

\_ WALTER XTRA·TEC® INSERT DRILL

# Tool Innovations in Drilling



**Tiger·tec® Silver**





WALTER TIGER·TEC® SILVER –  
THE NEW POWER IN MACHINING



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Boring/drilling

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# Walter Xtra-tec® Insert Drill:

## Very exact, very efficient, very economical

### THE TOOL

- Indexable insert drill
  - Indexable inserts with four cutting edges
- Diameter range: 0.531 - 2.250 inch
- Z = 1 effective
- Drilling depth: 2 x D, 3 x D, 4 x D and 5 x D
- Unique insert placement ensures balanced cutting forces during the machining process
- Optimized flute design for improved chip evacuation and maximum body stability
- Hard-nickel plated surface provides protection against corrosion and chip wash. Also ensures better chip evacuation
- TorxPlus screws for improved handling and increased clamping force on the inserts
- Cylindrical collar for easy measurement of the tool diameter

### THE APPLICATION

- For all steel and cast iron materials, as well as stainless and difficult to cut materials
- For drilling on angled or convex surfaces, pocket drilling
- Ideally suited for use in general mechanical engineering, the automobile industry as well as in aerospace applications



# Tiger-tec® Silver



## Xtra-tec®

### YOUR ADVANTAGES

- Increased productivity due to higher cutting data
- Low hole tolerance due to the optimum balance of forces
- Cost reduction:
  - 4 cutting edges per insert
  - Higher cutting parameters
  - Fewer additional follow-up operations
- Excellent surface finish from the wiper edge on the peripheral insert
- High process reliability due to TorxPlus insert clamping screw

types: B4212, B4213, B4214, B4215

# Walter Valenite Xtra-tec® Insert Drill: The productive cartridge solution

## THE TOOL

- Solid drill featuring indexable inserts with four cutting edges
- Z = 1 effective
- Cartridge construction
- Ø range of 59 - 120 mm (standard up to 80 mm)
- Adjustable diameter, nominal +0.6 mm
- Drilling depth 1 x D<sub>C</sub> up to 5 x D<sub>C</sub> (standard 3 x D<sub>C</sub>)
- Walter NCT interface for modular setup
- Ideal insert position ensures forces are balanced out during machining
- Hard-nickel plated surface protects against corrosion and wear, and ensures excellent chip flow
- Improved handling and higher clamping and release torque using TorxPlus insert screws
- Cylindrical collar for straightforward measurement of the tool diameter

## THE APPLICATION

- For all steel and cast iron materials as well as for stainless materials and materials which are difficult to machine.
- For drilling, spot drilling on inclined or convex surfaces, chain drilling
- Ideally suited for use in general mechanical engineering, the automotive and mass production industries, as well as in aerospace applications

## YOUR ADVANTAGES

- Productivity is increased due to higher cutting parameters
- High level of flexibility due to the Walter modular system
- Cost reduction:
  - 4 usable cutting edges
  - Higher cutting parameters
  - Cartridge design
- Excellent surface finish quality due to wiper edge insert at periphery
- High process reliability due to positive locking of the insert

## WALTER XPRESS

- Walter Xpress is compatible with tools in the diameter range 2.325 - 4.720 inch [59 - 120 mm] and in lengths of up to 5 x D<sub>C</sub>
- This range is fully covered by the standard cartridges available
- Modular construction enables short delivery times
- The NCT interface guarantees a modular tool setup and compatibility with almost any machine spindle

**Tiger-tec® Silver**





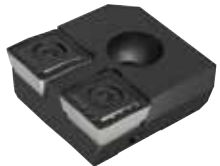
**Xtra-tec®** Insert Drill



**Cartridge: FR743C-6**



**Cartridge: FR744P-6**

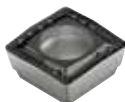


**Cartridge: FR746P-6**

## Application example 1: Connecting rod machining

### Tool

**Designation:** B4212-5898410  
**Indexable insert:** P4840P-3R-E57 / P4841C-3R-E57  
**Grade:** WKP25S / WKP35S  
**Diameter:** 23.7 mm



### Workpiece

**Designation:** Connecting rod  
**Material:** C70  
**Drilling depth:** 30 mm

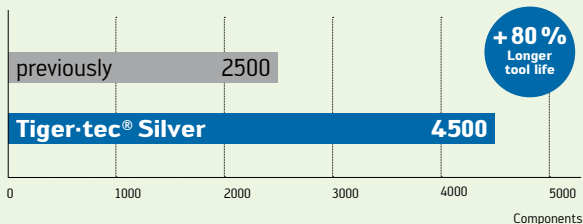
### Cutting data:

	existing	Tiger-tec® Silver
Cutting speed $v_c$	690 SFM	690 SFM
$n$	2820 rpm	2820 rpm
Feed per tooth $f_z$	0.003 inch/rev	0.003 inch/rev
Feed rate $v_f$	8.9 inch/min	8.9 inch/min
$Z$	1	1
Tool life	2500 components	4500 components

