TIZ IMPLEMENTS

SPADE DRILLS
WIERTŁA ŁOPATKOWE

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INTRODUCTION
WPROWADZENIE

Spade drills by TIZ IMPLEMENTS with exchangeable cutting inserts. The premium quality spade drills with quick-change function for quick exchanging of the cutting inserts. Particularly suitable for CNC machines such as pillar drilling machines or radial drilling machines.

Reduce your costs per drilling with TIZ IMPLEMENT's spade drills and increase the efficiency of your production. TIZ IMPLEMENT's range of spade drills is the efficient solution for drilling with exchangeable cutting inserts. TIZ IMPLEMENT spade drills are highly efficient drilling tools with outstanding performance parameters in terms of tool life and production tolerance.

Wiertła łopatkowe firmy TIZ IMPLEMENTS z wymiennymi płytkami skrawającymi. Najwyższej jakości wiertła łopatkowe z funkcją quick-change do szybkiej wymiany płytek skrawających. Szczególnie nadaje się do maszyn CNC, takich jak wiertarki słupowe lub wiertarki promieniowe.

Zmniejsz koszty wiercenia dzięki wiertłom łopatkowym TIZ IMPLEMENTS i zwiększ wydajność produkcji. Gama wierteł łopatkowych TIZ IMPLEMENTS to wydajne rozwiązanie do wiercenia za pomocą wymiennych płytek skrawających. Wiertła łopatkowe TIZ IMPLEMENTS to wysocewydajne narzędzia o wyjątkowych parametrach wydajnościowych pod względem trwałości narzędzia i tolerancji produkcyjnej.

- **Spade drills are the ideal drilling tools for all modern CNC machines such as (carbide inserts are preferably used here):**
  - **Numerically controlled pillar drilling machines / radial drilling machines**
  - **Numerically controlled lathes**
  - **Machining centers**
- **Spade drills are the ideal drilling tools for all traditional / manual drilling machines such as (HSS inserts are preferably used here):**
  - **Pillar drilling machines**
  - **Radial drilling machines**
  - **All types of vertical drilling machines**
  - **Non-numerically controlled lathes**

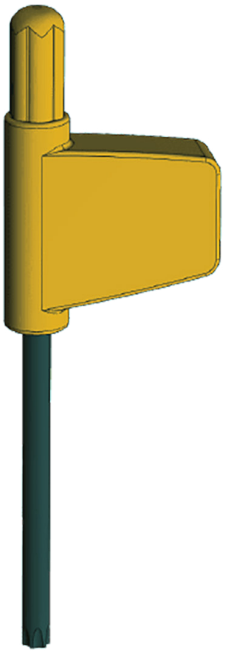
- Wiertła łopatkowe są idealnymi narzędziami wiertniczymi do wszystkich nowoczesnych maszyn CNC, takich jak (tutaj najlepiej stosować płytki węglikowe):
  - Wiertarki słupowe/wiertarki promieniowe sterowane numerycznie
  - Tokarki sterowane numerycznie
  - Centra obróbcze
- Wiertła łopatkowe są idealnymi narzędziami do wiercenia dla wszystkich tradycyjnych/ręcznych wiertarek, takich jak (tutaj najlepiej używać płytek HSS):
  - Wiertarki słupowe
  - Wiertarki promieniowe
  - Wszystkie typy wiertarek pionowych
  - Tokarki konwencjonalne

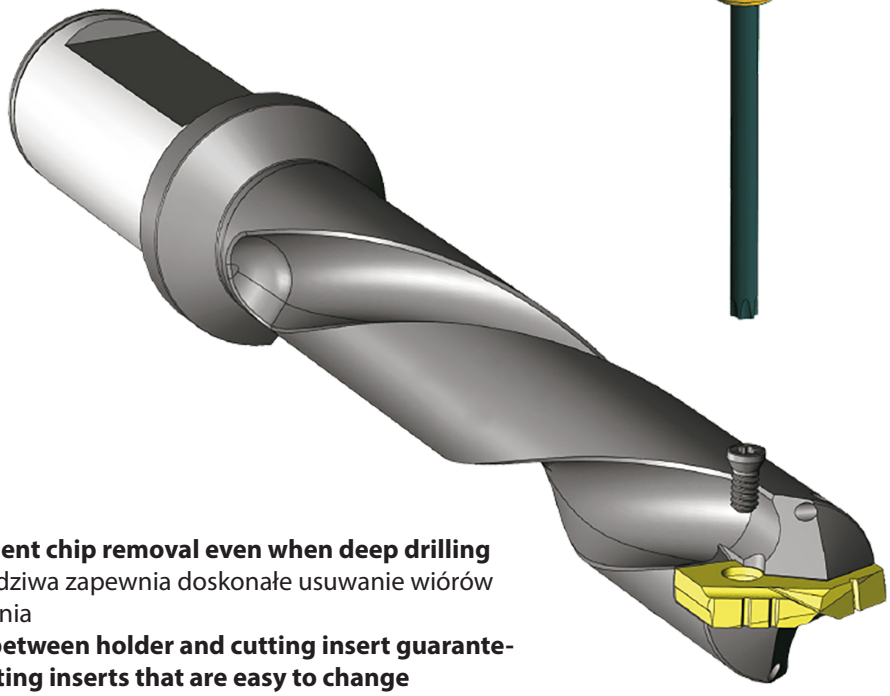
ADVANTAGES OF SPADE DRILLS WITH QUICK-CHANGE SYSTEM

ZALETY WIERTEŁ ŁOPATKOWYCH Z SYSTEMEM QUICK-CHANGE

TIZ IMPLEMENTS spade drills consist of two components, the tool holder and the cutting inserts. The spade drills also have an internal coolant supply, which ensures excellent chip removal, even when drilling deep holes. Spade drills are particularly suitable for CNC machines such as pillar drilling machines and radial drilling machines as well as all traditional or manual drilling machines.

Wiertła łopatkowe TIZ IMPLEMENTS składają się z dwóch elementów, uchwytu narzędziowego i płytek skrawających. Wiertła łopatkowe mają również wewnętrzne doprowadzanie chłodziwa, które zapewnia doskonałe usuwanie wiórów, nawet podczas wiercenia głębokich otworów. Wiertła łopatkowe nadają się szczególnie do maszyn CNC, takich jak wiertarki słupowe i promieniowe, a także wszystkie tradycyjne lub ręczne wiertarki.





- **Internal coolant supply for excelent chip removal even when deep drilling**
- Wewnętrzne doprowadzanie chłodziwa zapewnia doskonałe usuwanie wiórów nawet podczas głębokiego wiercenia
- **The high-precision connection between holder and cutting insert guarantees narrowest tolerances and cutting inserts that are easy to change**
- Bardzo precyzyjne połączenie między uchwytem a płytką skrawającą gwarantuje najwęższe tolerancje i łatwe do wymiany płytki skrawające.
- **The cutting inserts are made of powder steel or carbide. All cutting inserts also have coatings that are optimized for their intended uses. This combination results in a significantly higher cutting performance and tool life**
- Płytki skrawające są wykonane ze stali HSS lub węglika. Wszystkie płytki skrawające mają również powłoki zoptymalizowane pod kątem ich zamierzonych zastosowań. To połączenie zapewnia znacznie wyższą wydajność skrawania i żywotność narzędzia
- **Due to the quick exchange of the cutting inserts, the spade drill is immediately ready for use again. It is not necessary, as in the case of conventional steel drills, to recondition or sharpen the complete drill**
- Dzięki szybkiej wymianie płytek skrawających wiertło łopatkowe jest natychmiast gotowe do ponownego użycia. Nie ma potrzeby, jak w przypadku tradycyjnych wierteł stalowych, regeneracji lub ostrzenia całego wiertła
- **The chip breaker results in better chip removal and a lower cutting force**
- Łamacz wiórów zapewnia lepsze usuwanie wiórów i mniejszą siłę skrawania

DESCRIPTION OF THE SPADE DRILL INSERT
OPIS PŁYTKI WIERTŁA ŁOPATKOWEGO

THINNING & EDGE
ODCHUDZENIE & KRAWĘDŹ

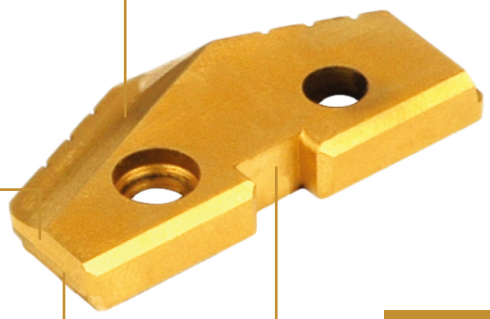
DURING CUTTING MAKING THE SPACE FOR THE CHIPS EVACUATION
PODCZAS OBRÓBKI TWORZY PRZESTRZEŃ DLA USUWANIA WIÓRÓW

OD MARGIN
MARGINES OD

TRIMMING THE HOLE PROCESSED
PRZYCIĘCIE OBRABIANEGO OTWORU

OD CLEARANCE
LUZ OD

EFFICIENT EJECTION OF HEAT
WYDAJNE USUWANIE CIEPŁA



KEY WAY
POZYCJONOWANIE

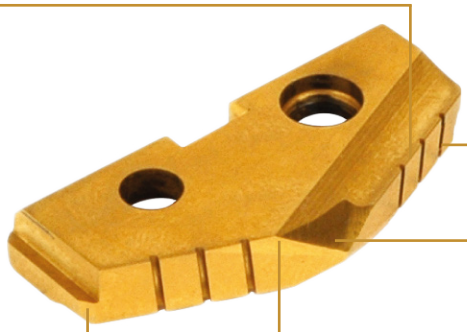
FIXING THE INSERT SYMMETRIC TO AXIS
USTAWIENIE PŁYTKI SYMETRYCZNIE DO OSI

CUTTING EDGE
KRAWĘDŹ SKRAWAJĄCA

OPTIMISED FOR EFFICIENT DRILLING
OPTYMALIZOWANA DLA WYDAJNEGO WIERCENIA

CHIP BREAKER
ŁAMACZ WIÓRÓW

CHIP BREAKER FOR EFFICIENT CHIPS EVACUATION
ŁAMACZ WIÓRÓW DLA WYDAJNEGO USUWANIA WIÓRÓW



RAKE SURFACE
PŁASZCZYZNA NATARCIA

THE PART OF CUTTING AND THE PART OF CHIP BREAKER
ELEMENT SKRAWANIA I ELEMENT ŁAMACZA WIÓRÓW

CORNER CHAMFER
FAZOWANE NAROŻE

TO REDUCE WEAR AND IMPROVE THE TOOL LIFE
W CELU REDUKCJI ZUŻYCIA ORAZ ZWIĘKSZENIA TRWAŁOŚCI NARZĘDZIA

CLEARANCE SURFACE
PŁASZCZYZNA PRZYŁOŻENIA

WITH CUTTING EDGE TO MAKE A HOLE AND EFFICIENT EJECTION OF HEAT
Z KRAWĘDZIĄ SKRAWAJĄCĄ W CELU WYKONANIA OTWORU I WYDAJNEGO USUNIĘCIA CIEPŁA

MATERIALS AND COATINGS
MATERIAŁY I POKRYCIA

INSERT MATERIAL TYPES
RODZAJE MATERIAŁÓW PŁYTKI

HSS STANDARD HR-H	HSS PREMIUM HR-P	CARBIDE CR
APPLIED FOR STEELS AND CAST IRON STOSOWANE DO STALI I ŻELIWA	**APPLIED FOR HIGH TEMP ALLOY AND 350-500 BHN (HRC37-49) AND HARDER** STOSOWANE DO STOPÓW WYSOKO-TEMPERATUROWYCH I 350-500 BHN (HRC 37-49) I TWARSZYCH	**APPLIED FOR CARBON STEEL, ALLOY STEEL AND HARD TO MACHINCE MATERIAL (TITANIUM AND STAINLESS STEEL)** STOSOWANY DO STALI WĘGLOWEJ, STALI STOPOWEJ I TWARDYCH MATERIAŁÓW (TYTAN I STAL NIERDZEWNA)
DIAMETERS 63.50-114.30 MM ŚREDNICE 63,50-114,30 MM	**DIAMETERS 9.50-65.09 MM** ŚREDNICE 9.50-65.09 MM	**DIAMETERS 33.00-47.63 MM** ŚREDNICE 33.00-47.63 MM

INSERT COATINGS TYPES
RODZAJE POKRYĆ PŁYTKI

TiN
GENERAL PURPOSE COATING
POKRYCIE OGÓLNEGO PRZEZNACZENIA
IMPROVED TOOL LIFE OVER A NONCOATED INSERT
DŁUŻSZA ŻYWOTNOŚĆ NIŻ PŁYTKA NIEPOKRYWANA
EXCELLENT CHOICE FOR ALUMINNIUM
ŚWIETNY WYBÓR DLA ALUMINIUM
COLOR: GOLD/YELLOW
KOLOR: ZŁOTY/ŻÓŁTY

