

PHANTOM.EU

Votre partenaire officiel

MICHAUD CHAILLY®

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2024



- **FAST MOVERS**
- **L'ESSENTIEL**
- **LOS PRINCIPALES**

www.phantom.eu

■ Bij uitstek geschikt - Très approprié - Muy adecuado - Ideal geeignet - Very adequate
 □ Beperkt geschikt - Approprié - Adecuado - Eingeschränkt geeignet - Adequate

ISO	ISO	NL	FR	ES	DE	EN
P 11 ≤600 N/mm ²	P 11 ≤600 N/mm ²	Ongelegeerd en gelegerd staal ≤600 N/mm² 1.0037 (S137), 1.0038 (S235JR G2), 1.00402 (C22), 1.1178 (C30E)	Aciers non-alliés ou faiblement alliés ≤600 N/mm² 1.0037 (A37), 1.0038 (E 24-2 Ne), 1.00402 (1C20), 1.1178 (1C30)	Acero no aleado ≤600 N/mm² 1.0037 (S235JR), 1.0038 (S235JR G2), 1.0402 (F.112), 1.1178 (C30E)	Unlegierter und legierter Stahl ≤600 N/mm² 1.0037 (St37), 1.0038 (S235JR G2), 1.00402 (C22), 1.1178 (C30E)	Unalloyed and low-alloyed steel ≤600 N/mm² 1.0037 (St37), 1.0038 (S235JR G2), 1.00402 (C22), 1.1178 (C30E)
P 12 ≤850 N/mm ²	P 12 ≤850 N/mm ²	Ongelegeerd en gelegerd staal 600 - 850 N/mm² 1.0050 (S150-2), 1.0070 (S170-2), 1.0301 (C10), 1.0503 (C45), 1.1121 (Ck10), 1.1191 (C45E), 1.0718 (11SMnPb30), 1.0736 (11SMn37)	Aciers non-alliés ou faiblement alliés 600 - 850 N/mm² 1.0050 (A50-2), 1.0070 (A70-2), 1.0301 (1C10), 1.0503 (1C45), 1.1121 (XC10), 1.1191 (2C45), 1.0718 (S250PB), 1.0736 (S300PB)	Acero no aleado 600 - 850 N/mm² 1.0050 (Fe490-2), 1.0070 (Fe690-2), 1.0301 (F.1151), 1.0503 (F.114), 1.1121 (F.1510-C10K), 1.1191 (C45K), 1.0718 (F.2112-11SMnPb28), 1.0736 (F.2113-11SMn37)	Unlegierter und legierter Stahl 600 - 850 N/mm² 1.0050 (St50-2), 1.0070 (St70-2), 1.0301 (C10), 1.0503 (C45), 1.1121 (Ck10), 1.1191 (C45E), 1.0718 (11SMnPb30), 1.0736 (11SMn37)	Unalloyed and low-alloyed steel 600 - 850 N/mm² 1.0050 (St50-2), 1.0070 (St70-2), 1.0301 (C10), 1.0503 (C45), 1.1121 (Ck10), 1.1191 (C45E), 1.0718 (11SMnPb30), 1.0736 (11SMn37)
P 13 ≤1000 N/mm ²	P 13 ≤1000 N/mm ²	Gelegerd staal 850 - 1000 N/mm² 1.0727 (46S20), 1.0728 (60S20), 1.0757 (46SPb20), 1.2080 (X210Cr12), 1.2083 (X42Cr13), 1.2767 (X45NiCrMo4), 1.5131 (50MnSi4), 1.7003 (38Cr2), 1.7030 (28Cr4), 1.7043 (38Cr4)	Aciers alliés 850 - 1000 N/mm² 1.0727 (45MF4), 1.0728 (60S20), 1.0757 (46SPb20), 1.2080 (Z200C12), 1.2083 (Z40C14), 1.2767 (Y35NCD16), 1.5131 (50MnSi4), 1.7003 (38Cr2), 1.7030 (28Cr4), 1.7043 (38Cr4)	Acero aleado 850 - 1000 N/mm² 1.0727 (46S20), 1.0728 (60S20), 1.0757 (46SPb20), 1.2080 (F.5212-X210Cr12), 1.2083 (X42Cr13), 1.2767 (X45NiCrMo4), 1.5131 (50MnSi4), 1.7003 (38Cr2), 1.7030 (28Cr4), 1.7043 (38Cr4)	Legierter Stahl 850 - 1000 N/mm² 1.0727 (46S20), 1.0728 (60S20), 1.0757 (46SPb20), 1.2080 (X210Cr12), 1.2083 (X42Cr13), 1.2767 (X45NiCrMo4), 1.5131 (50MnSi4), 1.7003 (38Cr2), 1.7030 (28Cr4), 1.7043 (38Cr4)	Alloyed steel 850 - 1000 N/mm² 1.0727 (46S20), 1.0728 (60S20), 1.0757 (46SPb20), 1.2080 (X210Cr12), 1.2083 (X42Cr13), 1.2767 (X45NiCrMo4), 1.5131 (50MnSi4), 1.7003 (38Cr2), 1.7030 (28Cr4), 1.7043 (38Cr4)
P 14 ≤1400 N/mm ²	P 14 ≤1400 N/mm ²	Gelegerd staal 1000 - 1400 N/mm² 1.5710 (36NiCr6), 1.7035 (41Cr40), 1.7225 (42CrMo4), 1.8519 (31CrMoV9), 1.8550 (34CrAlNi7), 1.5752 (15NiCr13), 1.7131 (16MnCr5), 1.7264 (20CrMo5)	Aciers alliés 1000 - 1400 N/mm² 1.5710 (36NiCr6), 1.7035 (41Cr40), 1.7225 (42CrMo4), 1.8519 (31CrMoV9), 1.8550 (34CrAlNi7), 1.5752 (15NiCr13), 1.7131 (16MnCr5), 1.7264 (20CrMo5)	Acero aleado 1000 - 1400 N/mm² 1.5710 (36NiCr6), 1.7035 (41Cr40), 1.7225 (42CrMo4), 1.8519 (31CrMoV9), 1.8550 (34CrAlNi7), 1.5752 (15NiCr13), 1.7131 (16MnCr5), 1.7264 (20CrMo5)	Legierter Stahl 1000 - 1400 N/mm² 1.5710 (36NiCr6), 1.7035 (41Cr40), 1.7225 (42CrMo4), 1.8519 (31CrMoV9), 1.8550 (34CrAlNi7), 1.5752 (15NiCr13), 1.7131 (16MnCr5), 1.7264 (20CrMo5)	Alloyed steel 1000 - 1400 N/mm² 1.5710 (36NiCr6), 1.7035 (41Cr40), 1.7225 (42CrMo4), 1.8519 (31CrMoV9), 1.8550 (34CrAlNi7), 1.5752 (15NiCr13), 1.7131 (16MnCr5), 1.7264 (20CrMo5)
H 15 HRC	H 15 HRC	Gehard en inzetgehard staal 50 - 60 HRC 1.2344 (X40CrMoV5), 1.2767 (X45NiCrMo4), 1.2379 (X155CrVMo12-1), 1.2080 (X210Cr12), 1.3343 (S6-5-2)	Aciers trempés et Aciers de cémentation alliés 50 - 60 HRC 1.2344 (Z 40 CDV 5), 1.2767 (X45NiCrMo4), 1.2379 (D2), 1.2080 (Z200C12), 1.3343 (Z85WDCV)	Acero templado 50 - 60 HRC 1.2344 (X40CrMoV5), 1.2767 (X45NiCrMo4), 1.2379 (X155CrVMo12-1), 1.2080 (X210Cr12), 1.3343 (S6-5-2)	Gehärteter und einsetzgehärteter Stahl, 50-60 HRC 1.2344 (X40CrMoV5), 1.2767 (X45NiCrMo4), 1.2379 (X155CrVMo12-1), 1.2080 (X210Cr12), 1.3343 (S6-5-2)	Hardened and case hardening steel 50 - 60 HRC 1.2344 (X40CrMoV5), 1.2767 (X45NiCrMo4), 1.2379 (X155CrVMo12-1), 1.2080 (X210Cr12), 1.3343 (S6-5-2)
M 21 INOX ≤850 N/mm ²	M 21 INOX ≤850 N/mm ²	Roestvaststaal, INOX ≤850 N/mm² 1.4005 (X12CrS13), 1.4104 (X14CrMos17), 1.4105 (X6CrMos17), 1.4301 (XCrNi18-10)(304), 1.4305 (X8CrNiS18-9)(303)	Aciers inoxydables ≤850 N/mm² 1.4005 (Z11CF13), 1.4104 (Z13CF17), 1.4105 (Z8CF17), 1.4301 (XCrNi18-10)(304), 1.4305 (X8CrNiS18-9)(303)	Acero inoxidable ≤850 N/mm² 1.4006 (F.3401-X10Cr13), 1.4104 (F.3117-X10CrS17), 1.4301 (F.3504-X5CrNi18-10)(304), 1.4305 (F.3508-X10CrNiS18-09)(303)	Rostfreier Stahl, INOX ≤850 N/mm² 1.4005 (X12CrS13), 1.4104 (X14CrMos17), 1.4105 (X6CrMos17), 1.4301 (XCrNi18-10)(304), 1.4305 (X8CrNiS18-9)(303)	Stainless steel, INOX ≤850 N/mm² 1.4005 (X12CrS13), 1.4104 (X14CrMos17), 1.4105 (X6CrMos17), 1.4301 (XCrNi18-10)(304), 1.4305 (X8CrNiS18-9)(303)
M 22 INOX >850 N/mm ²	M 22 INOX >850 N/mm ²	Roestvaststaal, INOX >850 N/mm² 1.4438 (X2CrNiMo18-15-4)(317), 1.4404 (X2CrNiMo17-12-2)(316L), 1.4571 (X6CrNiMoTi17-12-2)(316Ti)	Aciers inoxydables >850 N/mm² 1.4438 (X2CrNiMo18-15-4)(317), 1.4404 (X2CrNiMo17-12-2)(316L), 1.4571 (X6CrNiMoTi17-12-2)(316Ti)	Acero inoxidable >850 N/mm² 1.4438 (X2CrNiMo18-15-4)(317), 1.4404 (X2CrNiMo17-12-2)(316L), 1.4571 (F.3535-X6CrNiMoTi17-12-2)(316Ti)	Rostfreier Stahl, INOX >850 N/mm² 1.4438 (X2CrNiMo18-15-4)(317), 1.4404 (X2CrNiMo17-12-2)(316L), 1.4571 (X6CrNiMoTi17-12-2)(316Ti)	Stainless steel, INOX >850 N/mm² 1.4438 (X2CrNiMo18-15-4)(317), 1.4404 (X2CrNiMo17-12-2)(316L), 1.4571 (X6CrNiMoTi17-12-2)(316Ti)
K 31 GG	K 31 GG	Grijs gietijzer GG <260 HB30 0.6015 (GG 15), 0.6025 (GG 25), 0.6040 (GG 40)	Fontes <260 HB30 0.6015 (GG 15), 0.6025 (GG 25), 0.6040 (GG 40)	Fundición gris con grafito laminado GG <260 HB30 0.6015 (FG15), 0.6025 (FG25), 0.6040 (FG40)	Grauguss GG <260 HB30 0.6015 (GG 15), 0.6025 (GG 25), 0.6040 (GG 40)	Grey cast iron GG <260 HB30 0.6015 (GG 15), 0.6025 (GG 25), 0.6040 (GG 40)
K 32 GGG GTS-GTW	K 32 GGG GTS-GTW	Smeedbaar en Nodulair gietijzer <260 HB30 0.8145 (GTS-45), 0.8170 (GTS-70-02), 0.7040 (GGG 40), 0.7070 (GGG 70)	Fontes à graphites et malléables <260 HB30 0.8145 (GTS-45), 0.8170 (GTS-70-02), 0.7040 (GGG 40), 0.7070 (GGG 70)	Fundición gris con grafito esteroidal <260 HB30 0.8145 (GTS-45), 0.8170 (GTS-70-02), 0.7040 (GGG 40), 0.7070 (GGG 70)	Formbar und dehnbares Gusseisen <260 HB30 0.8145 (GTS-45), 0.8170 (GTS-70-02), 0.7040 (GGG 40), 0.7070 (GGG 70)	Nodular and malleable cast iron <260 HB30 0.8145 (GTS-45), 0.8170 (GTS-70-02), 0.7040 (GGG 40), 0.7070 (GGG 70)
N 41 Alu	N 41 Alu	Aluminium en Aluminiumlegeringen 3.0255 (Al99.5), 3.2315 (AlMgSi1), 3.3515 (AlMg1)	Aluminium et Alliages d'Aluminium 3.0255 (A59050C), 3.2315 (AlMgSi1), 3.3515 (AlMg1)	Aluminio y aleaciones de Aluminio 3.0255 (Al99.5), 3.2315 (AlMgSi1), 3.3515 (AlMg1)	Aluminium und Aluminiumlegierungen 3.0255 (Al99.5), 3.2315 (AlMgSi1), 3.3515 (AlMg1)	Aluminium and Aluminium alloys 3.0255 (Al99.5), 3.2315 (AlMgSi1), 3.3515 (AlMg1)
N 42 Alu Si>10%	N 42 Alu Si>10%	Gietaluminium Si 10 - 24% 3.2131 (G-AlSi5Cu1), 3.2153 (G-AlSi7Cu3), (3.2573 G-AlSi9), 3.2581 (G-AlSi12), 3.2583 (G-AlSi12Cu)	Alliages d'Aluminium Si 10 - 24% 3.2131 (G-AlSi5Cu1), 3.2153 (G-AlSi7Cu3), (3.2573 G-AlSi9), 3.2581 (G-AlSi12), 3.2583 (G-AlSi12Cu)	Fundición de Aluminio aleada Si 10 - 24% 3.2131 (G-AlSi5Cu1), 3.2153 (G-AlSi7Cu3), (3.2573 G-AlSi9), 3.2581 (L-2520,21), 3.2583 (L2530)	Druckguss Si 10 - 24% 3.2131 (G-AlSi5Cu1), 3.2153 (G-AlSi7Cu3), (3.2573 G-AlSi9), 3.2581 (G-AlSi12), 3.2583 (G-AlSi12Cu)	Cast Aluminium Si 10 - 24% 3.2131 (G-AlSi5Cu1), 3.2153 (G-AlSi7Cu3), (3.2573 G-AlSi9), 3.2581 (G-AlSi12), 3.2583 (G-AlSi12Cu)
N 43 Mg	N 43 Mg	Magnesiumlegeringen 3.5200 (MgMn2), 3.5812 (G-MgAl8Zn1), 3.5612 (G-MgAl6Zn1)	Alliages de Magnésium 3.5200 (MgMn2), 3.5812 (AZ81hp), 3.5612 (AZ61)	Aleaciones de Magnesio 3.5200 (MgMn2), 3.5812 (AZ81hp), 3.5612 (AZ61)	Magnesiumlegierungen 3.5200 (MgMn2), 3.5812 (G-MgAl8Zn1), 3.5612 (G-MgAl6Zn1)	Magnesium alloys 3.5200 (MgMn2), 3.5812 (G-MgAl8Zn1), 3.5612 (G-MgAl6Zn1)
N 51 Cu	N 51 Cu	Koper en Koperlegeringen 2.0070 (SE-Cu), 2.1020 (CuSn6), 2.1096 (G-CuSn5ZnPB), 2.0380 (CuZn39Pb2), 2.0401 (CuZn39Pb3), 2.0250 (CuZn20), 2.0280 (CuZn33), 2.0332 (CuZn37Pb0.5)	Cuivres et Alliages de cuivres 2.0070 (SE-Cu), 2.1020 (CuSn6), 2.1096 (G-CuSn5ZnPB), 2.0380 (CuZn40), 2.0401 (CuZn39Pb3), 2.0250 (CuZn20), 2.0280 (CuZn33), 2.0332 (CuZn37Pb0.5)	Cobre y aleaciones de cobre 2.0070 (SE-Cu), 2.1020 (CuSn6), 2.1096 (G-CuSn5ZnPB), 2.0380 (CuZn39Pb2), 2.0401 (CuZn39Pb3), 2.0250 (CuZn20), 2.0280 (CuZn33), 2.0332 (CuZn37Pb0.5)	Kupfer und Kupferlegierungen 2.0070 (SE-Cu), 2.1020 (CuSn6), 2.1096 (G-CuSn5ZnPB), 2.0380 (CuZn39Pb2), 2.0401 (CuZn39Pb3), 2.0250 (CuZn20), 2.0280 (CuZn33), 2.0332 (CuZn37Pb0.5)	Copper and copper alloys 2.0070 (SE-Cu), 2.1020 (CuSn6), 2.1096 (G-CuSn5ZnPB), 2.0380 (CuZn39Pb2), 2.0401 (CuZn39Pb3), 2.0250 (CuZn20), 2.0280 (CuZn33), 2.0332 (CuZn37Pb0.5)
N 52 CuAlFe	N 52 CuAlFe	Koper- en Aluminiumlegering 2.0916 (CuAl5), 2.0960 (CuAl9Mn), 2.1050 (CuSn10), 2.0980 (CuAl11Ni), 2.1247 (CuBe2) AMPPO [®] 8, AMPCO [®] 8 15, AMPCO [®] 18	Cuivre et Alliages d'Aluminium 2.0916 (CuAl5), 2.0960 (CuAl9Mn), 2.1050 (CuSn10), 2.0980 (CuAl11Ni), 2.1247 (CuBe2) AMPPO [®] 8, AMPCO [®] 8 15, AMPCO [®] 18	Cobre y aleaciones de Aluminio 2.0916 (CuAl5), 2.0960 (CuAl9Mn), 2.1050 (CuSn10), 2.0980 (CuAl11Ni), 2.1247 (CuBe2) AMPPO [®] 8, AMPCO [®] 8 15, AMPCO [®] 18	Kupfer- und Aluminiumlegierungen 2.0916 (CuAl5), 2.0960 (CuAl9Mn), 2.1050 (CuSn10), 2.0980 (CuAl11Ni), 2.1247 (Cu-Be2) AMPPO [®] 8, AMPCO [®] 8 15, AMPCO [®] 18	Copper and Aluminium alloys 2.0916 (CuAl5), 2.0960 (CuAl9Mn), 2.1050 (CuSn10), 2.0980 (CuAl11Ni), 2.1247 (CuBe2) AMPPO [®] 8, AMPCO [®] 8 15, AMPCO [®] 18
N 61 PVC	N 61 PVC	Duroplastic en Thermoplastic PMMA, PVC, PE, PP, PTFE	Duroplastiques et Thermoplastiques PMMA, PVC, PE, PP, PTFE	Duroplásticos en Termoplásticos PMMA, PVC, PE, PP, PTFE	Duroplaste und Thermoplaste PMMA, PVC, PE, PP, PTFE	Duroplastics en Thermoplastics PMMA, PVC, PE, PP, PTFE
N 62 GFK/CFK	N 62 GFK/CFK	Versterkte kunststoffen GFK, CFK	Plastiques réinforcés GFK, CFK	Plásticos reforzados GFK, CFK	Verstärkte Kunststoffe GFK, CFK	Reinforced plastics GFK, CFK
S 71 NiCo	S 71 NiCo	Nikkel- en Cobaltlegeringen Hastelloy, Inconel, Nimonic, Jetalloy	Alliages de Nickel et de Cobalt Hastelloy, Inconel, Nimonic, Jetalloy	Aleaciones de Níquel y Cobalto Hastelloy, Inconel, Nimonic, Jetalloy	Nickel und Kobaltlegierungen Hastelloy, Inconel, Nimonic, Jetalloy	Nickel and Cobalt alloys Hastelloy, Inconel, Nimonic, Jetalloy
S 72 Ti	S 72 Ti	Titaniumlegeringen 3.7024 (Ti99.5), 3.7114 (TiAl5Sn2.5), 3.7124 (TiCu2), 3.7154 (TiAl6Zr5), 3.7165 (TiAl6V4), 3.7184 (TiAl4Mo4Sn2.5)	Alliages de Titane 3.7024 (T35), 3.7114 (TiAl5Sn2.5), 3.7124 (T-U2), 3.7154 (TiAl6Zr5), 3.7165 (TiAl6V4), 3.7184 (TiAl4Mo4Sn2.5)	Titánio aleado 3.7024 (Ti99.5), 3.7114 (TiAl5Sn2.5), 3.7124 (TiCu2), 3.7154 (TiAl6Zr5), 3.7165 (TiAl6V4), 3.7184 (TiAl4Mo4Sn2.5)	Titanlegierungen 3.7024 (Ti99.5), 3.7114 (TiAl5Sn2.5), 3.7124 (TiCu2), 3.7154 (TiAl6Zr5), 3.7165 (TiAl6V4), 3.7184 (TiAl4Mo4Sn2.5)	Titanium alloys 3.7024 (Ti99.5), 3.7114 (TiAl5Sn2.5), 3.7124 (TiCu2), 3.7154 (TiAl6Zr5), 3.7165 (TiAl6V4), 3.7184 (TiAl4Mo4Sn2.5)

PHANTOM CATALOGUE BECOMES PHANTOM.EU

Welcome to the phantom.eu 2024 catalogue.

In this catalogue, you will find Phantom and International tools articles for drilling, tapping, milling, countersinking, reaming, sawing, turning and clamping. Each of these are reliable tools to help you and your customer not only save costs and work efficiently, but also sustainably and innovatively.

You will also find many links to our knowledge platform phantom.eu. This is because we strongly believe that we can lead you and your customer to the right machining tools and clamping tools even faster on phantom.eu. In doing so, the platform is always up to date in prices, statement stocks and, of course, the latest articles.

Whether you use the category structure, the search field or the selection aid, through each entry it is possible to quickly find the right product using your desired filters. In addition, the unique 'know-how' platform phantom.eu is available 24/7, up-to-date and well-organised, making repeated visits always worthwhile.

In addition to this catalogue, discover now the convenience and all the advantages of phantom.eu for you and your customer.

Welkom in de phantom.eu 2024 catalogus.

In deze catalogus, vindt u Phantom en International tools artikelen op gebied van boren, tappen, frezen, verzinken, ruimen, zagen, draaien en spannen. Stuk voor stuk betrouwbare gereedschappen om u en uw klant niet alleen te helpen kostenbesparend en efficiënt bezig te zijn, maar ook duurzaam en innovatief te ondernemen.

U vindt hier ook vele verwijzingen naar het kennisplatform phantom.eu. We zijn namelijk sterk overtuigd dat we u en uw klant op phantom.eu nog sneller tot de juiste verspanende gereedschappen en spangereedschappen kunnen leiden. Daarbij is het platform altijd actueel in prijzen, opgave voorraden en uiteraard de nieuwste artikelen.

Of u nu gebruik maakt van de categoriestructuur, het zoekveld of de keuzehulp, via iedere ingang is het mogelijk om met gebruikmaking van uw gewenste filters, snel tot het juiste product te komen. Daarbij is het unieke 'knowhow' platform phantom.eu 24/7 beschikbaar, actueel en overzichtelijk, wat maakt dat herhaaldelijke bezoeken altijd de moeite waard zijn.

Ontdek naast deze catalogus nu ook het gemak en alle voordelen van phantom.eu voor u en uw klant.

Bienvenue dans le catalogue phantom.eu

2024. Dans ce catalogue, vous trouverez les articles des outils Phantom et International tools dans les domaines du perçage, du taraudage, du fraisage, du chanfreinage, de l'alésage, du sciage, du tournage et du serrage. Ce sont des outils fiables qui vous aideront, vous et vos clients, à économiser des coûts et à travailler efficacement, mais aussi de manière durable et innovante.

Vous trouverez également de nombreux liens vers la plateforme de connaissances phantom.eu. En effet, nous sommes convaincus que nous pouvons, sur phantom.eu, vous aider, vous et votre client, à trouver encore plus rapidement les bons outils d'usinage et de serrage. La plate-forme est toujours à jour en ce qui concerne les prix, les stocks et contient toutes les informations sur nos nouveaux produits.

Quelque soit la méthode que vous utilisez (par gamme de d'outils, par opération à réaliser ou via le champ de recherche) vous trouverez très rapidement le bon produit grâce aux filtres que vous aurez sélectionnés. D'autre part, la plateforme unique de "savoir-faire" phantom.eu est disponible 24 heures sur 24, 7 jours sur 7, à jour et bien organisée, ce qui rend les visites répétées toujours utiles.

En plus de ce catalogue, découvrez dès maintenant le confort et tous les avantages de phantom.eu pour vous et vos clients.

PHANTOM.EU

**Together, we make a successful future.
Een succesvolle toekomst maken we samen.
Ensemble, nous construisons un avenir prospère.
Juntos, construiremos un futuro de éxito.
Gemeinsam gestalten wir eine erfolgreiche Zukunft.**

Bienvenido al catálogo phantom.eu 2024.

En este catálogo encontrará artículos de Phantom y International Tools para taladrar, roscar, fresar, avellanar, escariar, serrar, torneary sujetar. Todas ellas son herramientas fiables que le ayudarán a usted y a su cliente no sólo a ahorrar costes y trabajar con eficacia, sino también de forma sostenible e innovadora.

También encontrará muchos enlaces a nuestra plataforma phantom.eu. Y es que estamos convencidos de que en phantom.eu podemos guiarle a usted y a su cliente con mayor rapidez hacia las herramientas de mecanizado y de sujeción adecuadas. Para ello, la plataforma está siempre actualizada en cuanto a precios, stock y, por supuesto, los artículos más recientes.

Tanto si utiliza la estructura de categorías, el campo de búsqueda o la ayuda de selección, a través de cada entrada es posible encontrar rápidamente el producto adecuado utilizando los filtros deseados. Además, la exclusiva plataforma "know-how" phantom.eu está disponible 24 horas al día, 7 días a la semana, actualizada y bien organizada, por lo que las visitas repetidas siempre merecen la pena.

Además de este catálogo, descubra ahora la comodidad y todas las ventajas de phantom.eu para usted y su cliente.

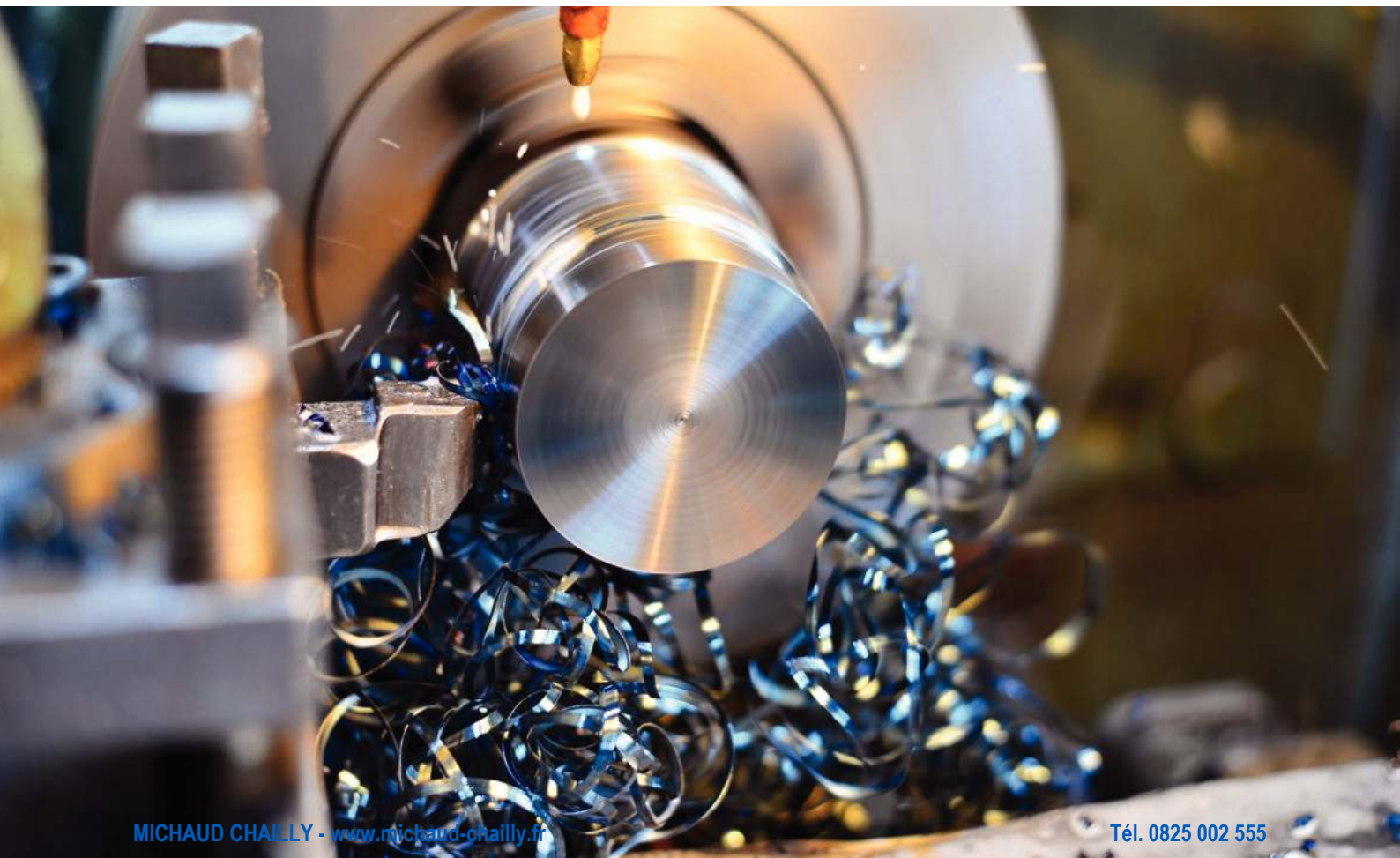
Willkommen im phantom.eu-Katalog 2024.

In diesem Katalog finden Sie Artikel von Phantom und International Tools aus den Bereichen Bohren, Gewinden, Fräsen, Senken, Reiben, Sägen, Drehen und Spannen. Allesamt zuverlässige Werkzeuge, die Ihnen und Ihren Kunden helfen, nicht nur Kosten zu sparen und effizient, sondern auch nachhaltig und innovativ zu arbeiten.

Sie finden auch viele Links zur 'Wissens'plattform phantom.eu. Denn wir sind der festen Überzeugung, dass wir Sie und Ihre Kunden auf phantom.eu noch schneller zu den richtigen Bearbeitungs- und Spannwerkzeugen führen können. Dabei ist die Plattform immer auf dem neuesten Stand, was Preise, Lagerauszüge und natürlich auch die neuesten Artikel angeht.

Ob über die Kategoriestructur, das Suchfeld oder die Auswahlhilfe, über jeden Eintrag ist es möglich, mit den gewünschten Filtern schnell das richtige Produkt zu finden. Darüber hinaus ist die einzigartige Know-how-Plattform phantom.eu rund um die Uhr verfügbar, aktuell und übersichtlich, so dass sich ein wiederholter Besuch immer lohnt.

Entdecken Sie jetzt zusätzlich zu diesem Katalog den Komfort und alle Vorteile von phantom.eu für Sie und Ihre Kunden.





PHANTOM.EU

Knowledge platform made for metalworkers by metalworkers
More than 30,000 machining tools easy to find
Orders placed before 19.00h are shipped the same day

Kennisplatform gemaakt voor metaalbewerkers door metaalbewerkers
Meer dan 30.000 verspanende producten eenvoudig vindbaar
Bestellen voor 19.00 uur is vandaag verstuurd

Plateforme de connaissances conçue pour des spécialistes par des spécialistes
Plus de 30.000 outils coupants faciles à trouver
Les commandes passées avant 19h00 sont expédiées le jour même

Una plataforma de conocimiento hecha por metalúrgicos para metalúrgicos
Más de 30.000 herramientas de mecanizado fáciles de encontrar
Los pedidos realizados antes de las 19.00h se envían hoy mismo

Wissensplattform von Metallarbeitern für Metallarbeiter
Mehr als 30.000 Metallbearbeitungsprodukte leicht auffindbar
Bestellung vor 19.00 Uhr wird noch gleicher Tag verschickt

STEP-POINT DRILLS

- Professional force free drilling by hand
- Ideal force distribution
- Drilling at an angle

- Professioneel licht boren uit de hand
- Ideale krachtverdeling
- Boren onder een hoek

- Perçage facile & rapide
- Répartition idéale des forces
- Perçage angulaire possible

- Taladro, profesional, controlado y fácil
- Distribución de fuerza ideal
- Permite taladrar en ángulo

- Professionelles Lichtbohren aus der Hand
- Ideale Kraftverteilung
- Winkelbohren



Phantom 

Phantom

UNI MACHINE TAPS

**First choice
Assured of approved thread
1 tap for all materials**



**Eerste keus
Verzekerd van goedgekeurd schroefdraad
1 tap voor alle materialen**

**Premier choix
Filetage homologué garanti
1 taraud adapté à toutes les matières**

**Primera opción
Garantía de rosca homologada
1 macho para todos los materiales**

**Erste Wahl
Garantiert bewährte Gewinde
1 Gewindebohrer für alle Materialien**

1 SC



1 HSS-E



2



3 SC



3 HSS-E



4



5



6



7



8



9

ETC.



ICONEN

ICONES

ICONOS

PIKTOGRAMME

ICONS

	NL	FR	ES	DE	EN
HSS	HSS	HSS	HSS	HSS	HSS
HSS-E	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)	HSS-E (5% Cobalto)	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)
HM-TIP	Hardmetaal Tip	Plaquette carbure brasée	Plaquetas de metal duro soldadas	mit HM-Schneiden	Carbide Tipped
TiN	TiN gecoat	Revêtement TiN	Recubrimiento TiN	TiN Beschichtung	TiN coated
TiAIN	TiAIN gecoat	Revêtement TiAIN	Recubrimiento TiAIN	TiAIN Beschichtung	TiN coated
OX.	Stoomontlaten	Vaporisé	Vaporizado	Dampfangelassen	Steam tempered
DIN 338	DIN norm	Norme DIN	Norma DIN	DIN Norm	DIN norm
NORM	Fabriek standaard	Standard usine	Estándar de la fábrica	Werksnorm	Factory standard
NFE 66051-A	NFE norm	Norme NFE	Norma NFE	NFE Norm	NFE norm
N	Type N, standaard spiraaluitvoering	Type N, hélice standard	Tipo N, Versión helicoidal estándar	Type N, standard Spiralwinkel	Type N, standard spiral
>N	Spiraalhoek sterker dan standaard	Hélice plus rapide que standard	Ángulo de hélice más rápido que estándar	Spiralwinkel sterker wie Standard	Helix quicker than standard
TS	Type TS, Tiefloch-spiraal	Type TS, goujure large	Tipo TS, Hélice para perforación profunda	Type TS, Tiefloch Spiral	Type TS, deep hole helix
	Cilindrische schacht	Queue cylindrique	Mango cilíndrico	Zylinderschaft	Straight shank

	NL	FR	ES	DE	EN
	Afgedraaide schacht	Queue réduite	Mango rebajado	Abgedrehtem Zylinderschaft	Reduced shank
	Morse Konus Opname	Cône morse	Mango cónico	Morsekegel	Morse Taper shank
	Standaard boorpunt	Affûtage standard	Afilado normal	Standard Bohrerspitze	Standard drill point
	Kruisaanslijping	Affûtage en croix	Afilado en Cruz	Kreuzanschliff	Splitpoint
	S-aanslijping	Affûtage en S	Afilado en S	S-Anschliff	S point
	Met verdunde punt	Ame amincie	Con alma delgada	Ausgedünnte Spitze	With thinned point
	HM-Snijanten	A plaquettes carbure brasées	Punta Metal Duro	HM-Schneiden	Carbide Tipped
	Tophoek	Angle au sommet	Ángulo de la punta	Spitzenwinkel	Top angle
	Uitvoering centreergat	Angle deamage	Versión ángulo avellanado	Ausführung Zentrierloch	Centre hole
	T.b.v. roestvaststaal	Pour Inox	Para acero inoxidable	Für Rostfreier Stahl	For stainless steel
	ECO PRO, industrie kwaliteit	ECO PRO, qualité industrielle	ECO PRO, calidad de la industria	ECO PRO, Industriequalität	ECO PRO, industry quality
	ECO, basis kwaliteit	ECO, qualité standard	ECO, calidad básica	ECO, grundlegenden Qualität	ECO, basic quality



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ICONOS

PIKTOGRAMME

ICONS

	NL	FR	ES	DE	EN
HSS	HSS	HSS	HSS	HSS	HSS
HSS-E	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)	HSS-E (5% Cobalto)	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)
HSS-E PM	PowderMetal HSS-E (5% Cobalt)	Acier rapide fritté de haute qualité	Acero rápido pulvimetalúrgico	Pulvermetall HSS-E (5% Cobalt)	PowderMetal HSS-E (5% Cobalt)
M	Metrisch	Métrique	Métrica	Metrisch	Metric
MF	Metrisch Fijn	Métrique pas fin	Métrica Fina	Metrisch Fein	Metric Fine
BSP G	British Standard Pipe (Gasdraad)	Filetage BSP(Gaz)	Rosca BSP (Gas)	British Standard Pipe (Gasgewinde)	British Standard Pipe (Gas thread)
EG	EG (Phan-Coil)	EG (Phan-Coil)	EG (Phan-Coil)	EG (Phan-Coil)	EG (Phan-Coil)
Phan-Coil	Schroefdraad-reparatie	Réparation de filetage	Reparar de rosca	Gewindereparatur	Thread repair
	Tophoek schroefdraad	Angle au sommet	Ángulo de punta de la rosca	Flankenwinkel	Point angle
TiN	TiN gecoat	Revêtement TiN	Recubrimiento TiN	TiN Beschichtung	TiN coated
OX.	Stoomontlaten	Vaporisé	Vaporizado	Dampfangelassen	Steam tempered
DIN 371	DIN norm	Norme DIN	Norma DIN	DIN Norm	DIN norm
NFE 66103	NFE norm	Norme NFE	Norma NFE	NFE Norm	NFE norm
ISO 529	ISO norm	Norme ISO	Norma ISO	ISO Norm	ISO norm
NORM	Fabriek standaard	Standard usine	Estándar de la fábrica	Werksnorm	Factory standard

	NL	FR	ES	DE	EN
2,5xD	Max. draadlengte	Profondeur max. de taraudage	Profundidad máx. de roscar	Max. Gewindelänge	Max. thread length
	Set a 3 stuks	Jeu de 3 pièces	Juego de 3 piezas	Satz von 3 Stück	Set of 3
	Voor handgebruik	Pour usage à la main	Para uso manual	für Handgebrauch	For hand use
	Spiraalhoek	Angle d'hélice	Angulo de hélice	Spiralwinkel	Spiral angles
	Met schilaaansnijding	Coupe GUN	Con entrada corregida (GUN)	Schälanschnitt	GUN nosed
	Aantal gangen aansnijding	Nombre de filets	Número de hilos	Anzahl Gangen Anschnitt	Number of lead chamfers
	Draad teruglopend na de 5e gang	Tronqués après le 5ème filet	Roasca rebajada a partir de 5° hilo	Rücklaufend nach dem 5. Gang	Back tapered after the 5th chamfer
	Schilaaansnijding snijplaten	Entrée GUN	Entrada corregida (GUN)	Schälanschnitt Schneideisen	Chamfer form for dies
	Doorlopende gaten	Trou débouchant	Agujero pasante	Durchgangslöcher	Through holes
	Blinde gaten	Trou borgne	Agujero ciego	Sacklöcher	Blind holes
2B	Tolerantie 2B	Tolérance 2B	Tolerancia 2B	Toleranz 2B	Tolerance 2B
	T.b.v. roestvaststaal	Pour Inox	Para acero inoxidable	Für Rostfreier Stahl	For stainless steel
	Universeel	Universel	Universal	Universal High Performance	Universal
	ECO PRO, industrie kwaliteit	ECO PRO, qualité industrielle	ECO PRO, calidad de la industria	ECO PRO, Industriequalität	ECO PRO, industry quality
	ECO, basis kwaliteit	ECO, qualité standard	ECO, calidad básica	ECO, grundlegenden Qualität	ECO, basic quality



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	NL	FR	ES	DE	EN		NL	FR	ES	DE	EN
HSS	HSS	HSS	HSS	HSS	HSS		Variabele tandsteek	A pas variable	Paso variable	Variabler Verzahnung	Variable pitch
HSS-E	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)	HSS-E (5% Cobalto)	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)	90°	Verzinkhoek	Angle de chanfreinage	Ángulo de avellanar	Senkwinkel	Countersinking angle
VHM SC	Volhardmetaal	Carbure monobloc	Metal duro integral	Hartmetall	Solid Carbide		Cilindrische schacht	Queue cylindrique	Mango cilíndrico	Zylinderschaft	Straight shank
OX.	Stoomontlaten	Vaporisé	Vaporizado	Dampfangelassen	Steam tempered	DIN 228-B	Morse Konus Opname	Cône morse	Mango cónico	Morsekegel	Morse Taper shank
NIT.	Genitreerd	Nitruré	Nitrurado	Nitriert	Nitrated		Bitopname (1/4")	Queue hexagonale 1/4" (6,35 mm)	Mango hexagonal 1/4" (6,35 mm)	Bitaufname (1/4")	Hexagonal shank 1/4"
TiAIN	TiAIN gecoat	Revêtement TiAIN	Recubrimiento TiAIN	TiAIN Beschichtung	TiN coated		Voor handgebruik	Pour usage à la main	Para uso manual	für Handgebrauch	For hand use
DIN 335-C	DIN norm	Norme DIN	Norma DIN	DIN Norm	DIN norm		Parabolisch geslepen spaankamer	Goujure droite	Labios rectos	Parabolisch gesliefen Spanraum	Parabolic cut chip chamber
	Verzinkrees met schuin gat	Fraise à chanfreiner à trou	Avellanador con agujero	Kegelsenker mit schräger Bohrung	Countersink with through holes		Recht geslepen spaankamer	Goujure parabolique	Labios parabólicos	Gerade gesliefen Spanraum	Straight chiproom
	Verzinkrees 3 snijkanten, frezende bewerking	Fraise à chanfreiner à 3 dents, pour fraisage	Avellanador con 3 dientes, para fresar	Kegelsenker mit 3 Schneiden, für fräsen	Countersink with single flute	ECO PRO	ECO PRO, industrie kwaliteit	ECO PRO, qualité industrielle	ECO PRO, calidad de la industria	ECO PRO, Industriequalität	ECO PRO, industry quality
	Verzinkrees 3 snijkanten, borende bewerking	Fraise à chanfreiner à 3 dents, pour perçage	Avellanador con 3 dientes, para taladar	Kegelsenker mit 3 Schneiden, für Bohren	Countersink with 3 flutes, for milling applications	ECO	ECO, basis kwaliteit	ECO, qualité standard	ECO, calidad básica	ECO, grundlegenden Qualität	ECO, basic quality



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	NL	FR	ES	DE	EN		NL	FR	ES	DE	EN
HSS	HSS	HSS	HSS	HSS	HSS	DIN 228-B	Morse Konus Opname	Cône morse	Mango cónico	Morsekegel	Morse Taper shank
HSS-E	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)	HSS-E (5% Cobalto)	HSS-E (5% Cobalt)	HSS-E (5% Cobalt)	x0,01	Oplopend met 0,01 mm	Croissant par 0,01 mm	Creciente por 0,01 mm	Ansteigend mit 0,01 mm	Increasing with 0.01 mm
DIN 212-B	DIN norm	Norme DIN	Norma DIN	DIN Norm	DIN norm	H7	Passing	Tolérance	Tolerancia	Passung	Tolerance
h8	Cilindrische schacht h8	Queue cylindrique h8	Mango cilíndrico h8	Zylinderschaft h8	Straight shank h8	±0,003 -0,000 +0,003	Tolerantie diameter	Tolérance diamètre	Tolerancia diámetro	Toleranz Durchmesser	Tolerance diameter

1 SC

1 HSS-E

2

3 SC

3 HSS-E

4

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	NL	FR	ES	DE	EN		NL	FR	ES	DE	EN
HSS	HSS	HSS	HSS	HSS	HSS		Hardhout	Bois dur	Madera dura	Hartholz	Also suitable for hardwood
HSS-E 8%	HSS-E (8% Cobalt)	HSS-E (8% Cobalt)	HSS-E (8% Cobalt)	HSS-E (8% Cobalt)	HSS-E (8% Cobalt)		Hogesnelheid-snedes	Coupe ultra-rapide	Corte rápido	Sehr schneller Schnitt	High-speed cut
HM-TIP	Hardmetaal Tip	Plaquette carbure brasée	Plaquetas de metal duro soldadas	mit HM-Schneiden	Carbide Tipped		Keukenblad	Plan de travail	Encimera	Küchenarbeitsplatten	Kitchen worktop
BiM HSS	HSS Bi-Metaal	Bi-métal HSS	HSS Bimetálica	HSS Bi-Metall	HSS Bi-Metall		Laminaat	Parquet	Laminado	Laminat	Laminate
OX.	Stoomontlaten	Vaporisé	Vaporizado	Dampfangelassen	Steam tempered		Gelamineerde platen	Contreplaqué filmé	Chapa laminada	Beschichtete Platten	Laminated board
NIT.	Genitreerd	Nitruré	Nitrurado	Nitriert	Nitrated		Gelijmd hout	Contreplaqué	Tableros contrachapada	Multiplex / Tischlerplatten	Multiplex / glued wood
TiN	TiN gecoat	Revêtement TiN	Recubrimiento TiN	TiN Beschichtung	TiN coated		Non ferro / aluminium	Non ferreux / aluminium	Metal no férreo / Aluminio	Buntmetall / Aluminium	Non-ferrous metals / Aluminium
INOX	T.b.v. roestvaststaal	Pour Inox	Para acero inoxidable	Für Rostfreier Stahl	For stainless steel		Renovatie / Raamkozijnen	Renovation bâtiment / Châssis fenêtre	Renovación / Marcos	Altbauanierung / Fensterrahmen	Old-building renovation / window frames
UNI	Voor verschillende materiaaldiktes	Pour pouvoir scier différentes épaisseurs de matériau	Para poder serrar material con diferentes espesores	Zur Bearbeitung unterschiedlicher Materialdicken	For multiple material thicknesses		Open profielen	Profil ouvert	Perfil abierto	Offene Profile	Open profile
0,5-25 mm	Materiaaldikte	Épaisseur du matériau	Espesor de material	Materialstärke	Material thickness		Pallets	Palette / Bois de palette	Pallet	Palettenbau	Pallet-construction
BW	Om en om afgeschuinde tand	Denture angulaire moyenne alternée	Forma de diente gruesa alternativa	Gebogene Zahn, jeder zweite abgeschragt	Alternately tapered (BW)		Kunststof	Plastique	Plástico	Kunststoff	Plastics
C	Met voor- en nasnijder	Denture rectifiée et affûtée	Con dientes rectificadas y afiladas	Mit Vor- und Nachschneider	With pre-cutter and post-cutter		Multiplex	Contreplaqué	Madera contrachapada	Sperrholz	Multiplex
Ø19 WELDON	Standaard kernboor opname Weldon 19 mm	Cône fraise à carotter standard, Weldon 19 mm	Sujeción estándar fresa hueca, Weldon 19 mm	Standard Kernbohrer-aufnahme Weldon 19 mm	Standard core drill shank		Versterkt kunststof	Plastique renforce	Plástico fortalece	Faserverstärkte Kunststoffe	Reinforced plastics
Ø19 QUICK	Snelwisselopname Quick 19 mm	Changement rapide d'outil 19 mm	Sujeción de cambio rápido 19 mm	Schnellwechsel Kernbohrer-aufnahme 19 mm	Rota-Quick® shank 19 mm		Sandwich panelen	Contreplaquet	Material tipo Sandwich	Sandwich-Material	Sandwich material
Ø18 FEIN QUICKIN	Fein Quickin kernboor opname 18 mm	Cône fraise à carotter Fein Quickin 18 mm	Sujeción Fein Quickin fresa hueca 18 mm	Fein Quickin Kernbohrer-aufnahme 18 mm	Fein QuickIN shank 18 mm		Dun plaatmateriaal	Matériaux plat fins	Material de chapas fino	Stahbleche	Sheet steel
SOFT	Kokerprofiel dunwandig	Profilés fins	Material de perfiles delgado	Schlauchmaterial dünn	Thin tube profile		Zacht hout / bouw hout	Bois de construction	Madera de construcción	Weich- / Konstruktionsholz	Softwood / construction wood
SOFT	Kokerprofiel dikwandig	Profilés épais	Material de perfiles grande	Schlauchmaterial dick	Thick tube profile		Stalen buizen	Tube en acier	Tubos en acero	Stahlrohre	Steel pipe
Gg	Buis gietijzer	Tube fonte	Tubo fundición	Gussrohre	Cast iron pipe		Rechte snedes	Coupe droite	Corte recto	Gerader Schnitt	Straight cut
SOFT	Gesloten profiel	Profil fermé	Perfil cerrado	Geschlossene Profile	Closed profile		Schone snedes	Coupe sans éclats sur la surface	Corte muy liso	Sehr sauberer Schnitt	Straight cut
SOFT	Contoursnedes	Pour contours	Corte perfiles	Kurvenschnitt	Curve cut						



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	NL	FR	ES	DE	EN		NL	FR	ES	DE	EN	
DIN 225	DIN norm	Norme DIN	Norma DIN	DIN Norm	DIN norm		n6	Tolerantie buitenmaat	Tolérance du diamètre externe	Tolerancia diámetro externo	Toleranz Aussen-durchmesser	Thick tube profile
TYPE A	Standaard uitvoering	Version standard	Versión estándar	Standard Ausführung	Standard version		C T	Druk- en trekcompensatie	Compensation de pression et de traction	Compensación de presión y de tracción	Ausgleich für Druck und Zug	Push and pull compensation
REVERSAL	Klopvaste uitvoering	Tenue aux percussions	Resistente a percusiones	Schlagfester Ausführung	Hammer drilling		AUTO REVERSAL	Omkeerinrichting	Avec dispositif d'inversion	Con dispositivo de inversión	Mit Umkehrvorrichtung	With pendular system
F7	Tolerantie boringdiameter	Tolérance d'alésage	Tolerancia de escariado	Toleranz Borungs-durchmesser	Tolerances							

NL Index
FR Index
ES índice
DE Übersicht
EN Index

P **K** Bij uitstek geschikt
H **N** Très approprié
M **S** Muy adecuado
Ideal geeignet
Very adequate
























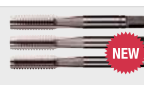







P **K** Beperkt geschikt
H **N** Approprié
M **S** Adecuado
Eingeschränkt geeignet
Adequate

P= pagina
P= page
P= página
P= Seite

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> 11.130	Phantom	HSS	DIN 1897		P	M	K	N			P. 11
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> 11.400	INTERNATIONAL TOOLS	HSS	DIN 338	ECO	P		K				P. 14
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> 11.415	INTERNATIONAL TOOLS	HSS-E	Ø13	ECO PRO	P	M	K	N			P. 15
> 11.416	INTERNATIONAL TOOLS	HSS	DIN 338	ECO	P		K	N			P. 15
> 11.420	INTERNATIONAL TOOLS	HSS	DIN 338	ECO PRO	P		K	N			P. 16
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> 11.430	INTERNATIONAL TOOLS	HSS	DIN 338	ECO PRO	P		K	N			P. 18
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> 11.440	Phantom	HSS			P	M	K	N			P. 19
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> 11.443	Phantom	HSS			P	M	K	N			P. 20
> 11.445	Phantom	HSS-E			P	M	K	N			P. 21
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> 11.447	Phantom	HSS-E			P	M	K	N			P. 22
> 11.450	Phantom	HSS	DIN 338		P	M	K	N			P. 22
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> 11.600	Phantom	HM-TIP	DIN 338		P	M	K	N	S H		P. 27
> 11.760	Phantom	HSS-E	DIN 338	INOX	P	M			S		P. 28
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

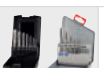





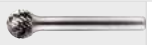

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> 12.900	Phantom	HSS	DIN 1870	DIN 228-B	P	M	K	N		P. 35
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> 15.095	INTERNATIONAL TOOLS	HSS	DIN 333-A		P	K	N		P. 37	
> 15.096	INTERNATIONAL TOOLS	HSS	DIN 333-A		P	K	N		P. 37	
> 15.100	Phantom	HSS	DIN 333-A		P	K	N		P. 37	
> 15.120	Phantom	HSS-E	DIN 333-A		P	M	K	N		P. 38
> 15.124	Phantom	HSS-E	DIN 333-A		P	M	K	N		P. 38
> 15.600	Phantom	HSS-E	ISO 10898		P	M	K	N		P. 39
> 15.604	Phantom	HSS-E	ISO 10898		P	M	K	N		P. 39
> 19.120	INTERNATIONAL TOOLS	HSS	DIN 338	ECO	P	K	N		P. 40	
> 19.124	INTERNATIONAL TOOLS	HSS	DIN 338	ECO PRO	P	K	N		P. 40	
> 19.127	INTERNATIONAL TOOLS	HSS	DIN 338	ECO	P	K	N		P. 40	
> 19.130	INTERNATIONAL TOOLS	HSS	DIN 338	ECO	P	K	N		P. 41	
> 19.134	INTERNATIONAL TOOLS	HSS	DIN 338	ECO PRO	P	K	N		P. 41	
> 19.136	INTERNATIONAL TOOLS	HSS	DIN 338	ECO PRO	P	M	K	N		P. 41
> 19.137	Phantom	HSS			P	M	K	N		P. 42
> 19.138	Phantom	HSS			P	M	K	N		P. 42
> 19.139	Phantom	HSS			P	M	K	N		P. 42

> 19.140	Phantom	HSS-E		P M K N			P. 43
> 19.141	Phantom	HSS-E	 	P M K N			P. 43
> 19.142	Phantom	HSS-E	 	P M K N		 NEW	P. 43
> 19.144	INTERNATIONAL TOOLS	HSS	DIN 338	ECO P K			P. 44
> 19.145	Phantom	HSS	DIN 338	P M K N			P. 44
> 19.146	Phantom	HSS	DIN 338	P M K N			P. 44
> 19.147	Phantom	HSS	DIN 338	 P M K N			P. 45
> 19.149	INTERNATIONAL TOOLS	HSS-E	DIN 338	ECO PRO P M K N			P. 45
> 19.150	Phantom	HSS-E	DIN 338	P M K N			P. 45
> 19.152	Phantom	HSS-E	DIN 338	 P M K N			P. 46
> 19.176	Phantom	HSS-E	DIN 338	INOX P M S			P. 46
> 19.374	Phantom	HM	Z=2				P. 46
> 19.376	Phantom	HM	Z=4				P. 46
> 21.140	INTERNATIONAL TOOLS	M	DIN 352	ECO P M K N			P. 47
> 21.145	Phantom	M	DIN 352	P M K N		 NEW	P. 47
> 21.250	Phantom	MF	DIN 2181	P M K N		 NEW	P. 48
> 21.405	Phantom	BSP G	DIN 5157	P M K N		 NEW	P. 48
> 22.100	INTERNATIONAL TOOLS	M	$\frac{1}{4}$ "	P K N		 NEW	P. 48
> 22.190	INTERNATIONAL TOOLS	M	DIN 352	P K N			P. 49
> 22.191	INTERNATIONAL TOOLS	M	DIN 371	P K N			P. 49
> 22.192	INTERNATIONAL TOOLS	M	DIN 376	P K N			P. 49
> 22.195	INTERNATIONAL TOOLS	M	DIN 371	P K N			P. 50

SC 1
HSS(E) 1
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SC 3
HSS-F 3
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ETC.
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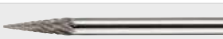




























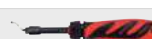







> 22.196	INTERNATIONAL TOOLS	M	DIN 376		P	K	N		P. 50		
> 22.197	INTERNATIONAL TOOLS	M	DIN 371		P	M	K	N		P. 50	
> 22.198	INTERNATIONAL TOOLS	M	DIN 376		P	M	K	N		P. 51	
> 22.200	Phantom	M	DIN 371		P	M	K	N	S		P. 51
> 22.201	Phantom	M	DIN 376		P	M	K	N	S		P. 52
> 22.205	Phantom	M	ISO 529		P	K	N		P. 52		
> 22.350	Phantom	M	NORM		P	M	K	N	S		P. 53
> 22.351	Phantom	M	NORM		P	M	K	N	S		P. 53
> 22.595	INTERNATIONAL TOOLS	M	DIN 371		P	M				P. 53	
> 22.596	INTERNATIONAL TOOLS	M	DIN 376		P	M				P. 54	
> 22.600	Phantom	M	DIN 371		P	M				P. 54	
> 22.601	Phantom	M	DIN 376		P	M				P. 54	
> 23.291	INTERNATIONAL TOOLS	M	DIN 371		P	K	N			P. 55	
> 23.292	INTERNATIONAL TOOLS	M	DIN 376		P	K	N			P. 55	
> 23.295	INTERNATIONAL TOOLS	M	DIN 371		P	K	N			P. 55	
> 23.296	INTERNATIONAL TOOLS	M	DIN 376		P	K	N			P. 56	
> 23.300	Phantom	M	DIN 371		P	M	K	N	S		P. 56
> 23.301	Phantom	M	DIN 376		P	M	K	N	S		P. 56
> 23.450	Phantom	M	DIN 371		P	M			S		P. 57
> 23.451	Phantom	M	DIN 376		P	M			S		P. 57
> 23.615	INTERNATIONAL TOOLS	MF	DIN 374		P	K	N			P. 57	
> 23.620	Phantom	MF	DIN 374		P	M	K	N	S		P. 58
> 23.835	INTERNATIONAL TOOLS	MF	DIN 374		P	K	N			P. 58	
> 23.840	Phantom	MF	DIN 374		P	M	K	N	S		P. 59
> 25.095	INTERNATIONAL TOOLS	BSP G	DIN 5156		P	K	N			P. 59	
> 25.097	Phantom	BSP G	DIN 5156		P	M	K	N	S		P. 60
> 25.100	Phantom	BSP G	DIN 5156		P	K	N			P. 60	
> 27.100	INTERNATIONAL TOOLS	M	DIN EN 22568		P	K	N			P. 60	
> 27.120	Phantom	M	DIN EN 22568		P	M		N		P. 61	
> 27.200	INTERNATIONAL TOOLS	MF	DIN EN 22568		P	K	N			P. 61	
> 27.220	Phantom	MF	DIN EN 22568		P	M		N		P. 62	

> 27.500	INTERNATIONAL TOOLS	BSP G	DIN EN 24231	P K N			P. 62
> 27.520	Phantom	BSP G	DIN EN 24231	P M N			P. 63
> 27.700	INTERNATIONAL TOOLS	M	DIN 382	P K N			P. 63
> 27.750	INTERNATIONAL TOOLS	MF	DIN 382	P K N			P. 63
> 27.900	INTERNATIONAL TOOLS	BSP G	DIN 382	P K N			P. 64
> 28.870	Phantom	M	Phan- Coil				P. 65
> 28.880	Phantom	M	Phan- Coil				P. 65
> 29.100	INTERNATIONAL TOOLS						P. 65
> 29.120	INTERNATIONAL TOOLS						P. 66
> 29.130	INTERNATIONAL TOOLS						P. 66
> 29.180	INTERNATIONAL TOOLS						P. 66
> 29.185	INTERNATIONAL TOOLS						P. 67
> 29.190	INTERNATIONAL TOOLS						P. 67
> 29.195	INTERNATIONAL TOOLS						P. 67
> 29.250	Phantom						P. 68
> 29.260	Phantom						P. 68
> 29.300	INTERNATIONAL TOOLS						P. 69
> 41.410	INTERNATIONAL TOOLS	A	Ø3 Ø6				P. 70
> 41.420	INTERNATIONAL TOOLS	B	Ø3 Ø6				P. 70
> 41.430	INTERNATIONAL TOOLS	C	Ø3 Ø6				P. 70
> 41.440	INTERNATIONAL TOOLS	D	Ø3 Ø6				P. 70
> 41.450	INTERNATIONAL TOOLS	E	Ø3 Ø6				P. 71

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HSS/E 1
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SC 3
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> 41.460	INTERNATIONAL TOOLS	F	Ø3	Ø6		P. 71
> 41.470	INTERNATIONAL TOOLS	G	Ø3	Ø6		P. 71
> 41.480	INTERNATIONAL TOOLS	H	Ø3	Ø6		P. 71
> 41.486	INTERNATIONAL TOOLS	L	Ø3	Ø6		P. 72
> 41.488	INTERNATIONAL TOOLS	M	Ø3	Ø6		P. 72
> 41.510	Phantom	A	Ø6			P. 73
> 41.511	Phantom	A	Ø6	TiAlN		P. 73
> 41.513	Phantom	A	Ø3			P. 73
> 41.518	Phantom	A	Ø8			P. 73
> 41.520	Phantom	B	Ø6			P. 74
> 41.521	Phantom	B	Ø6	TiAlN		P. 74
> 41.523	Phantom	B	Ø3			P. 74
> 41.528	Phantom	B	Ø8			P. 74
> 41.529	Phantom	B	Ø6			P. 74
> 41.530	Phantom	C	Ø6			P. 75
> 41.531	Phantom	C	Ø6	TiAlN		P. 75
> 41.533	Phantom	C	Ø3			P. 75
> 41.538	Phantom	C	Ø8			P. 75
> 41.539	Phantom	C	Ø6			P. 75
> 41.540	Phantom	D	Ø6			P. 76
> 41.543	Phantom	D	Ø3			P. 76
> 41.548	Phantom	D	Ø8			P. 76
> 41.549	Phantom	D	Ø6			P. 76
> 41.550	Phantom	E	Ø6			P. 77
> 41.553	Phantom	E	Ø3			P. 77
> 41.559	Phantom	E	Ø6			P. 77
> 41.560	Phantom	F	Ø6			P. 78
> 41.561	Phantom	F	Ø6	TiAlN		P. 78
> 41.563	Phantom	F	Ø3			P. 78
> 41.568	Phantom	F	Ø8			P. 78
> 41.569	Phantom	F	Ø6			P. 78
> 41.570	Phantom	G	Ø6			P. 79
> 41.573	Phantom	G	Ø3			P. 79
> 41.578	Phantom	G	Ø8			P. 79
> 41.579	Phantom	G	Ø6			P. 79

> 41.580	Phantom	H						P. 80			
> 41.583	Phantom	H						P. 80			
> 41.588	Phantom	H						P. 80			
> 41.620	Phantom	L						P. 81			
> 41.623	Phantom	L						P. 81			
> 41.628	Phantom	L						P. 81			
> 41.629	Phantom	L						P. 81			
> 41.630	Phantom	M						P. 82			
> 41.633	Phantom	M						P. 82			
> 42.500	Phantom	HSS-E		90°	P	K	N		P. 83		
> 42.533	INTERNATIONAL TOOLS	HSS		90°	P	K	N		P. 83		
> 42.535	INTERNATIONAL TOOLS	HSS		90°	P	K	N		P. 83		
> 42.536	INTERNATIONAL TOOLS	HSS		90°	P	M	K	N		P. 84	
> 42.540	Phantom	HSS-E		90°	P	M	K	N		P. 84	
> 42.543	INTERNATIONAL TOOLS	HSS		90°	P	K	N		P. 84		
> 42.553	Phantom	HSS-E		90°	P	M	K	N		P. 85	
> 42.554	Phantom	HSS-E		90°	P	M	K	N	S		P. 85
> 42.556	Phantom	HSS-E		90°	P	M	K	N	S		P. 86
> 44.100	Phantom	HSS			P	M	K	N			P. 86
> 44.102	Phantom	HSS			P	M	K	N			P. 86
> 44.130	Phantom	HSS			P	M	K	N			P. 87
> 44.134	Phantom	HSS			P	M	K	N			P. 87
> 44.200	Phantom	HSS			P			N			P. 88
> 46.100	SHAVIV										P. 89
> 46.120	SHAVIV	B									P. 89
> 46.300	SHAVIV	E									P. 90
> 49.140	INTERNATIONAL TOOLS	VHM SC									P. 91
> 49.150	Phantom	VHM SC									P. 91
> 49.240	INTERNATIONAL TOOLS	HSS		90°	P	K	N				P. 91





> 49.242	INTERNATIONAL TOOLS	HSS		90°	P	K	N			P. 91	
> 49.244	INTERNATIONAL TOOLS	HSS		90°	P	M	K	N		P. 92	
> 49.248	INTERNATIONAL TOOLS	HSS		90°	P	K	N			P. 92	
> 49.254	Phantom	HSS-E		90°	P	M	K	N		P. 92	
> 49.259	Phantom	HSS-E		90°	P	M	K	N		P. 93	
> 49.260	Phantom	HSS-E		90°	P	M	K	N		P. 93	
> 49.262	Phantom	HSS-E		90°	P	M	K	N		P. 93	
> 49.413	Phantom	HSS	NIT.		P	M	K	N		P. 94	
> 49.414	Phantom	HSS	TiAIN		P	M	K	N		P. 94	
> 51.110	Phantom	HSS	DIN 206-B	H7	P	K	N			P. 95	
> 51.320	Phantom	HSS-E	DIN 212-B	H7	P	M	K	N	S		P. 95
> 51.350	Phantom	HSS-E	DIN 212-B	x0,01	P	M	K	N	S		P. 96
> 51.520	Phantom	HSS-E	DIN 208-B	H7	P	M	K	N	S		P. 96
> 61.090	INTERNATIONAL TOOLS	BIM	8% Co		P	M	K	N		NEW P. 98	
> 61.105	Phantom	BIM	8% Co		P	M	K	N		P. 99	
> 61.110	Phantom	BIM	8% Co		P	M	K	N		P. 99	
> 61.135	INTERNATIONAL TOOLS									NEW P. 99	
> 61.137	INTERNATIONAL TOOLS									NEW P. 99	
> 61.140	Phantom									NEW P. 100	
> 61.142	Phantom									NEW P. 100	
> 61.145	INTERNATIONAL TOOLS									NEW P. 100	
> 61.147	INTERNATIONAL TOOLS									NEW P. 100	
> 61.148	INTERNATIONAL TOOLS									NEW P. 100	
> 61.150	Phantom									P. 101	
> 61.170	Phantom									NEW P. 101	
> 61.180	Phantom									NEW P. 101	
> 61.630	Phantom	HM-TIP		0,5-5 mm	P	M	K	N		P. 102	
> 61.670	Phantom	HM-TIP		0,5-12 mm	P	M	K	N		P. 102	
> 61.680	Phantom	HM-TIP		0,5-12 mm	P	M	K	N		P. 103	

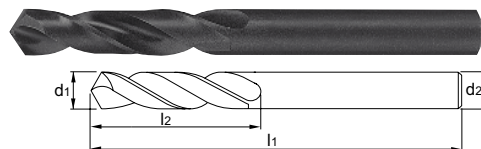
> 62.100	Phantom	HSS-EX 0,5-30 mm		P K N			P. 103
> 62.122	Phantom	HSS-EX 0,5-30 mm	NIT.	P M K N			P. 104
> 62.150	Phantom	HSS-EX 0,5-55 mm		P K N			P. 105
> 62.162	Phantom	HSS-EX 0,5-55 mm	NIT.	P M K N			P. 105
> 62.180	Phantom	HSS-EX 0,5-110 mm		P K N			P. 106
> 62.200	Phantom	HM-TIP 0,5-40 mm		P M K N	H		P. 107
> 62.250	Phantom	HSS-EX 0,5-40 mm	Ø18 FEIN QUICKIN	P M K N			P. 108
> 62.300	Phantom						P. 109
> 62.350	Phantom						P. 110
> 63.210	Phantom	HSS +GF+	BW	P M K N			P. 111
> 63.400	Phantom	HSS	OX. C+BW	P K N			P. 111
> 63.401	Phantom	HSS	TIN C+BW	P K N			P. 112
> 63.420	Phantom	HSS-E	OX. C+BW	P M K N			P. 112
> 63.424	Phantom	HSS-E	TiAIN C+BW	P M K N			P. 113
> 64.150	Phantom	HSS-Co 300mm 12"				Phantom HSS-Co 64.150.2400 300 x 13 x 0,65/24 24	P. 113
> 64.460	Phantom	HSS 300mm 12"					P. 113
> 64.500	Phantom						P. 114
> 64.600	Phantom						P. 116
> 66.450	Phantom	BIM 8% Co	VARI λ α0°	P M K N S			P. 118
> 66.460	Phantom	BIM 8% Co	VARI λ α10°	P M K N			P. 118
> 66.580	Phantom	BIM 10% Co	VARI λ α15°	P M S			P. 119
> 66.700	Phantom	BIM 8% Co	VARI λ α5°	P M K N S			P. 119
> 69.090	INTERNATIONAL TOOLS	BIM 8% Co		P M K N			P. 120
> 69.111	Phantom	BIM 8% Co		P M K N			P. 120
> 69.114	Phantom	BIM 8% Co		P M K N			P. 121
> 69.210	Phantom	HSS-EX 0,5-30 mm		P K N			P. 121
> 81.180	Phantom						P. 122
> 81.181	Phantom						P. 122
> 81.200	Phantom	TYPE A					P. 122
> 81.700	INTERNATIONAL TOOLS	(AUTO) REVERSAL	C T				P. 123
> 81.710	INTERNATIONAL TOOLS						P. 123
> 81.900							P. 123
> 81.905							P. 124



> 81.910						P. 124
> 81.930						P. 124
> 84.100	INTERNATIONAL TOOLS	DIN 2185				P. 125
> 84.110	INTERNATIONAL TOOLS	DIN 2187				P. 125
> 84.170	INTERNATIONAL TOOLS	DIN 238				P. 125
> 84.872	Phantom	DIN 172-A	n6	F7		P. 126
> 84.873	Phantom	DIN 172-A	n6	F7		P. 126
> 84.874	Phantom	DIN 172-A	n6	F7		P. 126
> 84.879	Phantom	DIN 179-A	n6	F7		P. 127
> 84.880	Phantom	DIN 179-A	n6	F7		P. 127
> 84.881	Phantom	DIN 179-A	n6	F7		P. 127
> 88.152	INTERNATIONAL TOOLS					P. 128
> 88.440	TORAX					P. 128
> 88.900	TORAX					P. 129
> 88.910	TORAX					P. 129
> 88.928	TORAX					P. 130
> 90.105	Phantom	UNI				NEW P. 131
> 90.110	Phantom	UNI				P. 131
> 90.130	Phantom	INOX				P. 131
> 90.140	Phantom	UNI				P. 131
> 90.145	Phantom	UNI				P. 132
> 90.150	Phantom	INOX				P. 132
> 90.170	Phantom	UNI				P. 132
> 90.180	Phantom	UNI				P. 132
> 90.210	Phantom	UNI				P. 133

> 11.110 INTERNATIONAL TOOLS

NL ECO HSS Spiraalboor
FR Foret HSS ECO
ES Broca HSS ECO
DE ECO HSS Spiralbohrer
EN ECO HSS Twist drill



HSS DIN 1897 N ECO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	45-50 G	25-40 D	22-28 D

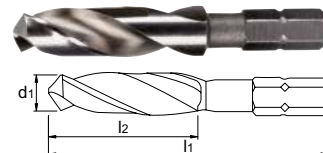
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11.110.0150	1.5	1.5	32	9	0,58
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11.110.0250	2.5	2.5	43	14	0,54
11.110.0300	3	3	46	16	0,92
11.110.0320	3.2	3.2	49	18	1,10
11.110.0330	3.3	3.3	49	18	1,10
11.110.0350	3.5	3.5	52	20	1,10
11.110.0400	4	4	55	22	1,14
11.110.0410	4.1	4.1	55	22	1,34
11.110.0420	4.2	4.2	55	22	1,34

Ref.	d1	d2	l1	l2	€
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11.110.0490	4.9	4.9	62	26	1,39
11.110.0500	5	5	62	26	1,39
11.110.0510	5.1	5.1	62	26	1,70
11.110.0520	5.2	5.2	62	26	1,70
11.110.0550	5.5	5.5	66	28	1,70
11.110.0580	5.8	5.8	66	28	1,95
11.110.0600	6	6	66	28	2,07
11.110.0650	6.5	6.5	70	31	2,20
11.110.0700	7	7	74	34	2,64
11.110.0750	7.5	7.5	74	34	3,10

Ref.	d1	d2	l1	l2	€
11.110.0800	8	8	79	37	3,53
11.110.0850	8.5	8.5	79	37	3,91
11.110.0900	9	9	84	40	4,72
11.110.0950	9.5	9.5	84	40	4,93
11.110.1000	10	10	89	43	5,61
11.110.1050	10.5	10.5	89	43	6,38
11.110.1100	11	11	95	47	7,30
11.110.1150	11.5	11.5	95	47	7,67
11.110.1200	12	12	102	51	8,52
11.110.1250	12.5	12.5	102	51	9,20
11.110.1300	13	13	102	51	9,62

> 11.120 INTERNATIONAL TOOLS

NL ECO HSS Spiraalboor met 1/4" (6,35 mm)-zeskant bitopname
FR Foret HSS ECO avec queue hexagonale 1/4" (6,35 mm)
ES Broca HSS ECO con sujeción 1/4" (6,35 mm) bit
DE ECO HSS Spiralbohrer mit 1/4" (6,35 mm) Hexa-Bitafnahme
EN ECO HSS Twist drill with hexagonal shank 1/4" (6,35 mm)



NIEUW / NOUVEAU / NUEVO / NEU

HSS N ECO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	15-20 E	25-30 E	45-50 E	35-40 G	25-40 D	22-28 D

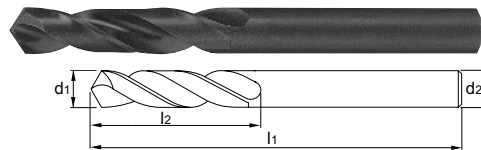
Ref.	d1	l1	l2	€
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11.120.0250	2.5	36	14	4,11
11.120.0300	3	38	16	4,11
11.120.0330	3.3	40	18	4,11
11.120.0350	3.5	40	18	4,11
11.120.0400	4	44	20	4,24
11.120.0420	4.2	45	20	4,24

Ref.	d1	l1	l2	€
11.120.0450	4.5	46	24	4,33
11.120.0500	5	50	26	4,33
11.120.0550	5.5	50	26	4,33
11.120.0600	6	50	26	4,33
11.120.0650	6.5	50	30	4,33
11.120.0680	6.8	50	30	4,33
11.120.0700	7	50	30	4,33

Ref.	d1	l1	l2	€
11.120.0750	7.5	51	32	4,33
11.120.0800	8	51	32	4,86
11.120.0850	8.5	53	33	4,86
11.120.0900	9	53	33	4,95
11.120.0950	9.5	54	38	4,95
11.120.1000	10	54	38	4,95
11.120.1020	10.2	54	38	4,95

> 11.130 Phantom

NL HSS Spiraalboor
FR Foret HSS
ES Broca HSS
DE HSS Spiralbohrer
EN HSS Twist drill



HSS OX. DIN 1897 N ECO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	45-50 G	25-40 D	22-28 D

Ref.	d1	d2	l1	l2	€
11.130.0100	1	1	26	6	2,15
11.130.0110	1.1	1.1	28	7	2,52
11.130.0120	1.2	1.2	30	8	2,52
11.130.0130	1.3	1.3	30	8	2,52
11.130.0140	1.4	1.4	32	9	2,52
11.130.0150	1.5	1.5	32	9	2,19
11.130.0160	1.6	1.6	34	10	2,52
11.130.0170	1.7	1.7	34	10	2,52
11.130.0180	1.8	1.8	36	11	2,52
11.130.0190	1.9	1.9	36	11	2,52
11.130.0200	2	2	38	12	1,89

Ref.	d1	d2	l1	l2	€
11.130.0210	2.1	2.1	38	12	1,63
11.130.0220	2.2	2.2	40	13	1,56
11.130.0230	2.3	2.3	40	13	1,56
11.130.0240	2.4	2.4	43	14	1,56
11.130.0250	2.5	2.5	43	14	1,42
11.130.0260	2.6	2.6	43	14	1,76
11.130.0270	2.7	2.7	46	16	1,76
11.130.0280	2.8	2.8	46	16	1,76
11.130.0290	2.9	2.9	46	16	1,76
11.130.0300	3	3	46	16	1,77
11.130.0310	3.1	3.1	49	18	1,77

Ref.	d1	d2	l1	l2	€
11.130.0320	3.2	3.2	49	18	1,77
11.130.0330	3.3	3.3	49	18	1,89
11.130.0340	3.4	3.4	52	20	1,89
11.130.0350	3.5	3.5	52	20	1,89
11.130.0360	3.6	3.6	52	20	1,89
11.130.0370	3.7	3.7	52	20	1,89
11.130.0380	3.8	3.8	55	22	2,18
11.130.0390	3.9	3.9	55	22	2,18
11.130.0400	4	4	55	22	2,18
11.130.0410	4.1	4.1	55	22	2,34
11.130.0420	4.2	4.2	55	22	2,34

> 11.130 Phantom



Ref.	d1	d2	l1	l2	€
11.130.0430	4.3	4.3	58	24	2,44
11.130.0440	4.4	4.4	58	24	2,44
11.130.0450	4.5	4.5	58	24	2,56
11.130.0460	4.6	4.6	58	24	2,59
11.130.0470	4.7	4.7	58	24	2,59
11.130.0480	4.8	4.8	62	26	2,59
11.130.0490	4.9	4.9	62	26	2,59
11.130.0500	5	5	62	26	2,59
11.130.0510	5.1	5.1	62	26	2,59
11.130.0520	5.2	5.2	62	26	2,59
11.130.0530	5.3	5.3	62	26	2,95
11.130.0540	5.4	5.4	66	28	2,95
11.130.0550	5.5	5.5	66	28	2,95
11.130.0560	5.6	5.6	66	28	2,95
11.130.0570	5.7	5.7	66	28	2,95
11.130.0580	5.8	5.8	66	28	2,95
11.130.0590	5.9	5.9	66	28	2,95
11.130.0600	6	6	66	28	3,37
11.130.0610	6.1	6.1	70	31	3,37

Ref.	d1	d2	l1	l2	€
11.130.0620	6.2	6.2	70	31	3,37
11.130.0630	6.3	6.3	70	31	3,43
11.130.0640	6.4	6.4	70	31	3,43
11.130.0650	6.5	6.5	70	31	3,57
11.130.0660	6.6	6.6	70	31	3,57
11.130.0670	6.7	6.7	70	31	3,64
11.130.0680	6.8	6.8	74	34	3,90
11.130.0690	6.9	6.9	74	34	3,90
11.130.0700	7	7	74	34	4,02
11.130.0750	7.5	7.5	74	34	5,16
11.130.0780	7.8	7.8	79	37	5,39
11.130.0800	8	8	79	37	5,61
11.130.0850	8.5	8.5	79	37	6,48
11.130.0880	8.8	8.8	84	40	6,59
11.130.0900	9	9	84	40	6,48
11.130.0950	9.5	9.5	84	40	7,26
11.130.0980	9.8	9.8	89	43	7,67
11.130.1000	10	10	89	43	8,09
11.130.1050	10.5	10.5	89	43	10,59

Ref.	d1	d2	l1	l2	€
11.130.1100	11	11	95	47	11,36
11.130.1150	11.5	11.5	95	47	14,20
11.130.1200	12	12	102	51	17,07
11.130.1250	12.5	12.5	102	51	18,28
11.130.1300	13	13	102	51	19,76
11.130.1350	13.5	13.5	107	54	21,87
11.130.1400	14	14	107	54	23,39
11.130.1450	14.5	14.5	111	56	25,50
11.130.1500	15	15	111	56	27,35
11.130.1550	15.5	15.5	115	58	30,35
11.130.1600	16	16	115	58	30,95
11.130.1650	16.5	16.5	119	60	34,10
11.130.1700	17	17	119	60	36,05
11.130.1750	17.5	17.5	123	62	40,45
11.130.1800	18	18	123	62	41,65
11.130.1850	18.5	18.5	127	64	46,15
11.130.1900	19	19	127	64	47,35
11.130.1950	19.5	19.5	131	66	50,15
11.130.2000	20	20	131	66	55,80

> 11.145 Phantom

NL HSS Spiraalboor dubbelzijdig
FR Foret HSS double-pointe
ES Broca HSS de doble punta
DE HSS Spiralbohrer Doppelseitig
EN HSS Twist drill double ended

HSS NORM N  

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	45-50 G	25-40 D	22-28 D



Ref.	d1	d2	l1	l2	€
11.145.0200	2	2	38	7.5	3,06
11.145.0210	2.1	2.1	38	7.5	3,82
11.145.0250	2.5	2.5	43	9.5	2,47
11.145.0300	3	3	46	10.6	2,42
11.145.0320	3.2	3.2	49	11.2	2,44
11.145.0330	3.3	3.3	49	11.2	2,44

Ref.	d1	d2	l1	l2	€
11.145.0350	3.5	3.5	52	12.5	2,50
11.145.0400	4	4	55	14	2,65
11.145.0410	4.1	4.1	55	14	2,73
11.145.0420	4.2	4.2	55	14	2,73
11.145.0450	4.5	4.5	58	15.5	3,13
11.145.0480	4.8	4.8	62	17	5,19

Ref.	d1	d2	l1	l2	€
11.145.0490	4.9	4.9	62	16	3,52
11.145.0500	5	5	62	17	3,39
11.145.0510	5.1	5.1	62	17	4,09
11.145.0520	5.2	5.2	62	17	4,19
11.145.0550	5.5	5.5	66	19	4,27
11.145.0600	6	6	66	19	4,57

> 11.150 INTERNATIONAL TOOLS

NL ECO PRO HSS-E Spiraalboor
FR Foret HSS-E ECO PRO
ES Broca HSS-E ECO PRO
DE ECO PRO HSS-E Spiralbohrer
EN ECO PRO HSS-E Twist drill

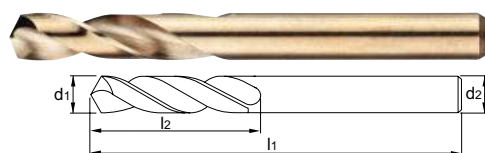
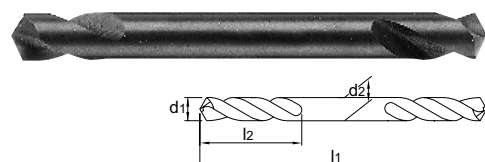
HSS-E DIN 1897 N   **ECO PRO**

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	d1	d2	l1	l2	€
11.150.0100	1	1	26	6	1,77
11.150.0150	1.5	1.5	32	9	1,77
11.150.0200	2	2	38	12	1,58
11.150.0220	2.2	2.2	40	13	1,28
11.150.0250	2.5	2.5	43	14	1,28
11.150.0300	3	3	46	16	1,40
11.150.0310	3.1	3.1	49	18	1,45
11.150.0320	3.2	3.2	49	18	1,45
11.150.0330	3.3	3.3	49	18	1,58
11.150.0340	3.4	3.4	52	20	1,58
11.150.0350	3.5	3.5	52	20	1,58
11.150.0370	3.7	3.7	52	20	1,66
11.150.0380	3.8	3.8	55	22	1,76

