13.5  | +0.007/+0.025 | 14    | 56,8 | 77 | 124 | 375GA1350        | ●     | 375HGA1350        | ●     |
| 13.7  | +0.007/+0.025 | 14    | 56,5 | 77 | 124 |                  |       | 375HGA1370        | ●     |
| 13.8  | +0.007/+0.025 | 14    | 56,3 | 77 | 124 |                  |       | 375HGA1380        | ●     |
| 13.9  | +0.007/+0.025 | 14    | 56,2 | 77 | 124 |                  |       | 375HGA1390        | ●     |
| 14.0  | +0.007/+0.025 | 14    | 56,0 | 77 | 124 | 375GA1400        | ●     | 375HGA1400        | ●     |
| 14.1  | +0.007/+0.025 | 16    | 61,9 | 83 | 133 |                  |       | 375HGA1410        | ●     |
| 14.2  | +0.007/+0.025 | 16    | 61,7 | 83 | 133 |                  |       | 375HGA1420        | ●     |
| 14.5  | +0.007/+0.025 | 16    | 61,3 | 83 | 133 | 375GA1450        | ●     | 375HGA1450        | ●     |
| 14.7  | +0.007/+0.025 | 16    | 61,0 | 83 | 133 |                  |       | 375HGA1470        | ●     |
| 14.8  | +0.007/+0.025 | 16    | 60,8 | 83 | 133 |                  |       | 375HGA1480        | ●     |
| 15.0  | +0.007/+0.025 | 16    | 60,5 | 83 | 133 | 375GA1500        | ●     | 375HGA1500        | ●     |
| 15.1  | +0.007/+0.025 | 16    | 60,4 | 83 | 133 |                  |       | 375HGA1510        | ●     |
| 15.2  | +0.007/+0.025 | 16    | 60,2 | 83 | 133 |                  |       | 375HGA1520        | ●     |

● stock standard ○ non-standard stock

## General application, Weldon shank



● stock standard    ○ non-standard stock

## CUTTING PARAMETERS

## 375GA

|  | Material Group<br>ISO 513 | P1                     | P2                        | P3 P4                      | P5 P6                      | P7                     | P8                         |
|-----------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|----------------------------|----------------------------|------------------------|----------------------------|
|                                                                                   | Hardness/Rm               | <500 N/mm <sup>2</sup> | 500÷700 N/mm <sup>2</sup> | 600÷1000 N/mm <sup>2</sup> | 900÷1480 N/mm <sup>2</sup> | <700 N/mm <sup>2</sup> | 850÷1200 N/mm <sup>2</sup> |
|                                                                                   | Vc (m/min)                | <b>70÷90</b>           | <b>60÷80</b>              | <b>60÷80</b>               | <b>50÷70</b>               | <b>40÷60</b>           | <b>35÷55</b>               |
|                                                                                   | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)             | fn<br>(mm/rev)             | fn<br>(mm/rev)         | fn<br>(mm/rev)             |
|                                                                                   | 3                         | 0.143                  | 0.143                     | 0.124                      | 0.105                      | 0.076                  | 0.057                      |
|                                                                                   | 4                         | 0.143                  | 0.143                     | 0.124                      | 0.105                      | 0.076                  | 0.057                      |
|                                                                                   | 6                         | 0.181                  | 0.181                     | 0.162                      | 0.133                      | 0.114                  | 0.095                      |
|                                                                                   | 8                         | 0.209                  | 0.209                     | 0.190                      | 0.152                      | 0.133                  | 0.124                      |
|                                                                                   | 10                        | 0.209                  | 0.209                     | 0.190                      | 0.152                      | 0.133                  | 0.124                      |
|                                                                                   | 12                        | 0.266                  | 0.266                     | 0.219                      | 0.181                      | 0.171                  | 0.171                      |
|                                                                                   | 14                        | 0.304                  | 0.304                     | 0.238                      | 0.209                      | 0.190                  | 0.190                      |
|                                                                                   | 16                        | 0.304                  | 0.304                     | 0.238                      | 0.209                      | 0.190                  | 0.190                      |
|                                                                                   | 18                        | 0.361                  | 0.361                     | 0.285                      | 0.228                      | 0.228                  | 0.228                      |
|                                                                                   | 20                        | 0.361                  | 0.361                     | 0.285                      | 0.228                      | 0.228                  | 0.228                      |