TiCN
EXCELLENT CHOICE FOR WEAR RESISTANCE OVER LOW SURFACE SPEEDS
DOSKONAŁY WYBÓR ODPORNOŚCI NA ZUŻYCIE PRZY NISKICH PRĘDKOŚCIACH POWIERZCHNIOWYCH
HIGH HARDNESS/WEAR RESISTANCE
WYSOKA TWARDOŚĆ / ODPORNOŚĆ NA ZUŻYCIE
MAXIMUM WORKING TEMPERATURE 400'C
MAKSYMALNA TEMPERATURA ROBOCZA 400'C
HARDNESS HV3000
TWARDOŚĆ HV3000
COLOR: BLUE/GREY
KOLOR: NIEBIESKI/SZARY

TiAlN
EXCELLENT CHOICE FOR WEAR RESISTANCE OVER LOW SURFACE SPEEDS
DOSKONAŁY WYBÓR ODPORNOŚCI NA ZUŻYCIE PRZY NISKICH PRĘDKOŚCIACH POWIERZCHNIOWYCH
EXCELLENT OXIDATION RESISTANCE
DOSKONAŁA ODPORNOŚĆ NA UTLENIANIE
MAXIMUM WORKING TEMPERATURE 800'C
MAKSYMALNA TEMPERATURA ROBOCZA 800'C
HARDNESS HV3500
TWARDOŚĆ HV3500
COLOR: VIOLET/BLACK
KOLOR: FIOLETOWY / CZARNY

TiAlSiN
FIRST CHOICE FOR INCREASED HEAT RESISTANCE OVER TIN AND TICN
PIERWSZY WYBÓR DLA ZWIĘKSZONEJ ODPORNOŚCI NA CIEPŁO NIŻ TIN I TICN
ALLOWS FOR IMPROVED TOOL LIFE AND HIGHER PENETRATION RATES OF THE MARKET
POZWALA NA POPRAWĘ ŻYCIA NARZĘDZIA I WYŻSZE WARTOŚCI PENETRACJI NIŻ DOSTĘPNE NA RYNKU
OVER 20% INCREASED TOOL LIFE OVER TIALN
PONAD 20% DŁUŻSZA ŻYWOTNOŚĆ NARZĘDZIA W PORÓWNANIU Z TIALN
COLOR: COPPER/BRONZE
KOLOR: MIEDŹ / BRĄZ

CONSTRUCTION SYSTEM OF SPADE DRILLS HOLDER CODE NO.

SYSTEM KONSTRUKCJI NR KODÓW UCHWYTÓW WIERTEŁ ŁOPATKOWYCH

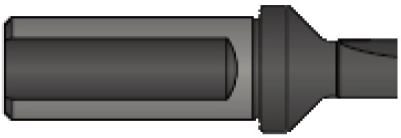
FSF	090	114	454	050	MP
1	2	3	4	5	6
GROUP GRUPA FSB FSF TSB TSA	**MIN DRILLING DIAMETER** MIN ŚREDNICA WIERCENIA **XXX** = XX.X mm (**XXX** = X.XX mm)	**MAX DRILLING DIAMETER** MAX ŚREDNICA WIERCENIA **XXX** = XX.X mm (**XXX** = X.XX mm)	**MAX DRILLING DEPTH** MAX GŁĘBOKOŚĆ WIERCENIA **XXX** = XXX mm	**SHANK DIA (EMPTY FOR MORSE)** ŚR. TRZONEK (PUSTY DLA MORSEA) **XXX** = XX.X mm	

FLUTE TYPES: STRAIGHT AND HELICAL

RODZAJE ROWKÓW WIUROWYCH: PROSTE I HELIKALNE

SHANK TYPES: FLANGED SHANK AND MORSE TAPER

RODZAJE CHWYTÓW: CHWYT KOŁNIERZOWY I STOŻEK MORSE'A



SPADE DRILL INSERT HOLDERS SERIES

SERIE PŁYTEK DO WIERTEŁ ŁOPATKOWYCH

DRILLING LENGHT DŁUGOŚĆ WIERCENIA **(mm)**	**HOLDER AND INSERTS SERIES** SERIE UCHWYTÓW I PŁYTEK (mm)
EXTRA SHORT LENGHT 1.5-2.5D	FSB & TSB - INSERTS: NONE FSF & TSA - INSERTS: Y, Z, 0, 1, 2
SHORT LENGHT ~3.5D MAX	FSB & TSB - INSERTS: 5, 6, 7, 8 FSF & TSA - INSERTS: ALL
INTERMEDIATE LENGHT ~6.5D MAX	FSB & TSB - INSERTS: 1, 2, 3 FSF & TSA - INSERTS: NONE
STANDARD LENGHT ~9.0D MAX	FSB & TSB - INSERTS: 1, 2, 3 FSF & TSA - INSERTS: NONE
EXTENDED LENGHT ~12D MAX	FSB & TSB - INSERTS: ALL FSF & TSA - INSERTS: NONE
LONG LENGHT ~15D MAX	FSB & TSB - INSERTS: 0, 1 FSF & TSA - INSERTS: NONE
XL EXTRA LONG ~25.0D MAX	FSB & TSB - INSERTS: 0, 1, 2, 3, 4 FSF & TSA - INSERTS: Y, Z, 0, 1, 2, 3, 1
3XL EXTRA LONG ~30.0D MAX	FSB & TSB - INSERTS: 0, 1, 2 FSF & TSA - INSERTS: Y, Z, 0, 1, 2

CONSTRUCTION SYSTEM OF SPADE DRILLS CODE NO.

SYSTEM KONSTRUKCJI NR KODÓW WIERTEŁ ŁOPATKOWYCH

HR	C	P	1150	0238	MP
1	2	3	4	5	6
MATERIAL MATERIAŁ	**COATING** POKRYCIE	**GRADE (FOR HSS ONLY)** GATUNEK (TYLKO DLA HSS)	**DRILLING DIAMETER** ŚREDNICA WIERCENIA	**THICKNESS** GRUBOŚĆ	
HR = HSS **CR** = CARBIDE	**T** = TiN **C** = TiCN **A** = TiAlN **S** = TiAlSiN	**H** = HSS STANDARD **P** = HSS PREMIUM	**XXXX** = XX.XX mm	**XXXX** = X.XXX mm	

SPADE DRILL INSERT SERIES

SERIE PŁYTEK DO WIERTEŁ ŁOPATKOWYCH

COATING POKRYCIE / MATERIAL MATERIAŁ																												
	T = TIN							**C = TiCN**							**A = TiAlN**							**S = TiAlSiN**						
STANDARD HSS	5	6	7	8				5	6	7	8				5	6	7	8				5	6	7	8			
PREMIUM HSS	Y	Z	0	1	2	3	4	Y	Z	0	1	2	3	4	Y	Z	0	1	2	3	4	Y	Z	0	1	2	3	4
CARBIDE																						0	1	2	3			

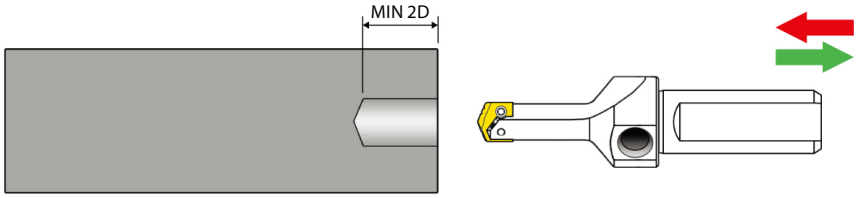
INSERT SERIES SERIA PŁYTEK	DRILL DIAMETER (mm) ŚREDNICA WIERTŁA (mm)
Y	9.5~11.0
Z	11.1~12.7
0	13.0~17.5
1	17.86~24.0
2	24.5~35.0
3	35.5~47.63
4	48.0~65.09
5	63.5~76.2
6	76.99~88.9
7	89.69~101.6
8	102.0~114.3

DEEP HOLE DRILLING GUIDELINES

WSKAZÓWKI DOTYCZĄCE WIERCENIA GŁĘBOKICH OTWORÓW

STEP 1
KROK 1

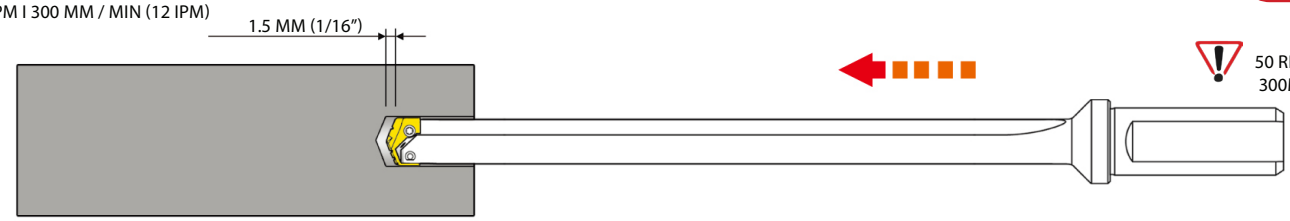
ESTABLISH THE PILOT HOLE USING THE SAME DIAMETER SHORT DRILL TO A DEPTH OF2XD MINIMUM
UTWÓRZ OTWÓR PILOTOWY ZA POMOCĄ WIERTŁA TEJ SAMEJ ŚREDNICY WIERTŁA NA GŁĘBOKOŚĆ 2XD MINIMALNIE



PILOT HOLE
100%RPM
100%MM/REV

STEP 2
KROK 2

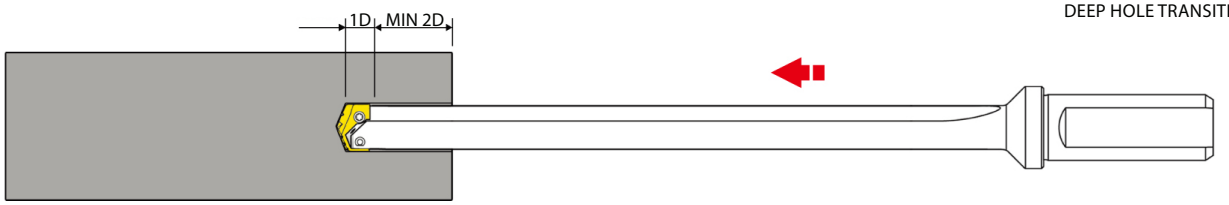
FEED THE LONGER DRILL WITHIN 1.5 (1/6”) SHORT OF THE ESTABLISHED PILOT HOLE BOTTOM AT A MAXIMUM OF 50 RPM AND 300 MM/MIN (12 IPM) FEED RATE
PODAWAJ DŁUŻSZE WIERTŁO 1.5CM (1/6„) OD DNA OTWORU PILOTOWEGO PRZY MAKSYMALNEJ PRĘDKOŚCI PODAWANIA 50 RPM I 300 MM / MIN (12 IPM)



FEED-IN
50 RPM MAX
300MM/REV

STEP 3
KROK 3

DRILL ADDITIONAL 1XD PAST OF THE BOTTOM OF THE PILOT HOLE AT 50% REDUCTION OF RECOMMENDED SPEED AND 25% REDUCTION OF RECOMMENDED SPEED. MINIMUM OF 1 SECOND DWELL IS REQUIRED TO MEET FULL SPEED BEFORE FEEDING
WIERĆ DODATKOWE 1XD OD DNA OTWORU PILOTOWEGO PRZY 50% REDUKCJI ZALECANEJ PRĘDKOŚCI I 25% REDUKCJI ZALECANEJ PRĘDKOŚCI WYMAGANE JEST MINIMUM 1 SEKUNDY ZATRZYMANIA, ABY OSIĄGNĄĆ PEŁNĄ PRĘDKOŚĆ PRZED POSUWEM

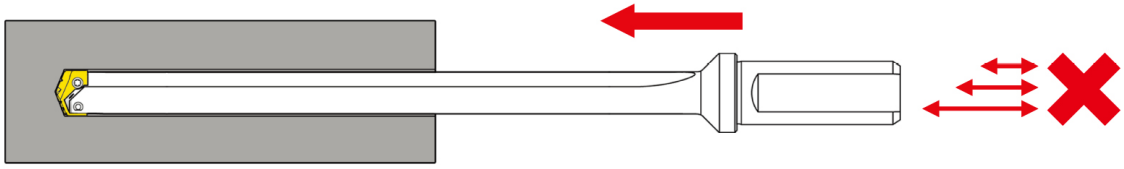


DEEP HOLE TRANSITION DRILLING
50%RPM
75%MM/REV

STEP 4
KROK 4

DRILL TO FULL DEPTH AT RECOMMENDED SPEED AND FEED FOR LONGER DRILL ACCORDING TO SPEED AND FEED CHARTS. NO PECK CYCLE RECOMMENDED
WIERCENIE NA PEŁNĄ GŁĘBOKOŚĆ Z ZALECANĄ PRĘDKOŚCIĄ I POSUWEM DLA DŁUŻSZEGO WIERTŁA ZGODNIE Z TABELAMI PRĘDKOŚCI I POSUWÓW. NIE ZALECANY CYKL PECK