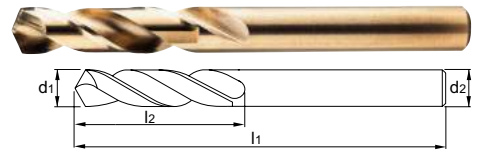
Ref.	d1	d2	l1	l2	€
11.150.0400	4	4	55	22	1,76
11.150.0410	4.1	4.1	55	22	1,90
11.150.0420	4.2	4.2	55	22	1,90
11.150.0450	4.5	4.5	58	24	2,15
11.150.0470	4.7	4.7	58	24	2,44
11.150.0480	4.8	4.8	62	26	2,44
11.150.0490	4.9	4.9	62	26	2,44
11.150.0500	5	5	62	26	2,44
11.150.0520	5.2	5.2	62	26	2,69
11.150.0550	5.5	5.5	66	28	2,69
11.150.0600	6	6	66	28	2,95
11.150.0650	6.5	6.5	70	31	3,40
11.150.0680	6.8	6.8	74	34	3,94

Ref.	d1	d2	l1	l2	€
11.150.0700	7	7	74	34	3,94
11.150.0750	7.5	7.5	74	34	4,89
11.150.0800	8	8	79	37	5,56
11.150.0850	8.5	8.5	79	37	6,33
11.150.0900	9	9	84	40	7,06
11.150.0950	9.5	9.5	84	40	7,40
11.150.1000	10	10	89	43	8,03
11.150.1050	10.5	10.5	89	43	9,91
11.150.1100	11	11	95	47	11,55
11.150.1150	11.5	11.5	95	47	12,43
11.150.1200	12	12	102	51	15,65
11.150.1250	12.5	12.5	102	51	16,35
11.150.1300	13	13	102	51	17,70



> 11.160 Phantom

NL HSS-E Spiraalboor
FR Foret HSS-E
ES Broca HSS-E
DE HSS-E Spiralbohrer
EN HSS-E Twist drill



HSS-E **DIN 1897** N

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

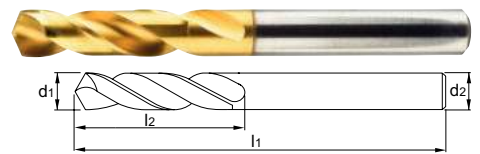
Ref.	d1	d2	l1	l2	€
11.160.0100	1	1	26	6	2,77
11.160.0120	1.2	1.2	30	8	2,82
11.160.0150	1.5	1.5	32	9	2,82
11.160.0160	1.6	1.6	34	10	2,82
11.160.0200	2	2	38	12	2,38
11.160.0210	2.1	2.1	38	12	2,06
11.160.0220	2.2	2.2	40	13	2,02
11.160.0230	2.3	2.3	40	13	2,12
11.160.0240	2.4	2.4	43	14	2,12
11.160.0250	2.5	2.5	43	14	1,88
11.160.0260	2.6	2.6	43	14	2,27
11.160.0270	2.7	2.7	46	16	2,27
11.160.0280	2.8	2.8	46	16	2,27
11.160.0290	2.9	2.9	46	16	2,27
11.160.0300	3	3	46	16	2,27
11.160.0310	3.1	3.1	49	18	2,29
11.160.0320	3.2	3.2	49	18	2,29
11.160.0330	3.3	3.3	49	18	2,45
11.160.0340	3.4	3.4	52	20	2,45
11.160.0350	3.5	3.5	52	20	2,48
11.160.0360	3.6	3.6	52	20	2,48
11.160.0370	3.7	3.7	52	20	2,48

Ref.	d1	d2	l1	l2	€
11.160.0380	3.8	3.8	55	22	2,75
11.160.0390	3.9	3.9	55	22	2,75
11.160.0400	4	4	55	22	2,75
11.160.0410	4.1	4.1	55	22	2,98
11.160.0420	4.2	4.2	55	22	2,94
11.160.0430	4.3	4.3	58	24	3,13
11.160.0440	4.4	4.4	58	24	3,13
11.160.0450	4.5	4.5	58	24	3,13
11.160.0460	4.6	4.6	58	24	3,50
11.160.0470	4.7	4.7	58	24	3,50
11.160.0480	4.8	4.8	62	26	3,50
11.160.0490	4.9	4.9	62	26	3,50
11.160.0500	5	5	62	26	3,50
11.160.0510	5.1	5.1	62	26	3,50
11.160.0520	5.2	5.2	62	26	3,50
11.160.0530	5.3	5.3	62	26	3,87
11.160.0540	5.4	5.4	66	28	3,87
11.160.0550	5.5	5.5	66	28	4,00
11.160.0560	5.6	5.6	66	28	4,04
11.160.0570	5.7	5.7	66	28	4,04
11.160.0580	5.8	5.8	66	28	4,06
11.160.0590	5.9	5.9	66	28	4,04

Ref.	d1	d2	l1	l2	€
11.160.0600	6	6	66	28	4,18
11.160.0610	6.1	6.1	70	31	4,53
11.160.0620	6.2	6.2	70	31	4,67
11.160.0640	6.4	6.4	70	31	4,72
11.160.0650	6.5	6.5	70	31	4,66
11.160.0670	6.7	6.7	70	31	4,88
11.160.0680	6.8	6.8	74	34	5,22
11.160.0700	7	7	74	34	5,35
11.160.0750	7.5	7.5	74	34	6,82
11.160.0800	8	8	79	37	7,34
11.160.0850	8.5	8.5	79	37	8,39
11.160.0900	9	9	84	40	9,31
11.160.0950	9.5	9.5	84	40	9,97
11.160.1000	10	10	89	43	10,73
11.160.1020	10.2	10.2	89	43	11,92
11.160.1050	10.5	10.5	89	43	14,17
11.160.1100	11	11	95	47	15,82
11.160.1150	11.5	11.5	95	47	18,58
11.160.1200	12	12	102	51	21,64
11.160.1250	12.5	12.5	102	51	23,00
11.160.1300	13	13	102	51	23,68

> 11.161 Phantom

NL HSS-E Spiraalboor TiN
FR Foret HSS-E TiN
ES Broca HSS-E TiN
DE HSS-E Spiralbohrer TiN
EN HSS-E Twist drill TiN



HSS-E **TiN** **DIN 1897** N

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
32-40 E	35-40 E	25-32 E	12-20 D	15-20 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

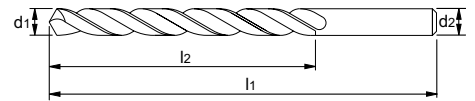
Ref.	d1	d2	l1	l2	€
11.161.0100	1	1	26	6	5,57
11.161.0110	1.1	1.1	28	7	5,65
11.161.0120	1.2	1.2	30	8	5,65
11.161.0130	1.3	1.3	30	8	5,65
11.161.0140	1.4	1.4	32	9	5,65
11.161.0150	1.5	1.5	32	9	5,65
11.161.0160	1.6	1.6	34	10	5,65
11.161.0170	1.7	1.7	34	10	5,65
11.161.0180	1.8	1.8	36	11	5,65
11.161.0190	1.9	1.9	36	11	5,65
11.161.0200	2	2	38	12	5,22
11.161.0210	2.1	2.1	38	12	5,22
11.161.0220	2.2	2.2	40	13	5,22
11.161.0230	2.3	2.3	40	13	5,22
11.161.0240	2.4	2.4	43	14	5,22
11.161.0250	2.5	2.5	43	14	4,89
11.161.0260	2.6	2.6	43	14	5,49
11.161.0270	2.7	2.7	46	16	5,49
11.161.0280	2.8	2.8	46	16	5,49
11.161.0290	2.9	2.9	46	16	5,49
11.161.0300	3	3	46	16	5,49
11.161.0310	3.1	3.1	49	18	5,86

Ref.	d1	d2	l1	l2	€
11.161.0320	3.2	3.2	49	18	5,86
11.161.0330	3.3	3.3	49	18	5,86
11.161.0340	3.4	3.4	52	20	5,86
11.161.0350	3.5	3.5	52	20	5,86
11.161.0360	3.6	3.6	52	20	5,86
11.161.0370	3.7	3.7	52	20	5,86
11.161.0380	3.8	3.8	55	22	6,52
11.161.0390	3.9	3.9	55	22	6,52
11.161.0400	4	4	55	22	6,52
11.161.0410	4.1	4.1	55	22	7,04
11.161.0420	4.2	4.2	55	22	6,78
11.161.0430	4.3	4.3	58	24	7,04
11.161.0440	4.4	4.4	58	24	7,04
11.161.0450	4.5	4.5	58	24	7,04
11.161.0460	4.6	4.6	58	24	7,55
11.161.0470	4.7	4.7	58	24	7,55
11.161.0480	4.8	4.8	62	26	7,55
11.161.0490	4.9	4.9	62	26	7,55
11.161.0500	5	5	62	26	7,29
11.161.0510	5.1	5.1	62	26	7,55
11.161.0520	5.2	5.2	62	26	7,55
11.161.0530	5.3	5.3	62	26	8,54

Ref.	d1	d2	l1	l2	€
11.161.0550	5.5	5.5	66	28	8,28
11.161.0570	5.7	5.7	66	28	8,78
11.161.0580	5.8	5.8	66	28	8,78
11.161.0600	6	6	66	28	8,78
11.161.0620	6.2	6.2	70	31	9,28
11.161.0650	6.5	6.5	70	31	9,42
11.161.0680	6.8	6.8	74	34	10,03
11.161.0700	7	7	74	34	11,30
11.161.0750	7.5	7.5	74	34	12,55
11.161.0800	8	8	79	37	14,07
11.161.0850	8.5	8.5	79	37	16,56
11.161.0900	9	9	84	40	18,33
11.161.0950	9.5	9.5	84	40	19,45
11.161.1000	10	10	89	43	19,20
11.161.1050	10.5	10.5	89	43	22,15
11.161.1100	11	11	95	47	23,23
11.161.1150	11.5	11.5	95	47	26,45
11.161.1200	12	12	102	51	27,60
11.161.1250	12.5	12.5	102	51	30,15
11.161.1300	13	13	102	51	31,35




> 11.400 INTERNATIONAL TOOLS

NL ECO HSS Spiraalboor gewalst
FR Foret HSS ECO lamine
ES Broca HSS ECO laminada
DE ECO HSS Spiralbohrer Gewalzt
EN ECO HSS Twist drill roll-forged



HSS DIN 338 N   ECO

P 11  P 12  P 13  K 31  K 32 

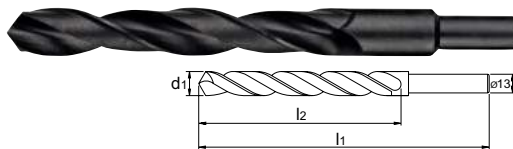
20-25 E  20-25 E  15-20 D  15-20 E  25-30 E 

Ref.	d1	d2	l1	l2	€
11.400.0100	1	1	34	12	0,18
11.400.0110	1.1	1.1	36	14	0,18
11.400.0120	1.2	1.2	38	16	0,18
11.400.0130	1.3	1.3	38	16	0,18
11.400.0140	1.4	1.4	40	18	0,18
11.400.0150	1.5	1.5	40	18	0,18
11.400.0160	1.6	1.6	43	20	0,25
11.400.0170	1.7	1.7	43	20	0,25
11.400.0180	1.8	1.8	46	22	0,25
11.400.0190	1.9	1.9	46	22	0,25
11.400.0200	2	2	49	24	0,25
11.400.0210	2.1	2.1	49	24	0,31
11.400.0220	2.2	2.2	53	27	0,31
11.400.0230	2.3	2.3	53	27	0,33
11.400.0240	2.4	2.4	57	30	0,33
11.400.0250	2.5	2.5	57	30	0,28
11.400.0260	2.6	2.6	57	30	0,40
11.400.0270	2.7	2.7	61	33	0,40
11.400.0280	2.8	2.8	61	33	0,40
11.400.0290	2.9	2.9	61	33	0,40
11.400.0300	3	3	61	33	0,36
11.400.0310	3.1	3.1	65	36	0,40
11.400.0320	3.2	3.2	65	36	0,40
11.400.0330	3.3	3.3	65	36	0,40
11.400.0340	3.4	3.4	70	39	0,40
11.400.0350	3.5	3.5	70	39	0,37
11.400.0360	3.6	3.6	70	39	0,40
11.400.0370	3.7	3.7	70	39	0,40
11.400.0380	3.8	3.8	75	43	0,40
11.400.0390	3.9	3.9	75	43	0,40
11.400.0400	4	4	75	43	0,40
11.400.0410	4.1	4.1	75	43	0,54
11.400.0420	4.2	4.2	75	43	0,54
11.400.0430	4.3	4.3	80	47	0,54
11.400.0440	4.4	4.4	80	47	0,54
11.400.0450	4.5	4.5	80	47	0,51
11.400.0460	4.6	4.6	80	47	0,65
11.400.0470	4.7	4.7	80	47	0,65
11.400.0480	4.8	4.8	86	52	0,65
11.400.0490	4.9	4.9	86	52	0,65
11.400.0500	5	5	86	52	0,63
11.400.0510	5.1	5.1	86	52	0,85
11.400.0520	5.2	5.2	86	52	0,85
11.400.0530	5.3	5.3	86	52	0,85
11.400.0540	5.4	5.4	93	57	0,85

Ref.	d1	d2	l1	l2	€
11.400.0550	5.5	5.5	93	57	0,83
11.400.0560	5.6	5.6	93	57	0,94
11.400.0570	5.7	5.7	93	57	0,94
11.400.0580	5.8	5.8	93	57	0,94
11.400.0590	5.9	5.9	93	57	0,94
11.400.0600	6	6	93	57	0,86
11.400.0610	6.1	6.1	101	63	1,05
11.400.0620	6.2	6.2	101	63	1,05
11.400.0630	6.3	6.3	101	63	1,05
11.400.0640	6.4	6.4	101	63	1,05
11.400.0650	6.5	6.5	101	63	1,00
11.400.0660	6.6	6.6	101	63	1,28
11.400.0670	6.7	6.7	101	63	1,28
11.400.0680	6.8	6.8	109	69	1,28
11.400.0690	6.9	6.9	109	69	1,28
11.400.0700	7	7	109	69	1,24
11.400.0710	7.1	7.1	109	69	1,49
11.400.0720	7.2	7.2	109	69	1,49
11.400.0730	7.3	7.3	109	69	1,49
11.400.0740	7.4	7.4	109	69	1,49
11.400.0750	7.5	7.5	109	69	1,46
11.400.0760	7.6	7.6	117	75	1,78
11.400.0770	7.7	7.7	117	75	1,78
11.400.0780	7.8	7.8	117	75	1,78
11.400.0790	7.9	7.9	117	75	1,78
11.400.0800	8	8	117	75	1,71
11.400.0810	8.1	8.1	117	75	2,03
11.400.0820	8.2	8.2	117	75	2,03
11.400.0830	8.3	8.3	117	75	2,03
11.400.0840	8.4	8.4	117	75	2,03
11.400.0850	8.5	8.5	117	75	1,90
11.400.0860	8.6	8.6	125	81	2,40
11.400.0870	8.7	8.7	125	81	2,40
11.400.0880	8.8	8.8	125	81	2,40
11.400.0890	8.9	8.9	125	81	2,40
11.400.0900	9	9	125	81	2,27
11.400.0910	9.1	9.1	125	81	2,56
11.400.0920	9.2	9.2	125	81	2,56
11.400.0930	9.3	9.3	125	81	2,56
11.400.0940	9.4	9.4	125	81	2,56
11.400.0950	9.5	9.5	125	81	2,54
11.400.0960	9.6	9.6	133	87	2,87
11.400.0970	9.7	9.7	133	87	2,87
11.400.0980	9.8	9.8	133	87	2,87
11.400.0990	9.9	9.9	133	87	2,87

Ref.	d1	d2	l1	l2	€
11.400.1000	10	10	133	87	2,81
11.400.1010	10.1	10.1	133	87	3,07
11.400.1020	10.2	10.2	133	87	3,07
11.400.1030	10.3	10.3	133	87	3,07
11.400.1040	10.4	10.4	133	87	3,07
11.400.1050	10.5	10.5	133	87	3,07
11.400.1060	10.6	10.6	133	87	3,60
11.400.1070	10.7	10.7	142	94	3,60
11.400.1080	10.8	10.8	142	94	3,60
11.400.1090	10.9	10.9	142	94	3,60
11.400.1100	11	11	142	94	3,60
11.400.1110	11.1	11.1	142	94	3,85
11.400.1120	11.2	11.2	142	94	3,85
11.400.1130	11.3	11.3	142	94	3,85
11.400.1140	11.4	11.4	142	94	3,85
11.400.1150	11.5	11.5	142	94	3,79
11.400.1160	11.6	11.6	142	94	4,47
11.400.1170	11.7	11.7	142	94	4,47
11.400.1180	11.8	11.8	142	94	4,47
11.400.1190	11.9	11.9	151	101	4,47
11.400.1200	12	12	151	101	4,41
11.400.1210	12.1	12.1	151	101	4,72
11.400.1220	12.2	12.2	151	101	4,72
11.400.1230	12.3	12.3	151	101	4,72
11.400.1240	12.4	12.4	151	101	4,72
11.400.1250	12.5	12.5	151	101	4,83
11.400.1260	12.6	12.6	151	101	5,14
11.400.1270	12.7	12.7	151	101	5,14
11.400.1280	12.8	12.8	151	101	5,14
11.400.1290	12.9	12.9	151	101	5,14
11.400.1300	13	13	151	101	5,06
11.400.1350	13.5	13.5	160	108	6,80
11.400.1400	14	14	160	108	7,04
11.400.1450	14.5	14.5	169	114	8,26
11.400.1500	15	15	169	114	8,57
11.400.1550	15.5	15.5	178	120	9,86
11.400.1600	16	16	178	120	10,20
11.400.1650	16.5	16.5	184	125	11,75
11.400.1700	17	17	184	125	11,75
11.400.1750	17.5	17.5	191	130	13,46
11.400.1800	18	18	191	130	13,94
11.400.1850	18.5	18.5	198	135	15,05
11.400.1900	19	19	198	135	15,05
11.400.1950	19.5	19.5	205	140	17,60
11.400.2000	20	20	205	140	17,60

> 11.413 INTERNATIONAL TOOLS



NL ECO HSS Spiraalboor gewalst, schacht 13 mm
 FR Foret HSS ECO laminé, queue 13 mm
 ES Broca HSS ECO laminada, mango 13 mm
 DE ECO HSS Spiralbohrer Gewalzt, Schaft 13 mm
 EN ECO HSS Twist drill roll-forged, shank 13 mm

HSS N Ø13 118° ECO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² K 31 GG K 32 GGG GTS-GTW

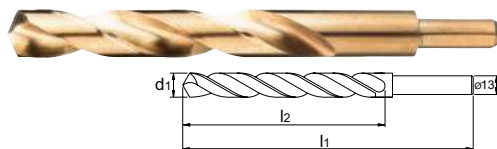
20-25 E 20-25 E 15-20 D 15-20 E 25-30 E

Ref.	d1	l1	l2	€
11.413.1350	13.5	160	108	12,46
11.413.1400	14	160	108	12,46
11.413.1450	14.5	169	114	14,64
11.413.1500	15	169	114	14,13
11.413.1550	15.5	178	120	15,76
11.413.1600	16	178	120	16,33
11.413.1650	16.5	184	125	19,53
11.413.1700	17	184	125	19,53

Ref.	d1	l1	l2	€
11.413.1750	17.5	191	130	21,72
11.413.1800	18	191	130	21,72
11.413.1850	18.5	198	135	25,45
11.413.1900	19	198	135	22,15
11.413.1950	19.5	205	140	28,10
11.413.2000	20	205	140	28,10
11.413.2100	21	208	145	38,50
11.413.2200	22	208	150	40,50

Ref.	d1	l1	l2	€
11.413.2300	23	213	155	41,10
11.413.2400	24	222	160	52,00
11.413.2500	25	222	160	62,00
11.413.2600	26	227	165	66,20
11.413.2700	27	232	170	67,20
11.413.2800	28	232	170	68,75
11.413.2900	29	237	175	74,25
11.413.3000	30	237	175	81,30

> 11.415 INTERNATIONAL TOOLS



NL ECO PRO HSS-E Spiraalboor met drievlaks schacht 13 mm
 FR Foret HSS-E ECO PRO à 3 méplats 13 mm
 ES Broca HSS-E ECO PRO con 3 chaflanes 13 mm
 DE ECO PRO HSS-E Spiralbohrer mit drei platten Flächen 13 mm
 EN ECO PRO HSS-E Twist drill with 3 flat surfaces 13 mm

HSS-E N Ø13 135° ECO PRO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 51 Cu N 52 CuAlFe

28-35 E 30-36 E 20-27 E 14-18 D 30-35 F 24-30 F 30-40 E 8-15 C

Ref.	d1	l1	l2	€
11.415.1350	13.5	160	108	25,75
11.415.1400	14	160	108	28,30
11.415.1450	14.5	169	114	31,35
11.415.1500	15	169	114	33,50
11.415.1550	15.5	178	120	35,60
11.415.1600	16	178	120	38,70
11.415.1650	16.5	184	125	42,70

Ref.	d1	l1	l2	€
11.415.1700	17	184	125	45,15
11.415.1750	17.5	191	130	49,15
11.415.1800	18	191	130	53,25
11.415.1850	18.5	198	135	56,85
11.415.1900	19	198	135	60,15
11.415.1950	19.5	205	140	64,20
11.415.2000	20	205	140	66,60

Ref.	d1	l1	l2	€
11.415.2100	21	208	145	72,90
11.415.2200	22	208	150	77,40
11.415.2300	23	213	155	84,05
11.415.2400	24	222	160	99,85
11.415.2500	25	222	160	110,75

> 11.416 INTERNATIONAL TOOLS



NL ECO HSS Spiraalboor
 FR Foret HSS ECO
 ES Broca HSS ECO
 DE ECO HSS Spiralbohrer
 EN ECO HSS Twist drill

HSS DIN 338 N 118° ECO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 42 Alu Si>10% N 51 Cu N 61 PVC

25-27 F 22-30 F 15-20 E 15-20 E 25-30 E 45-50 E 35-40 G 25-40 D 22-28 D

Ref.	d1	d2	l1	l2	€
11.416.0100	1	1	34	12	0,24
11.416.0110	1.1	1.1	36	14	0,25
11.416.0120	1.2	1.2	38	16	0,25
11.416.0130	1.3	1.3	38	16	0,25
11.416.0140	1.4	1.4	40	18	0,25
11.416.0150	1.5	1.5	40	18	0,25
11.416.0160	1.6	1.6	43	20	0,30
11.416.0170	1.7	1.7	43	20	0,30
11.416.0180	1.8	1.8	46	22	0,30
11.416.0190	1.9	1.9	46	22	0,30
11.416.0200	2	2	49	24	0,31
11.416.0210	2.1	2.1	49	24	0,39
11.416.0220	2.2	2.2	53	27	0,39
11.416.0230	2.3	2.3	53	27	0,39

Ref.	d1	d2	l1	l2	€
11.416.0240	2.4	2.4	57	30	0,39
11.416.0250	2.5	2.5	57	30	0,35
11.416.0260	2.6	2.6	57	30	0,55
11.416.0270	2.7	2.7	61	33	0,55
11.416.0280	2.8	2.8	61	33	0,55
11.416.0290	2.9	2.9	61	33	0,55
11.416.0300	3	3	61	33	0,53
11.416.0310	3.1	3.1	65	36	0,65
11.416.0320	3.2	3.2	65	36	0,65
11.416.0330	3.3	3.3	65	36	0,65
11.416.0340	3.4	3.4	70	39	0,65
11.416.0350	3.5	3.5	70	39	0,65
11.416.0360	3.6	3.6	70	39	0,72
11.416.0370	3.7	3.7	70	39	0,72

Ref.	d1	d2	l1	l2	€
11.416.0380	3.8	3.8	75	43	0,72
11.416.0390	3.9	3.9	75	43	0,72
11.416.0400	4	4	75	43	0,72
11.416.0410	4.1	4.1	75	43	0,77
11.416.0420	4.2	4.2	75	43	0,77
11.416.0430	4.3	4.3	80	47	0,81
11.416.0440	4.4	4.4	80	47	0,81
11.416.0450	4.5	4.5	80	47	0,81
11.416.0460	4.6	4.6	80	47	0,90
11.416.0470	4.7	4.7	80	47	0,90
11.416.0480	4.8	4.8	86	52	0,90
11.416.0490	4.9	4.9	86	52	0,90
11.416.0500	5	5	86	52	0,90
11.416.0510	5.1	5.1	86	52	1,04

> 11.416 INTERNATIONAL TOOLS

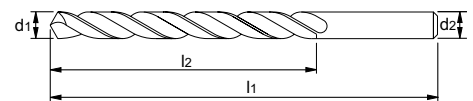
Ref.	d1	d2	l1	l2	€
11.416.0520	5.2	5.2	86	52	1,04
11.416.0530	5.3	5.3	86	52	1,04
11.416.0540	5.4	5.4	93	57	1,04
11.416.0550	5.5	5.5	93	57	1,04
11.416.0560	5.6	5.6	93	57	1,13
11.416.0570	5.7	5.7	93	57	1,13
11.416.0580	5.8	5.8	93	57	1,13
11.416.0590	5.9	5.9	93	57	1,13
11.416.0600	6	6	93	57	1,13
11.416.0610	6.1	6.1	101	63	1,30
11.416.0620	6.2	6.2	101	63	1,30
11.416.0630	6.3	6.3	101	63	1,30
11.416.0640	6.4	6.4	101	63	1,31
11.416.0650	6.5	6.5	101	63	1,31
11.416.0660	6.6	6.6	101	63	2,16
11.416.0670	6.7	6.7	101	63	1,53
11.416.0680	6.8	6.8	109	69	1,53
11.416.0690	6.9	6.9	109	69	2,16
11.416.0700	7	7	109	69	1,53
11.416.0710	7.1	7.1	109	69	1,80
11.416.0720	7.2	7.2	109	69	1,80
11.416.0730	7.3	7.3	109	69	1,80
11.416.0740	7.4	7.4	109	69	2,61
11.416.0750	7.5	7.5	109	69	1,80
11.416.0760	7.6	7.6	117	75	3,15
11.416.0770	7.7	7.7	117	75	3,15
11.416.0780	7.8	7.8	117	75	2,03

Ref.	d1	d2	l1	l2	€
11.416.0790	7.9	7.9	117	75	2,03
11.416.0800	8	8	117	75	2,03
11.416.0810	8.1	8.1	117	75	3,42
11.416.0820	8.2	8.2	117	75	2,25
11.416.0830	8.3	8.3	117	75	2,25
11.416.0840	8.4	8.4	117	75	2,25
11.416.0850	8.5	8.5	117	75	2,25
11.416.0860	8.6	8.6	125	81	3,96
11.416.0870	8.7	8.7	125	81	2,70
11.416.0880	8.8	8.8	125	81	3,96
11.416.0890	8.9	8.9	125	81	2,70
11.416.0900	9	9	125	81	2,70
11.416.0910	9.1	9.1	125	81	4,41
11.416.0920	9.2	9.2	125	81	4,41
11.416.0930	9.3	9.3	125	81	4,41
11.416.0940	9.4	9.4	125	81	4,41
11.416.0950	9.5	9.5	125	81	2,88
11.416.0960	9.6	9.6	133	87	5,04
11.416.0970	9.7	9.7	133	87	5,04
11.416.0980	9.8	9.8	133	87	5,04
11.416.0990	9.9	9.9	133	87	5,04
11.416.1000	10	10	133	87	3,15
11.416.1010	10.1	10.1	133	87	5,40
11.416.1020	10.2	10.2	133	87	3,60
11.416.1030	10.3	10.3	133	87	5,40
11.416.1040	10.4	10.4	133	87	5,40
11.416.1050	10.5	10.5	133	87	3,60

Ref.	d1	d2	l1	l2	€
11.416.1060	10.6	10.6	133	87	7,20
11.416.1070	10.7	10.7	142	94	7,20
11.416.1080	10.8	10.8	142	94	7,20
11.416.1090	10.9	10.9	142	94	7,20
11.416.1100	11	11	142	94	4,05
11.416.1110	11.1	11.1	142	94	7,20
11.416.1120	11.2	11.2	142	94	7,20
11.416.1130	11.3	11.3	142	94	7,20
11.416.1140	11.4	11.4	142	94	7,20
11.416.1150	11.5	11.5	142	94	4,23
11.416.1160	11.6	11.6	142	94	7,92
11.416.1170	11.7	11.7	142	94	7,92
11.416.1180	11.8	11.8	142	94	7,92
11.416.1190	11.9	11.9	151	101	7,92
11.416.1200	12	12	151	101	4,77
11.416.1210	12.1	12.1	151	101	8,55
11.416.1220	12.2	12.2	151	101	8,55
11.416.1230	12.3	12.3	151	101	8,55
11.416.1240	12.4	12.4	151	101	8,55
11.416.1250	12.5	12.5	151	101	5,22
11.416.1260	12.6	12.6	151	101	8,91
11.416.1270	12.7	12.7	151	101	8,91
11.416.1280	12.8	12.8	151	101	8,91
11.416.1290	12.9	12.9	151	101	8,91
11.416.1300	13	13	151	101	5,40

> 11.420 INTERNATIONAL TOOLS

- NL ECO PRO HSS Spiraalboor
- FR Foret HSS ECO PRO
- ES Broca HSS ECO PRO
- DE ECO PRO HSS Spiralbohrer
- EN ECO PRO HSS Twist drill



HSS **DIN 338** **N** **ECO PRO**

P 11 **P 12** **P 13** **K 31** **K 32** **N 41** **N 42** **N 51** **N 61**

5800 N/mm² 5850 N/mm² ≤1000 N/mm² GG GGG GTS-GTW Alu Alu Si>10% Cu PVC

25-27 F 22-30 F 15-20 E 15-20 E 25-30 E 45-50 E 35-40 G 25-40 D 22-28 D

Ref.	d1	d2	l1	l2	€
11.420.0100	1	1	34	12	0,38
11.420.0110	1.1	1.1	36	14	0,38
11.420.0120	1.2	1.2	38	16	0,38
11.420.0130	1.3	1.3	38	16	0,38
11.420.0140	1.4	1.4	40	18	0,38
11.420.0150	1.5	1.5	40	18	0,38
11.420.0160	1.6	1.6	43	20	0,42
11.420.0170	1.7	1.7	43	20	0,42
11.420.0180	1.8	1.8	46	22	0,42
11.420.0190	1.9	1.9	46	22	0,42
11.420.0200	2	2	49	24	0,45
11.420.0210	2.1	2.1	49	24	0,52
11.420.0220	2.2	2.2	53	27	0,52
11.420.0230	2.3	2.3	53	27	0,52
11.420.0240	2.4	2.4	57	30	0,52
11.420.0250	2.5	2.5	57	30	0,52
11.420.0260	2.6	2.6	57	30	0,72
11.420.0270	2.7	2.7	61	33	0,72
11.420.0280	2.8	2.8	61	33	0,72
11.420.0290	2.9	2.9	61	33	0,72
11.420.0300	3	3	61	33	0,72
11.420.0310	3.1	3.1	65	36	0,80
11.420.0320	3.2	3.2	65	36	0,80
11.420.0330	3.3	3.3	65	36	0,80
11.420.0340	3.4	3.4	70	39	0,80
11.420.0350	3.5	3.5	70	39	0,80
11.420.0360	3.6	3.6	70	39	0,90
11.420.0370	3.7	3.7	70	39	0,90
11.420.0380	3.8	3.8	75	43	0,90
11.420.0390	3.9	3.9	75	43	0,90
11.420.0400	4	4	75	43	0,90
11.420.0410	4.1	4.1	75	43	1,02
11.420.0420	4.2	4.2	75	43	1,02
11.420.0430	4.3	4.3	80	47	1,15
11.420.0440	4.4	4.4	80	47	1,15
11.420.0450	4.5	4.5	80	47	1,15
11.420.0460	4.6	4.6	80	47	1,28

Ref.	d1	d2	l1	l2	€
11.420.0470	4.7	4.7	80	47	1,28
11.420.0480	4.8	4.8	86	52	1,28
11.420.0490	4.9	4.9	86	52	1,28
11.420.0500	5	5	86	52	1,28
11.420.0510	5.1	5.1	86	52	1,72
11.420.0520	5.2	5.2	86	52	1,72
11.420.0530	5.3	5.3	86	52	1,72
11.420.0540	5.4	5.4	93	57	1,72
11.420.0550	5.5	5.5	93	57	1,72
11.420.0560	5.6	5.6	93	57	1,98
11.420.0570	5.7	5.7	93	57	1,98
11.420.0580	5.8	5.8	93	57	1,98
11.420.0590	5.9	5.9	93	57	1,98
11.420.0600	6	6	93	57	1,98
11.420.0610	6.1	6.1	101	63	2,40
11.420.0620	6.2	6.2	101	63	2,40
11.420.0630	6.3	6.3	101	63	2,40
11.420.0640	6.4	6.4	101	63	2,42
11.420.0650	6.5	6.5	101	63	2,42
11.420.0660	6.6	6.6	101	63	2,85
11.420.0670	6.7	6.7	101	63	2,85
11.420.0680	6.8	6.8	109	69	2,85
11.420.0690	6.9	6.9	109	69	2,85
11.420.0700	7	7	109	69	2,85
11.420.0710	7.1	7.1	109	69	3,20
11.420.0720	7.2	7.2	109	69	3,20
11.420.0730	7.3	7.3	109	69	3,20
11.420.0740	7.4	7.4	109	69	3,20
11.420.0750	7.5	7.5	109	69	3,20
11.420.0760	7.6	7.6	117	75	3,80
11.420.0770	7.7	7.7	117	75	3,80
11.420.0780	7.8	7.8	117	75	3,80
11.420.0790	7.9	7.9	117	75	3,80
11.420.0800	8	8	117	75	3,80
11.420.0810	8.1	8.1	117	75	4,15
11.420.0820	8.2	8.2	117	75	4,15
11.420.0830	8.3	8.3	117	75	4,15

Ref.	d1	d2	l1	l2	€
11.420.0840	8.4	8.4	117	75	4,15
11.420.0850	8.5	8.5	117	75	4,15
11.420.0860	8.6	8.6	125	81	4,90
11.420.0870	8.7	8.7	125	81	4,90
11.420.0880	8.8	8.8	125	81	4,90
11.420.0890	8.9	8.9	125	81	4,90
11.420.0900	9	9	125	81	4,90
11.420.0910	9.1	9.1	125	81	5,40
11.420.0920	9.2	9.2	125	81	5,40
11.420.0930	9.3	9.3	125	81	5,40
11.420.0940	9.4	9.4	125	81	5,40
11.420.0950	9.5	9.5	125	81	5,40
11.420.0960	9.6	9.6	133	87	6,15
11.420.0970	9.7	9.7	133	87	6,15
11.420.0980	9.8	9.8	133	87	6,15
11.420.0990	9.9	9.9	133	87	6,15
11.420.1000	10	10	133	87	6,15
11.420.1010	10.1	10.1	133	87	6,65
11.420.1020	10.2	10.2	133	87	6,65
11.420.1030	10.3	10.3	133	87	6,65
11.420.1040	10.4	10.4	133	87	6,65
11.420.1050	10.5	10.5	133	87	6,65
11.420.1060	10.6	10.6	133	87	7,92
11.420.1070	10.7	10.7	142	94	7,92
11.420.1080	10.8	10.8	142	94	7,92
1					

> 11.420 INTERNATIONAL TOOLS

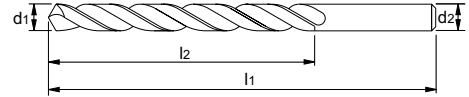
Ref.	d1	d2	l1	l2	€
11.420.1210	12.1	12.1	151	101	10,30
11.420.1220	12.2	12.2	151	101	10,30
11.420.1230	12.3	12.3	151	101	10,30
11.420.1240	12.4	12.4	151	101	10,30

Ref.	d1	d2	l1	l2	€
11.420.1250	12.5	12.5	151	101	10,30
11.420.1260	12.6	12.6	151	101	11,20
11.420.1270	12.7	12.7	151	101	11,20
11.420.1280	12.8	12.8	151	101	11,20

Ref.	d1	d2	l1	l2	€
11.420.1290	12.9	12.9	151	101	11,20
11.420.1300	13	13	151	101	11,20

> 11.423 INTERNATIONAL TOOLS

NL ECO HSS Spiraalboor Kruisaanslijping, blank
 FR Foret HSS ECO Affûtage en croix, finition polie
 ES Broca HSS ECO Afilado en cruz, blanca
 DE ECO HSS Spiralbohrer Kreuzanschliff, blank
 EN ECO HSS Twist drill Split point, bright finish



HSS DIN 338 N

P 11 P 12 P 13 K 31 K 32 N 42 N 51 N 61

25-27 F 22-30 F 15-20 E 15-20 E 25-30 E 35-40 G 25-40 D 22-28 D

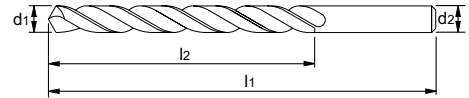
Ref.	d1	d2	l1	l2	€
11.423.0100	1	1	34	12	0,28
11.423.0150	1.5	1.5	40	18	0,28
11.423.0200	2	2	49	24	0,35
11.423.0250	2.5	2.5	57	30	0,42
11.423.0300	3	3	61	33	0,62
11.423.0310	3.1	3.1	65	36	0,72
11.423.0320	3.2	3.2	65	36	0,72
11.423.0330	3.3	3.3	65	36	0,72
11.423.0350	3.5	3.5	70	39	0,72
11.423.0380	3.8	3.8	75	43	0,80
11.423.0400	4	4	75	43	0,80
11.423.0410	4.1	4.1	75	43	0,85
11.423.0420	4.2	4.2	75	43	0,85
11.423.0450	4.5	4.5	80	47	0,90

Ref.	d1	d2	l1	l2	€
11.423.0480	4.8	4.8	86	52	1,00
11.423.0490	4.9	4.9	86	52	1,00
11.423.0500	5	5	86	52	1,00
11.423.0510	5.1	5.1	86	52	1,15
11.423.0520	5.2	5.2	86	52	1,15
11.423.0550	5.5	5.5	93	57	1,15
11.423.0570	5.7	5.7	93	57	1,25
11.423.0580	5.8	5.8	93	57	1,25
11.423.0600	6	6	93	57	1,25
11.423.0620	6.2	6.2	101	63	1,44
11.423.0650	6.5	6.5	101	63	1,45
11.423.0680	6.8	6.8	109	69	1,70
11.423.0700	7	7	109	69	1,70
11.423.0750	7.5	7.5	109	69	2,00

Ref.	d1	d2	l1	l2	€
11.423.0800	8	8	117	75	2,25
11.423.0850	8.5	8.5	117	75	2,50
11.423.0900	9	9	125	81	3,00
11.423.0950	9.5	9.5	125	81	3,20
11.423.1000	10	10	133	87	3,50
11.423.1020	10.2	10.2	133	87	4,00
11.423.1050	10.5	10.5	133	87	4,00
11.423.1100	11	11	142	94	4,50
11.423.1150	11.5	11.5	142	94	4,70
11.423.1200	12	12	151	101	5,30
11.423.1250	12.5	12.5	151	101	5,80
11.423.1300	13	13	151	101	6,00

> 11.426 INTERNATIONAL TOOLS

NL ECO HSS Spiraalboor Kruisaanslijping
 FR Foret HSS ECO Affûtage en croix
 ES Broca HSS ECO Afilado en cruz
 DE ECO HSS Spiralbohrer Kreuzanschliff
 EN ECO HSS Twist drill Split point



HSS DIN 338 N

P 11 P 12 P 13 K 31 K 32 N 42 N 51 N 61

25-27 F 22-30 F 15-20 E 15-20 E 25-30 E 35-40 G 25-40 D 22-28 D

Ref.	d1	d2	l1	l2	€
11.426.0100	1	1	34	12	0,28
11.426.0110	1.1	1.1	36	14	0,28
11.426.0120	1.2	1.2	38	16	0,28
11.426.0130	1.3	1.3	38	16	0,28
11.426.0140	1.4	1.4	40	18	0,28
11.426.0150	1.5	1.5	40	18	0,28
11.426.0160	1.6	1.6	43	20	0,32
11.426.0170	1.7	1.7	43	20	0,32
11.426.0180	1.8	1.8	46	22	0,32
11.426.0190	1.9	1.9	46	22	0,32
11.426.0200	2	2	49	24	0,35
11.426.0210	2.1	2.1	49	24	0,42
11.426.0220	2.2	2.2	53	27	0,42
11.426.0230	2.3	2.3	53	27	0,42
11.426.0240	2.4	2.4	57	30	0,42
11.426.0250	2.5	2.5	57	30	0,42
11.426.0260	2.6	2.6	57	30	0,62
11.426.0270	2.7	2.7	61	33	0,62
11.426.0280	2.8	2.8	61	33	0,62
11.426.0290	2.9	2.9	61	33	0,62
11.426.0300	3	3	61	33	0,62
11.426.0310	3.1	3.1	65	36	0,72
11.426.0320	3.2	3.2	65	36	0,72
11.426.0330	3.3	3.3	65	36	0,72
11.426.0340	3.4	3.4	70	39	0,72

Ref.	d1	d2	l1	l2	€
11.426.0350	3.5	3.5	70	39	0,72
11.426.0360	3.6	3.6	70	39	0,80
11.426.0370	3.7	3.7	70	39	0,80
11.426.0380	3.8	3.8	75	43	0,80
11.426.0390	3.9	3.9	75	43	0,80
11.426.0400	4	4	75	43	0,80
11.426.0410	4.1	4.1	75	43	0,85
11.426.0420	4.2	4.2	75	43	0,85
11.426.0430	4.3	4.3	80	47	0,90
11.426.0440	4.4	4.4	80	47	0,90
11.426.0450	4.5	4.5	80	47	0,90
11.426.0460	4.6	4.6	80	47	1,00
11.426.0470	4.7	4.7	80	47	1,00
11.426.0480	4.8	4.8	86	52	1,00
11.426.0490	4.9	4.9	86	52	1,00
11.426.0500	5	5	86	52	1,00
11.426.0510	5.1	5.1	86	52	1,15
11.426.0520	5.2	5.2	86	52	1,15
11.426.0530	5.3	5.3	86	52	1,15
11.426.0540	5.4	5.4	93	57	1,15
11.426.0550	5.5	5.5	93	57	1,15
11.426.0560	5.6	5.6	93	57	1,25
11.426.0570	5.7	5.7	93	57	1,25
11.426.0580	5.8	5.8	93	57	1,25
11.426.0590	5.9	5.9	93	57	1,25

Ref.	d1	d2	l1	l2	€
11.426.0600	6	6	93	57	1,25
11.426.0610	6.1	6.1	101	63	1,44
11.426.0620	6.2	6.2	101	63	1,44
11.426.0630	6.3	6.3	101	63	1,44
11.426.0640	6.4	6.4	101	63	1,45
11.426.0650	6.5	6.5	101	63	1,45
11.426.0660	6.6	6.6	101	63	2,40
11.426.0670	6.7	6.7	101	63	1,70
11.426.0680	6.8	6.8	109	69	1,70
11.426.0690	6.9	6.9	109	69	2,40
11.426.0700	7	7	109	69	1,70
11.426.0710	7.1	7.1	109	69	2,00
11.426.0720	7.2	7.2	109	69	2,00
11.426.0730	7.3	7.3	109	69	2,00
11.426.0740	7.4	7.4	109	69	2,90
11.426.0750	7.5	7.5	109	69	2,00
11.426.0760	7.6	7.6	117	75	3,50
11.426.0770	7.7	7.7	117	75	3,50
11.426.0780	7.8	7.8	117	75	2,25
11.426.0790	7.9	7.9	117	75	2,25
11.426.0800	8	8	117	75	2,25
11.426.0810	8.1	8.1	117	75	3,80
11.426.0820	8.2	8.2	117	75	2,50
11.426.0830	8.3	8.3	117	75	2,50
11.426.0840	8.4	8.4	117	75	2,50

**> 11.426 INTERNATIONAL TOOLS**

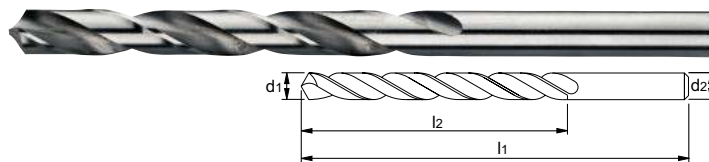
Ref.	d1	d2	l1	l2	€
11.426.0850	8.5	8.5	117	75	2,50
11.426.0860	8.6	8.6	125	81	4,40
11.426.0870	8.7	8.7	125	81	3,00
11.426.0880	8.8	8.8	125	81	4,40
11.426.0890	8.9	8.9	125	81	3,00
11.426.0900	9	9	125	81	3,00
11.426.0910	9.1	9.1	125	81	4,90
11.426.0920	9.2	9.2	125	81	4,90
11.426.0930	9.3	9.3	125	81	4,90
11.426.0940	9.4	9.4	125	81	4,90
11.426.0950	9.5	9.5	125	81	3,20

Ref.	d1	d2	l1	l2	€
11.426.0960	9.6	9.6	133	87	5,60
11.426.0970	9.7	9.7	133	87	5,60
11.426.0980	9.8	9.8	133	87	5,60
11.426.0990	9.9	9.9	133	87	5,60
11.426.1000	10	10	133	87	3,50
11.426.1010	10.1	10.1	133	87	6,00
11.426.1020	10.2	10.2	133	87	4,00
11.426.1040	10.4	10.4	133	87	6,00
11.426.1050	10.5	10.5	133	87	4,00
11.426.1060	10.6	10.6	133	87	8,00
11.426.1070	10.7	10.7	142	94	8,00

Ref.	d1	d2	l1	l2	€
11.426.1080	10.8	10.8	142	94	8,00
11.426.1090	10.9	10.9	142	94	8,00
11.426.1100	11	11	142	94	4,50
11.426.1120	11.2	11.2	142	94	8,00
11.426.1150	11.5	11.5	142	94	4,70
11.426.1180	11.8	11.8	142	94	8,80
11.426.1200	12	12	151	101	5,30
11.426.1220	12.2	12.2	151	101	9,50
11.426.1250	12.5	12.5	151	101	5,80
11.426.1280	12.8	12.8	151	101	9,90
11.426.1300	13	13	151	101	9,90

> 11.430 INTERNATIONAL TOOLS

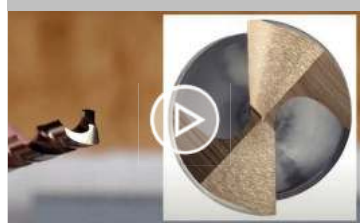
NL ECO PRO HSS Spiraalboor Kruisaanslijping
FR Foret HSS ECO PRO Affûtage en croix
ES Broca HSS ECO PRO Afilado en cruz
DE ECO PRO HSS Spiralbohrer Kreuzanschliff
EN ECO PRO HSS Twist drill Split point



Ref.	d1	d2	l1	l2	€
11.430.0100	1	1	34	12	0,44
11.430.0110	1.1	1.1	36	14	0,44
11.430.0120	1.2	1.2	38	16	0,44
11.430.0130	1.3	1.3	38	16	0,44
11.430.0140	1.4	1.4	40	18	0,44
11.430.0150	1.5	1.5	40	18	0,44
11.430.0160	1.6	1.6	43	20	0,50
11.430.0170	1.7	1.7	43	20	0,50
11.430.0180	1.8	1.8	46	22	0,50
11.430.0190	1.9	1.9	46	22	0,50
11.430.0200	2	2	49	24	0,55
11.430.0210	2.1	2.1	49	24	0,62
11.430.0220	2.2	2.2	53	27	0,62
11.430.0230	2.3	2.3	53	27	0,62
11.430.0240	2.4	2.4	57	30	0,62
11.430.0250	2.5	2.5	57	30	0,62
11.430.0260	2.6	2.6	57	30	0,85
11.430.0270	2.7	2.7	61	33	0,85
11.430.0280	2.8	2.8	61	33	0,85
11.430.0290	2.9	2.9	61	33	0,85
11.430.0300	3	3	61	33	0,85
11.430.0310	3.1	3.1	65	36	1,20
11.430.0320	3.2	3.2	65	36	1,20
11.430.0330	3.3	3.3	65	36	1,20
11.430.0340	3.4	3.4	70	39	1,20
11.430.0350	3.5	3.5	70	39	1,20
11.430.0360	3.6	3.6	70	39	1,36
11.430.0370	3.7	3.7	70	39	1,36
11.430.0380	3.8	3.8	75	43	1,36
11.430.0390	3.9	3.9	75	43	1,36
11.430.0400	4	4	75	43	1,36
11.430.0410	4.1	4.1	75	43	1,52
11.430.0420	4.2	4.2	75	43	1,52
11.430.0430	4.3	4.3	80	47	1,65
11.430.0440	4.4	4.4	80	47	1,65
11.430.0450	4.5	4.5	80	47	1,65
11.430.0460	4.6	4.6	80	47	1,78
11.430.0470	4.7	4.7	80	47	1,78
11.430.0480	4.8	4.8	86	52	1,78
11.430.0490	4.9	4.9	86	52	1,78
11.430.0500	5	5	86	52	1,78

Ref.	d1	d2	l1	l2	€
11.430.0510	5.1	5.1	86	52	2,22
11.430.0520	5.2	5.2	86	52	2,22
11.430.0530	5.3	5.3	86	52	2,22
11.430.0540	5.4	5.4	93	57	2,22
11.430.0550	5.5	5.5	93	57	2,22
11.430.0560	5.6	5.6	93	57	2,48
11.430.0570	5.7	5.7	93	57	2,48
11.430.0580	5.8	5.8	93	57	2,48
11.430.0590	5.9	5.9	93	57	2,48
11.430.0600	6	6	93	57	2,48
11.430.0610	6.1	6.1	101	63	2,90
11.430.0620	6.2	6.2	101	63	2,90
11.430.0630	6.3	6.3	101	63	2,90
11.430.0640	6.4	6.4	101	63	2,92
11.430.0650	6.5	6.5	101	63	2,92
11.430.0660	6.6	6.6	101	63	3,35
11.430.0670	6.7	6.7	101	63	3,35
11.430.0680	6.8	6.8	109	69	3,35
11.430.0690	6.9	6.9	109	69	3,35
11.430.0700	7	7	109	69	3,35
11.430.0710	7.1	7.1	109	69	3,70
11.430.0720	7.2	7.2	109	69	3,70
11.430.0730	7.3	7.3	109	69	3,70
11.430.0740	7.4	7.4	109	69	3,70
11.430.0750	7.5	7.5	109	69	3,60
11.430.0760	7.6	7.6	117	75	4,30
11.430.0770	7.7	7.7	117	75	4,30
11.430.0780	7.8	7.8	117	75	4,30
11.430.0790	7.9	7.9	117	75	4,30
11.430.0800	8	8	117	75	4,30
11.430.0810	8.1	8.1	117	75	4,65
11.430.0820	8.2	8.2	117	75	4,65
11.430.0830	8.3	8.3	117	75	4,65
11.430.0840	8.4	8.4	117	75	4,65
11.430.0850	8.5	8.5	117	75	4,65
11.430.0860	8.6	8.6	125	81	5,40
11.430.0870	8.7	8.7	125	81	5,40
11.430.0880	8.8	8.8	125	81	5,40
11.430.0890	8.9	8.9	125	81	5,40
11.430.0900	9	9	125	81	5,40
11.430.0910	9.1	9.1	125	81	5,90

Ref.	d1	d2	l1	l2	€
11.430.0920	9.2	9.2	125	81	5,90
11.430.0930	9.3	9.3	125	81	5,90
11.430.0940	9.4	9.4	125	81	5,90
11.430.0950	9.5	9.5	125	81	5,90
11.430.0960	9.6	9.6	133	87	6,65
11.430.0970	9.7	9.7	133	87	6,65
11.430.0980	9.8	9.8	133	87	6,65
11.430.0990	9.9	9.9	133	87	6,65
11.430.1000	10	10	133	87	6,65
11.430.1010	10.1	10.1	133	87	7,15
11.430.1020	10.2	10.2	133	87	7,15
11.430.1030	10.3	10.3	133	87	7,15
11.430.1040	10.4	10.4	133	87	7,15
11.430.1050	10.5	10.5	133	87	7,15
11.430.1060	10.6	10.6	133	87	8,42
11.430.1070	10.7	10.7	142	94	8,42
11.430.1080	10.8	10.8	142	94	8,42
11.430.1090	10.9	10.9	142	94	8,42
11.430.1100	11	11	142	94	8,42
11.430.1120	11.2	11.2	142	94	9,00
11.430.1150	11.5	11.5	142	94	9,00
11.430.1180	11.8	11.8	142	94	10,00
11.430.1200	12	12	151	101	10,25
11.430.1220	12.2	12.2	151	101	10,80
11.430.1250	12.5	12.5	151	101	10,80
11.430.1280	12.8	12.8	151	101	11,70
11.430.1300	13	13	151	101	11,70
11.430.1350	13.5	13.5	160	108	21,00
11.430.1400	14	14	160	108	23,00
11.430.1450	14.5	14.5	169	114	28,00
11.430.1500	15	15	169	114	30,00
11.430.1550	15.5	15.5	178	120	33,00
11.430.1600	16	16	178	120	35,00
11.430.1650	16.5	16.5	184	125	37,00
11.430.1700	17	17	184	125	39,00
11.430.1750	17.5	17.5	191	130	42,00
11.430.1800	18	18	191	130	47,00
11.430.1850	18.5	18.5	198	135	49,00
11.430.1900	19	19	198	135	51,00
11.430.1950	19.5	19.5	205	140	54,00
11.430.2000	20	20	205	140	56,00



NL Standaardpunt vs splitpoint
FR Affûtage standard versus un affûtage en croix
ES Afilado normal o Afilado en cruz
DE Kegelmantelanschliff gegen Kreuzanschliff
EN Traditional vs splitpoint drill bit

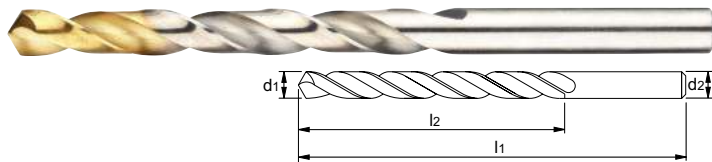
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> 11.431 INTERNATIONAL TOOLS

NL ECO PRO HSS Spiraalboor TiN-tip
 FR Foret HSS ECO PRO avec revêtement TiN sur la partie utile
 ES Broca HSS ECO PRO con punta TiN
 DE ECO PRO HSS Spiralbohrer TiN-Tip
 EN ECO PRO HSS Twist drill TiN coated tip



HSS **TiN** **DIN 338** **N** **118°** **ECO PRO**

P 11 **P 12** **P 13** **M 21** **K 31** **K 32** **N 41** **N 42** **N 51** **N 61**

≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Alu Si>10% Cu PVC

27-30 F 25-28 F 17-22 E 10-14 D 20-33 E 20-28 E 50-80 E 45-70 G 40-65 D 25-36 D

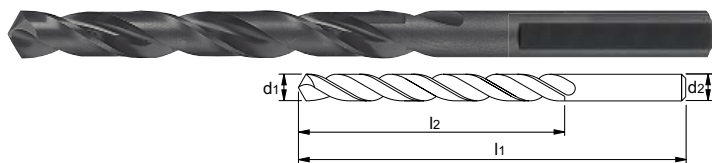
Ref.	d1	d2	l1	l2	€
11.431.0100	1	1	34	12	0,56
11.431.0110	1.1	1.1	36	14	0,60
11.431.0120	1.2	1.2	38	16	0,62
11.431.0130	1.3	1.3	38	16	0,64
11.431.0140	1.4	1.4	40	18	0,65
11.431.0150	1.5	1.5	40	18	0,67
11.431.0160	1.6	1.6	43	20	0,77
11.431.0170	1.7	1.7	43	20	0,79
11.431.0180	1.8	1.8	46	22	0,81
11.431.0190	1.9	1.9	46	22	0,82
11.431.0200	2	2	49	24	0,84
11.431.0210	2.1	2.1	49	24	0,96
11.431.0220	2.2	2.2	53	27	1,08
11.431.0230	2.3	2.3	53	27	1,13
11.431.0240	2.4	2.4	57	30	1,15
11.431.0250	2.5	2.5	57	30	1,17
11.431.0260	2.6	2.6	57	30	1,42
11.431.0270	2.7	2.7	61	33	1,44
11.431.0280	2.8	2.8	61	33	1,46
11.431.0290	2.9	2.9	61	33	1,48
11.431.0300	3	3	61	33	1,51
11.431.0310	3.1	3.1	65	36	1,82
11.431.0320	3.2	3.2	65	36	1,84
11.431.0330	3.3	3.3	65	36	1,86
11.431.0340	3.4	3.4	70	39	2,02
11.431.0350	3.5	3.5	70	39	1,90
11.431.0360	3.6	3.6	70	39	2,11
11.431.0370	3.7	3.7	70	39	2,13
11.431.0380	3.8	3.8	75	43	2,15
11.431.0390	3.9	3.9	75	43	2,31
11.431.0400	4	4	75	43	2,19
11.431.0410	4.1	4.1	75	43	2,34
11.431.0420	4.2	4.2	75	43	2,36
11.431.0430	4.3	4.3	80	47	2,43
11.431.0440	4.4	4.4	80	47	2,45
11.431.0450	4.5	4.5	80	47	2,47
11.431.0460	4.6	4.6	80	47	2,92

Ref.	d1	d2	l1	l2	€
11.431.0470	4.7	4.7	80	47	2,94
11.431.0480	4.8	4.8	86	52	2,83
11.431.0490	4.9	4.9	86	52	2,85
11.431.0500	5	5	86	52	2,87
11.431.0510	5.1	5.1	86	52	3,09
11.431.0520	5.2	5.2	86	52	3,11
11.431.0530	5.3	5.3	86	52	3,12
11.431.0540	5.4	5.4	93	57	3,36
11.431.0550	5.5	5.5	93	57	3,16
11.431.0560	5.6	5.6	93	57	3,43
11.431.0570	5.7	5.7	93	57	3,45
11.431.0580	5.8	5.8	93	57	3,47
11.431.0590	5.9	5.9	93	57	3,69
11.431.0600	6	6	93	57	3,50
11.431.0610	6.1	6.1	101	63	3,93
11.431.0620	6.2	6.2	101	63	4,15
11.431.0630	6.3	6.3	101	63	3,97
11.431.0640	6.4	6.4	101	63	4,15
11.431.0650	6.5	6.5	101	63	3,97
11.431.0660	6.6	6.6	101	63	4,38
11.431.0670	6.7	6.7	101	63	4,67
11.431.0680	6.8	6.8	109	69	4,41
11.431.0690	6.9	6.9	109	69	4,42
11.431.0700	7	7	109	69	4,44
11.431.0710	7.1	7.1	109	69	5,07
11.431.0720	7.2	7.2	109	69	4,82
11.431.0730	7.3	7.3	109	69	5,10
11.431.0740	7.4	7.4	109	69	5,12
11.431.0750	7.5	7.5	109	69	4,73
11.431.0760	7.6	7.6	117	75	5,47
11.431.0770	7.7	7.7	117	75	5,49
11.431.0780	7.8	7.8	117	75	5,85
11.431.0790	7.9	7.9	117	75	5,87
11.431.0800	8	8	117	75	5,53
11.431.0810	8.1	8.1	117	75	6,17
11.431.0820	8.2	8.2	117	75	5,93
11.431.0830	8.3	8.3	117	75	6,20

Ref.	d1	d2	l1	l2	€
11.431.0840	8.4	8.4	117	75	6,22
11.431.0850	8.5	8.5	117	75	5,98
11.431.0860	8.6	8.6	125	81	7,05
11.431.0870	8.7	8.7	125	81	7,07
11.431.0880	8.8	8.8	125	81	7,08
11.431.0890	8.9	8.9	125	81	7,10
11.431.0900	9	9	125	81	6,78
11.431.0910	9.1	9.1	125	81	7,69
11.431.0920	9.2	9.2	125	81	7,71
11.431.0930	9.3	9.3	125	81	7,72
11.431.0940	9.4	9.4	125	81	7,33
11.431.0950	9.5	9.5	125	81	7,35
11.431.0960	9.6	9.6	133	87	8,53
11.431.0970	9.7	9.7	133	87	8,55
11.431.0980	9.8	9.8	133	87	8,93
11.431.0990	9.9	9.9	133	87	8,58
11.431.1000	10	10	133	87	8,12
11.431.1010	10.1	10.1	133	87	9,05
11.431.1020	10.2	10.2	133	87	8,61
11.431.1030	10.3	10.3	133	87	9,08
11.431.1040	10.4	10.4	133	87	9,10
11.431.1050	10.5	10.5	133	87	8,66
11.431.1060	10.6	10.6	133	87	9,96
11.431.1070	10.7	10.7	142	94	10,50
11.431.1080	10.8	10.8	142	94	10,52
11.431.1090	10.9	10.9	142	94	10,53
11.431.1100	11	11	142	94	10,02
11.431.1120	11.2	11.2	142	94	10,66
11.431.1150	11.5	11.5	142	94	10,70
11.431.1180	11.8	11.8	142	94	13,40
11.431.1200	12	12	151	101	13,04
11.431.1220	12.2	12.2	151	101	14,10
11.431.1250	12.5	12.5	151	101	15,03
11.431.1280	12.8	12.8	151	101	16,56
11.431.1300	13	13	151	101	16,08

> 11.440 Phantom

NL HSS Spiraalboor met drievlaks schacht
 FR Foret HSS à 3 méplats
 ES Broca HSS con 3 chaflanes
 DE HSS Spiralbohrer mit drei platten Flächen
 EN HSS Twist drill with 3 flat surfaces



HSS **OX.** **DIN 338** **N** **118°**

P 11 **P 12** **P 13** **M 21** **K 31** **K 32** **N 42** **N 51** **N 61**

≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Alu Si>10% Cu PVC

25-27 F 22-30 F 15-20 E 8-12 D 15-20 E 25-30 E 45-50 G 25-40 D 22-28 D

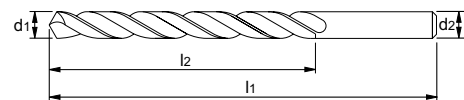
Ref.	d1	d2	l1	l2	€
11.440.0400	4	4	75	43	2,26
11.440.0420	4.2	4.2	75	43	2,66
11.440.0450	4.5	4.5	80	47	2,53
11.440.0500	5	5	86	52	2,92
11.440.0550	5.5	5.5	93	57	3,25
11.440.0600	6	6	93	57	3,61
11.440.0650	6.5	6.5	101	63	4,20
11.440.0680	6.8	6.8	109	69	5,54

Ref.	d1	d2	l1	l2	€
11.440.0700	7	7	109	69	4,76
11.440.0750	7.5	7.5	109	69	5,25
11.440.0800	8	8	117	75	6,36
11.440.0850	8.5	8.5	117	75	7,22
11.440.0900	9	9	125	81	8,33
11.440.0950	9.5	9.5	125	81	9,18
11.440.1000	10	10	133	87	10,07
11.440.1020	10.2	10.2	133	87	12,64

Ref.	d1	d2	l1	l2	€
11.440.1050	10.5	10.5	133	87	10,95
11.440.1100	11	11	142	94	11,21
11.440.1150	11.5	11.5	142	94	12,20
11.440.1200	12	12	151	101	14,58
11.440.1250	12.5	12.5	151	101	15,78
11.440.1300	13	13	151	101	16,30

> 11.441 Phantom

- NL HSS Spiraalboor TiN-tip, met drievlaks schacht, (handgebruik)
 FR Foret HSS avec revêtement TiN sur la partie utile, à 3 méplats, (usage à la main)
 ES Broca HSS con punta TiN, con 3 chaflanes, (uso manual)
 DE HSS Spiralbohrer TiN-Tip, mit drei platten Flächen, (handgebrauch)
 EN HSS Twist drill TiN coated tip, with 3 flat surfaces, (handuse)



Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€
11.441.0400	4	4	75	43	2,80	11.441.0550	5.5	5.5	93	57	4,53	11.441.0800	8	8	117	75	8,14
11.441.0410	4.1	4.1	75	43	3,16	11.441.0570	5.7	5.7	93	57	4,59	11.441.0850	8.5	8.5	117	75	9,92
11.441.0420	4.2	4.2	75	43	3,16	11.441.0580	5.8	5.8	93	57	4,59	11.441.0900	9	9	125	81	10,83
11.441.0430	4.3	4.3	80	47	3,18	11.441.0600	6	6	93	57	5,24	11.441.0950	9.5	9.5	125	81	12,03
11.441.0450	4.5	4.5	80	47	3,16	11.441.0610	6.1	6.1	101	63	5,22	11.441.1000	10	10	133	87	12,59
11.441.0470	4.7	4.7	80	47	3,55	11.441.0620	6.2	6.2	101	63	5,22	11.441.1020	10.2	10.2	133	87	13,51
11.441.0480	4.8	4.8	86	52	3,55	11.441.0630	6.3	6.3	101	63	5,26	11.441.1050	10.5	10.5	133	87	13,66
11.441.0490	4.9	4.9	86	52	3,55	11.441.0650	6.5	6.5	101	63	5,35	11.441.1100	11	11	142	94	14,25
11.441.0500	5	5	86	52	3,78	11.441.0670	6.7	6.7	101	63	5,53	11.441.1150	11.5	11.5	142	94	17,30
11.441.0510	5.1	5.1	86	52	3,84	11.441.0680	6.8	6.8	109	69	5,87	11.441.1200	12	12	151	101	17,56
11.441.0520	5.2	5.2	86	52	3,84	11.441.0700	7	7	109	69	6,42	11.441.1250	12.5	12.5	151	101	20,73
11.441.0530	5.3	5.3	86	52	4,48	11.441.0750	7.5	7.5	109	69	6,81	11.441.1300	13	13	151	101	21,45



- NL De boor bij uitstek voor handgebruik
 FR Le foret idéalement adapté pour l'utilisation manuelle
 ES La broca por excelencia para uso manual
 DE Der Spitzenbohrer für den Handgebrauch
 EN The drill of choice for manual use

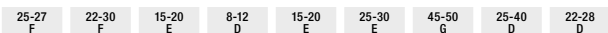
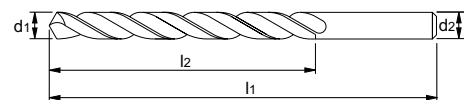
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> 11.443 Phantom

- NL HSS Spiraalboor Step-point, met drievlaks schacht
 FR Foret à pointe étagée HSS Step-point, à 3 méplats
 ES Broca HSS Step-point, con 3 chaflanes
 DE HSS Spiralbohrer Step-point, mit drei platten Flächen
 EN HSS Stub Drill Step-point, with 3 flat surfaces



Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€
11.443.0100	1	1	34	12	2,81	11.443.0490	4.9	4.9	86	52	5,58	11.443.0900	9	9	125	81	14,16
11.443.0150	1.5	1.5	40	18	3,00	11.443.0500	5	5	86	52	6,47	11.443.0950	9.5	9.5	125	81	14,73
11.443.0200	2	2	49	24	3,22	11.443.0510	5.1	5.1	86	52	6,97	11.443.1000	10	10	133	87	17,36
11.443.0250	2.5	2.5	57	30	3,92	11.443.0520	5.2	5.2	86	52	7,27	11.443.1020	10.2	10.2	133	87	18,66
11.443.0300	3	3	61	33	4,42	11.443.0550	5.5	5.5	93	57	7,27	11.443.1050	10.5	10.5	133	87	19,07
11.443.0320	3.2	3.2	65	36	4,33	11.443.0600	6	6	93	57	8,26	11.443.1100	11	11	142	94	22,10
11.443.0330	3.3	3.3	65	36	4,42	11.443.0650	6.5	6.5	101	63	8,93	11.443.1150	11.5	11.5	142	94	22,77
11.443.0350	3.5	3.5	70	39	4,59	11.443.0680	6.8	6.8	109	69	9,42	11.443.1200	12	12	151	101	25,85
11.443.0400	4	4	75	43	4,91	11.443.0700	7	7	109	69	9,50	11.443.1250	12.5	12.5	151	101	29,35
11.443.0410	4.1	4.1	75	43	5,22	11.443.0750	7.5	7.5	109	69	10,71	11.443.1300	13	13	151	101	30,25
11.443.0420	4.2	4.2	75	43	5,22	11.443.0800	8	8	117	75	12,18						
11.443.0450	4.5	4.5	80	47	5,40	11.443.0850	8.5	8.5	117	75	12,60						



- NL Step-point spiraalboor in actie
 FR Regardez le foret à pointe étagée Step-point en action
 ES Broca escalonada en acción
 DE Spiralbohrer mit Stufenspitze in Aktion
 EN Step-Point Stub Drill in Action

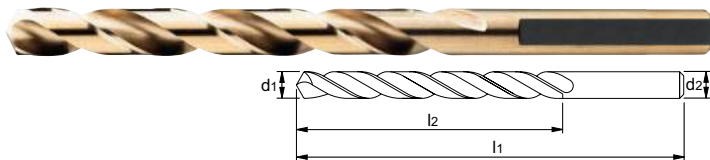
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> 11.445 **Phantom**

NL HSS-E Spiraalboor met drievlaks schacht
 FR Foret HSS-E à 3 méplats
 ES Broca HSS-E con 3 chaflanes
 DE HSS-E Spiralbohrer mit drei platten Flächen
 EN HSS-E Twist drill with 3 flat surfaces



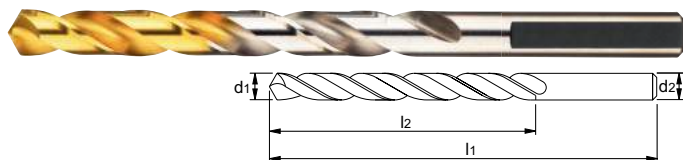
HSS-E DIN 338 N   135°





P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€
11.445.0400	4	4	75	43	3,24	11.445.0700	7	7	109	69	7,40	11.445.1050	10.5	10.5	133	87	17,56
11.445.0420	4.2	4.2	75	43	4,23	11.445.0750	7.5	7.5	109	69	8,43	11.445.1100	11	11	142	94	18,65
11.445.0450	4.5	4.5	80	47	3,55	11.445.0800	8	8	117	75	9,28	11.445.1150	11.5	11.5	142	94	21,80
11.445.0500	5	5	86	52	4,01	11.445.0850	8.5	8.5	117	75	11,13	11.445.1200	12	12	151	101	21,90
11.445.0550	5.5	5.5	93	57	4,71	11.445.0900	9	9	125	81	12,14	11.445.1250	12.5	12.5	151	101	24,29
11.445.0600	6	6	93	57	5,33	11.445.0950	9.5	9.5	125	81	13,44	11.445.1300	13	13	151	101	24,15
11.445.0650	6.5	6.5	101	63	6,42	11.445.1000	10	10	133	87	15,63						
11.445.0680	6.8	6.8	109	69	9,11	11.445.1020	10.2	10.2	133	87	19,47						

> 11.446 **Phantom**

NL HSS-E Spiraalboor TiN-tip, met drievlaks schacht, (handgebruik)
 FR Foret HSS-E avec revêtement TiN sur la partie utile, à 3 méplats, (usage à la main)
 ES Broca HSS-E con punta TiN, con 3 chaflanes, (uso manual)
 DE HSS-E Spiralbohrer TiN-Tip, mit drei platten Flächen, (handgebrauch)
 EN HSS-E Twist drill TiN coated tip, with 3 flat surfaces, (handuse)



HSS-E TiN DIN 338 >N   118°  

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
32-40 E	35-40 E	25-32 E	12-20 D	15-20 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€
11.446.0400	4	4	75	43	3,59	11.446.0550	5.5	5.5	93	57	5,14	11.446.0800	8	8	117	75	10,15
11.446.0410	4.1	4.1	75	43	4,30	11.446.0570	5.7	5.7	93	57	7,77	11.446.0850	8.5	8.5	117	75	12,23
11.446.0420	4.2	4.2	75	43	3,87	11.446.0580	5.8	5.8	93	57	7,77	11.446.0900	9	9	125	81	13,34
11.446.0430	4.3	4.3	80	47	5,42	11.446.0600	6	6	93	57	5,95	11.446.0950	9.5	9.5	125	81	14,81
11.446.0450	4.5	4.5	80	47	3,87	11.446.0610	6.1	6.1	101	63	9,91	11.446.1000	10	10	133	87	17,07
11.446.0470	4.7	4.7	80	47	7,18	11.446.0620	6.2	6.2	101	63	9,91	11.446.1020	10.2	10.2	133	87	19,01
11.446.0480	4.8	4.8	86	52	5,65	11.446.0630	6.3	6.3	101	63	9,91	11.446.1050	10.5	10.5	133	87	19,01
11.446.0490	4.9	4.9	86	52	5,65	11.446.0650	6.5	6.5	101	63	7,10	11.446.1100	11	11	142	94	19,63
11.446.0500	5	5	86	52	4,37	11.446.0670	6.7	6.7	101	63	11,58	11.446.1150	11.5	11.5	142	94	23,02
11.446.0510	5.1	5.1	86	52	7,56	11.446.0680	6.8	6.8	109	69	8,13	11.446.1200	12	12	151	101	23,63
11.446.0520	5.2	5.2	86	52	7,56	11.446.0700	7	7	109	69	8,13	11.446.1250	12.5	12.5	151	101	26,10
11.446.0530	5.3	5.3	86	52	7,56	11.446.0750	7.5	7.5	109	69	9,29	11.446.1300	13	13	151	101	26,75

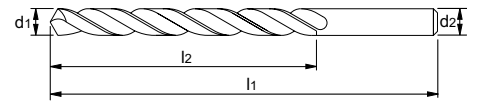


NL Effect toerental boor op RVS
 FR Effet de la vitesse de rotation d'un foret sur le perçage d'inox
 ES Efecto de las revoluciones de la broca en inox
 DE Effekt Drehzahl Spiralbohrer auf Rostfreien Stahl
 EN Effect off revolutions drillbit on stainless steel



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> 11.447 Phantom



NL HSS-E Spiraalboor Step-point, met drievlaks schacht
 FR Foret HSS-E Step-point, à 3 méplats
 ES Broca HSS-E Step-point, con 3 chaflanes
 DE HSS-E Spiralbohrer Step-point, mit drei platten Flächen
 EN HSS-E Twist drill Step-point, with 3 flat surfaces

NEUW NOUVEAU NUEVO NEU

HSS-E OX. DIN 338 >N

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	d1	d2	l1	l2	€
11.447.0100	1	1	34	12	3,36
11.447.0150	1.5	1.5	40	18	3,57
11.447.0200	2	2	49	24	3,86
11.447.0250	2.5	2.5	57	30	4,71
11.447.0300	3	3	61	33	5,30
11.447.0320	3.2	3.2	65	36	5,20
11.447.0330	3.3	3.3	65	36	5,30
11.447.0350	3.5	3.5	70	39	5,52
11.447.0400	4	4	75	43	5,90
11.447.0410	4.1	4.1	75	43	6,27
11.447.0420	4.2	4.2	75	43	6,27
11.447.0450	4.5	4.5	80	47	6,48

Ref.	d1	d2	l1	l2	€
11.447.0490	4.9	4.9	86	52	6,69
11.447.0500	5	5	86	52	7,76
11.447.0510	5.1	5.1	86	52	8,36
11.447.0520	5.2	5.2	86	52	8,73
11.447.0550	5.5	5.5	93	57	8,73
11.447.0600	6	6	93	57	9,90
11.447.0650	6.5	6.5	101	63	10,71
11.447.0680	6.8	6.8	109	69	11,31
11.447.0700	7	7	109	69	11,40
11.447.0750	7.5	7.5	109	69	12,85
11.447.0800	8	8	117	75	14,61
11.447.0850	8.5	8.5	117	75	15,12

Ref.	d1	d2	l1	l2	€
11.447.0900	9	9	125	81	16,99
11.447.0950	9.5	9.5	125	81	17,68
11.447.1000	10	10	133	87	20,83
11.447.1020	10.2	10.2	133	87	22,40
11.447.1050	10.5	10.5	133	87	22,89
11.447.1100	11	11	142	94	26,50
11.447.1150	11.5	11.5	142	94	27,35
11.447.1200	12	12	151	101	31,00
11.447.1250	12.5	12.5	151	101	35,25
11.447.1300	13	13	151	101	36,30



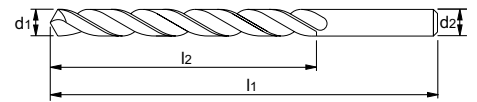
NL Step-point spiraalboor in actie
 FR Regardez le foret à pointe étagée Step-point en action
 ES Broca escalonada en acción
 DE Spiralbohrer mit Stufenspitze in Aktion
 EN Step-Point Stub Drill in Action

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> 11.450 Phantom



NL HSS Spiraalboor
 FR Foret HSS
 ES Broca HSS
 DE HSS Spiralbohrer
 EN HSS Twist drill

HSS OX. DIN 338 N

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	45-50 G	25-40 D	22-28 D

Ref.	d1	d2	l1	l2	€
11.450.0020	0.2	0.2	19	2.5	5,57
11.450.0025	0.25	0.25	19	3	5,47
11.450.0030	0.3	0.3	19	3	4,67
11.450.0035	0.35	0.35	19	4	5,17
11.450.0040	0.4	0.4	20	5	4,86
11.450.0045	0.45	0.45	20	5	4,88
11.450.0050	0.5	0.5	22	6	4,29
11.450.0055	0.55	0.55	24	7	4,26
11.450.0060	0.6	0.6	24	7	3,84
11.450.0065	0.65	0.65	26	8	3,93
11.450.0070	0.7	0.7	28	9	3,07
11.450.0075	0.75	0.75	28	9	3,07
11.450.0080	0.8	0.8	30	10	3,07
11.450.0085	0.85	0.85	30	10	3,07
11.450.0090	0.9	0.9	32	11	3,07
11.450.0095	0.95	0.95	32	11	3,07
11.450.0100	1	1	34	12	1,75
11.450.0105	1.05	1.05	34	12	2,66
11.450.0110	1.1	1.1	36	14	2,03
11.450.0115	1.15	1.15	36	14	2,26
11.450.0120	1.2	1.2	38	16	2,03
11.450.0125	1.25	1.25	38	16	2,18
11.450.0130	1.3	1.3	38	16	2,03
11.450.0135	1.35	1.35	40	18	2,57
11.450.0140	1.4	1.4	40	18	2,03
11.450.0145	1.45	1.45	40	18	2,26

Ref.	d1	d2	l1	l2	€
11.450.0150	1.5	1.5	40	18	1,94
11.450.0155	1.55	1.55	43	20	2,08
11.450.0160	1.6	1.6	43	20	1,88
11.450.0165	1.65	1.65	43	20	2,08
11.450.0170	1.7	1.7	43	20	1,94
11.450.0175	1.75	1.75	46	22	2,15
11.450.0180	1.8	1.8	46	22	2,06
11.450.0185	1.85	1.85	46	22	2,84
11.450.0190	1.9	1.9	46	22	2,06
11.450.0195	1.95	1.95	49	24	2,15
11.450.0200	2	2	49	24	1,73
11.450.0205	2.05	2.05	49	24	1,89
11.450.0210	2.1	2.1	49	24	1,78
11.450.0215	2.15	2.15	53	27	1,89
11.450.0220	2.2	2.2	53	27	1,72
11.450.0225	2.25	2.25	53	27	1,86
11.450.0230	2.3	2.3	53	27	1,72
11.450.0235	2.35	2.35	53	27	1,86
11.450.0240	2.4	2.4	57	30	1,72
11.450.0245	2.45	2.45	57	30	1,86
11.450.0250	2.5	2.5	57	30	1,44
11.450.0255	2.55	2.55	57	30	2,18
11.450.0260	2.6	2.6	57	30	1,98
11.450.0265	2.65	2.65	57	30	2,18
11.450.0270	2.7	2.7	61	33	1,98
11.450.0275	2.75	2.75	61	33	2,18

Ref.	d1	d2	l1	l2	€
11.450.0280	2.8	2.8	61	33	1,98
11.450.0285	2.85	2.85	61	33	2,18
11.450.0290	2.9	2.9	61	33	1,98
11.450.0295	2.95	2.95	61	33	2,18
11.450.0300	3	3	61	33	1,93
11.450.0305	3.05	3.05	65	36	2,18
11.450.0310	3.1	3.1	65	36	2,08
11.450.0315	3.15	3.15	65	36	2,18
11.450.0320	3.2	3.2	65	36	2,08
11.450.0325	3.25	3.25	65	36	2,18
11.450.0330	3.3	3.3	65	36	2,08
11.450.0335	3.35	3.35	65	36	2,18
11.450.0340	3.4	3.4	70	39	2,08
11.450.0345	3.45	3.45	70	39	2,18
11.450.0350	3.5	3.5	70	39	1,93
11.450.0355	3.55	3.55	70	39	2,22
11.450.0360	3.6	3.6	70	39	2,18
11.450.0365	3.65	3.65	70	39	2,22
11.450.0370	3.7	3.7	70	39	2,18
11.450.0375	3.75	3.75	70	39	2,45
11.450.0380	3.8	3.8	75	43	2,21
11.450.0385	3.85	3.85	75	43	2,59
11.450.0390	3.9	3.9	75	43	2,21
11.450.0395	3.95	3.95	75	43	2,59
11.450.0400	4	4	75	43	2,02
11.450.0405	4.05	4.05	75	43	2,73

> 11.450 Phantom

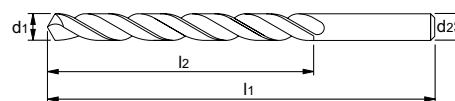
Ref.	d1	d2	l1	l2	€
11.450.0410	4.1	4.1	75	43	2,37
11.450.0415	4.15	4.15	75	43	2,73
11.450.0420	4.2	4.2	75	43	2,37
11.450.0425	4.25	4.25	75	43	2,73
11.450.0430	4.3	4.3	80	47	2,37
11.450.0435	4.35	4.35	80	47	2,73
11.450.0440	4.4	4.4	80	47	2,37
11.450.0445	4.45	4.45	80	47	2,73
11.450.0450	4.5	4.5	80	47	2,26
11.450.0455	4.55	4.55	80	47	3,05
11.450.0460	4.6	4.6	80	47	2,82
11.450.0465	4.65	4.65	80	47	3,05
11.450.0470	4.7	4.7	80	47	2,82
11.450.0475	4.75	4.75	80	47	3,05
11.450.0480	4.8	4.8	86	52	2,82
11.450.0485	4.85	4.85	86	52	3,05
11.450.0490	4.9	4.9	86	52	2,82
11.450.0495	4.95	4.95	86	52	3,05
11.450.0500	5	5	86	52	2,63
11.450.0510	5.1	5.1	86	52	3,07
11.450.0520	5.2	5.2	86	52	3,07
11.450.0525	5.25	5.25	86	52	3,25
11.450.0530	5.3	5.3	86	52	3,26
11.450.0540	5.4	5.4	93	57	3,26
11.450.0550	5.5	5.5	93	57	2,91
11.450.0555	5.55	5.55	93	57	3,43
11.450.0560	5.6	5.6	93	57	3,43
11.450.0570	5.7	5.7	93	57	3,43
11.450.0575	5.75	5.75	93	57	4,36
11.450.0580	5.8	5.8	93	57	3,43
11.450.0590	5.9	5.9	93	57	3,43
11.450.0600	6	6	93	57	3,23
11.450.0610	6.1	6.1	101	63	4,07
11.450.0620	6.2	6.2	101	63	4,07
11.450.0625	6.25	6.25	101	63	4,62
11.450.0630	6.3	6.3	101	63	4,07
11.450.0635	6.35	6.35	101	63	4,62
11.450.0640	6.4	6.4	101	63	4,07
11.450.0650	6.5	6.5	101	63	3,76
11.450.0660	6.6	6.6	101	63	4,88
11.450.0670	6.7	6.7	101	63	4,88
11.450.0675	6.75	6.75	109	69	4,95
11.450.0680	6.8	6.8	109	69	4,95
11.450.0690	6.9	6.9	109	69	4,95
11.450.0700	7	7	109	69	4,27
11.450.0710	7.1	7.1	109	69	5,28
11.450.0720	7.2	7.2	109	69	5,28
11.450.0725	7.25	7.25	109	69	5,77
11.450.0730	7.3	7.3	109	69	5,28
11.450.0740	7.4	7.4	109	69	5,49