## 375HGA

|  | Material Group<br>ISO 513 | P1                     | P2                        | P3 P4                      | P5 P6                      | P7                     | P8                         |
|-------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|----------------------------|----------------------------|------------------------|----------------------------|
|                                                                                     | Hardness/Rm               | <500 N/mm <sup>2</sup> | 500÷700 N/mm <sup>2</sup> | 600÷1000 N/mm <sup>2</sup> | 900÷1480 N/mm <sup>2</sup> | <700 N/mm <sup>2</sup> | 850÷1200 N/mm <sup>2</sup> |
|                                                                                     | Vc (m/min)                | <b>90÷110</b>          | <b>70÷90</b>              | <b>70÷90</b>               | <b>50÷70</b>               | <b>50÷70</b>           | <b>40÷60</b>               |
|                                                                                     | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)             | fn<br>(mm/rev)             | fn<br>(mm/rev)         | fn<br>(mm/rev)             |
|                                                                                     | 3                         | 0.150                  | 0.150                     | 0.130                      | 0.110                      | 0.080                  | 0.060                      |
|                                                                                     | 4                         | 0.150                  | 0.150                     | 0.130                      | 0.110                      | 0.080                  | 0.060                      |
|                                                                                     | 6                         | 0.190                  | 0.190                     | 0.170                      | 0.140                      | 0.120                  | 0.100                      |
|                                                                                     | 8                         | 0.220                  | 0.220                     | 0.200                      | 0.160                      | 0.140                  | 0.130                      |
|                                                                                     | 10                        | 0.220                  | 0.220                     | 0.200                      | 0.160                      | 0.140                  | 0.130                      |
|                                                                                     | 12                        | 0.280                  | 0.280                     | 0.230                      | 0.190                      | 0.180                  | 0.180                      |
|                                                                                     | 14                        | 0.320                  | 0.320                     | 0.250                      | 0.220                      | 0.200                  | 0.200                      |
|                                                                                     | 16                        | 0.320                  | 0.320                     | 0.250                      | 0.220                      | 0.200                  | 0.200                      |
|                                                                                     | 18                        | 0.380                  | 0.380                     | 0.300                      | 0.240                      | 0.240                  | 0.240                      |
|                                                                                     | 20                        | 0.380                  | 0.380                     | 0.300                      | 0.240                      | 0.240                  | 0.240                      |

## 375HGA

|  | Material Group<br>ISO 513 | M1                     | M2                        | M3                        |  |  |  |
|-------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|---------------------------|--|--|--|
|                                                                                     | Hardness/Rm               | <750 N/mm <sup>2</sup> | 550÷850 N/mm <sup>2</sup> | 650÷950 N/mm <sup>2</sup> |  |  |  |
|                                                                                     | Vc (m/min)                | <b>50÷70</b>           | <b>50÷70</b>              | <b>35÷55</b>              |  |  |  |
|                                                                                     | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)            |  |  |  |
|                                                                                     | 3                         | 0.080                  | 0.060                     | 0.060                     |  |  |  |
|                                                                                     | 4                         | 0.100                  | 0.080                     | 0.080                     |  |  |  |
|                                                                                     | 6                         | 0.120                  | 0.080                     | 0.080                     |  |  |  |
|                                                                                     | 8                         | 0.130                  | 0.100                     | 0.100                     |  |  |  |
|                                                                                     | 10                        | 0.150                  | 0.110                     | 0.110                     |  |  |  |
|                                                                                     | 12                        | 0.170                  | 0.130                     | 0.130                     |  |  |  |
|                                                                                     | 14                        | 0.180                  | 0.130                     | 0.130                     |  |  |  |
|                                                                                     | 16                        | 0.200                  | 0.140                     | 0.140                     |  |  |  |
|                                                                                     | 18                        | 0.220                  | 0.140                     | 0.140                     |  |  |  |
|                                                                                     | 20                        | 0.240                  | 0.160                     | 0.160                     |  |  |  |