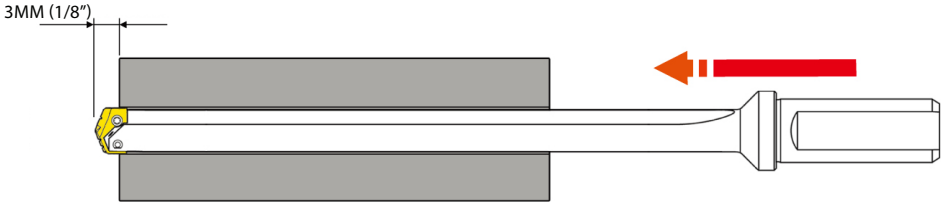
DEEP HOLE DRILLING - BLIND
100%RPM
100%MM/REV



STEP 5
KROK 5

FOR THROUGH HOLES ONLY: REDUCE SPEED BY 50% AND FEED BY 25% PRIOR TO BREAKOUT. DO NOT BREAK OUT MORE THAN 3MM (1/8”) PAST THE FULL DIAMETER OF THE DRILL
TYLKO OTWORY PRZELOTOWE: ZMNIEJSZENIE PRĘDKOŚCI O 50% I POSUWU O 25% PRZED PRZEWIERCENIEM. NIE WYSUWAĆ WIĘCEJ NIŻ 3 MM (1/8„) PO PEŁNEJ ŚREDNICY WIERTŁAZALECANY CYKL PECK

DEEP HOLE DRILLING - AT BREAKOUT
100%RPM
100%MM/REV

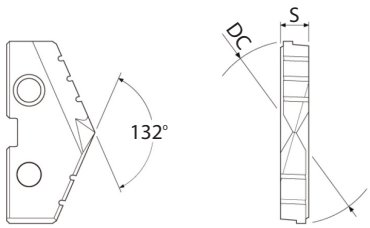


STEP 6
KROK 6

REDUCE SPEED TO A MAXIMUM OF 50RPM BEFORE RETRACTING FROM THE HOLE
ZMNIEJSZ OBROTY DO MAKSIMUM 50 OBR./MIN PRZED WYJŚCIEM Z OTWORU

DRILL RETRACT
50RPM MAX

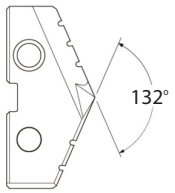
INSERT SERIES
SERIE PŁYTEK

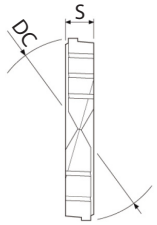


SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

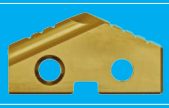
Series Seria	Diameter Średnica mm	Diameter Średnica inch	Thickness Grubość (mm)	Order Code Kod zamówienia – Premium HSS TiN	Premium HSS TiCN	Premium HSS TiAlN	Premium HSS TiAlSiN	Carbide Węglik TiAlSiN
Y	9.50	.3740"	2.38	HRTP09500238MP	HRCP09500238MP	HRAP09500238MP	HRSP09500238MP	
Y	9.53	.3750"	2.38	HRTP09530238MP	HRCP09530238MP	HRAP09530238MP	HRSP09530238MP	
Y	9.80	.3860"	2.38	HRTP09800238MP	HRCP09800238MP	HRAP09800238MP	HRSP09800238MP	
Y	9.92	.3906"	2.38	HRTP09920238MP	HRCP09920238MP	HRAP09920238MP	HRSP09920238MP	
Y	10.00	.3937"	2.38	HRTP10000238MP	HRCP10000238MP	HRAP10000238MP	HRSP10000238MP	
Y	10.20	.4016"	2.38	HRTP10200238MP	HRCP10200238MP	HRAP10200238MP	HRSP10200238MP	
Y	10.32	.4063"	2.38	HRTP10320238MP	HRCP10320238MP	HRAP10320238MP	HRSP10320238MP	
Y	10.50	.4134"	2.38	HRTP10500238MP	HRCP10500238MP	HRAP10500238MP	HRSP10500238MP	
Y	10.72	.4219"	2.38	HRTP10720238MP	HRCP10720238MP	HRAP10720238MP	HRSP10720238MP	
Y	10.08	.4252"	2.38	HRTP10080238MP	HRCP10080238MP	HRAP10080238MP	HRSP10080238MP	
Y	11.00	.4331"	2.38	HRTP11000238MP	HRCP11000238MP	HRAP11000238MP	HRSP11000238MP	
Z	11.11	.4375"	2.38	HRTP11110238MP	HRCP11110238MP	HRAP11110238MP	HRSP11110238MP	
Z	11.50	.4528"	2.38	HRTP11500238MP	HRCP11500238MP	HRAP11500238MP	HRSP11500238MP	
Z	11.51	.4531"	2.38	HRTP11510238MP	HRCP11510238MP	HRAP11510238MP	HRSP11510238MP	
Z	11.91	.4688"	2.38	HRTP11910238MP	HRCP11910238MP	HRAP11910238MP	HRSP11910238MP	
Z	12.00	.4724"	2.38	HRTP12000238MP	HRCP12000238MP	HRAP12000238MP	HRSP12000238MP	
Z	12.30	.4844"	2.38	HRTP12300238MP	HRCP12300238MP	HRAP12300238MP	HRSP12300238MP	
Z	12.50	.4921"	2.38	HRTP12500238MP	HRCP12500238MP	HRAP12500238MP	HRSP12500238MP	
Z	12.70	.5000"	2.38	HRTP12700238MP	HRCP12700238MP	HRAP12700238MP	HRSP12700238MP	
0	13.00	.5118"	3.18	HRTP13000318MP	HRCP13000318MP	HRAP13000318MP	HRSP13000318MP	CRS13000318MP
0	13.10	.5156"	3.18	HRTP13100318MP	HRCP13100318MP	HRAP13100318MP	HRSP13100318MP	CRS13100318MP
0	13.49	.5313"	3.18	HRTP13490318MP	HRCP13490318MP	HRAP13490318MP	HRSP13490318MP	CRS13490318MP
0	13.50	.5315"	3.18	HRTP13500318MP	HRCP13500318MP	HRAP13500318MP	HRSP13500318MP	CRS13500318MP
0	13.89	.5469"	3.18	HRTP13890318MP	HRCP13890318MP	HRAP13890318MP	HRSP13890318MP	CRS13890318MP
0	14.00	.5512"	3.18	HRTP14000318MP	HRCP14000318MP	HRAP14000318MP	HRSP14000318MP	CRS14000318MP
0	14.29	.5625"	3.18	HRTP14290318MP	HRCP14290318MP	HRAP14290318MP	HRSP14290318MP	CRS14290318MP
0	14.50	.5709"	3.18	HRTP14500318MP	HRCP14500318MP	HRAP14500318MP	HRSP14500318MP	CRS14500318MP
0	14.68	.5781"	3.18	HRTP14680318MP	HRCP14680318MP	HRAP14680318MP	HRSP14680318MP	CRS14680318MP
0	15.00	.5906"	3.18	HRTP15000318MP	HRCP15000318MP	HRAP15000318MP	HRSP15000318MP	CRS15000318MP
0	15.08	.5938"	3.18	HRTP15080318MP	HRCP15080318MP	HRAP15080318MP	HRSP15080318MP	CRS15080318MP
0	15.48	.6094"	3.18	HRTP15480318MP	HRCP15480318MP	HRAP15480318MP	HRSP15480318MP	CRS15480318MP
0	15.50	.6102"	3.18	HRTP15500318MP	HRCP15500318MP	HRAP15500318MP	HRSP15500318MP	CRS15500318MP
0	15.88	.6250"	3.18	HRTP15880318MP	HRCP15880318MP	HRAP15880318MP	HRSP15880318MP	CRS15880318MP
0	16.00	.6299"	3.18	HRTP16000318MP	HRCP16000318MP	HRAP16000318MP	HRSP16000318MP	CRS16000318MP
0	16.27	.6406"	3.18	HRTP16270318MP	HRCP16270318MP	HRAP16270318MP	HRSP16270318MP	CRS16270318MP
0	16.50	.6496"	3.18	HRTP16500318MP	HRCP16500318MP	HRAP16500318MP	HRSP16500318MP	CRS16500318MP
0	16.67	.6563"	3.18	HRTP16670318MP	HRCP16670318MP	HRAP16670318MP	HRSP16670318MP	CRS16670318MP
0	17.00	.6693"	3.18	HRTP17000318MP	HRCP17000318MP	HRAP17000318MP	HRSP17000318MP	CRS17000318MP
0	17.46	.6875"	3.18	HRTP17460318MP	HRCP17460318MP	HRAP17460318MP	HRSP17460318MP	CRS17460318MP
0	17.70	.6719"	3.18	HRTP17700318MP	HRCP17700318MP	HRAP17700318MP	HRSP17700318MP	CRS17700318MP
0	17.50	.6890"	3.18	HRTP17500318MP	HRCP17500318MP	HRAP17500318MP	HRSP17500318MP	CRS17500318MP

INSERT SERIES
SERIE PŁYTEK

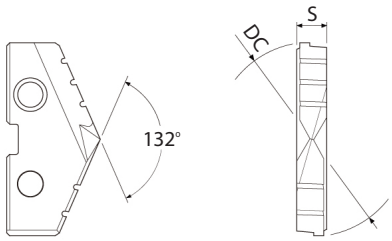




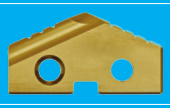
SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

Series Seria	Diameter Średnica		Thickness Grubość (mm)	Order Code Kod zamówienia				
				Premium HSS				Carbide Węglik
	mm	inch						
				TiN	TiCN	TiAlN	TiAlSiN	TiAlSiN
1	17.86	.7031"	4	HRTP17860400MP	HRCP17860400MP	HRAP17860400MP	HRSP17860400MP	CRS17860400MP
1	18.00	.7087"	4	HRTP18000400MP	HRCP18000400MP	HRAP18000400MP	HRSP18000400MP	CRS18000400MP
1	18.26	.7188"	4	HRTP18260400MP	HRCP18260400MP	HRAP18260400MP	HRSP18260400MP	CRS18260400MP
1	18.50	.7283"	4	HRTP18500400MP	HRCP18500400MP	HRAP18500400MP	HRSP18500400MP	CRS18500400MP
1	18.65	.7344"	4	HRTP18650400MP	HRCP18650400MP	HRAP18650400MP	HRSP18650400MP	CRS18650400MP
1	19.00	.7480"	4	HRTP19000400MP	HRCP19000400MP	HRAP19000400MP	HRSP19000400MP	CRS19000400MP
1	19.05	.7500"	4	HRTP19050400MP	HRCP19050400MP	HRAP19050400MP	HRSP19050400MP	CRS19050400MP
1	19.45	.7656"	4	HRTP19450400MP	HRCP19450400MP	HRAP19450400MP	HRSP19450400MP	CRS19450400MP
1	19.50	.7677"	4	HRTP19500400MP	HRCP19500400MP	HRAP19500400MP	HRSP19500400MP	CRS19500400MP
1	19.84	.7813"	4	HRTP19840400MP	HRCP19840400MP	HRAP19840400MP	HRSP19840400MP	CRS19840400MP
1	20.00	.7874"	4	HRTP20000400MP	HRCP20000400MP	HRAP20000400MP	HRSP20000400MP	CRS20000400MP
1	20.24	.7969"	4	HRTP20240400MP	HRCP20240400MP	HRAP20240400MP	HRSP20240400MP	CRS20240400MP
1	20.50	.8071"	4	HRTP20500400MP	HRCP20500400MP	HRAP20500400MP	HRSP20500400MP	CRS20500400MP
1	20.64	.8125"	4	HRTP20640400MP	HRCP20640400MP	HRAP20640400MP	HRSP20640400MP	CRS20640400MP
1	21.00	.8268"	4	HRTP21000400MP	HRCP21000400MP	HRAP21000400MP	HRSP21000400MP	CRS21000400MP
1	21.43	.8438"	4	HRTP21430400MP	HRCP21430400MP	HRAP21430400MP	HRSP21430400MP	CRS21430400MP
1	21.50	.8465"	4	HRTP21500400MP	HRCP21500400MP	HRAP21500400MP	HRSP21500400MP	CRS21500400MP
1	21.83	.8594"	4	HRTP21830400MP	HRCP21830400MP	HRAP21830400MP	HRSP21830400MP	CRS21830400MP
1	22.00	.8661"	4	HRTP22000400MP	HRCP22000400MP	HRAP22000400MP	HRSP22000400MP	CRS22000400MP
1	22.23	.8750"	4	HRTP22230400MP	HRCP22230400MP	HRAP22230400MP	HRSP22230400MP	CRS22230400MP
1	22.50	.8858"	4	HRTP22500400MP	HRCP22500400MP	HRAP22500400MP	HRSP22500400MP	CRS22500400MP
1	22.62	.8906"	4	HRTP22620400MP	HRCP22620400MP	HRAP22620400MP	HRSP22620400MP	CRS22620400MP
1	23.00	.9055"	4	HRTP23000400MP	HRCP23000400MP	HRAP23000400MP	HRSP23000400MP	CRS23000400MP
1	23.02	.9063"	4	HRTP23020400MP	HRCP23020400MP	HRAP23020400MP	HRSP23020400MP	CRS23020400MP
1	23.42	.9219"	4	HRTP23420400MP	HRCP23420400MP	HRAP23420400MP	HRSP23420400MP	CRS23420400MP
1	23.50	.9252"	4	HRTP23500400MP	HRCP23500400MP	HRAP23500400MP	HRSP23500400MP	CRS23500400MP
1	23.81	.9375"	4	HRTP23810400MP	HRCP23810400MP	HRAP23810400MP	HRSP23810400MP	CRS23810400MP
1	24.00	.9449"	4	HRTP24000400MP	HRCP24000400MP	HRAP24000400MP	HRSP24000400MP	CRS24000400MP