### Your advantages:

- Tool life increase from 2500 pieces to 4500 pieces
- Increased tool life and reliability
- Better surface finish quality

### Comparison between number of components

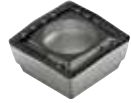




## Application example 2: Flex Link machining

### Tool

**Designation:** B4214.F40.40.Z1.160R-6  
**Indexable insert:** P4848P-6R-E57 / P4841C-6R-E57  
**Grade:** WKP35S / WXP40  
**Diameter:** 1.575 inch



### Workpiece

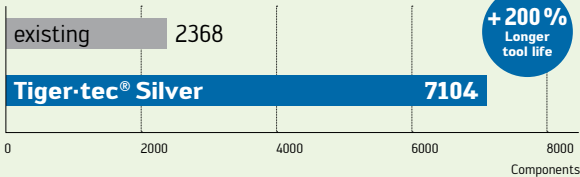
**Designation:** Flex Link  
**Material:** 4130  
**Drilling depth:** 5.83 inch

Cutting data:	existing	Tiger-tec® Silver
Cutting speed $v_c$	722 SFM	535 SFM
$n$	1751 rpm	1297 rpm
Feed per tooth $f_z$	0.002 inch/rev	0.006 inch/rev
Feed rate $v_f$	3.46 inch/min	7.68 inch/min
$Z$	1	1
Machining time	101 sec	46 sec
Tool life	2368 components	7104 components

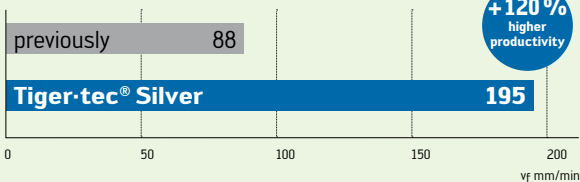
### Your advantages:

- + 200 % longer tool life
- + 120 % higher productivity
- spare machine capacity
- better process reliability

### Comparison between number of components



### Feed rate



## Application example 3: Connecting rod machining

### Tool

**Designation:** B4212-5642880  
**Indexable insert:** P4841P-5R-E57 / P4841C-5R-E57  
**Grade:** WKP25S / WKP35S  
**Diameter:** 1.240 inch



### Workpiece

**Designation:** Connecting rod  
**Material:** 36MnVS4  
**Drilling depth:** 0.787 inch

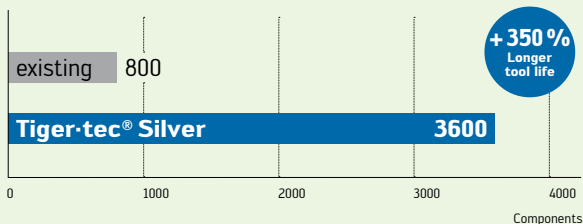
### Cutting data:

	existing	Tiger-tec® Silver
<b>Cutting speed <math>v_c</math></b>	394 SFM	460 SFM
<b>n</b>	1200 rpm	1400 rpm
<b>Feed per tooth <math>f_z</math></b>	0.008 inch/rev	0.007 inch/rev
<b>Feed rate <math>v_f</math></b>	9.84 inch/min	9.84 inch/min
<b>Z</b>	1	1
<b>Tool life</b>	800 components	3600 components

### Your advantages:

- Tool life increase from 800 pieces to 3600 pieces
- No vibration
- Better surface finish quality
- Increased tool life and reliability

### Comparison between number of components



## Application example 4: Clutch cover machining

### Tool

Designation: B4212-5538329  
 Indexable insert: P4840P-3R-A57 / P4841C-3R-A57  
 Grade: **WKP35S / WXP40**  
 Diameter: 8.66 inch



### Workpiece

Designation: Clutch cover  
 Material: GGG-40  
 Drilling depth: 0.590 inch

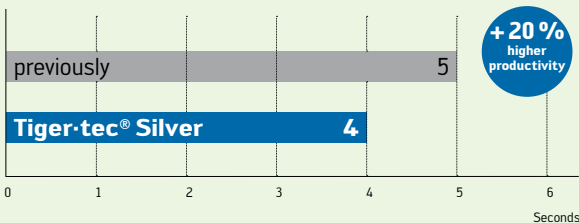
### Cutting data:

	existing	Tiger-tec® Silver
Cutting speed $v_c$	394 SFM	427 SFM
$n$	1737 rpm	1880 rpm
Feed per tooth $f_z$	0.0039 inch/rev	0.0047 inch/rev
Feed rate $v_f$	6.85 inch/min	8.9 inch/min
$Z$	1	1
Machining time	5 sec	4 sec

### Your advantages:

- + 20 % higher productivity with same tool life
- with same tool life
- No vibration
- Faster cycle times achieved reliably

### Machining time



## Walter Xtra-tec® Insert Drill: Very exact, very efficient, very economical



### THE OUTER INSERT

- Fully sintered version with corner radius at the OD
- Ground circumference version: wiper edge ensures excellent surface finish of the bore
- **Tiger-tec® Silver**: The cutting tool material for highest cutting speeds and maximum process reliability