## CUTTING PARAMETERS

## 375GA

|  | Material Group<br>ISO 513 | <b>K1</b>      | <b>K2</b>      | <b>K3</b>      |  |  |  |
|-----------------------------------------------------------------------------------|---------------------------|----------------|----------------|----------------|--|--|--|
|                                                                                   | Hardness/Rm               | 150÷250 HB     | 150÷350 HB     | 120÷260 HB     |  |  |  |
|                                                                                   | Vc (m/min)                | <b>90÷110</b>  | <b>70÷90</b>   | <b>60÷80</b>   |  |  |  |
|                                                                                   | D<br>(mm)                 | fn<br>(mm/rev) | fn<br>(mm/rev) | fn<br>(mm/rev) |  |  |  |
|                                                                                   | <b>3</b>                  | 0.162          | 0.143          | 0.086          |  |  |  |
|                                                                                   | <b>4</b>                  | 0.190          | 0.162          | 0.095          |  |  |  |
|                                                                                   | <b>6</b>                  | 0.238          | 0.190          | 0.124          |  |  |  |
|                                                                                   | <b>8</b>                  | 0.257          | 0.238          | 0.152          |  |  |  |
|                                                                                   | <b>10</b>                 | 0.285          | 0.266          | 0.190          |  |  |  |
|                                                                                   | <b>12</b>                 | 0.314          | 0.285          | 0.209          |  |  |  |
|                                                                                   | <b>14</b>                 | 0.342          | 0.314          | 0.228          |  |  |  |
|                                                                                   | <b>16</b>                 | 0.380          | 0.333          | 0.247          |  |  |  |
|                                                                                   | <b>18</b>                 | 0.399          | 0.361          | 0.266          |  |  |  |
|                                                                                   | <b>20</b>                 | 0.428          | 0.380          | 0.266          |  |  |  |

## 375HGA

|  | Material Group<br>ISO 513 | <b>K1</b>      | <b>K2</b>      | <b>K3</b>      |  |  |  |
|-------------------------------------------------------------------------------------|---------------------------|----------------|----------------|----------------|--|--|--|
|                                                                                     | Hardness/Rm               | 150÷250 HB     | 150÷350 HB     | 120÷260 HB     |  |  |  |
|                                                                                     | Vc (m/min)                | <b>110÷130</b> | <b>90÷110</b>  | <b>70÷90</b>   |  |  |  |
|                                                                                     | D<br>(mm)                 | fn<br>(mm/rev) | fn<br>(mm/rev) | fn<br>(mm/rev) |  |  |  |
|                                                                                     | <b>3</b>                  | 0.170          | 0.150          | 0.090          |  |  |  |
|                                                                                     | <b>4</b>                  | 0.200          | 0.170          | 0.100          |  |  |  |
|                                                                                     | <b>6</b>                  | 0.250          | 0.200          | 0.130          |  |  |  |
|                                                                                     | <b>8</b>                  | 0.270          | 0.250          | 0.160          |  |  |  |
|                                                                                     | <b>10</b>                 | 0.300          | 0.280          | 0.200          |  |  |  |
|                                                                                     | <b>12</b>                 | 0.330          | 0.300          | 0.220          |  |  |  |
|                                                                                     | <b>14</b>                 | 0.360          | 0.330          | 0.240          |  |  |  |
|                                                                                     | <b>16</b>                 | 0.400          | 0.350          | 0.260          |  |  |  |
|                                                                                     | <b>18</b>                 | 0.420          | 0.380          | 0.280          |  |  |  |
|                                                                                     | <b>20</b>                 | 0.450          | 0.400          | 0.280          |  |  |  |