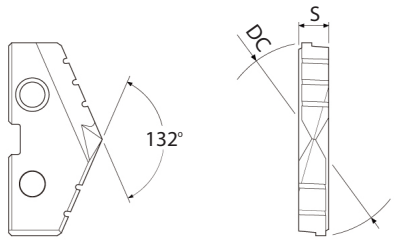
INSERT SERIES
SERIE PŁYTEK



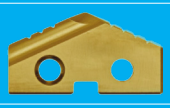
SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

Series Seria	Diameter Średnica		Thickness Grubość (mm)	Order Code Kod zamówienia				
				Premium HSS				Carbide Węglik
	mm	inch						
				TiN	TiCN	TiAlN	TiAlSiN	TiAlSiN
2	24.50	.9646"	4.76	HRTP24500476MP	HRCP24500476MP	HRAP24500476MP	HRSP24500476MP	CRS24500476MP
2	24.61	.9688"	4.76	HRTP24610476MP	HRCP24610476MP	HRAP24610476MP	HRSP24610476MP	CRS24610476MP
2	24.85	.9783"	4.76	HRTP24850476MP	HRCP24850476MP	HRAP24850476MP	HRSP24850476MP	CRS24850476MP
2	25.00	.9843"	4.76	HRTP25000476MP	HRCP25000476MP	HRAP25000476MP	HRSP25000476MP	CRS25000476MP
2	25.40	1.0000"	4.76	HRTP25400476MP	HRCP25400476MP	HRAP25400476MP	HRSP25400476MP	CRS25400476MP
2	25.50	1.0039"	4.76	HRTP25500476MP	HRCP25500476MP	HRAP25500476MP	HRSP25500476MP	CRS25500476MP
2	25.80	1.0156"	4.76	HRTP25800476MP	HRCP25800476MP	HRAP25800476MP	HRSP25800476MP	CRS25800476MP
2	26.00	1.0236"	4.76	HRTP26000476MP	HRCP26000476MP	HRAP26000476MP	HRSP26000476MP	CRS26000476MP
2	26.19	1.0313"	4.76	HRTP26190476MP	HRCP26190476MP	HRAP26190476MP	HRSP26190476MP	CRS26190476MP
2	26.50	1.0431"	4.76	HRTP26500476MP	HRCP26500476MP	HRAP26500476MP	HRSP26500476MP	CRS26500476MP
2	26.59	1.0469"	4.76	HRTP26590476MP	HRCP26590476MP	HRAP26590476MP	HRSP26590476MP	CRS26590476MP
2	26.99	1.0625"	4.76	HRTP26990476MP	HRCP26990476MP	HRAP26990476MP	HRSP26990476MP	CRS26990476MP
2	27.00	1.0630"	4.76	HRTP27000476MP	HRCP27000476MP	HRAP27000476MP	HRSP27000476MP	CRS27000476MP
2	27.50	1.0827"	4.76	HRTP27500476MP	HRCP27500476MP	HRAP27500476MP	HRSP27500476MP	CRS27500476MP
2	27.78	1.0938"	4.76	HRTP27780476MP	HRCP27780476MP	HRAP27780476MP	HRSP27780476MP	CRS27780476MP
2	28.00	1.1024"	4.76	HRTP28000476MP	HRCP28000476MP	HRAP28000476MP	HRSP28000476MP	CRS28000476MP
2	28.18	1.1094"	4.76	HRTP28180476MP	HRCP28180476MP	HRAP28180476MP	HRSP28180476MP	CRS28180476MP
2	28.50	1.1220"	4.76	HRTP28500476MP	HRCP28500476MP	HRAP28500476MP	HRSP28500476MP	CRS28500476MP
2	28.58	1.1250"	4.76	HRTP28580476MP	HRCP28580476MP	HRAP28580476MP	HRSP28580476MP	CRS28580476MP
2	29.00	1.1417"	4.76	HRTP29000476MP	HRCP29000476MP	HRAP29000476MP	HRSP29000476MP	CRS29000476MP
2	29.37	1.1563"	4.76	HRTP29370476MP	HRCP29370476MP	HRAP29370476MP	HRSP29370476MP	CRS29370476MP
2	29.50	1.1614"	4.76	HRTP29500476MP	HRCP29500476MP	HRAP29500476MP	HRSP29500476MP	CRS29500476MP
2	30.00	1.1811"	4.76	HRTP30000476MP	HRCP30000476MP	HRAP30000476MP	HRSP30000476MP	CRS30000476MP
2	30.16	1.1875"	4.76	HRTP30160476MP	HRCP30160476MP	HRAP30160476MP	HRSP30160476MP	CRS30160476MP
2	30.50	1.2008"	4.76	HRTP30500476MP	HRCP30500476MP	HRAP30500476MP	HRSP30500476MP	CRS30500476MP
2	30.96	1.2188"	4.76	HRTP30960476MP	HRCP30960476MP	HRAP30960476MP	HRSP30960476MP	CRS30960476MP
2	31.00	1.2205"	4.76	HRTP31000476MP	HRCP31000476MP	HRAP31000476MP	HRSP31000476MP	CRS31000476MP
2	31.50	1.2402"	4.76	HRTP31500476MP	HRCP31500476MP	HRAP31500476MP	HRSP31500476MP	CRS31500476MP
2	31.75	1.2500"	4.76	HRTP31750476MP	HRCP31750476MP	HRAP31750476MP	HRSP31750476MP	CRS31750476MP
2	32.00	1.2598"	4.76	HRTP32000476MP	HRCP32000476MP	HRAP32000476MP	HRSP32000476MP	CRS32000476MP
2	32.50	1.2795"	4.76	HRTP32500476MP	HRCP32500476MP	HRAP32500476MP	HRSP32500476MP	CRS32500476MP
2	32.54	1.2813"	4.76	HRTP32540476MP	HRCP32540476MP	HRAP32540476MP	HRSP32540476MP	CRS32540476MP
2	33.00	1.2992"	4.76	HRTP33000476MP	HRCP33000476MP	HRAP33000476MP	HRSP33000476MP	CRS33000476MP
2	33.34	1.3125"	4.76	HRTP33340476MP	HRCP33340476MP	HRAP33340476MP	HRSP33340476MP	CRS33340476MP
2	33.50	1.3187"	4.76	HRTP33500476MP	HRCP33500476MP	HRAP33500476MP	HRSP33500476MP	CRS33500476MP
2	34.00	1.3386"	4.76	HRTP34000476MP	HRCP34000476MP	HRAP34000476MP	HRSP34000476MP	CRS34000476MP
2	34.13	1.3438"	4.76	HRTP34130476MP	HRCP34130476MP	HRAP34130476MP	HRSP34130476MP	CRS34130476MP
2	34.50	1.3583"	4.76	HRTP34500476MP	HRCP34500476MP	HRAP34500476MP	HRSP34500476MP	CRS34500476MP
2	34.93	1.3750"	4.76	HRTP34930476MP	HRCP34930476MP	HRAP34930476MP	HRSP34930476MP	CRS34930476MP
2	35.00	1.3780"	4.76	HRTP35000476MP	HRCP35000476MP	HRAP35000476MP	HRSP35000476MP	CRS35000476MP

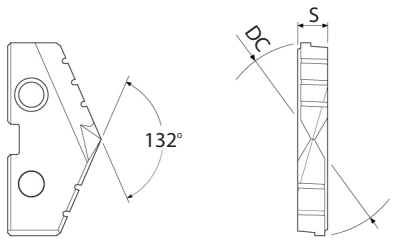
INSERT SERIES
SERIE PŁYTEK



SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

Series Seria	Diameter Średnica		Thickness Grubość (mm)	Order Code Kod zamówienia				
				Premium HSS				Carbide Węglik
	mm	inch						
				TiN	TiCN	TiAlN	TiAlSiN	TiAlSiN
3	35.50	1.3976"	6.35	HRTP35500635MP	HRCP35500635MP	HRAP35500635MP	HRSP35500635MP	CRS35500635MP
3	35.72	1.4063"	6.35	HRTP35720635MP	HRCP35720635MP	HRAP35720635MP	HRSP35720635MP	CRS35720635MP
3	36.00	1.4173"	6.35	HRTP36000635MP	HRCP36000635MP	HRAP36000635MP	HRSP36000635MP	CRS36000635MP
3	36.50	1.4370"	6.35	HRTP36500635MP	HRCP36500635MP	HRAP36500635MP	HRSP36500635MP	CRS36500635MP
3	36.51	1.4375"	6.35	HRTP36510635MP	HRCP36510635MP	HRAP36510635MP	HRSP36510635MP	CRS36510635MP
3	37.00	1.4567"	6.35	HRTP37000635MP	HRCP37000635MP	HRAP37000635MP	HRSP37000635MP	CRS37000635MP
3	37.31	1.4688"	6.35	HRTP37310635MP	HRCP37310635MP	HRAP37310635MP	HRSP37310635MP	CRS37310635MP
3	38.00	1.4961"	6.35	HRTP38000635MP	HRCP38000635MP	HRAP38000635MP	HRSP38000635MP	CRS38000635MP
3	38.10	1.5000"	6.35	HRTP38100635MP	HRCP38100635MP	HRAP38100635MP	HRSP38100635MP	CRS38100635MP
3	38.89	1.5313"	6.35	HRTP38890635MP	HRCP38890635MP	HRAP38890635MP	HRSP38890635MP	CRS38890635MP
3	39.00	1.5354"	6.35	HRTP39000635MP	HRCP39000635MP	HRAP39000635MP	HRSP39000635MP	CRS39000635MP
3	39.69	1.5625"	6.35	HRTP39690635MP	HRCP39690635MP	HRAP39690635MP	HRSP39690635MP	CRS39690635MP
3	40.00	1.5748"	6.35	HRTP40000635MP	HRCP40000635MP	HRAP40000635MP	HRSP40000635MP	CRS40000635MP
3	40.48	1.5938"	6.35	HRTP40480635MP	HRCP40480635MP	HRAP40480635MP	HRSP40480635MP	CRS40480635MP
3	41.00	1.6142"	6.35	HRTP41000635MP	HRCP41000635MP	HRAP41000635MP	HRSP41000635MP	CRS41000635MP
3	41.28	1.6250"	6.35	HRTP41280635MP	HRCP41280635MP	HRAP41280635MP	HRSP41280635MP	CRS41280635MP
3	42.00	1.6535"	6.35	HRTP42000635MP	HRCP42000635MP	HRAP42000635MP	HRSP42000635MP	CRS42000635MP
3	42.07	1.6563"	6.35	HRTP42070635MP	HRCP42070635MP	HRAP42070635MP	HRSP42070635MP	CRS42070635MP
3	42.86	1.6875"	6.35	HRTP42860635MP	HRCP42860635MP	HRAP42860635MP	HRSP42860635MP	CRS42860635MP
3	43.00	1.6929"	6.35	HRTP43000635MP	HRCP43000635MP	HRAP43000635MP	HRSP43000635MP	CRS43000635MP
3	43.66	1.7188"	6.35	HRTP43660635MP	HRCP43660635MP	HRAP43660635MP	HRSP43660635MP	CRS43660635MP
3	44.00	1.7323"	6.35	HRTP44000635MP	HRCP44000635MP	HRAP44000635MP	HRSP44000635MP	CRS44000635MP
3	44.45	1.7500"	6.35	HRTP44450635MP	HRCP44450635MP	HRAP44450635MP	HRSP44450635MP	CRS44450635MP
3	45.00	1.7717"	6.35	HRTP45000635MP	HRCP45000635MP	HRAP45000635MP	HRSP45000635MP	CRS45000635MP
3	45.24	1.7813"	6.35	HRTP45240635MP	HRCP45240635MP	HRAP45240635MP	HRSP45240635MP	CRS45240635MP
3	46.00	1.8110"	6.35	HRTP46000635MP	HRCP46000635MP	HRAP46000635MP	HRSP46000635MP	CRS46000635MP
3	46.04	1.8125"	6.35	HRTP46040635MP	HRCP46040635MP	HRAP46040635MP	HRSP46040635MP	CRS46040635MP
3	46.83	1.8438"	6.35	HRTP46830635MP	HRCP46830635MP	HRAP46830635MP	HRSP46830635MP	CRS46830635MP
3	47.00	1.8504"	6.35	HRTP47000635MP	HRCP47000635MP	HRAP47000635MP	HRSP47000635MP	CRS47000635MP
3	47.63	1.8750"	6.35	HRTP47630635MP	HRCP47630635MP	HRAP47630635MP	HRSP47630635MP	CRS47630635MP