Ref.	d1	d2	l1	l2	€
11.450.0750	7.5	7.5	109	69	4,71
11.450.0760	7.6	7.6	117	75	6,05
11.450.0770	7.7	7.7	117	75	6,13
11.450.0775	7.75	7.75	117	75	6,13
11.450.0780	7.8	7.8	117	75	6,13
11.450.0790	7.9	7.9	117	75	6,13
11.450.0800	8	8	117	75	5,70
11.450.0810	8.1	8.1	117	75	6,77
11.450.0820	8.2	8.2	117	75	6,77
11.450.0825	8.25	8.25	117	75	7,08
11.450.0830	8.3	8.3	117	75	6,92
11.450.0840	8.4	8.4	117	75	6,92
11.450.0850	8.5	8.5	117	75	6,37
11.450.0860	8.6	8.6	125	81	8,19
11.450.0870	8.7	8.7	125	81	8,19
11.450.0875	8.75	8.75	125	81	8,96
11.450.0880	8.8	8.8	125	81	8,19
11.450.0890	8.9	8.9	125	81	8,19
11.450.0900	9	9	125	81	7,44
11.450.0910	9.1	9.1	125	81	9,03
11.450.0920	9.2	9.2	125	81	9,03
11.450.0925	9.25	9.25	125	81	9,54
11.450.0930	9.3	9.3	125	81	9,03
11.450.0940	9.4	9.4	125	81	9,03
11.450.0950	9.5	9.5	125	81	8,18
11.450.0960	9.6	9.6	133	87	9,96
11.450.0970	9.7	9.7	133	87	9,96
11.450.0975	9.75	9.75	133	87	9,90
11.450.0980	9.8	9.8	133	87	9,96
11.450.0990	9.9	9.9	133	87	9,96
11.450.1000	10	10	133	87	9,02
11.450.1010	10.1	10.1	133	87	11,33
11.450.1020	10.2	10.2	133	87	11,33
11.450.1025	10.25	10.25	133	87	11,74
11.450.1030	10.3	10.3	133	87	11,74
11.450.1040	10.4	10.4	133	87	11,74
11.450.1050	10.5	10.5	133	87	9,81
11.450.1060	10.6	10.6	133	87	13,01
11.450.1070	10.7	10.7	142	94	13,01
11.450.1075	10.75	10.75	142	94	13,01
11.450.1080	10.8	10.8	142	94	13,01
11.450.1090	10.9	10.9	142	94	13,01
11.450.1100	11	11	142	94	10,06
11.450.1110	11.1	11.1	142	94	14,72
11.450.1120	11.2	11.2	142	94	14,72
11.450.1125	11.25	11.25	142	94	14,72
11.450.1130	11.3	11.3	142	94	14,72
11.450.1140	11.4	11.4	142	94	14,72
11.450.1150	11.5	11.5	142	94	10,79
11.450.1160	11.6	11.6	142	94	15,12

Ref.	d1	d2	l1	l2	€
11.450.1170	11.7	11.7	142	94	15,12
11.450.1175	11.75	11.75	142	94	15,12
11.450.1180	11.8	11.8	142	94	15,12
11.450.1190	11.9	11.9	151	101	15,12
11.450.1200	12	12	151	101	13,13
11.450.1210	12.1	12.1	151	101	16,10
11.450.1220	12.2	12.2	151	101	16,10
11.450.1225	12.25	12.25	151	101	16,10
11.450.1230	12.3	12.3	151	101	16,10
11.450.1240	12.4	12.4	151	101	16,72
11.450.1250	12.5	12.5	151	101	14,07
11.450.1260	12.6	12.6	151	101	17,33
11.450.1270	12.7	12.7	151	101	17,33
11.450.1275	12.75	12.75	151	101	17,33
11.450.1280	12.8	12.8	151	101	17,33
11.450.1290	12.9	12.9	151	101	17,33
11.450.1300	13	13	151	101	14,57
11.450.1310	13.1	13.1	151	101	25,70
11.450.1320	13.2	13.2	151	101	25,70
11.450.1325	13.25	13.25	160	108	25,70
11.450.1330	13.3	13.3	160	108	25,70
11.450.1340	13.4	13.4	160	108	25,70
11.450.1350	13.5	13.5	160	108	22,54
11.450.1360	13.6	13.6	160	108	25,70
11.450.1370	13.7	13.7	160	108	25,70
11.450.1375	13.75	13.75	160	108	25,70
11.450.1380	13.8	13.8	160	108	25,70
11.450.1390	13.9	13.9	160	108	25,70
11.450.1400	14	14	160	108	23,02
11.450.1425	14.25	14.25	169	114	39,70
11.450.1450	14.5	14.5	169	114	35,15
11.450.1475	14.75	14.75	169	114	39,70
11.450.1500	15	15	169	114	35,20
11.450.1510	15.1	15.1	178	120	41,65
11.450.1525	15.25	15.25	178	120	42,40
11.450.1550	15.5	15.5	178	120	38,30
11.450.1575	15.75	15.75	178	120	43,80
11.450.1580	15.8	15.8	178	120	43,80
11.450.1600	16	16	178	120	39,25
11.450.1650	16.5	16.5	184	125	44,30
11.450.1690	16.9	16.9	184	125	44,60
11.450.1700	17	17	184	125	44,95
11.450.1750	17.5	17.5	191	130	48,20
11.450.1800	18	18	191	130	54,95
11.450.1850	18.5	18.5	198	135	58,40
11.450.1890	18.9	18.9	198	135	59,35
11.450.1900	19	19	198	135	60,30
11.450.1950	19.5	19.5	205	140	63,50
11.450.2000	20	20	205	140	65,55

> 11.451 Phantom

NL HSS Spiraalboor TiN-tip
 FR Foret HSS avec revêtement TiN sur la partie utile
 ES Broca HSS con punta TiN
 DE HSS Spiralbohrer TiN-Tip
 EN HSS Twist drill TiN coated tip



HSS TiN DIN 338 N $\geq 1,6$ 118°

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si-10%	N 51 Cu	N 61 PVC
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27-30 F 25-28 F 17-22 E 10-14 D 20-33 E 20-28 E 50-80 E 45-70 G 40-65 D 25-36 D

Ref.	d1	d2	l1	l2	€
11.451.0100	1	1	34	12	1,80
11.451.0110	1.1	1.1	36	14	2,07
11.451.0120	1.2	1.2	38	16	2,07
11.451.0130	1.3	1.3	38	16	2,07
11.451.0140	1.4	1.4	40	18	2,07
11.451.0150	1.5	1.5	40	18	2,07
11.451.0160	1.6	1.6	43	20	2,15
11.451.0170	1.7	1.7	43	20	2,15
11.451.0180	1.8	1.8	46	22	2,15
11.451.0190	1.9	1.9	46	22	2,15
11.451.0200	2	2	49	24	2,15
11.451.0210	2.1	2.1	49	24	2,15
11.451.0220	2.2	2.2	53	27	2,07
11.451.0230	2.3	2.3	53	27	2,07

Ref.	d1	d2	l1	l2	€
11.451.0240	2.4	2.4	57	30	2,07
11.451.0250	2.5	2.5	57	30	2,07
11.451.0260	2.6	2.6	57	30	2,15
11.451.0270	2.7	2.7	61	33	2,15
11.451.0280	2.8	2.8	61	33	2,15
11.451.0290	2.9	2.9	61	33	2,15
11.451.0300	3	3	61	33	2,15
11.451.0310	3.1	3.1	65	36	2,33
11.451.0320	3.2	3.2	65	36	2,33
11.451.0330	3.3	3.3	65	36	2,33
11.451.0340	3.4	3.4	70	39	2,33
11.451.0350	3.5	3.5	70	39	2,33
11.451.0360	3.6	3.6	70	39	2,53
11.451.0370	3.7	3.7	70	39	2,53

Ref.	d1	d2	l1	l2	€
11.451.0380	3.8	3.8	75	43	2,53
11.451.0390	3.9	3.9			

> 11.451 Phantom

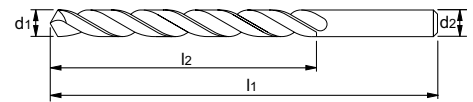
Ref.	d1	d2	l1	l2	€
11.451.0520	5.2	5.2	86	52	3,56
11.451.0530	5.3	5.3	86	52	4,22
11.451.0540	5.4	5.4	93	57	4,22
11.451.0550	5.5	5.5	93	57	4,22
11.451.0560	5.6	5.6	93	57	4,22
11.451.0570	5.7	5.7	93	57	4,22
11.451.0580	5.8	5.8	93	57	4,22
11.451.0590	5.9	5.9	93	57	4,22
11.451.0600	6	6	93	57	4,86
11.451.0610	6.1	6.1	101	63	4,86
11.451.0620	6.2	6.2	101	63	4,86
11.451.0630	6.3	6.3	101	63	4,86
11.451.0640	6.4	6.4	101	63	4,86
11.451.0650	6.5	6.5	101	63	4,92
11.451.0660	6.6	6.6	101	63	5,00
11.451.0670	6.7	6.7	101	63	5,09
11.451.0680	6.8	6.8	109	69	5,44
11.451.0690	6.9	6.9	109	69	5,44
11.451.0700	7	7	109	69	5,97
11.451.0710	7.1	7.1	109	69	6,28
11.451.0720	7.2	7.2	109	69	6,28
11.451.0730	7.3	7.3	109	69	6,28
11.451.0740	7.4	7.4	109	69	6,28
11.451.0750	7.5	7.5	109	69	6,28
11.451.0760	7.6	7.6	117	75	6,28
11.451.0770	7.7	7.7	117	75	6,80
11.451.0780	7.8	7.8	117	75	6,80

Ref.	d1	d2	l1	l2	€
11.451.0790	7.9	7.9	117	75	6,80
11.451.0800	8	8	117	75	7,52
11.451.0810	8.1	8.1	117	75	8,43
11.451.0820	8.2	8.2	117	75	8,43
11.451.0830	8.3	8.3	117	75	9,07
11.451.0840	8.4	8.4	117	75	9,07
11.451.0850	8.5	8.5	117	75	9,07
11.451.0860	8.6	8.6	125	81	9,97
11.451.0870	8.7	8.7	125	81	9,97
11.451.0880	8.8	8.8	125	81	9,97
11.451.0890	8.9	8.9	125	81	9,97
11.451.0900	9	9	125	81	9,97
11.451.0910	9.1	9.1	125	81	10,43
11.451.0920	9.2	9.2	125	81	10,43
11.451.0930	9.3	9.3	125	81	11,09
11.451.0940	9.4	9.4	125	81	11,09
11.451.0950	9.5	9.5	125	81	11,09
11.451.0960	9.6	9.6	133	87	11,34
11.451.0970	9.7	9.7	133	87	11,34
11.451.0980	9.8	9.8	133	87	11,48
11.451.0990	9.9	9.9	133	87	11,48
11.451.1000	10	10	133	87	11,60
11.451.1010	10.1	10.1	133	87	12,22
11.451.1020	10.2	10.2	133	87	12,44
11.451.1030	10.3	10.3	133	87	12,58
11.451.1040	10.4	10.4	133	87	12,58
11.451.1050	10.5	10.5	133	87	12,58

Ref.	d1	d2	l1	l2	€
11.451.1060	10.6	10.6	133	87	14,21
11.451.1070	10.7	10.7	142	94	14,21
11.451.1080	10.8	10.8	142	94	14,21
11.451.1090	10.9	10.9	142	94	14,21
11.451.1100	11	11	142	94	13,16
11.451.1110	11.1	11.1	142	94	15,95
11.451.1120	11.2	11.2	142	94	15,95
11.451.1130	11.3	11.3	142	94	15,95
11.451.1140	11.4	11.4	142	94	15,95
11.451.1150	11.5	11.5	142	94	15,95
11.451.1160	11.6	11.6	142	94	16,46
11.451.1170	11.7	11.7	142	94	16,46
11.451.1180	11.8	11.8	142	94	16,46
11.451.1190	11.9	11.9	151	101	16,46
11.451.1200	12	12	151	101	16,21
11.451.1210	12.1	12.1	151	101	18,01
11.451.1220	12.2	12.2	151	101	18,01
11.451.1230	12.3	12.3	151	101	18,01
11.451.1240	12.4	12.4	151	101	18,14
11.451.1250	12.5	12.5	151	101	19,12
11.451.1260	12.6	12.6	151	101	20,27
11.451.1270	12.7	12.7	151	101	20,27
11.451.1280	12.8	12.8	151	101	20,27
11.451.1290	12.9	12.9	151	101	20,27
11.451.1300	13	13	151	101	19,84

> 11.461 Phantom

- NL** HSS Spiraalboor TiN-tip, (handgebruik)
FR Foret HSS avec revêtement TiN sur la partie utile, (usage à la main)
ES Broca HSS con punta TiN, (uso manual)
DE HSS Spiralbohrer TiN-Tip, (handgebrauch)
EN HSS Twist drill TiN coated tip, (handuse)



HSS **TiN** **DIN 338** **>N** **≥1,6** **118°** **Hand** **Drill**

P 11	P 12	P 13	M 21	K 31	K 32	N 41	N 42	N 51	N 61
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	PVC
27-30 F	25-28 F	17-22 E	10-14 D	20-33 E	20-28 E	50-80 E	45-70 G	40-65 D	25-36 D

Ref.	d1	d2	l1	l2	€
11.461.0100	1	1	34	12	1,80
11.461.0110	1.1	1.1	36	14	2,07
11.461.0120	1.2	1.2	38	16	2,07
11.461.0130	1.3	1.3	38	16	2,07
11.461.0140	1.4	1.4	40	18	2,07
11.461.0150	1.5	1.5	40	18	2,07
11.461.0160	1.6	1.6	43	20	2,15
11.461.0170	1.7	1.7	43	20	2,15
11.461.0180	1.8	1.8	46	22	2,15
11.461.0190	1.9	1.9	46	22	2,15
11.461.0200	2	2	49	24	2,15
11.461.0210	2.1	2.1	49	24	2,15
11.461.0220	2.2	2.2	53	27	2,06
11.461.0230	2.3	2.3	53	27	2,06
11.461.0240	2.4	2.4	57	30	2,06
11.461.0250	2.5	2.5	57	30	2,06
11.461.0260	2.6	2.6	57	30	2,15
11.461.0270	2.7	2.7	61	33	2,15
11.461.0280	2.8	2.8	61	33	2,15
11.461.0290	2.9	2.9	61	33	2,15
11.461.0300	3	3	61	33	2,15
11.461.0310	3.1	3.1	65	36	2,33
11.461.0320	3.2	3.2	65	36	2,33
11.461.0330	3.3	3.3	65	36	2,33
11.461.0340	3.4	3.4	70	39	2,33
11.461.0350	3.5	3.5	70	39	2,33
11.461.0360	3.6	3.6	70	39	2,53
11.461.0370	3.7	3.7	70	39	2,53
11.461.0380	3.8	3.8	75	43	2,53
11.461.0390	3.9	3.9	75	43	2,53
11.461.0400	4	4	75	43	2,57
11.461.0410	4.1	4.1	75	43	2,91
11.461.0420	4.2	4.2	75	43	2,91
11.461.0430	4.3	4.3	80	47	2,91
11.461.0440	4.4	4.4	80	47	2,91
11.461.0450	4.5	4.5	80	47	2,91
11.461.0460	4.6	4.6	80	47	3,28

Ref.	d1	d2	l1	l2	€
11.461.0470	4.7	4.7	80	47	3,28
11.461.0480	4.8	4.8	86	52	3,28
11.461.0490	4.9	4.9	86	52	3,28
11.461.0500	5	5	86	52	3,50
11.461.0510	5.1	5.1	86	52	3,53
11.461.0520	5.2	5.2	86	52	3,53
11.461.0530	5.3	5.3	86	52	4,17
11.461.0540	5.4	5.4	93	57	4,17
11.461.0550	5.5	5.5	93	57	4,17
11.461.0560	5.6	5.6	93	57	4,22
11.461.0570	5.7	5.7	93	57	4,22
11.461.0580	5.8	5.8	93	57	4,22
11.461.0590	5.9	5.9	93	57	4,22
11.461.0600	6	6	93	57	4,86
11.461.0610	6.1	6.1	101	63	4,82
11.461.0620	6.2	6.2	101	63	4,82
11.461.0630	6.3	6.3	101	63	4,86
11.461.0640	6.4	6.4	101	63	4,86
11.461.0650	6.5	6.5	101	63	4,92
11.461.0660	6.6	6.6	101	63	5,00
11.461.0670	6.7	6.7	101	63	5,09
11.461.0680	6.8	6.8	109	69	5,41
11.461.0690	6.9	6.9	109	69	5,41
11.461.0700	7	7	109	69	5,97
11.461.0710	7.1	7.1	109	69	6,23
11.461.0720	7.2	7.2	109	69	6,23
11.461.0730	7.3	7.3	109	69	6,23
11.461.0740	7.4	7.4	109	69	6,28
11.461.0750	7.5	7.5	109	69	6,28
11.461.0760	7.6	7.6	117	75	6,28
11.461.0770	7.7	7.7	117	75	6,76
11.461.0780	7.8	7.8	117	75	6,76
11.461.0790	7.9	7.9	117	75	6,76
11.461.0800	8	8	117	75	7,52
11.461.0810	8.1	8.1	117	75	8,37
11.461.0820	8.2	8.2	117	75	8,37
11.461.0830	8.3	8.3	117	75	9,07

Ref.	d1	d2	l1	l2	€
11.461.0840	8.4	8.4	117	75	9,07
11.461.0850	8.5	8.5	117	75	9,07
11.461.0860	8.6	8.6	125	81	9,97
11.461.0870	8.7	8.7	125	81	9,97
11.461.0880	8.8	8.8	125	81	9,97
11.461.0890	8.9	8.9	125	81	9,97
11.461.0900	9	9	125	81	9,97
11.461.0910	9.1	9.1	125	81	10,43
11.461.0920	9.2	9.2	125	81	10,43
11.461.0930	9.3	9.3	125	81	11,09
11.461.0940	9.4	9.4	125	81	11,09
11.461.0950	9.5	9.5	125	81	11,09
11.461.0960	9.6	9.6	133	87	11,25
11.461.0970	9.7	9.7	133	87	11,25
11.461.0980	9.8	9.8	133	87	11,48
11.461.0990	9.9	9.9	133	87	11,48
11.461.1000	10	10	133	87	11,60
11.461.1010	10.1	10.1	133	87	12,22
11.461.1020	10.2	10.2	133	87	12,44
11.461.1030	10.3	10.3	133	87	12,58
11.461.1040	10.4	10.4	133	87	12,58
11.461.1050	10.5	10.5	133	87	12,58
11.461.1060	10.6	10.6	133	87</	

> 11.461 **Phantom**

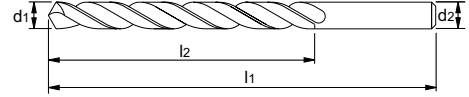
Ref.	d1	d2	l1	l2	€
11.461.1210	12.1	12.1	151	101	18,01
11.461.1220	12.2	12.2	151	101	18,01
11.461.1230	12.3	12.3	151	101	18,01
11.461.1240	12.4	12.4	151	101	18,14

Ref.	d1	d2	l1	l2	€
11.461.1250	12.5	12.5	151	101	19,12
11.461.1260	12.6	12.6	151	101	20,27
11.461.1270	12.7	12.7	151	101	20,27
11.461.1280	12.8	12.8	151	101	20,27

Ref.	d1	d2	l1	l2	€
11.461.1290	12.9	12.9	151	101	20,27
11.461.1300	13	13	151	101	19,84

> 11.490 **INTERNATIONAL TOOLS**

NL ECO PRO HSS-E Spiraalboor
 FR Foret HSS-E ECO PRO
 ES Broca HSS-E ECO PRO
 DE ECO PRO HSS-E Spiralbohrer
 EN ECO PRO HSS-E Twist drill



HSS-E DIN 338 N **ECO PRO**

P 11 **P 12** **P 13** **M 21** **K 31** **K 32** **N 51** **N 52**
≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Cu CuAlFe

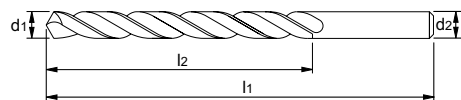
28-35 E 30-36 E 20-27 E 14-18 D 30-35 F 24-30 F 30-40 E 8-15 C

Ref.	d1	d2	l1	l2	€
11.490.0100	1	1	34	12	0,65
11.490.0110	1.1	1.1	36	14	0,70
11.490.0120	1.2	1.2	38	16	0,70
11.490.0130	1.3	1.3	38	16	0,70
11.490.0140	1.4	1.4	40	18	0,70
11.490.0150	1.5	1.5	40	18	0,70
11.490.0160	1.6	1.6	43	20	0,75
11.490.0170	1.7	1.7	43	20	0,75
11.490.0180	1.8	1.8	46	22	0,75
11.490.0190	1.9	1.9	46	22	0,75
11.490.0200	2	2	49	24	0,80
11.490.0210	2.1	2.1	49	24	0,85
11.490.0220	2.2	2.2	53	27	0,85
11.490.0230	2.3	2.3	53	27	0,85
11.490.0240	2.4	2.4	57	30	0,85
11.490.0250	2.5	2.5	57	30	0,95
11.490.0260	2.6	2.6	57	30	1,10
11.490.0270	2.7	2.7	61	33	1,10
11.490.0280	2.8	2.8	61	33	1,10
11.490.0290	2.9	2.9	61	33	1,10
11.490.0300	3	3	61	33	1,15
11.490.0310	3.1	3.1	65	36	1,35
11.490.0320	3.2	3.2	65	36	1,35
11.490.0330	3.3	3.3	65	36	1,45
11.490.0340	3.4	3.4	70	39	1,45
11.490.0350	3.5	3.5	70	39	1,50
11.490.0360	3.6	3.6	70	39	1,80
11.490.0370	3.7	3.7	70	39	1,80
11.490.0380	3.8	3.8	75	43	1,80
11.490.0390	3.9	3.9	75	43	1,80
11.490.0400	4	4	75	43	1,50
11.490.0410	4.1	4.1	75	43	2,00
11.490.0420	4.2	4.2	75	43	2,00

Ref.	d1	d2	l1	l2	€
11.490.0430	4.3	4.3	80	47	2,00
11.490.0440	4.4	4.4	80	47	2,00
11.490.0450	4.5	4.5	80	47	1,70
11.490.0460	4.6	4.6	80	47	2,50
11.490.0470	4.7	4.7	80	47	2,50
11.490.0480	4.8	4.8	86	52	2,50
11.490.0490	4.9	4.9	86	52	2,50
11.490.0500	5	5	86	52	2,09
11.490.0510	5.1	5.1	86	52	2,95
11.490.0520	5.2	5.2	86	52	2,95
11.490.0530	5.3	5.3	86	52	2,95
11.490.0540	5.4	5.4	93	57	2,95
11.490.0550	5.5	5.5	93	57	2,61
11.490.0560	5.6	5.6	93	57	3,49
11.490.0570	5.7	5.7	93	57	3,49
11.490.0580	5.8	5.8	93	57	2,82
11.490.0590	5.9	5.9	93	57	3,49
11.490.0600	6	6	93	57	2,82
11.490.0610	6.1	6.1	101	63	4,26
11.490.0620	6.2	6.2	101	63	4,26
11.490.0630	6.3	6.3	101	63	4,26
11.490.0640	6.4	6.4	101	63	4,26
11.490.0650	6.5	6.5	101	63	3,52
11.490.0660	6.6	6.6	101	63	5,49
11.490.0670	6.7	6.7	101	63	5,76
11.490.0680	6.8	6.8	109	69	4,92
11.490.0690	6.9	6.9	109	69	5,76
11.490.0700	7	7	109	69	4,13
11.490.0710	7.1	7.1	109	69	6,57
11.490.0720	7.2	7.2	109	69	6,12
11.490.0730	7.3	7.3	109	69	6,21
11.490.0740	7.4	7.4	109	69	6,21
11.490.0750	7.5	7.5	109	69	4,68

Ref.	d1	d2	l1	l2	€
11.490.0760	7.6	7.6	117	75	7,83
11.490.0770	7.7	7.7	117	75	8,19
11.490.0780	7.8	7.8	117	75	6,56
11.490.0790	7.9	7.9	117	75	6,56
11.490.0800	8	8	117	75	5,86
11.490.0810	8.1	8.1	117	75	8,74
11.490.0820	8.2	8.2	117	75	8,82
11.490.0830	8.3	8.3	117	75	8,82
11.490.0840	8.4	8.4	117	75	8,74
11.490.0850	8.5	8.5	117	75	6,62
11.490.0860	8.6	8.6	125	81	10,44
11.490.0870	8.7	8.7	125	81	9,90
11.490.0880	8.8	8.8	125	81	9,90
11.490.0890	8.9	8.9	125	81	9,90
11.490.0900	9	9	125	81	7,43
11.490.0910	9.1	9.1	125	81	11,07
11.490.0920	9.2	9.2	125	81	11,07
11.490.0930	9.3	9.3	125	81	11,70
11.490.0940	9.4	9.4	125	81	11,07
11.490.0950	9.5	9.5	125	81	8,35
11.490.0960	9.6	9.6	133	87	13,68
11.490.0970	9.7	9.7	133	87	12,96
11.490.0980	9.8	9.8	133	87	12,29
11.490.0990	9.9	9.9	133	87	12,29
11.490.1000	10	10	133	87	9,77
11.490.1020	10.2	10.2	133	87	10,37
11.490.1050	10.5	10.5	133	87	10,37
11.490.1100	11	11	142	94	12,05
11.490.1150	11.5	11.5	142	94	13,00
11.490.1200	12	12	151	101	15,17
11.490.1250	12.5	12.5	151	101	15,88
11.490.1300	13	13	151	101	17,17

> 11.500 Phantom



NL HSS-E Spiraalboor
 FR Foret HSS-E
 ES Broca HSS-E
 DE HSS-E Spiralbohrer
 EN HSS-E Twist drill

HSS-E DIN 338 N

P 11 P 12 P 13 P 14 M 21 M 22 K 31 K 32 N 51 N 52
≤600 N/mm² ≤850 N/mm² ≤1000 N/mm² ≤1400 N/mm² INOX ≤850N/mm² INOX >850N/mm² GG GGG GTS-GTW Cu CuAlFe

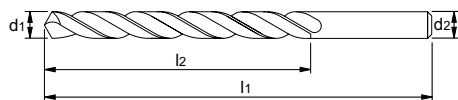
28-35 E 30-36 E 20-27 E 12-20 D 14-18 D 10-15 C 30-35 F 24-30 F 30-40 E 8-15 C

Ref.	d1	d2	l1	l2	€
11.500.0020	0.2	0.2	19	2.5	3,70
11.500.0025	0.25	0.25	19	3	3,65
11.500.0030	0.3	0.3	19	3	3,34
11.500.0040	0.4	0.4	20	5	2,91
11.500.0045	0.45	0.45	20	5	2,87
11.500.0050	0.5	0.5	22	6	2,76
11.500.0060	0.6	0.6	24	7	2,64
11.500.0065	0.65	0.65	26	8	2,64
11.500.0070	0.7	0.7	28	9	2,64
11.500.0075	0.75	0.75	28	9	2,64
11.500.0080	0.8	0.8	30	10	2,52
11.500.0090	0.9	0.9	32	11	2,39
11.500.0095	0.95	0.95	32	11	2,39
11.500.0100	1	1	34	12	2,39
11.500.0110	1.1	1.1	36	14	2,85
11.500.0120	1.2	1.2	38	16	2,85
11.500.0125	1.25	1.25	38	16	2,85
11.500.0130	1.3	1.3	38	16	2,85
11.500.0140	1.4	1.4	40	18	2,85
11.500.0150	1.5	1.5	40	18	2,39
11.500.0160	1.6	1.6	43	20	2,96
11.500.0170	1.7	1.7	43	20	2,96
11.500.0175	1.75	1.75	46	22	2,96
11.500.0180	1.8	1.8	46	22	2,96
11.500.0190	1.9	1.9	46	22	2,96
11.500.0200	2	2	49	24	2,22
11.500.0205	2.05	2.05	49	24	3,98
11.500.0210	2.1	2.1	49	24	3,98
11.500.0220	2.2	2.2	53	27	3,98
11.500.0225	2.25	2.25	53	27	3,98
11.500.0230	2.3	2.3	53	27	3,98
11.500.0240	2.4	2.4	57	30	3,98
11.500.0250	2.5	2.5	57	30	2,25
11.500.0260	2.6	2.6	57	30	4,52
11.500.0270	2.7	2.7	61	33	4,52
11.500.0275	2.75	2.75	61	33	4,52
11.500.0280	2.8	2.8	61	33	3,48
11.500.0290	2.9	2.9	61	33	3,48
11.500.0300	3	3	61	33	2,45
11.500.0310	3.1	3.1	65	36	2,89
11.500.0320	3.2	3.2	65	36	2,89
11.500.0325	3.25	3.25	65	36	2,91
11.500.0330	3.3	3.3	65	36	2,89
11.500.0340	3.4	3.4	70	39	4,17
11.500.0350	3.5	3.5	70	39	2,85
11.500.0360	3.6	3.6	70	39	3,48
11.500.0370	3.7	3.7	70	39	3,48
11.500.0375	3.75	3.75	70	39	3,53
11.500.0380	3.8	3.8	75	43	3,80
11.500.0390	3.9	3.9	75	43	3,80
11.500.0400	4	4	75	43	3,00
11.500.0410	4.1	4.1	75	43	3,88
11.500.0420	4.2	4.2	75	43	3,88
11.500.0425	4.25	4.25	75	43	3,88

Ref.	d1	d2	l1	l2	€
11.500.0430	4.3	4.3	80	47	4,60
11.500.0440	4.4	4.4	80	47	4,60
11.500.0450	4.5	4.5	80	47	3,26
11.500.0460	4.6	4.6	80	47	5,29
11.500.0465	4.65	4.65	80	47	5,59
11.500.0470	4.7	4.7	80	47	5,49
11.500.0475	4.75	4.75	80	47	5,49
11.500.0480	4.8	4.8	86	52	4,35
11.500.0490	4.9	4.9	86	52	4,35
11.500.0500	5	5	86	52	3,65
11.500.0510	5.1	5.1	86	52	5,48
11.500.0520	5.2	5.2	86	52	5,48
11.500.0525	5.25	5.25	86	52	5,48
11.500.0530	5.3	5.3	86	52	5,48
11.500.0540	5.4	5.4	93	57	5,48
11.500.0550	5.5	5.5	93	57	4,33
11.500.0555	5.55	5.55	93	57	5,97
11.500.0560	5.6	5.6	93	57	5,97
11.500.0570	5.7	5.7	93	57	5,97
11.500.0575	5.75	5.75	93	57	5,97
11.500.0580	5.8	5.8	93	57	5,97
11.500.0590	5.9	5.9	93	57	5,97
11.500.0600	6	6	93	57	4,85
11.500.0610	6.1	6.1	101	63	7,74
11.500.0620	6.2	6.2	101	63	7,74
11.500.0625	6.25	6.25	101	63	7,88
11.500.0630	6.3	6.3	101	63	7,88
11.500.0635	6.35	6.35	101	63	7,88
11.500.0640	6.4	6.4	101	63	7,88
11.500.0650	6.5	6.5	101	63	5,88
11.500.0660	6.6	6.6	101	63	9,41
11.500.0670	6.7	6.7	101	63	9,41
11.500.0675	6.75	6.75	109	69	9,41
11.500.0680	6.8	6.8	109	69	8,38
11.500.0690	6.9	6.9	109	69	9,41
11.500.0700	7	7	109	69	6,80
11.500.0710	7.1	7.1	109	69	14,45
11.500.0720	7.2	7.2	109	69	14,45
11.500.0725	7.25	7.25	109	69	13,57
11.500.0730	7.3	7.3	109	69	13,57
11.500.0740	7.4	7.4	109	69	13,57
11.500.0750	7.5	7.5	109	69	7,77
11.500.0760	7.6	7.6	117	75	15,03
11.500.0770	7.7	7.7	117	75	15,03
11.500.0775	7.75	7.75	117	75	10,95
11.500.0780	7.8	7.8	117	75	10,95
11.500.0790	7.9	7.9	117	75	10,95
11.500.0800	8	8	117	75	8,48
11.500.0810	8.1	8.1	117	75	14,45
11.500.0820	8.2	8.2	117	75	14,45
11.500.0825	8.25	8.25	117	75	14,06
11.500.0830	8.3	8.3	117	75	14,06
11.500.0840	8.4	8.4	117	75	14,06
11.500.0850	8.5	8.5	117	75	10,25

Ref.	d1	d2	l1	l2	€
11.500.0860	8.6	8.6	125	81	18,00
11.500.0870	8.7	8.7	125	81	18,00
11.500.0875	8.75	8.75	125	81	18,00
11.500.0880	8.8	8.8	125	81	18,00
11.500.0890	8.9	8.9	125	81	18,00
11.500.0900	9	9	125	81	11,27
11.500.0910	9.1	9.1	125	81	20,55
11.500.0920	9.2	9.2	125	81	20,55
11.500.0925	9.25	9.25	125	81	20,55
11.500.0930	9.3	9.3	125	81	20,55
11.500.0940	9.4	9.4	125	81	20,55
11.500.0950	9.5	9.5	125	81	12,43
11.500.0960	9.6	9.6	133	87	23,76
11.500.0970	9.7	9.7	133	87	23,76
11.500.0975	9.75	9.75	133	87	17,80
11.500.0980	9.8	9.8	133	87	17,80
11.500.0990	9.9	9.9	133	87	17,80
11.500.1000	10	10	133	87	14,34
11.500.1010	10.1	10.1	133	87	17,80
11.500.1020	10.2	10.2	133	87	17,80
11.500.1025	10.25	10.25	133	87	18,05
11.500.1030	10.3	10.3	133	87	17,80
11.500.1050	10.5	10.5	133	87	16,18
11.500.1080	10.8	10.8	142	94	16,18
11.500.1100	11	11	142	94	17,23
11.500.1110	11.1	11.1	142	94	20,04
11.500.1120	11.2	11.2	142	94	20,04
11.500.1150	11.5	11.5	142	94	20,04
11.500.1175	11.75	11.75	142	94	19,32
11.500.1180	11.8	11.8	142	94	19,32
11.500.1200	12	12	151	101	20,14
11.500.1220	12.2	12.2	151	101	21,66
11.500.1250	12.5	12.5	151	101	22,23
11.500.1300	13	13	151	101	22,10
11.500.1310	13.1	13.1	151	101	37,45
11.500.1350	13.5	13.5	160	108	37,45
11.500.1400	14	14	160	108	38,85
11.500.1450	14.5	14.5	169	114	45,15
11.500.1500	15	15	169	114	48,95
11.500.1510	15.1	15.1	178	120	52,60
11.500.1550	15.5	15.5	178	120	52,60
11.500.1600	16	16	178	120	52,60
11.500.1650	16.5	16.5	184	125	57,15
11.500.1690	16.9	16.9	184	125	56,05
11.500.1700	17	17	184	125	56,05
11.500.1750	17.5	17.5	191	130	59,45
11.500.1800	18	18	191	130	63,50
11.500.1850	18.5	18.5	198	135	75,30
11.500.1890	18.9	18.9	198	135	73,80
11.500.1900	19	19	198	135	73,80
11.500.1950	19.5	19.5	205	140	80,30
11.500.2000	20	20	205	140	87,35

> 11.506 Phantom



NL HSS-E Spiraalboor TiN-tip, (handgebruik)
 FR Foret HSS-E avec revêtement TiN sur la partie utile, (usage à la main)
 ES Broca HSS-E con punta TiN, (uso manual)
 DE HSS-E Spiralbohrer TiN-Tip, (handgebrauch)
 EN HSS-E Twist drill TiN coated tip, (handuse)

HSS-E TiN DIN 338 >N $\geq 1,6$ 118°

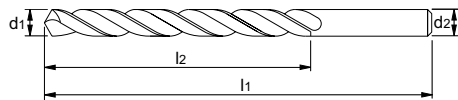
P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 51	N 52
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Cu	CuAlFe
32-40 E	35-40 E	25-32 E	12-20 D	15-20 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	d1	d2	l1	l2	€
11.506.0100	1	1	34	12	2,72
11.506.0120	1.2	1.2	38	16	3,41
11.506.0150	1.5	1.5	40	18	2,72
11.506.0160	1.6	1.6	43	20	3,49
11.506.0200	2	2	49	24	2,47
11.506.0210	2.1	2.1	49	24	4,19
11.506.0220	2.2	2.2	53	27	4,19
11.506.0230	2.3	2.3	53	27	4,19
11.506.0240	2.4	2.4	57	30	4,19
11.506.0250	2.5	2.5	57	30	2,60
11.506.0260	2.6	2.6	57	30	5,05
11.506.0270	2.7	2.7	61	33	5,05
11.506.0280	2.8	2.8	61	33	3,89
11.506.0290	2.9	2.9	61	33	3,89
11.506.0300	3	3	61	33	2,84
11.506.0310	3.1	3.1	65	36	3,21
11.506.0320	3.2	3.2	65	36	3,23
11.506.0330	3.3	3.3	65	36	3,23
11.506.0340	3.4	3.4	70	39	4,83
11.506.0350	3.5	3.5	70	39	3,25

Ref.	d1	d2	l1	l2	€
11.506.0360	3.6	3.6	70	39	3,92
11.506.0370	3.7	3.7	70	39	3,92
11.506.0380	3.8	3.8	75	43	3,92
11.506.0390	3.9	3.9	75	43	3,92
11.506.0400	4	4	75	43	3,35
11.506.0410	4.1	4.1	75	43	4,04
11.506.0420	4.2	4.2	75	43	3,60
11.506.0430	4.3	4.3	80	47	5,06
11.506.0450	4.5	4.5	80	47	3,60
11.506.0470	4.7	4.7	80	47	6,70
11.506.0480	4.8	4.8	86	52	5,28
11.506.0490	4.9	4.9	86	52	5,28
11.506.0500	5	5	86	52	4,10
11.506.0510	5.1	5.1	86	52	7,03
11.506.0520	5.2	5.2	86	52	7,03
11.506.0530	5.3	5.3	86	52	7,03
11.506.0550	5.5	5.5	93	57	4,76
11.506.0570	5.7	5.7	93	57	7,27
11.506.0580	5.8	5.8	93	57	7,27
11.506.0600	6	6	93	57	5,59

Ref.	d1	d2	l1	l2	€
11.506.0610	6.1	6.1	101	63	9,21
11.506.0620	6.2	6.2	101	63	9,21
11.506.0630	6.3	6.3	101	63	9,21
11.506.0650	6.5	6.5	101	63	6,66
11.506.0670	6.7	6.7	101	63	10,80
11.506.0680	6.8	6.8	109	69	7,65
11.506.0700	7	7	109	69	7,68
11.506.0750	7.5	7.5	109	69	8,77
11.506.0800	8	8	117	75	9,55
11.506.0850	8.5	8.5	117	75	11,40
11.506.0900	9	9	125	81	12,52
11.506.0950	9.5	9.5	125	81	13,88
11.506.1000	10	10	133	87	16,04
11.506.1020	10.2	10.2	133	87	17,03
11.506.1050	10.5	10.5	133	87	17,90
11.506.1100	11	11	142	94	18,50
11.506.1150	11.5	11.5	142	94	21,60
11.506.1200	12	12	151	101	22,21
11.506.1250	12.5	12.5	151	101	24,42
11.506.1300	13	13	151	101	25,05

> 11.600 Phantom



NL HM-tip Spiraalboor
 FR Foret à plaquette carbure
 ES Broca punta MD
 DE HM-Schneiden Spiralbohrer
 EN Carbide Tipped Twist drill

HM-TIP DIN 338 N $\geq 1,6$ 120°

P 11	P 12	P 13	P 14	H 15	M 21	M 22	K 31	K 32	N 42	N 52	N 62	S 71	S 72
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	HRC	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Alu Si>10%	CuAlFe	GFK/CFK	NiCo	Ti
75-85	60-70	55-65	30-40	10-20	20-35	18-30	70-85	60-75	120-150	35-40	70-130	25-30	30-35

Ref.	d1	d2	l1	l2	€
11.600.0200	2	2	49	24	20,50
11.600.0210	2.1	2.1	49	24	20,50
11.600.0220	2.2	2.2	53	27	20,50
11.600.0230	2.3	2.3	53	27	20,50
11.600.0240	2.4	2.4	57	30	20,50
11.600.0250	2.5	2.5	57	30	20,50
11.600.0260	2.6	2.6	57	30	20,50
11.600.0270	2.7	2.7	61	33	20,50
11.600.0280	2.8	2.8	61	33	20,50
11.600.0290	2.9	2.9	61	33	20,50
11.600.0300	3	3	61	33	18,92
11.600.0310	3.1	3.1	65	36	20,50
11.600.0320	3.2	3.2	65	36	20,50
11.600.0330	3.3	3.3	65	36	20,50
11.600.0340	3.4	3.4	70	39	20,50
11.600.0350	3.5	3.5	70	39	19,28
11.600.0360	3.6	3.6	70	39	20,50
11.600.0370	3.7	3.7	70	39	20,50
11.600.0380	3.8	3.8	75	43	20,50
11.600.0390	3.9	3.9	75	43	20,50
11.600.0400	4	4	75	43	18,46
11.600.0410	4.1	4.1	75	43	20,50
11.600.0420	4.2	4.2	75	43	20,50
11.600.0430	4.3	4.3	80	47	20,50
11.600.0440	4.4	4.4	80	47	20,50
11.600.0450	4.5	4.5	80	47	18,92
11.600.0460	4.6	4.6	80	47	20,50
11.600.0470	4.7	4.7	80	47	20,50

Ref.	d1	d2	l1	l2	€
11.600.0480	4.8	4.8	86	52	20,50
11.600.0490	4.9	4.9	86	52	20,50
11.600.0500	5	5	86	52	18,46
11.600.0510	5.1	5.1	86	52	22,19
11.600.0520	5.2	5.2	86	52	22,19
11.600.0530	5.3	5.3	86	52	22,19
11.600.0540	5.4	5.4	93	57	22,19
11.600.0550	5.5	5.5	93	57	19,72
11.600.0560	5.6	5.6	93	57	22,59
11.600.0570	5.7	5.7	93	57	22,59
11.600.0580	5.8	5.8	93	57	22,59
11.600.0590	5.9	5.9	93	57	22,59
11.600.0600	6	6	93	57	20,87
11.600.0610	6.1	6.1	101	63	23,12
11.600.0620	6.2	6.2	101	63	23,12
11.600.0630	6.3	6.3	101	63	23,12
11.600.0640	6.4	6.4	101	63	22,89
11.600.0650	6.5	6.5	101	63	21,17
11.600.0660	6.6	6.6	101	63	25,30
11.600.0670	6.7	6.7	101	63	25,30
11.600.0680	6.8	6.8	109	69	25,30
11.600.0690	6.9	6.9	109	69	25,30
11.600.0700	7	7	109	69	23,66
11.600.0710	7.1	7.1	109	69	26,60
11.600.0720	7.2	7.2	109	69	26,60
11.600.0730	7.3	7.3	109	69	26,60
11.600.0740	7.4	7.4	109	69	26,60
11.600.0750	7.5	7.5	109	69	24,90

Ref.	d1	d2	l1	l2	€
11.600.0760	7.6	7.6	117	75	28,20
11.600.0770	7.7	7.7	117	75	28,20
11.600.0780	7.8	7.8	117	75	28,20
11.600.0790	7.9	7.9	117	75	28,20
11.600.0800	8	8	117	75	26,60
11.600.0810	8.1	8.1	117	75	29,10
11.600.0820	8.2	8.2	117	75	29,10
11.600.0830	8.3	8.3	117	75	29,10
11.600.0840	8.4	8.4	117	75	29,10
11.600.0850	8.5	8.5	117	75	27,85
11.600.0860	8.6	8.6	125	81	32,00
11.600.0870	8.7	8.7	125	81	32,00
11.600.0880	8.8	8.8	125	81	32,00
11.600.0890	8.9	8.9	125	81	32,00
11.600.0900	9	9	125	81	30,70
11.600.0910	9.1	9.1	125	81	35,30
11.600.0920	9.2	9.2	125	81	35,30
11.600.0930	9.3	9.3	125	81	35,30
11.600.0940	9.4	9.4	125	81	35,30
11.600.0950	9.5	9.5	125	81	34,50
11.600.0960	9.6	9.6	133	87	37,70
11.600.0970	9.7	9.7	133	87	37,70
11.600.0980	9.8	9.8	133	87	37,70
11.600.0990	9.9	9.9	133	87	37,70
11.600.1000	10	10	133	87	35,75
11.600.1020	10.2	10.2	133	87	41,85
11.600.1050	10.5	10.5	133	87	40,35
11.600.1100	11	11	142	94	42,80

> 11.600 Phantom

Ref.	d1	d2	l1	l2	€
11.600.1150	11.5	11.5	142	94	45,70
11.600.1200	12	12	151	101	49,40
11.600.1250	12.5	12.5	151	101	52,90
11.600.1300	13	13	151	101	57,65

Ref.	d1	d2	l1	l2	€
11.600.1350	13.5	13.5	160	108	62,85
11.600.1400	14	14	160	108	64,40
11.600.1450	14.5	14.5	169	114	71,45
11.600.1500	15	15	169	114	79,50

Ref.	d1	d2	l1	l2	€
11.600.1550	15.5	15.5	178	120	88,60
11.600.1600	16	16	178	120	92,35

> 11.760 Phantom

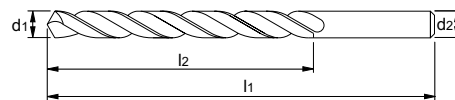
NL HSS-E Spiraalboor roestvaststaal

FR Foret HSS-E Inox

ES Broca HSS-E acero inoxidable

DE HSS-E Spiralbohrer rostfreien Stahl

EN HSS-E Twist drill stainless steel



HSS-E DIN 338 >N   130° INOX

P 14  M 21  M 22  S 71  S 72

12-16 E 14-18 D 12-16 C 6-8 A 6-10 B

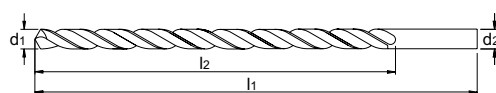
Ref.	d1	d2	l1	l2	€
11.760.0100	1	1	34	12	4,39
11.760.0110	1.1	1.1	36	14	3,62
11.760.0120	1.2	1.2	38	16	3,62
11.760.0130	1.3	1.3	38	16	3,62
11.760.0140	1.4	1.4	40	18	3,62
11.760.0150	1.5	1.5	40	18	3,62
11.760.0160	1.6	1.6	43	20	3,62
11.760.0170	1.7	1.7	43	20	3,62
11.760.0180	1.8	1.8	46	22	3,69
11.760.0190	1.9	1.9	46	22	3,88
11.760.0200	2	2	49	24	3,23
11.760.0210	2.1	2.1	49	24	3,40
11.760.0220	2.2	2.2	53	27	3,53
11.760.0230	2.3	2.3	53	27	3,53
11.760.0240	2.4	2.4	57	30	3,75
11.760.0250	2.5	2.5	57	30	3,53
11.760.0260	2.6	2.6	57	30	3,78
11.760.0270	2.7	2.7	61	33	3,88
11.760.0280	2.8	2.8	61	33	3,78
11.760.0290	2.9	2.9	61	33	3,78
11.760.0300	3	3	61	33	3,53
11.760.0310	3.1	3.1	65	36	3,99
11.760.0320	3.2	3.2	65	36	3,80
11.760.0330	3.3	3.3	65	36	3,80
11.760.0340	3.4	3.4	70	39	3,99
11.760.0350	3.5	3.5	70	39	3,75
11.760.0360	3.6	3.6	70	39	4,02
11.760.0370	3.7	3.7	70	39	4,16
11.760.0380	3.8	3.8	75	43	4,27
11.760.0390	3.9	3.9	75	43	4,40
11.760.0400	4	4	75	43	4,13
11.760.0410	4.1	4.1	75	43	4,39
11.760.0420	4.2	4.2	75	43	4,39
11.760.0430	4.3	4.3	80	47	4,79
11.760.0440	4.4	4.4	80	47	5,04
11.760.0450	4.5	4.5	80	47	4,57
11.760.0460	4.6	4.6	80	47	5,27
11.760.0470	4.7	4.7	80	47	5,03
11.760.0480	4.8	4.8	86	52	5,22

Ref.	d1	d2	l1	l2	€
11.760.0490	4.9	4.9	86	52	5,27
11.760.0500	5	5	86	52	4,74
11.760.0510	5.1	5.1	86	52	5,36
11.760.0520	5.2	5.2	86	52	5,54
11.760.0530	5.3	5.3	86	52	5,66
11.760.0540	5.4	5.4	93	57	6,45
11.760.0550	5.5	5.5	93	57	6,40
11.760.0560	5.6	5.6	93	57	6,71
11.760.0570	5.7	5.7	93	57	6,71
11.760.0580	5.8	5.8	93	57	6,71
11.760.0590	5.9	5.9	93	57	6,71
11.760.0600	6	6	93	57	6,40
11.760.0610	6.1	6.1	101	63	7,65
11.760.0620	6.2	6.2	101	63	7,65
11.760.0630	6.3	6.3	101	63	7,65
11.760.0640	6.4	6.4	101	63	7,90
11.760.0650	6.5	6.5	101	63	7,65
11.760.0660	6.6	6.6	101	63	8,03
11.760.0670	6.7	6.7	101	63	8,15
11.760.0680	6.8	6.8	109	69	8,53
11.760.0690	6.9	6.9	109	69	9,17
11.760.0700	7	7	109	69	8,66
11.760.0710	7.1	7.1	109	69	9,46
11.760.0720	7.2	7.2	109	69	10,42
11.760.0730	7.3	7.3	109	69	10,42
11.760.0740	7.4	7.4	109	69	9,96
11.760.0750	7.5	7.5	109	69	9,37
11.760.0760	7.6	7.6	117	75	11,41
11.760.0770	7.7	7.7	117	75	11,64
11.760.0780	7.8	7.8	117	75	10,80
11.760.0790	7.9	7.9	117	75	11,60
11.760.0800	8	8	117	75	9,76
11.760.0810	8.1	8.1	117	75	12,18
11.760.0820	8.2	8.2	117	75	11,58
11.760.0830	8.3	8.3	117	75	12,15
11.760.0840	8.4	8.4	117	75	12,55
11.760.0850	8.5	8.5	117	75	11,37
11.760.0860	8.6	8.6	125	81	14,48
11.760.0870	8.7	8.7	125	81	14,48

Ref.	d1	d2	l1	l2	€
11.760.0880	8.8	8.8	125	81	14,48
11.760.0890	8.9	8.9	125	81	15,16
11.760.0900	9	9	125	81	14,48
11.760.0910	9.1	9.1	125	81	15,16
11.760.0920	9.2	9.2	125	81	15,16
11.760.0930	9.3	9.3	125	81	15,16
11.760.0940	9.4	9.4	125	81	15,99
11.760.0950	9.5	9.5	125	81	15,29
11.760.0960	9.6	9.6	133	87	16,88
11.760.0970	9.7	9.7	133	87	17,25
11.760.0980	9.8	9.8	133	87	18,10
11.760.0990	9.9	9.9	133	87	18,46
11.760.1000	10	10	133	87	16,42
11.760.1020	10.2	10.2	133	87	18,59
11.760.1040	10.4	10.4	133	87	21,72
11.760.1050	10.5	10.5	133	87	19,68
11.760.1070	10.7	10.7	142	94	29,80
11.760.1100	11	11	142	94	23,27
11.760.1120	11.2	11.2	142	94	27,15
11.760.1150	11.5	11.5	142	94	25,85
11.760.1200	12	12	151	101	29,00
11.760.1210	12.1	12.1	151	101	37,85
11.760.1230	12.3	12.3	151	101	37,85
11.760.1250	12.5	12.5	151	101	31,90
11.760.1300	13	13	151	101	35,70
11.760.1350	13.5	13.5	160	108	41,10
11.760.1400	14	14	160	108	44,85
11.760.1450	14.5	14.5	169	114	47,45
11.760.1500	15	15	169	114	52,65
11.760.1550	15.5	15.5	178	120	54,30
11.760.1600	16	16	178	120	61,10
11.760.1650	16.5	16.5	184	125	96,10
11.760.1700	17	17	184	125	94,25
11.760.1750	17.5	17.5	191	130	99,60
11.760.1800	18	18	191	130	89,70
11.760.1900	19	19	198	135	127,00
11.760.2000	20	20	205	140	157,75

> 11.813 INTERNATIONAL TOOLS

NL ECO PRO HSS Spiraalboor
 FR Foret HSS ECO PRO
 ES Broca HSS ECO PRO
 DE ECO PRO HSS Spiralbohrer
 EN ECO PRO HSS Twist drill



HSS DIN 340 N ECO PRO

P 11 P 12 P 13 K 31 K 32 N 42 N 51 N 61
 ≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² GG GGG GTS-GTW Alu Si>10% Cu PVC

25-27 F 22-30 F 15-20 E 15-20 E 25-30 E 45-50 G 25-40 D 22-28 D

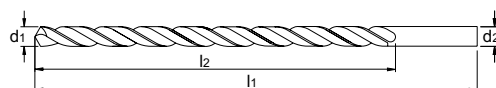
Ref.	d1	d2	l1	l2	€
11.813.0100	1	1	56	33	1,18
11.813.0110	1.1	1.1	60	37	1,18
11.813.0120	1.2	1.2	65	41	1,18
11.813.0130	1.3	1.3	65	41	1,18
11.813.0140	1.4	1.4	70	45	1,18
11.813.0150	1.5	1.5	70	45	1,22
11.813.0160	1.6	1.6	76	50	1,22
11.813.0170	1.7	1.7	76	50	1,22
11.813.0180	1.8	1.8	80	53	1,22
11.813.0190	1.9	1.9	80	53	1,22
11.813.0200	2	2	85	56	1,77
11.813.0210	2.1	2.1	85	56	1,86
11.813.0220	2.2	2.2	90	59	1,86
11.813.0230	2.3	2.3	90	59	1,86
11.813.0240	2.4	2.4	95	62	1,86
11.813.0250	2.5	2.5	95	62	1,86
11.813.0260	2.6	2.6	95	62	1,86
11.813.0270	2.7	2.7	100	66	1,86
11.813.0280	2.8	2.8	100	66	1,86
11.813.0290	2.9	2.9	100	66	1,86
11.813.0300	3	3	100	66	1,86
11.813.0310	3.1	3.1	106	69	2,48
11.813.0320	3.2	3.2	106	69	2,48

Ref.	d1	d2	l1	l2	€
11.813.0330	3.3	3.3	106	69	2,48
11.813.0340	3.4	3.4	112	73	2,48
11.813.0350	3.5	3.5	112	73	2,10
11.813.0360	3.6	3.6	112	73	2,63
11.813.0370	3.7	3.7	112	73	2,63
11.813.0380	3.8	3.8	119	78	2,63
11.813.0390	3.9	3.9	119	78	2,63
11.813.0400	4	4	119	78	2,24
11.813.0410	4.1	4.1	119	78	2,63
11.813.0420	4.2	4.2	119	78	2,63
11.813.0430	4.3	4.3	126	82	2,63
11.813.0440	4.4	4.4	126	82	2,63
11.813.0450	4.5	4.5	126	82	2,43
11.813.0460	4.6	4.6	126	82	3,04
11.813.0470	4.7	4.7	126	82	3,04
11.813.0480	4.8	4.8	132	87	3,04
11.813.0490	4.9	4.9	132	87	3,04
11.813.0500	5	5	132	87	3,04
11.813.0510	5.1	5.1	132	87	3,70
11.813.0520	5.2	5.2	132	87	3,70
11.813.0530	5.3	5.3	132	87	3,70
11.813.0540	5.4	5.4	139	91	3,70
11.813.0550	5.5	5.5	139	91	3,70

Ref.	d1	d2	l1	l2	€
11.813.0560	5.6	5.6	139	91	4,04
11.813.0570	5.7	5.7	139	91	4,04
11.813.0580	5.8	5.8	139	91	4,04
11.813.0590	5.9	5.9	139	91	4,04
11.813.0600	6	6	139	91	4,04
11.813.0650	6.5	6.5	148	97	4,71
11.813.0680	6.8	6.8	156	102	5,39
11.813.0700	7	7	156	102	5,39
11.813.0750	7.5	7.5	156	102	6,74
11.813.0800	8	8	165	109	8,08
11.813.0850	8.5	8.5	165	109	9,43
11.813.0900	9	9	175	115	10,76
11.813.0950	9.5	9.5	175	115	11,44
11.813.1000	10	10	184	121	13,11
11.813.1020	10.2	10.2	184	121	14,80
11.813.1050	10.5	10.5	184	121	14,80
11.813.1100	11	11	195	128	16,81
11.813.1150	11.5	11.5	195	128	18,16
11.813.1200	12	12	205	134	19,50
11.813.1250	12.5	12.5	205	134	21,53
11.813.1300	13	13	205	134	22,88

> 11.815 Phantom

NL HSS Spiraalboor
 FR Foret HSS
 ES Broca HSS
 DE HSS Spiralbohrer
 EN HSS Twist drill



HSS OX. DIN 340 N

P 11 P 12 P 13 M 21 K 31 K 32 N 42 N 51 N 61
 ≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Si>10% Cu PVC

25-27 F 22-30 F 15-20 E 8-12 D 15-20 E 25-30 E 45-50 G 25-40 D 22-28 D

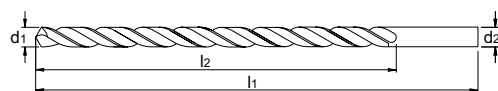
Ref.	d1	d2	l1	l2	€
11.815.0100	1	1	56	33	3,21
11.815.0110	1.1	1.1	60	37	5,56
11.815.0120	1.2	1.2	65	41	5,31
11.815.0130	1.3	1.3	65	41	4,89
11.815.0140	1.4	1.4	70	45	4,52
11.815.0150	1.5	1.5	70	45	4,21
11.815.0160	1.6	1.6	76	50	4,49
11.815.0170	1.7	1.7	76	50	4,49
11.815.0180	1.8	1.8	80	53	4,49
11.815.0190	1.9	1.9	80	53	4,49
11.815.0200	2	2	85	56	3,48
11.815.0210	2.1	2.1	85	56	3,97
11.815.0220	2.2	2.2	90	59	3,39
11.815.0230	2.3	2.3	90	59	3,62
11.815.0240	2.4	2.4	95	62	3,39
11.815.0250	2.5	2.5	95	62	2,69
11.815.0260	2.6	2.6	95	62	3,42
11.815.0270	2.7	2.7	100	66	3,86
11.815.0280	2.8	2.8	100	66	3,48
11.815.0290	2.9	2.9	100	66	4,08
11.815.0300	3	3	100	66	3,23
11.815.0310	3.1	3.1	106	69	3,76
11.815.0320	3.2	3.2	106	69	3,40
11.815.0330	3.3	3.3	106	69	3,64

Ref.	d1	d2	l1	l2	€
11.815.0340	3.4	3.4	112	73	4,12
11.815.0350	3.5	3.5	112	73	3,64
11.815.0360	3.6	3.6	112	73	4,03
11.815.0370	3.7	3.7	112	73	4,08
11.815.0380	3.8	3.8	119	78	3,99
11.815.0390	3.9	3.9	119	78	4,20
11.815.0400	4	4	119	78	3,86
11.815.0410	4.1	4.1	119	78	4,32
11.815.0420	4.2	4.2	119	78	3,86
11.815.0430	4.3	4.3	126	82	4,52
11.815.0440	4.4	4.4	126	82	4,70
11.815.0450	4.5	4.5	126	82	4,32
11.815.0460	4.6	4.6	126	82	4,89
11.815.0470	4.7	4.7	126	82	4,98
11.815.0480	4.8	4.8	132	87	4,98
11.815.0490	4.9	4.9	132	87	4,98
11.815.0500	5	5	132	87	4,45
11.815.0510	5.1	5.1	132	87	5,13
11.815.0520	5.2	5.2	132	87	4,98
11.815.0530	5.3	5.3	132	87	5,21
11.815.0540	5.4	5.4	139	91	6,39
11.815.0550	5.5	5.5	139	91	4,98
11.815.0560	5.6	5.6	139	91	6,20
11.815.0570	5.7	5.7	139	91	6,14

Ref.	d1	d2	l1	l2	€
11.815.0580	5.8	5.8	139	91	5,81
11.815.0590	5.9	5.9	139	91	6,64
11.815.0600	6	6	139	91	5,51
11.815.0620	6.2	6.2	148	97	9,51
11.815.0650	6.5	6.5	148	97	7,14
11.815.0680	6.8	6.8	156	102	8,92
11.815.0700	7	7	156	102	7,85
11.815.0750	7.5	7.5	156	102	9,34
11.815.0780	7.8	7.8	165	109	10,67
11.815.0800	8	8	165	109	9,61
11.815.0850	8.5	8.5	165	109	11,04
11.815.0880	8.8	8.8	175	115	14,50
11.815.0900	9	9	175	115	12,58
11.815.0950	9.5	9.5	175	115	14,26
11.815.0980	9.8	9.8	184	121	17,16
11.815.1000	10	10	184	121	13,87
11.815.1020	10.2	10.2	184	121	26,15
11.815.1050	10.5	10.5	184	121	18,55
11.815.1100	11	11	195	128	18,17
11.815.1150	11.5	11.5	195	128	21,80
11.815.1200	12	12	205	134	6,39
11.815.1250	12.5	12.5	205	134	24,69
11.815.1300	13	13	205	134	24,41

> 11.820 Phantom


NL HSS-E Spiraalboor roestvaststaal
 FR Foret HSS-E Inox
 ES Broca HSS-E acero inoxidable
 DE HSS-E Spiralbohrer rostfreien Stahl
 EN HSS-E Twist drill stainless steel



HSS-E DIN 340 >N   INOX

P 14 $\leq 1400 \text{ N/mm}^2$
 M 21 INOX $\leq 850 \text{ N/mm}^2$
 M 22 INOX $> 850 \text{ N/mm}^2$
 S 71 Ni/Co
 S 72 Ti

12-16 E 14-18 D 12-16 C 6-8 A 6-10 B

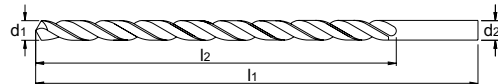
Ref.	d1	d2	l1	l2	€
11.820.0100	1	1	56	33	7,06
11.820.0150	1.5	1.5	70	45	6,94
11.820.0200	2	2	85	56	5,83
11.820.0250	2.5	2.5	95	62	5,94
11.820.0300	3	3	100	66	6,23
11.820.0310	3.1	3.1	106	69	7,13
11.820.0320	3.2	3.2	106	69	6,60
11.820.0350	3.5	3.5	112	73	7,09
11.820.0400	4	4	119	78	7,61
11.820.0410	4.1	4.1	119	78	8,55
11.820.0420	4.2	4.2	119	78	7,81
11.820.0450	4.5	4.5	126	82	8,82

Ref.	d1	d2	l1	l2	€
11.820.0500	5	5	132	87	9,04
11.820.0510	5.1	5.1	132	87	12,27
11.820.0520	5.2	5.2	132	87	9,98
11.820.0550	5.5	5.5	139	91	11,12
11.820.0600	6	6	139	91	11,63
11.820.0650	6.5	6.5	148	97	12,82
11.820.0670	6.7	6.7	148	97	18,47
11.820.0680	6.8	6.8	156	102	18,21
11.820.0700	7	7	156	102	14,55
11.820.0750	7.5	7.5	156	102	16,96
11.820.0800	8	8	165	109	16,96
11.820.0850	8.5	8.5	165	109	18,98

Ref.	d1	d2	l1	l2	€
11.820.0900	9	9	175	115	21,04
11.820.0950	9.5	9.5	175	115	25,05
11.820.1000	10	10	184	121	24,65
11.820.1050	10.5	10.5	184	121	33,05
11.820.1100	11	11	195	128	34,35
11.820.1110	11.1	11.1	195	128	69,35
11.820.1150	11.5	11.5	195	128	41,05
11.820.1200	12	12	205	134	42,85
11.820.1250	12.5	12.5	205	134	56,35
11.820.1300	13	13	205	134	48,50

> 11.860 Phantom


NL HSS Spiraalboor type TS
 FR Foret HSS type TS
 ES Broca HSS tipo TS
 DE HSS Spiralbohrer Typ TS
 EN HSS Twist drill type TS



HSS DIN 340 TS  

P 11 $\leq 600 \text{ N/mm}^2$
 P 12 $\leq 850 \text{ N/mm}^2$
 K 31 GG
 K 32 GGG GTS-GTW
 N 42 Alu Si>10%
 N 52 CuAlFe
 N 61 PVC

22-24 E 14-22 E 20-25 E 18-22 E 40-45 F 30-36 E 18-21 E

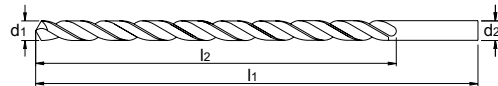
Ref.	d1	d2	l1	l2	€
11.860.0100	1	1	56	33	7,20
11.860.0150	1.5	1.5	70	45	5,35
11.860.0200	2	2	85	56	5,32
11.860.0210	2.1	2.1	85	56	5,39
11.860.0220	2.2	2.2	90	59	5,92
11.860.0230	2.3	2.3	90	59	5,92
11.860.0240	2.4	2.4	95	62	6,38
11.860.0250	2.5	2.5	95	62	5,47
11.860.0260	2.6	2.6	95	62	6,31
11.860.0270	2.7	2.7	100	66	6,50
11.860.0280	2.8	2.8	100	66	6,46
11.860.0290	2.9	2.9	100	66	6,75
11.860.0300	3	3	100	66	5,85
11.860.0310	3.1	3.1	106	69	7,21
11.860.0320	3.2	3.2	106	69	6,28
11.860.0330	3.3	3.3	106	69	6,71
11.860.0340	3.4	3.4	112	73	7,70
11.860.0350	3.5	3.5	112	73	6,50
11.860.0360	3.6	3.6	112	73	8,08
11.860.0370	3.7	3.7	112	73	7,85
11.860.0380	3.8	3.8	119	78	7,86
11.860.0390	3.9	3.9	119	78	7,86
11.860.0400	4	4	119	78	7,32
11.860.0410	4.1	4.1	119	78	8,08
11.860.0420	4.2	4.2	119	78	7,72
11.860.0430	4.3	4.3	126	82	8,87

Ref.	d1	d2	l1	l2	€
11.860.0440	4.4	4.4	126	82	8,97
11.860.0450	4.5	4.5	126	82	8,31
11.860.0460	4.6	4.6	126	82	9,22
11.860.0470	4.7	4.7	126	82	9,16
11.860.0480	4.8	4.8	132	87	9,08
11.860.0490	4.9	4.9	132	87	9,90
11.860.0500	5	5	132	87	8,52
11.860.0510	5.1	5.1	132	87	9,83
11.860.0520	5.2	5.2	132	87	10,13
11.860.0530	5.3	5.3	132	87	10,27
11.860.0540	5.4	5.4	139	91	10,76
11.860.0550	5.5	5.5	139	91	10,40
11.860.0560	5.6	5.6	139	91	12,02
11.860.0570	5.7	5.7	139	91	12,39
11.860.0580	5.8	5.8	139	91	12,41
11.860.0590	5.9	5.9	139	91	13,19
11.860.0600	6	6	139	91	10,87
11.860.0610	6.1	6.1	148	97	13,78
11.860.0620	6.2	6.2	148	97	13,92
11.860.0630	6.3	6.3	148	97	14,07
11.860.0640	6.4	6.4	148	97	14,66
11.860.0650	6.5	6.5	148	97	11,65
11.860.0660	6.6	6.6	148	97	14,18
11.860.0670	6.7	6.7	148	97	15,43
11.860.0680	6.8	6.8	156	102	14,48
11.860.0690	6.9	6.9	156	102	14,38

Ref.	d1	d2	l1	l2	€
11.860.0700	7	7	156	102	13,55
11.860.0710	7.1	7.1	156	102	22,13
11.860.0720	7.2	7.2	156	102	22,88
11.860.0730	7.3	7.3	156	102	23,25
11.860.0740	7.4	7.4	156	102	23,53
11.860.0750	7.5	7.5	156	102	16,36
11.860.0760	7.6	7.6	165	109	20,83
11.860.0770	7.7	7.7	165	109	24,45
11.860.0780	7.8	7.8	165	109	22,02
11.860.0790	7.9	7.9	165	109	22,97
11.860.0800	8	8	165	109	15,68
11.860.0850	8.5	8.5	165	109	19,39
11.860.0870	8.7	8.7	175	115	35,10
11.860.0900	9	9	175	115	19,27
11.860.0950	9.5	9.5	175	115	25,05
11.860.1000	10	10	184	121	23,24
11.860.1020	10.2	10.2	184	121	29,40
11.860.1050	10.5	10.5	184	121	29,55
11.860.1100	11	11	195	128	33,05
11.860.1150	11.5	11.5	195	128	40,75
11.860.1200	12	12	205	134	41,20
11.860.1250	12.5	12.5	205	134	43,90
11.860.1300	13	13	205	134	44,85
11.860.1400	14	14	214	140	54,05
11.860.1500	15	15	220	144	321,00
11.860.1600	16	16	227	149	201,45

> 11.920 Phantom

NL HSS Spiraalboor type TS
FR Foret HSS type TS
ES Broca HSS tipo TS
DE HSS Spiralbohrer Typ TS
EN HSS Twist drill type TS



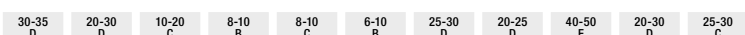
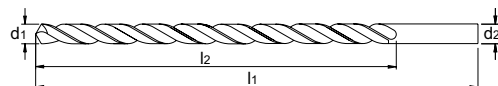
Ref.	d1	d2	l1	l2	€
11.920.0201	2	2	125	85	14,85
11.920.0251	2.5	2.5	140	95	14,12
11.920.0301	3	3	150	100	14,78
11.920.0303	3	3	190	130	22,88
11.920.0305	3	3	240	160	32,00
11.920.0351	3.5	3.5	165	115	16,07
11.920.0353	3.5	3.5	210	145	20,68
11.920.0355	3.5	3.5	265	180	30,90
11.920.0401	4	4	175	120	16,38
11.920.0403	4	4	220	150	20,68
11.920.0405	4	4	280	190	29,80
11.920.0407	4	4	400	300	147,80
11.920.0451	4.5	4.5	185	125	16,92
11.920.0453	4.5	4.5	235	160	24,15
11.920.0455	4.5	4.5	295	200	36,20
11.920.0501	5	5	195	135	18,11
11.920.0503	5	5	245	170	26,15
11.920.0505	5	5	315	210	39,30
11.920.0507	5	5	500	350	213,60
11.920.0551	5.5	5.5	205	140	19,07
11.920.0553	5.5	5.5	260	180	31,20
11.920.0557	5.5	5.5	330	225	45,15
11.920.0601	6	6	205	140	19,51

Ref.	d1	d2	l1	l2	€
11.920.0603	6	6	260	180	29,50
11.920.0605	6	6	330	225	44,25
11.920.0607	6	6	600	400	204,45
11.920.0608	6	6	500	400	68,15
11.920.0651	6.5	6.5	215	150	23,45
11.920.0653	6.5	6.5	275	190	35,60
11.920.0655	6.5	6.5	350	235	46,75
11.920.0701	7	7	225	155	25,85
11.920.0703	7	7	290	200	38,95
11.920.0705	7	7	370	250	54,30
11.920.0751	7.5	7.5	225	155	30,75
11.920.0753	7.5	7.5	290	200	43,45
11.920.0755	7.5	7.5	370	250	63,60
11.920.0801	8	8	240	165	31,75
11.920.0803	8	8	305	210	42,75
11.920.0805	8	8	390	265	59,05
11.920.0809	8	8	500	400	78,60
11.920.0851	8.5	8.5	240	165	33,75
11.920.0853	8.5	8.5	305	210	46,80
11.920.0901	9	9	250	175	45,60
11.920.0903	9	9	320	220	52,30
11.920.0905	9	9	410	280	75,55
11.920.0951	9.5	9.5	250	175	55,90

Ref.	d1	d2	l1	l2	€
11.920.0953	9.5	9.5	320	220	60,50
11.920.0955	9.5	9.5	410	280	94,75
11.920.1001	10	10	265	185	55,55
11.920.1003	10	10	340	235	61,75
11.920.1005	10	10	430	295	79,90
11.920.1008	10	10	600	500	106,25
11.920.1051	10.5	10.5	265	185	64,65
11.920.1053	10.5	10.5	340	235	68,35
11.920.1054	10.5	10.5	430	295	112,45
11.920.1101	11	11	280	195	76,35
11.920.1103	11	11	365	250	83,55
11.920.1104	11	11	455	310	118,40
11.920.1151	11.5	11.5	280	195	83,55
11.920.1153	11.5	11.5	365	250	99,50
11.920.1201	12	12	295	205	86,90
11.920.1203	12	12	375	260	99,15
11.920.1205	12	12	480	330	122,10
11.920.1206	12	12	600	500	150,10
11.920.1251	12.5	12.5	295	205	83,80
11.920.1253	12.5	12.5	375	260	91,85
11.920.1301	13	13	295	205	89,60
11.920.1303	13	13	375	260	97,10
11.920.1401	14	14	300	200	176,40

> 11.940 Phantom

NL HSS-E Spiraalboor type TS
FR Foret HSS-E type TS
ES Broca HSS-E tipo TS
DE HSS-E Spiralbohrer Typ TS
EN HSS-E Twist drill type TS



Ref.	d1	d2	l1	l2	€
11.940.0301	3	3	150	100	17,86
11.940.0303	3	3	190	130	28,30
11.940.0351	3.5	3.5	165	115	19,42
11.940.0353	3.5	3.5	210	145	25,00
11.940.0355	3.5	3.5	265	180	38,25
11.940.0401	4	4	175	120	20,21
11.940.0403	4	4	220	150	25,00
11.940.0405	4	4	280	190	36,75
11.940.0451	4.5	4.5	185	125	20,46
11.940.0453	4.5	4.5	235	160	29,20
11.940.0501	5	5	195	135	22,33
11.940.0503	5	5	245	170	32,35
11.940.0505	5	5	315	210	49,50
11.940.0551	5.5	5.5	205	140	23,50

Ref.	d1	d2	l1	l2	€
11.940.0553	5.5	5.5	260	180	38,45
11.940.0601	6	6	205	140	24,06
11.940.0603	6	6	260	180	35,70
11.940.0605	6	6	330	225	54,75
11.940.0651	6.5	6.5	215	150	28,35
11.940.0653	6.5	6.5	275	190	43,05
11.940.0701	7	7	225	155	31,30
11.940.0703	7	7	290	200	48,05
11.940.0705	7	7	370	250	65,70
11.940.0751	7.5	7.5	225	155	37,25
11.940.0753	7.5	7.5	290	200	53,50
11.940.0801	8	8	240	165	38,40
11.940.0803	8	8	305	210	51,70
11.940.0805	8	8	390	265	71,30

Ref.	d1	d2	l1	l2	€
11.940.0851	8.5	8.5	240	165	40,80
11.940.0853	8.5	8.5	305	210	56,60
11.940.0901	9	9	250	175	55,15
11.940.0903	9	9	320	220	63,30
11.940.0905	9	9	410	280	91,35
11.940.0951	9.5	9.5	250	175	67,50
11.940.0953	9.5	9.5	320	220	73,20
11.940.1001	10	10	265	185	67,10
11.940.1003	10	10	340	235	74,65
11.940.1005	10	10	430	295	96,55
11.940.1101	11	11	280	195	92,35
11.940.1103	11	11	365	250	101,10
11.940.1104	11	11	455	310	143,20
11.940.1201	12	12	295	205	107,85

> 11.940 **Phantom**

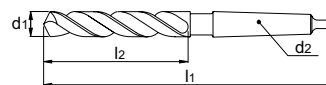
Ref.	d1	d2	l1	l2	€
11.940.1203	12	12	375	260	119,85
11.940.1205	12	12	480	330	147,65

Ref.	d1	d2	l1	l2	€
11.940.1301	13	13	295	205	129,25
11.940.1303	13	13	375	260	143,60

Ref.	d1	d2	l1	l2	€

> 12.400 **INTERNATIONAL TOOLS**

NL ECO HSS Spiraalboor gewalst, MK
 FR Foret HSS ECO laminé, CM
 ES Broca HSS ECO laminada, CM
 DE ECO HSS Spiralbohrer Gewalzt, MK
 EN ECO HSS Twist drill roll-forged, MT



HSS DIN 345 N DIN 228-B 118° ECO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² K 31 GG K 32 GGG GTS-GTW

20-25 E 20-25 E 15-20 D 15-20 E 25-30 E

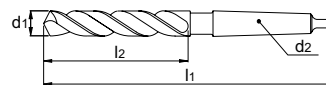
Ref.	d1	d2	l1	l2	€
12.400.0800	8	MK 1	156	75	7,47
12.400.0850	8.5	MK 1	156	75	7,47
12.400.0900	9	MK 1	162	81	7,47
12.400.0950	9.5	MK 1	162	81	7,47
12.400.1000	10	MK 1	168	87	7,47
12.400.1050	10.5	MK 1	168	87	7,47
12.400.1100	11	MK 1	175	94	7,47
12.400.1150	11.5	MK 1	175	94	7,47
12.400.1200	12	MK 1	182	101	7,77
12.400.1250	12.5	MK 1	182	101	7,77
12.400.1300	13	MK 1	182	101	8,45
12.400.1350	13.5	MK 1	189	108	8,45
12.400.1400	14	MK 1	189	108	9,69
12.400.1450	14.5	MK 2	212	114	10,35
12.400.1500	15	MK 2	212	114	10,35
12.400.1550	15.5	MK 2	218	120	10,35
12.400.1600	16	MK 2	218	120	11,10
12.400.1650	16.5	MK 2	223	125	11,85
12.400.1700	17	MK 2	223	125	12,60
12.400.1750	17.5	MK 2	228	130	12,60
12.400.1800	18	MK 2	228	130	13,36
12.400.1850	18.5	MK 2	233	135	13,36
12.400.1900	19	MK 2	233	135	14,11
12.400.1950	19.5	MK 2	238	140	14,11
12.400.2000	20	MK 2	238	140	16,50
12.400.2050	20.5	MK 2	243	145	16,50
12.400.2100	21	MK 2	243	145	18,76
12.400.2150	21.5	MK 2	248	150	18,76

Ref.	d1	d2	l1	l2	€
12.400.2200	22	MK 2	248	150	19,51
12.400.2250	22.5	MK 2	253	155	19,51
12.400.2300	23	MK 2	253	155	21,77
12.400.2350	23.5	MK 3	276	155	24,34
12.400.2400	24	MK 3	281	160	24,85
12.400.2450	24.5	MK 3	281	160	24,87
12.400.2500	25	MK 3	281	160	25,60
12.400.2550	25.5	MK 3	286	165	25,60
12.400.2600	26	MK 3	286	165	29,50
12.400.2650	26.5	MK 3	286	165	30,95
12.400.2700	27	MK 3	291	170	31,20
12.400.2750	27.5	MK 3	291	170	32,00
12.400.2800	28	MK 3	291	170	32,45
12.400.2850	28.5	MK 3	296	175	34,65
12.400.2900	29	MK 3	296	175	35,70
12.400.2950	29.5	MK 3	296	175	36,20
12.400.3000	30	MK 3	296	175	40,40
12.400.3050	30.5	MK 3	301	180	42,85
12.400.3100	31	MK 3	301	180	45,60
12.400.3150	31.5	MK 3	301	180	45,95
12.400.3200	32	MK 4	334	185	58,75
12.400.3250	32.5	MK 4	334	185	61,00
12.400.3300	33	MK 4	334	185	64,80
12.400.3350	33.5	MK 4	334	185	67,05
12.400.3400	34	MK 4	339	190	67,05
12.400.3450	34.5	MK 4	339	190	70,80
12.400.3500	35	MK 4	339	190	76,85
12.400.3550	35.5	MK 4	339	190	81,35

Ref.	d1	d2	l1	l2	€
12.400.3600	36	MK 4	344	195	82,85
12.400.3650	36.5	MK 4	344	195	87,40
12.400.3700	37	MK 4	344	195	98,50
12.400.3750	37.5	MK 4	344	195	99,45
12.400.3800	38	MK 4	349	200	99,45
12.400.3850	38.5	MK 4	349	200	99,45
12.400.3900	39	MK 4	349	200	100,20
12.400.3950	39.5	MK 4	349	200	100,20
12.400.4000	40	MK 4	349	200	100,20
12.400.4050	40.5	MK 4	354	205	100,20
12.400.4100	41	MK 4	354	205	100,20
12.400.4150	41.5	MK 4	354	205	100,20
12.400.4200	42	MK 4	354	205	108,45
12.400.4250	42.5	MK 4	354	205	108,45
12.400.4300	43	MK 4	359	210	108,45
12.400.4350	43.5	MK 4	359	210	108,45
12.400.4400	44	MK 4	359	210	119,75
12.400.4450	44.5	MK 4	359	210	119,75
12.400.4500	45	MK 4	359	210	135,55
12.400.4550	45.5	MK 4	364	215	135,55
12.400.4600	46	MK 4	364	215	135,55
12.400.4650	46.5	MK 4	364	215	135,55
12.400.4700	47	MK 4	364	215	151,35
12.400.4800	48	MK 4	369	220	151,35
12.400.4850	48.5	MK 4	369	220	151,35
12.400.4900	49	MK 4	369	220	151,35
12.400.4950	49.5	MK 4	369	220	151,35
12.400.5000	50	MK 4	369	220	165,65

> 12.440 **Phantom**

NL HSS Spiraalboor MK
 FR Foret HSS CM
 ES Broca HSS CM
 DE HSS Spiralbohrer MK
 EN HSS Twist drill MT