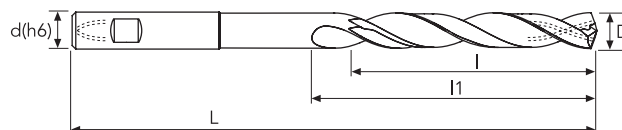
# 358HGA

General application, Weldon shank

**8XD****OSAWA  
NORM****MG  
PV400**

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ★ | ★ |   |   |   |

★ 1st choice ☆ suitable



| D(m7) | D Tol.        | d(h6) | l  | l1 | L   | EDP No.    | Stock |
|-------|---------------|-------|----|----|-----|------------|-------|
| 3.0   | +0.012/+0.002 | 6     | 29 | 34 | 72  | 358HGA0300 | ●     |
| 3.1   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0310 | ●     |
| 3.2   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0320 | ●     |
| 3.3   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0330 | ●     |
| 3.4   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0340 | ●     |
| 3.5   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0350 | ●     |
| 3.6   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0360 | ●     |
| 3.7   | +0.016/+0.004 | 6     | 29 | 34 | 72  | 358HGA0370 | ●     |
| 3.8   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0380 | ●     |
| 3.9   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0390 | ●     |
| 4.0   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0400 | ●     |
| 4.1   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0410 | ●     |
| 4.2   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0420 | ●     |
| 4.3   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0430 | ●     |
| 4.4   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0440 | ○     |
| 4.5   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0450 | ●     |
| 4.6   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0460 | ●     |
| 4.7   | +0.016/+0.004 | 6     | 36 | 43 | 81  | 358HGA0470 | ●     |
| 4.8   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0480 | ●     |
| 4.9   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0490 | ●     |
| 5.0   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0500 | ●     |
| 5.1   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0510 | ●     |
| 5.2   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0520 | ●     |
| 5.3   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0530 | ●     |
| 5.4   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0540 | ○     |
| 5.5   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0550 | ●     |
| 5.6   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0560 | ●     |
| 5.7   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0570 | ●     |
| 5.8   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0580 | ●     |
| 5.9   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0590 | ●     |
| 6.0   | +0.016/+0.004 | 6     | 48 | 57 | 95  | 358HGA0600 | ●     |
| 6.1   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0610 | ●     |
| 6.2   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0620 | ●     |
| 6.3   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0630 | ●     |
| 6.4   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0640 | ●     |
| 6.5   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0650 | ●     |
| 6.6   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0660 | ●     |
| 6.7   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0670 | ●     |
| 6.8   | +0.021/+0.006 | 8     | 64 | 76 | 114 | 358HGA0680 | ●     |

● stock standard ○ non-standard stock

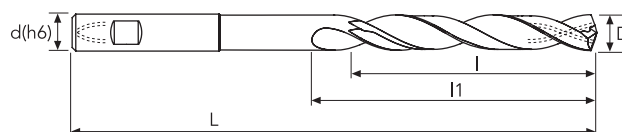
# 358HGA

General application, Weldon shank



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ★ | ★ |   |   |   |

★ 1st choice ☆ suitable



| D(m7) | D Tol.        | d(h6) | l  | l1  | L   | EDP No.    | Stock |
|-------|---------------|-------|----|-----|-----|------------|-------|
| 6.9   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0690 | ●     |
| 7.0   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0700 | ●     |
| 7.1   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0710 | ●     |
| 7.2   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0720 | ●     |
| 7.3   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0730 | ●     |
| 7.4   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0740 | ●     |
| 7.5   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0750 | ●     |
| 7.6   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0760 | ●     |
| 7.7   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0770 | ○     |
| 7.8   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0780 | ●     |
| 7.9   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0790 | ○     |
| 8.0   | +0.021/+0.006 | 8     | 64 | 76  | 114 | 358HGA0800 | ●     |
| 8.1   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0810 | ●     |
| 8.2   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0820 | ●     |
| 8.3   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0830 | ●     |
| 8.4   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0840 | ○     |
| 8.5   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0850 | ●     |
| 8.6   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0860 | ●     |
| 8.7   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0870 | ●     |
| 8.8   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0880 | ●     |
| 8.9   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0890 | ○     |
| 9.0   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0900 | ●     |
| 9.1   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0910 | ●     |
| 9.2   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0920 | ●     |
| 9.3   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0930 | ●     |
| 9.4   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0940 | ○     |
| 9.5   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0950 | ●     |
| 9.6   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0960 | ○     |
| 9.7   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0970 | ○     |
| 9.8   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0980 | ●     |
| 9.9   | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA0990 | ○     |
| 10.0  | +0.021/+0.006 | 10    | 80 | 95  | 142 | 358HGA1000 | ●     |
| 10.1  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1010 | ○     |
| 10.2  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1020 | ●     |
| 10.3  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1030 | ○     |
| 10.4  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1040 | ○     |
| 10.5  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1050 | ●     |
| 10.6  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1060 | ○     |
| 10.7  | +0.025/+0.007 | 12    | 96 | 114 | 162 | 358HGA1070 | ○     |