INSERT SERIES
SERIE PŁYTEK



SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

Series Seria	Diameter Średnica mm	Diameter Średnica inch	Thickness Grubość (mm)	Order Code Kod zamówienia – Premium HSS			
				TiN	TiCN	TiAlN	TiAlSiN
4	48.00	1.8898"	7.94	HRTP48000794MP	HRCP48000794MP	HRK1165480MP	HRSP48000794MP
4	48.42	1.9063"	7.94	HRTP48420794MP	HRCP48420794MP	HRK1165484MP	HRSP48420794MP
4	49.00	1.9291'	7.94	HRTP49000794MP	HRCP49000794MP	HRK1165490MP	HRSP49000794MP
4	49.21	1.9375'	7.94	HRTP49210794MP	HRCP49210794MP	HRK1165492MP	HRSP49210794MP
4	50.00	1.9685"	7.94	HRTP50000794MP	HRCP50000794MP	HRK1165500MP	HRSP50000794MP
4	50.01	1.9688"	7.94	HRTP50010794MP	HRCP50010794MP	HRK1165500MP	HRSP50010794MP
4	50.80	2.0000"	7.94	HRTP50800794MP	HRCP50800794MP	HRK1165508MP	HRSP50800794MP
4	51.00	2.0078"	7.94	HRTP51000794MP	HRCP51000794MP	HRK1165510MP	HRSP51000794MP
4	51.19	2.0313"	7.94	HRTP51190794MP	HRCP51190794MP	HRK1165512MP	HRSP51190794MP
4	52.00	2.0472"	7.94	HRTP52000794MP	HRCP52000794MP	HRK1165520MP	HRSP52000794MP
4	52.39	2.0625"	7.94	HRTP52390794MP	HRCP52390794MP	HRK1165524MP	HRSP52390794MP
4	53.00	2.0866"	7.94	HRTP53000794MP	HRCP53000794MP	HRK1165530MP	HRSP53000794MP
4	53.18	2.0938"	7.94	HRTP53180794MP	HRCP53180794MP	HRK1165532MP	HRSP53180794MP
4	53.98	2.1250"	7.94	HRTP53980794MP	HRCP53980794MP	HRK1165540MP	HRSP53980794MP
4	54.00	2.1260"	7.94	HRTP54000794MP	HRCP54000794MP	HRK1165540MP	HRSP54000794MP
4	54.79	2.1563"	7.94	HRTP54790794MP	HRCP54790794MP	HRK1165548MP	HRSP54790794MP
4	55.00	2.1654"	7.94	HRTP55000794MP	HRCP55000794MP	HRK1165550MP	HRSP55000794MP
4	55.56	2.1875"	7.94	HRTP55560794MP	HRCP55560794MP	HRK1165556MP	HRSP55560794MP
4	56.00	2.2047"	7.94	HRTP56000794MP	HRCP56000794MP	HRK1165560MP	HRSP56000794MP
4	56.36	2.2188"	7.94	HRTP56360794MP	HRCP56360794MP	HRK1165564MP	HRSP56360794MP
4	57.00	2.2441"	7.94	HRTP57000794MP	HRCP57000794MP	HRK1165570MP	HRSP57000794MP
4	57.15	2.2500"	7.94	HRTP57150794MP	HRCP57150794MP	HRK1165572MP	HRSP57150794MP
4	57.94	2.2813"	7.94	HRTP57940794MP	HRCP57940794MP	HRK1165579MP	HRSP57940794MP
4	58.00	2.2835"	7.94	HRTP58000794MP	HRCP58000794MP	HRK1165580MP	HRSP58000794MP
4	58.74	2.3125"	7.94	HRTP58740794MP	HRCP58740794MP	HRK1165587MP	HRSP58740794MP
4	59.00	2.3228"	7.94	HRTP59000794MP	HRCP59000794MP	HRK1165590MP	HRSP59000794MP
4	59.53	2.3438"	7.94	HRTP59530794MP	HRCP59530794MP	HRK1165595MP	HRSP59530794MP
4	60.00	2.3662"	7.94	HRTP60000794MP	HRCP60000794MP	HRK1165600MP	HRSP60000794MP
4	60.33	2.3750"	7.94	HRTP60330794MP	HRCP60330794MP	HRK1165603MP	HRSP60330794MP
4	61.00	2.4016"	7.94	HRTP61000794MP	HRCP61000794MP	HRK1165610MP	HRSP61000794MP
4	61.12	2.1063"	7.94	HRTP61120794MP	HRCP61120794MP	HRK1165611MP	HRSP61120794MP
4	61.91	2.4375"	7.94	HRTP61910794MP	HRCP61910794MP	HRK1165619MP	HRSP61910794MP
4	62.00	2.4409"	7.94	HRTP62000794MP	HRCP62000794MP	HRK1165620MP	HRSP62000794MP
4	62.71	2.4688"	7.94	HRTP62710794MP	HRCP62710794MP	HRK1165627MP	HRSP62710794MP
4	63.00	2.4803"	7.94	HRTP63000794MP	HRCP63000794MP	HRK1165630MP	HRSP63000794MP
4	63.50	2.5000"	7.94	HRTP63500794MP	HRCP63500794MP	HRK1165635MP	HRSP63500794MP
4	64.00	2.5197"	7.94	HRTP64000794MP	HRCP64000794MP	HRK1165640MP	HRSP64000794MP
4	64.29	2.5313"	7.94	HRTP64290794MP	HRCP64290794MP	HRK1165643MP	HRSP64290794MP
4	65.00	2.5591"	7.94	HRTP65000794MP	HRCP65000794MP	HRK1165650MP	HRSP65000794MP
4	65.09	2.5625"	7.94	HRTP65090794MP	HRCP65090794MP	HRK1165651MP	HRSP65090794MP

INSERT SERIES
SERIE PŁYTEK

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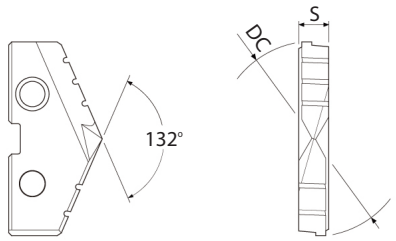
RYSUNEK NA POPRZEDNIEJ STRONIE

SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

Series Seria	Diameter Średnica		Thickness Grubość (mm)	Order Code Kod zamówienia			
				Premium HSS			
	mm	inch		TiN	TiCN	TiAlN	TiAlSiN
5	63.50	2.2500"	11.11	HRTH63501111MP	HRCH63501111MP	HRAH63501111MP	HRSH63501111MP
5	64.00	2.5197"	11.11	HRTH64001111MP	HRCH64001111MP	HRAH64001111MP	HRSH64001111MP
5	64.29	2.5313"	11.11	HRTH64291111MP	HRCH64291111MP	HRAH64291111MP	HRSH64291111MP
5	65.09	2.5625"	11.11	HRTH65091111MP	HRCH65091111MP	HRAH65091111MP	HRSH65091111MP
5	65.88	2.5938"	11.11	HRTH65881111MP	HRCH65881111MP	HRAH65881111MP	HRSH65881111MP
5	66.00	2.5984"	11.11	HRTH66001111MP	HRCH66001111MP	HRAH66001111MP	HRSH66001111MP
5	66.68	2.6250"	11.11	HRTH66681111MP	HRCH66681111MP	HRAH66681111MP	HRSH66681111MP
5	67.47	2.6563"	11.11	HRTH67471111MP	HRCH67471111MP	HRAH67471111MP	HRSH67471111MP
5	68.00	2.6772"	11.11	HRTH68001111MP	HRCH68001111MP	HRAH68001111MP	HRSH68001111MP
5	68.26	2.6875"	11.11	HRTH68261111MP	HRCH68261111MP	HRAH68261111MP	HRSH68261111MP
5	69.05	2.7188"	11.11	HRTH69051111MP	HRCH69051111MP	HRAH69051111MP	HRSH69051111MP
5	69.85	2.7500"	11.11	HRTH69851111MP	HRCH69851111MP	HRAH69851111MP	HRSH69851111MP
5	70.00	2.7559"	11.11	HRTH70001111MP	HRCH70001111MP	HRAH70001111MP	HRSH70001111MP
5	70.64	2.7813"	11.11	HRTH70641111MP	HRCH70641111MP	HRAH70641111MP	HRSH70641111MP
5	71.44	2.8125"	11.11	HRTH71441111MP	HRCH71441111MP	HRAH71441111MP	HRSH71441111MP
5	72.00	2.8346"	11.11	HRTH72001111MP	HRCH72001111MP	HRAH72001111MP	HRSH72001111MP
5	72.23	2.8438"	11.11	HRTH72231111MP	HRCH72231111MP	HRAH72231111MP	HRSH72231111MP
5	73.03	2.8750"	11.11	HRTH73031111MP	HRCH73031111MP	HRAH73031111MP	HRSH73031111MP
5	73.82	2.9063"	11.11	HRTH73821111MP	HRCH73821111MP	HRAH73821111MP	HRSH73821111MP
5	74.00	2.9134"	11.11	HRTH74001111MP	HRCH74001111MP	HRAH74001111MP	HRSH74001111MP
5	74.61	2.9375"	11.11	HRTH74611111MP	HRCH74611111MP	HRAH74611111MP	HRSH74611111MP
5	75.41	2.9688"	11.11	HRTH75411111MP	HRCH75411111MP	HRAH75411111MP	HRSH75411111MP
5	76.00	2.9921"	11.11	HRTH76001111MP	HRCH76001111MP	HRAH76001111MP	HRSH76001111MP
5	76.20	3.0000"	11.11	HRTH76201111MP	HRCH76201111MP	HRAH76201111MP	HRSH76201111MP
6	76.99	3.0313"	11.11	HRTH76991111MP	HRCH76991111MP	HRAH76991111MP	HRSH76991111MP
6	77.79	3.0625"	11.11	HRTH77791111MP	HRCH77791111MP	HRAH77791111MP	HRSH77791111MP
6	78.00	3.0709"	11.11	HRTH78001111MP	HRCH78001111MP	HRAH78001111MP	HRSH78001111MP
6	78.58	3.0938"	11.11	HRTH78581111MP	HRCH78581111MP	HRAH78581111MP	HRSH78581111MP
6	79.38	3.1250"	11.11	HRTH79381111MP	HRCH79381111MP	HRAH79381111MP	HRSH79381111MP
6	80.00	3.1496"	11.11	HRTH80001111MP	HRCH80001111MP	HRAH80001111MP	HRSH80001111MP
6	80.17	3.1563"	11.11	HRTH80171111MP	HRCH80171111MP	HRAH80171111MP	HRSH80171111MP
6	80.96	3.1875"	11.11	HRTH80961111MP	HRCH80961111MP	HRAH80961111MP	HRSH80961111MP
6	81.76	3.2188"	11.11	HRTH81761111MP	HRCH81761111MP	HRAH81761111MP	HRSH81761111MP
6	82.00	3.2283"	11.11	HRTH82001111MP	HRCH82001111MP	HRAH82001111MP	HRSH82001111MP
6	82.55	3.2500"	11.11	HRTH82551111MP	HRCH82551111MP	HRAH82551111MP	HRSH82551111MP
6	83.34	3.2813"	11.11	HRTH83341111MP	HRCH83341111MP	HRAH83341111MP	HRSH83341111MP
6	84.00	3.3071"	11.11	HRTH84001111MP	HRCH84001111MP	HRAH84001111MP	HRSH84001111MP
6	84.14	3.3125"	11.11	HRTH84141111MP	HRCH84141111MP	HRAH84141111MP	HRSH84141111MP
6	84.93	3.3438"	11.11	HRTH84931111MP	HRCH84931111MP	HRAH84931111MP	HRSH84931111MP
6	85.73	3.3750"	11.11	HRTH85731111MP	HRCH85731111MP	HRAH85731111MP	HRSH85731111MP
6	86.00	3.3858"	11.11	HRTH86001111MP	HRCH86001111MP	HRAH86001111MP	HRSH86001111MP
6	86.52	3.4063"	11.11	HRTH86521111MP	HRCH86521111MP	HRAH86521111MP	HRSH86521111MP
6	87.31	3.4375"	11.11	HRTH87311111MP	HRCH87311111MP	HRAH87311111MP	HRSH87311111MP
6	88.00	3.4646"	11.11	HRTH88001111MP	HRCH88001111MP	HRAH88001111MP	HRSH88001111MP
6	88.11	3.4688"	11.11	HRTH88111111MP	HRCH88111111MP	HRAH88111111MP	HRSH88111111MP
6	88.90	3.5000"	11.11	HRTH88901111MP	HRCH88901111MP	HRAH88901111MP	HRSH88901111MP