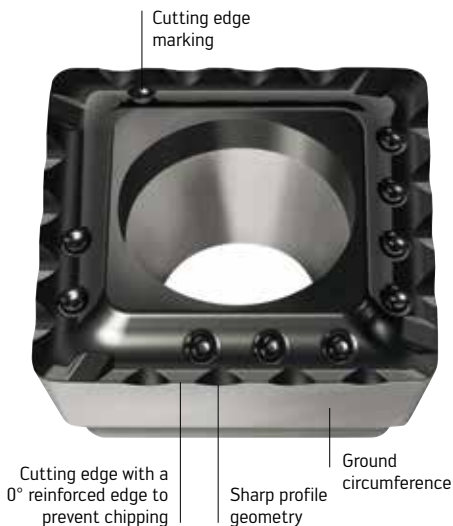


### THE CENTER INSERT

- **Tiger-tec® Silver**: The cutting tool material for longest tool life and maximum process reliability in the drilling of ISO P and ISO K materials
- New: **WXP40** PVD grade for longer tool life in the drilling of ISO P, ISO M and ISO S materials
- Specially developed to meet the requirements of a center insert



**Tiger-tec® Silver**



## THE GEOMETRY VARIANTS



### A 57 – The stable one

- 0° rake angle
- For unfavorable machining conditions
- Mainly for cast iron and steel materials



### E 57 – The universal one

- 13° rake angle
- For medium machining conditions
- For cast iron and steel, including stainless and difficult to cut materials



### E 67 – The special one

- 13° rake angle
- Special geometry for optimum chip formation
- For long-chipping materials, e.g. low carbon steels, stainless and difficult to cut materials, and aluminum

# Walter Select

## for indexable inserts for drilling:

### Step by step to the right indexable insert

#### STEP 1






Determine the **material** to be machined from page H 8 onwards in the Walter general catalog.

Note the machining group that corresponds to your material e.g.: P10.

Identifi- cation letters	Machining group	Groups of the materials to be machined	
<b>P</b>	P1–P15	Steel	All types of steel and cast steel, with the exception of steel with an austenitic structure
<b>M</b>	M1–M3	Stainless steel	Stainless austenitic steel and austenitic-ferritic steel and cast steel
<b>K</b>	K1–K7	Cast iron	Grey cast iron, cast iron with spheroidal graphite, malleable cast iron, cast iron with vermicular graphite
<b>N</b>	N1–N10	NF metals	Aluminum and other non-ferrous metals, non-ferrous materials
<b>S</b>	S1–S10	High temperature alloys and titanium alloys	Heat resisting special alloys based on iron, nickel and cobalt, titanium and titanium alloys
<b>H</b>	H1–H4	Hard materials	Hardened steel, hardened cast iron materials, chilled cast iron
<b>O</b>	O1–O6	Other	Plastics, fiber glass and carbon fiber reinforced plastics, graphite

#### STEP 2

Select the **machining conditions:**

Tool projection	Machine stability, clamping system and workpiece		
	very good	good	moderate
Short projection length			
Long projection length			

### STEP 3

Select your **tool** according to your application and individual requirements. Then select your drill from the corresponding tool page.

Drilling depth	Handbook page
2 x D <sub>c</sub>	28
3 x D <sub>c</sub>	32
4 x D <sub>c</sub>	36
5 x D <sub>c</sub>	40

### STEP 4

Determine your best **indexable index grade** and **-geometry** on the relevant tool page. In so doing, please take into consideration the machining conditions (step 2) and the material to be machined.

Square P 484 .  
**Tiger-tec®**

Indexable inserts

Designation	Number of cutting edges	l in	s in	r in	α	P HC		M		K		S	
						HC	HC	HC	HC	HC	HC		
P8ABMP-SR-A57	4	0.179	0.077	0.011	11°	●	●	●	●	●	●	●	●
P8ABMP-SR-A57	4	0.217	0.094	0.013	11°	●	●	●	●	●	●	●	●
P8ABMP-SR-A57	4	0.256	0.110	0.016	11°	●	●	●	●	●	●	●	●
P8ABMP-SR-A57	4	0.307	0.132	0.019	11°	●	●	●	●	●	●	●	●
P8ABMP-SR-A57	4	0.376	0.162	0.024	11°	●	●	●	●	●	●	●	●

Outer insert P8ABMP-SR-A57

Outer insert P8ABMP-SR-A57

**WALTER SELECT**

Best insert for:

☺ good      ☹ moderate      ☹ unfavorable

machining conditions

### STEP 5

Select the **cutting data** from page 46 onwards in this handbook.