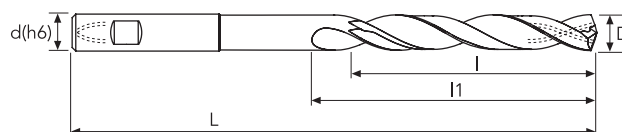
# 358HGA

General application, Weldon shank



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ★ | ★ | ★ |   |   |   |

★ 1st choice ☆ suitable



| D(m7) | D Tol.        | d(h6) | l   | l1  | L   | EDP No.    | Stock |
|-------|---------------|-------|-----|-----|-----|------------|-------|
| 10.8  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1080 | ●     |
| 10.9  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1090 | ○     |
| 11.0  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1100 | ●     |
| 11.1  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1110 | ○     |
| 11.2  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1120 | ●     |
| 11.3  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1130 | ○     |
| 11.4  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1140 | ○     |
| 11.5  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1150 | ●     |
| 11.6  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1160 | ○     |
| 11.7  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1170 | ○     |
| 11.8  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1180 | ●     |
| 11.9  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1190 | ○     |
| 12.0  | +0.025/+0.007 | 12    | 96  | 114 | 162 | 358HGA1200 | ●     |
| 12.2  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1220 | ●     |
| 12.5  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1250 | ●     |
| 12.8  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1280 | ●     |
| 13.0  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1300 | ●     |
| 13.2  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1320 | ●     |
| 13.5  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1350 | ●     |
| 13.8  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1380 | ○     |
| 14.0  | +0.025/+0.007 | 14    | 112 | 133 | 182 | 358HGA1400 | ●     |
| 14.2  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1420 | ●     |
| 14.5  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1450 | ●     |
| 14.8  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1480 | ○     |
| 15.0  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1500 | ●     |
| 15.5  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1550 | ●     |
| 15.8  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1580 | ○     |
| 16.0  | +0.025/+0.007 | 16    | 128 | 152 | 203 | 358HGA1600 | ●     |
| 16.5  | +0.025/+0.007 | 18    | 144 | 171 | 222 | 358HGA1650 | ●     |
| 16.8  | +0.025/+0.007 | 18    | 144 | 171 | 222 | 358HGA1680 | ○     |
| 17.0  | +0.025/+0.007 | 18    | 144 | 171 | 222 | 358HGA1700 | ●     |
| 17.5  | +0.025/+0.007 | 18    | 144 | 171 | 222 | 358HGA1750 | ●     |
| 17.8  | +0.025/+0.007 | 18    | 144 | 171 | 222 | 358HGA1780 | ○     |
| 18.0  | +0.025/+0.007 | 18    | 144 | 171 | 222 | 358HGA1800 | ●     |
| 18.5  | +0.029/+0.008 | 20    | 160 | 190 | 243 | 358HGA1850 | ●     |
| 18.8  | +0.029/+0.008 | 20    | 160 | 190 | 243 | 358HGA1880 | ○     |
| 19.0  | +0.029/+0.008 | 20    | 160 | 190 | 243 | 358HGA1900 | ●     |
| 19.5  | +0.029/+0.008 | 20    | 160 | 190 | 243 | 358HGA1950 | ●     |
| 19.8  | +0.029/+0.008 | 20    | 160 | 190 | 243 | 358HGA1980 | ○     |
| 20.0  | +0.029/+0.008 | 20    | 160 | 190 | 243 | 358HGA2000 | ●     |

● stock standard ○ non-standard stock

## CUTTING PARAMETERS

## 358HGA

| <br>Ø RUN OUT<br><0.02mm | Material Group<br>ISO 513 | P1                     | P2                        | P3 P4                      | P5 P6                      | P7                     | P8                         |
|-----------------------------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|----------------------------|----------------------------|------------------------|----------------------------|
|                                                                                                           | Hardness/Rm               | <500 N/mm <sup>2</sup> | 500÷700 N/mm <sup>2</sup> | 600÷1000 N/mm <sup>2</sup> | 900÷1480 N/mm <sup>2</sup> | <700 N/mm <sup>2</sup> | 850÷1200 N/mm <sup>2</sup> |
|                                                                                                           | Vc (m/min)                | <b>80÷100</b>          | <b>65÷85</b>              | <b>65÷85</b>               | <b>45÷65</b>               | <b>45÷65</b>           | <b>35÷55</b>               |
|                                                                                                           | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)             | fn<br>(mm/rev)             | fn<br>(mm/rev)         | fn<br>(mm/rev)             |
|                                                                                                           | 3                         | 0.150                  | 0.150                     | 0.130                      | 0.105                      | 0.057                  | 0.057                      |
|                                                                                                           | 4                         | 0.150                  | 0.150                     | 0.130                      | 0.105                      | 0.057                  | 0.057                      |
|                                                                                                           | 6                         | 0.190                  | 0.190                     | 0.170                      | 0.133                      | 0.095                  | 0.095                      |
|                                                                                                           | 8                         | 0.220                  | 0.220                     | 0.200                      | 0.152                      | 0.124                  | 0.124                      |
|                                                                                                           | 10                        | 0.220                  | 0.220                     | 0.200                      | 0.152                      | 0.124                  | 0.124                      |
|                                                                                                           | 12                        | 0.280                  | 0.280                     | 0.230                      | 0.181                      | 0.171                  | 0.171                      |
|                                                                                                           | 14                        | 0.320                  | 0.320                     | 0.250                      | 0.209                      | 0.190                  | 0.190                      |
|                                                                                                           | 16                        | 0.320                  | 0.320                     | 0.250                      | 0.209                      | 0.190                  | 0.190                      |
|                                                                                                           | 18                        | 0.380                  | 0.380                     | 0.300                      | 0.228                      | 0.228                  | 0.228                      |
|                                                                                                           | 20                        | 0.380                  | 0.380                     | 0.300                      | 0.228                      | 0.228                  | 0.228                      |