HSS OX. DIN 345 N DIN 228-B ≥14 118°

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 42 Alu Si>10% N 51 Cu N 61 PVC

25-27 F 22-30 F 15-20 E 8-12 D 15-20 E 25-30 E 45-50 G 25-40 D 22-28 D

Ref.	d1	d2	l1	l2	€
12.440.0500	5	MK 1	133	52	52,10
12.440.0550	5.5	MK 1	138	57	58,75
12.440.0600	6	MK 1	138	57	55,00
12.440.0625	6.25	MK 1	144	63	76,60
12.440.0650	6.5	MK 1	144	63	60,70
12.440.0675	6.75	MK 1	150	69	65,40
12.440.0700	7	MK 1	150	69	62,55
12.440.0750	7.5	MK 1	150	69	64,35
12.440.0775	7.75	MK 1	156	75	51,70
12.440.0800	8	MK 1	156	75	35,90
12.440.0825	8.25	MK 1	156	75	52,10
12.440.0850	8.5	MK 1	156	75	38,80
12.440.0875	8.75	MK 1	162	81	45,55

Ref.	d1	d2	l1	l2	€
12.440.0900	9	MK 1	162	81	38,65
12.440.0925	9.25	MK 1	162	81	56,00
12.440.0950	9.5	MK 1	162	81	42,95
12.440.0975	9.75	MK 1	168	87	54,75
12.440.1000	10	MK 1	168	87	39,40
12.440.1025	10.25	MK 1	168	87	52,00
12.440.1050	10.5	MK 1	168	87	31,10
12.440.1075	10.75	MK 1	175	94	52,15
12.440.1100	11	MK 1	175	94	38,50
12.440.1125	11.25	MK 1	175	94	59,05
12.440.1150	11.5	MK 1	175	94	48,00
12.440.1175	11.75	MK 1	175	94	51,15
12.440.1200	12	MK 1	182	101	40,45

Ref.	d1	d2	l1	l2	€
12.440.1225	12.25	MK 1	182	101	50,40
12.440.1250	12.5	MK 1	182	101	34,70
12.440.1275	12.75	MK 1	182	101	48,45
12.440.1300	13	MK 1	182	101	38,20
12.440.1325	13.25	MK 1	189	108	47,75
12.440.1350	13.5	MK 1	189	108	42,75
12.440.1375	13.75	MK 1	189	108	45,55
12.440.1400	14	MK 1	189	108	40,85
12.440.1425	14.25	MK 2	212	114	53,60
12.440.1450	14.5	MK 2	212	114	47,05
12.440.1475	14.75	MK 2	212	114	57,15
12.440.1500	15	MK 2	212	114	47,05
12.440.1525	15.25	MK 2	218	120	52,95

**> 12.440 Phantom**

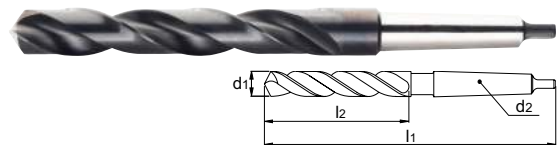
Ref.	d1	d2	l1	l2	€
12.440.1550	15.5	MK 2	218	120	50,00
12.440.1575	15.75	MK 2	218	120	53,35
12.440.1600	16	MK 2	218	120	50,00
12.440.1625	16.25	MK 2	223	125	65,15
12.440.1650	16.5	MK 2	223	125	54,85
12.440.1675	16.75	MK 2	223	125	60,65
12.440.1700	17	MK 2	223	125	56,30
12.440.1725	17.25	MK 2	228	130	63,50
12.440.1750	17.5	MK 2	228	130	60,70
12.440.1775	17.75	MK 2	228	130	66,75
12.440.1800	18	MK 2	228	130	60,70
12.440.1825	18.25	MK 2	233	135	68,95
12.440.1850	18.5	MK 2	233	135	66,45
12.440.1875	18.75	MK 2	233	135	72,60
12.440.1900	19	MK 2	233	135	66,45
12.440.1925	19.25	MK 2	238	140	77,35
12.440.1950	19.5	MK 2	238	140	74,60
12.440.1975	19.75	MK 2	238	140	78,80
12.440.2000	20	MK 2	238	140	72,30
12.440.2025	20.25	MK 2	243	145	82,10
12.440.2050	20.5	MK 2	243	145	78,50
12.440.2075	20.75	MK 2	243	145	85,50
12.440.2100	21	MK 2	243	145	80,50
12.440.2125	21.25	MK 2	248	150	88,10
12.440.2150	21.5	MK 2	248	150	84,50
12.440.2175	21.75	MK 2	248	150	90,10
12.440.2200	22	MK 2	248	150	86,95
12.440.2225	22.25	MK 2	248	150	103,30
12.440.2250	22.5	MK 2	253	155	91,60
12.440.2275	22.75	MK 2	253	155	100,70
12.440.2300	23	MK 2	253	155	96,50
12.440.2325	23.25	MK 3	276	155	128,55
12.440.2350	23.5	MK 3	276	155	101,95
12.440.2375	23.75	MK 3	281	160	120,75
12.440.2400	24	MK 3	281	160	103,90
12.440.2425	24.25	MK 3	281	160	123,15
12.440.2450	24.5	MK 3	281	160	108,60
12.440.2475	24.75	MK 3	281	160	128,50

Ref.	d1	d2	l1	l2	€
12.440.2500	25	MK 3	281	160	113,20
12.440.2525	25.25	MK 3	286	165	134,70
12.440.2550	25.5	MK 3	286	165	116,05
12.440.2575	25.75	MK 3	286	165	144,20
12.440.2600	26	MK 3	286	165	125,00
12.440.2625	26.25	MK 3	286	165	149,05
12.440.2650	26.5	MK 3	286	165	129,95
12.440.2675	26.75	MK 3	291	170	167,40
12.440.2700	27	MK 3	291	170	133,75
12.440.2725	27.25	MK 3	291	170	198,60
12.440.2750	27.5	MK 3	291	170	144,20
12.440.2775	27.75	MK 3	291	170	165,00
12.440.2800	28	MK 3	291	170	142,80
12.440.2825	28.25	MK 3	296	175	170,65
12.440.2850	28.5	MK 3	296	175	161,45
12.440.2875	28.75	MK 3	296	175	215,55
12.440.2900	29	MK 3	296	175	153,30
12.440.2925	29.25	MK 3	296	175	218,55
12.440.2950	29.5	MK 3	296	175	160,25
12.440.2975	29.75	MK 3	296	175	179,15
12.440.3000	30	MK 3	296	175	160,25
12.440.3025	30.25	MK 3	301	180	209,70
12.440.3050	30.5	MK 3	301	180	188,75
12.440.3075	30.75	MK 3	301	180	208,80
12.440.3100	31	MK 3	301	180	187,55
12.440.3125	31.25	MK 3	301	180	273,00
12.440.3150	31.5	MK 3	301	180	206,65
12.440.3200	32	MK 4	334	185	205,55
12.440.3250	32.5	MK 4	334	185	227,70
12.440.3300	33	MK 4	334	185	227,70
12.440.3350	33.5	MK 4	334	185	241,10
12.440.3400	34	MK 4	339	190	247,90
12.440.3450	34.5	MK 4	339	190	261,00
12.440.3500	35	MK 4	339	190	251,00
12.440.3550	35.5	MK 4	339	190	278,00
12.440.3600	36	MK 4	344	195	264,00
12.440.3650	36.5	MK 4	344	195	287,00
12.440.3700	37	MK 4	344	195	278,00

Ref.	d1	d2	l1	l2	€
12.440.3750	37.5	MK 4	344	195	313,00
12.440.3800	38	MK 4	349	200	299,00
12.440.3850	38.5	MK 4	349	200	359,00
12.440.3900	39	MK 4	349	200	323,00
12.440.3950	39.5	MK 4	349	200	395,00
12.440.4000	40	MK 4	349	200	340,00
12.440.4050	40.5	MK 4	354	205	515,00
12.440.4100	41	MK 4	354	205	394,00
12.440.4150	41.5	MK 4	354	205	547,00
12.440.4200	42	MK 4	354	205	391,00
12.440.4250	42.5	MK 4	354	205	570,00
12.440.4300	43	MK 4	359	210	470,00
12.440.4350	43.5	MK 4	359	210	591,00
12.440.4400	44	MK 4	359	210	481,00
12.440.4450	44.5	MK 4	359	210	621,00
12.440.4500	45	MK 4	359	210	485,00
12.440.4550	45.5	MK 4	364	215	671,00
12.440.4600	46	MK 4	364	215	524,00
12.440.4650	46.5	MK 4	364	215	665,00
12.440.4700	47	MK 4	364	215	550,00
12.440.4750	47.5	MK 4	364	215	688,00
12.440.4800	48	MK 4	369	220	561,00
12.440.4850	48.5	MK 4	369	220	714,00
12.440.4900	49	MK 4	369	220	597,00
12.440.4950	49.5	MK 4	369	220	753,00
12.440.5000	50	MK 4	369	220	592,00
12.440.5100	51	MK 5	412	225	1.154,00
12.440.5200	52	MK 5	412	225	1.134,00
12.440.5300	53	MK 5	412	225	1.408,00
12.440.5400	54	MK 5	417	230	1.300,00
12.440.5500	55	MK 5	417	230	1.240,00
12.440.5600	56	MK 5	417	230	1.486,00
12.440.5700	57	MK 5	422	235	1.543,00
12.440.5800	58	MK 5	422	235	1.353,00
12.440.5900	59	MK 5	422	235	1.490,00
12.440.6000	60	MK 5	422	235	1.365,00

> 12.500 Phantom

NL HSS-E Spiraalboor MK
FR Foret HSS-E CM
ES Broca HSS-E CM
DE HSS-E Spiralbohrer MK
EN HSS-E Twist drill MT



HSS-E	OX.	DIN 345	N	DIN 228-B	118°				
P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 51	N 52
S500 N/mm ²	S550 N/mm ²	S1000 N/mm ²	S1400 N/mm ²	INOX S550 N/mm ²	INOX >850 N/mm ²	GG	GGG GTS-GTW	Cu	CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

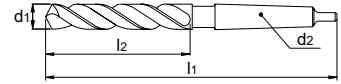
Ref.	d1	d2	l1	l2	€
12.500.0700	7	MK 1	150	69	59,45
12.500.0800	8	MK 1	156	75	54,90
12.500.0900	9	MK 1	162	81	56,00
12.500.1000	10	MK 1	168	87	54,75
12.500.1100	11	MK 1	175	94	58,40
12.500.1200	12	MK 1	182	101	57,90
12.500.1250	12.5	MK 1	182	101	61,05
12.500.1300	13	MK 1	182	101	61,35
12.500.1350	13.5	MK 1	189	108	71,80
12.500.1400	14	MK 1	189	108	67,90
12.500.1450	14.5	MK 2	212	114	80,85
12.500.1500	15	MK 2	212	114	81,40
12.500.1550	15.5	MK 2	218	120	88,80
12.500.1600	16	MK 2	218	120	81,95
12.500.1650	16.5	MK 2	223	125	88,60
12.500.1700	17	MK 2	223	125	84,50
12.500.1750	17.5	MK 2	228	130	90,95
12.500.1800	18	MK 2	228	130	88,10

Ref.	d1	d2	l1	l2	€
12.500.1850	18.5	MK 2	233	135	99,95
12.500.1900	19	MK 2	233	135	98,95
12.500.1950	19.5	MK 2	238	140	119,40
12.500.2000	20	MK 2	238	140	103,70
12.500.2050	20.5	MK 2	243	145	114,90
12.500.2100	21	MK 2	243	145	106,75
12.500.2150	21.5	MK 2	248	150	122,40
12.500.2200	22	MK 2	248	150	122,30
12.500.2250	22.5	MK 2	253	155	145,95
12.500.2300	23	MK 2	253	155	135,45
12.500.2350	23.5	MK 3	276	155	169,35
12.500.2400	24	MK 3	281	160	148,90
12.500.2450	24.5	MK 3	281	160	163,65
12.500.2500	25	MK 3	281	160	154,70
12.500.2550	25.5	MK 3	286	165	187,10
12.500.2600	26	MK 3	286	165	169,95
12.500.2650	26.5	MK 3	286	165	174,25
12.500.2700	27	MK 3	291	170	178,15

Ref.	d1	d2	l1	l2	€
12.500.2750	27.5	MK 3	291	170	207,90
12.500.2800	28	MK 3	291	170	207,45
12.500.2850	28.5	MK 3	296	175	200,75
12.500.2900	29	MK 3	296	175	191,25
12.500.2950	29.5	MK 3	296	175	206,55
12.500.3000	30	MK 3	296	175	180,85
12.500.3100	31	MK 3	301	180	251,00
12.500.3200	32	MK 4	334	185	243,80
12.500.3300	33	MK 4	334	185	255,00
12.500.3400	34	MK 4	339	190	292,00
12.500.3500	35	MK 4	339	190	308,00
12.500.3600	36	MK 4	344	195	336,00
12.500.3700	37	MK 4	344	195	339,00
12.500.3800	38	MK 4	349	200	366,00
12.500.3900	39	MK 4	349	200	411,00
12.500.4000	40	MK 4	349	200	398,00

> 12.900 Phantom

- NL HSS Spiraalboor MK
- FR Foret HSS CM
- ES Broca HSS CM
- DE HSS Spiralbohrer MK
- EN HSS Twist drill MT



HSS OX. DIN 1870 N DIN 228-B 118°

P 11 P 12 P 13 M 21 K 31 K 32 N 42 N 51 N 61

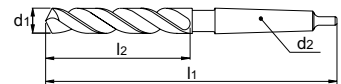
≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Si>10% Cu PVC

25-27 F 22-30 F 15-20 E 8-12 D 15-20 E 25-30 E 45-50 G 25-40 D 22-28 D

Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€
12.900.1001	10	MK 1	285	185	97,25	12.900.1603	16	MK 2	445	295	232,15	12.900.2303	23	MK 2	515	345	455,00
12.900.1003	10	MK 1	360	235	136,00	12.900.1651	16.5	MK 2	355	230	142,70	12.900.2401	24	MK 3	440	290	314,00
12.900.1051	10.5	MK 1	285	185	101,65	12.900.1653	16.5	MK 2	445	295	328,00	12.900.2403	24	MK 3	555	365	645,00
12.900.1053	10.5	MK 1	360	235	170,80	12.900.1701	17	MK 2	355	230	160,25	12.900.2501	25	MK 3	440	290	322,00
12.900.1101	11	MK 1	300	195	108,35	12.900.1703	17	MK 2	445	295	275,00	12.900.2503	25	MK 3	555	365	670,00
12.900.1103	11	MK 1	375	250	223,10	12.900.1751	17.5	MK 2	370	245	172,80	12.900.2601	26	MK 3	440	290	346,00
12.900.1151	11.5	MK 1	300	195	116,95	12.900.1753	17.5	MK 2	465	310	327,00	12.900.2603	26	MK 3	555	365	668,00
12.900.1201	12	MK 1	310	205	109,55	12.900.1801	18	MK 2	370	245	168,20	12.900.2701	27	MK 3	460	305	411,00
12.900.1203	12	MK 1	395	260	206,70	12.900.1803	18	MK 2	465	310	277,00	12.900.2801	28	MK 3	460	305	411,00
12.900.1251	12.5	MK 1	310	205	117,30	12.900.1851	18.5	MK 2	370	245	172,90	12.900.2803	28	MK 3	580	385	793,00
12.900.1253	12.5	MK 1	395	260	207,15	12.900.1853	18.5	MK 2	465	310	364,00	12.900.2901	29	MK 3	460	305	469,00
12.900.1301	13	MK 1	310	205	113,35	12.900.1901	19	MK 2	370	245	178,85	12.900.3001	30	MK 3	460	305	438,00
12.900.1303	13	MK 1	395	260	192,40	12.900.1903	19	MK 2	465	310	280,00	12.900.3003	30	MK 3	580	385	661,00
12.900.1351	13.5	MK 1	325	220	133,20	12.900.1951	19.5	MK 2	385	260	199,15	12.900.3201	32	MK 4	505	320	576,00
12.900.1353	13.5	MK 1	410	275	239,35	12.900.1953	19.5	MK 2	490	325	371,00	12.900.3203	32	MK 4	635	410	987,00
12.900.1401	14	MK 1	325	220	122,45	12.900.2001	20	MK 2	385	260	200,25	12.900.3501	35	MK 4	530	340	635,00
12.900.1403	14	MK 1	410	275	196,30	12.900.2003	20	MK 2	490	325	292,00	12.900.3801	38	MK 4	555	360	753,00
12.900.1451	14.5	MK 2	340	220	131,95	12.900.2051	20.5	MK 2	385	260	254,00	12.900.4001	40	MK 4	555	360	814,00
12.900.1453	14.5	MK 2	425	275	260,00	12.900.2053	20.5	MK 2	490	325	441,00	12.900.4003	40	MK 4	695	460	1.198,00
12.900.1501	15	MK 2	340	220	136,90	12.900.2101	21	MK 2	385	260	235,25	12.900.4201	42	MK 4	555	360	1.073,00
12.900.1503	15	MK 2	425	275	215,35	12.900.2103	21	MK 2	490	325	357,00	12.900.4501	45	MK 4	585	385	1.330,00
12.900.1551	15.5	MK 2	355	230	144,60	12.900.2201	22	MK 2	405	270	255,00	12.900.4503	45	MK 4	735	490	1.568,00
12.900.1553	15.5	MK 2	445	295	273,00	12.900.2203	22	MK 2	515	345	454,00	12.900.5001	50	MK 4	605	405	1.547,00
12.900.1601	16	MK 2	355	230	142,70	12.900.2301	23	MK 2	405	270	286,00						

> 12.910 Phantom

- NL HSS Spiraalboor, XXL type TS, MK
- FR Foret, XXL HSS type TS, CM
- ES Broca, XXL HSS tipo TS, CM
- DE HSS Spiralbohrer, XXL Typ TS, MK
- EN HSS Twist drill, XXL type TS, MT



HSS OX. NIT. >Ø 16,0 NORM TS DIN 228-B 130°

P 11 P 12 P 13 M 21 K 31 K 32 N 42 N 51 N 61

≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Si>10% Cu PVC

25-27 E 22-30 E 15-20 D 8-12 C 15-20 D 25-30 D 45-50 F 25-40 D 22-28 C

Ref.	d1	d2	l1	l2	€	Ref.	d1	d2	l1	l2	€
12.910.1005	10	MK 1	500	420	209,50	12.910.2105	21	MK 2	600	500	612,00
12.910.1205	12	MK 1	500	420	204,55	12.910.2205	22	MK 2	600	500	646,00
12.910.1405	14	MK 1	500	420	298,00	12.910.2305	23	MK 2	600	500	668,00
12.910.1407	14	MK 1	650	500	419,00	12.910.2405	24	MK 3	600	475	686,00
12.910.1505	15	MK 2	600	475	453,00	12.910.2505	25	MK 3	600	475	740,00
12.910.1507	15	MK 2	750	650	566,00	12.910.2605	26	MK 3	600	475	845,00
12.910.1605	16	MK 2	600	500	472,00	12.910.2805	28	MK 3	600	475	872,00
12.910.1705	17	MK 2	600	500	559,00	12.910.3005	30	MK 3	600	475	812,00
12.910.1805	18	MK 2	600	500	538,00	12.910.3503	35	MK 4	600	450	866,00
12.910.1905	19	MK 2	600	500	543,00	12.910.3803	38	MK 4	600	450	1.022,00
12.910.2005	20	MK 2	600	500	545,00						



> 13.740 Phantom



- NL SDS-PLUS HM-tip Hamerboor met 2 snijkanten
FR Foret Béton SDS-PLUS à plaquette carbure à 2 taillants
ES Broca martillo SDS-PLUS punta MD con 2 labios
DE SDS-PLUS HM-Schneiden Hammerbohrer mit 2 Schneiden
EN SDS-PLUS Carbide Tipped Hammer Drill with 2 flutes



Z=2

HM



Ref.	d1	l1	l2	€
13.740.0411	4	110	50	5,67
13.740.0511	5	110	50	4,31
13.740.0516	5	160	100	4,98
13.740.0551	5.5	110	50	4,69
13.740.0552	5.5	160	100	5,47
13.740.0611	6	110	50	4,40
13.740.0616	6	160	100	4,89
13.740.0621	6	210	150	6,61
13.740.0626	6	260	200	10,07
13.740.0631	6	310	250	13,76
13.740.0651	6.5	110	50	4,97
13.740.0652	6.5	160	100	5,77
13.740.0711	7	110	50	5,98
13.740.0716	7	160	100	6,59
13.740.0721	7	210	150	8,13
13.740.0811	8	110	50	4,93
13.740.0816	8	160	100	5,36
13.740.0821	8	210	150	6,86
13.740.0826	8	260	200	8,85
13.740.0831	8	310	250	13,04
13.740.0846	8	450	400	16,16
13.740.0916	9	160	100	7,94
13.740.0921	9	210	150	8,35
13.740.1011	10	110	50	5,94
13.740.1016	10	160	100	6,18

Ref.	d1	l1	l2	€
13.740.1021	10	210	150	7,37
13.740.1026	10	260	200	9,87
13.740.1031	10	310	250	13,25
13.740.1046	10	450	400	18,49
13.740.1116	11	160	100	8,80
13.740.1216	12	160	100	7,71
13.740.1221	12	210	150	9,91
13.740.1226	12	260	200	11,73
13.740.1231	12	310	250	16,04
13.740.1246	12	450	400	19,27
13.740.1316	13	160	100	10,52
13.740.1326	13	260	200	15,02
13.740.1346	13	450	400	23,09
13.740.1416	14	160	100	10,35
13.740.1421	14	210	150	11,54
13.740.1426	14	260	200	13,70
13.740.1431	14	310	250	17,14
13.740.1446	14	450	400	21,19
13.740.1516	15	160	100	14,24
13.740.1521	15	210	150	17,00
13.740.1526	15	260	200	17,56
13.740.1546	15	450	400	28,25
13.740.1616	16	160	100	13,61
13.740.1621	16	210	150	14,67
13.740.1626	16	260	200	20,51

Ref.	d1	l1	l2	€
13.740.1631	16	310	250	22,80
13.740.1646	16	450	400	29,80
13.740.1660	16	600	550	34,00
13.740.1690	16	1000	950	94,40
13.740.1821	18	210	150	20,56
13.740.1826	18	260	200	24,48
13.740.1831	18	310	250	32,05
13.740.1846	18	450	400	32,30
13.740.1860	18	600	550	39,15
13.740.1890	18	1000	950	101,35
13.740.2021	20	210	150	26,55
13.740.2026	20	260	200	27,25
13.740.2031	20	310	250	34,70
13.740.2046	20	450	400	38,25
13.740.2090	20	1000	950	125,15
13.740.2226	22	260	200	40,85
13.740.2231	22	310	250	38,85
13.740.2246	22	450	400	44,75
13.740.2426	24	260	200	48,40
13.740.2446	24	450	400	57,00
13.740.2526	25	260	200	50,85
13.740.2531	25	310	250	55,85
13.740.2546	25	450	400	60,35
13.740.2590	25	1000	950	155,80

> 13.744 Phantom



- NL SDS-PLUS HM-tip Hamerboor met 4 snijkanten
FR Foret Béton SDS-PLUS à plaquette carbure à 4 taillants
ES Broca martillo SDS-PLUS punta MD con 4 labios
DE SDS-PLUS HM-Schneiden Hammerbohrer mit 4 Schneiden
EN SDS-PLUS Carbide Tipped Hammer Drill with 4 flutes



Z=4

HM



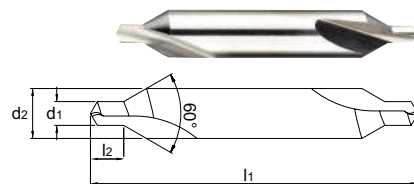
Ref.	d1	l1	l2	€
13.744.0511	5	110	50	9,98
13.744.0516	5	160	100	10,69
13.744.0552	5.5	160	100	10,37
13.744.0611	6	110	50	9,80
13.744.0616	6	160	100	10,40
13.744.0621	6	210	150	13,45
13.744.0626	6	260	200	17,81
13.744.0631	6	310	250	25,45
13.744.0652	6.5	160	100	12,69
13.744.0716	7	160	100	13,08
13.744.0811	8	110	50	10,96
13.744.0816	8	160	100	11,73
13.744.0821	8	210	150	13,45
13.744.0826	8	260	200	15,79
13.744.0831	8	310	250	26,65
13.744.0846	8	450	400	38,25
13.744.0916	9	160	100	14,34

Ref.	d1	l1	l2	€
13.744.1011	10	110	50	12,02
13.744.1016	10	160	100	13,00
13.744.1021	10	210	150	14,98
13.744.1026	10	260	200	17,42
13.744.1031	10	310	250	27,40
13.744.1046	10	450	400	42,45
13.744.1216	12	160	100	14,81
13.744.1221	12	210	150	17,77
13.744.1226	12	260	200	20,38
13.744.1231	12	310	250	31,65
13.744.1246	12	450	400	46,10
13.744.1416	14	160	100	21,48
13.744.1421	14	210	150	26,85
13.744.1426	14	260	200	32,30
13.744.1431	14	310	250	36,40
13.744.1446	14	450	400	48,35
13.744.1516	15	160	100	34,95

Ref.	d1	l1	l2	€
13.744.1526	15	260	200	42,90
13.744.1616	16	160	100	34,10
13.744.1621	16	210	150	38,15
13.744.1626	16	260	200	49,25
13.744.1631	16	310	250	50,85
13.744.1646	16	450	400	61,85
13.744.1660	16	600	550	97,20
13.744.1690	16	1000	950	180,75
13.744.1825	18	250	200	58,75
13.744.1846	18	450	400	68,45
13.744.2025	20	250	200	64,65
13.744.2046	20	450	400	77,70
13.744.2225	22	250	200	74,75
13.744.2246	22	450	400	92,10
13.744.2426	24	250	200	98,60
13.744.2525	25	250	200	86,85
13.744.2546	25	450	400	109,85

> 15.095 INTERNATIONAL TOOLS

NL ECO PRO HSS Centerboor 60°
 FR Foret à centrer HSS ECO PRO 60°
 ES Broca escalonada HSS ECO PRO 60°
 DE ECO PRO HSS Zentrierbohrer 60°
 EN ECO PRO HSS Centre Drill 60°



HSS **DIN 333-A** **NFE 66051-A** **ECO PRO** **h7**

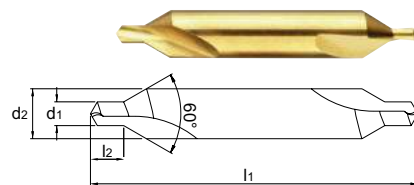
P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 43 Mg	N 51 Cu	N 61 PVC
20-25 E	15-25 E	16-22 F	25-30 E	20-25 D	50-60 E	60-70 E	45-50 E	25-40 E	18-28 E

Ref.	d1	d2	l1	l2	€
15.095.1031	1	3.15	31	1,3-1,7	3,61
15.095.1040	1	4	35	1,3-1,7	3,81
15.095.1231	1.25	3.15	31	1,6-2,0	3,61
15.095.1550	1.5	5	40	2,0-2,6	4,08
15.095.1640	1.6	4	35	2,0-2,6	3,81
15.095.2050	2	5	40	2,5-3,1	4,08
15.095.2060	2	6	45	2,5-3,1	4,46
15.095.2563	2.5	6.3	45	3,1-3,8	4,99
15.095.2580	2.5	8	50	3,1-3,8	6,36

Ref.	d1	d2	l1	l2	€
15.095.3090	3	10	55	3,9-4,6	10,24
15.095.3180	3.15	8	50	3,9-4,6	5,91
15.095.3190	3.15	10	55	3,9-4,6	10,24
15.095.4010	4	10	55	5,0-5,9	8,28
15.095.4012	4	12	63	5,0-5,9	13,00
15.095.5013	5	12.5	63	6,3-7,2	13,00
15.095.6316	6.3	16	71	8,0-8,9	22,48
15.095.8020	8	20	80	10,1-11,1	34,85
15.095.9025	10	25	100	12,8-13,8	70,35

> 15.096 INTERNATIONAL TOOLS

NL ECO PRO HSS Centerboor TiN, 60°
 FR Foret à centrer HSS ECO PRO TiN, 60°
 ES Broca escalonada HSS ECO PRO TiN, 60°
 DE ECO PRO HSS Zentrierbohrer TiN, 60°
 EN ECO PRO HSS Centre Drill TiN, 60°



HSS **TiN** **DIN 333-A** **NFE 66051-A** **ECO PRO** **h7**

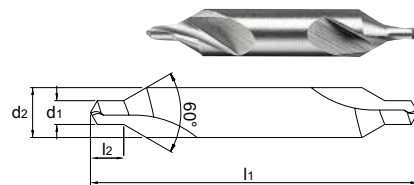
P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 43 Mg	N 51 Cu	N 61 PVC
20-25 E	15-25 E	16-22 F	25-30 E	20-25 D	50-60 E	60-70 E	45-50 E	25-40 E	18-28 E

Ref.	d1	d2	l1	l2	€
15.096.1040	1	4	35	1,3-1,7	6,20
15.096.1640	1.6	4	35	2,0-2,6	6,20
15.096.2050	2	5	40	2,5-3,1	6,82
15.096.2563	2.5	6.3	45	3,1-3,8	7,43

Ref.	d1	d2	l1	l2	€
15.096.3180	3.15	8	50	3,9-4,6	8,67
15.096.4010	4	10	55	5,0-5,9	13,79
15.096.5013	5	12.5	63	6,3-7,2	17,73

> 15.100 Phantom

NL HSS Centerboor 60°
 FR Foret à centrer HSS 60°
 ES Broca escalonada HSS 60°
 DE HSS Zentrierbohrer 60°
 EN HSS Centre Drill 60°



HSS **DIN 333-A** **NFE 66051-A** **h7**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 43 Mg	N 51 Cu	N 61 PVC
20-25 E	15-25 E	16-22 F	25-30 E	20-25 D	50-60 E	60-70 E	45-50 E	25-40 E	18-28 E

Ref.	d1	d2	l1	l2	€
15.100.0531	0.5	3.15	25	0,6-0,9	7,90
15.100.0735	0.75	3.5	35	1,0-1,3	10,55
15.100.0831	0.8	3.15	25	1,0-1,3	7,90
15.100.1031	1	3.15	31	1,3-1,7	7,90
15.100.1040	1	4	35	1,3-1,7	9,36
15.100.1231	1.25	3.15	31	1,6-2,0	7,90
15.100.1240	1.25	4	35	1,6-2,0	9,56
15.100.1550	1.5	5	40	2,0-2,6	9,93
15.100.1640	1.6	4	35	2,0-2,6	7,90
15.100.1650	1.6	5	40	2,0-2,6	10,55
15.100.2050	2	5	40	2,5-3,1	9,25
15.100.2060	2	6	45	2,5-3,1	11,02
15.100.2063	2	6.3	45	2,5-3,1	11,54
15.100.2563	2.5	6.3	45	3,1-3,8	11,02
15.100.2580	2.5	8	50	3,1-3,8	12,42
15.100.3090	3	10	55	3,9-4,6	15,64

Ref.	d1	d2	l1	l2	€
15.100.3180	3.15	8	50	3,9-4,6	12,42
15.100.3190	3.15	10	55	3,9-4,6	16,06
15.100.3590	3.5	10	55	4,0-4,5	32,50
15.100.4010	4	10	55	5,0-5,9	14,45
15.100.4012	4	12	63	5,0-5,9	26,60
15.100.4013	4	12.5	63	5,0-5,9	27,25
15.100.5013	5	12.5	63	6,3-7,2	23,02
15.100.5014	5	14	69	6,3-7,2	33,45
15.100.5016	5	16	71	6,3-7,2	38,90
15.100.6018	6	18	77	8,0-8,9	53,05
15.100.6316	6.3	16	71	8,0-8,9	37,50
15.100.6320	6.3	20	80	8,0-8,9	75,90
15.100.8020	8	20	80	10,1-11,1	67,10
15.100.9025	10	25	100	12,8-13,8	125,00
15.100.9531	12.5	31.5	125	16,5-17,5	290,00

> 15.120 Phantom

NL HSS-E Centerboor 60°
FR Foret à centrer HSS-E 60°
ES Broca escalonada HSS-E 60°
DE HSS-E Zentrierbohrer 60°
EN HSS-E Centre Drill 60°

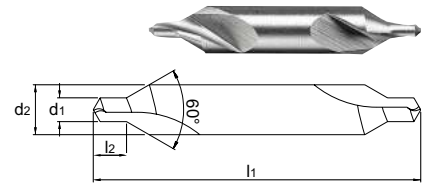
HSS-E  NFE 66051-A DIN 333-A h7

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
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25-30 E	20-40 E	16-22 F	8-10 D	6-8 C	25-30 E	20-25 D	60-70 E	50-80 E	30-40 E	10-15 D	18-21 E
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Ref.	d1	d2	l1	l2	€
15.120.0735	0.75	3.5	35	1,0-1,3	11,90
15.120.0831	0.8	3.15	25	1,0-1,3	11,90
15.120.1040	1	4	35	1,3-1,7	11,90
15.120.1231	1.25	3.15	31	1,6-2,0	12,89
15.120.1550	1.5	5	40	2,0-2,6	12,16
15.120.1640	1.6	4	35	2,0-2,6	12,89
15.120.2050	2	5	40	2,5-3,1	14,19
15.120.2060	2	6	45	2,5-3,1	13,93

Ref.	d1	d2	l1	l2	€
15.120.2563	2.5	6.3	45	3,1-3,8	16,06
15.120.2580	2.5	8	50	3,1-3,8	15,86
15.120.3090	3	10	55	5,0-4,6	22,35
15.120.3180	3.15	8	50	3,9-4,6	18,03
15.120.4010	4	10	55	5,0-5,9	20,42
15.120.4012	4	12	63	5,0-5,9	36,50
15.120.5013	5	12.5	63	6,3-7,2	36,50
15.120.5014	5	14	69	6,3-7,2	47,70

**> 15.124 Phantom**

NL HSS-E Centerboor TiAlN, 60°
FR Foret à centrer HSS-E TiAlN, 60°
ES Broca escalonada HSS-E TiAlN, 60°
DE HSS-E Zentrierbohrer TiAlN, 60°
EN HSS-E Centre Drill TiAlN, 60°

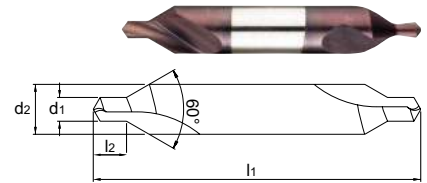
HSS-E  TiAlN DIN 333-A NFE 66051-A h7

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 43 Mg	N 51 Cu	N 52 CuAlFe	N 61 PVC
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35-45 E	25-45 E	20-25 F	10-20 D	10-15 C	40-45 E	30-40 D	75-100 E	60-80 E	40-45 D	20-25 D	18-21 E
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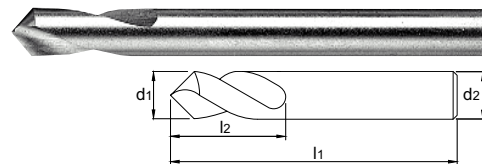
Ref.	d1	d2	l1	l2	€
15.124.0531	0.5	3.15	25	0,6-0,9	17,68
15.124.0831	0.8	3.15	25	1,0-1,3	17,68
15.124.1031	1	3.15	31	1,3-1,7	20,45
15.124.1040	1	4	35	1,3-1,7	20,76
15.124.1231	1.25	3.15	31	1,6-2,0	20,45
15.124.1550	1.5	5	40	2,0-2,6	23,49
15.124.1640	1.6	4	35	2,0-2,6	20,76
15.124.2050	2	5	40	2,5-3,1	23,49
15.124.2060	2	6	45	2,5-3,1	26,50

Ref.	d1	d2	l1	l2	€
15.124.2563	2.5	6.3	45	3,1-3,8	26,50
15.124.2580	2.5	8	50	3,1-3,8	31,70
15.124.3090	3	10	55	5-4,6	38,75
15.124.3180	3.15	8	50	3,9-4,6	31,70
15.124.4010	4	10	55	5,0-5,9	38,75
15.124.4012	4	12	63	5,0-5,9	56,75
15.124.5013	5	12.5	63	6,3-7,2	56,75
15.124.6316	6.3	16	71	8,0-8,9	79,95
15.124.8020	8	20	80	10,1-11,1	144,95



> 15.600 **Phantom**

NL HSS-E NC-Centreerboor 90°
 FR Foret à pointer NC HSS-E 90°
 ES Broca de puntear NC HSS-E 90°
 DE HSS-E NC Anbohrer 90°
 EN HSS-E NC Spotting Drill 90°



HSS-E ISO 10898 90° h6

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² M 22 INOX >850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 42 Alu Si>10% N 43 Mg N 51 Cu N 52 CuAlFe N 61 PVC

25-30 E 20-40 E 16-22 F 8-10 D 6-8 C 25-30 E 20-25 D 60-70 E 50-80 E 45-50 E 30-40 E 10-15 D 18-28 E

Ref.	d1	d2	l1	l2	€
15.600.0200	2	2	49	8	15,79
15.600.0300	3	3	50	10	12,83
15.600.0400	4	4	52	12	12,83
15.600.0500	5	5	60	15	13,93
15.600.0600	6	6	66	20	17,77

Ref.	d1	d2	l1	l2	€
15.600.0800	8	8	79	25	19,80
15.600.1000	10	10	89	25	26,30
15.600.1200	12	12	102	30	32,85
15.600.1400	14	14	115	35	47,40
15.600.1600	16	16	115	35	54,70

Ref.	d1	d2	l1	l2	€
15.600.1800	18	18	130	40	78,80
15.600.2000	20	20	131	40	83,00
15.600.2500	25	25	138	45	139,55



NL Verskil tussen centerboor en centreerboor
 FR La différence entre un foret à centre et un foret à pointer
 ES Diferencia entre broca de centrar y broca de puntear
 DE Unterschied zwischen Zentrierbohrer und Anbohrer
 EN The difference between centre drills and spot drills

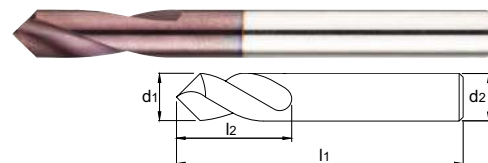
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> 15.604 **Phantom**

NL HSS-E NC-Centreerboor TiAIN, 90°
 FR Foret à pointer NC HSS-E TiAIN, 90°
 ES Broca de puntear NC HSS-E TiAIN, 90°
 DE HSS-E NC Anbohrer TiAIN, 90°
 EN HSS-E NC Spotting Drill TiAIN, 90°



HSS-E ISO 10898 90° TiAIN h6

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² M 22 INOX >850N/mm² K 31 GG K 32 GGG GTS-GTW N 42 Alu Si>10% N 43 Mg N 51 Cu N 52 CuAlFe

35-45 E 25-45 E 20-25 F 10-20 D 10-15 C 40-45 E 30-40 D 75-100 E 60-80 E 40-45 D 20-25 D

Ref.	d1	d2	l1	l2	€
15.604.0300	3	3	50	10	17,10
15.604.0400	4	4	52	12	18,56
15.604.0500	5	5	60	15	20,37
15.604.0600	6	6	66	20	26,25

Ref.	d1	d2	l1	l2	€
15.604.0800	8	8	79	25	30,10
15.604.1000	10	10	89	25	39,85
15.604.1200	12	12	102	30	50,75
15.604.1600	16	16	115	35	78,50

Ref.	d1	d2	l1	l2	€
15.604.1800	18	18	130	40	111,00
15.604.2000	20	20	131	40	126,30
15.604.2500	25	25	138	45	186,85

> 19.120 INTERNATIONAL TOOLS

NL ECO HSS Set Spiraalboren
FR Coffret de Forets HSS ECO
ES Estuche de brocas HSS ECO
DE ECO HSS Satz Spiralbohrer
EN ECO HSS Drill set



HSS	DIN 338	N				ECO		
P 11	P 12	P 13	K 31	K 32	N 41	N 42	N 51	N 61
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	PVC
25-27 F	22-30 F	15-20 E	15-20 E	25-30 E	45-50 E	35-40 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.120.1000	11.416	1-10 mm x 0,5 mm	37,40
19.120.1300	11.416	1-13 mm x 0,5 mm	68,70

Ref.	Type	Ø mm	€
19.120.6000	11.416	1-10 mm x 0,5 mm (170x)	204,70

> 19.124 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Spiraalboren
FR Coffret de Forets HSS ECO PRO
ES Estuche de brocas HSS ECO PRO
DE ECO PRO HSS Satz Spiralbohrer
EN ECO PRO HSS Drill set



HSS	DIN 338	N				ECO PRO		
P 11	P 12	P 13	K 31	K 32	N 41	N 42	N 51	N 61
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	PVC
25-27 F	22-30 F	15-20 E	15-20 E	25-30 E	45-50 E	35-40 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.124.1000	11.420	1-10 mm x 0,5 mm	55,10
19.124.1010	11.420	1-10 mm x 0,1 mm (91x)	284,00
19.124.1300	11.420	1-13 mm x 0,5 mm	110,90

Ref.	Type	Ø mm	€
19.124.6000	11.420	1-10 mm x 0,5 mm (170x)	337,00
19.124.6100	11.420	1-13 mm x 0,5 mm + 3,3 - 4,2 mm (220x)	651,00

> 19.127 INTERNATIONAL TOOLS

NL ECO HSS Set Spiraalboren Kruisaanslijping, blank
FR Coffret de Forets HSS ECO Affûtage en croix, finition polie
ES Estuche de brocas HSS ECO Afilado en cruz, blanca
DE ECO HSS Satz Spiralbohrer Kreuzanschliff, blank
EN ECO HSS Drill set Split point, bright finish



HSS	DIN 338	N				ECO	
P 11	P 12	P 13	K 31	K 32	N 42	N 51	N 61
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	GG	GGG GTS-GTW	Alu Si>10%	Cu	PVC
25-27 F	22-30 F	15-20 E	15-20 E	25-30 E	35-40 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.127.1000	11.423	1-10 mm x 0,5 mm	40,35

Ref.	Type	Ø mm	€
19.127.1300	11.423	1-13 mm x 0,5 mm	78,05

> 19.130 INTERNATIONAL TOOLS

NL ECO HSS Set Spiraalboren Kruisaanslijping
 FR Coffret de Forets HSS ECO Affûtage en croix
 ES Estuche de brocas HSS ECO Afilado en cruz
 DE ECO HSS Satz Spiralbohrer Kreuzanschliff
 EN ECO HSS Drill set Split point



HSS DIN 338 N ECO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	15-20 E	25-30 E	35-40 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.130.1000	11.426	1-10 mm x 0,5 mm	37,55
19.130.1300	11.426	1-13 mm x 0,5 mm	75,60

Ref.	Type	Ø mm	€
19.130.6000	11.426	1-10 mm x 0,5 mm (170x)	238,90

> 19.134 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Spiraalboren Kruisaanslijping
 FR Coffret de Forets HSS ECO PRO Affûtage en croix
 ES Estuche de brocas HSS ECO PRO Afilado en cruz
 DE ECO PRO HSS Satz Spiralbohrer Kreuzanschliff
 EN ECO PRO HSS Drill set Split point



HSS DIN 338 N ECO PRO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	15-20 E	25-30 E	35-40 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.134.1000	11.430	1-10 mm x 0,5 mm	57,70
19.134.1300	11.430	1-13 mm x 0,5 mm	125,80

Ref.	Type	Ø mm	€
19.134.6000	11.430	1-10 mm x 0,5 mm (170x)	386,00
19.134.6100	11.430	1-13 mm x 0,5 mm + 3,3 - 4,2 mm (220x)	737,00

> 19.136 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Spiraalboren TiN-tip
 FR Coffret de Forets HSS ECO PRO avec revêtement TiN sur la partie utile
 ES Estuche de brocas HSS ECO PRO con punta TiN
 DE ECO PRO HSS Satz Spiralbohrer TiN-Tip
 EN ECO PRO HSS Drill set TiN coated tip



HSS TiN DIN 338 N ECO PRO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	48-60 E	45-50 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.136.1000	11.431	1-10 mm x 0,5 mm	74,25

Ref.	Type	Ø mm	€
19.136.1300	11.431	1-13 mm x 0,5 mm	144,30



> 19.137 Phantom

NL HSS Set Spiraalboren met drievlaks schacht
FR Coffret de Forets HSS à 3 méplats
ES Estuche de brocas HSS con 3 chaflanes
DE HSS Satz Spiralbohrer mit drei platten Flächen
EN HSS Drill set with 3 flat surfaces

HSS	OX.	DIN 338	N	<4	≥4	118°			
P 11	P 12	P 13	M 21	K 31	K 32	N 42	N 51	N 61	
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu Si>10%	Cu	PVC	
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	45-50 G	25-40 D	22-28 D	

Ref.	Type	Ø mm	€
19.137.1000	11.440	1-10 mm x 0,5 mm	96,05

Ref.	Type	Ø mm	€
19.137.1300	11.440	1-13 mm x 0,5 mm	182,60

> 19.138 Phantom

NL HSS Set Spiraalboren TiN-tip, met drievlaks schacht, (handgebruik)
FR Coffret de Forets HSS avec revêtement TiN sur la partie utile, à 3 méplats, (usage à la main)
ES Estuche de brocas HSS con punta TiN, con 3 chaflanes, (uso manual)
DE HSS Satz Spiralbohrer TiN-Tip, mit drei platten Flächen, (handgebrauch)
EN HSS Drill set TiN coated tip, with 3 flat surfaces, (handuse)

HSS	TiN	DIN 338	>N	<4	≥4	≥1,6	118°		
P 11	P 12	P 13	M 21	K 31	K 32	N 41	N 42	N 51	N 61
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	PVC
27-30 F	25-28 F	17-22 E	10-14 D	20-33 E	20-28 E	50-80 E	45-70 G	40-65 D	25-36 D

Ref.	Type	Ø mm	€
19.138.1000	11.441	1-10 mm x 0,5 mm	119,65

Ref.	Type	Ø mm	€
19.138.1300	11.441	1-13 mm x 0,5 mm	231,20



> 19.139 Phantom

NL HSS Set Spiraalboren Step-point, met drievlaks schacht
FR Coffret de Forets HSS Step-point, à 3 méplats
ES Estuche de brocas HSS Step-point, con 3 chaflanes
DE HSS Satz Spiralbohrer Step-point, mit drei platten Flächen
EN HSS Drill set Step-point, with 3 flat surfaces

HSS	OX.	DIN 338	N	≥4	≥2,5	118°			
P 11	P 12	P 13	M 21	K 31	K 32	N 42	N 51	N 61	
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu Si>10%	Cu	PVC	
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	45-50 G	25-40 D	22-28 D	

Ref.	Type	Ø mm	€
19.139.0310	11.443	3-10 mm x 1 mm	84,00
19.139.1000	11.443	1-10 mm x 0,5 mm	177,65

Ref.	Type	Ø mm	€
19.139.1300	11.443	1-13 mm x 0,5 mm	331,00



NL Step-point spiraalboor in actie
FR Regardez le foret à pointe étagée Step-point en action
ES Broca escalonada en acción
DE Spiralbohrer mit Stufenspitze in Aktion
EN Step-Point Stub Drill in Action

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> 19.140 **Phantom**

NL HSS-E Set Spiraalboren met drievlaks schacht
 FR Coffret de Forets HSS-E à 3 méplats
 ES Estuche de brocas HSS-E con 3 chaflanes
 DE HSS-E Satz Spiralbohrer mit drei platten Flächen
 EN HSS-E Drill set with 3 flat surfaces



HSS-E DIN 338 N

P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 51	N 52
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Cu	CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	Type	Ø mm	€
19.140.1000	11.445	1-10 mm x 0,5 mm	134,50

Ref.	Type	Ø mm	€
19.140.1300	11.445	1-13 mm x 0,5 mm	264,00

> 19.141 **Phantom**

NL HSS-E Set Spiraalboren TiN-tip, met drievlaks schacht, (handgebruik)
 FR Coffret de Forets HSS-E avec revêtement TiN sur la partie utile, à 3 méplats, (usage à la main)
 ES Estuche de brocas HSS-E con punta TiN, con 3 chaflanes, (uso manual)
 DE HSS-E Satz Spiralbohrer TiN-Tip, mit drei platten Flächen, (handgebrauch)
 EN HSS-E Drill set TiN coated tip, with 3 flat surfaces, (handuse)



HSS-E TiN DIN 338 >N

P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 51	N 52
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Cu	CuAlFe
32-40 E	35-40 E	25-32 E	12-20 D	15-20 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	Type	Ø mm	€
19.141.1000	11.446	1-10 mm x 0,5 mm	145,05

Ref.	Type	Ø mm	€
19.141.1300	11.446	1-13 mm x 0,5 mm	280,00

> 19.142 **Phantom**

NL HSS-E Set Spiraalboren Step-point, met drievlaks schacht
 FR Coffret de Forets HSS-E Step-point, à 3 méplats
 ES Estuche de brocas HSS-E Step-point, con 3 chaflanes
 DE HSS-E Satz Spiralbohrer Step-point, mit drei platten Flächen
 EN HSS-E Drill set Step-point, with 3 flat surfaces



NIUW NOUVEAU NUEVO NEU

HSS-E OX. DIN 338 N

P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 51	N 52
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Cu	CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	Type	Ø mm	€
19.142.0310	11.447	3-10 mm x 1 mm	99,00
19.142.1000	11.447	1-10 mm x 0,5 mm	190,00

Ref.	Type	Ø mm	€
19.142.1300	11.447	1-13 mm x 0,5 mm	365,00



NL Step-point spiraalboor in actie
 FR Regardez le foret à pointe étagée Step-point en action
 ES Broca escalonada en acción
 DE Spiralbohrer mit Stufenspitze in Aktion
 EN Step-Point Stub Drill in Action

Watch me

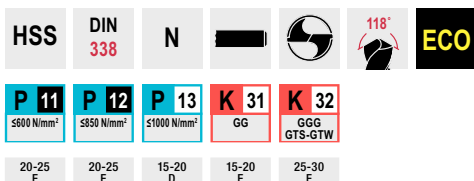


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> 19.144 INTERNATIONAL TOOLS

NL ECO HSS Set Spiraalboren gewalst
FR Coffret de Forets HSS ECO laminé
ES Estuche de brocas HSS ECO laminada
DE ECO HSS Satz Spiralbohrer Gewalzt
EN ECO HSS Drill set roll-forged

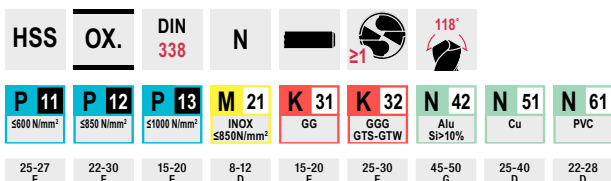


Ref.	Type	Ø mm	€
19.144.1002	11.400	1-10 mm x 0,5 mm	20,67
19.144.1302	11.400	1-13 mm x 0,5 mm	37,70

Ref.	Type	Ø mm	€
19.144.6001	11.400	1-10 mm x 0,5 mm (170x)	177,00
19.144.6100	11.400	1-13 mm x 0,5 mm + 3,3 - 4,2 mm (220x)	316,00

> 19.145 Phantom

NL HSS Set Spiraalboren
FR Coffret de Forets HSS
ES Estuche de brocas HSS
DE HSS Satz Spiralbohrer
EN HSS Drill set

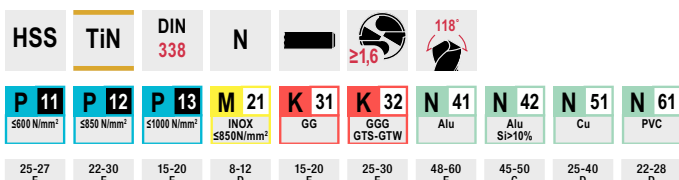


Ref.	Type	Ø mm	€
19.145.1000	11.450	1-10 mm x 0,5 mm	84,40
19.145.1010	11.450	1-10 mm x 0,1 mm (91x)	457,00
19.145.1150	11.450	1-10,5 mm x 0,5 mm + 3,3-4,2-6,8-10,2 mm	105,50
19.145.1300	11.450	1-13 mm x 0,5 mm	154,40

Ref.	Type	Ø mm	€
19.145.1590	11.450	1-5,9 mm x 0,1 mm	137,00
19.145.1600	11.450	6-10 mm x 0,1 mm	302,00
19.145.6000	11.450	1-10 mm x 0,5 mm (170x)	604,00
19.145.6100	11.450	1-13 mm x 0,5 mm + 3,3 - 4,2 mm (220x)	1.016,00

> 19.146 Phantom

NL HSS Set Spiraalboren TiN-tip
FR Coffret de Forets HSS avec revêtement TiN sur la partie utile
ES Estuche de brocas HSS con punta TiN
DE HSS Satz Spiralbohrer TiN-Tip
EN HSS Drill set TiN coated tip



Ref.	Type	Ø mm	€
19.146.1000	11.451	1-10 mm x 0,5 mm	101,05
19.146.1010	11.451	1-10 mm x 0,1 mm (91x)	534,00

Ref.	Type	Ø mm	€
19.146.1150	11.451	1-10,5 mm x 0,5 mm + 3,3-4,2-6,8-10,2 mm	127,85
19.146.1300	11.451	1-13 mm x 0,5 mm	200,75

> 19.147 **Phantom**

NL HSS Set Spiraalboren TiN-tip, (handgebruik)
 FR Coffret de Forets HSS avec revêtement TiN sur la partie utile,
 (usage à la main)
 ES Estuche de brocas HSS con punta TiN, (uso manual)
 DE HSS Satz Spiralbohrer TiN-Tip, (handgebrauch)
 EN HSS Drill set TiN coated tip, (handuse)



HSS TiN DIN 338 >N $\geq 1,6$ 118°

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27 F	22-30 F	15-20 E	8-12 D	15-20 E	25-30 E	48-60 E	45-50 G	25-40 D	22-28 D

Ref.	Type	Ø mm	€
19.147.1000	11.461	1-10 mm x 0,5 mm	103,65
19.147.1010	11.461	1-10 mm x 0,1 mm (91x)	533,00

Ref.	Type	Ø mm	€
19.147.1150	11.461	1-10,5 mm x 0,5 mm + 3,3-4,2-6,8-10,2 mm	151,00
19.147.1300	11.461	1-13 mm x 0,5 mm	199,30

> 19.149 **INTERNATIONAL TOOLS**

NL ECO PRO HSS-E Set Spiraalboren
 FR Coffret de Forets HSS-E ECO PRO
 ES Estuche de brocas HSS-E ECO PRO
 DE ECO PRO HSS-E Satz Spiralbohrer
 EN ECO PRO HSS-E Drill set



HSS-E DIN 338 N ≥ 3 135° ECO PRO

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
28-35 E	30-36 E	20-27 E	14-18 D	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	Type	Ø mm	€
19.149.1000	11.490	1-10 mm x 0,5 mm	83,65
19.149.1300	11.490	1-13 mm x 0,5 mm	175,00

Ref.	Type	Ø mm	€
19.149.6000	11.490	1-10 mm x 0,5 mm (170x)	600,00
19.149.6100	11.490	1-13 mm x 0,5 mm + 3,3 - 4,2 mm (220x)	993,00

> 19.150 **Phantom**

NL HSS-E Set Spiraalboren
 FR Coffret de Forets HSS-E
 ES Estuche de brocas HSS-E
 DE HSS-E Satz Spiralbohrer
 EN HSS-E Drill set



HSS-E DIN 338 N ≥ 2 135°

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 51 Cu	N 52 CuAlFe
28-35 E	30-36 E	20-27 E	12-20 D	14-18 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C

Ref.	Type	Ø mm	€
19.150.1000	11.500	1-10 mm x 0,5 mm	121,90
19.150.1010	11.500	1-10 mm x 0,1 mm (91x)	817,00
19.150.1150	11.500	1-10,5 mm x 0,5 mm + 3,3-4,2-6,8-10,2 mm	153,20
19.150.1300	11.500	1-13 mm x 0,5 mm	236,00

Ref.	Type	Ø mm	€
19.150.1590	11.500	1-5,9 mm x 0,1 mm	215,00
19.150.1600	11.500	6-10 mm x 0,1 mm	584,00
19.150.6000	11.500	1-10 mm x 0,5 mm (170x)	894,00
19.150.6100	11.500	1-13 mm x 0,5 mm + 3,3 - 4,2 mm (220x)	1.557,00

> 19.152 Phantom

NL HSS-E Set Spiraalboren TiN-tip, (handgebruik)
 FR Coffret de Forets HSS-E avec revêtement TiN sur la partie utile,
 (usage à la main)
 ES Estuche de brocas HSS-E con punta TiN, (uso manual)
 DE HSS-E Satz Spiralbohrer TiN-Tip, (handgebrauch)
 EN HSS-E Drill set TiN coated tip, (handuse)



HSS-E	TiN	DIN 338	>N								
P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 51	N 52		
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	INOX ≤850 N/mm ²	INOX >850 N/mm ²	GG	GGG GTS-GTW	Cu	CuAlFe		
32-40 E	35-40 E	25-32 E	12-20 D	15-20 D	10-15 C	30-35 F	24-30 F	30-40 E	8-15 C		

Ref.	Type	Ø mm	€	Ref.	Type	Ø mm	€
19.152.1000	11.506	1-10 mm x 0,5 mm	140,10	19.152.1300	11.506	1-13 mm x 0,5 mm	273,00

> 19.176 Phantom

NL HSS-E Set Spiraalboren roestvaststaal
 FR Coffret de Forets HSS-E Inox
 ES Estuche de brocas HSS-E acero inoxidable
 DE HSS-E Satz Spiralbohrer rostfreien Stahl
 EN HSS-E Drill set stainless steel



HSS-E	DIN 338	>N				INOX
P 14	M 21	M 22	S 71	S 72		
≤1400 N/mm ²	INOX ≤850 N/mm ²	INOX >850 N/mm ²	Ni/Co	Ti		
12-16 E	14-18 D	12-16 C	6-8 A	6-10 B		

Ref.	Type	Ø mm	€	Ref.	Type	Ø mm	€
19.176.1000	11.760	1-10 mm x 0,5 mm	154,00	19.176.1300	11.760	1-13 mm x 0,5 mm	324,00
19.176.1150	11.760	1-10,5 mm x 0,5 mm + 3,3-4,2-6,8-10,2 mm	215,00				

> 19.374 Phantom

NL HM-tip Set Hamerboren, SDS-PLUS met 2 snijkanten
 FR Jeu Forets à béton, SDS-PLUS à plaquette carbure à 2 taillants
 ES Juego de brocas martillo, SDS-PLUS punta MD con 2 labios
 DE HM-Schneiden Satz Hammerbohrer, SDS-PLUS mit 2 Schneiden
 EN Carbide Tipped Hammer Drill set, SDS-PLUS with 2 flutes



	Z=2	HM	
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Ref.	Type	Ø mm	€
19.374.0512	13.740	5x110, 6x110, 8x110, 6x160, 8x160, 10x160, 12x160 mm	56,00
19.374.1000	13.740	5x110 (5x), 6x160 (5x), 8x160 (5x), 10x160 (5x), 12x160 (5x), 8x210 (5x), 10x210 (5x), 12x210 mm (5x)	297,00

> 19.376 Phantom

NL HM-tip Set Hamerboren, SDS-PLUS met 4 snijkanten
 FR Jeu Forets à béton, SDS-PLUS à plaquette carbure à 4 taillants
 ES Juego de brocas martillo, SDS-PLUS punta MD con 4 labios
 DE HM-Schneiden Satz Hammerbohrer, SDS-PLUS mit 4 Schneiden
 EN Carbide Tipped Hammer Drill set, SDS-PLUS with 4 flutes

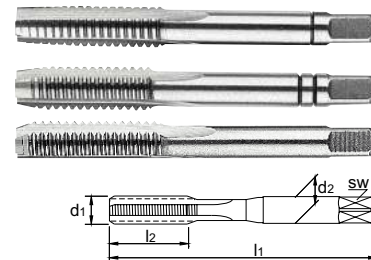


	Z=4	HM	
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Ref.	Type	Ø mm	€
19.376.0512	13.744	5x110, 6x110, 8x110, 6x160, 8x160, 10x160, 12x160 mm	99,00

> 21.140 INTERNATIONAL TOOLS

NL ECO HSS Handtappen Metrisch, set à 3 stuks
 FR Tarauds à main HSS ECO Métrique, Jeu de 3 pièces
 ES Machos mano HSS ECO Métrica, juego de 3 piezas
 DE ECO HSS Handgewindebohrer Metrisch, Satz von 3 Stück
 EN ECO HSS Hand Taps Metric Coarse, set of 3 pieces



HSS M 60° DIN 352 ISO 2 6H ECO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 51 Cu

Ref.	d1	P	l1	l2	d2	sw	€
21.140.0300	M3	0.5	40	11	3.5	2.7	15,00
21.140.0400	M4	0.7	45	13	4.5	3.4	15,00
21.140.0500	M5	0.8	50	16	6	4.9	16,84
21.140.0600	M6	1	56	19	6	4.9	18,66
21.140.0800	M8	1.25	63	22	6	4.9	23,10
21.140.1000	M10	1.5	70	24	7	5.5	28,95
21.140.1200	M12	1.75	75	28	9	7	33,40
21.140.1400	M14	2	80	30	11	9	44,70

Ref.	d1	P	l1	l2	d2	sw	€
21.140.1600	M16	2	80	32	12	9	41,90
21.140.1800	M18	2.5	95	34	14	11	68,80
21.140.2000	M20	2.5	95	34	16	12	72,80
21.140.2200	M22	2.5	100	34	18	14.5	101,30
21.140.2400	M24	3	110	38	18	14.5	112,50
21.140.2700	M27	3	110	38	20	16	195,30
21.140.3000	M30	3.5	125	45	22	18	265,00

> 21.145 Phantom

NL HSS Handtappen Metrisch, set à 3 stuks
 FR Tarauds à main HSS Métrique, Jeu de 3 pièces
 ES Machos mano HSS Métrica, juego de 3 piezas
 DE HSS Handgewindebohrer Metrisch, Satz von 3 Stück
 EN HSS Hand Taps Metric Coarse, set of 3 pieces



HSS M 60° DIN 352 ISO 2 6H

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 51 Cu

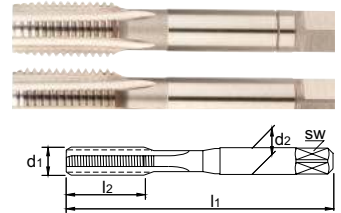
NIEUW NOUVEAU NUEVO NEU

Ref.	d1	P	l1	l2	d2	sw	€
21.145.0160	M1,6	0.35	32	8	2.5	2.1	88,00
21.145.0200	M2	0.4	36	8	2.8	2.1	28,15
21.145.0250	M2,5	0.45	40	9	2.8	2.1	32,25
21.145.0300	M3	0.5	40	11	3.5	2.7	21,43
21.145.0350	M3,5	0.6	45	12	4	3	27,85
21.145.0400	M4	0.7	45	13	4.5	3.4	21,43
21.145.0500	M5	0.8	50	16	6	4.9	24,05
21.145.0600	M6	1	56	19	6	4.9	26,65
21.145.0700	M7	1	56	19	6	4.9	40,10
21.145.0800	M8	1.25	63	22	6	4.9	33,00
21.145.0900	M9	1.25	63	22	7	5.5	49,60
21.145.1000	M10	1.5	70	24	7	5.5	41,40
21.145.1100	M11	1.5	70	24	8	6.2	59,30

Ref.	d1	P	l1	l2	d2	sw	€
21.145.1200	M12	1.75	75	28	9	7	47,70
21.145.1400	M14	2	80	30	11	9	63,85
21.145.1600	M16	2	80	32	12	9	59,80
21.145.1800	M18	2.5	95	34	14	11	120,25
21.145.2000	M20	2.5	95	34	16	12	137,40
21.145.2200	M22	2.5	100	34	18	14.5	150,95
21.145.2400	M24	3	110	38	18	14.5	160,75
21.145.2700	M27	3	110	38	20	16	279,00
21.145.3000	M30	3.5	125	45	22	18	378,00
21.145.3300	M33	3.5	125	50	25	20	374,00
21.145.3600	M36	4	150	56	28	22	398,00
21.145.3900	M39	4	150	60	32	24	497,00
21.145.4200	M42	4.5	150	60	32	24	726,00

> 21.250 Phantom

- NL HSS Handtappen Metrisch Fijn, set à 2 stuks
 FR Tarauds à main HSS Métrique Fin, Jeu de 2 pièces
 ES Machos mano HSS Métrica Fina, juego de 2 piezas
 DE HSS Handgewindebohrer Metrisch Fein, Satz von 2 Stück
 EN HSS Hand Taps Metric Fine, set of 2 pieces



HSS MF 60° DIN 2181 ISO 2 6H

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 51 Cu

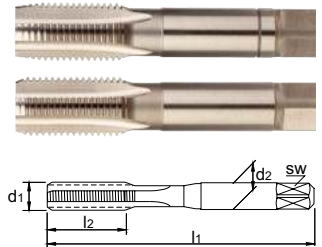
NIEUW NOUVEAU NUEVO NEU

Ref.	d1	P	l1	l2	d2	sw	€
21.250.0405	MF4	0.5	45	10	4.5	3.4	20,81
21.250.0505	MF5	0.5	52	12	6	4.9	22,59
21.250.0607	MF6	0.75	56	14	6	4.9	17,25
21.250.0810	MF8	1	63	22	6	4.9	29,90
21.250.1010	MF10	1	63	20	7	5.5	24,14
21.250.1012	MF10	1.25	70	24	7	5.5	24,14
21.250.1210	MF12	1	70	22	9	7	34,70
21.250.1212	MF12	1.25	70	22	9	7	34,30
21.250.1215	MF12	1.5	70	22	9	7	34,00
21.250.1410	MF14	1	70	22	11	9	46,85
21.250.1412	MF14	1.25	70	22	11	9	42,10

Ref.	d1	P	l1	l2	d2	sw	€
21.250.1415	MF14	1.5	70	22	11	9	37,85
21.250.1610	MF16	1	70	22	12	9	52,95
21.250.1615	MF16	1.5	70	22	12	9	42,95
21.250.1810	MF18	1	80	22	14	11	96,00
21.250.1815	MF18	1.5	80	22	14	11	86,20
21.250.2015	MF20	1.5	80	22	16	12	119,55
21.250.2020	MF20	2	80	22	16	12	113,00
21.250.2215	MF22	1.5	80	22	18	14.5	150,25
21.250.2415	MF24	1.5	90	22	18	14.5	159,45
21.250.2420	MF24	2	90	22	18	14.5	143,25

> 21.405 Phantom

- NL HSS Handtappen BSP (Gasdraad), set à 2 stuks
 FR Tarauds à main HSS BSP (pas gaz), Jeu de 2 pièces
 ES Machos mano HSS BSP (gas), juego de 2 piezas
 DE HSS Handgewindebohrer BSP (Rohrgewinde), Satz von 2 Stück
 EN HSS Hand Taps BSP (G), set of 2 pieces



HSS BSP G 55° DIN 5157 ISO 2 6H

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 51 Cu

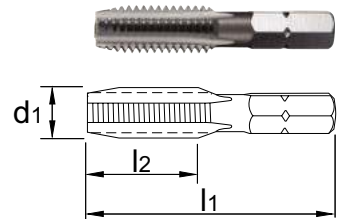
NIEUW NOUVEAU NUEVO NEU

Ref.	d1	P	l1	l2	d2	sw	€
21.405.0973	BSP 1/8	28	63	20	7	5.5	30,70
21.405.1316	BSP 1/4	19	70	22	11	9	38,25
21.405.1666	BSP 3/8	19	70	22	12	9	38,90
21.405.2096	BSP 1/2	14	80	22	16	12	48,60
21.405.2291	BSP 5/8	14	80	22	18	14.5	42,40

Ref.	d1	P	l1	l2	d2	sw	€
21.405.2644	BSP 3/4	14	90	22	20	16	88,90
21.405.3020	BSP 7/8	14	90	22	22	18	107,95
21.405.3325	BSP 1	11	100	25	25	20	141,30
21.405.4191	BSP 1.1/4	11	125	40	32	24	447,00
21.405.4780	BSP 1.1/2	11	140	40	36	29	725,00

> 22.100 INTERNATIONAL TOOLS

- NL ECO HSS Machinetap Metrisch, met 1/4" (6,35 mm)-zeskant bitopname
 FR Taraud machine HSS ECO Métrique, avec queue hexagonale 1/4" (6,35 mm)
 ES Macho máquina HSS ECO Métrica, con sujeción 1/4" (6,35 mm) bit
 DE ECO HSS Maschinengewindebohrer Metrisch, mit 1/4" (6,35 mm) Hexa-Bitafnahme
 EN ECO HSS Machine Tap Metric Coarse, with hexagonal shank 1/4" (6,35 mm)



HSS M 60° DIN 3126 1/4" ISO 2 6H ECO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² K 31 GG N 41 Alu

NIEUW NOUVEAU NUEVO NEU

12-17	9-15	7-12	20-30
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Ref.	d1	P	l1	l2	€
22.100.0300	M3	0.5	33	11	5,34
22.100.0400	M4	0.7	35	12	5,34

Ref.	d1	P	l1	l2	€
22.100.0500	M5	0.8	36	15	5,34
22.100.0600	M6	1	39	18	5,34

Ref.	d1	P	l1	l2	€
22.100.0800	M8	1.25	40	19	6,54
22.100.1000	M10	1.5	41	21	7,60

> 22.190 INTERNATIONAL TOOLS

NL ECO HSS Machinetap Metrisch, kort
 FR Taraud machine HSS ECO Métrique, version courte
 ES Macho máquina HSS ECO Métrica, corto
 DE ECO HSS Maschinengewindebohrer Metrisch, kurz
 EN ECO HSS Machine Tap Metric Coarse, short

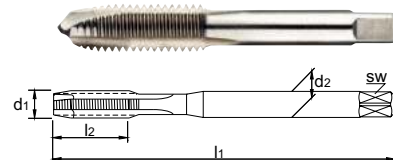
HSS M DIN 352 3xD Form B ISO 2 6H **ECO**

P 11 **P 12** **K 31** **N 41**

12-17 9-15 7-12 20-30

Ref.	d1	P	l1	l2	d2	sw	€
22.190.0300	M3	0.5	40	11	3.5	2.7	3,94
22.190.0400	M4	0.7	45	13	4.5	3.4	4,46
22.190.0500	M5	0.8	50	16	6	4.9	4,71
22.190.0600	M6	1	56	19	6	4.9	5,65

Ref.	d1	P	l1	l2	d2	sw	€
22.190.0800	M8	1.25	63	22	6	4.9	7,50
22.190.1000	M10	1.5	70	24	7	5.5	9,04
22.190.1200	M12	1.75	75	28	9	7	11,55



> 22.191 INTERNATIONAL TOOLS

NL ECO HSS Machinetap Metrisch
 FR Taraud machine HSS ECO Métrique
 ES Macho máquina HSS ECO Métrica
 DE ECO HSS Maschinengewindebohrer Metrisch
 EN ECO HSS Machine Tap Metric Coarse

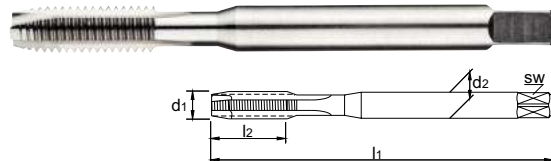
HSS M DIN 371 3xD Form B ISO 2 6H **ECO**

P 11 **P 12** **K 31** **N 41**

12-17 9-15 7-12 20-30

Ref.	d1	P	l1	l2	d2	sw	€
22.191.0300	M3	0.5	56	11	3.5	2.7	6,45
22.191.0400	M4	0.7	63	13	4.5	3.4	6,45
22.191.0500	M5	0.8	70	16	6	4.9	6,60

Ref.	d1	P	l1	l2	d2	sw	€
22.191.0600	M6	1	80	19	6	4.9	8,35
22.191.0800	M8	1.25	90	22	8	6.2	10,04
22.191.1000	M10	1.5	100	24	10	8	11,99



> 22.192 INTERNATIONAL TOOLS

NL ECO HSS Machinetap Metrisch
 FR Taraud machine HSS ECO Métrique
 ES Macho máquina HSS ECO Métrica
 DE ECO HSS Maschinengewindebohrer Metrisch
 EN ECO HSS Machine Tap Metric Coarse

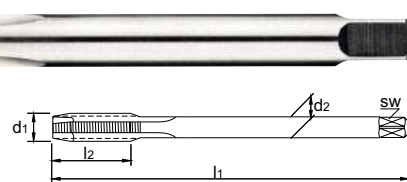
HSS M DIN 376 3xD Form B ISO 2 6H **ECO**

P 11 **P 12** **K 31** **N 41**

12-17 9-15 7-12 20-30

Ref.	d1	P	l1	l2	d2	sw	€
22.192.1200	M12	1.75	110	28	9	7	15,04

Ref.	d1	P	l1	l2	d2	sw	€



> 22.195 INTERNATIONAL TOOLS

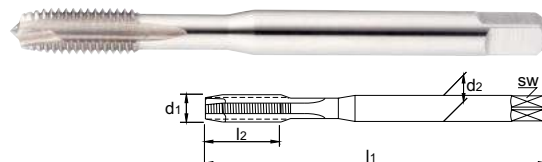
NL ECO PRO HSS-E Machinetap Metrisch
FR Taraud machine HSS-E ECO PRO Métrique
ES Macho máquina HSS-E ECO PRO Métrica
DE ECO PRO HSS-E Maschinengewindebohrer Metrisch
EN ECO PRO HSS-E Machine Tap Metric Coarse

HSS-E M  DIN 371 3xD  Form B  ISO 2 6H 

P 11  **P 12**  **K 31**  **N 41** 

15-20 12-18 10-15 25-35





Ref.	d1	P	l1	l2	d2	sw	€
22.195.0200	M2	0.4	45	8	2.8	2.1	18,94
22.195.0300	M3	0.5	56	11	3.5	2.7	11,86
22.195.0400	M4	0.7	63	13	4.5	3.4	12,13
22.195.0500	M5	0.8	70	16	6	4.9	12,80



> 22.196 INTERNATIONAL TOOLS

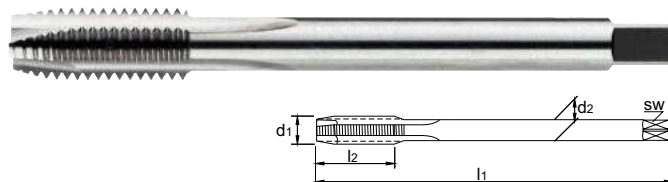
NL ECO PRO HSS-E Machinetap Metrisch
FR Taraud machine HSS-E ECO PRO Métrique
ES Macho máquina HSS-E ECO PRO Métrica
DE ECO PRO HSS-E Maschinengewindebohrer Metrisch
EN ECO PRO HSS-E Machine Tap Metric Coarse

HSS-E M  DIN 376 3xD  Form B  ISO 2 6H 

P 11  **P 12**  **K 31**  **N 41** 

15-20 12-18 10-15 25-35

Ref.	d1	P	l1	l2	d2	sw	€
22.196.1000	M10	1.5	100	24	7	5.5	17,98
22.196.1200	M12	1.75	110	28	9	7	21,96
22.196.1400	M14	2	110	30	11	9	27,25
22.196.1600	M16	2	110	32	12	9	30,60
22.196.2000	M20	2.5	140	34	16	12	45,55
22.196.2200	M22	2.5	140	34	18	14.5	63,50



> 22.197 INTERNATIONAL TOOLS

NL ECO PRO HSS-E Machinetap Metrisch, TiN
FR Taraud machine HSS-E ECO PRO Métrique, TiN
ES Macho máquina HSS-E ECO PRO Métrica, TiN
DE ECO PRO HSS-E Maschinengewindebohrer Metrisch, TiN
EN ECO PRO HSS-E Machine Tap Metric Coarse, TiN

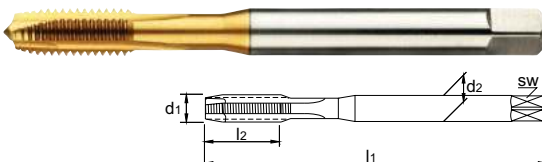
HSS-E M  TiN  DIN 371 3xD  Form B  ISO 2 6H 

P 11  **P 12**  **M 21**  **K 31**  **N 41**  **N 42**  **N 51** 

22-30 18-27 7-10 15-22 32-52 15-20 5-12

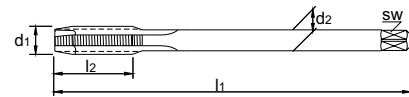
Ref.	d1	P	l1	l2	d2	sw	€
22.197.0300	M3	0.5	56	11	3.5	2.7	17,19
22.197.0400	M4	0.7	63	13	4.5	3.4	16,68
22.197.0500	M5	0.8	70	16	6	4.9	18,48

Ref.	d1	P	l1	l2	d2	sw	€
22.197.0600	M6	1	80	19	6	4.9	19,59
22.197.0800	M8	1.25	90	22	8	6.2	23,43
22.197.1000	M10	1.5	100	24	10	8	27,15



> 22.198 **INTERNATIONAL TOOLS**

NL ECO PRO HSS-E Machinetap Metrisch, TiN
 FR Taraud machine HSS-E ECO PRO Métrique, TiN
 ES Macho máquina HSS-E ECO PRO Métrica, TiN
 DE ECO PRO HSS-E Maschinengewindebohrer Metrisch, TiN
 EN ECO PRO HSS-E Machine Tap Metric Coarse, TiN



HSS-E M 60° TiN DIN 376 3xD Form B 3,5-6 ISO 2 6H **ECO PRO**

P 11 P 12 M 21 K 31 N 41 N 42 N 51
 ≤800 N/mm² ≤850 N/mm² INOX ≤850N/mm² GG Alu Alu Si>10% Cu

22-30	18-27	7-10	15-22	32-52	15-20	5-12
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Ref.	d1	P	l1	l2	d2	sw	€
22.198.1200	M12	1.75	110	28	9	7	33,65

Ref.	d1	P	l1	l2	d2	sw	€



NL Tappen van doorlopend en blind gat
 FR Tarauder un trou débouchant et un trou borgne
 ES Roscar un agujero pasante y ciego
 DE Gewindebohrer Durchgangslöcher und Sacklöcher
 EN Tapping through and blind hole

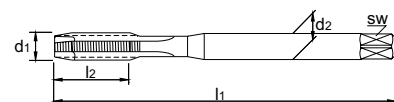
Watch me



www.phantom.eu

> 22.200 **Phantom**

NL UNI HSS-E Machinetap Metrisch
 FR Taraud machine HSS-E UNI Métrique
 ES Macho máquina HSS-E UNI Métrica
 DE UNI HSS-E Maschinengewindebohrer Metrisch
 EN UNI HSS-E Machine Tap Metric Coarse



HSS-E M 60° DIN 371 3xD Form B 4-5 ISO 2 6H **UNI**

P 11 P 12 P 13 M 21 K 31 K 32 N 41 N 42 N 51 S 71 S 72
 ≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Alu Si>10% Cu NiCo Ti

15-20	10-20	6-10	7-10	10-15	10-15	25-35	10-20	15-35	2-8	2-8
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Ref.	d1	P	l1	l2	d2	sw	€
22.200.0100	M1	0.25	40	5.5	2.5	2.1	39,40
22.200.0110	M1,1	0.25	40	5.5	2.5	2.1	35,45
22.200.0120	M1,2	0.25	40	5.5	2.5	2.1	32,20
22.200.0140	M1,4	0.3	40	7	2.5	2.1	30,00
22.200.0160	M1,6	0.35	40	8	2.5	2.1	26,90
22.200.0170	M1,7	0.35	40	8	2.5	2.1	24,65
22.200.0180	M1,8	0.35	40	8	2.5	2.1	23,12
22.200.0200	M2	0.4	45	8	2.8	2.1	25,05
22.200.0220	M2,2	0.45	45	9	2.8	2.1	25,60
22.200.0230	M2,3	0.4	45	9	2.8	2.1	26,15
22.200.0250	M2,5	0.45	50	9	2.8	2.1	23,35

Ref.	d1	P	l1	l2	d2	sw	€
22.200.0260	M2,6	0.45	50	9	2.8	2.1	23,54
22.200.0300	M3	0.5	56	11	3.5	2.7	19,16
22.200.0350	M3,5	0.6	56	12	4	3	21,14
22.200.0400	M4	0.7	63	13	4.5	3.4	19,18
22.200.0450	M4,5	0.75	70	16	6	4.9	19,99
22.200.0500	M5	0.8	70	16	6	4.9	19,99
22.200.0600	M6	1	80	19	6	4.9	19,99
22.200.0700	M7	1	80	19	7	5.5	23,73
22.200.0800	M8	1.25	90	22	8	6.2	23,40
22.200.0900	M9	1.25	90	22	9	7	27,55
22.200.1000	M10	1.5	100	24	10	8	27,55



NL 80% kiest voor Phantom UNI machinetap!
 FR 80% de notre clientèle choisissent un taraud machine Phantom UNI !
 ES ¡El 80% elige el macho máquina Phantom UNI!
 DE 80% entscheiden sich für den UNI-Maschinengewindebohrer von Phantom!
 EN 80% opt for the Phantom UNI machine tap!