Machining data for Drilling with Xtratec INSERT DRILL Dc 0.531 - 2.250 inches

✂ Cutting data for wet machining  
✂ Dry machining is possible

Structure of main material groups and identification letters

Material group

Insert geometry

Starting values for feed f (inches)

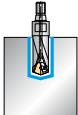
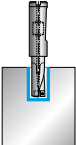
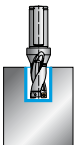
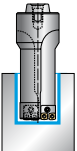




A 57

f (inches)

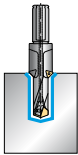
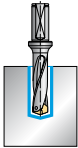
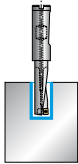
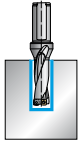






Material group	Designation	Structure of main material groups and identification letters	Breed system (B)	Insert strength (N/mm²)	Cutting grade	Starting values for feed f (inches)					
						0.531	0.750	1.000	1.500	2.000	2.250
P Unalloyed steel	C - 0.25%	annealed	150	900	●	0.002	0.002	0.002	0.002	0.002	0.002
	C - 0.25% - c 0.35%	annealed	150	900	●	0.002	0.002	0.002	0.002	0.002	0.002
	C - 0.25% - c 0.35%	tempered	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002
	C - 0.35%	annealed	150	900	●	0.002	0.002	0.002	0.002	0.002	0.002
	C - 0.35%	tempered	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002
	Free cutting steel (short-chipping)	annealed	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002
P Low-alloyed steel	annealed	150	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
	tempered	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
	tempered	300	1200	●	0.002	0.002	0.002	0.002	0.002	0.002	
	hardened and tempered	450	1200	●	0.002	0.002	0.002	0.002	0.002	0.002	
	annealed	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
	hardened and tempered	300	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
P High-alloyed steel and high-alloyed tool steel	annealed	150	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
	hardened and tempered	300	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
M Stainless steel	martensitic, annealed	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
	martensitic, tempered	300	1100	●	0.002	0.002	0.002	0.002	0.002	0.002	
M Stainless steel	austenitic, quenched/hardened	200	900	●	0.002	0.002	0.002	0.002	0.002	0.002	
	austenitic, precipitation hardened (PH)	300	1000	●	0.002	0.002	0.002	0.002	0.002	0.002	
	austenitic / ferritic, duplex	250	750	●	0.002	0.002	0.002	0.002	0.002	0.002	
M Malleable cast iron		200	900	●	0.002	0.002	0.002	0.002	0.002	0.002	

# Walter Select – Drilling

## Walter Xtra-tec® Insert Drill and Point Drill

Tool type					
$L_c$ approx.	$1.3 \times D_c$	$2 \times D_c$			
	B 4011 (R)	B 3212 (R)	B 4212 (R)	B 3011.M (R)	
Drill (R) = right handed					
	<b>Xtra-tec®</b>		<b>Xtra-tec®</b>		
$\emptyset$ range [inch]	0.472–1.016	0.391–0.703	0.531–2.250	59.5–120 mm	
Walter general catalog page	C 50	C 60	Handbook page 28	C 64	
<b>P</b> Steel	●●	●●	●●	●●	
<b>M</b> Stainless steel	●●	●●	●●	●	
<b>K</b> Cast iron	●●	●●	●●	●●	
<b>N</b> NF metals	●●	●	●	●	
<b>S</b> Difficult-to-cut materials	●●	●●	●●	●	
<b>H</b> Hard materials					
<b>O</b> Other					
Basic insert shape					
Insert types	P 600 ..	LCMX ..	P 484 ..	P 284 ..	
Drilling depth [mm]	$\leq 1.3 \times D_c$	$\leq 2 \times D_c$	$\leq 2 \times D_c$	$\leq 2 \times D_c$	

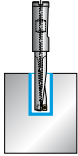
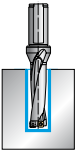








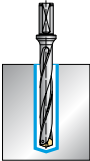
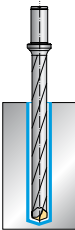


	2.5 x D <sub>c</sub>	3 x D <sub>c</sub>			
	B 4012C (R)	B 4013 (R)	B 3213 (R)	B 4213 (R)	B 4213.N
					
	<b>Xtra-tec®</b>	<b>Xtra-tec®</b>		<b>Xtra-tec®</b>	<b>Xtra-tec®</b>
	0.472–1.172	0.472–1.496	0.391–0.640	13.5–59 mm	59.5–120 mm
	C 66	C 68	C 82	Handbook page 32	Handbook page 44
	●●	●●	●●	●●	●●
	●●	●●	●●	●●	●
	●●	●●	●●	●●	●●
	●●	●●	●	●	●
	●●	●●	●●	●●	●
					
	P 600 .. TC ..	P 600 ..	LCMX ..	P 484 ..	P 484 ..
	≤ 2.5 x D <sub>c</sub>	≤ 3 x D <sub>c</sub>	≤ 3 x D <sub>c</sub>	≤ 3 x D <sub>c</sub>	≤ 3 x D <sub>c</sub>