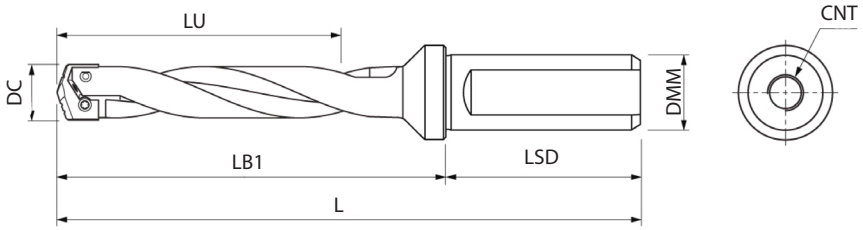
INSERT SERIES
SERIE PŁYTEK



SPADE DRILL INSERT
PŁYTKI DO WIERTEŁ ŁOPATKOWYCH

Series Seria	Diameter Średnica mm	Diameter Średnica inch	Thickness Grubość (mm)	Order Code Kod zamówienia – Premium HSS			
				TiN	TiCN	TiAlN	TiAlSiN
7	89.69	3.5313"	11.11	HRTH89691111MP	HRCH89691111MP	HRAH89691111MP	HRSH89691111MP
7	90.00	3.5433"	11.11	HRTH90001111MP	HRCH90001111MP	HRAH90001111MP	HRSH90001111MP
7	90.49	3.5625"	11.11	HRTH90491111MP	HRCH90491111MP	HRAH90491111MP	HRSH90491111MP
7	91.28	3.5938"	11.11	HRTH91281111MP	HRCH91281111MP	HRAH91281111MP	HRSH91281111MP
7	92.00	3.6221"	11.11	HRTH92001111MP	HRCH92001111MP	HRAH92001111MP	HRSH92001111MP
7	92.08	3.6250"	11.11	HRTH92081111MP	HRCH92081111MP	HRAH92081111MP	HRSH92081111MP
7	92.87	3.6563"	11.11	HRTH92871111MP	HRCH92871111MP	HRAH92871111MP	HRSH92871111MP
7	93.66	3.6875"	11.11	HRTH93661111MP	HRCH93661111MP	HRAH93661111MP	HRSH93661111MP
7	94.00	3.7008"	11.11	HRTH94001111MP	HRCH94001111MP	HRAH94001111MP	HRSH94001111MP
7	94.46	3.7188"	11.11	HRTH94461111MP	HRCH94461111MP	HRAH94461111MP	HRSH94461111MP
7	95.25	3.7500"	11.11	HRTH95251111MP	HRCH95251111MP	HRAH95251111MP	HRSH95251111MP
7	96.00	3.7795"	11.11	HRTH96001111MP	HRCH96001111MP	HRAH96001111MP	HRSH96001111MP
7	96.04	3.7813"	11.11	HRTH96041111MP	HRCH96041111MP	HRAH96041111MP	HRSH96041111MP
7	96.84	3.8125"	11.11	HRTH96841111MP	HRCH96841111MP	HRAH96841111MP	HRSH96841111MP
7	97.63	3.8438"	11.11	HRTH97631111MP	HRCH97631111MP	HRAH97631111MP	HRSH97631111MP
7	98.00	3.8583"	11.11	HRTH98001111MP	HRCH98001111MP	HRAH98001111MP	HRSH98001111MP
7	98.43	3.8750"	11.11	HRTH98431111MP	HRCH98431111MP	HRAH98431111MP	HRSH98431111MP
7	99.22	3.9063"	11.11	HRTH99221111MP	HRCH99221111MP	HRAH99221111MP	HRSH99221111MP
7	100.00	3.9370"	11.11	HRTH100001111MP	HRCH100001111MP	HRAH100001111MP	HRSH100001111MP
7	100.01	3.9375"	11.11	HRTH100011111MP	HRCH100011111MP	HRAH100011111MP	HRSH100011111MP
7	100.81	3.9688"	11.11	HRTH100811111MP	HRCH100811111MP	HRAH100811111MP	HRSH100811111MP
7	101.60	4.0000"	11.11	HRTH101601111MP	HRCH101601111MP	HRAH101601111MP	HRSH101601111MP
8	102.00	4.0157"	11.11	HRTH102001111MP	HRCH102001111MP	HRAH102001111MP	HRSH102001111MP
8	103.19	4.0625"	11.11	HRTH103191111MP	HRCH103191111MP	HRAH103191111MP	HRSH103191111MP
8	103.98	4.0938"	11.11	HRTH103981111MP	HRCH103981111MP	HRAH103981111MP	HRSH103981111MP
8	104.00	4.0945"	11.11	HRTH104001111MP	HRCH104001111MP	HRAH104001111MP	HRSH104001111MP
8	104.78	4.1250"	11.11	HRTH104781111MP	HRCH104781111MP	HRAH104781111MP	HRSH104781111MP
8	106.00	4.1732"	11.11	HRTH106001111MP	HRCH106001111MP	HRAH106001111MP	HRSH106001111MP
8	106.36	4.1875"	11.11	HRTH106361111MP	HRCH106361111MP	HRAH106361111MP	HRSH106361111MP
8	107.95	4.2500"	11.11	HRTH107951111MP	HRCH107951111MP	HRAH107951111MP	HRSH107951111MP
8	108.00	4.2520"	11.11	HRTH108001111MP	HRCH108001111MP	HRAH108001111MP	HRSH108001111MP
8	109.54	4.3125"	11.11	HRTH109541111MP	HRCH109541111MP	HRAH109541111MP	HRSH109541111MP
8	110.00	4.3307"	11.11	HRTH110001111MP	HRCH110001111MP	HRAH110001111MP	HRSH110001111MP
8	111.13	4.3750"	11.11	HRTH111131111MP	HRCH111131111MP	HRAH111131111MP	HRSH111131111MP
8	112.00	4.4094"	11.11	HRTH112001111MP	HRCH112001111MP	HRAH112001111MP	HRSH112001111MP
8	112.71	4.4375"	11.11	HRTH112711111MP	HRCH112711111MP	HRAH112711111MP	HRSH112711111MP
8	114.00	4.4482"	11.11	HRTH114001111MP	HRCH114001111MP	HRAH114001111MP	HRSH114001111MP
8	114.30	4.5000"	11.11	HRTH114301111MP	HRCH114301111MP	HRAH114301111MP	HRSH114301111MP

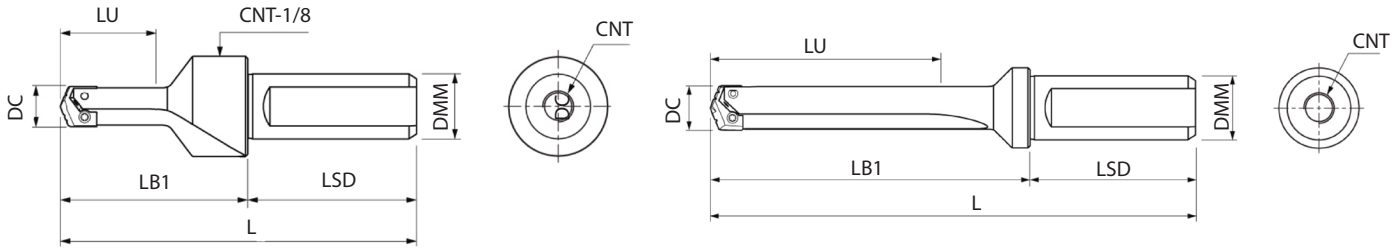
DRILL INSERT HOLDERS
UCHWYTY DO PŁYTEK



SPADE DRILL FSB SERIES - HELICAL FLUTE AND FLANGE SHANK
WIERTŁO ŁOPATKOWE SERIA FSB - SPIRALNY ROWEK I CHWYT KOŁNIERZOWY

Order Code Kod zamówienia	Lenght Długość (mm)	Dimension Wymiary (mm)							Insert Series Seria płytek
		DC	LU	LB1	L	DMM	LSD	CNT	
FSB095110134020MP	Standard	9.5-11.0	60.3	92.1	134	20	48	1/8"	Y
FSB095110192920MP	Extended	9.5-11.0	111.1	142.9	192.9	20	50	1/8"	Y
FSB115125136020MP	Standard	11.5-12.5	60.3	92.1	136	20	50	1/8"	Z
FSB115125192920MP	Extended	11.5-12.5	111.1	142.9	192.9	20	50	1/8"	Z
FSB130175144920MP	Standard	13.0-17.5	63.5	94.9	144.9	20	50	1/8"	0
FSB130175195720MP	Extended	13.0-17.5	114.3	145.7	195.7	20	50	1/8"	0
FSB130175259120MP	Long	13.0-17.5	177.8	209.1	259.1	20	50	1/8"	0
FSB130175376720MP	XL(extra long)	13.0-17.5	295	326.7	376.7	20	50	1/8"	0
FSB130175468820MP	3XL(extra long)	13.0-17.5	387	418.8	468.8	20	50	1/8"	0
FSB155175144920MP	Standard	15.5-17.5	63.5	94.9	144.9	20	50	1/8"	0
FSB155175195720MP	Extended	15.5-17.5	114.3	145.7	195.7	20	50	1/8"	0
FSB155175259120MP	Long	15.5-17.5	177.8	209.1	259.1	20	50	1/8"	0
FSB155175376720MP	XL(extra long)	15.5-17.5	295	325. 7	376.7	20	50	1/8"	0
FSB155175468820MP	3XL(extra long)	15.5-17.5	387	418.8	468.8	20	50	1/8"	0
FSB180240214425MP	Intarnediate	18.0-24.0	117.5	158.4	214.4	25	56	1/8"	1
FSB180240265225MP	Standard	18.0-24.0	168.3	209.2	265.2	25	56	1/8"	1
FSB180240366825MP	Long	18.0-24.0	269.9	310.8	366.8	25	56	1/8"	1
FSB180240554125MP	XL(extra long)	18.0-24.0	457	498.1	554.1	25	56	1/8"	1
FSB180240662125MP	3XL(extra long)	18.0-24.0	569	606.1	662.1	25	56	1/8"	1
FSB220240214425MP	Irtemnediate	22.0-24.0	117.5	158.4	214.4	25	56	1/8"	1
FSB220240265225MP	Standard	22.0-24.0	168.3	209.2	265.2	25	56	1/8"	1
FSB220240366825MP	Extended	22.0-24.0	269.9	310.8	366.8	25	56	1/8"	1
FSB220240554125MP	XL(extra long)	22.0-24.0	457	498.1	554.1	25	56	1/8"	1
FSB220240662125MP	3XL(extra long)	22.0-24.0	569	606.1	662.1	25	56	1/8"	1
FSB250350243032MP	Intarnediate	25.0-35.0	136.5	183	243	32	60	1/4"	2
FSB250350293832MP	Standard	25.0-35.0	187.3	233.8	293.8	32	60	1/4"	2
FSB250350395432MP	Extended	25.0-35.0	288.9	335.4	395.4	32	60	1/4"	2
FSB250350617732MP	XL(extra long)	25.0-35.0	511	557.7	617.7	32	60	1/4"	2
FSB250350798732MP	3XL(extra long)	25.0-35.0	692	738.7	798.7	32	60	1/4"	2
FSB300350243032MP	Intarnediate	30.0-35.0	136.5	183	243	32	60	1/4"	2
FSB300350293832MP	Standard	30.0-35.0	187.3	233.8	293.8	32	60	1/4"	2
FSB300350395432MP	Extended	30.0-35.0	288.9	335.4	395.4	32	60	1/4"	2
FSB300350617732MP	3XL(extra long)	30.0-35.0	511	557.7	617.7	32	60	1/4"	2
FSB300350798732MP	3XL(extra long)	30.0-35.0	692	738.7	798.7	32	60	1/4"	2
FSB360470292340MP	Intermediate	36.0-47.0	165.1	222.3	292.3	40	70	1/4"	3
FSB360470292342MP	Intarnediate	36.0-47.0	165.1	222.3	292.3	42	70	1/4"	3
FSB360470336740MP	Standard	36.0-47.0	209.6	266.7	336.7	40	70	1/4"	3
FSB360470336742MP	Standard	36.0-47.0	209.6	266.7	336.7	42	70	1/4"	3
FSB360470476440MP	Extended	36.0-47.0	349	406.41	476.4	40	70	1/4"	3
FSB360470685940MP	XL(extra long)	36.0-47.0	558.8	615.9	685.9	40	70	1/4"	3
FSB480650355840MP	Standard	48.0-65.0	231.8	285.81	355.8	40	70	1/4"	4
FSB480650355842MP	Standard	48.0-65.0	231.8	285.8	355.8	42	70	1/4"	4
FSB480650546340MP	Extended	48.0-65.0	422	476.31	546.3	40	70	1/4"	4
FSB480650749540MP	XL(extra long)	48.0-65.0	625	679.5	749.5	40	70	1/4"	4
FSB640880302350MP	Short	64.0-88.0	M71.9	222.31	302.3	50	80	1/2"	5,6
FSB640880403950MP	Standard	64.0-88.0	273.5	323.9	403.9	50	80	1/2"	5,6
FSB640880594450MP	Extended	64.0-88.0	464	514.41	594.4	50	80	1/2"	5,6
FSB900114311850MP	Short	90.0-114.0	172	231.8	311.8	50	80	1/2"	7,8
FSB900114413450MP	Standard	90.0-114.0	273	333.41	413.4	50	80	1/2"	7,8
FSB900114696050MP	Extended	90.0-114.0	556	616	696	50	80	1/2"	7,8