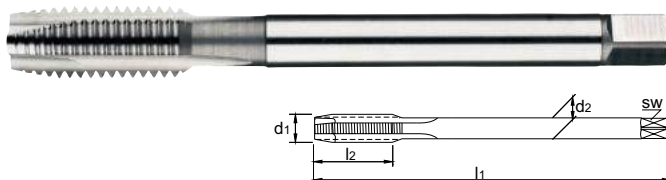
Watch me



www.phantom.eu

> 22.201 Phantom

NL UNI HSS-E Machinetap Metrisch
FR Taraud machine HSS-E UNI Métrique
ES Macho máquina HSS-E UNI Métrica
DE UNI HSS-E Maschinengewindebohrer Metrisch
EN UNI HSS-E Machine Tap Metric Coarse



HSS-E	M	60°	DIN 376	3xD	Form B	4-5	ISO 2 6H	UNI		
P 11	P 12	P 13	M 21	K 31	K 32	N 41	N 42	N 51	S 71	S 72
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	Ni/Co	Ti
15-20	10-20	6-10	7-10	10-15	10-15	25-35	10-20	15-35	2-8	2-8

Ref.	d1	P	l1	l2	d2	sw	€
22.201.0200	M2	0.4	45	4	1.4		27,55
22.201.0250	M2,5	0.45	50	5	1.8		23,12
22.201.0300	M3	0.5	56	11	2.2		22,21
22.201.0400	M4	0.7	63	13	2.8	2.1	22,47
22.201.0500	M5	0.8	70	16	3.5	2.7	22,47
22.201.0600	M6	1	80	19	4.5	3.4	22,47
22.201.0700	M7	1	80	19	5.5	4.3	23,72
22.201.0800	M8	1.25	90	22	6	4.9	26,20
22.201.0900	M9	1.25	90	22	7	5.5	37,65
22.201.1000	M10	1.5	100	24	7	5.5	30,55
22.201.1200	M12	1.75	110	28	9	7	35,60
22.201.1400	M14	2	110	30	11	9	45,30
22.201.1600	M16	2	110	32	12	9	52,60

Ref.	d1	P	l1	l2	d2	sw	€
22.201.1800	M18	2.5	125	34	14	11	70,35
22.201.2000	M20	2.5	140	34	16	12	77,95
22.201.2200	M22	2.5	140	34	18	14.5	97,50
22.201.2400	M24	3	160	38	18	14.5	104,25
22.201.2700	M27	3	160	38	20	16	147,35
22.201.3000	M30	3.5	180	45	22	18	180,10
22.201.3300	M33	3.5	180	50	25	20	216,25
22.201.3600	M36	4	200	56	28	22	278,00
22.201.3900	M39	4	200	60	32	24	408,00
22.201.4200	M42	4.5	200	60	32	24	426,00
22.201.4500	M45	4.5	220	65	36	29	493,00
22.201.4800	M48	5	250	70	36	29	579,00
22.201.5200	M52	5	250	70	40	32	747,00



NL Test Phantom HSS-E UNI Machinetappen
FR Test de tarauds machine UNI HSS-E
ES Test Phantom HSS-E UNI Machos de rosca de máquina
DE Test Phantom HSS-E UNI Maschinengewindebohrer
EN Test Phantom HSS-E UNI Machine Taps

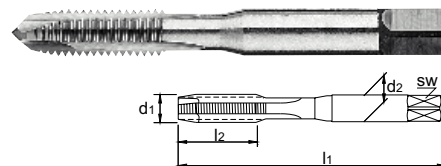
Watch me



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> 22.205 Phantom

NL HSS Machinetap Metrisch
FR Taraud machine HSS Métrique
ES Macho máquina HSS Métrica
DE HSS Maschinengewindebohrer Metrisch
EN HSS Machine Tap Metric Coarse



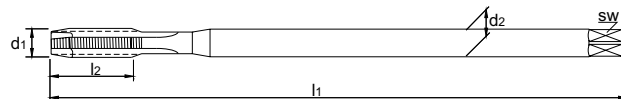
HSS	M	60°	NFE 66103	ISO 529	2xD	Form B	5	ISO 2 6H
P 11	P 12	K 31	K 32	N 41	N 52			
≤500 N/mm ²	≤850 N/mm ²	GG	GGG GTS-GTW	Alu	CuAlFe			
12-17	10-15	7-12	3-6	15-20	5-12			

Ref.	d1	P	l1	l2	d2	sw	€
22.205.0200	M2	0.4	41	8	2.5	2	19,64
22.205.0250	M2,5	0.45	44	9.5	2.8	2.24	17,30
22.205.0300	M3	0.5	48	11	3.15	2.5	12,97
22.205.0350	M3,5	0.6	50	13	3.55	2.8	16,47
22.205.0400	M4	0.7	53	13	4	3.15	12,97
22.205.0450	M4,5	0.75	58	16	5	4	17,26
22.205.0500	M5	0.8	58	16	5	4	13,24
22.205.0600	M6	1	66	19	6.3	5	13,43
22.205.0700	M7	1	66	19	7.1	5.6	17,36
22.205.0800	M8	1.25	72	22	8	6.3	17,36
22.205.0900	M9	1.25	72	22	9	7.1	23,43

Ref.	d1	P	l1	l2	d2	sw	€
22.205.1000	M10	1.5	80	24	10	8	21,37
22.205.1200	M12	1.75	89	29	9	7.1	27,25
22.205.1400	M14	2	95	30	11.2	9	35,40
22.205.1600	M16	2	102	32	12.5	10	44,15
22.205.1800	M18	2.5	112	37	14	11.2	56,90
22.205.2000	M20	2.5	112	37	14	11.2	65,55
22.205.2200	M22	2.5	118	38	16	12.5	84,05
22.205.2400	M24	3	130	45	18	14	96,45
22.205.2700	M27	3	135	45	20	16	123,65
22.205.3000	M30	3.5	138	48	20	16	164,45

> 22.350 Phantom

NL UNI HSS-E Machinetap Metrisch, lang
 FR Taraud machine HSS-E UNI Métrique, version longue
 ES Macho máquina HSS-E UNI Métrica, larga
 DE UNI HSS-E Maschinengewindebohrer Metrisch, lang
 EN UNI HSS-E Machine Tap Metric Coarse, long



HSS-E M 60° NORM 3xD Form B 4-5 ISO 2 6H UNI
P 11 P 12 P 13 M 21 K 31 K 32 N 41 N 42 N 51 S 71 S 72
≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Alu Si>10% Cu Ni/Co Ti
 15-20 10-20 6-10 7-10 10-15 10-15 25-35 10-20 15-35 2-8 2-8

Ref.	d1	P	l1	l2	d2	sw	€
22.350.0400	M4	0.7	126	13	4.5	3.4	46,05
22.350.0500	M5	0.8	140	15	6	4.9	49,80

Ref.	d1	P	l1	l2	d2	sw	€
22.350.0600	M6	1	160	17	6	4.9	51,40
22.350.0800	M8	1.25	180	20	8	6.2	58,25

> 22.351 Phantom

NL UNI HSS-E Machinetap Metrisch, lang
 FR Taraud machine HSS-E UNI Métrique, version longue
 ES Macho máquina HSS-E UNI Métrica, larga
 DE UNI HSS-E Maschinengewindebohrer Metrisch, lang
 EN UNI HSS-E Machine Tap Metric Coarse, long



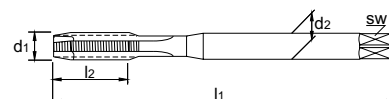
HSS-E M 60° NORM 3xD Form B 4-5 ISO 2 6H UNI
P 11 P 12 P 13 M 21 K 31 K 32 N 41 N 42 N 51 S 71 S 72
≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² GG GGG GTS-GTW Alu Alu Si>10% Cu Ni/Co Ti
 15-20 10-20 6-10 7-10 10-15 10-15 25-35 10-20 15-35 8-15 2-8

Ref.	d1	P	l1	l2	d2	sw	€
22.351.0800	M8	1.25	180	20	6	4.9	56,35
22.351.1000	M10	1.5	200	22	7	5.5	68,45
22.351.1200	M12	1.75	220	24	9	7	78,95

Ref.	d1	P	l1	l2	d2	sw	€
22.351.1600	M16	2	220	32	12	9	116,40
22.351.2000	M20	2.5	280	32	16	12	163,90
22.351.2400	M24	3	320	34	18	14.5	216,80

> 22.595 INTERNATIONAL TOOLS

NL ECO PRO HSS-E Machinetap Metrisch, stoomontlaten, roestvaststaal
 FR Taraud machine HSS-E ECO PRO Métrique, vaporisé, Inox
 ES Macho máquina HSS-E ECO PRO Métrica, vaporizada, acero inoxidable
 DE ECO PRO HSS-E Maschinengewindebohrer Metrisch, dampfangelassen, rostfreien Stahl
 EN ECO PRO HSS-E Machine Tap Metric Coarse, steam oxide, stainless steel



HSS-E M 60° OX. DIN 371 3xD Form B 4-6 ISO 2 6H INOX ECO PRO
P 11 M 21
≤800 N/mm² INOX ≤850N/mm²
 15-20 7-10

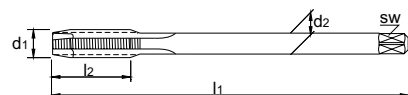
Ref.	d1	P	l1	l2	d2	sw	€
22.595.0300	M3	0.5	56	11	3.5	2.7	15,20
22.595.0400	M4	0.7	63	13	4.5	3.4	15,42
22.595.0500	M5	0.8	70	16	6	4.9	16,33

Ref.	d1	P	l1	l2	d2	sw	€
22.595.0600	M6	1	80	19	6	4.9	16,35
22.595.0800	M8	1.25	90	22	8	6.2	18,50
22.595.1000	M10	1.5	100	24	10	8	21,26



> 22.596 INTERNATIONAL TOOLS

- NL ECO PRO HSS-E Machinetap Metrisch, stoomontlaten, roestvaststaal
 FR Taraud machine HSS-E ECO PRO Métrique, vaporisé, Inox
 ES Macho máquina HSS-E ECO PRO Métrica, vaporizada, acero inoxidable
 DE ECO PRO HSS-E Maschinengewindebohrer Metrisch, dampfangelassen, rostfreien Stahl
 EN ECO PRO HSS-E Machine Tap Metric Coarse, steam oxide, stainless steel



HSS-E M 60° OX. DIN 376 3xD Form B 4-6 ISO 2 6H INOX ECO PRO

P 11 M 21
 s800 N/mm² INOX s850 N/mm²

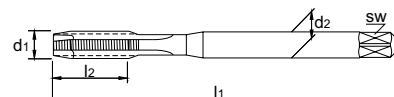
15-20 7-10

Ref.	d1	P	l1	l2	d2	sw	€
22.596.1200	M12	1.75	110	28	9	7	26,55
22.596.1600	M16	2	110	32	12	9	38,50

Ref.	d1	P	l1	l2	d2	sw	€
22.596.2000	M20	2.5	140	34	16	12	57,40

> 22.600 Phantom

- NL HSS-E PM Machinetap Metrisch, stoomontlaten, roestvaststaal
 FR Taraud machine HSS-E PM Métrique, vaporisé, Inox
 ES Macho máquina HSS-E PM Métrica, vaporizada, acero inoxidable
 DE HSS-E PM Maschinengewindebohrer Metrisch, dampfangelassen, rostfreien Stahl
 EN HSS-E PM Machine Tap Metric Coarse, steam oxide, stainless steel



HSS-E PM M 60° OX. DIN 371 3xD Form B 4-5 ISO 2 6H INOX

P 11 M 21 M 22
 s800 N/mm² INOX s850 N/mm² INOX >850 N/mm²

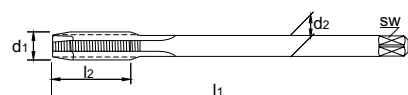
15-20 7-10 5-8

Ref.	d1	P	l1	l2	d2	sw	€
22.600.0300	M3	0.5	56	11	3.5	2.7	23,20
22.600.0400	M4	0.7	63	13	4.5	3.4	23,20
22.600.0500	M5	0.8	70	16	6	4.9	23,50

Ref.	d1	P	l1	l2	d2	sw	€
22.600.0600	M6	1	80	19	6	4.9	23,50
22.600.0800	M8	1.25	90	22	8	6.2	29,40
22.600.1000	M10	1.5	100	24	10	8	37,20

> 22.601 Phantom

- NL HSS-E PM Machinetap Metrisch, stoomontlaten, roestvaststaal
 FR Taraud machine HSS-E PM Métrique, vaporisé, Inox
 ES Macho máquina HSS-E PM Métrica, vaporizada, acero inoxidable
 DE HSS-E PM Maschinengewindebohrer Metrisch, dampfangelassen, rostfreien Stahl
 EN HSS-E PM Machine Tap Metric Coarse, steam oxide, stainless steel



HSS-E PM M 60° OX. DIN 376 3xD Form B 4-5 ISO 2 6H INOX

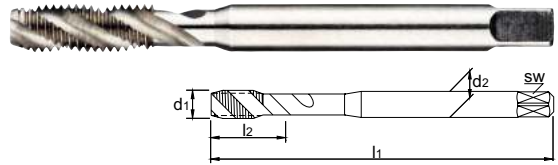
P 11 M 21 M 22
 s800 N/mm² INOX s850 N/mm² INOX >850 N/mm²

15-20 7-10 5-8

Ref.	d1	P	l1	l2	d2	sw	€
22.601.0800	M8	1.25	90	22	6	4.9	29,40
22.601.1000	M10	1.5	100	24	7	5.5	37,20
22.601.1200	M12	1.75	110	28	9	7	49,30
22.601.1400	M14	2	110	30	11	9	62,55
22.601.1600	M16	2	110	32	12	9	74,05
22.601.1800	M18	2.5	125	34	14	11	100,15

Ref.	d1	P	l1	l2	d2	sw	€
22.601.2000	M20	2.5	140	34	16	12	118,85
22.601.2200	M22	2.5	140	34	18	14.5	150,80
22.601.2400	M24	3	160	38	18	14.5	164,55
22.601.2700	M27	3	160	38	20	16	249,15
22.601.3000	M30	3.5	180	45	22	18	309,00

> 23.291 INTERNATIONAL TOOLS



NL ECO HSS Machinetap Metrisch
 FR Taraud machine HSS ECO Métrique
 ES Macho máquina HSS ECO Métrica
 DE ECO HSS Maschinengewindebohrer Metrisch
 EN ECO HSS Machine Tap Metric Coarse

HSS M DIN 371 2xD Form C 2-3 ISO 2 6H **ECO**

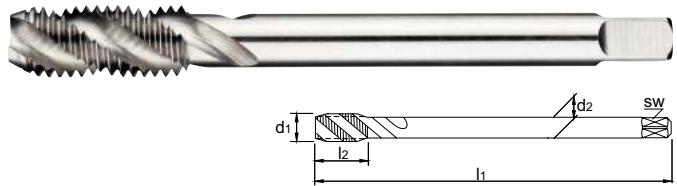
P 11 **P 12** **K 31** **N 41**

12-17	9-15	7-12	20-30
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Ref.	d1	P	l1	l2	d2	sw	€
23.291.0300	M3	0.5	56	11	3.5	2.7	6,73
23.291.0400	M4	0.7	63	13	4.5	3.4	6,86
23.291.0500	M5	0.8	70	16	6	4.9	7,00

Ref.	d1	P	l1	l2	d2	sw	€
23.291.0600	M6	1	80	19	6	4.9	8,64
23.291.0800	M8	1.25	90	22	8	6.2	11,04
23.291.1000	M10	1.5	100	24	10	8	14,15

> 23.292 INTERNATIONAL TOOLS



NL ECO HSS Machinetap Metrisch
 FR Taraud machine HSS ECO Métrique
 ES Macho máquina HSS ECO Métrica
 DE ECO HSS Maschinengewindebohrer Metrisch
 EN ECO HSS Machine Tap Metric Coarse

HSS M DIN 376 2xD Form C 2-3 ISO 2 6H **ECO**

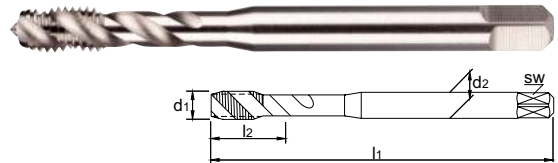
P 11 **P 12** **K 31** **N 41**

12-17	9-15	7-12	20-30
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Ref.	d1	P	l1	l2	d2	sw	€
23.292.1200	M12	1.75	110	28	9	7	15,51

Ref.	d1	P	l1	l2	d2	sw	€

> 23.295 INTERNATIONAL TOOLS



NL ECO PRO HSS-E Machinetap Metrisch
 FR Taraud machine HSS-E ECO PRO Métrique
 ES Macho máquina HSS-E ECO PRO Métrica
 DE ECO PRO HSS-E Maschinengewindebohrer Metrisch
 EN ECO PRO HSS-E Machine Tap Metric Coarse

HSS-E M DIN 371 2xD Form C 2-3 ISO 2 6H **ECO PRO**

P 11 **P 12** **K 31** **N 41**

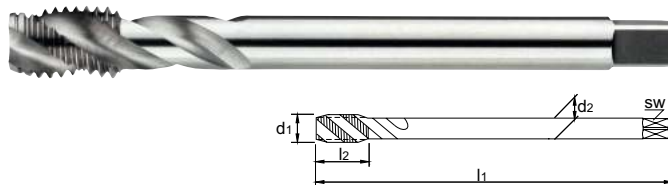
15-20	12-18	10-15	25-35
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Ref.	d1	P	l1	l2	d2	sw	€
23.295.0200	M2	0.4	45	8	2.8	2.1	18,19
23.295.0300	M3	0.5	56	11	3.5	2.7	13,02
23.295.0400	M4	0.7	63	13	4.5	3.4	13,02
23.295.0500	M5	0.8	70	16	6	4.9	13,30

Ref.	d1	P	l1	l2	d2	sw	€
23.295.0600	M6	1	80	19	6	4.9	13,76
23.295.0800	M8	1.25	90	22	8	6.2	15,76
23.295.1000	M10	1.5	100	24	10	8	18,61

> 23.296 INTERNATIONAL TOOLS

NL ECO PRO HSS-E Machinetap Metrisch
FR Taraud machine HSS-E ECO PRO Métrique
ES Macho máquina HSS-E ECO PRO Métrica
DE ECO PRO HSS-E Maschinengewindebohrer Metrisch
EN ECO PRO HSS-E Machine Tap Metric Coarse



HSS-E M 60° DIN 376 2xD 35° Form C 2-3 ISO 2 6H **ECO PRO**

P 11 ≤800 N/mm² **P 12** ≤850 N/mm² **K 31** GG **N 41** Alu

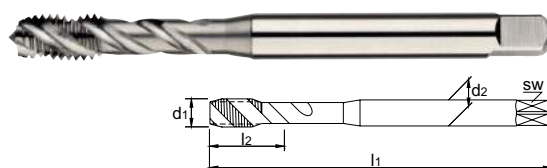
15-20 12-18 10-15 25-35

Ref.	d1	P	l1	l2	d2	sw	€
23.296.1000	M10	1.5	100	24	7	5.5	20,59
23.296.1200	M12	1.75	110	28	9	7	24,16
23.296.1400	M14	2	110	30	11	9	30,00
23.296.1600	M16	2	110	32	12	9	33,05
23.296.2000	M20	2.5	140	34	16	12	48,60

Ref.	d1	P	l1	l2	d2	sw	€
23.296.2200	M22	2.5	140	34	18	14.5	65,40
23.296.2400	M24	3	160	38	18	14.5	62,00
23.296.2700	M27	3	160	38	20	16	94,65
23.296.3000	M30	3.5	180	45	22	18	118,95

> 23.300 Phantom

NL UNI HSS-E Machinetap Metrisch
FR Taraud machine HSS-E UNI Métrique
ES Macho máquina HSS-E UNI Métrica
DE UNI HSS-E Maschinengewindebohrer Metrisch
EN UNI HSS-E Machine Tap Metric Coarse



HSS-E M 60° DIN 371 2,5xD 40° Form C 2.5 ISO 2 6H **UNI**

P 11 ≤800 N/mm² **P 12** ≤850 N/mm² **P 13** ≤1000 N/mm² **M 21** INOX ≤850N/mm² **K 31** GG **K 32** GGG GTS-GTW **N 41** Alu **N 42** Alu Si>10% **N 51** Cu **S 71** Ni/Co **S 72** Ti

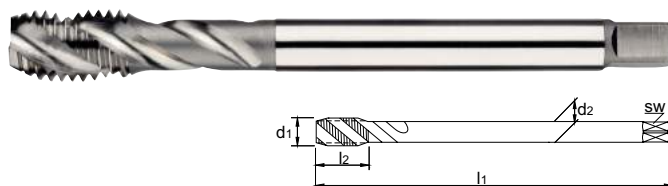
15-20 10-20 6-10 7-10 10-15 10-15 25-35 10-20 15-35 2-8 2-8

Ref.	d1	P	l1	l2	d2	sw	€
23.300.0200	M2	0.4	45	8	2.8	2.1	25,10
23.300.0220	M2,2	0.45	45	9	2.8	2.1	31,80
23.300.0230	M2,3	0.4	45	9	2.8	2.1	32,65
23.300.0250	M2,5	0.45	50	9	2.8	2.1	23,97
23.300.0260	M2,6	0.45	50	9	2.8	2.1	28,20
23.300.0300	M3	0.5	56	11	3.5	2.7	20,25
23.300.0350	M3,5	0.6	56	12	4	3	23,03

Ref.	d1	P	l1	l2	d2	sw	€
23.300.0400	M4	0.7	63	13	4.5	3.4	20,25
23.300.0500	M5	0.8	70	16	6	4.9	20,67
23.300.0600	M6	1	80	19	6	4.9	21,45
23.300.0700	M7	1	80	19	7	5.5	27,15
23.300.0800	M8	1.25	90	22	8	6.2	25,55
23.300.1000	M10	1.5	100	24	10	8	31,35

> 23.301 Phantom

NL UNI HSS-E Machinetap Metrisch
FR Taraud machine HSS-E UNI Métrique
ES Macho máquina HSS-E UNI Métrica
DE UNI HSS-E Maschinengewindebohrer Metrisch
EN UNI HSS-E Machine Tap Metric Coarse



HSS-E M 60° DIN 376 2,5xD 40° Form C 2.5 ISO 2 6H **UNI**

P 11 ≤800 N/mm² **P 12** ≤850 N/mm² **P 13** ≤1000 N/mm² **M 21** INOX ≤850N/mm² **K 31** GG **K 32** GGG GTS-GTW **N 41** Alu **N 42** Alu Si>10% **N 51** Cu **S 71** Ni/Co **S 72** Ti

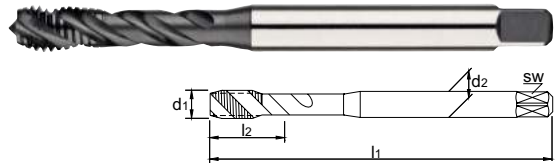
15-20 10-20 6-10 7-10 10-15 10-15 25-35 10-20 15-35 2-8 2-8

Ref.	d1	P	l1	l2	d2	sw	€
23.301.0600	M6	1	80	19	4.5	3.4	23,38
23.301.0800	M8	1.25	90	22	6	4.9	26,70
23.301.0900	M9	1.25	90	22	7	5.5	47,10
23.301.1000	M10	1.5	100	24	7	5.5	32,60
23.301.1200	M12	1.75	110	28	9	7	40,45
23.301.1400	M14	2	110	30	11	9	51,50
23.301.1600	M16	2	110	32	12	9	59,90
23.301.1800	M18	2.5	125	34	14	11	79,95

Ref.	d1	P	l1	l2	d2	sw	€
23.301.2000	M20	2.5	140	34	16	12	89,10
23.301.2200	M22	2.5	140	34	18	14.5	102,00
23.301.2400	M24	3	160	38	18	14.5	115,90
23.301.2700	M27	3	160	38	20	16	155,10
23.301.3000	M30	3.5	180	45	22	18	197,55
23.301.3300	M33	3.5	180	50	25	20	247,70
23.301.3600	M36	4	200	56	28	22	335,00

> 23.450 **Phantom**

NL HSS-E Machinetap Metrisch, stoomontlaten, roestvaststaal
 FR Taraud machine HSS-E Métrique, vaporisé, Inox
 ES Macho máquina HSS-E Métrica, vaporizada, acero inoxidable
 DE HSS-E Maschinengewindebohrer Metrisch, dampfangelassen, rostfreien Stahl
 EN HSS-E Machine Tap Metric Coarse, steam oxide, stainless steel



HSS-E M 60° OX. DIN 371 2,5xD 45° Form C 2.5 ISO 2 6H INOX

P 14 ≤1400 N/mm²
 M 21 INOX ≤850N/mm²
 M 22 INOX >850N/mm²
 S 71 Ni/Co

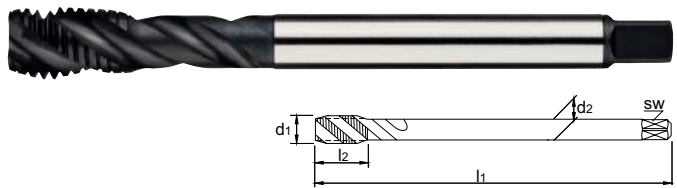
3-5 7-10 5-8 2-8

Ref.	d1	P	l1	l2	d2	sw	€
23.450.0300	M3	0.5	56	11	3.5	2.7	24,70
23.450.0400	M4	0.7	63	13	4.5	3.4	25,00
23.450.0500	M5	0.8	70	16	6	4.9	25,80

Ref.	d1	P	l1	l2	d2	sw	€
23.450.0600	M6	1	80	19	6	4.9	25,90
23.450.0800	M8	1.25	90	22	8	6.2	30,85
23.450.1000	M10	1.5	100	24	10	8	37,05

> 23.451 **Phantom**

NL HSS-E Machinetap Metrisch, stoomontlaten, roestvaststaal
 FR Taraud machine HSS-E Métrique, vaporisé, Inox
 ES Macho máquina HSS-E Métrica, vaporizada, acero inoxidable
 DE HSS-E Maschinengewindebohrer Metrisch, dampfangelassen, rostfreien Stahl
 EN HSS-E Machine Tap Metric Coarse, steam oxide, stainless steel



HSS-E M 60° OX. DIN 376 2,5xD 40° Form C 2.5 ISO 2 6H INOX

P 14 ≤1400 N/mm²
 M 21 INOX ≤850N/mm²
 M 22 INOX >850N/mm²
 S 71 Ni/Co

3-5 7-10 5-8 2-8

Ref.	d1	P	l1	l2	d2	sw	€
23.451.0800	M8	1.25	90	22	6	4.9	33,45
23.451.1000	M10	1.5	100	24	7	5.5	40,15
23.451.1200	M12	1.75	110	28	9	7	48,05
23.451.1400	M14	2	110	30	11	9	59,40
23.451.1600	M16	2	110	32	12	9	70,15
23.451.1800	M18	2.5	125	34	14	11	96,95
23.451.2000	M20	2.5	140	34	16	12	104,70
23.451.2200	M22	2.5	140	34	18	14.5	130,30
23.451.2400	M24	3	160	38	18	14.5	135,55

Ref.	d1	P	l1	l2	d2	sw	€
23.451.2700	M27	3	160	38	20	16	194,40
23.451.3000	M30	3.5	180	45	22	18	228,10
23.451.3300	M33	3.5	180	50	25	20	275,00
23.451.3600	M36	4	200	56	28	22	322,00
23.451.3900	M39	4	200	60	32	24	386,00
23.451.4200	M42	4.5	200	60	32	24	450,00
23.451.4500	M45	4.5	220	65	36	29	537,00
23.451.4800	M48	5	250	70	36	29	673,00

> 23.615 **INTERNATIONAL TOOLS**

NL ECO PRO HSS-E Machinetap Metrisch Fijn
 FR Taraud machine HSS-E ECO PRO Métrique Fin
 ES Macho máquina HSS-E ECO PRO Métrica Fina
 DE ECO PRO HSS-E Maschinengewindebohrer Metrisch Fein
 EN ECO PRO HSS-E Machine Tap Metric Fine



HSS-E MF 60° DIN 374 1,5xD Form B 3,5-6 ISO 2 6H ECO PRO

P 11 ≤600 N/mm²
 P 12 ≤850 N/mm²
 K 31 GG
 N 41 Alu

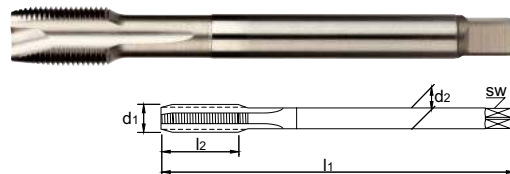
15-20 12-18 10-15 23-35

Ref.	d1	P	l1	l2	d2	sw	€
23.615.0505	MF5	0.5	70	12	3.5	2.7	21,00
23.615.0605	MF6	0.5	80	14	4.5	3.4	21,23
23.615.0607	MF6	0.75	80	14	4.5	3.4	21,08
23.615.0807	MF8	0.75	80	19	6	4.9	23,45
23.615.0810	MF8	1	90	22	6	4.9	21,23
23.615.1007	MF10	0.75	90	20	7	5.5	30,30
23.615.1010	MF10	1	90	20	7	5.5	22,22
23.615.1012	MF10	1.25	100	24	7	5.5	27,90
23.615.1210	MF12	1	100	22	9	7	25,70
23.615.1212	MF12	1.25	100	22	9	7	28,70
23.615.1215	MF12	1.5	100	22	9	7	24,29
23.615.1410	MF14	1	100	22	11	9	33,80
23.615.1412	MF14	1.25	100	22	11	9	32,45

Ref.	d1	P	l1	l2	d2	sw	€
23.615.1415	MF14	1.5	100	22	11	9	31,80
23.615.1610	MF16	1	100	22	12	9	38,30
23.615.1615	MF16	1.5	100	22	12	9	36,45
23.615.1810	MF18	1	110	25	14	11	48,85
23.615.1815	MF18	1.5	110	25	14	11	45,05
23.615.2010	MF20	1	125	25	16	12	52,75
23.615.2015	MF20	1.5	125	25	16	12	50,30
23.615.2020	MF20	2	140	25	16	12	68,70
23.615.2215	MF22	1.5	125	25	18	14.5	53,25
23.615.2415	MF24	1.5	140	28	18	14.5	58,70
23.615.2420	MF24	2	140	28	18	14.5	65,95
23.615.2515	MF25	1.5	140	28	18	14.5	105,20

**> 23.620 Phantom**

NL UNI HSS-E Machinetap Metrisch Fijn
FR Taraud machine HSS-E UNI Métrique Fin
ES Macho máquina HSS-E UNI Métrica Fina
DE UNI HSS-E Maschinengewindebohrer Metrisch Fein
EN UNI HSS-E Machine Tap Metric Fine



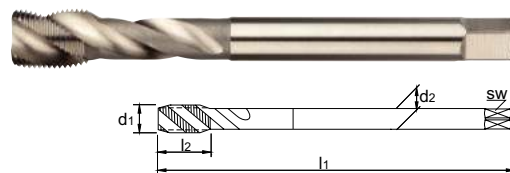
HSS-E	MF	60°	DIN 374	3xD	Form B	5	ISO 2 6H	UNI		
P 11 s800 N/mm ²	P 12 s850 N/mm ²	P 13 s1000 N/mm ²	M 21 INOX s850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	S 71 Ni/Co	S 72 Ti
15-20	10-20	6-10	7-10	10-15	10-15	25-35	10-20	15-35	2-8	2-8

Ref.	d1	P	l1	l2	d2	sw	€
23.620.0303	MF3	0.35	56	8	2.2		30,55
23.620.0405	MF4	0.5	63	10	2.8	2.1	28,05
23.620.0505	MF5	0.5	70	11	3.5	2.7	29,05
23.620.0605	MF6	0.5	80	13	4.5	3.4	29,70
23.620.0607	MF6	0.75	80	13	4.5	3.4	29,05
23.620.0705	MF7	0.5	80	13	5.5	4.3	43,55
23.620.0707	MF7	0.75	80	13	5.5	4.3	40,95
23.620.0805	MF8	0.5	80	13	6	4.9	35,80
23.620.0807	MF8	0.75	80	13	6	4.9	34,20
23.620.0810	MF8	1	90	20	6	4.9	30,60
23.620.0907	MF9	0.75	90	20	7	5.5	41,65
23.620.0910	MF9	1	90	20	7	5.5	40,55
23.620.1005	MF10	0.5	90	16	7	5.5	44,15
23.620.1007	MF10	0.75	90	16	7	5.5	43,05
23.620.1010	MF10	1	90	16	7	5.5	33,95
23.620.1012	MF10	1.25	100	22	7	5.5	35,30
23.620.1110	MF11	1	90	20	8	6.2	50,65
23.620.1112	MF11	1.25	90	20	8	6.2	33,30
23.620.1205	MF12	0.5	100	22	9	7	44,85
23.620.1207	MF12	0.75	100	22	9	7	42,80
23.620.1210	MF12	1	100	22	9	7	36,50
23.620.1212	MF12	1.25	100	22	9	7	42,80
23.620.1215	MF12	1.5	100	22	9	7	37,70
23.620.1310	MF13	1	100	22	11	9	69,45
23.620.1410	MF14	1	100	22	11	9	52,30
23.620.1412	MF14	1.25	100	22	11	9	50,05
23.620.1415	MF14	1.5	100	22	11	9	50,05
23.620.1510	MF15	1	100	22	12	9	63,90
23.620.1515	MF15	1.5	100	22	12	9	65,65
23.620.1610	MF16	1	100	22	12	9	56,50
23.620.1612	MF16	1.25	100	22	12	9	53,25
23.620.1615	MF16	1.5	100	22	12	9	53,25
23.620.1810	MF18	1	110	25	14	11	76,50
23.620.1815	MF18	1.5	110	25	14	11	69,40
23.620.1820	MF18	2	125	30	14	11	82,40
23.620.2010	MF20	1	125	25	16	12	81,15
23.620.2015	MF20	1.5	125	25	16	12	75,35

Ref.	d1	P	l1	l2	d2	sw	€
23.620.2020	MF20	2	140	32	16	12	98,80
23.620.2210	MF22	1	125	25	18	14.5	112,50
23.620.2212	MF22	1.25	125	25	18	14.5	99,85
23.620.2215	MF22	1.5	125	25	18	14.5	86,30
23.620.2220	MF22	2	140	32	18	14.5	112,90
23.620.2410	MF24	1	140	28	18	14.5	119,95
23.620.2415	MF24	1.5	140	28	18	14.5	100,75
23.620.2420	MF24	2	140	28	18	14.5	128,35
23.620.2510	MF25	1	140	28	18	14.5	189,20
23.620.2515	MF25	1.5	140	28	18	14.5	171,95
23.620.2520	MF25	2	140	28	18	14.5	176,70
23.620.2615	MF26	1.5	140	28	18	14.5	140,45
23.620.2715	MF27	1.5	140	28	20	16	143,30
23.620.2720	MF27	2	140	28	20	16	157,65
23.620.2815	MF28	1.5	140	28	20	16	145,95
23.620.3010	MF30	1	150	28	22	18	174,60
23.620.3015	MF30	1.5	150	28	22	18	162,65
23.620.3020	MF30	2	150	28	22	18	167,60
23.620.3215	MF32	1.5	150	28	22	18	196,20
23.620.3315	MF33	1.5	160	30	25	20	265,00
23.620.3320	MF33	2	160	30	25	20	265,00
23.620.3415	MF34	1.5	170	30	28	22	271,00
23.620.3515	MF35	1.5	170	30	28	22	271,00
23.620.3615	MF36	1.5	170	30	28	22	260,00
23.620.3620	MF36	2	170	30	28	22	275,00
23.620.3630	MF36	3	200	50	28	22	291,00
23.620.3815	MF38	1.5	170	30	28	22	306,00
23.620.4015	MF40	1.5	170	30	32	24	293,00
23.620.4215	MF42	1.5	170	30	32	24	368,00
23.620.4220	MF42	2	170	30	32	24	394,00
23.620.4230	MF42	3	200	45	32	24	412,00
23.620.4515	MF45	1.5	180	32	36	29	422,00
23.620.4520	MF45	2	180	32	36	29	436,00
23.620.4815	MF48	1.5	190	32	36	29	512,00
23.620.5015	MF50	1.5	190	32	36	29	614,00
23.620.5215	MF52	1.5	190	32	40	32	633,00

> 23.835 INTERNATIONAL TOOLS

NL ECO PRO HSS-E Machinetap Metrisch Fijn
FR Taraud machine HSS-E ECO PRO Métrique Fin
ES Macho máquina HSS-E ECO PRO Métrica Fina
DE ECO PRO HSS-E Maschinengewindebohrer Metrisch Fein
EN ECO PRO HSS-E Machine Tap Metric Fine

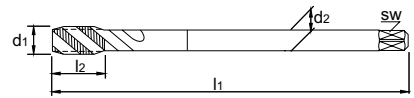


HSS-E	MF	60°	DIN 374	2xD	35°	Form C	2-3	ISO 2 6H	ECO PRO
P 11 s800 N/mm ²	P 12 s850 N/mm ²	K 31 GG	N 41 Alu						
15-20	12-18	10-15	23-35						

Ref.	d1	P	l1	l2	d2	sw	€
23.835.0810	MF8	1	90	10	6	4.9	22,22
23.835.1010	MF10	1	90	12	7	5.5	23,88
23.835.1012	MF10	1.25	100	12	7	5.5	32,55
23.835.1210	MF12	1	100	14	9	7	28,05
23.835.1212	MF12	1.25	100	14	9	7	36,45

Ref.	d1	P	l1	l2	d2	sw	€
23.835.1215	MF12	1.5	100	14	9	7	26,70
23.835.1415	MF14	1.5	100	16	11	9	34,55
23.835.1615	MF16	1.5	100	16	12	9	41,95
23.835.1815	MF18	1.5	110	20	14	11	47,25
23.835.2015	MF20	1.5	125	20	16	12	54,10

> 23.840 **Phantom**



NL UNI HSS-E Machinetap Metrisch Fijn
 FR Taraud machine HSS-E UNI Métrique Fin
 ES Macho máquina HSS-E UNI Métrica Fina
 DE UNI HSS-E Maschinengewindebohrer Metrisch Fein
 EN UNI HSS-E Machine Tap Metric Fine

HSS-E MF 60° DIN 374 2,5xD 40° Form C 2-3 ISO 2 6H UNI

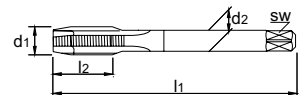
P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 42 Alu Si>10% N 51 Cu S 71 Ni/Co S 72 Ti

15-20 10-20 6-10 7-10 10-15 10-15 25-35 10-20 15-35 2-8 2-8

Ref.	d1	P	l1	l2	d2	sw	€
23.840.0405	MF4	0.5	63	10	2.8	2.1	28,15
23.840.0505	MF5	0.5	70	11	3.5	2.7	28,80
23.840.0605	MF6	0.5	80	13	4.5	3.4	28,80
23.840.0607	MF6	0.75	80	13	4.5	3.4	29,40
23.840.0807	MF8	0.75	80	13	6	4.9	34,90
23.840.0810	MF8	1	90	20	6	4.9	34,10
23.840.0910	MF9	1	90	20	7	5.5	41,25
23.840.1007	MF10	0.75	90	16	7	5.5	41,35
23.840.1010	MF10	1	90	16	7	5.5	36,70
23.840.1012	MF10	1.25	100	22	7	5.5	36,70
23.840.1110	MF11	1	90	20	8	6.2	46,10
23.840.1210	MF12	1	100	22	9	7	48,70
23.840.1212	MF12	1.25	100	22	9	7	48,90
23.840.1215	MF12	1.5	100	22	9	7	42,15
23.840.1310	MF13	1	100	22	11	9	50,55
23.840.1410	MF14	1	100	22	11	9	60,75
23.840.1412	MF14	1.25	100	22	11	9	60,75
23.840.1415	MF14	1.5	100	22	11	9	55,25
23.840.1510	MF15	1	100	22	12	9	67,25
23.840.1515	MF15	1.5	100	22	12	9	67,25
23.840.1610	MF16	1	100	22	12	9	67,25
23.840.1615	MF16	1.5	100	22	12	9	67,05
23.840.1810	MF18	1	110	25	14	11	88,35
23.840.1815	MF18	1.5	110	25	14	11	86,30
23.840.1820	MF18	2	125	30	14	11	82,95

Ref.	d1	P	l1	l2	d2	sw	€
23.840.2010	MF20	1	125	25	16	12	94,70
23.840.2015	MF20	1.5	125	25	16	12	92,90
23.840.2020	MF20	2	140	32	16	12	94,70
23.840.2210	MF22	1	125	25	18	14.5	118,70
23.840.2215	MF22	1.5	125	25	18	14.5	104,90
23.840.2220	MF22	2	140	32	18	14.5	107,55
23.840.2410	MF24	1	140	28	18	14.5	125,45
23.840.2415	MF24	1.5	140	28	18	14.5	124,10
23.840.2420	MF24	2	140	28	18	14.5	125,45
23.840.2515	MF25	1.5	140	28	18	14.5	199,80
23.840.2615	MF26	1.5	140	28	18	14.5	159,70
23.840.2715	MF27	1.5	140	28	20	16	178,15
23.840.2720	MF27	2	140	28	20	16	179,55
23.840.2815	MF28	1.5	140	28	20	16	180,95
23.840.3010	MF30	1	150	28	22	18	211,25
23.840.3015	MF30	1.5	150	28	22	18	203,60
23.840.3020	MF30	2	150	28	22	18	210,65
23.840.3215	MF32	1.5	150	28	22	18	235,60
23.840.3315	MF33	1.5	160	30	25	20	277,00
23.840.3320	MF33	2	160	30	25	20	279,00
23.840.3515	MF35	1.5	170	30	28	22	323,00
23.840.3615	MF36	1.5	170	30	28	22	290,00
23.840.3620	MF36	2	170	30	28	22	300,00
23.840.3630	MF36	3	200	50	28	22	309,00
23.840.4015	MF40	1.5	170	30	32	24	348,00

> 25.095 **INTERNATIONAL TOOLS**



NL ECO PRO HSS-E Machinetap BSP (Gasdraad)
 FR Taraud machine HSS-E ECO PRO BSP (pas gaz)
 ES Macho máquina HSS-E ECO PRO BSP (gas)
 DE ECO PRO HSS-E Maschinengewindebohrer BSP (Rohrgewinde)
 EN ECO PRO HSS-E Machine Tap BSP (G)

HSS-E BSP G 55° DIN 5156 1,5xD Form B 3,5-6 ECO PRO

P 11 ≤800 N/mm² P 12 ≤850 N/mm² K 31 GG N 41 Alu

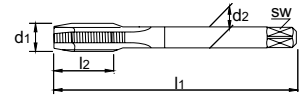
15-20 12-18 10-15 23-35

Ref.	d1	P	l1	l2	d2	sw	€
25.095.0973	BSP 1/8	28	90	20	7	5.5	30,65
25.095.1316	BSP 1/4	19	100	22	11	9	41,10
25.095.1666	BSP 3/8	19	100	22	12	9	50,95

Ref.	d1	P	l1	l2	d2	sw	€
25.095.2096	BSP 1/2	14	125	25	16	12	68,70
25.095.2644	BSP 3/4	14	140	28	20	16	108,05
25.095.3325	BSP 1	11	160	30	25	20	152,35

> 25.097 Phantom

NL UNI HSS-E Machinetap BSP (Gasdraad)
FR Taraud machine HSS-E UNI BSP (pas gaz)
ES Macho máquina HSS-E UNI BSP (gas)
DE UNI HSS-E Maschinengewindebohrer BSP (Rohrgewinde)
EN UNI HSS-E Machine Tap BSP (G)



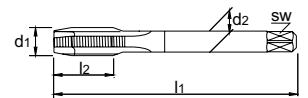
HSS-E	BSP G	55°	DIN 5156	3xD	Form B	5	UNI				
P 11	P 12	P 13	M 21	M 22	K 31	K 32	N 41	N 42	N 51	S 71	S 72
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	Ni/Co	Ti
15-20	10-20	6-10	7-10	4-8	10-15	10-15	25-35	10-20	15-35	2-8	2-8

Ref.	d1	P	l1	l2	d2	sw	€
25.097.0973	BSP 1/8	28	90	20	7	5.5	32,80
25.097.1316	BSP 1/4	19	100	22	11	9	44,35
25.097.1666	BSP 3/8	19	100	22	12	9	52,35
25.097.2096	BSP 1/2	14	125	25	16	12	75,25
25.097.2291	BSP 5/8	14	125	25	18	14.5	103,20
25.097.2644	BSP 3/4	14	140	28	20	16	133,50

Ref.	d1	P	l1	l2	d2	sw	€
25.097.3020	BSP 7/8	14	150	28	22	18	162,90
25.097.3325	BSP 1	11	160	30	25	20	191,75
25.097.3790	BSP 1.1/8	11	170	30	28	22	261,00
25.097.4191	BSP 1.1/4	11	170	30	32	24	300,00
25.097.4780	BSP 1.1/2	11	190	32	36	29	427,00

> 25.100 Phantom

NL HSS-E Machinetap BSP (Gasdraad)
FR Taraud machine HSS-E BSP (pas gaz)
ES Macho máquina HSS-E BSP (gas)
DE HSS-E Maschinengewindebohrer BSP (Rohrgewinde)
EN HSS-E Machine Tap BSP (G)



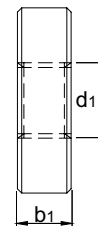
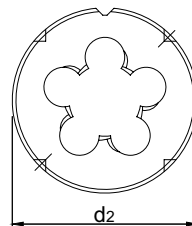
HSS-E	BSP G	55°	DIN 5156	3xD	Form B	5
P 11	P 12	K 32	N 41	N 42	N 51	N 61
≤800 N/mm ²	≤850 N/mm ²	GGG GTS-GTW	Alu	Alu Si>10%	Cu	PVC
15-20	10-20	5-15	10-35	10-20	8-35	20-30

Ref.	d1	P	l1	l2	d2	sw	€
25.100.0973	BSP 1/8	28	90	20	7	5.5	32,80
25.100.1316	BSP 1/4	19	100	22	11	9	44,35
25.100.1666	BSP 3/8	19	100	22	12	9	52,35
25.100.2096	BSP 1/2	14	125	25	16	12	75,25
25.100.2291	BSP 5/8	14	125	25	18	14.5	95,05
25.100.2644	BSP 3/4	14	140	28	20	16	121,30

Ref.	d1	P	l1	l2	d2	sw	€
25.100.3020	BSP 7/8	14	150	28	22	18	156,70
25.100.3325	BSP 1	11	160	30	25	20	187,05
25.100.3790	BSP 1.1/8	11	170	30	28	22	255,00
25.100.4191	BSP 1.1/4	11	170	30	32	24	300,00
25.100.4780	BSP 1.1/2	11	190	32	36	29	427,00

> 27.100 INTERNATIONAL TOOLS

NL ECO PRO HSS Ronde Snijplaat Metrisch
FR Filière ronde HSS ECO PRO Métrique
ES Terraja esférica HSS ECO PRO Métrica
DE ECO PRO HSS Runde Schneideisen Metrisch
EN ECO PRO HSS Thread Die Metric Coarse



HSS	M	60°	DIN EN 22568	6g	ECO PRO
P 11	P 12	K 31	K 32	N 41	N 42
≤800 N/mm ²	≤850 N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%

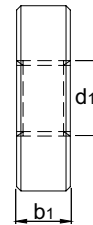
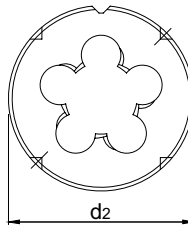
Ref.	d1	P	d2	b1	€
27.100.0200	M2	0.4	16	5	8,80
27.100.0250	M2,5	0.45	16	5	8,80
27.100.0300	M3	0.5	20	5	7,80
27.100.0400	M4	0.7	20	5	7,80
27.100.0500	M5	0.8	20	7	7,80
27.100.0600	M6	1	20	7	7,80
27.100.0700	M7	1	25	9	9,30

Ref.	d1	P	d2	b1	€
27.100.0800	M8	1.25	25	9	9,30
27.100.1000	M10	1.5	30	11	15,60
27.100.1200	M12	1.75	38	14	21,90
27.100.1400	M14	2	38	14	21,90
27.100.1600	M16	2	45	18	40,90
27.100.1800	M18	2.5	45	18	40,90
27.100.2000	M20	2.5	45	18	40,90

Ref.	d1	P	d2	b1	€
27.100.2200	M22	2.5	55	22	68,70
27.100.2400	M24	3	55	22	68,70
27.100.2700	M27	3	65	25	98,70
27.100.3000	M30	3.5	65	25	98,70
27.100.3300	M33	3.5	65	25	98,70
27.100.3600	M36	4	65	25	98,70

> 27.120 **Phantom**

NL HSS Ronde Snijplaat Metrisch, schilaansnijding
 FR Filière ronde HSS Métrique, coupe gun
 ES Terraja esférica HSS Métrica, entrada corregida (gun)
 DE HSS Runde Schneideisen Metrisch, Schälanschnitt
 EN HSS Thread Die Metric Coarse, gun nosed



HSS **M** **DIN EN 22568** **6g**

P 11 **P 12** **P 13** **M 21** **N 41**

≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² Alu

10-14 6-10 5-8 4-6 15-25

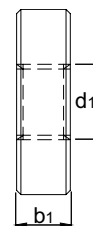
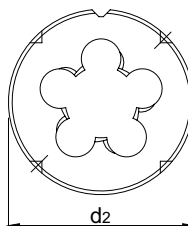
Ref.	d1	P	d2	b1	€
27.120.0100	M1	0.25	16	5	70,25
27.120.0120	M1,2	0.25	16	5	66,15
27.120.0140	M1,4	0.3	16	5	60,60
27.120.0160	M1,6	0.35	16	5	52,45
27.120.0180	M1,8	0.35	16	5	55,35
27.120.0200	M2	0.4	16	5	41,55
27.120.0220	M2,2	0.45	16	5	62,70
27.120.0230	M2,3	0.4	16	5	45,30
27.120.0250	M2,5	0.45	16	5	37,85
27.120.0260	M2,6	0.45	16	5	40,25
27.120.0300	M3	0.5	20	5	35,20
27.120.0350	M3,5	0.6	20	5	37,75

Ref.	d1	P	d2	b1	€
27.120.0400	M4	0.7	20	5	35,20
27.120.0500	M5	0.8	20	7	35,20
27.120.0600	M6	1	20	7	35,20
27.120.0700	M7	1	25	9	43,80
27.120.0800	M8	1.25	25	9	38,60
27.120.0900	M9	1.25	25	9	50,15
27.120.1000	M10	1.5	30	11	46,50
27.120.1100	M11	1.5	30	11	63,10
27.120.1200	M12	1.75	38	14	61,75
27.120.1400	M14	2	38	14	63,05
27.120.1600	M16	2	45	18	80,15
27.120.1800	M18	2.5	45	18	85,45

Ref.	d1	P	d2	b1	€
27.120.2000	M20	2.5	45	18	85,45
27.120.2200	M22	2.5	55	22	122,20
27.120.2400	M24	3	55	22	122,20
27.120.2700	M27	3	65	25	184,25
27.120.3000	M30	3.5	65	25	184,25
27.120.3300	M33	3.5	65	25	198,00
27.120.3600	M36	4	65	25	186,45
27.120.3900	M39	4	75	30	310,00
27.120.4200	M42	4.5	75	30	310,00
27.120.4500	M45	4.5	90	36	488,00
27.120.4800	M48	5	90	36	465,00
27.120.5200	M52	5	90	36	491,00

> 27.200 **INTERNATIONAL TOOLS**

NL ECO PRO HSS Ronde Snijplaat Metrisch Fijn
 FR Filière ronde HSS ECO PRO Métrique Fin
 ES Terraja esférica HSS ECO PRO Métrica Fina
 DE ECO PRO HSS Runde Schneideisen Metrisch Fein
 EN ECO PRO HSS Thread Die Metric Fine



HSS **MF** **DIN EN 22568** **6g** **ECO PRO**

P 11 **P 12** **K 31** **K 32** **N 41** **N 42**

≤800 N/mm² ≤850 N/mm² GG GGG GTS-GTW Alu Alu SP-10%

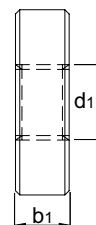
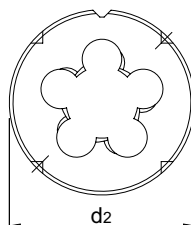
Ref.	d1	P	d2	b1	€
27.200.0403	MF4	0.35	20	5	8,50
27.200.0405	MF4	0.5	20	5	8,50
27.200.0505	MF5	0.5	20	5	8,50
27.200.0605	MF6	0.5	20	5	8,50
27.200.0607	MF6	0.75	20	7	9,30
27.200.0707	MF7	0.75	25	9	9,30
27.200.0805	MF8	0.5	25	9	9,30
27.200.0807	MF8	0.75	25	9	9,30
27.200.0810	MF8	1	25	9	9,30
27.200.0910	MF9	1	25	9	9,30
27.200.1007	MF10	0.75	30	11	15,60
27.200.1010	MF10	1	30	11	15,60

Ref.	d1	P	d2	b1	€
27.200.1012	MF10	1.25	30	11	15,60
27.200.1210	MF12	1	38	10	21,90
27.200.1212	MF12	1.25	38	10	21,90
27.200.1215	MF12	1.5	38	10	21,90
27.200.1310	MF13	1	38	10	21,90
27.200.1410	MF14	1	38	10	21,90
27.200.1412	MF14	1.25	38	10	21,90
27.200.1415	MF14	1.5	38	10	21,90
27.200.1510	MF15	1	38	10	21,90
27.200.1610	MF16	1	45	14	40,90
27.200.1615	MF16	1.5	45	14	40,90
27.200.1810	MF18	1	45	14	40,90

Ref.	d1	P	d2	b1	€
27.200.1815	MF18	1.5	45	14	40,90
27.200.2010	MF20	1	45	14	40,90
27.200.2015	MF20	1.5	45	14	40,90
27.200.2215	MF22	1.5	55	16	68,70
27.200.2220	MF22	2	55	16	68,70
27.200.2415	MF24	1.5	55	16	68,70
27.200.2420	MF24	2	55	16	68,70
27.200.2715	MF27	1.5	65	18	82,00
27.200.2720	MF27	2	65	18	82,00
27.200.3015	MF30	1.5	65	18	98,70
27.200.3020	MF30	2	65	18	98,70

> 27.220 Phantom

NL HSS Ronde Snijplaat Metrisch Fijn, schilaansnijding
FR Filière ronde HSS Métrique Fin, coupe gun
ES Terraja esférica HSS Métrica Fina, entrada corregida (gun)
DE HSS Runde Schneideisen Metrisch Fein, Schälanschnitt
EN HSS Thread Die Metric Fine, gun nosed



HSS **MF** **60°** **DIN EN 22568** **6g**

P 11 **P 12** **P 13** **M 21** **N 41**

≤500 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² Alu

10-14 6-10 5-8 4-6 15-25

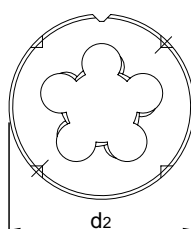
Ref.	d1	P	d2	b1	€
27.220.0303	MF3	0.35	20	5	54,70
27.220.0403	MF4	0.35	20	5	56,80
27.220.0405	MF4	0.5	20	5	45,30
27.220.0505	MF5	0.5	20	5	44,30
27.220.0605	MF6	0.5	20	5	44,30
27.220.0607	MF6	0.75	20	7	44,05
27.220.0707	MF7	0.75	25	9	49,80
27.220.0805	MF8	0.5	25	9	65,60
27.220.0807	MF8	0.75	25	9	46,80
27.220.0810	MF8	1	25	9	46,05
27.220.0907	MF9	0.75	25	9	61,55
27.220.0910	MF9	1	25	9	56,15
27.220.1005	MF10	0.5	30	11	83,10
27.220.1007	MF10	0.75	30	11	61,60
27.220.1010	MF10	1	30	11	55,60
27.220.1012	MF10	1.25	30	11	60,35
27.220.1110	MF11	1	30	11	62,10
27.220.1205	MF12	0.5	38	10	107,65
27.220.1207	MF12	0.75	38	10	82,45
27.220.1210	MF12	1	38	10	72,60
27.220.1212	MF12	1.25	38	10	75,80
27.220.1215	MF12	1.5	38	10	66,85
27.220.1310	MF13	1	38	10	77,60
27.220.1405	MF14	0.5	38	10	131,20
27.220.1407	MF14	0.75	38	10	82,10
27.220.1410	MF14	1	38	10	73,10
27.220.1412	MF14	1.25	38	10	76,35
27.220.1415	MF14	1.5	38	10	66,85

Ref.	d1	P	d2	b1	€
27.220.1510	MF15	1	38	10	76,80
27.220.1515	MF15	1.5	38	10	86,40
27.220.1607	MF16	0.75	45	14	136,85
27.220.1610	MF16	1	45	14	101,10
27.220.1612	MF16	1.25	45	14	120,10
27.220.1615	MF16	1.5	45	14	91,35
27.220.1810	MF18	1	45	14	101,10
27.220.1812	MF18	1.25	45	14	134,15
27.220.1815	MF18	1.5	45	14	91,35
27.220.1820	MF18	2	45	14	112,55
27.220.2010	MF20	1	45	14	101,10
27.220.2015	MF20	1.5	45	14	91,35
27.220.2020	MF20	2	45	14	104,65
27.220.2210	MF22	1	55	16	134,65
27.220.2215	MF22	1.5	55	16	119,90
27.220.2220	MF22	2	55	16	143,85
27.220.2410	MF24	1	55	16	134,65
27.220.2415	MF24	1.5	55	16	119,90
27.220.2420	MF24	2	55	16	133,15
27.220.2510	MF25	1	55	16	169,50
27.220.2515	MF25	1.5	55	16	142,70
27.220.2520	MF25	2	55	16	183,75
27.220.2610	MF26	1	55	16	169,50
27.220.2615	MF26	1.5	55	16	142,70
27.220.2710	MF27	1	65	18	213,50
27.220.2715	MF27	1.5	65	18	177,70
27.220.2720	MF27	2	65	18	195,75
27.220.2815	MF28	1.5	65	18	177,70

Ref.	d1	P	d2	b1	€
27.220.2820	MF28	2	65	18	234,35
27.220.3010	MF30	1	65	19	204,50
27.220.3015	MF30	1.5	65	18	177,70
27.220.3020	MF30	2	65	18	195,75
27.220.3215	MF32	1.5	65	18	181,20
27.220.3315	MF33	1.5	65	18	187,45
27.220.3320	MF33	2	65	18	195,75
27.220.3415	MF34	1.5	65	18	216,70
27.220.3515	MF35	1.5	65	18	185,45
27.220.3615	MF36	1.5	65	18	185,45
27.220.3620	MF36	2	65	18	195,75
27.220.3630	MF36	3	65	25	248,70
27.220.3815	MF38	1.5	75	20	281,00
27.220.3920	MF39	2	75	20	313,00
27.220.3930	MF39	3	75	30	338,00
27.220.4015	MF40	1.5	75	20	281,00
27.220.4020	MF40	2	75	20	313,00
27.220.4215	MF42	1.5	75	20	281,00
27.220.4220	MF42	2	75	20	313,00
27.220.4230	MF42	3	75	30	338,00
27.220.4515	MF45	1.5	90	22	378,00
27.220.4520	MF45	2	90	22	416,00
27.220.4530	MF45	3	90	22	453,00
27.220.4815	MF48	1.5	90	22	378,00
27.220.4830	MF48	3	90	22	453,00
27.220.5015	MF50	1.5	90	22	378,00
27.220.5215	MF52	1.5	90	22	378,00

> 27.500 INTERNATIONAL TOOLS

NL ECO PRO HSS Ronde Snijplaat BSP (Gasdraad)
FR Filière ronde HSS ECO PRO BSP (pas gaz)
ES Terraja esférica HSS ECO PRO BSP (gas)
DE ECO PRO HSS Runde Schneideisen BSP (Rohrgewinde)
EN ECO PRO HSS Thread Die BSP (G)



HSS **BSP G** **55°** **DIN EN 24231** **ECO PRO**

P 11 **P 12** **K 31** **K 32** **N 41** **N 42**

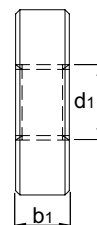
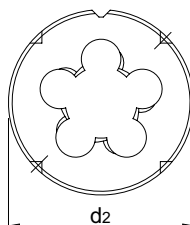
≤500 N/mm² ≤850 N/mm² GG GGG GTS-GTW Alu Alu Si-10%

Ref.	d1	P	d2	b1	€
27.500.0973	BSP 1/8	28	30	11	18,00
27.500.1316	BSP 1/4	19	38	10	22,00
27.500.1666	BSP 3/8	19	45	14	35,00
27.500.2096	BSP 1/2	14	45	14	35,00
27.500.2291	BSP 5/8	14	55	16	58,00
27.500.2644	BSP 3/4	14	55	16	58,00

Ref.	d1	P	d2	b1	€
27.500.3020	BSP 7/8	14	65	18	98,00
27.500.3325	BSP 1	11	65	18	98,00
27.500.4191	BSP 1.1/4	11	75	20	162,00
27.500.4780	BSP 1.1/2	11	90	22	220,00
27.500.5961	BSP 2	11	105	22	470,00

> 27.520 **Phantom**

NL HSS Ronde Snijplaat schilaansnijding, BSP (Gasdraad)
 FR Filière ronde HSS coupe gun, BSP (pas gaz)
 ES Terraja esférica HSS entrada corregida (gun), BSP (gas)
 DE HSS Runde Schneideisen Schälaanschnitt, BSP (Rohrgewinde)
 EN HSS Thread Die gun nosed, BSP (G)



HSS **BSP G** **55°** **DIN EN 24231**

P 11 **P 12** **P 13** **M 21** **N 41**

≤800 N/mm² ≤850 N/mm² ≤1000 N/mm² INOX ≤850N/mm² Alu

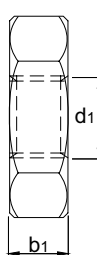
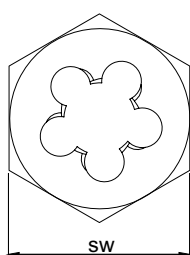
10-14 6-10 5-8 4-6 15-25

Ref.	d1	P	d2	b1	€
27.520.0973	BSP 1/8	28	30	11	64,60
27.520.1316	BSP 1/4	19	38	10	64,60
27.520.1666	BSP 3/8	19	45	14	85,80
27.520.2096	BSP 1/2	14	45	14	85,80
27.520.2291	BSP 5/8	14	55	16	131,40
27.520.2644	BSP 3/4	14	55	16	130,40
27.520.3020	BSP 7/8	14	65	18	206,00

Ref.	d1	P	d2	b1	€
27.520.3325	BSP 1	11	65	18	181,70
27.520.3790	BSP 1.1/8	11	75	20	318,00
27.520.4191	BSP 1.1/4	11	75	20	270,00
27.520.4432	BSP 1.3/8	11	90	22	440,00
27.520.4780	BSP 1.1/2	11	90	22	373,00
27.520.5375	BSP 1.3/4	11	90	22	396,00
27.520.5961	BSP 2	11	105	22	481,00

> 27.700 **INTERNATIONAL TOOLS**

NL ECO PRO HSS Zeskante Snijmoer Metrisch
 FR Filière hexagonale HSS ECO PRO Métrique
 ES Terraja hexagonal HSS ECO PRO Métrica
 DE ECO PRO HSS Sechskant Schneideisen Metrisch
 EN ECO PRO HSS Hexagon Die Nut Metric Coarse



HSS **M** **60°** **DIN 382**

P 11 **P 12** **K 31** **K 32** **N 41** **N 42**

≤800 N/mm² ≤850 N/mm² GG GGG GTS-GTW Alu Alu SP-10%

6g **ECO PRO**

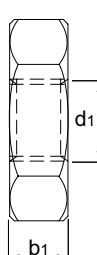
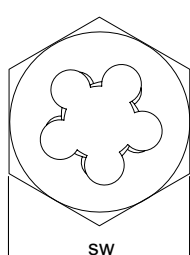
Ref.	d1	P	sw	b1	€
27.700.0300	M3	0.5	19	5	16,00
27.700.0400	M4	0.7	19	5	16,00
27.700.0500	M5	0.8	19	7	18,00
27.700.0600	M6	1	19	7	18,00
27.700.0700	M7	1	22	9	20,00
27.700.0800	M8	1.25	22	9	20,00
27.700.0900	M9	1.25	22	9	22,00
27.700.1000	M10	1.5	27	11	26,00

Ref.	d1	P	sw	b1	€
27.700.1200	M12	1.75	36	14	42,00
27.700.1400	M14	2	36	14	42,00
27.700.1600	M16	2	41	18	62,00
27.700.1800	M18	2.5	41	18	62,00
27.700.2000	M20	2.5	41	18	62,00
27.700.2200	M22	2.5	50	22	98,00
27.700.2400	M24	3	50	22	98,00
27.700.2700	M27	3	60	25	158,00

Ref.	d1	P	sw	b1	€
27.700.3000	M30	3.5	60	25	158,00
27.700.3300	M33	3.5	60	25	158,00
27.700.3600	M36	4	60	25	158,00
27.700.3900	M39	4	70	30	256,00
27.700.4200	M42	4.5	70	30	256,00
27.700.4500	M45	4.5	85	36	360,00
27.700.4800	M48	5	85	36	360,00
27.700.5200	M52	5	85	36	360,00

> 27.750 **INTERNATIONAL TOOLS**

NL ECO PRO HSS Zeskante Snijmoer Metrisch Fijn
 FR Filière hexagonale HSS ECO PRO Métrique Fin
 ES Terraja hexagonal HSS ECO PRO Métrica Fina
 DE ECO PRO HSS Sechskant Schneideisen Metrisch Fein
 EN ECO PRO HSS Hexagon Die Nut Metric Fine



HSS **MF** **60°** **DIN 382**

P 11 **P 12** **K 31** **K 32** **N 41** **N 42**

≤800 N/mm² ≤850 N/mm² GG GGG GTS-GTW Alu Alu SP-10%

6g **ECO PRO**

Ref.	d1	P	sw	b1	€
27.750.0303	MF3	0.35	19	5	35,00
27.750.0403	MF4	0.35	19	5	35,00
27.750.0505	MF5	0.5	19	5	35,00
27.750.0605	MF6	0.5	19	5	35,00
27.750.0607	MF6	0.75	19	5	35,00
27.750.0805	MF8	0.5	22	9	38,00
27.750.0807	MF8	0.75	22	9	38,00

Ref.	d1	P	sw	b1	€
27.750.0810	MF8	1	22	9	22,50
27.750.1007	MF10	0.75	27	11	38,00
27.750.1010	MF10	1	27	11	30,00
27.750.1012	MF10	1.25	27	11	30,00
27.750.1207	MF12	0.75	36	10	53,00
27.750.1210	MF12	1	36	10	48,00
27.750.1212	MF12	1.25	36	10	48,00

Ref.	d1	P	sw	b1	€
27.750.1215	MF12	1.5	36	10	48,00
27.750.1410	MF14	1	36	10	48,00
27.750.1412	MF14	1.25	36	10	48,00
27.750.1415	MF14	1.5	36	10	48,00
27.750.1610	MF16	1	41	14	72,00
27.750.1612	MF16	1.25	41	14	74,00
27.750.1615	MF16	1.5	41	14	72,00

> 27.750 INTERNATIONAL TOOLS

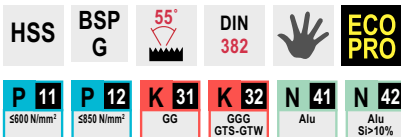
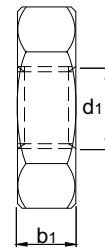
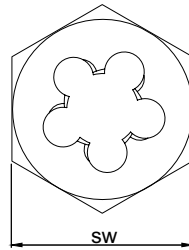
Ref.	d1	P	sw	b1	€
27.750.1810	MF18	1	41	14	72,00
27.750.1812	MF18	1.25	41	14	76,00
27.750.1815	MF18	1.5	41	14	72,00
27.750.1820	MF18	2	41	14	72,00
27.750.2010	MF20	1	41	14	72,00
27.750.2012	MF20	1.25	41	14	76,00
27.750.2015	MF20	1.5	41	14	72,00
27.750.2020	MF20	2	41	14	72,00
27.750.2212	MF22	1.25	50	16	115,50
27.750.2215	MF22	1.5	50	16	115,50
27.750.2220	MF22	2	50	16	115,50
27.750.2415	MF24	1.5	50	16	115,50
27.750.2420	MF24	2	50	16	115,50
27.750.2515	MF25	1.5	50	16	115,50
27.750.2615	MF26	1.5	50	16	169,00
27.750.2620	MF26	2	50	16	169,00
27.750.2715	MF27	1.5	60	18	169,00

Ref.	d1	P	sw	b1	€
27.750.2720	MF27	2	60	18	169,00
27.750.2815	MF28	1.5	60	18	169,00
27.750.2820	MF28	2	60	18	181,00
27.750.3015	MF30	1.5	60	18	169,00
27.750.3020	MF30	2	60	18	169,00
27.750.3215	MF32	1.5	60	18	169,00
27.750.3220	MF32	2	60	18	181,00
27.750.3315	MF33	1.5	60	18	181,00
27.750.3515	MF35	1.5	60	18	169,00
27.750.3520	MF35	2	60	18	170,00
27.750.3615	MF36	1.5	60	18	169,00
27.750.3620	MF36	2	60	18	169,00
27.750.3630	MF36	3	60	18	169,00
27.750.3815	MF38	1.5	70	20	225,00
27.750.3820	MF38	2	70	20	317,00
27.750.4015	MF40	1.5	70	20	225,00
27.750.4020	MF40	2	70	20	298,00

Ref.	d1	P	sw	b1	€
27.750.4030	MF40	3	70	20	298,00
27.750.4215	MF42	1.5	70	20	298,00
27.750.4220	MF42	2	70	20	298,00
27.750.4230	MF42	3	70	20	298,00
27.750.4515	MF45	1.5	85	22	367,00
27.750.4530	MF45	3	85	22	427,00
27.750.4615	MF46	1.5	85	22	476,00
27.750.4815	MF48	1.5	85	22	330,00
27.750.4820	MF48	2	85	22	400,00
27.750.4830	MF48	3	85	22	419,00
27.750.5015	MF50	1.5	85	22	385,00
27.750.5020	MF50	2	85	22	400,00
27.750.5215	MF52	1.5	85	22	385,00
27.750.5220	MF52	2	85	22	400,00
27.750.6020	MF60	2	100	22	649,00

> 27.900 INTERNATIONAL TOOLS

- NL ECO PRO HSS Zeskante Snijmoer BSP (Gasdraad)
 FR Filière hexagonale HSS ECO PRO BSP (pas gaz)
 ES Terraja hexagonal HSS ECO PRO BSP (gas)
 DE ECO PRO HSS Sechskant Schneideisen BSP (Rohrgewinde)
 EN ECO PRO HSS Hexagon Die Nut BSP (G)



Ref.	d1	P	sw	b1	€
27.900.0973	BSP 1/8	28	27	11	28,00
27.900.1316	BSP 1/4	19	36	10	42,00
27.900.1666	BSP 3/8	19	41	14	56,00
27.900.2096	BSP 1/2	14	41	14	56,00
27.900.2291	BSP 5/8	14	50	16	92,00
27.900.2644	BSP 3/4	14	50	16	92,00
27.900.3020	BSP 7/8	14	60	18	142,00
27.900.3325	BSP 1	11	60	18	142,00

Ref.	d1	P	sw	b1	€
27.900.3790	BSP 1.1/8	11	70	20	199,00
27.900.4191	BSP 1.1/4	11	70	20	199,00
27.900.4432	BSP 1.3/8	11	85	22	298,00
27.900.4780	BSP 1.1/2	11	85	22	298,00
27.900.5375	BSP 1.3/4	11	85	22	494,00
27.900.5961	BSP 2	11	100	22	498,00
27.900.7518	BSP 2.1/2	11	120	22	583,00
27.900.8788	BSP 3	11	130	22	958,00

> 28.870 **Phantom**

NL Set Phan-Coils Metrisch
 FR Jeu de Phan-Coils Métrique
 ES Juego de Phan-Coils Métrica
 DE Satz Phan-Coils Metrisch
 EN Set Phan-Coils Metric Coarse



EG M Phan-Coil

Ref.	d1	P	Max. x d1	1	2	3	4	5	€
28.870.0040	M4	0.7	1.5	11.450.0420	21.812.0400	28.860.0025	28.865.0025	1,5xD (5), 2xD (5)	50,45
28.870.0050	M5	0.8	1.5	11.450.0525	21.812.0500	28.860.0035	28.865.0035	1,5xD (5), 2xD (5)	51,15
28.870.0060	M6	1	1.5	11.450.0630	21.812.0600	28.860.0040	28.865.0040	1,5xD (5), 2xD (5)	52,70
28.870.0080	M8	1.25	1.5	11.450.0840	21.812.0800	28.860.0055	28.865.0055	1,5xD (5), 2xD (5)	60,05
28.870.0100	M10	1.5	1.5	11.450.1050	21.812.1000	28.860.0070	28.865.0070	1,5xD (5), 2xD (5)	65,35
28.870.0120	M12	1.75	1.5	11.450.1250	21.812.1200	28.860.0080	28.865.0080	1,5xD (3), 2xD (3)	77,80
28.870.0160	M16	2	1.5	11.450.1650	21.812.1600	28.860.0095	28.865.0095	1,5xD (2), 2xD (2)	106,10



NL Schroefdraad repareren of herstellen
 FR Réparer ou restaurer un filetage ?
 ES ¿Reparar o restaurar roscas?
 DE Gewinde reparieren oder wiederherstellen?
 EN Threading – repair or restore?

Read me



www.phantom.eu

> 28.880 **Phantom**

NL Set Phan-Coils Metrisch, (combinatie)
 FR Jeu de Phan-Coils Métrique, (combinaison)
 ES Juego de Phan-Coils Métrica, (combinación)
 DE Satz Phan-Coils Metrisch, (Kombination)
 EN Set Phan-Coils Metric Coarse, (combination)



EG M Phan-Coil

Ref.	Contents	1	2	3	4	5	€
28.880.1000	M5, M6, M8, M10, M12	11.450.0525	21.812.0500	28.860.0035	28.865.0035	M5 15xD(4) 2xD(4)	266,00
		11.450.0630	21.812.0600	28.860.0040	28.865.0040	M6 15xD(4) 2xD(4)	
		11.450.0840	21.812.0800	28.860.0055	28.865.0055	M8 15xD(4) 2xD(4)	
		11.450.1050	21.812.1000	28.860.0070	28.865.0070	M10 15xD(3) 2xD(3)	
		11.450.1250	21.812.1200	28.860.0080	28.865.0080	M12 15xD(3) 2xD(3)	

> 29.100 **INTERNATIONAL TOOLS**

NL ECO PRO HSS Set Draadsnijden in kunststof koffer
 FR Coffret de taraudage HSS ECO PRO en coffret plastique
 ES Juego de roscar HSS ECO PRO en estuche plástico
 DE ECO PRO HSS Satz Gewindeschneiden in Kunststoff-Etui
 EN ECO PRO HSS Set Threading Tools in plastic case



HSS M 60° ISO 2 6H ECO PRO

Ref.	Ø	1	2	3	4	5	6	7	€
29.100.1000	M3-M12	M3-4-5-6-8-10-12	M3-4-5-6-8-10-12	2,5-3,3-4,2-5-6,8-8,5-10,2	1 + 2	1 + 2	20x5, 20x7, 25x9, 30x11, 38x14	2,7-3,4-4,9-5,5-7	379,00
29.100.2000	M3-M12	M3-4-5-6-8-10-12	M3-4-5-6-8-10-12	2,5-3,3-4,2-5-6,8-8,5-10,2	1,5	1	25x9	-	256,00

> 29.120 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Draadsnijden in houten cassette
FR Coffret de taraudage HSS ECO PRO en coffret bois
ES Juego de roscar HSS ECO PRO en estuche de madera
DE ECO PRO HSS Satz Gewindeschneiden in Holzkassetten
EN ECO PRO HSS Set Threading Tools in wooden case



Ref.	Ø	1	2	3	4	€
29.120.0001	M3-M14	M3-4-5-6-8-10-12-14	M3-4-5-6-8-10-12-14	Nr. 2	20x5, 20x7, 25x9, 30x11, 38x14	529,00
29.120.0002	M3-M24	M3-4-5-6-8-10-12-14-16-18-20-22-24	M3-4-5-6-8-10-12-14-16-18-20-22-24	Nr. 0 + 2 + 4	20x5, 20x7, 25x9, 30x11, 38x14, 45x18, 55x22	1.557,00
29.120.0003	M5-M30	M5-6-8-10-12-14-16-18-20-22-24-27-30	M5-6-8-10-12-14-16-18-20-22-24-27-30	Nr. 1 + 3 + 5	20x7, 25x9, 30x11, 38x14, 45x18, 55x22, 65x25	2.598,00
29.120.0004	UNC1/4-1	UNC 1/4-5/16-3/8-7/16-1/2-5/8-3/4-7/8-1	UNC 1/4-5/16-3/8-7/16-1/2-5/8-3/4-7/8-1	Nr. 0 + 2 + 4	20x7, 25x9, 30x11, 38x14, 45x18, 55x22	1.836,00
29.120.0005	UNF1/4-1	UNF 1/4-5/16-3/8-7/16-1/2-5/8-3/4-7/8-1	UNF 1/4-5/16-3/8-7/16-1/2-5/8-3/4-7/8-1	Nr. 0 + 2 + 4	20x7, 25x9, 30x11, 38x10, 45x14, 55x16	1.447,00
29.120.0006	BSP1/8-1	BSP 1/8-1/4-3/8-1/2-3/4-1	BSP 1/8-1/4-3/8-1/2-3/4-1	Nr. 3 + 5	30x11, 38x10, 45x14, 55x16, 65x18	1.401,00
29.120.0007	MF6-20	MF 6x0,75-8x1-10x1-12x1,5-14x1,5-16x1,5-18x1,5-20x1,5	MF 6x0,75-8x1-10x1-12x1,5-14x1,5-16x1,5-18x1,5-20x1,5	Nr. 1 + 3	20x7, 25x9, 30x11, 38x10, 45x14	1.007,00
29.120.0009	NPT1/4-1	NPT 1/4-3/8-1/2-3/4-1	NPT 1/4-3/8-1/2-3/4-1	Nr. 3 + 5	38x14, 45x14, 45x18, 55x22, 65x25	2.247,00
29.120.1320	M3-M20	M3-4-5-6-8-10-12-14-16-18-20	M3-4-5-6-8-10-12-14-16-18-20	Nr. 1 + 3	20x5, 20x7, 25x9, 30x11, 38x14, 45x18	973,00
29.120.7225	BSW1/8-1	BSW 1/8-3/16-1/4-5/16-3/8-7/16-1/2-5/8-3/4-7/8-1	BSW 1/8-3/16-1/4-5/16-3/8-7/16-1/2-5/8-3/4-7/8-1	Nr. 0 + 2 + 4	20x5, 20x7, 25x9, 30x11, 38x14, 45x18, 55x22	1.447,00

> 29.130 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Draadsnijden in stalen cassette
FR Coffret de taraudage HSS ECO PRO en coffret métal
ES Juego de roscar HSS ECO PRO en estuche metálico
DE ECO PRO HSS Satz Gewindeschneiden in Kasette aus Stahl
EN ECO PRO HSS Set Threading Tools in metal case



Ref.	Ø	1	2	3	4	5	€
29.130.0200	M3-M12	M3-4-5-6-8-10-12	M3-4-5-6-8-10-12	-	Nr. 1.5	25x9	301,00
29.130.1312	M3-M12	M3-4-5-6-8-10-12	M3-4-5-6-8-10-12	2,5-3,3-4,2-5-6,8-8,5-10,2	Nr. 1 + 2	20x5, 20x7, 25x9, 30x11, 38x14	305,00
29.130.1320	M3-M20	M3-4-5-6-8-10-12-14-16-18-20	M3-4-5-6-8-10-12-14-16-18-20	-	Nr. 1 + 3	20x5, 20x7, 25x9, 30x11, 38x14, 45x18	682,00

> 29.180 INTERNATIONAL TOOLS

NL ECO HSS Set Handtappen (combinatie)
FR Jeu de Tarauds à main HSS ECO (combinaison)
ES Juego de Machos mano HSS ECO (combinación)
DE ECO HSS Satz Handgewindebohrer (Kombination)
EN ECO HSS Hand tap Set (combination)



Ref.	1	2	€
29.180.0001	21.140 (M3-4-5-6-8-10-12)	-	167,00
29.180.0002	21.140 (M3-4-5-6-8-10-12)	11.400 (2,5-3,3-4,2-5-6,8-8,5-10,2)	177,00

> 29.185 INTERNATIONAL TOOLS

- NL ECO HSS Set Draadsnijden met 1/4" (6,35 mm)-zeskant bitopname, (combinatie)
- FR Coffret de taraudage HSS ECO avec queue hexagonale 1/4" (6,35 mm), (combinaison)
- ES Juego de roscar HSS ECO con sujeción 1/4" (6,35 mm) bit, (combinación)
- DE ECO HSS Satz Gewindeschneiden mit 1/4" (6,35 mm) Hexa-Bitafnahme, (Kombination)
- EN ECO HSS Set Threading Tools with hexagonal shank 1/4" (6,35 mm), (combination)



HSS M **DIN 3126** **ISO 2 6H** **ECO**

Ref.	1	2	€
29.185.1310	22.100 (M3-4-5-6-8-10)	11.120 (2,5-3,3-4,2-5-6,8-8,5)	62,90

> 29.190 INTERNATIONAL TOOLS

- NL ECO Set machinetappen (combinatie)
- FR Jeu de tarauds machine ECO (combinaison)
- ES Juego de machos máquina ECO (combinación)
- DE ECO Satz Maschinengewindebohren (Kombination)
- EN ECO machine tap Set (combination)



HSS M **ISO 2 6H** **ECO**

Ref.	1	2	3	4	A, B, C	€
29.190.1000	22.191/22.192 (M3-4-5-6-8-10-12)	-	-	-	B	76,50
29.190.2000	22.191/22.192 (M3-4-5-6-8-10-12)	11.416 (2,5-4,2-5-6,8-8,5-10,2)	-	-	B	88,00
29.190.2250	22.190 (M3-4-5-6-8-10-12)	11.416 (2,5-4,2-5-6,8-8,5-10,2)	-	81.900 (Nr. 1,5)	B	80,00
29.190.3000	22.190 (M4-5-6-8-10)	11.416 (3,3-4,2-5-6,8-8,5)	42.533 (10,4 16,5)	-	A	63,45
29.190.6000	23.291/23.292 (M3-4-5-6-8-10-12)	-	-	-	B	81,35

> 29.195 INTERNATIONAL TOOLS

- NL ECO PRO Set machinetappen (combinatie)
- FR Jeu de tarauds machine ECO PRO (combinaison)
- ES Juego de machos máquina ECO PRO (combinación)
- DE ECO PRO Satz Maschinengewindebohren (Kombination)
- EN ECO PRO machine tap Set (combination)

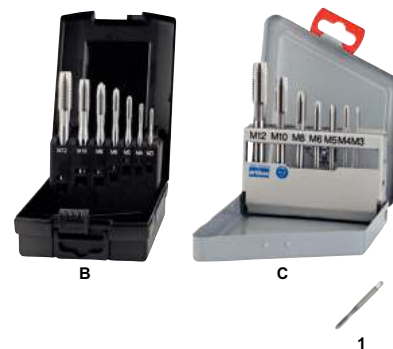


M **ISO 2 6H** **ECO PRO**

Ref.	1	2	3	4	A, B, C	€
29.195.1000	22.195/22.196 (M3-4-5-6-8-10-12)	-	-	-	B	114,00
29.195.1250	22.197/22.198 (M3-4-5-6-8-10-12)	-	-	-	B	167,00
29.195.1500	22.595/22.596 (M3-4-5-6-8-10-12)	-	-	-	B	140,00
29.195.2000	22.195/22.196 (M3-4-5-6-8-10-12)	11.420 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	-	B	125,00
29.195.2250	22.195/22.196 (M3-4-5-6-8-10-12)	11.420 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	81.905 (Nr. 1,5)	B	156,00
29.195.2500	22.195/22.196 (M3-4-5-6-8-10-12)	11.490 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	-	B	145,00
29.195.3000	22.195 (M4-5-6-8-10)	11.420 (3,3-4,2-5-6,8-8,5)	42.535 (10,4 16,5)	-	A	107,00
29.195.3500	22.197 (M4-5-6-8-10)	11.431 (3,3-4,2-5-6,8-8,5)	42.536 (10,4 16,5)	-	A	168,00
29.195.4000	22.197/22.198 (M3-4-5-6-8-10-12)	11.431 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	-	B	197,00
29.195.5000	22.197/22.198 (M3-4-5-6-8-10-12)	11.490 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	-	B	198,00
29.195.6000	23.295/23.296 (M3-4-5-6-8-10-12)	-	-	-	B	122,00

**> 29.250 Phantom**

NL Set machinetappen
FR Jeu de tarauds machine
ES Juego de machos máquina
DE Satz Maschinengewindebohren
EN Machine tap Set



Ref.	1	B, C	€
29.250.2000	22.200/22.201 (M3-4-5-6-8-10-12)	B	176,00
29.250.2100	22.201 (M3-4-5-6-8-10-12)	C	241,00
29.250.2120	22.230/22.231 (M3-4-5-6-8-10-12)	B	217,00
29.250.2150	22.205 (M3-4-5-6-8-10-12)	C	153,00
29.250.2500	22.268/22.269 (M3-4-5-6-8-10-12)	B	338,00
29.250.2600	22.600/22.601 (M3-4-5-6-8-10-12)	B	220,00
29.250.3300	23.300/23.301 (M3-4-5-6-8-10-12)	B	191,00
29.250.3450	23.450/23.451 (M3-4-5-6-8-10-12)	B	228,00

> 29.260 Phantom

NL Set machinetappen (combinatie)
FR Jeu de tarauds machine (combinaison)
ES Juego de machos máquina (combinación)
DE Satz Maschinengewindebohren (Kombination)
EN Machine tap Set (combination)



Ref.	1	2	3	A, B, C	€
29.260.1980	22.200/22.201 (M3-4-5-6-8-10-12)	11.450 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	209,00
29.260.1990	22.200/22.201 (M3-4-5-6-8-10-12)	11.451 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	215,30
29.260.1995	22.200/22.201 (M3-4-5-6-8-10-12)	11.461 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	216,00
29.260.2000	22.200/22.201 (M3-4-5-6-8-10-12)	11.500 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	227,00
29.260.2100	22.201 (M3-4-5-6-8-10-12)	11.500 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	C	271,00
29.260.2120	22.230/22.231 (M3-4-5-6-8-10-12)	11.461 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	257,00
29.260.2200	22.220/22.221 (M3-4-5-6-8-10-12)	11.451 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	218,00
29.260.2240	22.220 (M4-5-6-8-10)	11.451 (3,3-4,2-5-6,8-8,5)	42.540 (10,4 16,5)	A	187,00
29.260.2500	22.268/22.269 (M3-4-5-6-8-10-12)	11.568 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	428,00
29.260.2600	22.600/22.601 (M3-4-5-6-8-10-12)	11.760 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	277,00
29.260.3340	23.300/23.301 (M3-4-5-6-8-10-12)	11.450 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	224,00
29.260.3350	23.300/23.301 (M3-4-5-6-8-10-12)	11.451 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	215,10
29.260.3355	23.300/23.301 (M3-4-5-6-8-10-12)	11.461 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	231,00
29.260.3360	23.300/23.301 (M3-4-5-6-8-10-12)	11.500 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	242,00
29.260.3450	23.450/23.451 (M3-4-5-6-8-10-12)	11.760 (2,5-3,3-4,2-5-6,8-8,5-10,2)	-	B	285,00

> 29.300 **INTERNATIONAL
TOOLS**

NL ECO Set Draadeinduithalers
 FR Jeu d'extracteurs, goujons et tubes cassés ECO
 ES Juego de extractores de tornillos rotos ECO
 DE ECO Satz Schraubenausdreher
 EN ECO Set Extractors for broken screws, bolts etc.