# Walter Select – Drilling

## Walter Xtra-tec® Insert Drill and Point Drill

Tool type					
$L_c$ approx.	$4 \times D_c$		$5 \times D_c$		
	B 3214 (R)	B 4214 (R)	B 4015 (R)	B 4215 (R)	
Drill (R) = right handed					
			<b>Xtra-tec®</b>	<b>Xtra-tec®</b>	
$\emptyset$ range [inch]	10–18 mm	0.531–2.250	0.472–1.496	0.531–2.250	
Walter general catalog page	C 96	Handbook page 36	C 98	Handbook page 40	
<b>P</b> Steel		●●	●●	●●	
<b>M</b> Stainless steel		●	●●		
<b>K</b> Cast iron	●●	●●	●●	●●	
<b>N</b> NF metals	●	●	●●	●	
<b>S</b> Difficult-to-cut materials		●	●		
<b>H</b> Hard materials					
<b>O</b> Other					
Basic insert shape					
Insert types	LCMX ..	P 484 ..	P 600 ..	P 484 ..	
Drilling depth [mm]	$\leq 4 \times D_c$	$\leq 4 \times D_c$	$\leq 5 \times D_c$	$\leq 5 \times D_c$	

7 x D <sub>c</sub>	10 x D <sub>c</sub>
B 4017 (R)	B 4010 (R)
 <p data-bbox="229 737 346 762"><b>Xtra-tec®</b></p>	 <p data-bbox="689 737 806 762"><b>Xtra-tec®</b></p>
0.472–1.496	0.708–0.945
C 86	C 88
● ●	● ●
●	● ●
● ●	● ●
●	●
●	
	
P 600 ..	P 600 ..
≤ 7 x D <sub>c</sub>	≤ 10 x D <sub>c</sub>



## Designation key for indexable inserts P 484 .

<b>P 484</b>	<b>0</b>	<b>P</b>	<b>–</b>	<b>2</b>	<b>R</b>	<b>–</b>	<b>A57</b>	<b>WKP 35S</b>
1	2	3		4	5		6	7

<b>1</b>
Walter Valenite indexable insert designation

<b>2</b>
<b>0</b> ground <b>1</b> sintered

<b>3</b>
<b>C</b> Center insert <b>P</b> Outer insert

<b>4</b>
Insert size

<b>5</b>
<b>R</b> Right handed

<b>6</b>
Walter Valenite geometry <b>A 57</b> The stable one <b>E 57</b> The universal one <b>E 67</b> The sharp one

<b>7</b>
Walter cutting material grade

## Designation key for Xtra-tec® Insert Drill

<b>B 421</b>	<b>2.</b>	<b>F25</b>	<b>24.</b>	<b>Z1.</b>	<b>048</b>	<b>R</b>	<b>–</b>	<b>3</b>
1	2	3	4	5	6	7		8

<b>1</b>
Walter Valenite indexable insert designation

<b>2</b>
<b>2</b> 2 x D <sub>C</sub> <b>3</b> 3 x D <sub>C</sub> <b>4</b> 4 x D <sub>C</sub> <b>5</b> 5 x D <sub>C</sub>

<b>3</b>
Shank variant and diameter, e.g.:
<b>F 25</b> metric, Ø 25
<b>UF 31</b> inches, Ø 1¼"
<b>N 8</b> NCT 80

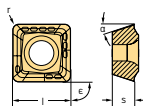
<b>4</b>
Nominal diameter [mm]

<b>5</b>
Effective number of teeth



<b>6</b>
Drilling depth [mm]

<b>7</b>
<b>R</b> right version

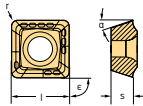
<b>8</b>
Insert size





### Indexable inserts

Designation	Number of cutting edges	l in	s in	r in	$\alpha$	$\epsilon$	P		M	K	S	HC			
							HC	HC	HC	HC	HC				
							WKP25 S	WKP35 S	WSP45	WSP45	WAK15	WKP25 S	WKP35 S	WSP45	WXP40
Outer insert															
P4840P-1R-A57	4	0.179	0.077	0.011	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-2R-A57	4	0.217	0.094	0.013	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-3R-A57	4	0.256	0.110	0.016	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-4R-A57	4	0.307	0.132	0.019	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-5R-A57	4	0.376	0.162	0.023	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-6R-A57	4	0.463	0.192	0.028	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-7R-A57	4	0.552	0.218	0.031	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-8R-A57	4	0.650	0.218	0.039	11°	90°	☒	☒	☒	☒		☒	☒	☒	
															
Outer insert															
P4840P-1R-E57	4	0.179	0.077	0.011	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-2R-E57	4	0.217	0.094	0.013	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-3R-E57	4	0.256	0.110	0.016	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-4R-E57	4	0.307	0.132	0.019	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-5R-E57	4	0.376	0.162	0.023	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-6R-E57	4	0.463	0.192	0.028	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-7R-E57	4	0.552	0.218	0.031	11°	90°	☒	☒	☒	☒		☒	☒	☒	
P4840P-8R-E57	4	0.650	0.218	0.039	11°	90°	☒	☒	☒	☒		☒	☒	☒	