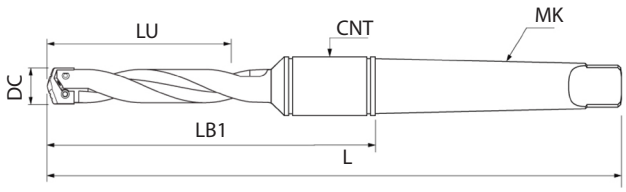
DRILL INSERT HOLDERS
UCHWYTY DO PŁYTEK

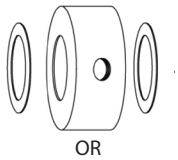


SPADE DRILL FSF SERIES - STRAIGHT FLUTE AND FLANGE SHANK
WIERTŁO ŁOPATKOWE SERIA FSF - PROSTY ROWEK I CHWYT KOŁNIERZOWY

Order Code Kod zamówienia	Lenght Długość (mm)	Dimension Wymiary (mm)							Insert Series Seria płytek
		DC	LU	LB1	L	DMM	LSD	CNT	
FSF095110098016MP	Stub(extra short)	9.5-11.0	19.9	50	98	16	48	1/16"	Y
FSF095110113520MP	Short	9.5-11.0	31.8	63.5	113.5	20	50	1/8"	Y
FSF095110304120MP	XL(extra long)	9.5-11.0	222	254.1	304.1	20	50	1/8"	Y
FSF095110372320MP	3XL(extra long)	9.5-11.0	290	322.3	372.3	20	50	1/8"	Y
FSF115125098016MP	Stub(extra short)	11.5-12.5	19.9	50	98	16	48	1/16"	Z
FSF115125113520MP	Short	11.5-12.5	31.8	63.5	113.5	20	50	1/8"	Z
FSF115125304120MP	XL(extra long)	11.5-12.5	222	254.1	304.1	20	50	1/8"	Z
FSF115125372320MP	3XL(extra long)	11.5-12.5	290	322.3	372.3	20	50	1/8"	Z
FSF130175100420MP	Stub(extra short)	13.0-17.5	22.2	50.4	100.4	20	50	1/8"	0
FSF130175116320MP	Short	13.0-17.5	34.9	66.3	116.3	20	50	1/8"	0
FSF130175376720MP	XL(extra long)	13.0-17.5	295	326.7	376.7	20	50	1/8"	0
FSF130175468820MP	3XL(extra long)	13.0-17.5	387	418.8	468.8	20	50	1/8"	0
FSF155175100420MP	Stub(extra short)	15.5-17.5	22.2	50.4	100.4	20	50	1/8"	0
FSF155175116320MP	Short	15.5-17.5	34.9	66.3	116.3	20	50	1/8"	0
FSF155175376720MP	XL(extra long)	15.5-17.5	295	326.7	376.7	20	50	1/8"	0
FSF155175468820MP	3XL(extra long)	15.5-17.5	387	418.8	468.8	20	50	1/8"	0
FSF180240135425MP	Stub(extra short)	18.0-24.0	47.6	79.4	135.4	25	56	1/8"	1
FSF180240166725MP	Short	18.0-24.0	66.7	110.7	166.7	25	56	1/8"	1
FSF180240554125MP	XL(extra long)	18.0-24.0	457	498.1	554.1	25	56	1/8"	1
FSF180240662125MP	3XL(extra long)	18.0-24.0	569	606.1	662.1	25	56	1/8"	1
FSF220240135425MP	Stub(extra short)	22.0-24.0	47.6	79.4	135.4	25	56	1/8"	1
FSF220240166725MP	Short	22.0-24.0	66.7	110.7	166.7	25	56	1/8"	1
FSF220240554125MP	XL(extra long)	22.0-24.0	457	498.7	554.1	25	56	1/8"	1
FSF220240662125MP	3XL(extra long)	22.0-24.0	569	606.1	662.1	25	56	1/8"	1
FSF250350152132MP	Stub(extra short)	25.0-35.0	57.2	92.1	152.1	32	60	1/4"	2
FSF250350192232MP	Short	25.0-35.0	85.7	132.2	192.2	32	60	1/4"	2
FSF250350617732MP	XL(extra long)	25.0-35.0	511	557.7	617.7	32	60	1/4"	2
FSF250350798732MP	3XL(extra long)	25.0-35.0	692	738.7	798.7	32	60	1/4"	2
FSF300350152132MP	Stub(extra short)	30.0-35.0	57.2	92.1	152.1	32	60	1/4"	2
FSF300350192232MP	Short	30.0-35.0	85.7	132.2	192.2	32	60	1/4"	2
FSF300350617732MP	XL(extra long)	30.0-35.0	511	557.7	617.7	32	60	1/4"	2
FSF300350798732MP	3XL(extra long)	30.0-35.0	692	738.7	798.7	32	60	1/4"	2
FSF360470247840MP	Short	36.0-47.0	120.7	177.8	247.8	40	70	1/4"	3
FSF360470247842MP	Short	36.0-47.0	120.7	177.8	247.8	42	70	1/4"	3
FSF360470476440MP	Extended	36.0-47.0	349.3	406.4	476.4	40	70	1/4"	3
FSF360470476442MP	Extended	36.0-47.0	349.3	406.4	476.4	42	70	1/4"	3
FSF360470685940MP	XL(extra long)	36.0-47.0	558.8	616	685.9	40	70	1/4"	3
FSF480650254240MP	Short	48.0-65.0	130.2	184.2	254.2	40	70	1/4"	4
FSF480650254242MP	Short	48.0-65.0	130.2	184.2	254.2	42	70	1/4"	4
FSF480650546340MP	Extended	48.0-65.0	422.3	476.3	546.3	40	70	1/4"	4
FSF480650546342MP	Extended	48.0-65.0	422.3	476.3	546.3	42	70	1/4"	4
FSF480650749540MP	XL(extra long)	48.0-65.0	625	679.6	749.5	40	70	1/4"	4
FSF640880317550MP	Short	64.0-88.0	171.5	237.5	317.5	50	80	1/2 "	5,6
FSF640880419150MP	Standard	64.0-88.0	273	339	419.1	50	80	1/2 "	5,6
FSF640880609650MP	Extended	64.0-88.0	463.6	529.6	609.6	50	80	1/2"	5,6
FSF900114352450MP	Short	90.0-114.0	171.5	272.4	352.4	50	80	1/2"	7,8
FSF900114454050MP	Standard	90.0-114.0	273	374	454	50	80	1/2"	7,8
FSF900114454050MP	Extended	90.0-114.0	555.6	656.6	736.6	50	80	1/2"	7,8

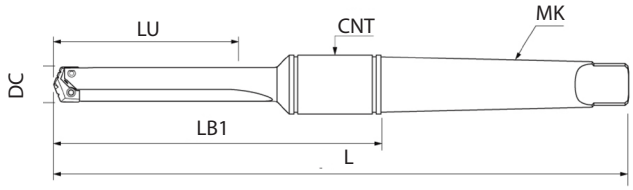
DRILL INSERT HOLDERS
UCHWYTY DO PŁYTEK

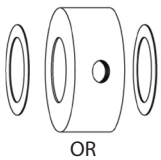




SPADE DRILL TSB SERIES - HELICAL FLUTE AND MORSE TAPER
WIERTŁO ŁOPATKOWE SERIA TSB - SPIRALNY ROWEK I CHWYT MORSE'A

Order Code Kod zamówienia	Lenght Długość (mm)	Dimension Wymiary (mm)						Insert Series Seria płytek
		DC	LU	LB1	L	MK	CNT	
TSB095110191MP	Standard	9.5-11.0	60.3	116.7	191.3	#2	1/16"	Y
TSB095110242MP	Extended	9.5-11.0	111.1	167.4	242.1	#2	1/16"	Y
TSB115125191MP	Standard	11.5-12.5	60.3	116.7	191.3	#2	1/16"	Z
TSB115125242MP	Extended	11.5-12.5	111.1	167.4	242.1	#2	1/16"	Z
TSB130175196MP	Standard	13.0-17.5	63.5	121	195.7	#2	1/16"	0
TSB130175247MP	Extended	13.0-17.5	114.3	171.8	246.5	#2	1/16"	0
TSB130175310MP	Long	13.0-17.5	177.8	235.3	310.3	#2	1/16"	0
TSB155175196MP	Standard	15.5-17.5	63.5	121	195.7	#2	1/16"	0
TSB155175247MP	Extended	15.5-17.5	114.3	171.8	246.5	#2	1/16"	0
TSB155175310MP	Long	15.5-17.5	177.8	235.3	310.3	#2	1/16"	0
TSB180240287MP	Interrmediate	18.0-24.0	120.7	193.3	286.9	#3	1/8"	1
TSB180240338MP	Standard	18.0-24.0	171.5	244.1	337.8	#3	1/8"	1
TSB180240439MP	Extended	18.0-24.0	273.1	345.7	439.4	#3	1/8"	1
TSB220240287MP	Intermediate	22.0-24.0	120.7	193.3	286.9	#3	1/8"	1
TSB220240338MP	Standard	22.0-24.0	171.5	244.1	337.8	#3	1/8"	1
TSB220240439MP	Extended	22.0-24.0	273.1	345.7	439.4	#3	1/8"	1
TSB250350328MP	Intermediate	25.0-35.0	136.5	211.2	328.2	#4	1/8 "	2
TSB250350379MP	Standard	25.0-35.0	187.3	262	379	#4	1/8 "	2
TSB250350481MP	Extended	25.0-35.0	289	363.6	480.6	#4	1/8"	2
TSB300350335MP	Intermediate	30.0-35.0	136.5	218.4	335.4	#4	1/4"	2
TSB300350386MP	Standard	30.0-35.0	187.3	269.2	386.2	#4	1/4"	2
TSB300350488MP	Extended	30.0-35.0	289	370.8	487.8	#4	1/4"	2
TSB360470368MP	Intermediate	36.0-47.0	165.1	250.9	368.4	#4	1/4"	3
TSB360470413MP	Standard	36.0-47.0	209.5	295.3	412.8	#4	1/4"	3
TSB480650470MP	Standard	48.0-65.0	231.8	320.7	469.9	#4	1/4"	4
TSB640880537MP	Standard	64.0-88.0	273.1	388.9	536.6	#5	1/2"	5,6
TSB900114546MP	Standard	90.0-114.0	273.1	398.5	546.1	#5	1/2"	7,8





SPADE DRILL TSA SERIES - HELICAL FLUTE AND MORSE TAPER
WIERTŁO ŁOPATKOWE SERIA TSA - PROSTY ROWEK I CHWYT MORSE'A

Order Code Kod zamówienia	Lenght Długość (mm)	Dimension Wymiary (mm)						Insert Series Seria płytek
		DC	LU	LB1	L	MK	CNT	
TSA095110163MP	Short	9.5-11.0	31.8	88	162.9	#2	1/16"	Y
TSA115125163MP	Short	11.5-12.5	31.8	88	162.9	#2	1/16"	Z
TSA130175167MP	Short	13.0-17.5	35	92.4	167.1	#2	1/16"	0
TSA155175167MP	Short	15.5-17.5	35	92.4	167.1	#2	1/16"	0
TSA180240236MP	Short	18.0-24.0	69.8	142.5	236.1	#3	1/8 "	1
TSA220240236MP	Short	22.0-24.0	69.8	142.5	236.1	#3	1/8"	1
TSA250350273MP	Short	25.0-35.0	85.7	160.4	273.1	#4	1/8"	2,3
TSA300350285MP	Short	30.0-35.0	85.7	167.6	284.6	#4	1/4"	2,3
TSA360470319MP	Short	36.0-47.0	120.6	206.4	319	#4	1/4"	2,3
TSA360470553MP	Extended	36.0-47.0	349.3	435	552.5	#4	1/4"	2,3
TSA360470676MP	Long	36.0-47.0	472.8	555	676.1	#4	1/4"	2,3
TSA480650363MP	Short	48.0-65.0	130.1	219.1	363.1	#5	1/4"	4
TSA480650660MP	Extended	48.0-65.0	422.3	511.2	660.4	#5	1/4"	4
TSA640880435MP	Short	64.0-88.0	171.5	287.3	435	#5	1/2"	5,6
TSA640880727MP	Extended	64.0-88.0	463.6	579.4	727.1	#5	1/2"	5,6
TSA900114445MP	Short	90.0-114.0	171.5	296.8	444.5	#5	1/2"	7,8
TSA900114829MP	Extended	90.0-114.0	555.6	681.1	828.7	#5	1/2"	7,8