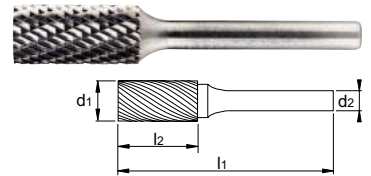
ECO

Ref.	1	€
29.300.0100	28.800 Nr. 1-5 / M3-M18	12,00
29.300.0200	28.800 Nr. 1-6 / M3-M24	16,00
29.300.0300	28.800 Nr. 1-8 / M3-M45	38,00



> 41.410 INTERNATIONAL TOOLS

NL ECO PRO HM Stiftfrees model A, cilindrisch
FR Fraise lime Carbure ECO PRO Forme A, forme cylindrique
ES Fresa rotativa MD ECO PRO forma A, cilindrico
DE ECO PRO HM Frässtift Form A, Zylinderform
EN ECO PRO SC Burr model A, cylindrical



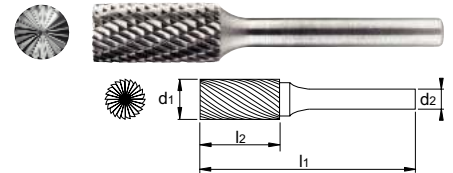
HM A $\emptyset 3$ $\emptyset 6$ ECO PRO

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.410.0336	3	3	38	14	3	6-UNI	7,71
41.410.0606	6	6	50	18	6	6-UNI	12,06
41.410.0806	8	8	65	20	6	6-UNI	16,18

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.410.1006	10	10	65	20	6	6-UNI	17,46
41.410.1206	12	12	70	25	6	6-UNI	27,45
41.410.1606	16	16	70	25	6	6-UNI	34,55

> 41.420 INTERNATIONAL TOOLS

NL ECO PRO HM Stiftfrees model B, cilindrisch met kopvertanding
FR Fraise lime Carbure ECO PRO Forme B, Forme cylindrique avec denture en bout
ES Fresa rotativa MD ECO PRO forma B, cilíndrico con corte al centro
DE ECO PRO HM Frässtift Form B, Zylinderform mit Stirverzahnung
EN ECO PRO SC Burr model B, cylindrical with End Cut



HM B $\emptyset 3$ $\emptyset 6$ ECO PRO

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.420.0336	3	3	38	14	3	6-UNI	8,48
41.420.0606	6	6	50	18	6	6-UNI	12,98
41.420.0806	8	8	65	20	6	6-UNI	17,86

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.420.1006	10	10	65	20	6	6-UNI	19,14
41.420.1206	12	12	70	25	6	6-UNI	30,40
41.420.1606	16	16	70	25	6	6-UNI	37,90

> 41.430 INTERNATIONAL TOOLS

NL ECO PRO HM Stiftfrees model C, cilindrisch, ronde kop
FR Fraise lime Carbure ECO PRO Forme C, Forme cylindrique à bout arrondi
ES Fresa rotativa MD ECO PRO forma C, cilíndrico, forma semiesférica
DE ECO PRO HM Frässtift Form C, Walzenrundform
EN ECO PRO SC Burr model C, Cylindrical, ball nose



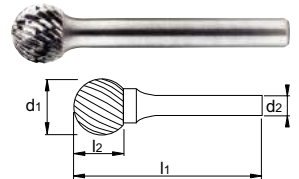
HM C $\emptyset 3$ $\emptyset 6$ ECO PRO

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.430.0336	3	3	38	14	3	6-UNI	7,71
41.430.0606	6	6	50	18	6	6-UNI	13,75
41.430.0806	8	8	65	20	6	6-UNI	19,81

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.430.1006	10	10	65	20	6	6-UNI	20,03
41.430.1206	12	12	70	25	6	6-UNI	29,55
41.430.1606	16	16	70	25	6	6-UNI	37,75

> 41.440 INTERNATIONAL TOOLS

NL ECO PRO HM Stiftfrees model D, kogelvorm
FR Fraise lime Carbure ECO PRO Forme D, Forme sphérique
ES Fresa rotativa MD ECO PRO forma D, modelo esférico
DE ECO PRO HM Frässtift Form D, Kugelform
EN ECO PRO SC Burr model D, ball



HM D $\emptyset 3$ $\emptyset 6$ ECO PRO

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.440.0336	3	3	38	2,5	3	6-UNI	7,71
41.440.0606	6	6	50	5	6	6-UNI	13,36
41.440.0806	8	8	52	7	6	6-UNI	14,38

Ref.	\emptyset	d1	l1	l2	d2	z	€
41.440.1006	10	10	54	9	6	6-UNI	16,32
41.440.1206	12	12	56	11	6	6-UNI	20,80
41.440.1606	16	16	59	14	6	6-UNI	28,90

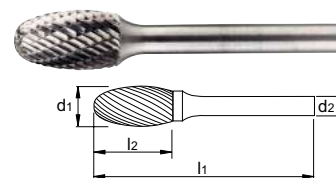
> 41.450 INTERNATIONAL TOOLS

NL ECO PRO HM Stiffrees model E, druppelvorm
 FR Fraise lime Carbure ECO PRO Forme E, Forme goutte
 ES Fresa rotativa MD ECO PRO forma E, forma oval
 DE ECO PRO HM Frässtift Form E, Tropfenform
 EN ECO PRO SC Burr model E, Oval



Ref.	Ø	d1	l1	l2	d2	z	€
41.450.0336	3	3	38	6	3	6-UNI	7,71
41.450.0606	6	6	50	10	6	6-UNI	15,30
41.450.0806	8	8	60	15	6	6-UNI	18,96

Ref.	Ø	d1	l1	l2	d2	z	€
41.450.1006	10	10	60	15	6	6-UNI	20,29
41.450.1206	12	12	65	20	6	6-UNI	29,80
41.450.1606	16	16	70	25	6	6-UNI	43,05

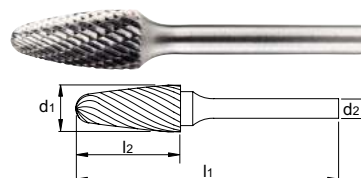
**> 41.460 INTERNATIONAL TOOLS**

NL ECO PRO HM Stiffrees model F, boomvorm met ronde kop
 FR Fraise lime Carbure ECO PRO Forme F, Forme ogive à bout arrondi
 ES Fresa rotativa MD ECO PRO forma F, forma ojival en semiesférica
 DE ECO PRO HM Frässtift Form F, Rundbogenform
 EN ECO PRO SC Burr model F, Ball nose tree



Ref.	Ø	d1	l1	l2	d2	z	€
41.460.0336	3	3	38	14	3	6-UNI	7,71
41.460.0606	6	6	50	18	6	6-UNI	15,30
41.460.0806	8	8	65	20	6	6-UNI	18,96

Ref.	Ø	d1	l1	l2	d2	z	€
41.460.1006	10	10	65	20	6	6-UNI	20,43
41.460.1206	12	12	70	25	6	6-UNI	29,80
41.460.1606	16	16	70	25	6	6-UNI	43,05

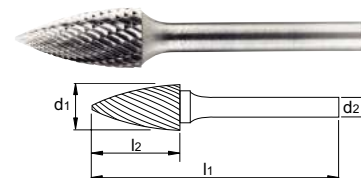
**> 41.470 INTERNATIONAL TOOLS**

NL ECO PRO HM Stiffrees model G, boomvorm spits
 FR Fraise lime Carbure ECO PRO Forme G, Forme ogive
 ES Fresa rotativa MD ECO PRO forma G, forma ojival en punta
 DE ECO PRO HM Frässtift Form G, Spitzbogenform
 EN ECO PRO SC Burr model G, pointed tree



Ref.	Ø	d1	l1	l2	d2	z	€
41.470.0336	3	3	38	14	3	6-UNI	7,71
41.470.0606	6	6	50	18	6	6-UNI	15,30
41.470.0806	8	8	65	20	6	6-UNI	19,70

Ref.	Ø	d1	l1	l2	d2	z	€
41.470.1006	10	10	65	20	6	6-UNI	19,01
41.470.1206	12	12	70	25	6	6-UNI	29,80
41.470.1606	16	16	70	25	6	6-UNI	42,85

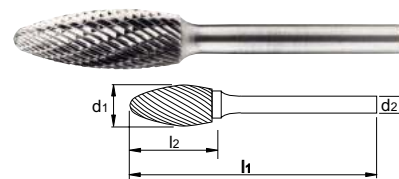
**> 41.480 INTERNATIONAL TOOLS**

NL ECO PRO HM Stiffrees model H, vlamvorm
 FR Fraise lime Carbure ECO PRO Forme H, Forme flamme
 ES Fresa rotativa MD ECO PRO forma H, forma llama
 DE ECO PRO HM Frässtift Form H, Flammenform
 EN ECO PRO SC Burr model H, flame



Ref.	Ø	d1	l1	l2	d2	z	€
41.480.0336	3	3	38	6	3	6-UNI	7,71
41.480.0606	6	6	50	14	6	6-UNI	16,69
41.480.0806	8	8	65	20	6	6-UNI	20,03

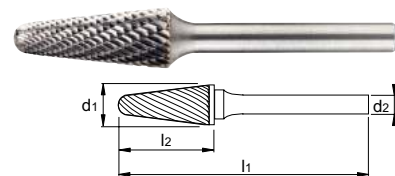
Ref.	Ø	d1	l1	l2	d2	z	€
41.480.1006	10	10	65	20	6	6-UNI	38,05
41.480.1206	12	12	75	30	6	6-UNI	37,60
41.480.1606	16	16	80	35	6	6-UNI	59,85





> 41.486 INTERNATIONAL TOOLS

- NL ECO PRO HM Stiffrees model L, kegelvorm, met ronde kop
 FR Fraise lime Carbure ECO PRO Forme L, Forme conique à bout arrondi
 ES Fresa rotativa MD ECO PRO forma L, forma cónica, con punta redondeada
 DE ECO PRO HM Frässtift Form L, Rundkegelform
 EN ECO PRO SC Burr model L, ball nose cone



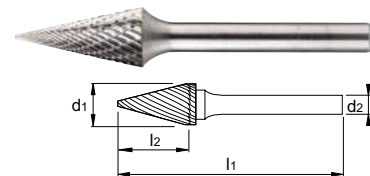
HM L Ø3 Ø6 **ECO PRO**

Ref.	Ø	d1	l1	l2	d2	z	€
41.486.0336	3	3	38	14	3	6-UNI	7,71
41.486.0606	6	6	50	18	6	6-UNI	15,30
41.486.0806	8	8	70	25	6	6-UNI	21,72

Ref.	Ø	d1	l1	l2	d2	z	€
41.486.1006	10	10	65	20	6	6-UNI	23,12
41.486.1206	12	12	75	30	6	6-UNI	31,50
41.486.1606	16	16	78	33	6	6-UNI	57,30

> 41.488 INTERNATIONAL TOOLS

- NL ECO PRO HM Stiffrees model M, kegelvorm, spits
 FR Fraise lime Carbure ECO PRO Forme M, Forme conique à bout pointu
 ES Fresa rotativa MD ECO PRO forma M, forma cónica, en punta
 DE ECO PRO HM Frässtift Form M, Spitzkegelform
 EN ECO PRO SC Burr model M, cone



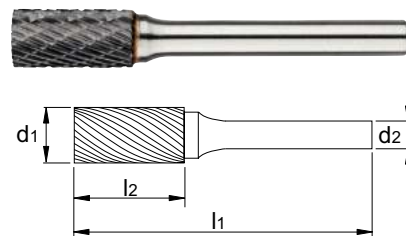
HM M Ø3 Ø6 **ECO PRO**

Ref.	Ø	d1	l1	l2	d2	z	€
41.488.0336	3	3	38	11	3	6-UNI	7,71
41.488.0606	6	6	50	20	6	6-UNI	15,41
41.488.0806	8	8	65	20	6	6-UNI	21,72

Ref.	Ø	d1	l1	l2	d2	z	€
41.488.1006	10	10	65	20	6	6-UNI	22,48
41.488.1206	12	12	71	26	6	6-UNI	28,75
41.488.1606	16	16	70	25	6	6-UNI	39,95

> 41.510 **Phantom**

NL HM Stiffrees model A, cilindrisch, schacht 6 mm
 FR Fraise lime Carbure Forme A, forme cylindrique, queue 6 mm
 ES Fresa rotativa MD forma A, cilíndrico, mango 6 mm
 DE HM Frässtift Form A, Zylinderform, Schaft 6 mm
 EN SC Burr model A, cylindrical, shank 6 mm



1-ALU	3-FINE	4-DIAMOND	6-UNI	8-STEEL	9-INOX
N	P M K S H	P M S	P M K S H	P K	M

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18	41.510.0601	25,75	41.510.0603	19,97	41.510.0604	21,20	41.510.0606	20,17	41.510.0608	22,24	41.510.0609	24,33
8	8	6	64	19	41.510.0801	32,65	41.510.0803	26,85	41.510.0804	28,50	41.510.0806	27,10	41.510.0808	29,90	41.510.0809	32,65
10	9,5	6	64	19	41.510.1001	35,40	41.510.1003	28,90	41.510.1004	30,60	41.510.1006	29,15	41.510.1008	32,00	41.510.1009	34,75
12	12,7	6	70	25	41.510.1201	54,90	41.510.1203	45,40	41.510.1204	47,90	41.510.1206	45,85	41.510.1208	50,10	41.510.1209	54,90
16	16	6	70	25	41.510.1601	69,05			41.510.1604	60,50	41.510.1606	57,65				
20	19	6	70	25							41.510.2006	86,90				

> 41.511 **Phantom**

NL HM Stiffrees model A, cilindrisch, schacht 6 mm, TiAlN
 FR Fraise lime Carbure Forme A, forme cylindrique, queue 6 mm, TiAlN
 ES Fresa rotativa MD forma A, cilíndrico, mango 6 mm, TiAlN
 DE HM Frässtift Form A, Zylinderform, Schaft 6 mm, TiAlN
 EN SC Burr model A, cylindrical, shank 6 mm, TiAlN



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18							41.511.0606	25,70				
8	8	6	64	19							41.511.0806	32,65				
10	9,5	6	64	19							41.511.1006	37,50				
12	12,7	6	70	25							41.511.1206	57,65				

> 41.513 **Phantom**

NL HM Stiffrees model A, cilindrisch, schacht 3 mm
 FR Fraise lime Carbure Forme A, forme cylindrique, queue 3 mm
 ES Fresa rotativa MD forma A, cilíndrico, mango 3 mm
 DE HM Frässtift Form A, Zylinderform, Schaft 3 mm
 EN SC Burr model A, cylindrical, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
1,5	1,5	3	38	6			41.513.0153	10,08	41.513.0154	11,11						
2	2	3	38	11							41.513.0206	10,62				
3	3	3	38	14	41.513.0301	14,59	41.513.0303	10,08	41.513.0304	11,11	41.513.0306	10,71			41.513.0309	14,59
6	6,3	3	45	12,7							41.513.0636	18,76			41.513.0639	27,45

> 41.518 **Phantom**

NL HM Stiffrees model A, cilindrisch, schacht 8 mm
 FR Fraise lime Carbure Forme A, forme cylindrique, queue 8 mm
 ES Fresa rotativa MD forma A, cilíndrico, mango 8 mm
 DE HM Frässtift Form A, Zylinderform, Schaft 8 mm
 EN SC Burr model A, cylindrical, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	70	25							41.518.1286	45,85				
16	16	8	70	25	41.518.1681	69,05					41.518.1686	57,65				
20	19	8	70	25							41.518.2086	86,90				



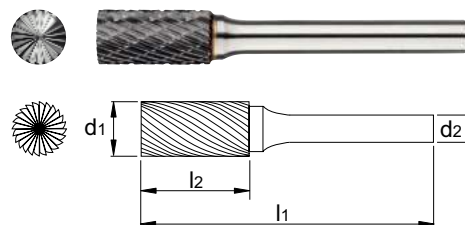
NL Stiffrezen keuzehulp
 FR Aide à la sélection des fraises lime
 ES Ayuda para la selección de fresas rotativas
 DE Auswahlhilfe Frässtifte
 EN Selection guide for burrs



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> 41.520 Phantom

- NL HM Stiffrees model B, cilindrisch met kopvertanding, schacht 6 mm
 FR Fraise lime Carbure Forme B, Forme cylindrique avec denture en bout, queue 6 mm
 ES Fresa rotativa MD forma B, cilíndrico con corte al centro, mango 6 mm
 DE HM Frässtift Form B, Zylinderform mit Stirnverzahnung, Schaft 6 mm
 EN SC Burr model B, cylindrical with End Cut, shank 6 mm



1-ALU	3-FINE	4-DIAMOND	6-UNI	8-STEEL	9-INOX
N	P M K S H	P M S	P M K S H	P K	M

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18	41.520.0601	27,75	41.520.0603	21,48	41.520.0604	22,93	41.520.0606	21,68	41.520.0608	24,33		
8	8	6	64	19	41.520.0801	35,85	41.520.0803	29,60	41.520.0804	31,25	41.520.0806	29,90	41.520.0808	32,65		
10	9,5	6	64	19	41.520.1001	38,20	41.520.1003	31,60	41.520.1004	33,35	41.520.1006	32,00	41.520.1008	37,80		
12	12,7	6	70	25	41.520.1201	60,50	41.520.1203	50,75	41.520.1204	53,55	41.520.1206	50,75	41.520.1208	55,60		
16	16	6	70	25			41.520.1603	63,20	41.520.1604	66,70	41.520.1606	63,20				
20	19	8	70	25							41.520.2006	90,30				

> 41.521 Phantom

- NL HM Stiffrees model B, cilindrisch met kopvertanding, schacht 6 mm, TiAIN
 FR Fraise lime Carbure Forme B, Forme cylindrique avec denture en bout, queue 6 mm, TiAIN
 ES Fresa rotativa MD forma B, cilíndrico con corte al centro, mango 6 mm, TiAIN
 DE HM Frässtift Form B, Zylinderform mit Stirnverzahnung, Schaft 6 mm, TiAIN
 EN SC Burr model B, cylindrical with End Cut, shank 6 mm, TiAIN



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18							41.521.0606	27,25				
8	8	6	64	19							41.521.0806	35,40				
10	9,5	6	64	19							41.521.1006	40,30				
12	12,7	6	70	25							41.521.1206	62,55				

> 41.523 Phantom

- NL HM Stiffrees model B, cilindrisch met kopvertanding, schacht 3 mm
 FR Fraise lime Carbure Forme B, Forme cylindrique avec denture en bout, queue 3 mm
 ES Fresa rotativa MD forma B, cilíndrico con corte al centro, mango 3 mm
 DE HM Frässtift Form B, Zylinderform mit Stirnverzahnung, Schaft 3 mm
 EN SC Burr model B, cylindrical with End Cut, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
1,5	1,5	3	38	6			41.523.0153	10,08								
2	2	3	38	11							41.523.0206	10,62				
3	3	3	38	14	41.523.0301	14,59	41.523.0303	10,08	41.523.0304	11,11	41.523.0306	10,71				
5	5	3	38	12,7							41.523.0506	30,00				
6	6,3	3	38	12,7							41.523.0636	22,24				

> 41.528 Phantom

- NL HM Stiffrees model B, cilindrisch met kopvertanding, schacht 8 mm
 FR Fraise lime Carbure Forme B, Forme cylindrique avec denture en bout, queue 8 mm
 ES Fresa rotativa MD forma B, cilíndrico con corte al centro, mango 8 mm
 DE HM Frässtift Form B, Zylinderform mit Stirnverzahnung, Schaft 8 mm
 EN SC Burr model B, cylindrical with End Cut, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	70	25							41.528.1286	50,75				
16	16	8	70	25							41.528.1686	63,20				
20	19	8	70	25							41.528.2086	90,30				

> 41.529 Phantom

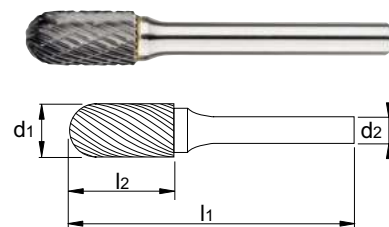
- NL HM Stiffrees model B, cilindrisch met kopvertanding, schacht 6 mm, lang
 FR Fraise lime Carbure Forme B, Forme cylindrique avec denture en bout, queue 6 mm, version longue
 ES Fresa rotativa MD forma B, cilíndrico con corte al centro, mango 6 mm, larga
 DE HM Frässtift Form B, Zylinderform mit Stirnverzahnung, Schaft 6 mm, lang
 EN SC Burr model B, cylindrical with End Cut, shank 6 mm, long


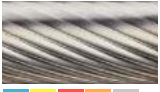
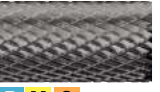
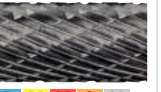
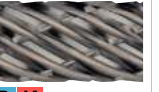



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	162	12,7					41.529.0614	38,20						
10	9,5	6	170	19					41.529.1014	49,30						
12	12,7	6	175	25					41.529.1214	68,85						

> 41.530 **Phantom**

NL HM Stiffrees model C, cilindrisch, ronde kop, schacht 6 mm
 FR Fraise lime Carbure Forme C, Forme cylindrique à bout arrondi, queue 6 mm
 ES Fresa rotativa MD forma C, cilíndrico, forma semiesférica, mango 6 mm
 DE HM Frässtift Form C, Walzenrundform, Schaft 6 mm
 EN SC Burr model C, Cylindrical, ball nose, shank 6 mm



1-ALU	3-FINE	4-DIAMOND	6-UNI	8-STEEL	9-INOX
					
N	P M K S H	P M S	P M K S H	P K	M

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	6	60	15							41.530.0306	29,90				
4	4	6	60	15							41.530.0406	29,90				
6	6	6	50	18	41.530.0601	29,90	41.530.0603	22,70	41.530.0604	24,33	41.530.0606	22,93	41.530.0608	25,00	41.530.0609	27,10
6	6	6	60	18							41.530.0616	30,85				
6	6	6	100	18							41.530.0636	66,75				
8	8	6	64	19	41.530.0801	39,60	41.530.0803	32,35	41.530.0804	35,40	41.530.0806	34,75	41.530.0808	38,20	41.530.0809	41,00
10	9,5	6	64	19	41.530.1001	39,70	41.530.1003	33,00	41.530.1004	35,40	41.530.1006	33,35	41.530.1008	36,85	41.530.1009	39,70
12	12,7	6	70	25	41.530.1201	61,15	41.530.1203	48,20	41.530.1204	52,15	41.530.1206	49,30	41.530.1208	54,20	41.530.1209	59,00
16	16	6	70	25	41.530.1601	77,90	41.530.1603	61,25	41.530.1604	65,60	41.530.1606	62,85				
20	19	6	70	25							41.530.2006	95,20				

> 41.531 **Phantom**

NL HM Stiffrees model C, cilindrisch, ronde kop, schacht 6 mm, TiAIN
 FR Fraise lime Carbure Forme C, Forme cylindrique à bout arrondi, queue 6 mm, TiAIN
 ES Fresa rotativa MD forma C, cilíndrico, forma semiesférica, mango 6 mm, TiAIN
 DE HM Frässtift Form C, Walzenrundform, Schaft 6 mm, TiAIN
 EN SC Burr model C, Cylindrical, ball nose, shank 6 mm, TiAIN



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18							41.531.0606	29,15				
8	8	6	64	19							41.531.0806	43,70				
10	9,5	6	64	19							41.531.1006	43,15				
12	12,7	6	70	25							41.531.1206	62,40				

> 41.533 **Phantom**

NL HM Stiffrees model C, cilindrisch, ronde kop, schacht 3 mm
 FR Fraise lime Carbure Forme C, Forme cylindrique à bout arrondi, queue 3 mm
 ES Fresa rotativa MD forma C, cilíndrico, forma semiesférica, mango 3 mm
 DE HM Frässtift Form C, Walzenrundform, Schaft 3 mm
 EN SC Burr model C, Cylindrical, ball nose, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
2	2	3	38	11			41.533.0203	10,08			41.533.0206	10,62				
3	3	3	38	14	41.533.0301	14,59	41.533.0303	10,08	41.533.0304	11,11	41.533.0306	10,71			41.533.0309	14,59
6	6,3	3	45	12,7			41.533.0633	18,76	41.533.0634	20,84	41.533.0636	18,76			41.533.0639	27,10

> 41.538 **Phantom**

NL HM Stiffrees model C, cilindrisch, ronde kop, schacht 8 mm
 FR Fraise lime Carbure Forme C, Forme cylindrique à bout arrondi, queue 8 mm
 ES Fresa rotativa MD forma C, cilíndrico, forma semiesférica, mango 8 mm
 DE HM Frässtift Form C, Walzenrundform, Schaft 8 mm
 EN SC Burr model C, Cylindrical, ball nose, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	70	25							41.538.1286	49,30				
16	16	8	70	25							41.538.1686	62,85				
19	19	8	70	25							41.538.2086	95,20				

> 41.539 **Phantom**

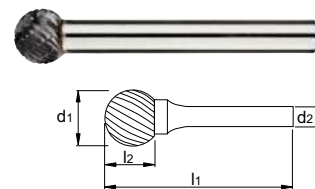
NL HM Stiffrees model C, cilindrisch, ronde kop, schacht 6 mm, lang
 FR Fraise lime Carbure Forme C, Forme cylindrique à bout arrondi, queue 6 mm, version longue
 ES Fresa rotativa MD forma C, cilíndrico, forma semiesférica, mango 6 mm, larga
 DE HM Frässtift Form C, Walzenrundform, Schaft 6 mm, lang
 EN SC Burr model C, Cylindrical, ball nose, shank 6 mm, long




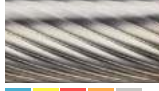
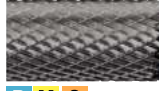
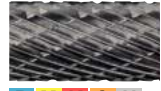
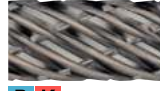

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	162	12,7					41.539.0614	39,70						
10	9,5	6	170	19					41.539.1014	47,60						
12	12,7	6	175	25					41.539.1214	65,85						



> 41.540 **Phantom**



- NL HM Stiffrees model D, kogelvorm, schacht 6 mm
- FR Fraise lime Carbure Forme D, Forme sphérique, queue 6 mm
- ES Fresa rotativa MD forma D, modelo esférico, mango 6 mm
- DE HM Frässtift Form D, Kugelform, Schaft 6 mm
- EN SC Burr model D, ball, shank 6 mm

1-ALU	3-FINE	4-DIAMOND	6-UNI	8-STEEL	9-INOX
					
N	P M K S H	P M S	P M K S H	P K	M

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	5	41.540.0601	29,15	41.540.0603	21,75	41.540.0604	23,34	41.540.0606	22,24	41.540.0608	24,33	41.540.0609	26,40
8	8	6	50	6,4	41.540.0801	30,70	41.540.0803	23,39	41.540.0804	25,35	41.540.0806	23,90	41.540.0808	26,40	41.540.0809	29,15
10	9,5	6	52	8	41.540.1001	34,05	41.540.1003	26,15	41.540.1004	28,20	41.540.1006	27,10	41.540.1008	29,90	41.540.1009	32,65
12	12,7	6	55	11	41.540.1201	44,45	41.540.1203	34,05	41.540.1204	36,50	41.540.1206	34,75	41.540.1208	38,20	41.540.1209	41,65
16	16	6	58	14	41.540.1601	57,05					41.540.1606	48,20				
20	19	6	62	16							41.540.2006	66,05				

> 41.543 **Phantom**



- NL HM Stiffrees model D, kogelvorm, schacht 3 mm
- FR Fraise lime Carbure Forme D, Forme sphérique, queue 3 mm
- ES Fresa rotativa MD forma D, modelo esférico, mango 3 mm
- DE HM Frässtift Form D, Kugelform, Schaft 3 mm
- EN SC Burr model D, ball, shank 3 mm

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
2	2	3	38	1,8			41.543.0203	10,08			41.543.0206	10,62				
3	3	3	38	2,5	41.543.0301	14,59	41.543.0303	10,08	41.543.0304	11,11	41.543.0306	10,71			41.543.0309	14,59
4	4	3	38	3,4			41.543.0403	29,90			41.543.0406	32,00				
6	6,3	3	38	5	41.543.0631	25,70	41.543.0633	20,84			41.543.0636	18,76			41.543.0639	27,75

> 41.548 **Phantom**



- NL HM Stiffrees model D, kogelvorm, schacht 8 mm
- FR Fraise lime Carbure Forme D, Forme sphérique, queue 8 mm
- ES Fresa rotativa MD forma D, modelo esférico, mango 8 mm
- DE HM Frässtift Form D, Kugelform, Schaft 8 mm
- EN SC Burr model D, ball, shank 8 mm

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	56	11							41.548.1286	34,75				
16	16	8	59	14							41.548.1686	47,90				
20	19	8	62	16,5							41.548.2086	64,60				

> 41.549 **Phantom**

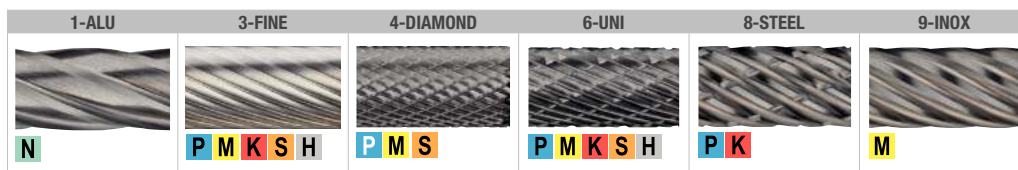
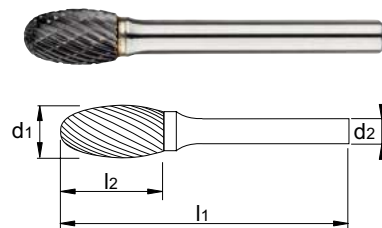


- NL HM Stiffrees model D, kogelvorm, schacht 6 mm, lang
- FR Fraise lime Carbure Forme D, Forme sphérique, queue 6 mm, version longue
- ES Fresa rotativa MD forma D, modelo esférico, mango 6 mm, larga
- DE HM Frässtift Form D, Kugelform, Schaft 6 mm, lang
- EN SC Burr model D, ball, shank 6 mm, long

Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
10	9,5	6	158	8					41.549.1014	43,15						
12	12,7	6	161	11					41.549.1214	52,40						

> 41.550 **Phantom**

NL HM Stiffrees model E, druppelvorm, schacht 6 mm
 FR Fraise lime Carbure Forme E, Forme goutte, queue 6 mm
 ES Fresa rotativa MD forma E, forma oval, mango 6 mm
 DE HM Frässtift Form E, Tropfenform, Schaft 6 mm
 EN SC Burr model E, Oval, shank 6 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	9,5	41.550.0601	35,80					41.550.0606	27,75				
8	8	6	60	15							41.550.0806	34,05			41.550.0809	36,85
10	9,5	6	60	16	41.550.1001	44,00			41.550.1004	37,15	41.550.1006	35,80			41.550.1009	41,65
12	12,7	6	66	22	41.550.1201	62,55			41.550.1204	52,30	41.550.1206	50,20			41.550.1209	59,00
16	16	6	70	25							41.550.1606	75,65				

> 41.553 **Phantom**

NL HM Stiffrees model E, druppelvorm, schacht 3 mm
 FR Fraise lime Carbure Forme E, Forme goutte, queue 3 mm
 ES Fresa rotativa MD forma E, forma oval, mango 3 mm
 DE HM Frässtift Form E, Tropfenform, Schaft 3 mm
 EN SC Burr model E, Oval, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	3	38	5,5							41.553.0306	10,71				
6	6,3	3	42	9,5							41.553.0636	18,76				

> 41.559 **Phantom**

NL HM Stiffrees model E, druppelvorm, schacht 6 mm, lang
 FR Fraise lime Carbure Forme E, Forme goutte, queue 6 mm, version longue
 ES Fresa rotativa MD forma E, forma oval, mango 6 mm, larga
 DE HM Frässtift Form E, Tropfenform, Schaft 6 mm, lang
 EN SC Burr model E, Oval, shank 6 mm, long



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
10	9,5	6	166	16					41.559.1014	51,05						



NL Stiffrees keuzehulp
 FR Aide à la sélection des fraises lime
 ES Ayuda para la selección de fresas rotativas
 DE Auswahlhilfe Frässtifte
 EN Selection guide for burrs

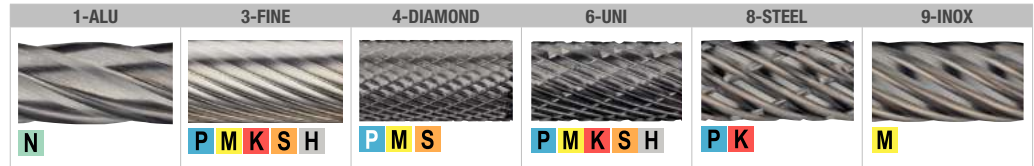
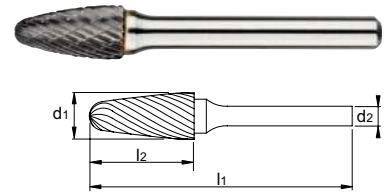
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> 41.560 Phantom

- NL HM Stiffrees model F, boomvorm met ronde kop, schacht 6 mm
 FR Fraise lime Carbure Forme F, Forme ogive à bout arrondi, queue 6 mm
 ES Fresa rotativa MD forma F, forma ojival en semiesférica, mango 6 mm
 DE HM Frässtift Form F, Rundbogenform, Schaft 6 mm
 EN SC Burr model F, Ball nose tree, shank 6 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18	41.560.0601	32,35	41.560.0603	24,08	41.560.0604	26,45	41.560.0606	25,45	41.560.0608	27,10	41.560.0609	29,55
8	8	6	65	20							41.560.0806	34,05	41.560.0808	33,35	41.560.0809	36,85
10	9,5	6	64	19	41.560.1001	41,30	41.560.1003	32,35	41.560.1004	35,80	41.560.1006	33,70	41.560.1008	36,85	41.560.1009	39,70
12	12,7	6	70	25	41.560.1201	57,75	41.560.1203	47,50	41.560.1204	52,30	41.560.1206	49,60	41.560.1208	53,15	41.560.1209	58,35
16	16	6	70	25	41.560.1601	82,45			41.560.1604	74,35	41.560.1606	71,55				

> 41.561 Phantom

- NL HM Stiffrees model F, boomvorm met ronde kop, schacht 6 mm, TiAIN
 FR Fraise lime Carbure Forme F, Forme ogive à bout arrondi, queue 6 mm, TiAIN
 ES Fresa rotativa MD forma F, forma ojival en semiesférica, mango 6 mm, TiAIN
 DE HM Frässtift Form F, Rundbogenform, Schaft 6 mm, TiAIN
 EN SC Burr model F, Ball nose tree, shank 6 mm, TiAIN



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18							41.561.0606	31,90				
10	9,5	6	64	19							41.561.1006	42,40				
12	12,7	6	70	25							41.561.1206	61,90				

> 41.563 Phantom

- NL HM Stiffrees model F, boomvorm met ronde kop, schacht 3 mm
 FR Fraise lime Carbure Forme F, Forme ogive à bout arrondi, queue 3 mm
 ES Fresa rotativa MD forma F, forma ojival en semiesférica, mango 3 mm
 DE HM Frässtift Form F, Rundbogenform, Schaft 3 mm
 EN SC Burr model F, Ball nose tree, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	3	38	12,7	41.563.0301	14,59	41.563.0303	10,08	41.563.0304	11,11	41.563.0306	10,71			41.563.0309	14,59
6	6,3	3	45	12,7	41.563.0631	25,70	41.563.0633	18,76			41.563.0636	18,76			41.563.0639	27,75

> 41.568 Phantom

- NL HM Stiffrees model F, boomvorm met ronde kop, schacht 8 mm
 FR Fraise lime Carbure Forme F, Forme ogive à bout arrondi, queue 8 mm
 ES Fresa rotativa MD forma F, forma ojival en semiesférica, mango 8 mm
 DE HM Frässtift Form F, Rundbogenform, Schaft 8 mm
 EN SC Burr model F, Ball nose tree, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	70	25							41.568.1286	48,65				
16	16	8	70	25							41.568.1686	69,45				
20	19	8	82	38							41.568.2086	118,10				

> 41.569 Phantom

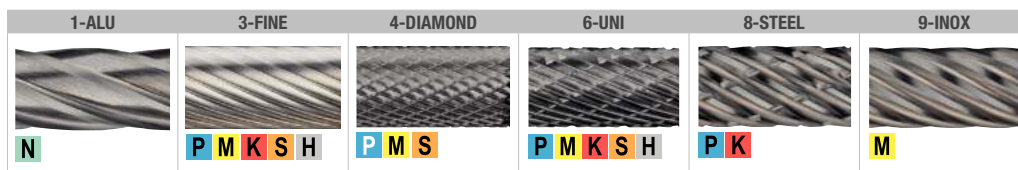
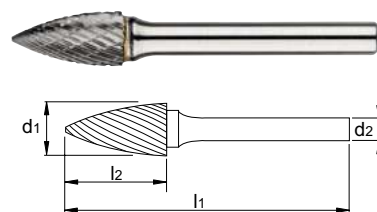
- NL HM Stiffrees model F, boomvorm met ronde kop, schacht 6 mm, lang
 FR Fraise lime Carbure Forme F, Forme ogive à bout arrondi, queue 6 mm, version longue
 ES Fresa rotativa MD forma F, forma ojival en semiesférica, mango 6 mm, larga
 DE HM Frässtift Form F, Rundbogenform, Schaft 6 mm, lang
 EN SC Burr model F, Ball nose tree, shank 6 mm, long



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	6	175	25					41.569.1214	61,15						

> 41.570 **Phantom**

NL HM Stiffrees model G, boomvorm spits, schacht 6 mm
 FR Fraise lime Carbure Forme G, Forme ogive, queue 6 mm
 ES Fresa rotativa MD forma G, forma ojival en punta, mango 6 mm
 DE HM Frässtift Form G, Spitzbogenform, Schaft 6 mm
 EN SC Burr model G, pointed tree, shank 6 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	18	41.570.0601	32,35	41.570.0603	24,08	41.570.0604	26,45	41.570.0606	25,45	41.570.0608	27,10	41.570.0609	29,55
8	8	6	64	19	41.570.0801	44,00	41.570.0803	32,35	41.570.0804	35,80	41.570.0806	34,40	41.570.0808	36,85	41.570.0809	40,30
10	9,5	6	64	19	41.570.1001	41,30	41.570.1003	30,25	41.570.1004	33,35	41.570.1006	31,60	41.570.1008	34,75	41.570.1009	37,50
12	12,7	6	70	25	41.570.1201	57,75	41.570.1203	47,50	41.570.1204	52,30	41.570.1206	49,60	41.570.1208	52,80	41.570.1209	58,35
16	16	6	70	25	41.570.1601	82,45	41.570.1603	67,45	41.570.1604	74,35	41.570.1606	71,55				

> 41.573 **Phantom**

NL HM Stiffrees model G, boomvorm spits, schacht 3 mm
 FR Fraise lime Carbure Forme G, Forme ogive, queue 3 mm
 ES Fresa rotativa MD forma G, forma ojival en punta, mango 3 mm
 DE HM Frässtift Form G, Spitzbogenform, Schaft 3 mm
 EN SC Burr model G, pointed tree, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	3	38	10	41.573.0301	14,59	41.573.0303	10,08	41.573.0304	11,11	41.573.0306	10,71				
6	6,3	3	45	12,7			41.573.0633	18,76			41.573.0636	18,76				

> 41.578 **Phantom**

NL HM Stiffrees model G, boomvorm spits, schacht 8 mm
 FR Fraise lime Carbure Forme G, Forme ogive, queue 8 mm
 ES Fresa rotativa MD forma G, forma ojival en punta, mango 8 mm
 DE HM Frässtift Form G, Spitzbogenform, Schaft 8 mm
 EN SC Burr model G, pointed tree, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	70	25							41.578.1286	48,65				
16	16	8	70	25							41.578.1686	69,45				
20	19	8	83	38							41.578.2086	118,10				

> 41.579 **Phantom**

NL HM Stiffrees model G, boomvorm spits, schacht 6 mm, lang
 FR Fraise lime Carbure Forme G, Forme ogive, queue 6 mm, version longue
 ES Fresa rotativa MD forma G, forma ojival en punta, mango 6 mm, larga
 DE HM Frässtift Form G, Spitzbogenform, Schaft 6 mm, lang
 EN SC Burr model G, pointed tree, shank 6 mm, long



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	164	12,7					41.579.0614	41,80						
10	9,5	6	170	19					41.579.1014	48,65						
12	12,7	6	175	25					41.579.1214	61,15						



NL Stiffrezen keuzehulp
 FR Aide à la sélection des fraises lime
 ES Ayuda para la selección de fresas rotativas
 DE Auswahlhilfe Frässtifte
 EN Selection guide for burrs

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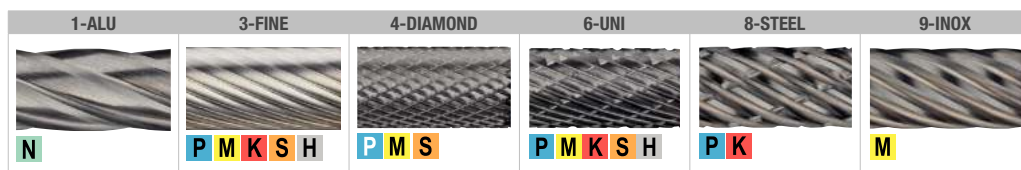
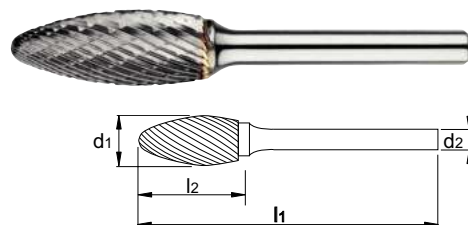


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> 41.580 Phantom

NL HM Stiftrees model H, vlamvorm, schacht 6 mm
 FR Fraise lime Carbure Forme H, Forme flamme, queue 6 mm
 ES Fresa rotativa MD forma H, forma llama, mango 6 mm
 DE HM Frässtift Form H, Flammenform, Schaft 6 mm
 EN SC Burr model H, flame, shank 6 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	9,5							41.580.0606	27,75				
8	8	6	64	19	41.580.0801	39,95	41.580.0803	32,65	41.580.0804	35,40	41.580.0806	33,35	41.580.0808	36,85	41.580.0809	40,30
10	9,5	6	65	19							41.580.1006	66,45			41.580.1009	72,25
12	12,7	6	77	32	41.580.1201	80,30	41.580.1203	61,25	41.580.1204	66,00	41.580.1206	62,55	41.580.1208	68,85	41.580.1209	75,15
16	16	6	80	36							41.580.1606	100,00				

> 41.583 Phantom

NL HM Stiftrees model H, vlamvorm, schacht 3 mm
 FR Fraise lime Carbure Forme H, Forme flamme, queue 3 mm
 ES Fresa rotativa MD forma H, forma llama, mango 3 mm
 DE HM Frässtift Form H, Flammenform, Schaft 3 mm
 EN SC Burr model H, flame, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	3	38	6,3							41.583.0306	10,71				
6	6	3	43	10							41.583.0636	20,84				

> 41.588 Phantom

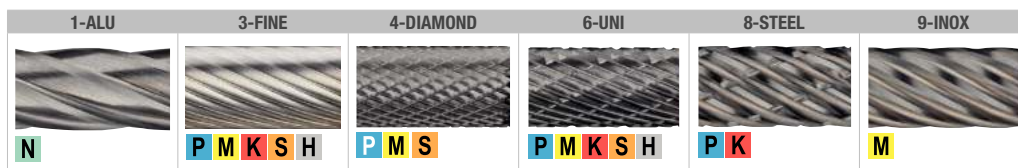
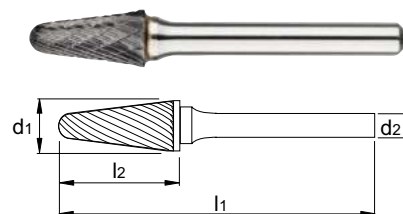
NL HM Stiftrees model H, vlamvorm, schacht 8 mm
 FR Fraise lime Carbure Forme H, Forme flamme, queue 8 mm
 ES Fresa rotativa MD forma H, forma llama, mango 8 mm
 DE HM Frässtift Form H, Flammenform, Schaft 8 mm
 EN SC Burr model H, flame, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	77	32							41.588.1286	62,55				
16	16	8	36	81							41.588.1686	98,70				
20	19	8	86	41							41.588.2086	122,35				

> 41.620 **Phantom**

NL HM Stiffrees model L, kegelvorm, met ronde kop, schacht 6 mm
 FR Fraise lime Carbure Forme L, Forme conique à bout arrondi, queue 6 mm
 ES Fresa rotativa MD forma L, forma cónica, con punta redondeada, mango 6 mm
 DE HM Frässtift Form L, Rundkegelform, Schaft 6 mm
 EN SC Burr model L, ball nose cone, shank 6 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	16	41.620.0601	34,40	41.620.0603	24,08	41.620.0604	26,85	41.620.0606	25,45				
8	8	6	70	22	41.620.0801	44,00					41.620.0806	32,35			41.620.0809	38,20
10	9,5	6	74	27	41.620.1001	52,15					41.620.1006	38,60	41.620.1008	45,85	41.620.1009	50,10
12	12,7	6	76	28	41.620.1201	63,30			41.620.1204	55,00	41.620.1206	52,30	41.620.1208	57,00	41.620.1209	62,55
16	16	6	77	30							41.620.1606	85,25				

> 41.623 **Phantom**

NL HM Stiffrees model L, kegelvorm, met ronde kop, schacht 3 mm
 FR Fraise lime Carbure Forme L, Forme conique à bout arrondi, queue 3 mm
 ES Fresa rotativa MD forma L, forma cónica, con punta redondeada, mango 3 mm
 DE HM Frässtift Form L, Rundkegelform, Schaft 3 mm
 EN SC Burr model L, ball nose cone, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	3	38	12,7	41.623.0301	15,30	41.623.0303	10,08	41.623.0304	11,11	41.623.0306	10,71				

> 41.628 **Phantom**

NL HM Stiffrees model L, kegelvorm, met ronde kop, schacht 8 mm
 FR Fraise lime Carbure Forme L, Forme conique à bout arrondi, queue 8 mm
 ES Fresa rotativa MD forma L, forma cónica, con punta redondeada, mango 8 mm
 DE HM Frässtift Form L, Rundkegelform, Schaft 8 mm
 EN SC Burr model L, ball nose cone, shank 8 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	8	77	32							41.628.1286	50,75				
16	16	8	78	33							41.628.1686	84,75				
20	19	8	86	41							41.628.2086	132,00				

> 41.629 **Phantom**

NL HM Stiffrees model L, kegelvorm, met ronde kop, schacht 6 mm, lang
 FR Fraise lime Carbure Forme L, Forme conique à bout arrondi, queue 6 mm, version longue
 ES Fresa rotativa MD forma L, forma cónica, con punta redondeada, mango 6 mm, larga
 DE HM Frässtift Form L, Rundkegelform, Schaft 6 mm, lang
 EN SC Burr model L, ball nose cone, shank 6 mm, long

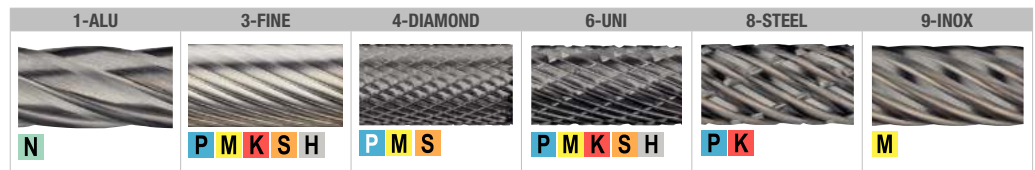
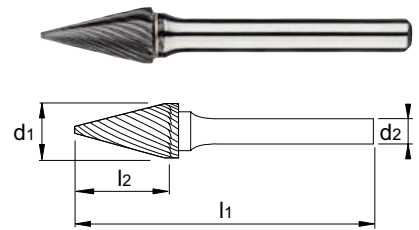


Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
12	12,7	6	178	28					41.629.1214	65,30						



> 41.630 Phantom

- NL HM Stiffrees model M, kegelvorm, spits, schacht 6 mm
 FR Fraise lime Carbure Forme M, Forme conique à bout pointu, queue 6 mm
 ES Fresa rotativa MD forma M, forma cónica, en punta, mango 6 mm
 DE HM Frässtift Form M, Spitzkegelform, Schaft 6 mm
 EN SC Burr model M, cone, shank 6 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
6	6	6	50	12,7	41.630.0601	31,60	41.630.0603	23,72			41.630.0606	25,70				
6	6	6	50	19	41.630.0611	33,70	41.630.0613	25,45			41.630.0616	26,40				
6	6	6	50	25	41.630.0621	36,45	41.630.0623	27,20			41.630.0626	30,95				
8	8	6	63	18							41.630.0806	37,25				
10	9,5	6	64	16	41.630.1001	49,60	41.630.1003	36,45			41.630.1006	37,20				
12	12,7	6	70	22	41.630.1201	63,30	41.630.1203	46,80			41.630.1206	47,60				
16	16	6	73	25			41.630.1603	71,55			41.630.1606	73,65				

> 41.633 Phantom

- NL HM Stiffrees model M, kegelvorm, spits, schacht 3 mm
 FR Fraise lime Carbure Forme M, Forme conique à bout pointu, queue 3 mm
 ES Fresa rotativa MD forma M, forma cónica, en punta, mango 3 mm
 DE HM Frässtift Form M, Spitzkegelform, Schaft 3 mm
 EN SC Burr model M, cone, shank 3 mm



Ø	d1	d2	l1	l2	1-ALU	€	3-FINE	€	4-DIAMOND	€	6-UNI	€	8-STEEL	€	9-INOX	€
3	3	3	38	11	41.633.0301	14,59	41.633.0303	10,08			41.633.0306	10,71				



- NL Stiffrees keuzehulp
 FR Aide à la sélection des fraises lime
 ES Ayuda para la selección de fresas rotativas
 DE Auswahlhilfe Frässtifte
 EN Selection guide for burrs

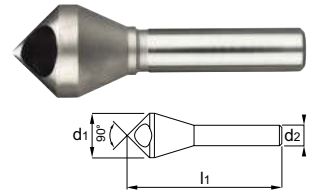
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> 42.500 **Phantom**

NL HSS-E Verzinkboor 90°, schuin gat
 FR Fraise à chanfreiner HSS-E 90°, à trou
 ES Avellanador para desbarbar HSS-E 90°, con agujero
 DE HSS-E Kegelsenker 90°, Querloch
 EN HSS-E Countersink 90°, through hole



HSS-E **90°**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
35-45 C	20-30 D	15-20 C	20-30 C	30-40 D	55-65 I	30-40 F	20-30 E	30-40 D	50-100 I

Ref.	d1	Min-Max Ø	l1	d2	€
42.500.0500	5	2-5	45	6	23,30
42.500.1000	10	4-9	45	6	23,30
42.500.1500	15	6-14	55	8	29,80
42.500.2000	20	8-18	65	10	46,60
42.500.2500	25	10-23	78	12	64,15

Ref.	d1	Min-Max Ø	l1	d2	€
42.500.2800	28	11-26	86	12	86,20
42.500.3000	30	12-28	88	12	94,90
42.500.3500	35	14-33	116	16	143,75
42.500.4000	40	16-38	132	16	204,25
42.500.5000	50	20-48	136	16	287,00

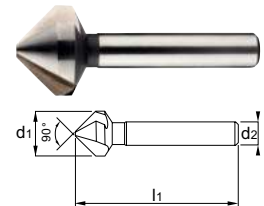


NL Verzinken keuzehulp
 FR Aide à la sélection des fraises à chanfreiner
 ES Ayuda para la selección de avellanadores
 DE Auswahlhilfe Kegelsenker
 EN Countersink selection guide



> 42.533 **INTERNATIONAL TOOLS**

NL ECO HSS Verzinkboor 90°, 3 snijkanten
 FR Fraise à chanfreiner HSS ECO 90°, 3 taillants
 ES Avellanador para desbarbar HSS ECO 90°, 3 labios
 DE ECO HSS Kegelsenker 90°, 3 Schneiden
 EN ECO HSS Countersink 90°, 3 flute



HSS

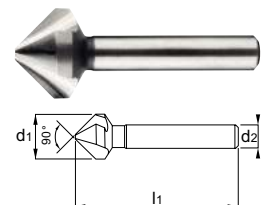
P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu
17-22	10-15	15-20	20-25	35-45

Ref.	d1	Min-Max Ø	l1	d2	€
42.533.0630	6.3	1,5-6,3	45	5	6,18
42.533.0830	8.3	2-8,3	50	6	7,49
42.533.1040	10.4	2,5-10,4	50	6	8,28
42.533.1240	12.4	2,8-12,4	56	8	9,79
42.533.1440	14.4	2,9-14,4	56	8	10,87

Ref.	d1	Min-Max Ø	l1	d2	€
42.533.1650	16.5	3,2-16,5	60	10	12,16
42.533.2050	20.5	3,5-20,5	63	10	15,58
42.533.2500	25	3,8-25	67	10	22,42
42.533.3100	31	4,2-31	71	12	32,80

> 42.535 **INTERNATIONAL TOOLS**

NL ECO PRO HSS Verzinkboor 90°, 3 snijkanten
 FR Fraise à chanfreiner HSS ECO PRO 90°, 3 taillants
 ES Avellanador para desbarbar HSS ECO PRO 90°, 3 labios
 DE ECO PRO HSS Kegelsenker 90°, 3 Schneiden
 EN ECO PRO HSS Countersink 90°, 3 flute



HSS

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu
15-20	8-12	6-10	10-15	15-20	30-40	20-25	15-25

Ref.	d1	Min-Max Ø	l1	d2	€
42.535.0630	6.3	1,5-6,3	45	5	11,33
42.535.0830	8.3	2-8,3	50	6	13,59
42.535.1040	10.4	2,5-10,4	50	6	14,43
42.535.1240	12.4	2,8-12,4	56	8	18,40
42.535.1440	14.4	2,9-14,4	56	10	21,25

Ref.	d1	Min-Max Ø	l1	d2	€
42.535.1650	16.5	3,2-16,5	60	10	22,65
42.535.2050	20.5	3,5-20,5	63	10	26,50
42.535.2500	25	3,8-25	67	10	38,95
42.535.3100	31	4,2-31	71	12	60,60

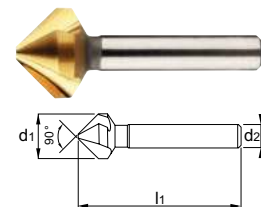
> 42.536 INTERNATIONAL TOOLS

NL ECO PRO HSS Verzinkboor 90°, TiN, 3 snijkanten
 FR Fraise à chanfreiner HSS ECO PRO 90°, TiN, 3 taillants
 ES Avellanador para desbarbar HSS ECO PRO 90°, TiN, 3 labios
 DE ECO PRO HSS Kegelsenker 90°, TiN, 3 Schneiden
 EN ECO PRO HSS Countersink 90°, TiN, 3 flute

HSS	TiN	DIN 335-C			
P 11 ≤800 N/mm²	P 12 ≤850 N/mm²	P 13 ≤1000 N/mm²	M 21 INOX ≤850N/mm²	K 31 GG	K 32 GGG GTS-GTW
N 41 Alu	N 42 Alu Si>10%	N 51 Cu			
15-20	8-12	6-10	5-10	10-15	15-20

Ref.	d1	Min-Max Ø	l1	d2	€
42.536.0630	6.3	1,5-6,3	45	5	14,27
42.536.0830	8.3	2-8,3	50	6	16,98
42.536.1040	10.4	2,5-10,4	50	6	18,34
42.536.1240	12.4	2,8-12,4	56	8	22,42
42.536.1440	14.4	2,9-14,4	56	10	25,65

Ref.	d1	Min-Max Ø	l1	d2	€
42.536.1650	16.5	3,2-16,5	60	10	27,15
42.536.2050	20.5	3,5-20,5	63	10	34,00
42.536.2500	25	3,8-25	67	10	48,95
42.536.3100	31	4,2-31	71	12	72,20

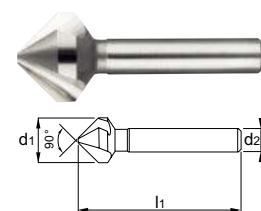
**> 42.540 Phantom**

NL HSS-E Verzinkboor 90°, 3 snijkanten
 FR Fraise à chanfreiner HSS-E 90°, 3 taillants
 ES Avellanador para desbarbar HSS-E 90°, 3 labios
 DE HSS-E Kegelsenker 90°, 3 Schneiden
 EN HSS-E Countersink 90°, 3 flute

HSS-E	DIN 335-C			
P 11 ≤800 N/mm²	P 12 ≤850 N/mm²	P 13 ≤1000 N/mm²	P 14 ≤1400 N/mm²	M 21 INOX ≤850N/mm²
M 22 INOX >850N/mm²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%
N 51 Cu	N 52 CuAlFe	N 61 PVC		
17-22 C	10-15 C	8-12 B	4-8 A	8-12 B

Ref.	d1	Min-Max Ø	l1	d2	€
42.540.0430	4.3	1,3-4,3	40	4	18,54
42.540.0530	5.3	1,5-5,3	40	4	19,03
42.540.0630	6.3	1,5-6,3	45	5	19,51
42.540.0730	7.3	1,8-7,3	50	6	19,51
42.540.0830	8.3	2-8,3	50	6	20,01
42.540.0940	9.4	2,2-9,4	50	6	21,25
42.540.1040	10.4	2,5-10,4	50	6	23,13
42.540.1240	12.4	2,8-12,4	56	8	25,35
42.540.1440	14.4	2,9-14,4	56	8	27,85

Ref.	d1	Min-Max Ø	l1	d2	€
42.540.1650	16.5	3,2-16,5	60	10	30,35
42.540.2050	20.5	3,5-20,5	63	10	46,30
42.540.2500	25	3,8-25	67	10	60,80
42.540.2800	28	4-28	71	12	82,95
42.540.3100	31	4-31	71	12	90,30
42.540.3500	35	7-35	107	16	167,80
42.540.4000	40	8-40	111	16	221,80
42.540.5000	50	10-50	120	16	312,00

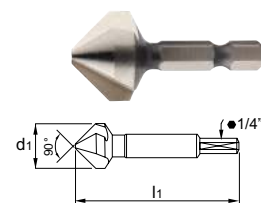
**> 42.543 INTERNATIONAL TOOLS**

NL ECO HSS Verzinkboor 90°, 3 snijkanten, met 1/4" (6,35 mm)-
 zeskant bitopname
 FR Fraise à chanfreiner HSS ECO 90°, 3 taillants, avec queue
 hexagonale 1/4" (6,35 mm)
 ES Avellanador para desbarbar HSS ECO 90°, 3 labios, con sujeción
 1/4" (6,35 mm) bit
 DE ECO HSS Kegelsenker 90°, 3 Schneiden, mit 1/4" (6,35 mm)
 Hexa-Bitafnahme
 EN ECO HSS Countersink 90°, 3 flute, with hexagonal shank 1/4"
 (6,35 mm)

HSS	NORM				
P 11 ≤800 N/mm²	P 12 ≤850 N/mm²	P 13 ≤1000 N/mm²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu
N 42 Alu Si>10%	N 51 Cu				
15-20	8-12	6-10	10-15	15-20	30-40

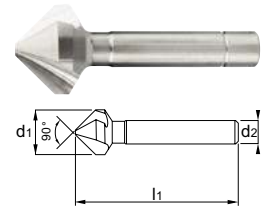
Ref.	d1	Min-Max Ø	l1	€
42.543.0630	6.3	1,5-6,3	50	6,81
42.543.0830	8.3	2-8,3	50	8,16
42.543.1040	10.4	2,5-10,4	50	9,52

Ref.	d1	Min-Max Ø	l1	€
42.543.1240	12.4	2,8-12,4	50	11,55
42.543.1650	16.5	3,2-16,5	50	14,95
42.543.2050	20.5	3,5-20,5	50	18,34



> 42.553 Phantom

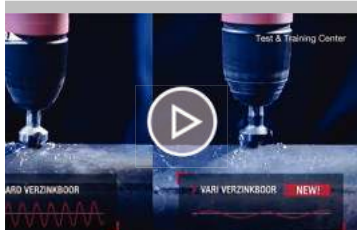
NL HSS-E Vari Verzinkboor 90°, 3 snijkanten
 FR Fraise à chanfreiner Vari HSS-E 90°, 3 taillants
 ES Avellanador Vari HSS-E 90°, 3 labios
 DE HSS-E Kegelsenker ungleichteilung 90°, 3 Schneiden
 EN HSS-E Vari Countersink 90°, 3 flute



HSS-E **DIN 335-C**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
17-22 C	10-15 C	8-12 B	4-8 A	8-12 B	6-10 A	15-20 C	20-25 C	35-45 D	30-40 C	15-25 D	20-30 C	35-70 I

Ref.	d1	Min-Max Ø	l1	d2	€	Ref.	d1	Min-Max Ø	l1	d2	€
42.553.0430	4.3	1,3-4,3	40	4	21,17	42.553.1240	12.4	2,8-12,4	56	8	25,85
42.553.0600	6	1,5-6	45	5	22,34	42.553.1500	15	3,2-15	60	10	30,60
42.553.0630	6.3	1,5-6,3	45	5	22,34	42.553.1650	16.5	3,2-16,5	60	10	30,60
42.553.0800	8	2-8	50	6	23,52	42.553.1900	19	3,5-19	63	10	40,00
42.553.0830	8.3	2-8,3	50	6	23,52	42.553.2050	20.5	3,5-20,5	63	10	41,15
42.553.1000	10	2,5-10	50	6	23,52	42.553.2300	23	3,8-23	67	10	50,55
42.553.1040	10.4	2,5-10,4	50	6	23,52	42.553.2500	25	3,8-25	67	10	50,55
42.553.1150	11.5	2,8-11,5	50	8	25,85	42.553.3100	31	6-31	71	12	77,60



NL Vari verzinkboren in actie
 FR Il n'y pas de limites avec notre nouvelle génération de fraise à chanfreiner
 ES Los avellanadores Vari en acción
 DE Vari-Kegelsenker in Aktion
 EN Vari-countersinks in action

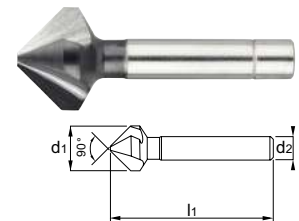
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> 42.554 Phantom

NL HSS-E Vari Verzinkboor 90°, 3 snijkanten, TiAIN
 FR Fraise à chanfreiner Vari HSS-E 90°, 3 taillants, TiAIN
 ES Avellanador Vari HSS-E 90°, 3 labios, TiAIN
 DE HSS-E Kegelsenker ungleichteilung 90°, 3 Schneiden, TiAIN
 EN HSS-E Vari Countersink 90°, 3 flute, TiAIN



HSS-E **TiAIN** **DIN 335-C**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC	S 72 Ti
35-45 C	20-30 C	16-20 B	8-15 A	12-15 B	8-12 A	20-30 C	30-40 C	50-60 D	35-40 C	20-30 D	30-40 C	35-70 I	4-8 A

Ref.	d1	Min-Max Ø	l1	d2	€	Ref.	d1	Min-Max Ø	l1	d2	€
42.554.0430	4.3	1,3-4,3	40	4	24,70	42.554.1240	12.4	2,8-12,4	56	8	37,90
42.554.0600	6	1,5-6	45	5	25,85	42.554.1500	15	3,2-15	60	10	42,80
42.554.0630	6.3	1,5-6,3	45	5	25,85	42.554.1650	16.5	3,2-16,5	60	10	42,80
42.554.0800	8	2-8	50	6	29,40	42.554.1900	19	3,5-19	63	10	53,80
42.554.0830	8.3	2-8,3	50	6	29,40	42.554.2050	20.5	3,5-20,5	63	10	55,55
42.554.1000	10	2,5-10	50	6	30,60	42.554.2300	23	3,8-23	67	10	67,30
42.554.1040	10.4	2,5-10,4	50	6	30,60	42.554.2500	25	3,8-25	67	10	67,95
42.554.1150	11.5	2,8-11,5	50	8	37,90	42.554.3100	31	6-31	71	12	107,65



NL Dwaarsgat- eensnijder- en driesnijderverzinker
 FR Différences entre une fraise à chanfreiner à trou, une fraise à chanfreiner à 1 dent et une fraise à chanfreiner à 3 dents
 ES Avellanador con agujero, 1 labio o 3 labios
 DE Querlochsenger, Einschneidersenger, Dreischneidersenger
 EN Hole, single flute, 3 flute countersinker

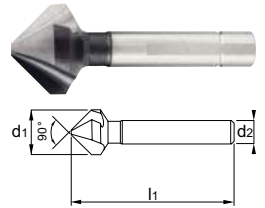
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**> 42.556 Phantom**

- NL HSS-E Vari Verzinkboor 90°, 3 snijkanten, TiAlN, met drievlaks schacht
 FR Fraise à chanfreiner Vari HSS-E 90°, 3 taillants, TiAlN, à 3 méplats
 ES Avellanador Vari HSS-E 90°, 3 labios, TiAlN, con 3 chafflanes
 DE HSS-E Kegelsenker ungleichteilung 90°, 3 Schneiden, TiAlN, mit drei platten Flächen
 EN HSS-E Vari Countersink 90°, 3 flute, TiAlN, with 3 flat surfaces

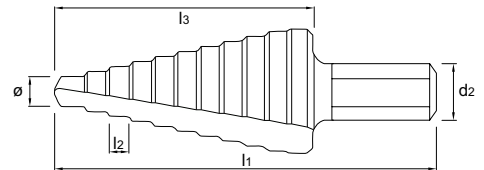


HSS-E	TiAlN	DIN 335-C											
P 11	P 12	P 13	P 14	M 21	M 22	K 31	K 32	N 41	N 42	N 51	N 52	N 61	S 72
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	≤1400 N/mm ²	INOX ≤850N/mm ²	INOX >850N/mm ²	GG	GGG GTS-GTW	Alu	Alu Si>10%	Cu	CuAlFe	PVC	Ti
35-45 C	20-30 C	16-20 B	8-15 A	12-15 B	8-12 A	20-30 C	30-40 C	50-60 D	35-40 C	20-30 D	30-40 C	35-70 I	4-8 A

Ref.	d1	Min-Max Ø	l1	d2	€	Ref.	d1	Min-Max Ø	l1	d2	€
42.556.0430	4.3	1,3-4,3	40	4	28,20	42.556.1240	12.4	2,8-12,4	56	8	40,00
42.556.0600	6	1,5-6	45	5	29,40	42.556.1500	15	3,2-15	60	10	46,50
42.556.0630	6.3	1,5-6,3	45	5	29,40	42.556.1650	16.5	3,2-16,5	60	10	46,95
42.556.0800	8	2-8	50	6	32,95	42.556.1900	19	3,5-19	63	10	57,45
42.556.0830	8.3	2-8,3	50	6	32,95	42.556.2050	20.5	3,5-20,5	63	10	59,25
42.556.1000	10	2,5-10	50	6	34,25	42.556.2300	23	3,8-23	67	10	70,95
42.556.1040	10.4	2,5-10,4	50	6	34,25	42.556.2500	25	3,8-25	67	10	72,30
42.556.1150	11.5	2,8-11,5	50	8	40,00	42.556.3100	31	6-31	71	12	113,40

> 44.100 Phantom

- NL HSS Getrapte Plaatboor stoomtlaten
 FR Foret étagé HSS vaporisé
 ES Broca escalonada HSS vaporizada
 DE HSS Stufenbohrer dampfangelassen
 EN HSS multi diameter Step Drill steam oxide

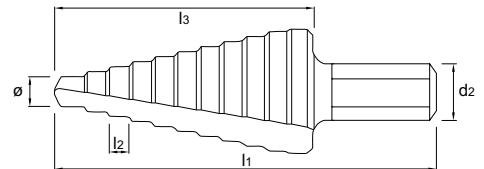


Z=2	HSS	OX.						
P 11	P 12	P 13	M 21	K 31	K 32	N 42	N 51	N 61
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu Si>10%	Cu	PVC
25-27	22-30	15-20	8-12	15-20	25-30	45-50	25-40	22-28

Ref.	xØ	Ø mm	l1	l2	d2	l3	€
44.100.0100	9	4-5-6-7-8-9-10-11-12	64	4	10	39	55,10
44.100.0200	11	6-8-10-12-14-16-18-20-22-24-25	77	4	12	52	82,90
44.100.0300	7	6-8-10-12-14-16-18	59	4	10	34	70,90
44.100.0400	14	8-10-12-14-16-18-20-22-24-26-28-30-32-34	92	4	12	67	155,00

> 44.102 Phantom

- NL HSS Getrapte Plaatboor genitreerd
 FR Foret étagé HSS nitrué
 ES Broca escalonada HSS nitrurada
 DE HSS Stufenbohrer nitriert
 EN HSS multi diameter Step Drill nitrided

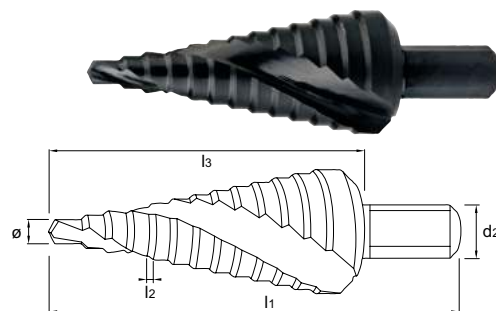


Z=2	HSS	NIT.						
P 11	P 12	P 13	M 21	K 31	K 32	N 42	N 51	N 61
≤500 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	INOX ≤850N/mm ²	GG	GGG GTS-GTW	Alu Si>10%	Cu	PVC
25-27	22-30	15-20	8-12	15-20	25-30	45-50	25-40	22-28

Ref.	xØ	Ø mm	l1	l2	d2	l3	€
44.102.0412	5	4-6-8-10-12	65	4	10	43	25,20
44.102.0420	9	4-6-8-10-12-14-16-18-20	69	4	12	44	54,15
44.102.0630	13	6-8-10-12-14-16-18-20-22-24-26-28-30	88	4	13	65	65,10
44.102.0638	12	6-9-13-16-19-21-23-26-29-32-35-38	87	4	13	63	89,75

> 44.130 **Phantom**

NL HSS Getrapte Plaatboor gepsiraliseerd, genitreerd
 FR Foret étagé HSS goujure hélicoïdale, nitruré
 ES Broca escalonada HSS helicoidal, nitrurada
 DE HSS Stufenbohrer spiralförmig, nitriert
 EN HSS multi diametre Step Drill with spiral flute, nitrided



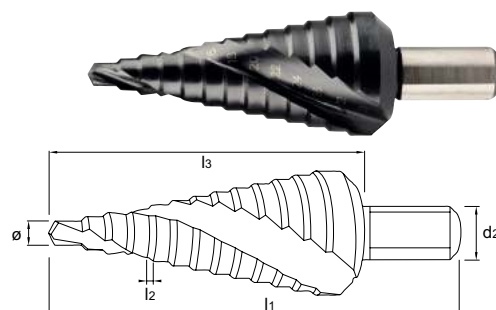
Z=2 HSS NIT. max. 4 mm

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27	22-30	15-20	8-12	5-8	15-20	25-30	45-50	25-40	22-28

Ref.	xØ	Ø mm	l1	l2	d2	l3	€
44.130.0100	5	4-6-8-10-12	65	4	8	43	27,80
44.130.0200	9	4-6-8-10-12-14-16-18-20	75	4	10	53	42,70
44.130.0300	13	6-8-10-12-14-16-18-20-22-24-26-28-30	98	4	13	74	73,55

> 44.134 **Phantom**

NL HSS Getrapte Plaatboor gepsiraliseerd, TiAlN
 FR Foret étagé HSS goujure hélicoïdale, TiAlN
 ES Broca escalonada HSS helicoidal, TiAlN
 DE HSS Stufenbohrer spiralförmig, TiAlN
 EN HSS multi diametre Step Drill with spiral flute, TiAlN



Z=2 HSS TiAlN max. 4 mm

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27	22-30	15-20	8-12	5-8	15-20	25-30	45-50	25-40	22-28

Ref.	xØ	Ø mm	l1	l2	d2	l3	€
44.134.0100	5	4-6-8-10-12	65	4	8	43	47,45
44.134.0200	9	4-6-8-10-12-14-16-18-20	75	4	10	53	66,00
44.134.0300	13	6-8-10-12-14-16-18-20-22-24-26-28-30	98	4	13	74	106,75



NL Trapboor vs spiraalboor
 FR Foret étagé versus foret standard cylindrique
 ES Broca escalonada o Broca cilíndrica
 DE Stufenbohrer vs Spiralbohrer
 EN Step drill vs twist drill

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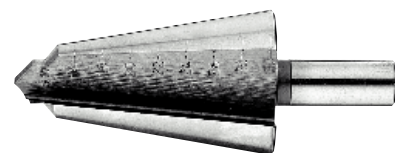


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> 44.200 Phantom

NL HSS Conische Plaatboor
FR Foret conique HSS
ES Fresa cónica HSS
DE HSS konische Blechschälbohrer
EN HSS Taper Sheet and Tube Drill



Z=2 HSS   

P 11 **P 12** **N 41** **N 42** **N 61**
≤600 N/mm² ≤850 N/mm² Alu Alu Si>10% PVC

25-27 22-30 50-70 40-60 22-28

Ref.	Min-Max Ø	l1	d2	€
44.200.0100	3-14	62	6	29,85
44.200.0200	6-20	70	8	34,65
44.200.0300	16-30	75	10	65,05
44.200.0400	26-40	78	12	134,40

Ref.	Min-Max Ø	l1	d2	€
44.200.0500	36-50	78	12	209,35
44.200.0600	46-60	78	13	380,00
44.200.0700	6-30	95	10	76,55
44.200.0800	6-25,4	84	8	62,70

> 46.100 SHAVIV

NL Handgrepen en Onderdelen
 FR Manches et accessoires
 ES Mangos y Accesorios
 DE Handgriffe und Einzelteile
 EN Handles and Accessories

Ref.	Type	€	Ref.	Type	€
46.100.0010	Mango II B, C, D, E, F, Burr-Bi, M	10,84	46.100.1200	ALU B, C, D, E, F, Burr-Bi, M	18,69
46.100.1000	Clas-sic A B, C, D, E, F, Burr-Bi, M	10,37	46.100.1300	Set HC Ø 1,0 - 8,0 mm, C55	46,60

> 46.120 SHAVIV

NL Handontbramer en mesjes type B
 FR Ebavureur et lames type B
 ES Desbarbador y cuchillas tipo B
 DE Handentgrater und Klängen Typ B
 EN Handle and blades type B

Ref.	Type					P	H	M	K	N	
46.120.0250	Mango II, B, B10, B20										28,00
46.120.0255	Mango II, B, B10, B20										16,94
46.120.0260	Mango II, B, 10x B10										37,25
46.120.0265	Mango II, B, 10x B10										24,29
46.120.0500	UB2000										21,87
46.120.1001	B										2,98
46.120.1002	B										12,96
46.120.2100	B10					P				N	2,36
46.120.2101	B10P					P		M		N	3,80
46.120.2102	B10C						H			N	13,09
46.120.2109	B10L					P				N	2,62
46.120.2110	B11					P				N	2,72
46.120.2120	B12					P				N	2,36
46.120.2121	B12P					P		M		N	3,90
46.120.2200	B20								K	N	2,36
46.120.2201	B20P								K	N	3,90
46.120.2250	B25					P				N	2,36
46.120.2252	B25C					P				N	13,09
46.120.2300	B30					P				N	3,29
46.120.2301	B30P					P		M		N	5,19
46.120.2320	B32								K	N	3,29
46.120.2500	B50					P	H	M	K	N	9,09
46.120.2600	B60					P				N	5,08
46.120.2700	B70					P	H	M	K	N	11,96



**> 46.300 SHAVIV**

NL Handontbramer en mesjes type E
FR Ebavureur et lames type E
ES Desbarbador y cuchillas tipo E
DE Handentgrater und Klängen Typ E
EN Handle and blades type

Ref.	Type					P	H	M	K	N	€
46.300.0250	Mango II, E, E100, E200, E300										32,30
46.300.0255	Mango IIE, E100, E200, E300										21,10
46.300.0260	Mango II, E, 10x E100										43,05
46.300.0265	Mango II, E, 10x E100										30,10
46.300.1000	SHAVIV 1, E100, E200, E300										25,90
46.300.1100	SHAVIV 1 (A)										15,71
46.300.1500	MB2000										18,69
46.300.2001	E										3,13
46.300.2002	E										12,96
46.300.2100	E100					P				N	2,82
46.300.2101	E100P					TiN P		M		N	4,72
46.300.2102	E100C					VHM SC	H			N	15,25
46.300.2104	E100S					P		M		N	3,03
46.300.2109	E100L					P				N	2,93
46.300.2110	E110					P				N	2,93
46.300.2111	E110P					TiN P		M		N	4,93
46.300.2150	E111					P				N	2,93
46.300.2200	E200								K	N	2,82
46.300.2201	E200P					TiN			K	N	4,72
46.300.2250	E250					P				N	2,82
46.300.2300	E300					P				N	3,29
46.300.2320	E320								K	N	3,29
46.300.2350	E350								K	N	2,82
46.300.2600	E600					P				N	5,13
46.300.2601	E601					P				N	6,52
46.300.2720	E720					P				N	3,59

> 49.140 INTERNATIONAL TOOLS

NL ECO PRO HM Set Stiffrezen
 FR Jeu de Fraises limes Carbone ECO PRO
 ES Juego de fresa rotativa MD ECO PRO
 DE ECO PRO HM Satz Frässtifte
 EN ECO PRO SC Set Burr



VHM SC Ø6 ECO PRO

Ref.	Ø	z	Contents	€
49.140.0106	10	6-UNI	Form B, C, D, F, G	97,25

Ref.	Ø	z	Contents	€
49.140.0126	12	6-UNI	Form B, C, D, F, G	142,50

> 49.150 Phantom

NL HM set Stiffrezen
 FR Jeu de Fraises limes Carbone
 ES Juego de fresa rotativa MD
 DE HM Satz Frässtifte
 EN SC set Burr



VHM SC Ø6

Ref.	Ø	z	Contents	€
49.150.0101	10	1-ALU	Form B, C, D, F, G	195,20
49.150.0103	10	3-FINE	Form B, C, D, F, G	172,00
49.150.0104	10	4-DIAMOND	Form B, C, D, F, G	178,90
49.150.0106	10	6-UNI	Form B, C, D, F, G	161,80

Ref.	Ø	z	Contents	€
49.150.0108	10	8-STEEL	Form B, C, D, F, G	152,90
49.150.0109	10	9-INOX	Form A, C, D, F, G	159,60
49.150.0126	12	6-UNI	Form B, C, D, F, G	234,00

> 49.240 INTERNATIONAL TOOLS

NL ECO HSS Set Verzinkboren 42.533, 90°, 3 snijkanten
 FR Jeu de fraises à ébavurer HSS ECO 42.533, 90°, 3 taillants
 ES Juego de avellanadores HSS ECO 42.533, 90°, 3 labios
 DE ECO HSS Satz Kegelsenker 42.533, 90°, 3 Schneiden
 EN ECO HSS Countersink set 42.533, 90°, 3 flute