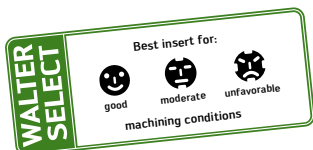
HC = Coated carbide



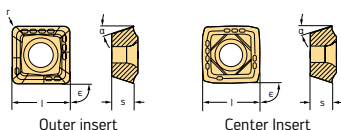
## Indexable inserts

Designation	Number of cutting edges	l in	s in	r in	$\alpha$	e	P HC		M HC	K HC		S HC	HC
							WKP25 S	WKP35 S	WSP45	WSP45	WAK15	WKP25 S	WKP35 S
 Outer insert													
P4840P-1R-E67	4	0.179	0.077	0.011	11°	90°	☹	☹	☹		☹	☹	
P4840P-2R-E67	4	0.217	0.094	0.013	11°	90°	☹	☹	☹		☹	☹	
P4840P-3R-E67	4	0.256	0.110	0.016	11°	90°	☹	☹	☹		☹	☹	
P4840P-4R-E67	4	0.307	0.132	0.019	11°	90°	☹	☹	☹		☹	☹	
P4840P-5R-E67	4	0.376	0.162	0.023	11°	90°	☹	☹	☹		☹	☹	
P4840P-6R-E67	4	0.463	0.192	0.028	11°	90°	☹	☹	☹		☹	☹	
P4840P-7R-E67	4	0.552	0.218	0.031	11°	90°	☹	☹	☹		☹	☹	
P4840P-8R-E67	4	0.650	0.218	0.039	11°	90°	☹	☹	☹		☹	☹	
 Outer insert													
P4841P-1R-A57	4	0.179	0.077	0.011	11°	90°	☹	☹	☹		☹	☹	
P4841P-2R-A57	4	0.217	0.094	0.013	11°	90°	☹	☹	☹		☹	☹	
P4841P-3R-A57	4	0.256	0.110	0.016	11°	90°	☹	☹	☹		☹	☹	
P4841P-4R-A57	4	0.307	0.132	0.019	11°	90°	☹	☹	☹		☹	☹	
P4841P-5R-A57	4	0.376	0.162	0.023	11°	90°	☹	☹	☹		☹	☹	
P4841P-6R-A57	4	0.463	0.192	0.028	11°	90°	☹	☹	☹		☹	☹	
P4841P-7R-A57	4	0.552	0.218	0.031	11°	90°	☹	☹	☹		☹	☹	
P4841P-8R-A57	4	0.650	0.218	0.039	11°	90°	☹	☹	☹		☹	☹	



HC = Coated carbide



# Square P 484 . Tiger-tec®

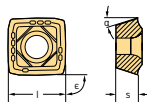


## Indexable inserts



Designation	Number of cutting edges	l in	s in	r in	$\alpha$	$\epsilon$	P		M	K	S	HC
							WKP25 S	WKP35 S	WSP45	WSP45	WAK15	WKP25 S
 Outer insert												
P4841P-1R-E57	4	0.179	0.077	0.011	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-2R-E57	4	0.217	0.094	0.013	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-3R-E57	4	0.256	0.110	0.016	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-4R-E57	4	0.307	0.132	0.019	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-5R-E57	4	0.376	0.162	0.023	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-6R-E57	4	0.463	0.192	0.028	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-7R-E57	4	0.552	0.218	0.031	11°	90°	☉	☉	☉	☉	☉	☉
P4841P-8R-E57	4	0.650	0.218	0.039	11°	90°	☉	☉	☉	☉	☉	☉
 Center insert												
P4841C-1R-A57	4	0.193	0.077	0.011	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-2R-A57	4	0.234	0.094	0.013	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-3R-A57	4	0.276	0.110	0.016	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-4R-A57	4	0.331	0.132	0.019	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-5R-A57	4	0.405	0.162	0.023	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-6R-A57	4	0.482	0.192	0.028	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-7R-A57	4	0.578	0.218	0.031	11°	90°	☉	☉	☉	☉	☉	☉
P4841C-8R-A57	4	0.689	0.218	0.039	11°	90°	☉	☉	☉	☉	☉	☉

HC = Coated carbide

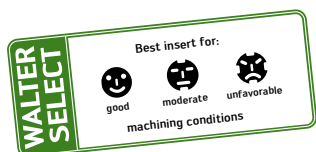




## Indexable inserts

Designation	Number of cutting edges	l in	s in	r in	$\alpha$	e	P HC		M HC		K HC		S HC	
							WKP25 S	WKP35 S	WSP45	WSP45	WAK15	WKP25 S	WKP35 S	WSP45
 Center insert														
P4841C-1R-E57	4	0.193	0.077	0.011	11°	90°	☒					☒		☒
P4841C-2R-E57	4	0.234	0.094	0.013	11°	90°	☒					☒		☒
P4841C-3R-E57	4	0.276	0.110	0.016	11°	90°	☒					☒		☒
P4841C-4R-E57	4	0.331	0.132	0.019	11°	90°	☒					☒		☒
P4841C-5R-E57	4	0.405	0.162	0.023	11°	90°	☒					☒		☒
P4841C-6R-E57	4	0.482	0.192	0.028	11°	90°	☒					☒		☒
P4841C-7R-E57	4	0.578	0.218	0.031	11°	90°	☒					☒		☒
P4841C-8R-E57	4	0.689	0.218	0.039	11°	90°	☒					☒		☒
 Center insert														
P4840C-1R-E67	4	0.193	0.077	0.011	11°	90°	☒					☒		☒
P4840C-2R-E67	4	0.234	0.094	0.013	11°	90°	☒					☒		☒
P4840C-3R-E67	4	0.276	0.110	0.016	11°	90°	☒					☒		☒
P4840C-4R-E67	4	0.331	0.132	0.019	11°	90°	☒					☒		☒
P4840C-5R-E67	4	0.405	0.162	0.023	11°	90°	☒					☒		☒
P4840C-6R-E67	4	0.482	0.192	0.028	11°	90°	☒					☒		☒
P4840C-7R-E67	4	0.578	0.218	0.031	11°	90°	☒					☒		☒
P4840C-8R-E67	4	0.689	0.218	0.039	11°	90°	☒					☒		☒