TECHNICAL DATA
DANE TECHNICZNE

RECOMMENDED CUTTING PARAMETERS FOR SPADE DRILLS
ZALECANE PARAMETRY SKRAWANIA DLA WIERTEŁ ŁOPATKOWYCH

ISO ISO	Material Materiał	Hardness Twardość (HB)	HSS Grade Gatunek HSS	Vc (m/min)				Feed (mm/rev) Posuw (mm/obr)						
				TiN	TiCN	TiAlN	TiAl-SiN	ϕ9.5~ϕ12.5	ϕ13~ϕ17.5	ϕ18~ϕ24	ϕ25~ϕ35	ϕ36~ϕ47	ϕ48~ϕ65	ϕ65~ϕ117
P	**Free machining steel (-0.2%) 118,1215,12L14, ect** Stal automatowa (-0.2%) 118,1215,12L14, ect	100-150	HR H	62	79	84	97	-	-	-	-	-	0.56	0.71
		150-200	HR H	56	71	80	88	-	-	-	-	-	0.56	0.71
		200-250	HR H	20	65	72	83	-	-	-	-	-	0.56	0.71
	Low carbon steel Stal niskowęglowa 110,1020,1025,1522,144, ect.	85-125	HR H	52	66	75	86	-	-	-	-	-	0.56	0.68
		125-175	HR H	50	63	72	81	-	-	-	-	-	0.56	0.68
		175-225	HR H	48	58	69	77	-	-	-	-	-	0.52	0.60
		225-275	HR H	44	55	65	71	-	-	-	-	-	0.52	0.60
	Medium carbon steel Stal średniowęglowa 1030,1040,1050,1527,1140,1151, ect	125-175	HR H	50	63	73	81	-	-	-	-	-	0.56	0.68
		175-225	HR H	47	59	69	77	-	-	-	-	-	0.52	0.60
		225-275	HR H	44	56	64	71	-	-	-	-	-	0.50	0.58
		275-325	HR H	41	52	59	65	0.10	0.17	0.22	0.30	0.40	0.46	-
	Alloy steel Stal stopowa 4140,5140,8640, ect.	125-175	HR H	46	59	64	71	-	-	-	-	-	0.47	0.54
		175-225	HR H	43	55	59	66	-	-	-	-	-	0.46	0.54
		225-275	HR H	40	52	55	62	-	-	-	-	-	0.46	0.54
		275-325	HR P	37	47	52	57	0.10	0.15	0.22	0.29	0.37	0.42	0.50
		325-375	HR P	34	44	47	52	0.08	0.14	0.21	0.28	0.36	0.40	-
	Hight Strenght Alloy Stop o wysokiej wytrzymałości 4340,4330v,300M, ect	225-300	HR P	24	30	34	36	0.12	0.17	0.22	0.24	0.35	0.42	-
		300-350	HR P	18	24	26	28	0.10	0.17	0.22	0.24	0.35	0.42	-
		350-400	HR P	15	20	21	23	0.08	0.15	0.20	0.22	0.30	0.37	-
	Structural Steel Stal konstrukcyjna A36, A285, A516, ect.	100-150	HR H	43	55	61	69	-	-	-	-	-	0.52	0.65
		150-250	HR H	37	47	52	55	-	-	-	-	-	0.46	0.59
		250-350	HR P	30	40	43	46	0.10	0.20	0.22	0.24	0.34	0.41	0
	Tool Steel H-13, H-21, A-4,O-2, ect	150-200	HR P	24	34	32	36	0.10	0.15	0.20	0.25	0.29	0.37	-
		200-250	HR P	18	26	27	29	0.09	0.15	0.19	0.25	0.28	0.36	-
M	**Stainless steel 400 series** Seria 400 ze stali nierdzewnej 416,420, ect.	185-275	HR P	23	29	32	34	0.13	0.18	0.21	0.26	0.35	0.40	-
		275-350	HR P	18	24	27	29	0.12	0.17	0.19	0.24	0.29	0.35	-
	Stainless steel 300 series Seria 300 ze stali nierdzewnej 304,316, 17,4PH, etc.	135-185	HR P	23	29	37	34	0.08	0.17	0.19	0.26	0.34	0.39	-
		185-275	HR P	18	24	27	29	0.07	0.14	0.17	0.24	0.29	0.35	-
K	**Grey, Nodular cast iron** Żeliwo szare, sferoidalne A48-76, GR30/GR45, A536-72, A22-76	120-150	HR H	52	67	76	82	-	-	-	-	-	0.68	0.74
		150-200	HR H	46	59	69	77	-	-	-	-	-	0.63	0.68
		200-220	HR H	40	52	59	66	-	-	-	-	-	0.52	0.58
		220-260	HR P	34	44	50	55	0.12	0.17	0.22	0.29	0.35	0.42	-
		260-320	HR P	27	37	41	45	0.10	0.14	0.17	0.22	0.28	0.35	-
N	**Aluminium** Aluminium 2014, 6061, 7075, ect.	30	HR H	183	229	259	270 !	-	-	-	-	-	0.64	0.64
		180	HR H	91	122	137	190 !	-	-	-	-	-	0.62	0.64
S	**High Temp Alloy** Stop wysokotemperaturowy Hastlloy B, Inconel 600, ect.	140-220	HR P	9 !	11 !	12 !	13 !	0.09	0.17	0.20	0.24	0.27	0.33	-
		220-310	HR P	8	9	11	12	0.08	0.14	0.17	0.19	0.24	0.28	-

CHECK THAT THE INSERT OUTER DIAMETER IS A MINIMUM 0.3 MM (0.012") LARGER THAN THE HOLDER BODY DIAMETER.
SPRAWDŹ, CZY ŚREDNICA ZEWNĘTRZNA WKŁADKI JEST O MINIMALNIE 0,3 MM (0,012„) WIĘKSZA OD ŚREDNICY KORPUSU.

THE RECOMMENDATIONS FOR SPEEDS, FEEDS AND OTHER PARAMETERS PRESENTED IN THIS CHART ARE NOMINAL RECOMMENDATIONS AND SHOULD BE CONSIDERED ONLY AS GOOD STARTING POINTS.
ZALECENIA DOTYCZĄCE PRĘDKOŚCI, PASZY I INNYCH PARAMETRÓW PRZEDSTAWIONE W TEJ TABELI SĄ ZALECENIAMI NOMINALNYMI I NALEŻY ROZWAŻYĆ TYLKO JAKO DOBRY PUNKT STARTOWY.

WHEN INITIAL OPERTATIONS, SPEED AND FEED REDUCTIONS (20% REDUCTION IN SPEED AND 10% REDUCTION IN FEED) ARE RECOMMENDED.
PODCZAS WYKONYWANIA OPERACJI WSTĘPNYCH, ZALECANE SĄ REDUKCJA PRĘDKOŚCI I POSUWU (20% REDUKCJA PRĘDKOŚCI I 10% REDUKCJA POSUWU).

TECHNICAL DATA
DANE TECHNICZNE

RECOMMENDED CUTTING PARAMETERS FOR SPADE DRILLS
ZALECANE PARAMETRY SKRAWANIA DLA WIERTEŁ ŁOPATKOWYCH

ISO ISO	Material Materiał	Hardness Twardość (HB)	Carbide Węglik		Feed (mm/rev) Posuw (mm/obr)						
				TiAlSiN	ϕ9.5~ϕ12.5	ϕ13~ϕ17.5	ϕ18~ϕ24	ϕ25~ϕ35	ϕ36~ϕ47	ϕ48~ϕ65	ϕ65~ϕ117
P	**Free machining steel (-0.2%) 118,1215,12L14, ect** Stal automatowa (-0.2%) 118,1215,12L14, ect	100-150	CR	128	-	0.30	0.38	0.45	0.53	-	-
		150-200	CR	110	-	0.28	0.35	0.40	0.48	-	-
		200-250	CR	104	-	0.25	0.33	0.38	0.43	-	-
	Low carbon steel Stal niskowęglowa 110,1020,1025,1522,144, ect.	85-125	CR	119	-	0.25	0.33	0.43	0.48	-	-
		125-175	CR	104	-	0.25	0.33	0.10	0.45	-	-
		175-225	CR	95	-	0.23	0.30	0.38	0.43	-	-
		225-275	CR	83	-	0.23	0.30	0.38	0.43	-	-
	Medium carbon steel Stal średniowęglowa 1030,1040,1050,1527,1140,1151, ect	125-175	CR	104	-	0.25	0.33	0.43	0.45	-	-
		175-225	CR	95	-	0.23	0.33	0.38	0.43	-	-
		225-275	CR	83	-	0.23	0.30	0.38	0.43	-	-
		275-325	CR	70	-	0.23	0.30	0.35	0.40	-	-
	Alloy steel Stal stopowa 4140,5140,8640, ect.	125-175	CR	99	-	0.25	0.33	0.40	0.45	-	-
		175-225	CR	92	-	0.23	0.30	0.38	0.43	-	-
		225-275	CR	83	-	0.23	0.30	0.38	0.43	-	-
		275-325	CR	76	-	0.20	0.28	0.35	0.40	-	-
		325-375	CR	67	-	0.18	0.25	0.33	0.38	-	-
	Hight Strenght Alloy Stop o wysokiej wytrzymałości 4340,4330v,300M, ect	225-300	CR	61	-	0.23	0.25	0.30	0.38	-	-
		300-350	CR	55	-	0.20	0.23	0.28	0.35	-	-
		350-400	CR	49	-	0.18	0.20	0.25	0.30	-	-
	Structural Steel Stal konstrukcyjna A36, A285, A516, ect.	100-150	CR	95	-	0.28	0.35	0.40	0.45	-	-
		150-250	CR	76	-	0.25	0.30	0.35	0.40	-	-
		250-350	CR	70	-	0.23	0.28	0.25	0.35	-	-
	Tool Steel H-13, H-21, A-4,O-2, ect	150-200	CR	69	-	0.18	0.23	0.28	0.33	-	-
		200-250	CR	52	-	0.15	0.23	0.28	0.33	-	-
M	**Stainless steel 400 series** Seria 400 ze stali nierdzewnej 416,420, ect.	185-275	CR	64	-	0.22	0.29	0.35	0.40	-	-
		275-350	CR	49	-	0.19	0.27	0.30	0.35	-	-
	Stainless steel 300 series Seria 300 ze stali nierdzewnej 304,316, 17,4PH, etc.	135-185	CR	64	-	0.17	0.22	0.26	0.30	-	-
		185-275	CR	49	-	0.14	0.20	0.22	0.25	-	-
K	**Grey, Nodular cast iron** Żeliwo szare, sferoidalne A48-76, GR30/GR45, A536-72, A22-76	120-150	CR	141	-	0.30	0.38	0.48	0.58	-	-
		150-200	CR	122	-	0.28	0.33	0.43	0.53	-	-
		200-220	CR	110	-	0.23	0.30	0.38	0.45	-	-
		220-260	CR	95	-	0.20	0.28	0.33	0.38	-	-
		260-320	CR	83	-	0.18	0.25	0.28	0.33	-	-
N	**Aluminium** Aluminium 2014, 6061, 7075, ect.	30	CR	460	-	0.38	0.45	0.50	0.55	-	-
		180	CR	305	-	0.33	0.40	0.45	0.50	-	-
S	**High Temp Alloy** Stop wysokotemperaturowy Hastlloy B, Inconel 600, ect.	140-220	CR	32	-	0.18	0.23	0.28	0.33	-	-
		220-310	CR	26	-	0.15	0.15	0.25	0.30	-	-

DEEP HOLE DRILL IN SPEED & FEED ADJUSTMENT
REGULACJA PRĘDKOŚCI I POSUWU WIERCENIA GŁĘBOKICH OTWORÓW

HOLDER UCHWYT	EXTENDED PRZEDŁUŻONY	LONG DŁUGI	XL XL	3XL 3XL
SPEED PRĘDKOŚĆ	0.90	0.85	0.80	0.75
FEED POSUW	-	0.95	0.90	0.90

RECOMMENDED SPEED AND FEED EXAMPLE
PRZYKŁADY ZALECANYCH PRĘDKOŚCI I POSUWÓW

IF THE RECOMMENDED SPEED AND FEED IS 30M/MIN AND 0.50MM/REV FOR A STANDARD LENGHT HOLDER IN THE SAME APPLICATION WOULD BE 22.5M/MIN AND 0.45MM/REV
JEŚLI ZALECANA PRĘDKOŚĆ I POSUW WYNOSZĄ 30 M/MIN I 0,50 MM/OBR DLA STANDARDOWEGO DŁUGOŚCI UCHWYTU W TYM SAMYM ZASTOSOWANIU WYNOSI 22,5 M/MIN I 0,45 MM/OBR

EX. 30 X 0.75=22.5M/MIN, 0.05 X 0.90=0.56MM/REV
PRZYKŁAD. 30 X 0.75=22.5M/MIN, 0.05 X 0.90=0.56MM/OBR

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