## 358HGA

| <br>Ø RUN OUT<br><0.02mm | Material Group<br>ISO 513 | M1                     | M2                        | M3                        |  |  |  |
|-------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|---------------------------|---------------------------|--|--|--|
|                                                                                                             | Hardness/Rm               | <750 N/mm <sup>2</sup> | 550÷850 N/mm <sup>2</sup> | 650÷950 N/mm <sup>2</sup> |  |  |  |
|                                                                                                             | Vc (m/min)                | <b>40÷60</b>           | <b>40÷60</b>              | <b>30÷50</b>              |  |  |  |
|                                                                                                             | D<br>(mm)                 | fn<br>(mm/rev)         | fn<br>(mm/rev)            | fn<br>(mm/rev)            |  |  |  |
|                                                                                                             | 3                         | 0.800                  | 0.060                     | 0.060                     |  |  |  |
|                                                                                                             | 4                         | 0.800                  | 0.060                     | 0.060                     |  |  |  |
|                                                                                                             | 6                         | 0.100                  | 0.080                     | 0.080                     |  |  |  |
|                                                                                                             | 8                         | 0.100                  | 0.080                     | 0.080                     |  |  |  |
|                                                                                                             | 10                        | 0.120                  | 0.100                     | 0.100                     |  |  |  |
|                                                                                                             | 12                        | 0.120                  | 0.100                     | 0.100                     |  |  |  |
|                                                                                                             | 14                        | 0.140                  | 0.120                     | 0.120                     |  |  |  |
|                                                                                                             | 16                        | 0.140                  | 0.120                     | 0.120                     |  |  |  |
|                                                                                                             | 18                        | 0.160                  | 0.140                     | 0.140                     |  |  |  |
|                                                                                                             | 20                        | 0.160                  | 0.140                     | 0.140                     |  |  |  |

## 358HGA

| <br>Ø RUN OUT<br><0.02mm | Material Group<br>ISO 513 | K1             | K2             | K3             |  |  |  |
|-------------------------------------------------------------------------------------------------------------|---------------------------|----------------|----------------|----------------|--|--|--|
|                                                                                                             | Hardness/Rm               | 150÷250 HB     | 150÷350 HB     | 250÷500 HB     |  |  |  |
|                                                                                                             | Vc (m/min)                | <b>100÷120</b> | <b>80÷100</b>  | <b>65÷85</b>   |  |  |  |
|                                                                                                             | D<br>(mm)                 | fn<br>(mm/rev) | fn<br>(mm/rev) | fn<br>(mm/rev) |  |  |  |
|                                                                                                             | 3                         | 0.162          | 0.143          | 0.086          |  |  |  |
|                                                                                                             | 4                         | 0.190          | 0.162          | 0.095          |  |  |  |
|                                                                                                             | 6                         | 0.238          | 0.190          | 0.124          |  |  |  |
|                                                                                                             | 8                         | 0.257          | 0.238          | 0.152          |  |  |  |
|                                                                                                             | 10                        | 0.285          | 0.266          | 0.190          |  |  |  |
|                                                                                                             | 12                        | 0.314          | 0.285          | 0.209          |  |  |  |
|                                                                                                             | 14                        | 0.342          | 0.314          | 0.228          |  |  |  |
|                                                                                                             | 16                        | 0.380          | 0.333          | 0.247          |  |  |  |
|                                                                                                             | 18                        | 0.399          | 0.361          | 0.266          |  |  |  |
|                                                                                                             | 20                        | 0.428          | 0.380          | 0.266          |  |  |  |

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