HC = Coated carbide



## Cutting tool material application tables

### Grades for drilling

Walter Grade designation	Standard designation	Workpiece material group							
		P	M	K	N	S	H		
		Steel	Stainless steel	Cast iron	NF metals	Difficult-to-cut materials	Hard materials		
<b>WKP25S</b>	HC – P25	●●							
	HC – K25			●●					
<b>WKP35S</b>	HC – P35	●●							
	HC – K35			●●					
<b>WSP45</b>	HC – P45	●●							
	HC – M45		●●						
	HC – S45					●●			
<b>WXP40</b>	HC – P45	●●	●●	●●		●●			

HC = Coated carbide

- Primary application
- Other application




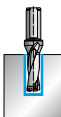


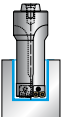


Application range										Coating process	Coating structure	
01	05	10	15	20	25	30	35	40	45			
											CVD	TiCN + Al <sub>2</sub> O <sub>3</sub> (+TiCN)
											CVD	TiCN + Al <sub>2</sub> O <sub>3</sub> (+TiCN)
											PVD	TiAlN + Al <sub>2</sub> O <sub>3</sub> (ZrCN)
											PVD	Multilayer TiAlN / TiN

# Walter Valenite drill: Product range overview of drilling and boring tools with indexable inserts

## Drilling



Walter Select see GC page C 48

$L_C = 1.3 \times D_C$	$L_C = 2 \times D_C$		$L_C = 3 \times D_C$	
$D_C = .472-1.106$ in <b>B 4011</b> GC page C 50 <b>Xtra-tec®</b> 			$D_C = .472-1.496$ in <b>B 4013</b> GC page C 68 <b>Xtra-tec®</b> 	
	$D_C = .531-2.250$ in <b>B 4212</b> HB page 28 <b>Xtra-tec®</b> 		$D_C = .531-2.250$ in <b>B 4213</b> HB page 32 <b>Xtra-tec®</b> 	$D_C = 59-120$ mm <b>B 4213.N</b> HB page 44 <b>Xtra-tec®</b> 
	$D_C = .391-.625$ in <b>B 3212</b> GC page C 60 	$D_C = 59.8-120$ mm <b>B 3011M</b> GC page C 64 	$D_C = .391-.640$ <b>B 3213</b> GC page C 82 	$D_C = 16-37$ mm <b>B 3213</b> GC page C 68 



Walter Select see GC page C 48

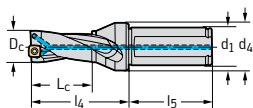


Walter Select  
see GC page C 48

	$L_C = 4 \times D_C$	$L_C = 5 \times D_C$	$L_C = 7 \times D_C$	$L_C = 10 \times D_C$	$L_C = 2 \times D_C$
		$D_C = .472-1.496$ in <b>B 4015</b> GC page C 98 <b>Xtra-tec®</b>	$D_C = .472-1.496$ in <b>B 4017</b> GC page C 110 <b>Xtra-tec®</b>	$D_C = .709-1.016$ in <b>B 4010</b> GC page C 114 <b>Xtra-tec®</b>	$D_C = .472-1.172$ in <b>B 4012C</b> GC page C 66 <b>Xtra-tec®</b>
	$D_C = .656-2.250$ in <b>B 4214</b> HB page 36 <b>Xtra-tec®</b>	$D_C = .656-2.250$ in <b>B 4215</b> HB page 40 <b>Xtra-tec®</b>			
	$D_C = 10-18$ mm <b>B 3214</b> GC page C 98				


HB: This page information relates to this handbook.  
 GC: This page information relates to the Walter general catalog 2012.