HSS DIN 335-C 3 90° ECO

P 11 ≤800 N/mm²	P 12 ≤850 N/mm²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu
17-22	10-15	15-20	20-25	35-45

Ref.	Type	Ø mm	€
49.240.0630	42.533	6,3-8,3-10,4-12,4-16,5-20,5 mm	63,70

Ref.	Type	Ø mm	€
49.240.0631	42.533	6,3-8,3-10,4-12,4-16,5-20,5-25 mm	81,00

> 49.242 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Verzinkboren 42.535, 90°, 3 snijkanten
 FR Jeu de fraises à ébavurer HSS ECO PRO 42.535, 90°, 3 taillants
 ES Juego de avellanadores HSS ECO PRO 42.535, 90°, 3 labios
 DE ECO PRO HSS Satz Kegelsenker 42.535, 90°, 3 Schneiden
 EN ECO PRO HSS Countersink set 42.535, 90°, 3 flute



HSS DIN 335-C 3 90° ECO PRO

P 11 ≤800 N/mm²	P 12 ≤850 N/mm²	P 13 ≤1000 N/mm²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu
15-20	8-12	6-10	10-15	15-20	30-40	20-25	15-25

Ref.	Type	Ø mm	€
49.242.0630	42.535	6,3-8,3-10,4-12,4-16,5-20,5 mm	119,15

Ref.	Type	Ø mm	€



> 49.244 INTERNATIONAL TOOLS

NL ECO PRO HSS Set Verzinkboren 42.536, 90°, 3 snijkanten, TiN
 FR Jeu de fraises à ébavurer HSS ECO PRO 42.536, 90°, 3 taillants, TiN
 ES Juego de avellanadores HSS ECO PRO 42.536, 90°, 3 labios, TiN
 DE ECO PRO HSS Satz Kegelsenker 42.536, 90°, 3 Schneiden, TiN
 EN ECO PRO HSS Countersink set 42.536, 90°, 3 flute, TiN

HSS	TiN	DIN 335-C						
P 11 ≤500 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu
15-20	8-12	6-10	5-10	10-15	15-20	30-40	20-25	15-25

Ref.	Type	Ø mm	€
49.244.0630	42.536	6,3-8,3-10,4-12,4-16,5-20,5 mm	133,00

Ref.	Type	Ø mm	€

> 49.248 INTERNATIONAL TOOLS

NL ECO HSS set Verzinkboren 42.543, 90°, 3 snijkanten, met 1/4" (6,35 mm)-zeskant bitopname
 FR Jeu de fraises à ébavurer HSS ECO 42.543, 90°, 3 taillants, avec queue hexagonale 1/4" (6,35 mm)
 ES Juego de avellanadores HSS ECO 42.543, 90°, 3 labios, con sujeción 1/4" (6,35 mm) bit
 DE ECO HSS Satz Kegelsenker 42.543, 90°, 3 Schneiden, mit 1/4" (6,35 mm) Hexa-Bit Aufnahme
 EN ECO HSS Countersink set 42.543, 90°, 3 flute, with hexagonal shank 1/4" (6,35 mm)

HSS		90°					
P 11 ≤500 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu
15-20	8-12	6-10	10-15	15-20	30-40	20-25	15-25

Ref.	Type	Ø mm	€
49.248.0630	42.543	6,3-8,3-10,4-12,4-16,5-20,5 mm	68,45

Ref.	Type	Ø mm	€



> 49.254 Phantom

NL HSS-E Set Verzinkboren 42.540, 90°, 3 snijkanten
 FR Jeu de fraises à ébavurer HSS-E 42.540, 90°, 3 taillants
 ES Juego de avellanadores HSS-E 42.540, 90°, 3 labios
 DE HSS-E Satz Kegelsenker 42.540, 90°, 3 Schneiden
 EN HSS-E Countersink set 42.540, 90°, 3 flute

HSS-E	DIN 335-C											
P 11 ≤500 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850 N/mm ²	M 22 INOX >850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
17-22 C	10-15 C	8-12 B	4-8 A	8-12 B	6-10 A	15-20 C	20-25 C	35-45 D	30-40 C	15-25 D	20-30 C	35-70 I

Ref.	Type	Ø mm	€
49.254.0630	42.540	6,3-8,3-10,4-12,4-16,5-20,5 mm	164,35
49.254.0631	42.540	6,3-10,4-16,5-20,5-25 mm	186,20

Ref.	Type	Ø mm	€
49.254.1040	42.540	10,4-16,5-20,5-25-31 mm	250,00



> 49.259 **Phantom**

NL HSS-E Set Vari Verzinkboren 42.553, 90°, 3 snijkanten
 FR Jeu de fraises à chanfreiner Vari HSS-E 42.553, 90°, 3 taillants
 ES Juego de avellanadores Vari HSS-E 42.553, 90°, 3 labios
 DE HSS-E Satz Kegelsenker ungleichteilung 42.553, 90°, 3 Schneiden
 EN HSS-E Vari Countersink set 42.553, 90°, 3 flute



HSS-E **DIN 335-C**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
17-22 C	10-15 C	8-12 B	4-8 A	8-12 B	6-10 A	15-20 C	20-25 C	35-45 D	30-40 C	15-25 D	20-30 C	35-70 I

Ref.	Type	Ø mm	€
49.259.0620	42.553	6,3-8,3-10,4-12,4-16,5-20,5 mm	175,00
49.259.0625	42.553	6,3-8,3-10,4-12,4-16,5-20,5-25 mm	226,00

Ref.	Type	Ø mm	€
49.259.1020	42.553	10,4-12,4-16,5-20,5 mm	129,00
49.259.1025	42.553	10,4-12,4-16,5-20,5-25 mm	180,00

> 49.260 **Phantom**

NL HSS-E Set Vari Verzinkboren 42.554, 90°, 3 snijkanten, TiAIN
 FR Jeu de fraises à chanfreiner Vari HSS-E 42.554, 90°, 3 taillants, TiAIN
 ES Juego de avellanadores Vari HSS-E 42.554, 90°, 3 labios, TiAIN
 DE HSS-E Satz Kegelsenker ungleichteilung 42.554, 90°, 3 Schneiden, TiAIN
 EN HSS-E Vari Countersink set 42.554, 90°, 3 flute, TiAIN



HSS-E **TiAIN** **DIN 335-C**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC	S 72 Ti
35-45 C	20-30 C	16-20 B	8-15 A	12-15 B	8-12 A	20-30 C	30-40 C	50-60 D	35-40 C	20-30 D	30-40 C	35-70 I	4-8 A

Ref.	Type	Ø mm	€
49.260.0620	42.554	6,3-8,3-10,4-12,4-16,5-20,5 mm	230,00
49.260.0625	42.554	6,3-8,3-10,4-12,4-16,5-20,5-25 mm	298,00

Ref.	Type	Ø mm	€
49.260.1020	42.554	10,4-12,4-16,5-20,5 mm	175,00
49.260.1025	42.554	10,4-12,4-16,5-20,5-25 mm	243,00

> 49.262 **Phantom**

NL HSS-E Set Vari Verzinkboren 42.556, 90°, 3 snijkanten, TiAIN, met drielaks schacht
 FR Jeu de fraises à chanfreiner Vari HSS-E 42.556, 90°, 3 taillants, TiAIN, à 3 méplats
 ES Juego de avellanadores Vari HSS-E 42.556, 90°, 3 labios, TiAIN, con 3 chaflanes
 DE HSS-E Satz Kegelsenker ungleichteilung 42.556, 90°, 3 Schneiden, TiAIN, mit drei platten Flächen
 EN HSS-E Vari Countersink set 42.556, 90°, 3 flute, TiAIN, with 3 flat surfaces

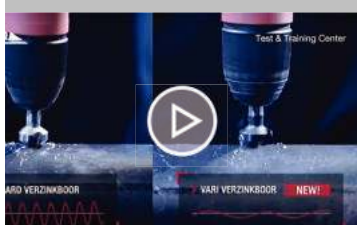


HSS-E **TiAIN** **DIN 335-C**

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC	S 72 Ti
35-45 C	20-30 C	16-20 B	8-15 A	12-15 B	8-12 A	20-30 C	30-40 C	50-60 D	35-40 C	20-30 D	30-40 C	35-70 I	4-8 A

Ref.	Type	Ø mm	€
49.262.0620	42.556	6,3-8,3-10,4-12,4-16,5-20,5 mm	251,00
49.262.0625	42.556	6,3-8,3-10,4-12,4-16,5-20,5-25 mm	323,00

Ref.	Type	Ø mm	€
49.262.1020	42.556	10,4-12,4-16,5-20,5 mm	189,00
49.262.1025	42.556	10,4-12,4-16,5-20,5-25 mm	261,00



NL Vari verzinkboren in actie
 FR Il n'y pas de limites avec notre nouvelle génération de fraise à chanfreiner
 ES Los avellanadores Vari en acción
 DE Vari-Kegelsenker in Aktion
 EN Vari-countersinks in action

Watch me



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> 49.413 Phantom

NL HSS Set Getrapte Plaatboren gespiraliseerd, 44.130, genitreerd
 FR Jeu de forets étagé HSS goujure hélicoidale, 44.130, nitruré
 ES Juego de brocas escalonada HSS helicoidal, 44.130, nitrurada
 DE HSS Satz Stufenbohrer spiralförmig, 44.130, nitriert
 EN HSS Set multi diametre Step Drills with spiral flute, 44.130, nitrided

HSS		NIT.							
P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27	22-30	15-20	8-12	5-8	15-20	25-30	45-50	25-40	22-28
Ref.	Ø mm					€			
49.413.1000	4-12 mm, 4-20 mm, 6-30 mm					156,00			

Ref.	Ø mm	€

> 49.414 Phantom

NL HSS Set Getrapte Plaatboren gespiraliseerd, 44.134, TiAIN
 FR Jeu de forets étagé HSS goujure hélicoidale, 44.134, TiAIN
 ES Juego de brocas escalonada HSS helicoidal, 44.134, TiAIN
 DE HSS Satz Stufenbohrer spiralförmig, 44.134, TiAIN
 EN HSS Set multi diametre Step Drills with spiral flute, 44.134, TiAIN



HSS		TiAIN							
P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25-27	22-30	15-20	8-12	5-8	15-20	25-30	45-50	25-40	22-28
Ref.	Ø mm					€			
49.414.1000	4-12 mm, 4-20 mm, 6-30 mm					220,00			

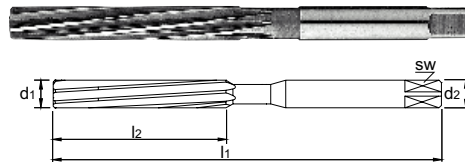
Ref.	Ø mm	€

> 51.110 **Phantom**

NL HSS Handruimer H7
 FR Alésoir à main HSS H7
 ES Escariador mano HSS H7
 DE HSS Handreibahle H7
 EN HSS Hand Reamer H7

HSS DIN 206-B H7 

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 51 Cu



Ref.	d1	l1	l2	d2	sw	€
51.110.0200	2	50	25	2	1.6	43,75
51.110.0250	2.5	58	29	2.5	2	41,45
51.110.0300	3	62	31	3	2.24	19,32
51.110.0350	3.5	71	35	3.5	2.8	19,32
51.110.0400	4	76	38	4	3.15	17,77
51.110.0450	4.5	81	41	4.5	3.55	19,32
51.110.0500	5	87	44	5	4	19,13
51.110.0550	5.5	93	47	5.5	4.5	20,98
51.110.0600	6	93	47	6	4.5	20,61
51.110.0650	6.5	100	50	6.5	5	21,82
51.110.0700	7	107	54	7	5.6	23,18
51.110.0750	7.5	115	58	7.5	6.3	23,67
51.110.0800	8	115	58	8	6.3	25,20
51.110.0850	8.5	124	62	8.5	7.1	26,20
51.110.0900	9	124	62	9	7.1	27,65
51.110.0950	9.5	133	66	9.5	8	32,95
51.110.1000	10	133	66	10	8	30,70
51.110.1100	11	142	71	11	9	40,35

Ref.	d1	l1	l2	d2	sw	€
51.110.1200	12	152	76	12	10	44,45
51.110.1300	13	152	76	13	10	48,20
51.110.1400	14	163	81	14	11.2	54,05
51.110.1500	15	163	81	15	11.2	59,15
51.110.1600	16	175	87	16	12.5	66,50
51.110.1700	17	175	87	17	12.5	67,65
51.110.1800	18	188	93	18	14	68,45
51.110.1900	19	188	93	19	14	71,90
51.110.2000	20	201	100	20	16	84,70
51.110.2100	21	201	100	21	16	85,20
51.110.2200	22	215	107	22	18	94,80
51.110.2300	23	215	107	23	18	100,75
51.110.2400	24	231	115	24	20	116,85
51.110.2500	25	231	115	25	20	117,30
51.110.2600	26	231	115	26	20	128,35
51.110.2700	27	247	124	27	22.4	137,85
51.110.2800	28	247	124	28	22.4	152,90
51.110.2900	29	247	124	29	22.4	322,00

Ref.	d1	l1	l2	d2	sw	€
51.110.3000	30	247	124	30	22.4	167,85
51.110.3100	31	265	133	31	25	357,00
51.110.3200	32	265	133	32	25	196,90
51.110.3300	33	265	133	33	25	386,00
51.110.3400	34	284	142	34	28	227,90
51.110.3500	35	284	142	35	28	259,00
51.110.3600	36	284	142	36	28	249,55
51.110.3700	37	284	142	37	28	438,00
51.110.3800	38	305	152	38	31.5	290,00
51.110.3900	39	305	152	39	31.5	465,00
51.110.4000	40	305	152	40	31.5	316,00
51.110.4200	42	305	152	42	31.5	334,00
51.110.4400	44	326	163	44	35.5	388,00
51.110.4500	45	326	163	45	35.5	419,00
51.110.4600	46	326	163	46	35.5	572,00
51.110.4800	48	347	174	48	40	628,00
51.110.5000	50	347	174	50	40	516,00

> 51.320 **Phantom**

NL HSS-E Machineruimer H7
 FR Alésoir machine HSS-E H7
 ES Escariador máquina HSS-E H7
 DE HSS-E Maschinenreibahlen H7
 EN HSS-E Machine Chucking Reamer H7

HSS-E DIN 212 B/D h8 H7

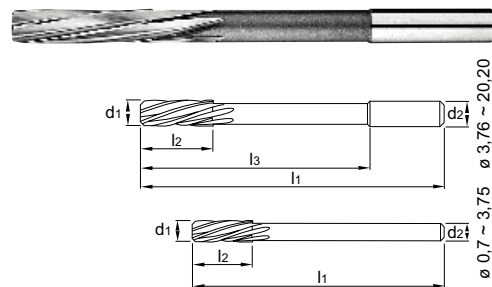
P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² P 14 ≤1400 N/mm² M 21 INOX ≤850N/mm² M 22 INOX >850N/mm² K 31 GG K 32 GGG GTS-GTW N 41 Alu N 42 Alu Si>10% N 51 Cu S 71 Ni/Co S 72 Ti

15-22 E 12-17 D 7-10 C 5-7 B 4-6 A 3-5 A 4-5 C 6-15 D 25-35 G 20-30 G 12-17 D 2-3 A 2-3 A

Ref.	d1	l1	l2	l3	d2	€
51.320.0100	1	38	5		1	33,10
51.320.0150	1.5	40	8		1.5	31,70
51.320.0200	2	49	11		2	29,55
51.320.0250	2.5	57	14		2.5	29,70
51.320.0300	3	61	15		3	29,70
51.320.0350	3.5	70	18		3.5	29,70
51.320.0400	4	75	19	47	4	33,05
51.320.0450	4.5	80	21	52	4.5	33,05
51.320.0500	5	86	23	58	5	34,25
51.320.0550	5.5	93	26	58	5.6	35,45

Ref.	d1	l1	l2	l3	d2	€
51.320.0600	6	93	26	58	5.6	35,45
51.320.0650	6.5	101	28	65	6.3	38,20
51.320.0700	7	109	31	73	7.1	38,20
51.320.0750	7.5	109	31	73	7.1	38,20
51.320.0800	8	117	33	81	8	38,20
51.320.0850	8.5	117	33	81	8	44,75
51.320.0900	9	125	36	85	9	44,75
51.320.0950	9.5	125	36	85	9	44,75
51.320.1000	10	133	38	93	10	44,75
51.320.1050	10.5	133	38	93	10	57,65

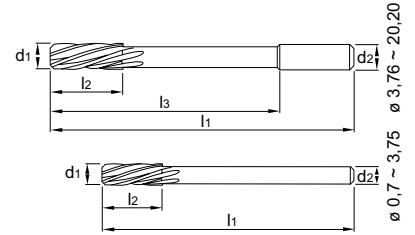
Ref.	d1	l1	l2	l3	d2	€
51.320.1100	11	142	41	102	10	57,65
51.320.1150	11.5	142	41	102	10	63,90
51.320.1200	12	151	44	111	10	63,90
51.320.1250	12.5	151	44	111	10	75,95
51.320.1300	13	151	44	111	10	75,95
51.320.1350	13.5	160	47	115	12.5	86,35
51.320.1400	14	160	47	117	12.5	86,35
51.320.1450	14.5	162	50	117	12.5	104,15
51.320.1500	15	162	50	117	12.5	104,15
51.320.1600	16	170	52	125	12.5	106,75





> 51.350 Phantom

NL HSS-E Precisie Machineruimer x 0,01 mm
 FR Alésoir machine de précision HSS-E x 0,01 mm
 ES Escariador máquina de precisión HSS-E x 0,01 mm
 DE HSS-E Präzisions Maschinenreibahlen x 0,01 mm
 EN HSS-E Precision Machine Reamer x 0,01 mm



HSS-E	DIN 212 B/D	h8	x0,01	≤ø3 -0,000 +0,003	≤ø6 -0,000 +0,004	>ø6 -0,000 +0,005
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P 11 s900 N/mm ²	P 12 s850 N/mm ²	P 13 s1000 N/mm ²	P 14 s1400 N/mm ²	M 21 INOX s850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	S 71 Ni/Co	S 72 Ti
15-22 E	12-17 D	7-10 C	5-7 B	4-6 A	3-5 A	4-5 C	6-15 D	25-35 G	20-30 G	12-17 D	2-3 A	2-3 A

Ref.	d1	l1	l2	l3	z	d2	€
51.350.0070-51.350.0079	0.7-0.79	33	5		4	0.7-0.79	57,65
51.350.0080-51.350.0089	0.8-0.89	38	5		4	0.8-0.89	51,85
51.350.0090-51.350.0096	0.90-0.96	38	5		4	0.90-0.96	37,50
51.350.0097-51.350.0105	0.97-1.05	38	5		4	0.90-1.05	35,80
51.350.0106-51.350.0132	1.06-1.32	40	5		6	1.06-1.32	32,85
51.350.0133-51.350.0150	1.33-1.5	40	8		6	1.33-1.5	32,85
51.350.0151-51.350.0170	1.51-1.7	43	9		6	1.51-1.7	32,85
51.350.0171-51.350.0179	1.71-1.79	46	10		6	1.71-1.79	32,85
51.350.0180-51.350.0190	1.80-1.9	46	10		6	1.80-1.9	30,50
51.350.0191-51.350.0212	1.91-2.12	49	11		6	1.91-2.12	30,50
51.350.0213-51.350.0236	2.13-2.36	53	12		6	2.13-2.36	30,50
51.350.0237-51.350.0265	2.37-2.65	57	14		6	2.37-2.65	30,25
51.350.0266-51.350.0300	2.66-3	61	15		6	2.66-3	30,25
51.350.0301-51.350.0329	3.01-3.29	65	16		6	3.01-3.29	30,25
51.350.0330-51.350.0335	3.30-3.35	65	16		6	3.30-3.35	30,85
51.350.0336-51.350.0375	3.36-3.75	70	18		6	3.36-3.75	30,85
51.350.0376-51.350.0425	3.76-4.25	75	19	47	6	4	32,10
51.350.0426-51.350.0475	4.26-4.75	80	21	52	6	4.5	32,10
51.350.0476-51.350.0530	4.76-5.3	86	23	58	6	5	33,30
51.350.0531-51.350.0600	5.31-6	93	26	58	6	5.6	34,65
51.350.0601-51.350.0668	6.01-6.68	101	28	65	6	6.3	34,65
51.350.0670	6.7	101	28	65	6	6.3	37,50
51.350.0671-51.350.0750	6.71-7.5	109	31	73	6	7.1	37,50

Ref.	d1	l1	l2	l3	z	d2	€
51.350.0751-51.350.0850	7.51-8.5	117	33	81	6	8	37,50
51.350.0851-51.350.0855	8.51-8.55	125	36	85	6	9	37,50
51.350.0856-51.350.0950	8.56-9.5	125	36	85	6	9	43,35
51.350.0951-51.350.0955	9.51-9.55	133	38	93	6	10	43,35
51.350.0956-51.350.1005	9.56-10.05	133	38	93	6	10	45,15
51.350.1006-51.350.1060	10.06-10.6	133	38	93	6	10	47,00
51.350.1061-51.350.1131	10.61-11.31	142	41	102	6	10	47,00
51.350.1132-51.350.1180	11.32-11.8	142	41	102	6	10	61,50
51.350.1182-51.350.1250	11.82-12.5	151	44	111	6	10	61,50
51.350.1251-51.350.1320	12.51-13.2	151	44	111	8	10	66,30
51.350.1325-51.350.1370	13.25-13.7	160	47	115	8	12.5	133,20
51.350.1397-51.350.1400	13.97-14	160	47	117	8	12.5	119,25
51.350.1401-51.350.1405	14.01-14.05	162	50	117	8	12.5	119,25
51.350.1410-51.350.1500	14.10-15	162	50	117	8	12.5	142,00
51.350.1501-51.350.1510	15.01-15.1	170	52	125	8	12.5	142,15
51.350.1515-51.350.1590	15.15-15.9	170	52	125	8	12.5	186,60
51.350.1597-51.350.1600	15.97-16	170	52	125	8	12.5	142,00
51.350.1601-51.350.1605	16.01-16.05	175	54	130	8	14	142,00
51.350.1610-51.350.1700	16.1-17	175	54	130	8	14	174,35
51.350.1701-51.350.1800	17.01-18	182	56	137	8	14	174,35
51.350.1801-51.350.1900	18.01-19	189	58	141	8	16	174,35
51.350.1901-51.350.2005	19.01-20.05	195	60	147	8	16	174,35
51.350.2010-51.350.2020	20.10-20.2	195	60	147	8	16	210,90

> 51.520 Phantom

NL HSS-E Machineruimer H7, MK
 FR Alésoir machine HSS-E H7, CM
 ES Escariador máquina HSS-E H7, CM
 DE HSS-E Maschinenreibahlen H7, MK
 EN HSS-E Machine Chucking Reamer H7, MT



HSS-E	DIN 208-B	DIN 228-B	H7
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P 11 s900 N/mm ²	P 12 s850 N/mm ²	P 13 s1000 N/mm ²	P 14 s1400 N/mm ²	M 21 INOX s850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	S 71 Ni/Co	S 72 Ti
15-22 E	12-17 D	7-10 C	5-7 B	4-6 A	3-5 A	4-5 C	6-15 D	25-35 G	20-30 G	12-17 D	2-3 A	2-3 A

Ref.	d1	d2	l1	l2	l3	z	€
51.520.0400	4	MK 1	120	24	54	6	93,25
51.520.0500	5	MK 1	133	26	67	6	79,85
51.520.0600	6	MK 1	138	28	72	6	76,25
51.520.0700	7	MK 1	150	31	84	6	78,35
51.520.0800	8	MK 1	156	33	90	6	78,35
51.520.0900	9	MK 1	162	36	96	6	85,30
51.520.1000	10	MK 1	168	38	102	6	70,80
51.520.1050	10.5	MK 1	168	41	109	6	98,05
51.520.1100	11	MK 1	175	41	109	6	75,05
51.520.1150	11.5	MK 1	175	41	109	6	98,05
51.520.1200	12	MK 1	182	44	116	6	75,05
51.520.1250	12.5	MK 1	182	44	116	6	98,05
51.520.1300	13	MK 1	182	44	116	8	86,55
51.520.1350	13.5	MK 1	189	47	123	8	98,05
51.520.1400	14	MK 1	189	47	123	8	86,55
51.520.1450	14.5	MK 2	204	50	124	8	115,30
51.520.1500	15	MK 2	204	50	124	8	98,95
51.520.1550	15.5	MK 2	210	52	130	8	121,10
51.520.1600	16	MK 2	210	52	130	8	101,70
51.520.1650	16.5	MK 2	214	54	134	8	138,30

Ref.	d1	d2	l1	l2	l3	z	€
51.520.1700	17	MK 2	214	54	134	8	107,45
51.520.1750	17.5	MK 2	219	56	139	8	138,30
51.520.1800	18	MK 2	219	56	139	8	115,30
51.520.1850	18.5	MK 2	223	58	143	8	149,90
51.520.1900	19	MK 2	223	58	143	8	121,10
51.520.1950	19.5	MK 2	228	60	148	8	149,90
51.520.2000	20	MK 2	228	60	148	8	121,10
51.520.2050	20.5	MK 2	232	62	152	8	172,95
51.520.2100	21	MK 2	232	62	152	8	153,50
51.520.2150	21.5	MK 2	237	64	157	8	172,95
51.520.2200	22	MK 2	237	64	157	8	153,50
51.520.2250	22.5	MK 2	241	66	161	8	172,95
51.520.2300	23	MK 2	241	66	161	8	172,95
51.520.2400	24	MK 3	268	68	168	8	172,95
51.520.2500	25	MK 3	268	68	168	8	172,95
51.520.2600	26	MK 3	273	70	173	10	201,75
51.520.2700	27	MK 3	277	71	177	10	213,35
51.520.2800	28	MK 3	277	71	177	10	213,35
51.520.2900	29	MK 3	281	73	181	10	230,65
51.520.3000	30	MK 3	281	73	181	10	230,65

> 51.520 Phantom

Ref.	d1	d2	l1	l2	l3	z	€
51.520.3100	31	MK 3	285	77	193	10	302,00
51.520.3200	32	MK 4	317	77	193	10	324,00
51.520.3300	33	MK 4	317	77	193	10	329,00
51.520.3400	34	MK 4	321	78	197	10	329,00
51.520.3500	35	MK 4	321	78	197	10	329,00
51.520.3600	36	MK 4	325	79	201	10	404,00
51.520.3700	37	MK 4	325	79	201	10	404,00
51.520.3800	38	MK 4	329	81	205	10	404,00
51.520.3900	39	MK 4	329	81	205	12	404,00
51.520.4000	40	MK 4	329	81	205	12	404,00

Ref.	d1	d2	l1	l2	l3	z	€
51.520.4100	41	MK 4	333	82	209	12	548,00
51.520.4200	42	MK 4	333	82	209	12	548,00
51.520.4300	43	MK 4	336	83	212	12	548,00
51.520.4400	44	MK 4	336	83	212	12	548,00
51.520.4500	45	MK 4	336	83	212	12	548,00
51.520.4600	46	MK 4	340	84	216	12	664,00
51.520.4700	47	MK 4	340	84	216	12	664,00
51.520.4800	48	MK 4	344	86	220	12	692,00
51.520.4900	49	MK 4	344	86	220	12	692,00
51.520.5000	50	MK 4	344	86	220	12	692,00



SC 1



HSS/E 1



2



SC 3



HSS-F 3



4



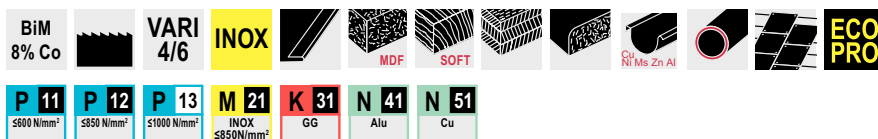
5

> 61.090 INTERNATIONAL TOOLS

NL ECO PRO HSS-Co 8% Bi-Metaal Gatzag
FR Scie cloche HSS-Co 8% Bi-métal ECO PRO
ES Corona Perforadora HSS-Co 8% Bi-Metal ECO PRO
DE ECO PRO HSS-Co 8% Bi-Metall Lochsäge
EN ECO PRO HSS-Co 8% Bi-Metal Hole saw



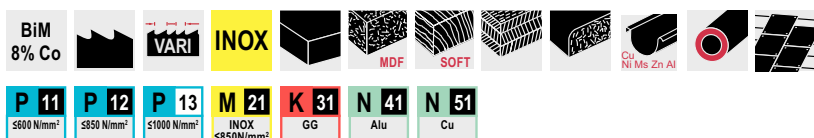
NIUW NOUVEAU NUEVO NEU



Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
61.090.0014	14	6,50	61.090.0041	41	11,00	61.090.0079	79	19,50
61.090.0016	16	7,00	61.090.0043	43	11,00	61.090.0083	83	20,00
61.090.0017	17	7,00	61.090.0044	44	12,00	61.090.0086	86	20,50
61.090.0019	19	7,00	61.090.0046	46	12,00	61.090.0089	89	22,00
61.090.0020	20	7,00	61.090.0048	48	12,50	61.090.0092	92	22,50
61.090.0021	21	7,00	61.090.0051	51	13,00	61.090.0095	95	25,00
61.090.0022	22	7,00	61.090.0052	52	13,50	61.090.0098	98	25,00
61.090.0024	24	7,50	61.090.0054	54	13,50	61.090.0102	102	26,00
61.090.0025	25	8,50	61.090.0057	57	14,00	61.090.0105	105	26,00
61.090.0027	27	8,50	61.090.0059	59	14,50	61.090.0108	108	26,50
61.090.0029	29	9,00	61.090.0060	60	15,00	61.090.0111	111	27,50
61.090.0030	30	9,00	61.090.0064	64	16,00	61.090.0114	114	28,50
61.090.0032	32	9,00	61.090.0065	65	16,00	61.090.0121	121	30,50
61.090.0033	33	9,00	61.090.0067	67	16,50	61.090.0127	127	32,50
61.090.0035	35	10,50	61.090.0068	68	16,50	61.090.0140	140	35,00
61.090.0037	37	11,00	61.090.0070	70	17,00	61.090.0152	152	38,00
61.090.0038	38	11,00	61.090.0073	73	18,00			
61.090.0040	40	11,00	61.090.0076	76	19,00			

> 61.105 Phantom

NL HSS-Co 8% Bi-Metaal Gatzag
FR Scie cloche HSS-Co 8% Bi-métal
ES Corona Perforadora HSS-Co 8% Bi-Metal
DE HSS-Co 8% Bi-Metall Lochsäge
EN HSS-Co 8% Bi-Metal Hole saw



Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
61.105.0014	14	10,25	61.105.0041	41	16,00	61.105.0076	76	28,50
61.105.0016	16	10,50	61.105.0043	43	17,00	61.105.0079	79	29,00
61.105.0017	17	10,50	61.105.0044	44	17,00	61.105.0083	83	29,50
61.105.0018	18	11,00	61.105.0046	46	17,50	61.105.0086	86	30,00
61.105.0019	19	11,00	61.105.0048	48	18,00	61.105.0089	89	30,50
61.105.0020	20	11,00	61.105.0049	49	18,50	61.105.0090	90	31,00
61.105.0021	21	11,00	61.105.0050	50	18,50	61.105.0092	92	31,00
61.105.0022	22	11,00	61.105.0051	51	18,50	61.105.0095	95	35,00
61.105.0024	24	11,00	61.105.0052	52	19,50	61.105.0098	98	35,50
61.105.0025	25	12,50	61.105.0054	54	20,00	61.105.0100	100	36,00
61.105.0027	27	12,50	61.105.0056	56	20,50	61.105.0102	102	37,00
61.105.0028	28	13,00	61.105.0057	57	20,50	61.105.0105	105	38,00
61.105.0029	29	13,00	61.105.0059	59	21,00	61.105.0108	108	39,00
61.105.0030	30	13,00	61.105.0060	60	21,00	61.105.0111	111	40,00
61.105.0032	32	14,00	61.105.0061	61	21,00	61.105.0114	114	41,50
61.105.0033	33	14,00	61.105.0064	64	23,50	61.105.0121	121	43,50
61.105.0034	34	14,00	61.105.0065	65	24,00	61.105.0127	127	46,50
61.105.0035	35	14,80	61.105.0067	67	24,50	61.105.0133	133	49,50
61.105.0037	37	15,50	61.105.0068	68	25,00	61.105.0140	140	50,50
61.105.0038	38	15,50	61.105.0070	70	25,00	61.105.0146	146	53,50
61.105.0040	40	16,00	61.105.0073	73	26,00	61.105.0152	152	55,00

> 61.110 **Phantom**

NL HSS-Co 8% Bi-Metaal Gatzaag voor dunne plaat en buizen
 FR Scie cloche HSS-Co 8% Bi-métal pour tôle fine et tube
 ES Corona Perforadora HSS-Co 8% Bi-Metal para chapa fina y tubos
 DE HSS-Co 8% Bi-Metall Lochsäge für dünne Platte und Rohren
 EN HSS-Co 8% Bi-Metal Hole saw For thin plates and tubes



BiM 8% Co

VARI INOX

MDF SOFT

Cu Ni Ms Zn Al

P 11 ≤800 N/mm² P 12 ≤850 N/mm² P 13 ≤1000 N/mm² M 21 INOX ≤850 N/mm² K 31 GG N 41 Alu N 51 Cu

Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
61.110.0014	14	10,25	61.110.0051	51	18,50	61.110.0098	98	35,50
61.110.0016	16	10,50	61.110.0054	54	19,50	61.110.0100	100	36,00
61.110.0017	17	10,50	61.110.0057	57	20,50	61.110.0102	102	37,00
61.110.0019	19	11,00	61.110.0060	60	21,00	61.110.0105	105	38,00
61.110.0020	20	11,00	61.110.0064	64	23,50	61.110.0108	108	39,00
61.110.0021	21	11,00	61.110.0067	67	24,50	61.110.0111	111	40,00
61.110.0022	22	11,00	61.110.0068	68	25,00	61.110.0114	114	41,50
61.110.0024	24	11,00	61.110.0070	70	25,00	61.110.0121	121	43,50
61.110.0025	25	12,50	61.110.0073	73	26,00	61.110.0127	127	46,50
61.110.0027	27	12,50	61.110.0076	76	28,50	61.110.0133	133	49,50
61.110.0030	30	13,00	61.110.0079	79	29,00	61.110.0140	140	50,50
61.110.0032	32	14,00	61.110.0083	83	29,50	61.110.0152	152	55,00
61.110.0035	35	14,80	61.110.0086	86	30,00	61.110.0160	160	70,00
61.110.0038	38	15,50	61.110.0089	89	30,50	61.110.0168	168	74,00
61.110.0040	40	16,00	61.110.0090	90	31,00	61.110.0177	177	79,00
61.110.0044	44	17,00	61.110.0092	92	31,00	61.110.0210	210	94,00
61.110.0048	48	18,00	61.110.0095	95	35,00			



NL Gatzaag vertanding
 FR Scie cloche HSS-Co Bi-métal pour tôle fine et tube vs la scie cloche standard
 ES Corona bimetálica paso grueso o Corona bimetálica paso estándar
 DE BiM Lochsäge grob gegen BiM Lochsäge standard
 EN BiM holesaw coarse vs BiM holesaw standard

Watch me



www.phantom.eu

> 61.135 **INTERNATIONAL TOOLS**

NL ECO PRO Universele Quick Change Houder
 FR Adaptateur à changement rapide ECO PRO
 ES Husillo de cambio rápido ECO PRO
 DE ECO PRO Universal Schnellwechselhalter
 EN ECO PRO Universal Quick Change holder



NIEUW NOUVEAU NUEVO NEU

Ref.	Ø	d2	1 incl.	2 incl.	3 incl.	4 incl.	€
61.135.1432	14-210	11mm - 7/16"	61.160.9566	61.148.0900	61.137.1401	61.137.3201	28,50

> 61.137 **INTERNATIONAL TOOLS**

NL ECO PRO Universele Quick Change adapter
 FR Adaptateur universel à changement rapide ECO PRO
 ES Adaptador universal de cambio rápido ECO PRO
 DE ECO PRO Universeller Schnellwechseladapter
 EN ECO PRO Universal Quick Change adapter



NIEUW NOUVEAU NUEVO NEU

Ref.	Ø	#	€	Ref.	Ø	#	€
61.137.1401	14-30	1	4,95	61.137.3201	32-210	1	4,95
61.137.1405	14-30	5	14,95	61.137.3205	32-210	5	14,95

**> 61.140 Phantom**

NL Universele Quick Change Houder
FR Adaptateur à changement rapide
ES Husillo de cambio rápido
DE Universal Schnellwechselhalter
EN Universal Quick Change holder



11

NIEUW NOUVEAU NUEVO NEU

Ref.	Ø	d2	1 incl.	2 incl.	3 incl.	4 incl.	€
61.140.1432	14-210	11mm - 7/16"	61.160.9566	61.180.0900	61.142.1401	61.142.3201	28,50

> 61.142 Phantom

NL Universele Quick Change adapter
FR Adaptateur universel à changement rapide
ES Adaptador universal de cambio rápido
DE Universeller Schnellwechseladapter
EN Universal Quick Change adapter

**NIEUW NOUVEAU NUEVO NEU**

Ref.	Ø	#	€	Ref.	Ø	#	€
61.142.1401	14-30	1	4,95	61.142.3201	32-210	1	4,95
61.142.1405	14-30	5	14,95	61.142.3205	32-210	5	14,95

> 61.145 INTERNATIONAL TOOLS

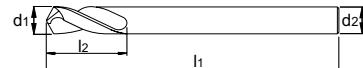
NL ECO PRO Houder voor Gatzaag 61.090
FR Arbre pour Scies cloches ECO PRO 61.090
ES Husillo para Corona perforadora ECO PRO 61.090
DE ECO PRO Halter für Lochsägen 61.090
EN ECO PRO Hole saw Arbor 61.090

**NIEUW NOUVEAU NUEVO NEU**

Ref.	Ø	d2	1 incl.	2 incl.	€	Ref.	Ø	d2	1 incl.	2 incl.	€
61.145.0201	32-152	11mm - 7/16"	61.160.9532	61.147.0600	€ 23,40	61.145.0500	14-30	9,5mm - 3/8"	61.160.9514	61.147.0600	€ 16,20

> 61.147 INTERNATIONAL TOOLS

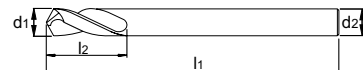
NL ECO PRO Centerboor voor Gatzaag 61.090
FR Foret à centrer ECO PRO pour Scies cloches 61.090
ES Broca escalonada ECO PRO para la Corona perforadora 61.090
DE ECO PRO Zentrierbohrer für Lochsägen 61.090
EN ECO PRO Centre Drill for 61.090

**NIEUW NOUVEAU NUEVO NEU**

Ref.	Type	d2	l1	61.0xx	€
61.147.0600	HSS-E	6.35	90	61.090	€ 5,85

> 61.148 INTERNATIONAL TOOLS

NL ECO PRO HSS Centerboor Step-point voor Gatzaag 61.090
FR Foret à centrer HSS ECO PRO Step-point pour Scies cloches 61.090
ES Broca escalonada HSS ECO PRO Step-point para la Corona perforadora 61.090
DE ECO PRO HSS Zentrierbohrer Step-point für Lochsägen 61.090
EN ECO PRO HSS Centre Drill Step-point for hole saws 61.090

**NIEUW NOUVEAU NUEVO NEU**

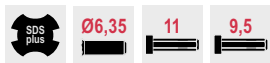
Ref.	Type	d2	l1	€
61.148.0900	HSS	6.35	90	6,50

> **61.150 Phantom**

NL Houder voor Gatzaag 61.105 en 61.110
 FR Arbre pour Scies cloches 61.105 et 61.110
 ES Husillo para Corona perforadora 61.105 y 61.110
 DE Halter für Lochsägen 61.105 und 61.110
 EN Hole saw Arbor 61.105 and 61.110



NIEUW NOUVEAU NUEVO NEU

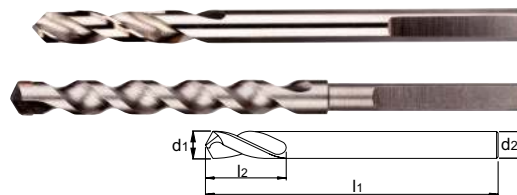


Ref.	Ø	d2	1 incl.	2 incl.	€
61.150.0100	14-30	11mm - 7/16"	61.160.9514	61.170.0600	15,00
61.150.0201	32-210	11mm - 7/16"	61.160.9532	61.170.0600	26,00
61.150.0400	14-30	Ø 6,35mm - 1/4"	61.160.9514	61.170.0601	13,00
61.150.0500	14-30	9,5mm - 3/8"	61.160.9514	61.170.0600	18,00

Ref.	Ø	d2	1 incl.	2 incl.	€
61.150.0601	32-210	9,5mm - 3/8"	61.160.9532	61.170.0600	24,00
61.150.0800	14-30	SDS+	61.160.9514	61.170.0600	18,00
61.150.0901	32-210	SDS+	61.160.9532	61.170.0600	28,50

> **61.170 Phantom**

NL Centerboor voor Gatzaag 61.105, 61.110 en 61.130
 FR Foret à centrer pour Scies cloches 61.105, 61.110 et 61.130
 ES Broca escalonada para la Corona perforadora 61.105, 61.110 y 61.130
 DE Zentrierbohrer für Lochsäge 61.105, 61.110 und 61.130
 EN Centre Drill for 61.105, 61.110 and 61.130



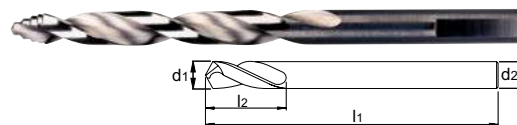
NIEUW NOUVEAU NUEVO NEU



Ref.	Type	d2	l1	61.1xx	Nr	€
61.170.0600	HSS-E	6.35	90	61.150	1, 2, 5, 6, 8, 9	6,50
61.170.0601	HSS-E	6.35	115	61.150	4	5,79
61.170.0602	HSS-E	6.35	110	61.151	1, 2	5,56
61.170.0603	Carbide Tipped	6.35	110	61.151	1, 2	5,00

> **61.180 Phantom**

NL HSS Centerboor Step-point voor Gatzaag
 FR Foret à centrer HSS Step-point pour Scies cloches
 ES Broca escalonada HSS Step-point para la Corona perforadora
 DE HSS Zentrierbohrer Step-point für Lochsäge
 EN HSS Centre Drill Step-point for hole saws



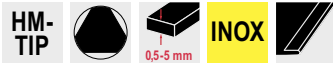
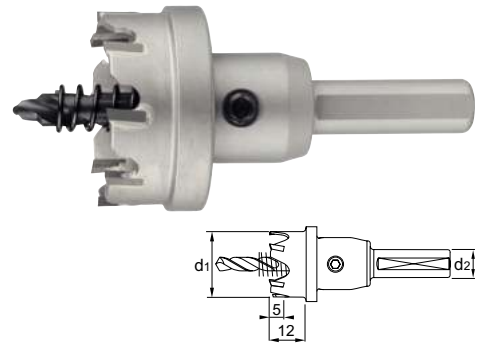
NIEUW NOUVEAU NUEVO NEU



Ref.	Type	d2	l1	€
61.180.0900	HSS	6.35	90	6,50

**> 61.630 Phantom**

- NL HM-tip Gattrees materiaaldikte <5 mm
 FR Scie trépan à plaquette carbure épaisseur <5 mm
 ES Corona fresa punta MD espesor <5 mm
 DE HM-Schneiden Lochfräser Materialdicke <5 mm
 EN Carbide Tipped Hole saw thickness <5 mm

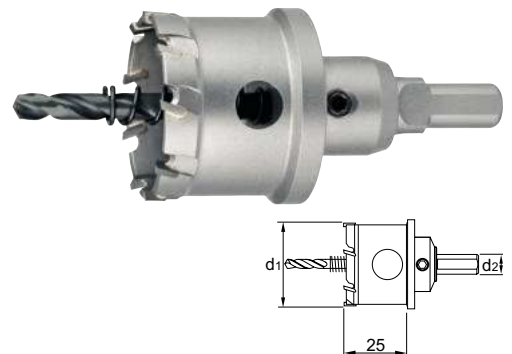


36	34	30	25	20	10	60	40	90	35	30
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Ref.	d1	d2	z	€	Ref.	d1	d2	z	€	Ref.	d1	d2	z	€
61.630.0140	14	10	6	41,85	61.630.0225	22.5	10	6	44,55	61.630.0400	40	13	6	66,65
61.630.0150	15	10	6	41,85	61.630.0230	23	10	6	44,55	61.630.0430	43	13	6	71,20
61.630.0152	15.2	10	6	41,85	61.630.0240	24	10	6	45,10	61.630.0450	45	13	6	71,20
61.630.0160	16	10	6	41,85	61.630.0250	25	10	6	45,10	61.630.0480	48	13	6	78,30
61.630.0170	17	10	6	41,85	61.630.0260	26	10	6	47,35	61.630.0500	50	13	6	80,15
61.630.0180	18	10	6	41,85	61.630.0270	27	10	6	47,35	61.630.0550	55	13	6	86,10
61.630.0186	18.6	10	6	41,85	61.630.0280	28	10	6	48,60	61.630.0600	60	13	8	95,50
61.630.0190	19	10	6	41,85	61.630.0283	28.3	10	6	51,40	61.630.0700	70	13	8	108,15
61.630.0200	20	10	6	43,25	61.630.0300	30	10	6	51,40	61.630.0760	76	13	10	136,60
61.630.0204	20.4	10	6	43,25	61.630.0320	32	10	6	59,95	61.630.0800	80	13	12	143,85
61.630.0210	21	10	6	43,25	61.630.0350	35	13	6	61,00					
61.630.0220	22	10	6	43,25	61.630.0380	38	13	6	66,65					

> 61.670 Phantom

- NL HM-tip Gattrees diepgat uitvoering 25 mm, materiaaldikte <12 mm
 FR Scie trépan à plaquette carbure profondeur de coupe 25 mm, épaisseur <12 mm
 ES Corona fresa punta MD profundidad de corte 25 mm, espesor <12 mm
 DE HM-Schneiden Lochfräser Tiefloch-Ausführung 25 mm, Materialdicke <12 mm
 EN Carbide Tipped Hole saw deep hole version 25 mm, thickness <12 mm

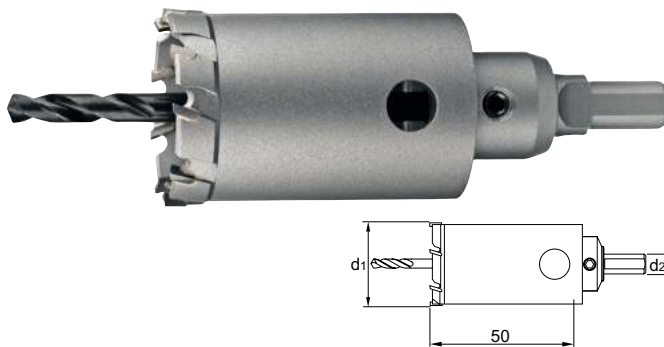


36	34	30	25	20	10	60	40	90	35	30
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Ref.	d1	d2	z	€	Ref.	d1	d2	z	€	Ref.	d1	d2	z	€
61.670.0016	16	10	6	52,65	61.670.0039	39	10	6	81,10	61.670.0063	63	10	8	148,70
61.670.0017	17	10	6	52,65	61.670.0040	40	10	6	81,10	61.670.0064	64	10	8	148,70
61.670.0018	18	10	6	52,65	61.670.0041	41	10	6	92,20	61.670.0065	65	10	8	148,70
61.670.0019	19	10	6	52,65	61.670.0042	42	10	6	92,20	61.670.0066	66	10	8	168,65
61.670.0020	20	10	6	52,65	61.670.0043	43	10	6	92,20	61.670.0067	67	10	8	168,65
61.670.0021	21	10	6	57,05	61.670.0044	44	10	6	92,20	61.670.0068	68	10	8	168,65
61.670.0022	22	10	6	57,05	61.670.0045	45	10	6	92,20	61.670.0070	70	10	8	168,65
61.670.0023	23	10	6	57,05	61.670.0046	46	10	6	96,70	61.670.0072	72	10	10	184,20
61.670.0024	24	10	6	57,05	61.670.0047	47	10	6	96,70	61.670.0074	74	10	10	184,20
61.670.0025	25	10	6	57,05	61.670.0048	48	10	6	96,70	61.670.0075	75	10	10	184,20
61.670.0026	26	10	6	62,75	61.670.0049	49	10	6	96,70	61.670.0076	76	10	10	193,90
61.670.0027	27	10	6	62,75	61.670.0050	50	10	6	96,70	61.670.0077	77	10	12	193,90
61.670.0028	28	10	6	62,75	61.670.0051	51	10	6	110,60	61.670.0078	78	10	12	193,90
61.670.0029	29	10	6	62,75	61.670.0052	52	10	6	110,60	61.670.0079	79	10	12	193,90
61.670.0030	30	10	6	62,75	61.670.0053	53	10	6	110,60	61.670.0080	80	13	12	193,90
61.670.0031	31	10	6	67,70	61.670.0054	54	10	6	110,60	61.670.0082	82	13	12	210,25
61.670.0032	32	10	6	67,70	61.670.0055	55	10	6	110,60	61.670.0083	83	13	12	210,25
61.670.0033	33	10	6	67,70	61.670.0056	56	10	6	135,75	61.670.0084	84	13	12	210,25
61.670.0034	34	10	6	67,70	61.670.0057	57	10	6	135,75	61.670.0085	85	13	12	210,25
61.670.0035	35	10	6	67,70	61.670.0058	58	10	6	135,75	61.670.0090	90	13	14	226,80
61.670.0036	36	10	6	81,10	61.670.0060	60	10	8	135,75	61.670.0092	92	13	14	245,80
61.670.0037	37	10	6	81,10	61.670.0061	61	10	8	148,70	61.670.0095	95	13	14	245,80
61.670.0038	38	10	6	81,10	61.670.0062	62	10	8	148,70	61.670.0100	100	13	14	262,00

> 61.680 **Phantom**

- NL HM-tip Gattrees lange diepgat uitvoering 50 mm, materiaaldikte <12 mm
- FR Scie trépan à plaquette carbure profondeur de coupe 50 mm, épaisseur <12 mm
- ES Corona fresa punta MD profundidad de corte 50 mm, espesor <12 mm
- DE HM-Schneiden Lochfräser lange Tiefloch-Ausführung 50 mm, Materialdicke <12 mm
- EN Carbide Tipped Hole saw long deep hole version 50 mm, thickness <12 mm



P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 52 CuAlFe	N 62 GFK/CFK
36	34	30	25	20	10	60	40	90	35	30

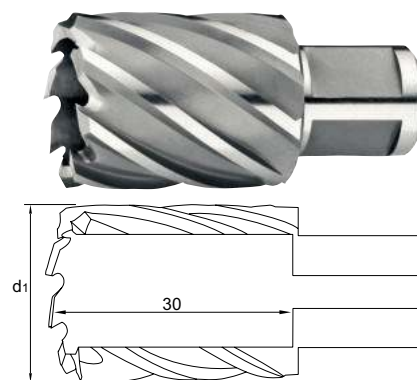
Ref.	d1	d2	z	€
61.680.0020	20	10	6	69,60
61.680.0021	21	10	6	75,45
61.680.0022	22	10	6	75,45
61.680.0023	23	10	6	75,45
61.680.0024	24	10	6	75,45
61.680.0025	25	10	6	75,45
61.680.0026	26	10	6	82,65
61.680.0027	27	10	6	82,65
61.680.0028	28	10	6	82,65
61.680.0030	30	10	6	82,65
61.680.0032	32	10	6	89,15
61.680.0033	33	10	6	89,15
61.680.0034	34	10	6	89,15
61.680.0035	35	10	6	89,15

Ref.	d1	d2	z	€
61.680.0037	37	10	6	106,70
61.680.0038	38	10	6	106,70
61.680.0039	39	10	6	106,70
61.680.0040	40	10	6	106,70
61.680.0041	41	10	6	120,95
61.680.0042	42	10	6	120,95
61.680.0043	43	10	6	120,95
61.680.0045	45	10	6	120,95
61.680.0048	48	10	6	126,65
61.680.0050	50	10	6	126,65
61.680.0051	51	10	6	145,15
61.680.0053	53	10	6	145,15
61.680.0054	54	10	6	145,15
61.680.0055	55	10	6	145,15

Ref.	d1	d2	z	€
61.680.0057	57	10	6	177,70
61.680.0060	60	10	8	177,70
61.680.0061	61	10	8	194,70
61.680.0062	62	10	8	194,70
61.680.0064	64	10	8	194,70
61.680.0065	65	10	8	194,70
61.680.0067	67	10	8	220,30
61.680.0070	70	10	8	220,30
61.680.0075	75	10	10	240,35
61.680.0076	76	10	10	253,00
61.680.0080	80	13	12	253,00
61.680.0090	90	13	14	296,00
61.680.0100	100	13	14	369,00

> 62.100 **Phantom**

- NL HSS-EX Kernboor snijdiepte 30 mm
- FR Fraise à carotter HSS-EX profondeur de coupe 30 mm
- ES Fresa hueca HSS-EX profundidad de corte 30 mm
- DE HSS-EX Kernbohr Schnittiefe 30 mm
- EN HSS-EX Annular Cutter cutting depth 30 mm



P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
25	20	13	18	38	32	22	17

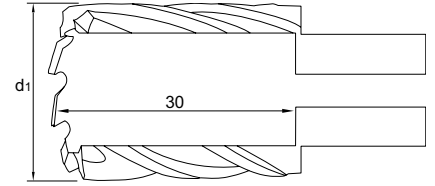
Ref.	d1	€
62.100.1200	12	25,55
62.100.1300	13	25,55
62.100.1400	14	26,85
62.100.1500	15	26,85
62.100.1600	16	28,10
62.100.1700	17	28,10
62.100.1800	18	29,35
62.100.1900	19	29,35
62.100.2000	20	31,30
62.100.2100	21	31,30
62.100.2200	22	37,10
62.100.2300	23	37,10
62.100.2400	24	40,90
62.100.2500	25	40,90
62.100.2600	26	44,10
62.100.2700	27	44,10
62.100.2800	28	46,65
62.100.2900	29	46,65

Ref.	d1	€
62.100.3000	30	51,15
62.100.3100	31	51,15
62.100.3200	32	56,85
62.100.3300	33	56,85
62.100.3400	34	60,70
62.100.3500	35	60,70
62.100.3600	36	63,30
62.100.3700	37	63,30
62.100.3800	38	67,70
62.100.3900	39	67,70
62.100.4000	40	74,75
62.100.4100	41	74,75
62.100.4200	42	82,40
62.100.4300	43	82,40
62.100.4400	44	88,80
62.100.4500	45	88,80
62.100.4600	46	93,95
62.100.4700	47	93,95

Ref.	d1	€
62.100.4800	48	99,10
62.100.4900	49	99,10
62.100.5000	50	106,10
62.100.5100	51	106,10
62.100.5200	52	115,00
62.100.5300	53	119,50
62.100.5400	54	122,70
62.100.5500	55	125,90
62.100.5600	56	130,35
62.100.5700	57	136,10
62.100.5800	58	139,30
62.100.5900	59	144,40
62.100.6000	60	149,55
62.100.6100	61	163,60
62.100.6200	62	168,70
62.100.6300	63	173,80
62.100.6400	64	178,95
62.100.6500	65	182,80

> 62.122 Phantom

NL HSS-EX Kernboor genitreerd, snijdiepte 30 mm
 FR Fraise à carotter HSS-EX nitruré, profondeur de coupe 30 mm
 ES Fresa hueca HSS-EX nitrurada, profundidad de corte 30 mm
 DE HSS-EX Kernbohr nitriert, Schnitttiefe 30 mm
 EN HSS-EX Annular Cutter nitrided, cutting depth 30 mm



P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850 N/mm ²	M 22 INOX >850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
31	18	16	9	10	4	20	16	38	40	36	36	22

Ref.	d1	€	Ref.	d1	€
62.122.1200	12	27,80	62.122.3000	30	56,90
62.122.1300	13	27,80	62.122.3100	31	56,90
62.122.1400	14	30,05	62.122.3200	32	62,65
62.122.1500	15	30,05	62.122.3300	33	62,65
62.122.1600	16	31,00	62.122.3400	34	67,00
62.122.1700	17	31,00	62.122.3500	35	67,00
62.122.1800	18	32,25	62.122.3600	36	70,20
62.122.1900	19	32,25	62.122.3700	37	70,20
62.122.2000	20	35,05	62.122.3800	38	74,60
62.122.2100	21	35,05	62.122.3900	39	74,60
62.122.2200	22	41,05	62.122.4000	40	82,85
62.122.2300	23	41,05	62.122.4100	41	82,85
62.122.2400	24	45,50	62.122.4200	42	91,65
62.122.2500	25	45,50	62.122.4300	43	91,65
62.122.2600	26	48,75	62.122.4400	44	98,60
62.122.2700	27	48,75	62.122.4500	45	98,60
62.122.2800	28	51,25	62.122.4600	46	104,30
62.122.2900	29	51,25	62.122.4700	47	104,30

Ref.	d1	€
62.122.4800	48	110,05
62.122.4900	49	110,05
62.122.5000	50	117,60
62.122.5100	51	117,60
62.122.5200	52	128,95
62.122.5300	53	132,80
62.122.5400	54	136,60
62.122.5500	55	140,40
62.122.5600	56	145,40
62.122.5700	57	151,75
62.122.5800	58	155,60
62.122.5900	59	160,60
62.122.6000	60	166,90
62.122.6100	61	182,10
62.122.6200	62	187,20
62.122.6300	63	193,50
62.122.6400	64	199,80
62.122.6500	65	204,90



NL Kernboren keuzehulp
 FR Aide à la sélection des fraises à carotter
 ES Ayuda para la selección de fresas huecas
 DE Auswahlhilfe Kernbohrer
 EN Selection guide for annular cutters

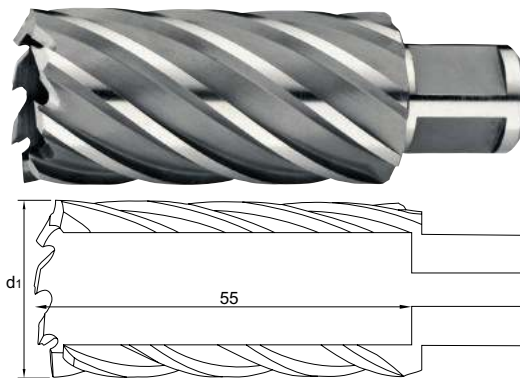
Read me



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> 62.150 Phantom

NL HSS-EX Kernboor snijdiepte 55 mm
 FR Fraise à carotter HSS-EX profondeur de coupe 55 mm
 ES Fresa hueca HSS-EX profundidad de corte 55 mm
 DE HSS-EX Kernbohr Schnitttiefe 55 mm
 EN HSS-EX Annular Cutter cutting depth 55 mm



P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
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25	20	13	18	38	32	22	17
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Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
62.150.1200	12	33,90	62.150.3000	30	67,10	62.150.4800	48	129,10
62.150.1300	13	33,90	62.150.3100	31	67,10	62.150.4900	49	129,10
62.150.1400	14	35,15	62.150.3200	32	73,50	62.150.5000	50	138,05
62.150.1500	15	35,15	62.150.3300	33	73,50	62.150.5100	51	138,05
62.150.1600	16	36,45	62.150.3400	34	78,55	62.150.5200	52	150,80
62.150.1700	17	36,45	62.150.3500	35	78,55	62.150.5300	53	155,25
62.150.1800	18	37,70	62.150.3600	36	82,40	62.150.5400	54	160,40
62.150.1900	19	37,70	62.150.3700	37	82,40	62.150.5500	55	164,25
62.150.2000	20	40,90	62.150.3800	38	88,20	62.150.5600	56	170,00
62.150.2100	21	40,90	62.150.3900	39	88,20	62.150.5700	57	177,65
62.150.2200	22	48,55	62.150.4000	40	97,15	62.150.5800	58	182,80
62.150.2300	23	48,55	62.150.4100	41	97,15	62.150.5900	59	187,90
62.150.2400	24	53,65	62.150.4200	42	107,30	62.150.6000	60	194,20
62.150.2500	25	53,65	62.150.4300	43	107,30	62.150.6100	61	212,15
62.150.2600	26	57,50	62.150.4400	44	116,35	62.150.6200	62	219,80
62.150.2700	27	57,50	62.150.4500	45	116,35	62.150.6300	63	226,15
62.150.2800	28	60,10	62.150.4600	46	122,25	62.150.6400	64	232,60
62.150.2900	29	60,10	62.150.4700	47	122,70	62.150.6500	65	239,00

> 62.162 Phantom

NL HSS-EX Kernboor genitreerd, snijdiepte 55 mm
 FR Fraise à carotter HSS-EX nitruré, profondeur de coupe 55 mm
 ES Fresa hueca HSS-EX nitrurada, profundidad de corte 55 mm
 DE HSS-EX Kernbohr nitriert, Schnitttiefe 55 mm
 EN HSS-EX Annular Cutter nitrided, cutting depth 55 mm



P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
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31	18	16	9	10	4	20	16	38	40	36	36	22
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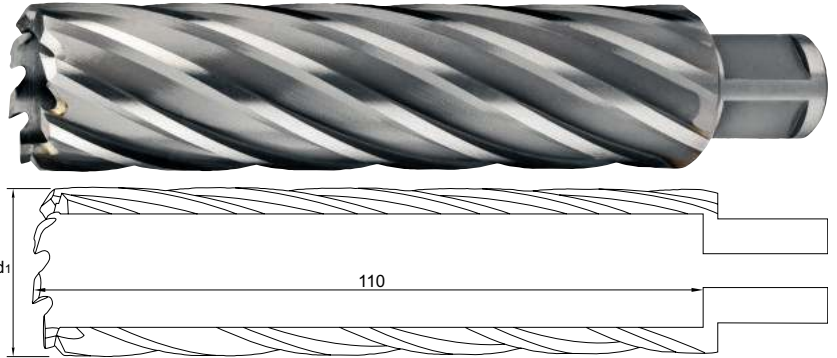
Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
62.162.1200	12	37,30	62.162.2100	21	45,05	62.162.3700	37	91,10
62.162.1300	13	37,30	62.162.2200	22	53,10	62.162.3800	38	97,35
62.162.1400	14	38,85	62.162.2300	23	53,10	62.162.3900	39	97,35
62.162.1450	14.5	46,65	62.162.2400	24	58,80	62.162.4000	40	107,50
62.162.1500	15	38,85	62.162.2500	25	58,80	62.162.4100	41	107,50
62.162.1550	15.5	48,55	62.162.2600	26	63,20	62.162.4200	42	119,55
62.162.1600	16	40,50	62.162.2700	27	63,20	62.162.4300	43	119,55
62.162.1650	16.5	48,55	62.162.2800	28	66,40	62.162.4400	44	128,95
62.162.1700	17	40,50	62.162.2900	29	66,40	62.162.4500	45	128,95
62.162.1750	17.5	50,45	62.162.3000	30	73,95	62.162.4600	46	135,30
62.162.1800	18	41,75	62.162.3100	31	73,95	62.162.4700	47	135,30
62.162.1850	18.5	50,45	62.162.3200	32	81,55	62.162.4800	48	142,90
62.162.1900	19	41,75	62.162.3300	33	81,55	62.162.4900	49	142,90
62.162.1950	19.5	54,35	62.162.3400	34	87,30	62.162.5000	50	153,00
62.162.2000	20	44,95	62.162.3500	35	87,30	62.162.5100	51	153,00
62.162.2050	20.5	54,35	62.162.3600	36	91,10	62.162.5200	52	166,90

> 62.162 Phantom

Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
62.162.5300	53	172,00	62.162.5800	58	201,75	62.162.6300	63	252,00
62.162.5400	54	177,10	62.162.5900	59	208,70	62.162.6400	64	259,00
62.162.5500	55	182,10	62.162.6000	60	214,35	62.162.6500	65	265,00
62.162.5600	56	188,40	62.162.6100	61	235,85			
62.162.5700	57	197,25	62.162.6200	62	244,10			

> 62.180 Phantom

- NL HSS-EX Kernboor slijddiepte 110 mm
 FR Fraise à carotter HSS-EX profondeur de coupe 110 mm
 ES Fresa hueca HSS-EX profundidad de corte 110 mm
 DE HSS-EX Kernbohr Schnittiefe 110 mm
 EN HSS-EX Annular Cutter cutting depth 110 mm

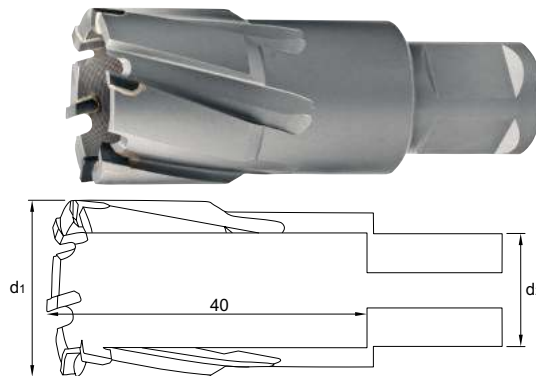


P 11	P 12	P 13	K 31	N 41	N 42	N 51	N 61
≤800 N/mm ²	≤850 N/mm ²	≤1000 N/mm ²	GG	Alu	Alu Si>10%	Cu	PVC
25	20	13	18	38	32	22	17

Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
62.180.1800	18	77,60	62.180.2500	25	107,50	62.180.3400	34	164,40
62.180.1900	19	77,60	62.180.2600	26	116,35	62.180.3500	35	172,00
62.180.2000	20	82,20	62.180.2700	27	118,90	62.180.4000	40	213,70
62.180.2100	21	85,05	62.180.2800	28	122,65	62.180.4500	45	252,00
62.180.2200	22	97,35	62.180.3000	30	136,60	62.180.5000	50	324,00
62.180.2400	24	107,50	62.180.3200	32	149,20			

> 62.200 **Phantom**

NL HM-tip Kernboor snijdiepte 40 mm
 FR Fraise à carotter à plaquette carbure profondeur de coupe 40 mm
 ES Fresa hueca punta MD profundidad de corte 40 mm
 DE HM-Schneiden Kernbohr Schnittiefe 40 mm
 EN Carbide Tipped Annular Cutter cutting depth 40 mm



P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	H 15 HRC	M 21 INOX ≤850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 42 Alu Si>10%	N 52 CuAlFe	N 62 GFK/CFK
36	34	30	25	20	20	10	60	40	90	35	30

Ref.	d1	€
62.200.1200	12	60,05
62.200.1300	13	60,05
62.200.1400	14	60,05
62.200.1500	15	60,05
62.200.1600	16	60,05
62.200.1700	17	60,05
62.200.1800	18	60,05
62.200.1900	19	60,05
62.200.2000	20	60,05

Ref.	d1	€
62.200.2100	21	60,05
62.200.2200	22	60,05
62.200.2300	23	59,30
62.200.2400	24	60,05
62.200.2500	25	60,05
62.200.2600	26	65,70
62.200.2700	27	65,70
62.200.2800	28	65,70
62.200.3000	30	65,70

Ref.	d1	€
62.200.3200	32	77,10
62.200.3500	35	77,10
62.200.3600	36	87,30
62.200.4000	40	87,30
62.200.4500	45	105,00
62.200.5000	50	120,10
62.200.5500	55	135,30
62.200.6000	60	149,20



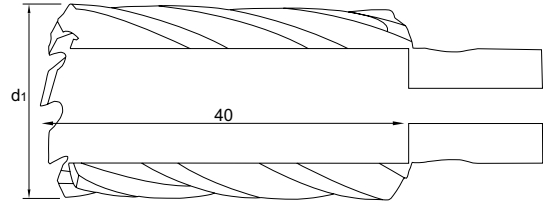
NL Wanneer HM-tip kernboor gebruiken?
 FR Quand utiliser une fraise à carotter à plaquette carbure ?
 ES ¿Cuándo utilizar una fresa hueca con punta MD?
 DE Wann kommen HM-bestückte Kernbohrer zum Einsatz?
 EN When to use a carbide tipped annular cutter?



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**> 62.250 Phantom**

NL HSS-EX Kernboor met Fein QuickIN opname, snijdiepte 40 mm
 FR Fraise à carotter HSS-EX Fein QuickIN, profondeur de coupe 40 mm
 ES Fresa hueca HSS-EX con mango Fein QuickIn, profundidad de corte 40 mm
 DE HSS-EX Kernbohr mit Fein QuickIN Aufnahme, Schnitttiefe 40 mm
 EN HSS-EX Annular Cutter with Fein QuickIN, cutting depth 40 mm



HSS-EX **Ø18**
 FEIN
 QUICKIN 0,5-40 mm

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850 N/mm ²	M 22 INOX >850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 52 CuAlFe	N 61 PVC
31	18	16	9	10	4	20	16	38	40	36	36	22

Ref.	d1	€	Ref.	d1	€	Ref.	d1	€
62.250.1200	12	34,10	62.250.2100	21	42,80	62.250.3000	30	61,95
62.250.1300	13	34,10	62.250.2200	22	43,95	62.250.3200	32	68,30
62.250.1400	14	34,75	62.250.2300	23	45,15	62.250.3500	35	74,70
62.250.1500	15	34,75	62.250.2400	24	46,80	62.250.4000	40	91,65
62.250.1600	16	36,70	62.250.2500	25	46,80	62.250.4500	45	110,90
62.250.1700	17	36,70	62.250.2600	26	49,95	62.250.5000	50	130,15
62.250.1800	18	38,00	62.250.2700	27	53,75	62.250.5500	55	155,50
62.250.1900	19	38,00	62.250.2800	28	56,25	62.250.6000	60	183,20
62.250.2000	20	41,05	62.250.2900	29	57,85			



NL Kernboren keuzehulp
 FR Aide à la sélection des fraises à carotter
 ES Ayuda para la selección de fresas huecas
 DE Auswahlhilfe Kernbohrer
 EN Selection guide for annular cutters

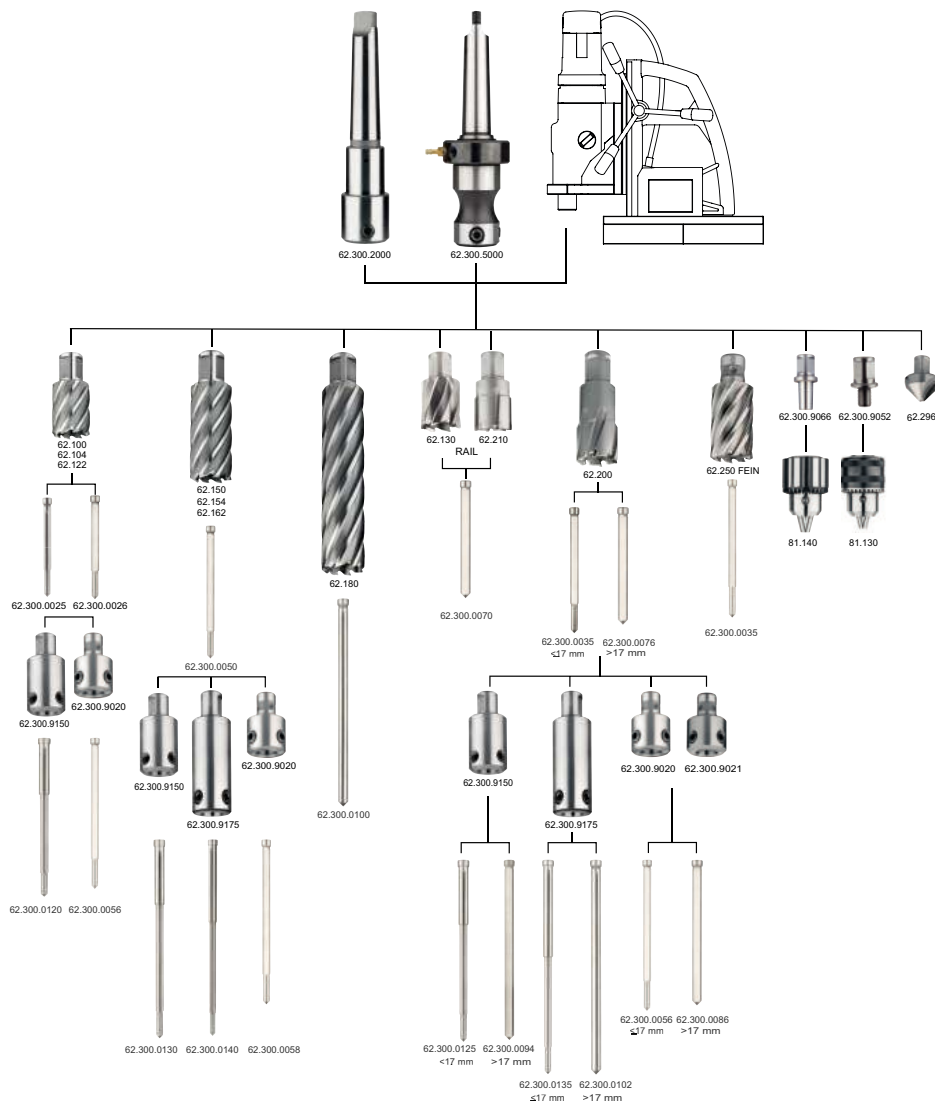
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> 62.300 **Phantom**

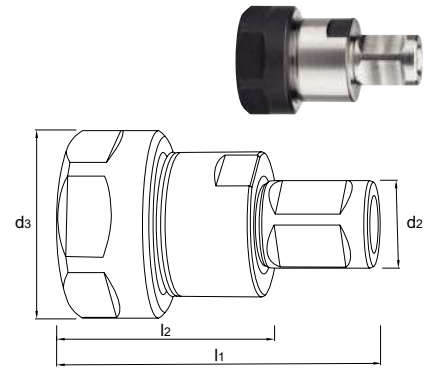
NL Toebehoren voor Kernboor
 FR Accessoires pour Fraises à carotter
 ES Accesorios para Fresa hueca
 DE Zubehör für Kernbohrer
 EN Annular Cutter Accessories



Ref.	Type	d1	l1	62.xxx	€
62.300.0025	30 mm	6,35/5,3 mm	77	62.100, 62.104, 62.122	4,43
62.300.0026	30 mm	6,35/5,3 mm	77	62.100, 62.104, 62.122	3,80
62.300.0035	40 mm	6,35/5,3 mm	90	62.200(≤17,5 mm), 62.250, 62.270	4,74
62.300.0050	55 mm	6,35/5,3 mm	102	62.150, 62.154, 62.162, 62.280	5,01
62.300.0054	55 mm	6,35/5,3 mm	106	62.220(≤17,5 mm)	4,88
62.300.0056	40 mm	6,35/5,3 mm	116	62.200(≤17,5 mm) + 62.300.9020	5,69
62.300.0058	55 mm	6,35/5,3 mm	127	62.150, 62.154, 62.162, 62.220(≤17,5 mm) + 62.300.9020	6,32
62.300.0062	110 mm	6,35/5,3 mm	160	62.240(≤17,5 mm)	10,44
62.300.0070	30 mm	7,98 mm	77	62.130, 62.210	4,43
62.300.0076	40 mm	7,98 mm	90	62.200(>17,5 mm)	5,01
62.300.0086	40 mm	7,98 mm	118	62.200(>17,5 mm) + 62.300.9021	6,59
62.300.0090	55 mm	7,98 mm	115	62.220(>60 mm)	6,59
62.300.0092	55 mm	7,98 mm	130	62.220(>17,5 mm) + 62.300.9021	8,18
62.300.0094	40 mm	7,98 mm	145	62.200(>17,5 mm) + 62.300.9150	7,59
62.300.0100	110 mm	7,98 mm	160	62.180, 62.240(>17,5 mm)	8,84
62.300.0102	40 mm	7,98 mm	165	62.200(>17,5 mm) + 62.300.9175	8,84
62.300.0108	55 mm	7,98 mm	180	62.220(>17,5 mm) + 62.300.9175	11,36
62.300.0120	30 mm	7,98/6,35/5,3 mm	127	62.100, 62.104, 62.122 + 62.300.9150	7,59
62.300.0125	40 mm	7,98/6,35/5,3 mm	140	62.200(≤17,5mm) + 62.300.9150	8,22
62.300.0130	55 mm	7,98/6,35/5,3 mm	153	62.150, 62.154, 62.162, 62.220(≤17,5 mm) + 62.300.9150	9,49
62.300.0135	40 mm	7,98/6,35/5,3 mm	165	62.200(≤17,5 mm) + 62.300.9175	10,01
62.300.0140	55 mm	7,98/6,35/5,3 mm	178	62.150, 62.154, 62.162, 62.220(≤17,5 mm) + 62.300.9175	11,07
62.300.1000	MK 2				117,00
62.300.2000	MK 3				130,25
62.300.3000	MK 4				132,15
62.300.4000	MK 2				177,10
62.300.5000	MK 3				187,20
62.300.6000	MK 4				196,05
62.300.9015	Fein M18 -> Weldon		43		31,60
62.300.9020	Fein QuickIn -> Weldon	6,35 mm	25		27,80
62.300.9021	Fein QuickIn -> Weldon	7,98 mm	25		27,80
62.300.9052	Weldon -> 1/2 -20 UNF				24,97
62.300.9066	Weldon -> B16				21,85
62.300.9150	Weldon -> B16	35 mm	74		37,30
62.300.9175	Weldon -> Weldon	35 mm	99		41,05

> 62.350 Phantom

NL Spantanghouder, voor kernboormachine ER
 FR Mandrin porte-pinces, pour carotteuse ER
 ES Portapinzas, para perforadora de núcleo ER
 DE Spannzangenfutter, für Kernbohrmaschine ER
 EN Collet Chuck, for core drilling machine ER



Ref.	d2	Type	Ø	l1	l2	d3	sw	€
62.350.1925	Ø 19 Weldon	ER25	1-20	70	46	42	38	110,25



NL Unieke spantanghouder voor kleinere diameters en kort opspannen in de kernboormachine
 FR Mandrin porte-pinces unique pour petits diamètres et serrage court pour perceuses magnétiques
 ES Porta pinzas único para diámetros pequeños y sujeción corta para taladradoras magnéticas
 DE Einzigartiges Spannzangenfutter für kleinere Durchmesser und schnelles Einspannen in die Kernbohrmaschine
 EN Unique collet chuck for smaller diameters and short clamping for magnetic drilling machines

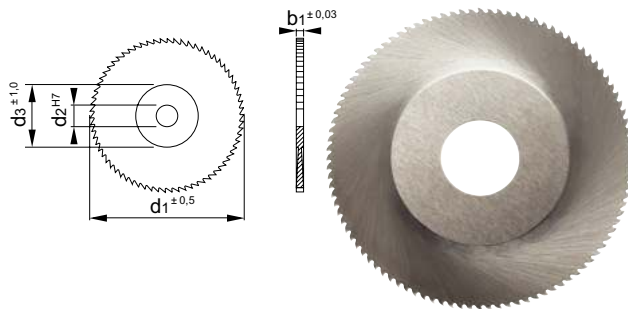
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> 63.210 **Phantom**

NL HSS Metaalcirkelzaag GF/Orbitalum
 FR Fraise-scie HSS GF/Orbitalum
 ES Fresa sierra circular HSS GF/Orbitalum
 DE HSS Metallkreissägeblätter GF/Orbitalum
 EN HSS Circular Saw Blade GF/Orbitalum



HSS **BW** +GF+

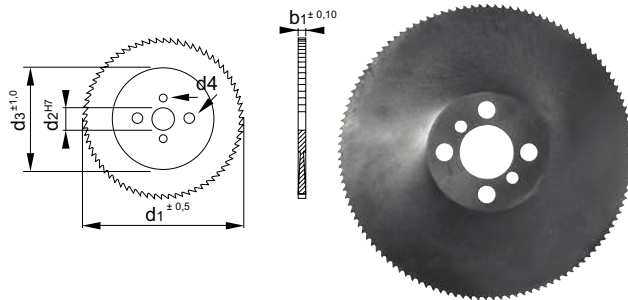
P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤650 N/mm ²	M 22 INOX >850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
30-40	25-35	15-25	15-20	10-15	6-8	25-30	20-25	500-700	500-700	200-400	200-600

Ref.	d1	b1	d2	d3	z	t	€
63.210.0612	63	1.2	16	36	100	2	36,25
63.210.0616	63	1.6	16	36	44	4,5	39,50
63.210.0617	63	1.6	16	36	64	3	39,50
63.210.0618	63	1.6	16	36	80	2,5	39,50
63.210.0716	68	1.6	16	42	44	4,75	42,95
63.210.0717	68	1.6	16	42	84	2,5	42,95
63.210.0718	68	1.6	16	42	72	3	42,95

Ref.	d1	b1	d2	d3	z	t	€
63.210.0719	68	1.6	16	42	64	3,25	42,95
63.210.0720	68	2	16	42	44	4,75	46,25
63.210.0814	80	1.6	16	42	44	5,75	50,85
63.210.0816	80	1.6	16	42	64	4	50,85
63.210.0818	80	1.6	16	42	80	3,25	50,85
63.210.0828	80	2	16	42	80	3,25	55,30

> 63.400 **Phantom**

NL HSS Afkortzaag stoomontlaten
 FR Fraise-scie à tronçonner HSS vaporisé
 ES Fresa sierra circular tronzoadora HSS vaporizada
 DE HSS Trennsägeblätter dampfangelassen
 EN HSS Circular Saw Blade steam oxide



HSS **OX.** **Ts4** **Ts5**
BW **C**

P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
30-40	25-35	15-25	25-30	20-25	500-700	500-700	200-400	200-600

Ref.	d1	b1	d2	d3	z	t	d4	€
63.400.2013	200	1.8	32	90	130	5	2/8-45+2/11-63	128,55
63.400.2016	200	1.8	32	90	160	4	2/8-45+2/11-63	128,55
63.400.2018	200	1.8	32	90	180	3,5	2/8-45+2/11-63	128,55
63.400.2126	225	1.2	32	100	264	2,5	2/8-45+2/11-63+2/9-50	177,80
63.400.2209	225	2	32	90	90	8	2/8-45+2/11-63+2/9-50	129,90
63.400.2212	225	2	32	90	120	6	2/8-45+2/11-63+2/9-50	129,90
63.400.2214	225	2	32	90	140	5	2/8-45+2/11-63+2/9-50	129,90
63.400.2218	225	2	32	90	180	4	2/8-45+2/11-63+2/9-50	129,90
63.400.2222	225	2	32	90	220	3	2/8-45+2/11-63+2/9-50	129,90
63.400.2312	225	2	40	90	120	6	2/8-55+4/11-63	129,90
63.400.2318	225	2	40	90	180	4	2/8-55+4/11-63	129,90
63.400.2326	225	2	40	90	220	3	2/8-55+4/11-63	129,90
63.400.2508	250	2	32	90	80	10	2/8-45+2/11-63+2/9-50	136,75
63.400.2510	250	2	32	90	100	8	2/8-45+2/11-63+2/9-50	136,75
63.400.2512	250	2	32	90	128	6	2/8-45+2/11-63+2/9-50	136,75
63.400.2516	250	2	32	90	160	5	2/8-45+2/11-63+2/9-50	136,75
63.400.2520	250	2	32	90	200	4	2/8-45+2/11-63+2/9-50	136,75
63.400.2525	250	2	32	90	250	3	2/8-45+2/11-63+2/9-50	136,75
63.400.2566	250	2,5	32	100	160	5	2/8-45+2/11-63+2/9-50	160,30
63.400.2570	250	2,5	32	100	200	4	2/8-45+2/11-63+2/9-50	160,30
63.400.2575	250	2,5	32	100	250	3	2/8-45+2/11-63+2/9-50	160,30
63.400.2608	250	2,5	40	100	80	10	2/8-55+4/12-64	160,30
63.400.2610	250	2,5	40	100	100	8	2/8-55+4/12-64	160,30
63.400.2612	250	2,5	40	100	128	6	2/8-55+4/12-64	160,30
63.400.2616	250	2,5	40	100	160	5	2/8-55+4/12-64	160,30
63.400.2620	250	2,5	40	100	200	4	2/8-55+4/12-64	160,30
63.400.2625	250	2,5	40	100	250	3	2/8-55+4/12-64	160,30
63.400.2709	275	2,5	32	100	90	10	2/8-45+2/11-63+2/12-75	180,40
63.400.2711	275	2,5	32	100	110	8	2/8-45+2/11-63+2/12-75	180,40
63.400.2714	275	2,5	32	100	140	6	2/8-45+2/11-63+2/12-75	180,40
63.400.2718	275	2,5	32	100	180	5	2/8-45+2/11-63+2/12-75	180,40
63.400.2722	275	2,5	32	100	220	4	2/8-45+2/11-63+2/12-75	180,40
63.400.2728	275	2,5	32	100	280	3	2/8-45+2/11-63+2/12-75	180,40

Ref.	d1	b1	d2	d3	z	t	d4	€
63.400.2809	275	2,5	40	100	90	10	2/8-55+4/12-64	180,40
63.400.2811	275	2,5	40	100	110	8	2/8-55+4/12-64	180,40
63.400.2814	275	2,5	40	100	140	6	2/8-55+4/12-64	180,40
63.400.2818	275	2,5	40	100	180	5	2/8-55+4/12-64	180,40
63.400.2822	275	2,5	40	100	220	4	2/8-55+4/12-64	180,40
63.400.2828	275	2,5	40	100	280	3	2/8-55+4/12-64	180,40
63.400.3009	300	2,5	32	100	90	10	2/8-45+4/11-63	222,80
63.400.3012	300	2,5	32	100	120	8	2/8-45+4/11-63	222,80
63.400.3016	300	2,5	32	100	160	6	2/8-45+4/11-63	222,80
63.400.3018	300	2,5	32	100	180	5	2/8-45+4/11-63	222,80
63.400.3020	300	2,5	32	100	200	4	2/8-45+4/11-63	222,80
63.400.3022	300	2,5	32	100	220	4	2/8-45+4/11-63	222,80
63.400.3030	300	2,5	32	100	300	3	2/8-45+4/11-63	222,80
63.400.3059	300	3	40	100	90	10	2/8-55+4/12-64	284,00
63.400.3062	300	3	40	100	120	8	2/8-55+4/12-64	284,00
63.400.3066	300	3	40	100	160	6	2/8-55+4/12-64	284,00
63.400.3068	300	3	40	100	180	5	2/8-55+4/12-64	284,00
63.400.3072	300	3	40	100	220	4	2/8-55+4/12-64	284,00
63.400.3080	300	3	40	100	300	3	2/8-55+4/12-64	284,00
63.400.3110	315	2,5	32	100	100	10	2/8-45+4/11-63	241,05
63.400.3112	315	2,5	32	100	120	8	2/8-45+4/11-63	241,05
63.400.3116	315	2,5	32	100	160	6	2/8-45+4/11-63	241,05
63.400.3120	315	2,5	32	100	200	5	2/8-45+4/11-63	241,05
63.400.3124	315	2,5	32	100	240	4	2/8-45+4/11-63	241,05
63.400.3130	315	2,5	32	100	300	3	2/8-45+4/11-63	241,05
63.400.3160	315	2,5	40	100	100	10	2/8-55+2/12-64	241,05
63.400.3162	315	2,5	40	100	120	8	2/8-55+2/12-64	241,05
63.400.3166	315	2,5	40	100	160	6	2/8-55+2/12-64	241,05
63.400.3170	315	2,5	40	100	200	5	2/8-55+2/12-64	241,05
63.400.3174	315	2,5	40	100	240	4	2/8-55+2/12-64	241,05
63.400.3180	315	2,5	40	100	300	3	2/8-55+2/12-64	241,05
63.400.3512	350	3	32	120	120	9	2/8-45+4/11-63	347,00
63.400.3514	350	3	32	120	140	8	2/8-45+4/11-63	347,00

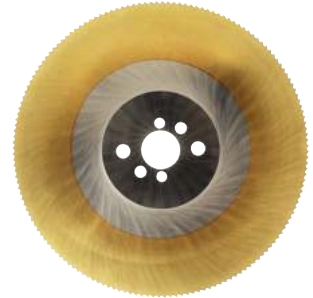
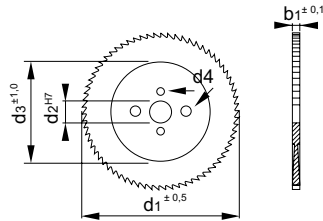
**> 63.400 Phantom**

Ref.	d1	b1	d2	d3	z	t	d4	€
63.400.3518	350	3	32	120	180	6	2/8-45+4/11-63	347,00
63.400.3522	350	3	32	120	220	5	2/8-45+4/11-63	347,00
63.400.3528	350	3	32	120	280	4	2/8-45+4/11-63	347,00
63.400.3535	350	3	32	120	350	3	2/8-45+4/11-63	347,00
63.400.3562	350	3	40	120	120	9	2/8-55+4/12-64	347,00
63.400.3564	350	3	40	120	140	8	2/8-55+4/12-64	347,00
63.400.3568	350	3	40	120	180	6	2/8-55+2/12-64	347,00
63.400.3572	350	3	40	120	220	5	2/8-55+2/12-64	347,00
63.400.3578	350	3	40	120	280	4	2/8-55+2/12-64	347,00
63.400.3585	350	3	40	120	350	3	2/8-55+4/12-64	347,00
63.400.3608	350	3	50	120	80	14	4/15-80+4/14-85	347,00

Ref.	d1	b1	d2	d3	z	t	d4	€
63.400.3612	350	3	50	120	120	9	4/15-80+4/14-85	347,00
63.400.3616	350	3	50	120	160	7	4/15-80+4/14-85	347,00
63.400.3622	350	3	50	120	220	5	4/15-80+4/14-85	347,00
63.400.3711	370	3	50	120	110	10	4/15-80+4/14-85	467,00
63.400.3716	370	3	50	120	160	7	4/15-80+4/14-85	467,00
63.400.3722	370	3	50	120	220	5	4/15-80+4/14-85	467,00
63.400.4008	400	3	50	120	80	16	4/15-80+4/14-85	479,00
63.400.4010	400	3	50	120	100	12	4/15-80+4/14-85	479,00
63.400.4012	400	3	50	120	120	10	4/15-80+4/14-85	479,00
63.400.4016	400	3	50	120	160	8	4/15-80+4/14-85	479,00
63.400.4020	400	3	50	120	200	6	4/15-80+4/14-85	479,00

> 63.401 Phantom

NL HSS Afkortzaag TiN
FR Fraise-scie à tronçonner HSS TiN
ES Fresa sierra circular tronzadora HSS TiN
DE HSS Trennsägeblätter TiN
EN HSS Circular Saw Blade TiN



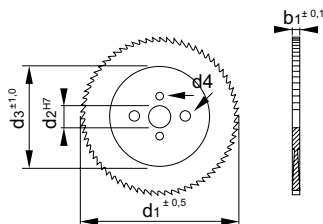
HSS	TiN	Ts4 BW	T≥5 C
P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG
K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu
N 61 PVC			
30-40	25-35	15-25	25-30
			20-25
			500-700
			500-700
			200-400
			200-600

Ref.	d1	b1	d2	d3	z	t	d4	€
63.401.2512	250	2	32	100	128	6	2/8-45+2/11-63+2/9-50	168,20
63.401.2516	250	2	32	100	160	5	2/8-45+2/11-63+2/9-50	168,20
63.401.2520	250	2	32	100	200	4	2/8-45+2/11-63+2/9-50	168,20
63.401.2525	250	2	32	100	250	3	2/8-45+2/11-63+2/9-50	168,20
63.401.2566	250	2.5	32	100	160	5	2/8-45+2/11-63+2/9-50	185,15
63.401.2570	250	2.5	32	100	200	4	2/8-45+2/11-63+2/9-50	185,15
63.401.2714	275	2.5	32	100	140	6	2/8-45+2/11-63+2/12-75	214,80
63.401.2718	275	2.5	32	100	180	5	2/8-45+2/11-63+2/12-75	214,80
63.401.2722	275	2.5	32	100	220	4	2/8-45+2/11-63+2/12-75	214,80
63.401.2814	275	2.5	40	100	140	6	2/8-55+4/12-64	214,80
63.401.2818	275	2.5	40	100	180	5	2/8-55+4/12-64	214,80
63.401.2822	275	2.5	40	100	220	4	2/8-55+4/12-64	214,80

Ref.	d1	b1	d2	d3	z	t	d4	€
63.401.3016	300	2.5	32	100	160	6	2/8-45+4/11-63	256,00
63.401.3018	300	2.5	32	100	180	5	2/8-45+4/11-63	256,00
63.401.3022	300	2.5	32	100	220	4	2/8-45+4/11-63	256,00
63.401.3116	315	2.5	32	100	160	6	2/8-45+4/11-63	282,00
63.401.3120	315	2.5	32	100	200	5	2/8-45+4/11-63	282,00
63.401.3124	315	2.5	32	100	240	4	2/8-45+4/11-63	282,00
63.401.3166	315	2.5	40	100	160	6	2/8-55+4/12-64	282,00
63.401.3170	315	2.5	40	100	200	5	2/8-55+4/12-64	282,00
63.401.3174	315	2.5	40	100	240	4	2/8-55+4/12-64	282,00
63.401.3518	350	3	32	100	180	6	2/8-45+4/11-63	356,00
63.401.3522	350	3	32	100	220	5	2/8-45+4/11-63	356,00

> 63.420 Phantom

NL HSS-E Afkortzaag stoomontlaten
FR Fraise-scie à tronçonner HSS-E vaporisé
ES Fresa sierra circular tronzadora HSS-E vaporizada
DE HSS-E Trennsägeblätter dampfangelassen
EN HSS-E Circular Saw Blade steam oxide



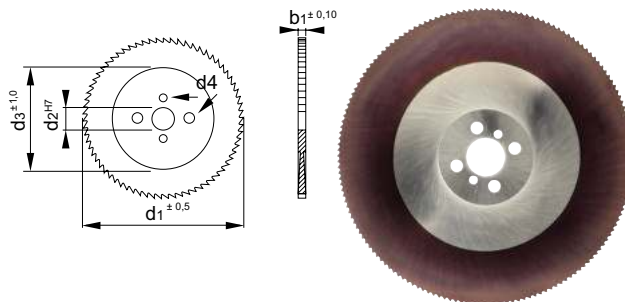
HSS-E	OX.	Ts4 BW	T≥5 C	INOX
P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850 N/mm ²
M 22 INOX >850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%
N 51 Cu	N 61 PVC			
30-40	25-35	15-25	15-20	10-15
				6-8
				25-30
				20-25
				500-700
				500-700
				200-400
				200-600

Ref.	d1	b1	d2	d3	z	t	d4	€
63.420.2218	225	2	32	90	180	4	2/8-45+2/11-63+2/9-50	211,25
63.420.2222	225	2	32	90	220	3	2/8-45+2/11-63+2/9-50	211,25
63.420.2516	250	2	32	100	160	5	2/8-45+2/11-63+2/9-50	190,65
63.420.2520	250	2	32	100	200	4	2/8-45+2/11-63+2/9-50	190,65
63.420.2525	250	2	32	100	250	3	2/8-45+2/11-63+2/9-50	190,65
63.420.2714	275	2.5	32	100	140	6	2/8-45+2/11-63+2/12-75	253,00
63.420.2718	275	2.5	32	100	180	5	2/8-45+2/11-63+2/12-75	253,00
63.420.2722	275	2.5	32	100	220	4	2/8-45+2/11-63+2/12-75	253,00
63.420.2814	275	2.5	40	100	140	6	2/8-55+4/12-64	253,00
63.420.2818	275	2.5	40	100	180	5	2/8-55+4/12-64	253,00
63.420.2822	275	2.5	40	100	220	4	2/8-55+4/12-64	253,00
63.420.3018	300	2.5	32	100	180	5	2/8-45+4/11-63	305,00

Ref.	d1	b1	d2	d3	z	t	d4	€
63.420.3020	300	2.5	32	100	200	5	2/8-45+4/11-63	305,00
63.420.3022	300	2.5	32	100	220	4	2/8-45+4/11-63	305,00
63.420.3030	300	2.5	32	100	300	3	2/8-45+4/11-63	305,00
63.420.3116	315	2.5	32	100	160	6	2/8-45+4/11-63	336,00
63.420.3120	315	2.5	32	100	200	5	2/8-45+4/11-63	336,00
63.420.3124	315	2.5	32	100	240	4	2/8-45+4/11-63	336,00
63.420.3166	315	2.5	40	100	160	6	2/8-55+4/12-64	336,00
63.420.3170	315	2.5	40	100	200	5	2/8-55+4/12-64	336,00
63.420.3174	315	2.5	40	100	240	4	2/8-55+4/12-64	336,00
63.420.3518	350	3	32	120	180	6	2/8-45+4/11-63	567,00
63.420.3522	350	3	32	120	220	5	2/8-45+4/11-63	567,00
63.420.3528	350	3	32	120	280	4	2/8-45+4/11-63	567,00

> 63.424 Phantom

NL HSS-E Afkortzaag TiAIN
 FR Fraise-scie à tronçonner HSS-E TiAIN
 ES Fresa sierra circular tronzadora HSS-E TiAIN
 DE HSS-E Trennsägeblätter TiAIN
 EN HSS-E Circular Saw Blade TiAIN



HSS-E TiAIN T≤4 BW T≥5 C INOX

P 11 S800 N/mm ²	P 12 S850 N/mm ²	P 13 S1000 N/mm ²	P 14 S1400 N/mm ²	M 21 INOX S850N/mm ²	M 22 INOX >850N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 42 Alu Si>10%	N 51 Cu	N 61 PVC
30-40	25-35	15-25	15-20	10-15	6-8	25-30	20-25	500-700	500-700	200-400	200-600

Ref.	d1	b1	d2	d3	z	t	d4	€
63.424.2822	275	2.5	40	100	220	4	2/8-55+4/12-64	302,00
63.424.3022	300	2.5	32	100	220	4	2/8-45+4/11-63	361,00
63.424.3030	300	2.5	32	100	300	3	2/8-45+4/11-63	361,00
63.424.3116	315	2.5	32	100	160	6	2/8-45+2/11-63	396,00
63.424.3120	315	2.5	32	100	200	5	2/8-45+4/11-63	396,00
63.424.3124	315	2.5	32	100	240	4	2/8-45+4/11-63	396,00

Ref.	d1	b1	d2	d3	z	t	d4	€
63.424.3166	315	2.5	40	100	160	6	2/8-55+4/12-64	396,00
63.424.3170	315	2.5	40	100	200	5	2/8-55+4/12-64	396,00
63.424.3174	315	2.5	40	100	240	4	2/8-55+4/12-64	396,00
63.424.3518	350	3	32	120	180	6	2/8-45+4/11-63	500,00
63.424.3522	350	3	32	120	220	5	2/8-45+4/11-63	500,00

> 64.150 Phantom

NL HSS-Co Bi-Metaal Handzaagblad
 FR Lame de scie à main HSS-Co Bi-métal
 ES Hoja de sierra manual HSS-Co Bi-metal
 DE HSS-Co Bi-Metall Handsägeblätter
 EN HSS-Co Bi-Metal Hand Hacksaw Blade



HSS-Co 300mm 12"

Ref.	T/''	t	€
64.150.1800	18	1,4	2,50
64.150.2400	24	1	2,50
64.150.3200	32	0,8	2,50

> 64.460 Phantom

NL HSS Metaalzaagbeugel robuuste uitvoering
 FR Monture de scie à métaux HSS version Heavy Duty
 ES Mango de sierra HSS versión macizo
 DE HSS Metallsägebogen robuste Ausführung
 EN HSS Hacksaw Bracket sturdy version

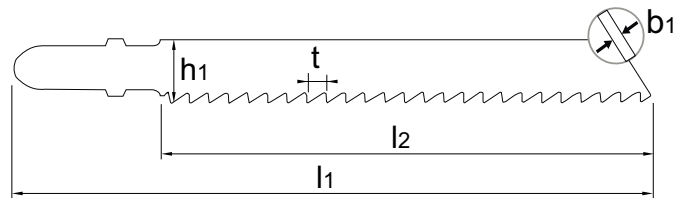






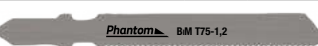






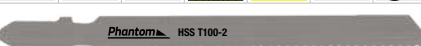



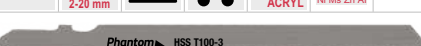



















HSS 24 TPI 180KG 45°-90° 300mm 12"

Ref.	Nr.	€
64.460.1001	1	62,00

> 64.500 Phantom

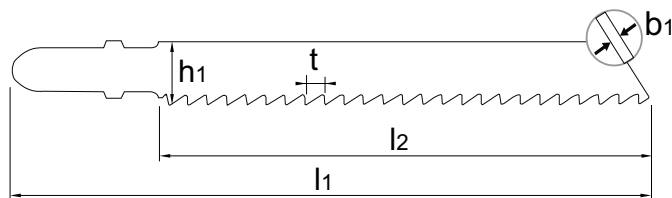
NL Decoupeerzaag, voor metaal
FR Lame de scie sauteuse, pour métal
ES Hojas de sierra de calar, para metal
DE Sticksägeblätter, für Metall
EN Jigsaw Blade



Ref.	Type	l1	l2	h1	b1	t		€
64.500.0710	T75-0,9	75	50	8,0	1,00	0,9	 BiM HSS 0,5-1,5 mm 	12,71
64.500.0711	T75-1,1 INOX	75	50	9,5	1,00	1,1	 HM 1,5-3 mm 	37,70
64.500.0714	T75-1,2	75	50	8,0	1,00	1,2	 BiM HSS 1-3 mm 	12,71
64.500.0720	T75-2	75	50	8,0	1,00	2	 BiM HSS 2,6-6 mm 	12,71
64.500.1018	T100-1,2/2,5 UNI	100	75	8,0	1,00	1,2-2,5	 BiM HSS 1,5-10 mm   	15,88
64.500.1021	T100-2	100	75	8,0	1,27	2	 HSS 2-20 mm   	18,17
64.500.1025	T100-3	100	75	8,0	1,15	3	 HSS 3-15 mm  	11,72
64.500.1027	T100-3C	100	75	6,2	1,15	3	 HSS 3-15 mm  	14,43
64.500.1312	T132-1,2	132	110	8,0	1,00	1,2	 BiM HSS 1-3 mm  	19,06
64.500.1313	T132-1/1,6 UNI	132	110	8,0	1,00	1-1,6	 BiM HSS 1,2-6 mm   	20,75
64.500.1321	T132-1,8/2,5 UNI	132	110	8,0	1,27	1,8-2,5	 BiM HSS 3-100 mm   	20,75
64.500.1330	T132-2/4 UNI	132	110	8,0	1,27	2-4	 BiM HSS 3-65 mm   	19,86

> 64.500 **Phantom**

NL Decoupeerzaag, voor hout, tegels, cellenbeton en composiet
 FR lame de scie sauteuse, pour bois
 ES Hojas de sierra de calar, para madera
 DE Stichsägeblätter, für Holz
 EN Jigsaw Blade

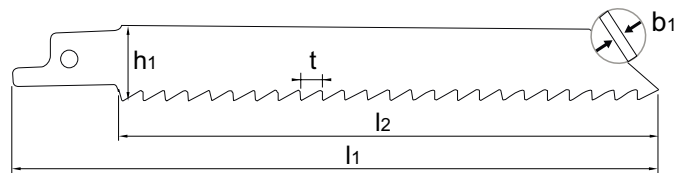


Ref.	Type	l1	l2	h1	b1	t		€
64.500.0725	T75-2C	75	50	5,4	1,25	2	 CV	6,47
64.500.0819	T80-1,9	80	55	8,0	1,27	1,9	 BiM HSS	16,43
64.500.1020	T100-2G	100	75	8,0	1,27	2	 BiM HSS	18,05
64.500.1024	T100-2,5CG	100	75	8,0	1,27	2,5	 CV	11,04
64.500.1026	T100-2,5G	100	75	8,0	1,27	2,5	 BiM HSS	18,05
64.500.1028	T100-2,5NG	100	75	8,0	1,27	2,5	 BiM HSS	18,05
64.500.1042	T100-4G	100	75	8,0	1,27	4	 BiM HSS	16,25
64.500.1150	T115-2,5/3,2G	115	90	8,0	1,45	2,5-3,2	 CV	20,18
64.500.1340	T132-4G	132	110	8,0	1,27	4	 BiM HSS	19,86
64.500.1540	T150-4	150	130	8,0	1,25	4	 CV	9,86
64.500.1950	T75-HM	75	50	8,0	1,00	-	 HM	6,47
64.500.2043	T100-4,3HM	100	75	8,0	1,25	4,3	 HM	76,25



> 64.600 Phantom

NL Reciprozaag
 FR Lame de scie sabre
 ES Hojas de sierra de sable
 DE Säbelsägeblätter
 EN Sabre Saw Blade



Ref.	Type	l1	l2	h1	b1	t		€
64.600.1510	R150-1	150	130	19,0	0,90	1	Phantom BIM R150-1	21,35
							BiM HSS 0,7-3 mm	
64.600.1514	R150-1,4	150	130	19,0	0,90	1,4	Phantom BIM R150-1,4	21,35
							BiM HSS 1,5-4 mm INOX	
64.600.1518	R150-1,8	150	130	19,0	0,90	1,8	Phantom BIM R150-1,8	21,35
							BiM HSS 3-8 mm INOX	
64.600.1519	R150-1,8 90°	150	130	25,4	0,90	1,8	Phantom BIM R150-1,8 90°	32,30
							BiM HSS 3-8 mm INOX 90°	
64.600.1522	R150-1,8/2,5 UNI	150	130	19,0	1,27	1,8-2,5	Phantom BIM R150-1,8/2,5 UNI	29,35
							BiM HSS 3-12 mm UNI INOX	
64.600.1525	R150-2,5	150	130	19,0	0,90	2,5	Phantom BIM R150-2,5	21,35
							BiM HSS 3-12 mm	
64.600.1540	R150-4,2C	150	130	19,0	1,27	4,2	Phantom BIM R150-4,2C	26,85
							BiM HSS 6-100 mm	
64.600.2014	R200-1,4	200	180	19,0	0,90	1,4	Phantom BIM R200-1,4	27,30
							BiM HSS 1,5-4 mm INOX	
64.600.2018	R200-1,8	200	180	19,0	0,90	1,8	Phantom BIM R200-1,8	27,30
							BiM HSS 2-8 mm	
64.600.2023	R200-1,8/2,5 UNI	200	180	19,0	1,27	1,8-2,5	Phantom BIM R200-1,8/2,5 UNI	36,80
							BiM HSS 3-12 mm UNI	
64.600.2025	R200-2,5	200	180	19,0	0,90	2,5	Phantom BIM R200-2,5	27,30
							BiM HSS 3-150 mm	
64.600.2214	R230-1,4	230	210	19,0	0,90	1,4	Phantom BIM R230-1,4	32,30
							BiM 8% Co 1,5-4 mm INOX	
64.600.2218	R230-1,8	230	210	19,0	0,90	1,8	Phantom BIM R230-1,8	31,10
							BiM HSS 2-8 mm	

Ref.	Type	l1	l2	h1	b1	t		€
64.600.2220	R230-2	230	210	19,0	1,27	2	 BIM HSS 2,5-10 mm	37,05
64.600.2221	R230-1,8/2,5 UNI	230	210	19,0	0,90	1,8-2,5	 BIM HSS 3-12 mm UNI	33,35
64.600.2225	R230-2,5	230	210	19,0	0,90	2,5	 BIM HSS 3-12 mm	32,30
64.600.2232	R230-2,2/3,2 UNI	230	210	19,0	1,27	2,2-3,2	 BIM HSS UNI MDF 90°	38,70
64.600.2332	R230-3,2	230	210	19,0	1,57	3,2	 BIM HSS 4-12 mm 90° GG	53,20
64.600.2342	R230-4,2C	230	210	19,0	1,27	4,2	 BIM HSS 6-175 mm MDF	35,80
64.600.2356	R230-5/6,5	230	210	19,0	1,20	5-6,5	 CV 15-190 mm SOFT	33,10
64.600.3018	R300-1,8	300	280	19,0	0,90	1,8	 BIM HSS 2-8 mm INOX	35,45
64.600.3021	R300-1,8/2,5 UNI	300	280	19,0	0,90	1,8-2,5	 BIM HSS 3-12 mm UNI	43,05
64.600.3025	R300-2,5	300	280	19,0	0,90	2,5	 BIM HSS 3-12 mm GG	35,45
64.600.3032	R300-4,2C	300	280	19,0	1,27	4,2	 BIM HSS 6-250 mm MDF	45,10



> 66.450 Phantom

NL M42 Bi-Metaal Bandzaag voor profielmateriaal
 FR Scie à ruban Bi-métal M42 pour profilés
 ES Sierra de cinta Bimetal M42 para materiales de perfiles
 DE M42 Bi-Metall Sägebänder für Profilmaterial
 EN M42 Bi-Metal Band saw for profile material



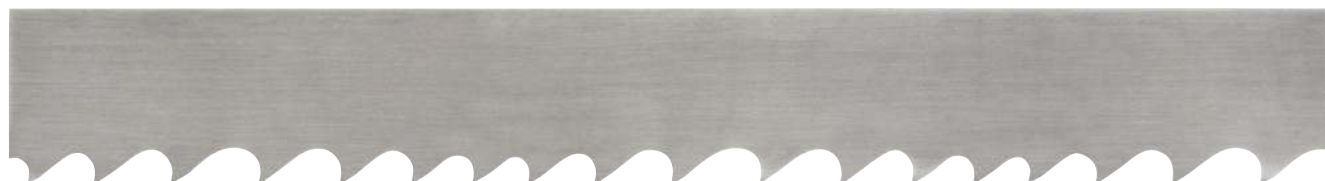
P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850 N/mm ²	M 22 INOX >850 N/mm ²	K 31 GG	K 32 GGG GTS-GTW	N 41 Alu	N 51 Cu	S 71 Ni/Co	S 72 Ti
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50-120	35-50	30-45	30-40	30-40	10-30	30-60	30-60	80-800	50-400	10-25	10-20
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h1 x b1 (mm)	Price pr. Meter €	Welding costs €	z=5-8/''	z=6-10/''	z=8-12/''	z=10-14/''
13 x 0,65	€ 14,70	€ 11,30		66.450.07...	66.450.08...	66.450.09...
13 x 0,9	€ 15,70	€ 11,30		66.450.17...	66.450.18...	66.450.19...
20 x 0,9	€ 16,20	€ 12,65	66.450.26...	66.450.27...	66.450.28...	66.450.29...
27 x 0,9	€ 17,00	€ 13,35	66.450.36...	66.450.37...	66.450.38...	66.450.39...
34 x 1,1	€ 21,15	€ 13,85	66.450.56...	66.450.57...	66.450.58...	

> 66.460 Phantom

NL M42 Bi-Metaal Bandzaag voor grotere afmetingen
 FR Scie à ruban Bi-métal M42 pour matériaux de grandes dimensions
 ES Sierra de cinta Bi-metal M42 para materiales con dimensiones grandes
 DE M42 Bi-Metall Sägebänder größer Abmessung
 EN M42 Bi-Metal Band saw for large sizes



P 11 ≤600 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	P 14 ≤1400 N/mm ²	M 21 INOX ≤850 N/mm ²	M 22 INOX >850 N/mm ²	K 31 GG	N 41 Alu	N 42 Alu Si>10%
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50-120	35-50	30-45	30-40	30-40	10-30	30-60	80-800	80-800
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h1 x b1 (mm)	Price pr. Meter €	Welding costs €	z=2-3/''	z=3-4/''	z=4-6/''
20 x 0,9	€ 16,20	€ 12,65			66.460.25...
27 x 0,9	€ 17,00	€ 13,35	66.460.33...	66.460.34...	66.460.35...
34 x 1,1	€ 21,15	€ 13,85	66.460.53...	66.460.54...	66.460.55...
41 x 1,3	€ 30,50	€ 19,60	66.460.63...	66.460.64...	66.460.65...
54 x 1,6	€ 43,85	€ 31,15	66.450.73...	66.460.74...	

> 66.580 Phantom

- NL M51 Bi-Metal Bandzaag voor grotere afmetingen, extra slijtvast
 FR Scie à ruban Bi-métal M51 pour matériaux de grandes dimensions, très résistante à l'usure
 ES Sierra de cinta Bi-metal M51 para materiales con dimensiones grandes, extra resistente al desgaste
 DE M51 BiMetall Sägebänder größer Abmessung, besonders Verschleissfest
 EN M51 Bi-Metal Band saw for large sizes, Extra wear-resistant

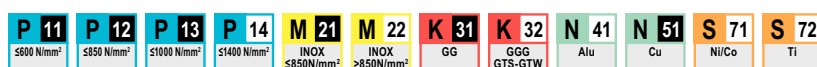


50-120	35-50	30-45	30-40	30-40	10-30	10-25	10-20
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h1 x b1 (mm)	Price pr. Meter €	Welding costs €	z=3-4/''	z=4-6/''	z=5-8/''
27 x 0,9	€ 23,85	€ 13,35	66.580.44....	66.580.45....	66.580.46....
34 x 1,1	€ 33,05	€ 13,85	66.580.54....	66.580.55....	
41 x 1,3	€ 39,25	€ 19,60	66.580.64....	66.580.65....	

> 66.700 Phantom

- NL HP2 UNI M42 Bi-Metaal Bandzaag universele multizaag
 FR Scie à ruban Bi-métal M42 HP2 UNI scie multifonction
 ES Sierra de cinta Bimetal M42 HP2 UNI sierra universal
 DE HP2 UNI M42 Bi-Metall Sägebänder Universal-Sägeband
 EN HP2 UNI M42 Bi-Metal Band saw universal multi-saw

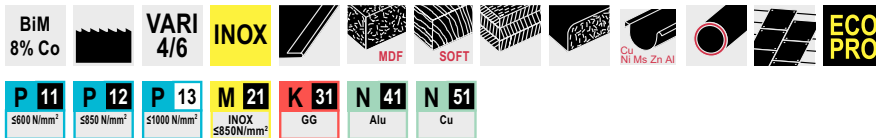


50-120	35-50	30-45	30-40	30-40	10-30	30-60	30-60	80-800	50-400	10-25	10-20
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h1 x b1 (mm)	Price pr. Meter €	Welding costs €	z=3-4/''	z=4-6/''	z=5-7/''	z=7-9/''	z=8-11/''
27 x 0,9	€ 19,55	€ 13,35	66.700.34....	66.700.35....	66.700.36....	66.700.37....	66.700.38....
34 x 1,1	€ 22,95	€ 13,85	66.700.54....	66.700.55....	66.700.56....		
41 x 1,3	€ 33,00	€ 19,60	66.700.64....	66.700.65....	66.700.66....		
54 x 1,6	€ 47,50	€ 31,15	66.700.74....				

**> 69.090 INTERNATIONAL TOOLS**

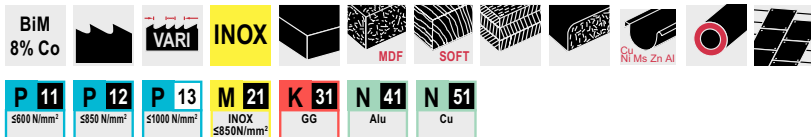
NL ECO PRO HSS-Co 8% Bi-Metaal Set Gatzagen 61.090
 FR Jeu de Scies cloches HSS-Co 8% Bi-métal ECO PRO 61.090
 ES Juego de coronas perforadoras HSS-Co 8% Bi-Metal ECO PRO 61.090
 DE ECO PRO HSS-Co 8% Bi-Metall Satz Lochsägen 61.090
 EN ECO PRO HSS-Co 8% Bi-Metal Hole saw set 61.090

**NIEUW NOUVEAU NUEVO NEU**

Ref.	1	2	3	4	€
69.090.1200	16, 19, 22, 25, 29, 32, 35, 38, 44, 51, 64, 76 mm	Nr. 2+5	61.147.0600	61.160.9500	180,00
69.090.1201	16, 19, 22, 25, 29, 32, 35, 38, 44, 51, 68, 76 mm	Nr. 2+5	61.147.0600	61.160.9500	180,00

> 69.111 Phantom

NL HSS-Co 8% Bi-Metaal Set Gatzagen 61.105
 FR Jeu de Scies cloches HSS-Co 8% Bi-métal 61.105
 ES Juego de coronas perforadoras HSS-Co 8% Bi-Metal 61.105
 DE HSS-Co 8% Bi-Metall Satz Lochsägen 61.105
 EN HSS-Co 8% Bi-Metal Hole saw set 61.105



Ref.	1	2	3	4	€
69.111.0900	19, 22, 29, 35, 38, 44, 51, 57, 64 mm	Nr. 2+5	61.170.0600	61.160.9500	192,00
69.111.0901	19, 22, 29, 35, 38, 44, 51, 57, 68 mm	Nr. 2+5	61.170.0600	61.160.9500	192,00
69.111.1200	16, 19, 22, 25, 29, 32, 35, 38, 44, 51, 64, 76 mm	Nr. 2+5	61.170.0600	61.160.9500	228,00
69.111.1201	16, 19, 22, 25, 29, 32, 35, 38, 44, 51, 68, 76 mm	Nr. 2+5	61.170.0600	61.160.9500	228,00

> 69.114 Phantom

- NL HSS-Co 8% Bi-Metaal Set Gatzagen voor dunne plaat en buizen, 61.110
- FR Jeu de Scies cloches HSS-Co 8% Bi-métal pour tôle fine et tube, 61.110
- ES Juego de coronas perforadoras HSS-Co 8% Bi-Metal para chapa fina y tubos, 61.110
- DE HSS-Co 8% Bi-Metall Satz Lochsägen für dünne Platte und Rohren, 61.110
- EN HSS-Co 8% Bi-Metal Hole saw set for thin plates and tubes, 61.110



NIEUW NOUVEAU NUEVO NEU

BIM 8% Co	VARI	INOX	MDF	SOFT	Cu Ni Ms Zn Al	
P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	M 21 INOX ≤850N/mm ²	K 31 GG	N 41 Alu	N 51 Cu

Ref.	1	2	3	4	€
69.114.1200	16, 19, 22, 25, 29, 32, 35, 38, 44, 51, 64, 76 mm	Nr. 2+5	61.170.0600	61.160.9500	221,00
69.114.1201	16, 19, 22, 25, 29, 32, 35, 38, 44, 51, 68, 76 mm	Nr. 2+5	61.170.0600	61.160.9500	221,00



NL Gatzagen in actie
 FR Phantom Scies Cloches best of the test!
 ES Phantom Corona best of the test!
 DE Lochsägen in Aktion
 EN Phantom Hole Saw best of the test!

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> 69.210 Phantom

- NL HSS-EX Set Kernboren snijdiepte 30 mm, 62.100
- FR Jeu de Fraises à carotter HSS-EX profondeur de coupe 30 mm, 62.100
- ES Juego de Fresas huecas HSS-EX profundidad de corte 30 mm, 62.100
- DE HSS-EX Satz Kernbohrer Schnittiefe 30 mm, 62.100
- EN HSS-EX Set Annular Cutters cutting depth 30 mm, 62.100



HSS-EX
 0,5-30 mm
 WELDON

P 11 ≤800 N/mm ²	P 12 ≤850 N/mm ²	P 13 ≤1000 N/mm ²	K 31 GG	N 41 Alu	N 42 Alu Si-10%	N 51 Cu	N 61 PVC
25	20	13	18	38	32	22	17

Ref.	Ø mm	€
69.210.0001	12-14-16-18-20-22 + 62.300.0025	201,95



NL Kernboren keuzehulp
 FR Aide à la sélection des fraises à carotter
 ES Ayuda para la selección de fresas huecas
 DE Auswahlhilfe Kernbohrer
 EN Selection guide for annular cutters

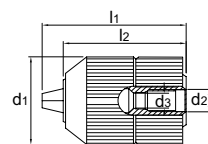
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**> 81.180 Phantom**

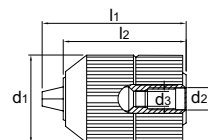
NL Snelspanboorhouder
FR Mandrin porte-forets auto-serrant
ES Portabroca cierre automático
DE Schnellspannbohrfutter
EN Keyless Drill Chuck



Ref.	Ø	d2	d3	d1	l2	l1	Watt Max.	1 incl.	2 excl.	€
81.180.1020	1-10	3/8"-24 UNF	5.5	41	54	64	400	81.182.0510	-	40,45
81.180.1325	2-13	1/2"-20 UNF	6.5	46	66	81	1000	81.182.0610	81.182.1330	59,25

> 81.181 Phantom

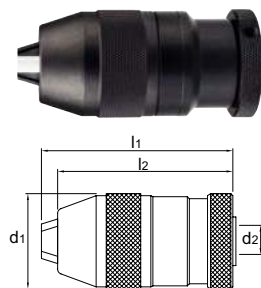
NL Snelspanboorhouder, in metalen uitvoering
FR Mandrin porte-forets auto-serrant, en métal
ES Portabroca cierre automático, en metal
DE Schnellspannbohrfutter, in Metallausführung
EN Keyless Drill Chuck, in metal



Ref.	Ø	d2	d3	d1	l2	l1	Watt Max.	1 incl.	2 excl.	€
81.181.1020	1-10	3/8"-24 UNF	5.5	40.4	56	65.5	1000	81.182.0510	-	43,50
81.181.1320	2-13	3/8"-24 UNF	5.5	42.5	68	75	1000	81.182.0510	-	58,10
81.181.1325	2-13	1/2"-20 UNF	6.5	42.5	68	75	1000	81.182.0610	81.182.1330	58,10

> 81.200 Phantom

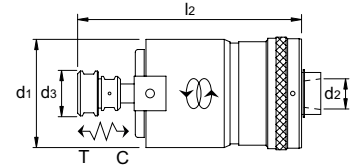
NL Zelfspannende Boorhouder, type A
FR Mandrin de perçage auto-serrant, type A
ES Portabroca cierre automático, tipo A
DE Selbstspannende Bohrfutter, Typ A
EN Industrial Keyless Chuck, type A

**TYPE A**

Ref.	Ø	d2	d1	l1	l2	Type	1	€
81.200.0810	0,8-8	B10	33	70	65	8A	81.412.0800	136,60
81.200.0812	0,8-8	B12	33	70	65	8A	81.412.0800	136,60
81.200.1012	0,8-10	B12	39	80	73	10A	81.412.0800	133,75
81.200.1016	0,8-10	B16	39	80	73	10A	81.412.0800	133,75
81.200.1020	0,8-10	3/8"-24 UNF	39	80	73	10A	81.412.0800	133,75
81.200.1092	0,8-10	J2	39	80	73	10A	81.412.0800	133,75
81.200.1312	1-13	B12	44	95	86	13A	81.412.1300	141,45
81.200.1316	1-13	B16	47	102	92	13A	81.412.1300	141,45
81.200.1320	2-13	3/8"-24 UNF	44	95	86	13A	81.412.0800	141,45
81.200.1325	2-13	1/2"-20 UNF	44	95	86	13A	81.412.0800	141,45
81.200.1392	1-13	J2	44	95	86	13A	81.412.1300	141,45
81.200.1396	1-13	J6	44	95	86	13A	81.412.1300	141,45
81.200.1616	3-16	B16	51	105	95	16A	81.412.1300	167,85
81.200.1618	3-16	B18	51	115	102	16A	81.412.1300	167,85
81.200.1625	3-16	1/2"-20 UNF	51	115	102	16A	81.412.1300	167,85
81.200.1630	3-16	5/8"-16 UN	51	115	102	16A	81.412.1300	167,85
81.200.1696	3-16	J6	51	115	102	16A	81.412.1300	167,85
81.200.1762	5-20	B18	64	140	127	20A	81.412.1600	250,00
81.200.1828	5-20	B22	64	140	127	20A	81.412.1600	250,00
81.200.1894	5-20	J3	64	140	127	20A	81.412.1600	250,00

> 81.700 INTERNATIONAL TOOLS

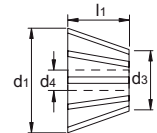
- NL ECO PRO Tapapparaat met omkeerinrichting, met druk- en trek-compensatie, met instelbare slipkoppeling
- FR Appareil à tarauder ECO PRO dispositif d'inversion, à compensation de pression et de traction, à réglage de couple par friction
- ES Aparato roscador ECO PRO con dispositivo de inversión, con compensación de presión y de tracción, con ajuste de par por fricción
- DE ECO PRO Gewindeschneidmaschinen mit Umkehrvorrichtung, mit Zug- und Druckausgleich, mit einstellbarer Rutschkupplung
- EN ECO PRO Tapping Unit with reversing arrangement, with push and pull compensation, with adjustable torque coupling



Ref.	Ø	d2	d1	d3	l2	x:y	RPM	Release	1 incl.	2 excl.	€
81.700.0070	M2-M7	B16	54	23	129.5	1:2.4	1500	3.5	81.710.0204/0407	84.170	589,00
81.700.0120	M5-M12	B16	74	28	156	1:2.2	1000	4	81.710.0510/0712	84.170	798,00
81.700.0200	M8-M20	B22	89	38	205.5	1:2,3	600	6	81.710.0814/1620	84.170	818,00

> 81.710 INTERNATIONAL TOOLS

- NL ECO PRO Rubberflex spantang voor 81.700
- FR Pince de serrage Rubberflex ECO PRO pour 81.700
- ES Pinza de sujeción Rubberflex ECO PRO parra 81.700
- DE ECO PRO Rubberflex-Spannzangen für 81.700
- EN ECO PRO Rubberflex collet for 81.700



Ref.	d1	d3	d4	l1	M	Ø	€
81.710.0204	13.3	4.5	2.5	11	M2-M4	2,5-4,5	55,50
81.710.0407	13.3	6.5	4.5	11	M4-M7	4,5-6,5	55,50
81.710.0510	20.5	6.5	3.5	13	M5-M10	3,5-6,5	55,50
81.710.0712	20.5	10	6.5	13	M7-M12	6,5-10	55,50
81.710.0814	28.5	10	4.5	15	M8-M14	4,5-10	55,50
81.710.1620	28.5	13	7	15	M16-M20	7,0-13	55,50



- NL Montage boorhouderstift in tapkop
- FR Monter un abre de mandrin de perçage dans un appareil à tarauder
- ES Sujetar una espiga en un portamachos
- DE Montieren Bohrfutteraufnahme im Gewindeschneidhalter
- EN Mounting arbor into tapping head

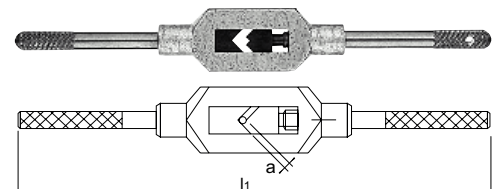
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> 81.900

- NL Verstelbaar Wringijzer, standaard kwaliteit, Zink-legering
- FR Tourne à gauche expansible, qualité standard, alliage de zinc
- ES Giramacho extensible, calidad estándar, aleación de cinc
- DE Verstellbare Windeisen, Standard-Qualität, Zinkdruckguß
- EN Adjustable Tap Wrench, standard quality, zinc die cast



DIN 1814

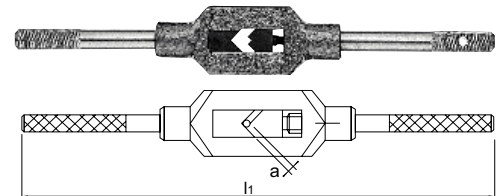
Ref.	Nr.	M	BSW	BSP	l1	a	€
81.900.0000	0	M1-M6	1/16-1/4	-	125	2-5	8,77
81.900.0100	1	M1-M10	1/16-3/8	1/8	180	2-6	8,93
81.900.0150	1,5	M3-M12	1/16-1/2	1/8	200	2,5-8	9,30
81.900.0200	2	M4,5-M16	5/32-1/2	1/8	280	4-9	16,37
81.900.0300	3	M4,5-M20	7/32-3/4	1/8-1/2	375	4,9-12	28,15
81.900.0400	4	M7-M27	7/16-1	1/4-3/4	500	5,5-16	45,00
81.900.0500	5L	M9-M33	1/2-1.1/4	1/4-1	750	7-20	72,70

**> 81.905**

NL Verstelbaar Wringijzer, extra kwaliteit, staal
FR Tourne à gauche expansible, qualité supérieure, acier
ES Giramacho extensible, calidad superior, acero
DE Verstellbare Windeisen, Extra-Qualität, Stahl
EN Adjustable Tap Wrench, extra quality, steel

DIN
1814

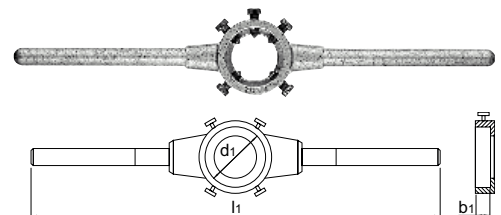
Ref.	Nr.	M	BSW	BSP	l1	a	€
81.905.0000	0	M1-M6	1/16-1/4	-	130	2-5	18,00
81.905.0100	1	M1-M10	1/16-3/8	1/8	180	2-6	21,00
81.905.0150	1,5	M3-M12	1/16-1/2	1/8	200	2,5-8	21,00
81.905.0200	2	M4,5-M16	5/32-1/2	1/8	280	4-9	32,00
81.905.0300	3	M4,5-M20	7/32-3/4	1/8-1/2	375	4,9-12	48,00
81.905.0400	4	M7-M27	7/16-1	1/4-3/4	500	5,5-16	79,00
81.905.0500	5S	M9-M33	1/2-1.1/4	1/4-1	750	7-20	136,00
81.905.0600	6L	M18-M42	3/4-1.1/2	1/2-1.1/4	1000	9-25	148,00
81.905.0800	8	M27-M68	1-2.1/2	3/4-3	1250	16-40	218,00

**> 81.910**

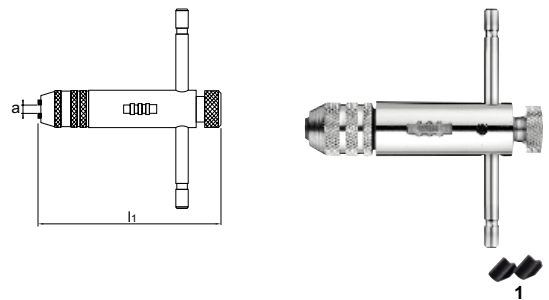
NL Snijplaathouder, standaard kwaliteit, Zink-legering
FR Porte-filières, qualité standard, alliage de zinc
ES Portaterraja, calidad estándar, aleación de cinc
DE Schneideisenhalter, Standard-Qualität, Zinkdruckguß
EN Die Stock, standard quality, zinc die cast

DIN EN 22568 DIN 225 DIN EN 24230 DIN EN 24231 ISO 2568

Ref.	d1	b1	l1	€	Ref.	d1	b1	l1	€
81.910.1605	16	5	160	3,30	81.910.7520	75	20	800	111,30
81.910.2005	20	5	200	3,90	81.910.7530	75	30	800	67,90
81.910.2007	20	7	200	3,90	81.910.9022	90	22	900	152,75
81.910.2509	25	9	224	4,85	81.910.9036	90	36	900	152,75
81.910.3011	30	11	280	7,65	81.910.9122	105	22	1000	261,00
81.910.3810	38	10	315	10,60	81.910.9136	105	36	1000	261,00
81.910.3814	38	14	315	10,60	81.910.9222	120	22	1100	426,00
81.910.4514	45	14	450	16,65	81.910.9236	120	36	1100	426,00
81.910.4518	45	18	450	16,65	81.910.9322	130	22	1100	600,00
81.910.5516	55	16	560	23,10	81.910.9336	130	36	1100	600,00
81.910.5522	55	22	560	23,10	81.910.9422	140	22	1200	719,00
81.910.6518	65	18	630	30,40	81.910.9522	150	22	1200	820,00
81.910.6525	65	25	630	30,40	81.910.9622	160	22	1300	1.336,00

**> 81.930**

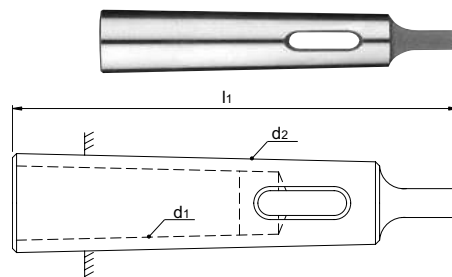
NL Rateltapkrukje
FR Porte-tarauts à cliquet
ES Giromacho en T con carraca
DE Werkzeughalter mit Knarre
EN Tap Wrench



Ref.	Nr.	M	BSW	BSP	a	l1	1	€
81.930.0100	1	M3-M10	1/8-3/8	-	2,4-5,5	85	81.938.0100	15,00
81.930.0200	2	M5-M12	7/32-1/2	1/8	4,5-7	100	81.938.0200	20,00

> 84.100 INTERNATIONAL TOOLS

NL ECO PRO Boorhuls (Reduceerhuls) MK x MK
 FR Douille (de réduction) ECO PRO CM x CM
 ES Casquillo (Casquillo de reducción) ECO PRO CM x CM
 DE ECO PRO Bohrhülse (Reduzierhülse) MK x MK
 EN ECO PRO Morse Taper Sleeve (Reducing Bush) MT x MT



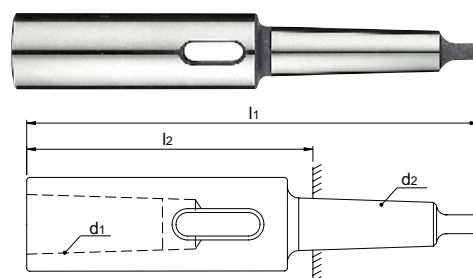
DIN 2185 **ECO PRO**

Ref.	d2	d1	l1	€
84.100.0100	MK 1	-	85	7,17
84.100.0201	MK 2	MK 1	92	7,55
84.100.0301	MK 3	MK 1	99	6,82
84.100.0302	MK 3	MK 2	112	6,82
84.100.0401	MK 4	MK 1	124	9,78
84.100.0402	MK 4	MK 2	124	9,78
84.100.0403	MK 4	MK 3	140	9,78
84.100.0501	MK 5	MK 1	156	23,59

Ref.	d2	d1	l1	€
84.100.0502	MK 5	MK 2	156	23,59
84.100.0503	MK 5	MK 3	156	20,60
84.100.0504	MK 5	MK 4	171	20,60
84.100.0602	MK 6	MK 2	218	40,45
84.100.0603	MK 6	MK 3	218	35,40
84.100.0604	MK 6	MK 4	218	35,40
84.100.0605	MK 6	MK 5	218	35,40

> 84.110 INTERNATIONAL TOOLS

NL ECO PRO Verlengde Boorhuls MK x MK
 FR Douille allongée ECO PRO CM x CM
 ES Casquillo de prolongación ECO PRO CM x CM
 DE ECO PRO Verlängerte Bohrhülsen MK x MK
 EN ECO PRO Extended Morse Taper Sleeve MT x MT



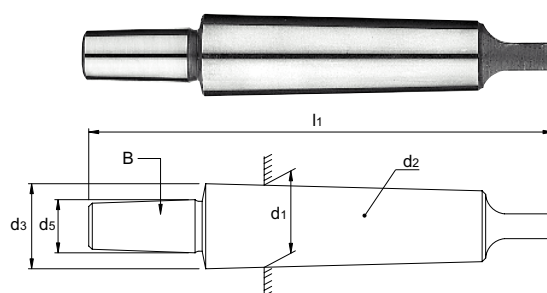
DIN 2187 **ECO PRO**

Ref.	d2	d1	l1	l2	€
84.110.0101	MK 1	MK 1	145	83	10,23
84.110.0102	MK 1	MK 2	160	91	19,22
84.110.0103	MK 1	MK 3	183	121	29,35
84.110.0201	MK 2	MK 1	160	85	14,28
84.110.0202	MK 2	MK 2	175	100	20,32
84.110.0203	MK 2	MK 3	196	112	27,70
84.110.0204	MK 2	MK 4	221	146	38,35
84.110.0301	MK 3	MK 1	175	81	20,61
84.110.0302	MK 3	MK 2	194	100	20,32
84.110.0303	MK 3	MK 3	215	121	27,70
84.110.0304	MK 3	MK 4	240	137	32,80

Ref.	d2	d1	l1	l2	€
84.110.0305	MK 3	MK 5	275	181	63,95
84.110.0401	MK 4	MK 1	200	76	29,85
84.110.0402	MK 4	MK 2	215	97,5	24,65
84.110.0403	MK 4	MK 3	240	122,5	28,85
84.110.0404	MK 4	MK 4	265	147,5	46,55
84.110.0405	MK 4	MK 5	300	172	69,40
84.110.0502	MK 5	MK 2	247	145	49,70
84.110.0503	MK 5	MK 3	268	118,5	49,70
84.110.0504	MK 5	MK 4	300	150,5	48,05
84.110.0505	MK 5	MK 5	335	185,5	75,70

> 84.170 INTERNATIONAL TOOLS

NL ECO PRO Boorhouderstift MK en B-opname DIN 238
 FR Arbre de mandrin de perçage ECO PRO CM et cône B selon DIN 238
 ES Espiga para portabrocas ECO PRO CM y con sujeción B DIN 238
 DE ECO PRO Bohrfutterkegel MK und B-Aufnahme DIN 238
 EN ECO PRO Drill Chuck Arbor MT and B Taper DIN 238



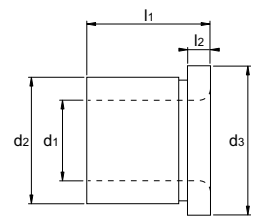
DIN 238 **ECO PRO**

Ref.	d2	B	l1	d1	d5	d3	€
84.170.0110	MK 1	B10	86	12.065	10.095	12.22	4,90
84.170.0112	MK 1	B12	90	12.065	12.065	12.22	4,90
84.170.0116	MK 1	B16	96	12.065	15.733	12.22	4,90
84.170.0118	MK 1	B18	104	12.065	17.78	12.22	4,90
84.170.0210	MK 2	B10	105	17.78	10.095	18	5,42
84.170.0212	MK 2	B12	105	17.78	12.065	18	5,42
84.170.0216	MK 2	B16	112	17.78	15.733	18	5,42
84.170.0218	MK 2	B18	119	17.78	17.78	18	5,42
84.170.0222	MK 2	B22	128	17.78	21.793	18	5,42
84.170.0312	MK 3	B12	124	23.825	12.065	24.1	7,03

Ref.	d2	B	l1	d1	d5	d3	€
84.170.0316	MK 3	B16	130	23.825	15.733	24.1	7,03
84.170.0318	MK 3	B18	138	23.825	17.78	24.1	7,03
84.170.0322	MK 3	B22	147	23.825	21.793	24.1	7,56
84.170.0416	MK 4	B16	156	31.267	15.733	31.6	10,93
84.170.0418	MK 4	B18	164	31.267	17.78	31.6	10,93
84.170.0422	MK 4	B22	176	31.267	21.793	31.6	10,93
84.170.0516	MK 5	B16	188	44.399	15.733	44.7	22,95
84.170.0518	MK 5	B18	198	44.399	17.78	44.7	22,95
84.170.0522	MK 5	B22	207	44.399	21.793	44.7	22,95

**> 84.872 Phantom**

NL Boorbus, korte uitvoering, met kraag
 FR Canon de perçage, version courte, à collerette
 ES Casquillo guía broca, versión corto, con valona
 DE Bohrbuchsen, kurze Ausführung, mit Kragen
 EN Drill Bush, short series, headed



DIN
172-A

n6

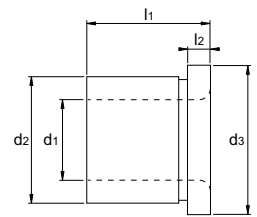
F7

Ref.	d1	d2	d3	l1	l2	€
84.872.0120	1,2	4	7	6	2	14,47
84.872.0130-84.872.0140	1,3-1,4	4	7	6	2	14,46
84.872.0150-84.872.0180	1,5-1,8	4	7	6	2	8,24
84.872.0190-84.872.0260	1,9-2,6	5	8	6	2	4,20
84.872.0270-84.872.0330	2,7-3,3	6	9	8	2,5	4,20
84.872.0340-84.872.0400	3,4-4	7	10	8	2,5	4,03
84.872.0410-84.872.0500	4,1-5	8	11	8	2,5	4,03
84.872.0510-84.872.0600	5,1-6	10	13	10	3	4,23
84.872.0610-84.872.0800	6,1-8	12	15	10	3	4,75
84.872.0810-84.872.1000	8,1-10	15	18	12	3	5,07

Ref.	d1	d2	d3	l1	l2	€
84.872.1010-84.872.1200	10,1-12	18	22	12	4	5,55
84.872.1210-84.872.1500	12,1-15	22	26	16	4	6,34
84.872.1525-84.872.1800	15,25-18	26	30	16	4	7,67
84.872.1825-84.872.2200	18,25-22	30	34	20	5	10,07
84.872.2225-84.872.2600	22,25-26	35	39	20	5	12,60
84.872.2625-84.872.3000	26,25-30	42	46	25	5	16,18
84.872.3025-84.872.3500	30,25-35	48	52	25	5	24,48
84.872.3550-84.872.3750	35,5-37,5	55	59	30	5	36,10
84.872.3800	38	55	59	30	5	39,35
84.872.3850-84.872.4000	38,5-40	55	59	30	5	39,00

> 84.873 Phantom

NL Boorbus, middellange uitvoering, met kraag
 FR Canon de perçage, version longue, à collerette
 ES Casquillo guía broca, versión larga, con valona
 DE Bohrbuchsen, mittellange Ausführung, mit Kragen
 EN Drill Bush, long version, headed



DIN
172-A

F7

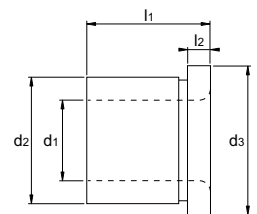
n6

Ref.	d1	d2	d3	l1	l2	€
84.873.0120-84.873.0140	1,2-1,4	4	7	9	2	17,33
84.873.0150-84.873.0180	1,5-1,8	4	7	9	2	11,00
84.873.0190-84.873.0260	1,9-2,6	5	8	9	2	4,50
84.873.0270-84.873.0330	2,7-3,3	6	9	12	2,5	4,50
84.873.0340-84.873.0400	3,4-4	7	10	12	2,5	4,46
84.873.0410-84.873.0500	4,1-5	8	11	12	2,5	4,36
84.873.0510-84.873.0600	5,1-6	10	13	16	3	4,64

Ref.	d1	d2	d3	l1	l2	€
84.873.0610-84.873.0800	6,1-8	12	15	16	3	5,16
84.873.0810-84.873.1000	8,1-10	15	18	20	3	5,64
84.873.1020-84.873.1200	10,2-12	18	22	20	4	6,34
84.873.1225-84.873.1500	12,25-15	22	26	28	4	8,57
84.873.1525-84.873.1800	15,25-18	26	30	28	4	10,23
84.873.1825-84.873.2000	18,25-20	30	34	36	5	13,68

> 84.874 Phantom

NL Boorbus, extra lange uitvoering, met kraag
 FR Canon de perçage, version extra longue, à collerette
 ES Casquillo guía broca, versión extra larga, con valona
 DE Bohrbuchsen, extra lange Ausführung, mit Kragen
 EN Drill Bush, extra long series, headed



DIN
172-A

n6

F7

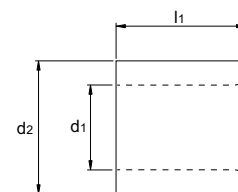
Ref.	d1	d2	d3	l1	l2	€
84.874.0300	3	6	9	16	2,5	8,10
84.874.0350	3,5	7	10	16	2,5	6,95
84.874.0400	4	7	10	16	2,5	6,95
84.874.0450	4,5	8	11	16	2,5	7,27
84.874.0500	5	8	11	16	2,5	7,27
84.874.0550	5,5	10	13	20	3	7,52
84.874.0600	6	10	13	20	3	7,52
84.874.0650	6,5	12	15	20	3	8,19
84.874.0700	7	12	15	20	3	8,19

Ref.	d1	d2	d3	l1	l2	€
84.874.0750	7,5	12	15	20	3	8,19
84.874.0800	8	12	15	20	3	8,19
84.874.0850	8,5	15	18	25	3	9,18
84.874.0900	9	15	18	25	3	9,18
84.874.0950	9,5	15	18	25	3	9,18
84.874.1000	10	15	18	25	3	9,18
84.874.1050	10,5	18	22	25	4	10,26
84.874.1100	11	18	22	25	4	10,26
84.874.1150	11,5	18	22	25	4	10,26

Ref.	d1	d2	d3	l1	l2	€
84.874.1200	12	18	22	25	4	10,26
84.874.1250	12,5	22	26	36	4	13,96
84.874.1300	13	22	26	36	4	13,96
84.874.1350	13,5	22	26	36	4	13,96
84.874.1400	14	22	26	36	4	13,96
84.874.1450	14,5	22	26	36	4	13,96
84.874.1500	15	22	26	36	4	13,96
84.874.1550	15,5	26	30	36	4	18,53
84.874.1600	16	26	30	36	4	18,53

> 84.879 Phantom

NL Boorbus, korte uitvoering
 FR Canon de perçage, version courte
 ES Casquillo guía broca, versión corto
 DE Bohrbuchsen, kurze Ausführung
 EN Drill Bush, short series



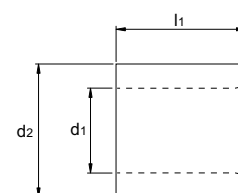
DIN 179-A F7 n6

Ref.	d1	d2	l1	€
84.879.0120-84.879.0140	1.2-1.4	4	6	10,77
84.879.0150-84.879.0180	1.5-1.8	4	6	9,00
84.879.0190-84.879.0260	1.9-2.6	5	6	2,95
84.879.0270-84.879.0330	2.7-3.3	6	8	2,95
84.879.0340-84.879.0400	3.4-4	7	8	2,90
84.879.0410-84.879.0500	4.1-5	8	8	3,14
84.879.0510-84.879.0600	5.1-6	10	10	3,20
84.879.0610-84.879.0800	6.1-8	12	10	3,37
84.879.0810-84.879.1000	8.1-10	15	12	3,74
84.879.1010-84.879.1200	10.1-12	18	12	4,11
84.879.1210-84.879.1500	12.1-15	22	16	4,64

Ref.	d1	d2	l1	€
84.879.1525-84.879.1800	15.25-18	26	16	5,91
84.879.1825-84.879.2200	18.25-22	30	20	7,55
84.879.2225-84.879.2600	22.25-26	35	20	8,93
84.879.2625-84.879.3000	26.25-30	42	25	14,07
84.879.3025-84.879.3500	30.25-35	48	25	17,38
84.879.3550-84.879.4200	35.5-42	55	30	28,95
84.879.4300-84.879.4800	43-48	62	30	34,80
84.879.4900-84.879.5500	49-55	70	30	43,60
84.879.6000	60	78	35	63,40
84.879.6500	65	85	35	143,70

> 84.880 Phantom

NL Boorbus, middellange uitvoering
 FR Canon de perçage, version longue
 ES Casquillo guía broca, versión larga
 DE Bohrbuchsen, mittellange Ausführung
 EN Drill Bush, long version



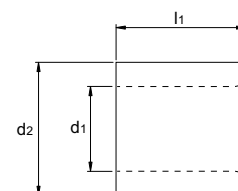
DIN 179-A n6 F7

Ref.	d1	d2	l1	€
84.880.0120-84.880.0140	1.2-1.4	4	9	13,54
84.880.0150-84.880.0180	1.5-1.8	4	9	6,36
84.880.0190-84.880.0260	1.9-2.6	5	9	3,42
84.880.0270-84.880.0330	2.7-3.3	6	12	3,40
84.880.0340-84.880.0400	3.4-4	7	12	3,40
84.880.0410-84.880.0500	4.1-5	8	12	3,40
84.880.0510-84.880.0600	5.1-6	10	16	3,70

Ref.	d1	d2	l1	€
84.880.0610-84.880.0800	6.1-8	12	16	3,91
84.880.0810-84.880.1000	8.1-10	15	20	4,40
84.880.1020-84.880.1200	10.2-12	18	20	5,03
84.880.1225-84.880.1500	12.25-15	22	28	6,32
84.880.1525-84.880.1800	15.25-18	26	28	7,61
84.880.1825-84.880.2000	18.25-20	30	36	10,58
84.880.2500	25	35	36	11,17

> 84.881 Phantom

NL Boorbus, extra lange uitvoering
 FR Canon de perçage, version extra longue
 ES Casquillo guía broca, versión extra larga
 DE Bohrbuchsen, extra lange Ausführung
 EN Drill Bush, extra long series



DIN 179-A F7 n6

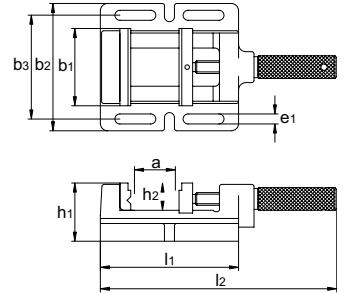
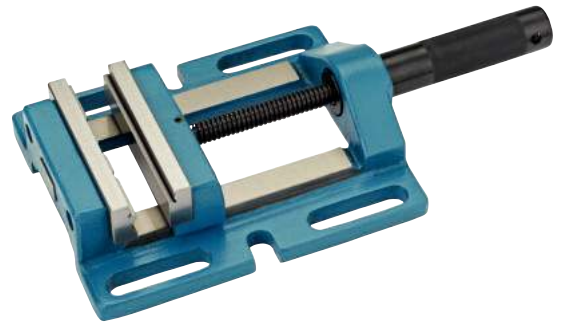
Ref.	d1	d2	l1	€
84.881.0300	3	6	16	7,17
84.881.0350	3.5	7	16	5,23
84.881.0400	4	7	16	5,23
84.881.0450	4.5	8	16	4,85
84.881.0500	5	8	16	4,85
84.881.0550	5.5	10	20	4,93
84.881.0600	6	10	20	4,93
84.881.0650	6.5	12	20	5,30
84.881.0700	7	12	20	5,30
84.881.0750	7.5	12	20	5,30

Ref.	d1	d2	l1	€
84.881.0780	7.8	12	20	5,30
84.881.0800	8	12	20	5,30
84.881.0850	8.5	15	25	5,93
84.881.0900	9	15	25	5,93
84.881.0950	9.5	15	25	5,93
84.881.1000	10	15	25	5,93
84.881.1050	10.5	18	25	7,02
84.881.1100	11	18	25	7,02
84.881.1150	11.5	18	25	7,02
84.881.1200	12	18	25	7,02

Ref.	d1	d2	l1	€
84.881.1250	12.5	22	36	8,82
84.881.1300	13	22	36	8,82
84.881.1350	13.5	22	36	8,82
84.881.1400	14	22	36	8,82
84.881.1450	14.5	22	36	8,82
84.881.1500	15	22	36	8,82
84.881.1550	15.5	26	36	11,08
84.881.1600	16	26	36	11,08
84.881.1650	16.5	26	36	11,08
84.881.3200	32	48	56	30,70

**> 88.152 INTERNATIONAL TOOLS**

NL ECO PRO Boorklem
FR Étau machine ECO PRO
ES Mordaza para taladros ECO PRO
DE ECO PRO Bohrschraubstock
EN ECO PRO Drilling Machine Vise

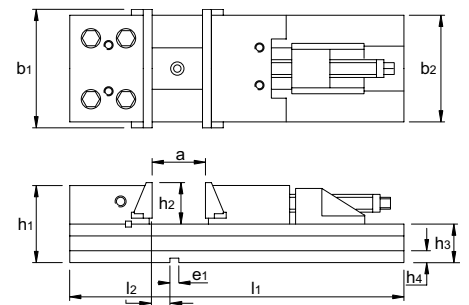
**ECO PRO**

Ref.	b1	b2	b3	a max	l1	l2	h1	h2	e1	€
88.152.0085	85	143	105	70	157	238	54	30	12,5	94,75
88.152.0100	100	152	126	95	176	280	60	30	14	109,70

Ref.	b1	b2	b3	a max	l1	l2	h1	h2	e1	€
88.152.0120	120	178	149	105	220	340	60	35	14	164,60
88.152.0150	150	195	166	140	229	380	77	39	15	244,40

> 88.440 TORAX

NL Precisie Machinespanklem
FR Étau de fraisage de précision
ES Mordaza mecánica de precisión
DE Präzisionsschraubstöcke
EN Precision Compact Vise



Ref.	b1	b2	l1	l2	h1	h2	h3	h4	a max	e1 N6	Max. daN	€
88.440.1027	100	75	270	25.61	65	30	35	15	100	16	3000	809,00
88.440.1234	125	95	345	25.61	80	40	40	15	150	16	3000	943,00
88.440.1542	150	125	420	25.61	100	50	50	20	200	16	5000	1.004,00
88.440.1552	150	125	520	25.61	100	50	50	20	300	16	5000	1.222,00
88.440.1745	175	145	455	25.61	118	60	58	20	200	16	6000	1.377,00
88.440.1755	175	145	555	25.61	118	60	58	20	300	16	6000	1.456,00
88.440.1765	175	145	655	25.61	118	60	58	20	400	16	6000	1.629,00
88.440.1775	175	145	755	25.61	118	60	58	20	500	16	6000	1.946,00
88.440.2059	200	170	595	25.61	135	65	70	26	300	16	10000	2.105,00
88.440.2069	200	170	695	25.61	135	65	70	26	400	16	10000	2.423,00
88.440.2079	200	170	795	25.61	135	65	70	26	500	16	10000	2.915,00
88.440.3063	300	195	635	25.61	158	80	78	26	300	16	12000	2.997,00
88.440.3073	300	195	735	25.61	158	80	78	26	400	16	12000	3.079,00
88.440.3083	300	195	835	25.61	158	80	78	26	500	16	12000	3.319,00
88.440.3093	300	195	935	25.61	158	80	78	26	600	16	12000	3.648,00



NL Opspannen product in precisieklem
FR Serrer une pièce dans un étau de précision
ES Sujetar un producto en una mordaza de precisión
DE Einspannen von Werkstücken im präzision Machineschraubstock
EN Clamping material in precision vise

Watch me

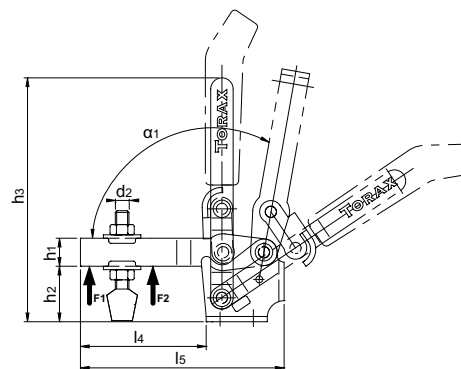
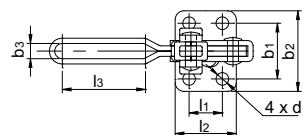


www.phantom.eu

> 88.900

TORAX

- NL Verticale Snelspanklem, met horizontale voet
- FR Sauterelle verticale, à pied horizontal
- ES Grapas Rápidas vertical, con base horizontal
- DE Vertikale Spannklemme, mit waagrechtem Fuß
- EN Vertical Clamp, with horizontal foot

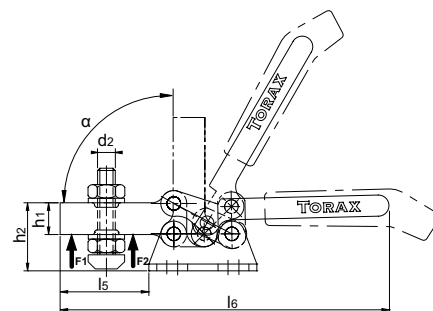
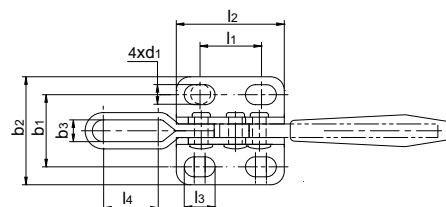


Ref.	Nr.	b1	l1	d1	b2	l2	b3	h1	h2	h3	l3	l4	l5	α1	F1	F2	d2	€
88.900.0000	Gr. 0	23.8	15.9	4.4	33.3	25.4	5	8	18.8	76.1	17.5	26	54.2	100°	0.5	0.7	M4 x 25	16,68
88.900.0100	Gr. 1	27	12.7	5.2	39.7	25.4	6.4	9.8	22.7	97.3	16	33	64	100°	0.8	1.1	M6 x 44	18,12
88.900.0300	Gr. 3	31.8	19	7.2	46	34.9	8.7	16	31.8	140	47.6	71.4	116	100°	1.4	2.5	M8 x 63	25,35
88.900.0400	Gr. 4	45.3	31.8	8.7	64.3	49.2	11	19	44	202	49.2	85.1	140.9	105°	2	3	M10 x 85	37,70
88.900.0500	Gr. 5	45.2	31.8	8.7	64.2	50.8	13.4	23	51	225	79.4	125.4	176.2	100° - 135°	3	5	M12 x 100	60,90
88.900.0600	Gr. 6	69.8	50.8	12.3	95.2	76.2	16.7	32	82.6	305	79.4	153	229.2	100° - 140°	3.5	5.5	M16 x 150	79,00

> 88.910

TORAX

- NL Horizontale Snelspanklem, met horizontale voet
- FR Sauterelle horizontale, à pied horizontal
- ES Grapas Rápidas horizontal, con base horizontal
- DE Horizontaler Spannklemme, mit waagrechtem Fuß
- EN Horizontal Clamp, with horizontal foot



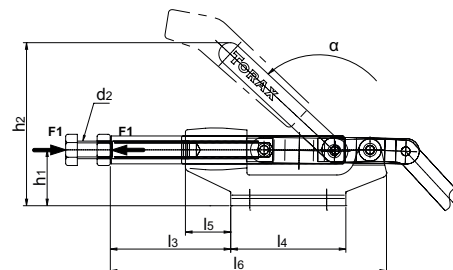
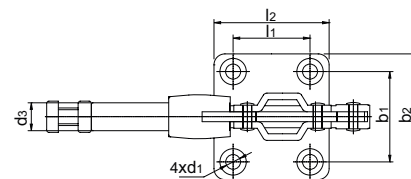
Ref.	Nr.	b1	l1	b2	l2	l3	b3	h1	h2	l4	l5	l6	α1	F1	F2	d1	d2	€
88.910.0000	Gr. 0	15.9	13.5	23.8	23.8	6.8	4.8	7	15	11	19.6	77	90°	0.25	0.4	4.4	M4 x 25	14,48
88.910.0200	Gr. 2	22	27	36	37	6	7.4	12.7	38.1	35	56.2	142	85°	1	1.2	5.2	M6 x 44	21,03
88.910.0300	Gr. 3	22.2	23.1	35	38	9	8.7	12.7	47.6	44	70	168	90°	1.8	2.5	6.7	M8 x 63	25,35
88.910.0500	Gr. 5	41.3	41.3	57.2	57.1	11	19	63.5	78	107	292	292	85°	3	5	8.3	M10 x 85	37,70



> 88.928

TORAX

- NL Schuifstang Snelspanklem, met voet, zware uitvoering
 FR Sauterelle à tige coulissante, à pied, version extra lourde
 ES Grapas Rápidas Barra corredera, con base, versión macizo
 DE Spannklemme mit Schiebestange, mit Fuß, schwere Ausführung
 EN Clamp Telescopic arm, with foot, heavy duty version



Ref.	Nr.	b1	l1	b2	l2	h1	h2	d1	d3	l3	l4	l5	l6	$\alpha 1$	F1	d2	€
88.928.0300	Gr. 3	41.1	35	57.2	52.4	25.4	74.2	6.7	12.7	54.8	52.4	20.6	125	190°	4	M8 x 1,25	43,50
88.928.0500	Gr. 5	41.1	41.1	57.2	58.8	31.8	93.5	8.3	16	81	58.8	31.8	163	185°	10	M10 x 1,5	60,90

> 90.105 Phantom

- NL Universal Snijolie EP (Extreme Pressure), chloor- en silicoonvrij, op plantaardige basis
 FR Huile de coupe Universal EP (Haute Pression), sans chlore, à base d'huile végétale
 ES Aceite de corte Universal EP (Alta Presión), sin cloro, base vegetal
 DE Universal Schneidöl EP (Hochdruck), Chlor- und Silikonfrei, auf pflanzlicher Basis
 EN Universal Cutting oil EP (Extreme Pressure), chlorine-free, vegetable based


NIEUW NOUVEAU NUEVO NEU


Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.105.0250	250 ml	17,16	90.105.0251	Box with 10 pcs	142,55			

> 90.110 Phantom

- NL Universal Snijolie EP (Extreme Pressure), chloor- en silicoonvrij, op mineraaloliebasis
 FR Huile de coupe Universal EP (Haute Pression), sans chlore, à base d'huile minérale
 ES Aceite de corte Universal EP (Alta Presión), sin cloro, base de aceite mineral
 DE Universal Schneidöl EP (Hochdruck), Chlor- und Silikonfrei, auf Mineralölbasis
 EN Universal Cutting oil EP (Extreme Pressure), chlorine-free, mineral oil based



Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.110.0250	250 ml	20,00	90.110.5010	10 l	230,50	90.110.5200	200 l	3.372,00
90.110.0251	Box with 10 pcs	166,20	90.110.5025	25 l	545,00			
90.110.5005	5 l	133,25	90.110.5060	60 l	1.185,00			

> 90.130 Phantom

- NL Heavy Duty Snijolie EP (Extreme Pressure), chloor- en silicoonvrij, op mineraaloliebasis
 FR Huile de coupe Heavy Duty EP (Haute Pression), sans chlore, à base d'huile minérale
 ES Aceite de corte Heavy Duty EP (Alta Presión), sin cloro, base de aceite mineral
 DE Heavy Duty Schneidöl EP (Hochdruck), Chlor- und Silikonfrei, auf Mineralölbasis
 EN Heavy Duty Cutting oil EP (Extreme Pressure), chlorine-free, mineral oil based



Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.130.0250	250 ml	22,67	90.130.5010	10 l	256,00	90.130.5200	200 l	4.223,00
90.130.0251	Box with 10 pcs	189,35	90.130.5025	25 l	692,00			
90.130.5005	5 l	161,70	90.130.5060	60 l	1.452,00			

> 90.140 Phantom

- NL Universal Snijolie spray EP (Extreme Pressure), chloor- en silicoonvrij, op plantaardige basis
 FR Universal Huile de coupe spray EP (Haute Pression), sans chlore, à base d'huile végétale
 ES Universal Aceite de corte pulverizador EP (Alta Presión), sin cloro, base vegetal
 DE Universal Schneidöl Spray EP (Extreme Pressure), Chlor- und Silikonfrei, auf pflanzlicher Basis
 EN Universal Cutting oil spray EP (Extreme Pressure), chlorine-free, vegetable based



Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.140.0400	400 ml	20,00	90.140.0401	12 x 400 ml	203,05			



> 90.145 Phantom

- NL Universal Snijolie-schuim, chloor-, zwavel- en mineraalolievrij
 FR Huile de coupe Universal sous forme de mousse, sans chlore, ni soufre ni huile minérale
 ES Aceite de corte Universal en espuma, sin cloro, azufre y aceite mineral
 DE Universal Schneidöl-Schaum, Chlor-, Schwefel und Mineralölfrei
 EN Universal Cutting oil foam, chlorine- and mineral oil free



UNI

Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.145.0400	400 ml	43,30	90.145.0401	12 x 400 ml	408,00			

> 90.150 Phantom

- NL Extreme Snijpasta, chloor- en siliconvrij
 FR Pâte de coupe Extrême, sans chlore
 ES Pasta de corte Extreme, sin cloro
 DE Hochleistungs-Schneidpaste, Chlor- und Silikonfrei
 EN Extreme Cutting paste, chlorine-free



INOX

Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.150.0250	250 gr.	28,00	90.150.2500	2,5 kg.	144,25			
90.150.0251	10 x 250 gr.	257,00	90.150.5000	5 kg.	227,35			

> 90.170 Phantom

- NL Snijwas EP (Extreme Pressure), chloorvrij
 FR Pâte de coupe EP (Haute Pression), sans chlore
 ES Cera de corte EP (Alta Presión), sin cloro
 DE Wachsstift EP (Extreme Pressure), chlorfreier
 EN Cutting wax EP (Extreme Pressure), chlorine free



UNI

Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.170.0300	300 gr	39,50	90.170.0301	50 x 300 gr	1.750,00			



- NL Keuzehulp snijolie en smeermiddelen
 FR Aide à la sélection des huiles de coupe et lubrifiants
 ES Ayuda para la selección de aceites de corte y lubricantes
 DE Auswahlhilfe Schneidöl und Schmiermittel
 EN Selection Guide for Cutting Oils and Lubricants

Read me



www.phantom.eu

> 90.180 Phantom

- NL Micro Doseer Vloeistof EP (Extreme Pressure), chloor- en mineraal-olievrij, op plantaardige basis
 FR Huile pour micro lubrification EP (Haute Pression), sans chlore et sans huile minérale, à base d'huile végétale
 ES Líquido microdosificador EP (Alta Presión), exento de cloro y aceites minerales, base vegetal
 DE Mikro-dosierflüssigkeit EP (Extreme Pressure), Chlor- und Mineralölfreier, auf pflanzlicher Basis
 EN Micro dosing liquid EP (Extreme Pressure), chlorine- and mineral oil free, vegetable based



UNI



Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.180.5005	5 l	130,00						

> 90.210 **Phantom**



- NL Multi Cooling Concentrate, chloor- en silicoonvrij, secundair aminevrij en nitrietvrij
- FR Multi Cooling Concentrate, sans chlore, exempt d'amine secondaire et de nitrite
- ES Multi Cooling Concentrate, sin cloro, sin amina secundaria y sin nitritos
- DE Hochleistungs- Kühlmier- Konzentrat, Chlor- und Silikonfrei, sekundäre Amin-frei und Nitrit-frei
- EN Multi Cooling Concentrate, chlorine-free, secondary amine-free and nitrite-free

UNI

Ref.	Contents	€	Ref.	Contents	€	Ref.	Contents	€
90.210.0050	5 l	99,55						





1 SC



1 HSS(E)



2



3 SC



3 HSS-E



4



5



6



7



8

ETC.

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