# Drill B 4212 Xtra·tec® Insert Drill



Cylindrical shank with flat

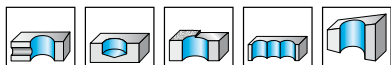
- diameter range 0.531–2.250 in
- right-hand cutting
- drilling depth  $2 \times D_c$

Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4212.UF19.135.Z1.027R-1	0.531	0.750	1.000	1.849	2.031	1.062	0.3	1/1	P484 . P-1R P484 . C-1R
B 4212.UF19.139.Z1.028R-1	0.547	0.750	1.000	1.881	2.031	1.094	0.4	1/1	
B 4212.UF19.143.Z1.029R-1	0.562	0.750	1.000	1.911	2.031	1.124	0.4	1/1	
B 4212.UF19.147.Z1.029R-1	0.578	0.750	1.000	1.943	2.031	1.156	0.4	1/1	
B 4212.UF19.151.Z1.030R-1	0.594	0.750	1.000	1.976	2.031	1.188	0.4	1/1	
B 4212.UF19.155.Z1.031R-1	0.609	0.750	1.000	2.006	2.031	1.218	0.4	1/1	
B 4212.UF19.159.Z1.032R-1	0.625	0.750	1.000	2.037	2.031	1.250	0.5	1/1	
B 4212.UF26.167.Z1.033R-2	0.656	1.000	1.260	2.310	2.280	1.310	0.8	1/1	
B 4212.UF26.170.Z1.034R-2	0.671	1.000	1.260	2.340	2.280	1.340	0.8	1/1	
B 4212.UF26.174.Z1.035R-2	0.687	1.000	1.260	2.370	2.280	1.370	0.8	1/1	
B 4212.UF26.179.Z1.036R-2	0.703	1.000	1.260	2.410	2.280	1.410	0.8	1/1	
B 4212.UF26.182.Z1.036R-2	0.718	1.000	1.260	2.440	2.280	1.440	0.8	1/1	
B 4212.UF26.191.Z1.038R-2	0.750	1.000	1.260	2.500	2.280	1.500	0.8	1/1	
B 4212.UF26.194.Z1.039R-2	0.765	1.000	1.260	2.530	2.280	1.530	0.8	1/1	
B 4212.UF26.198.Z1.040R-2	0.781	1.000	1.260	2.560	2.280	1.560	0.8	1/1	
B 4212.UF26.206.Z1.041R-3	0.812	1.000	1.260	2.620	2.280	1.620	0.8	1/1	P484 . P-3R P484 . C-3R
B 4212.UF26.214.Z1.043R-3	0.843	1.000	1.260	2.690	2.280	1.690	1.0	1/1	
B 4212.UF31.222.Z1.044R-3	0.875	1.250	1.575	2.880	2.280	1.750	1.3	1/1	
B 4212.UF31.230.Z1.046R-3	0.906	1.250	1.575	2.940	2.280	1.810	1.3	1/1	
B 4212.UF31.234.Z1.047R-3	0.921	1.250	1.575	2.970	2.280	1.840	1.3	1/1	
B 4212.UF31.238.Z1.048R-3	0.937	1.250	1.575	3.000	2.280	1.870	1.4	1/1	
B 4212.UF31.246.Z1.049R-4	0.968	1.250	1.575	3.070	2.280	1.940	1.4	1/1	
B 4212.UF31.250.Z1.050R-4	0.984	1.250	1.575	3.100	2.280	1.970	1.4	1/1	
B 4212.UF31.254.Z1.051R-4	1.000	1.250	1.575	3.130	2.280	2.000	1.4	1/1	P484 . P-4R P484 . C-4R
B 4212.UF31.266.Z1.053R-4	1.046	1.250	1.575	3.220	2.280	2.090	1.4	1/1	
B 4212.UF31.270.Z1.054R-4	1.062	1.250	1.575	3.250	2.280	2.120	1.4	1/1	
B 4212.UF31.282.Z1.056R-4	1.109	1.250	1.575	3.350	2.280	2.200	1.4	1/1	
B 4212.UF31.286.Z1.057R-4	1.125	1.250	1.575	3.380	2.280	2.250	1.5	1/1	

Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.

Please implement safety measures.



Assembly parts		D <sub>c</sub> in	.531 - .625	.656 - .781	.812 - .937	.968 - 1.125
	Clamping screw for insert		FS2120 (Torx 6 IP)	FS2111 (Torx 7 IP)	FS1454 (Torx 8 IP)	FS1457 (Torx 9 IP)
	Tightening torque		3.5 In lbs	8 In lbs	10.6 In lbs	17.7 In lbs

Accessories		D <sub>c</sub> in	.531 - .625	.656 - .781	.812 - .937	.968 - 1.125
	Torque screwdriver		FS2002			FS2004
		Interchangeable blade	FS2085 (Torx 6 IP)	FS2011 (Torx 7 IP)	FS2012 (Torx 8 IP)	FS2013 (Torx 9 IP)
	Screwdriver		FS2086 (Torx 6 IP)	FS2088 (Torx 7 IP)	FS1483 (Torx 8 IP)	FS1484 (Torx 9 IP)

### Indexable inserts

	Designation	Size	P		M		K		N		S		H	HC		
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC				
	P4840P- . R-A57	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840P- . R-E57	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840P- . R-E67	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841P- . R-A57	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841P- . R-E57	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841C- . R-A57	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841C- . R-E57	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840C- . R-E67	1-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40

HC = Coated carbide

**WALTER SELECT**

Best insert for:

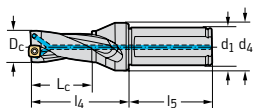
good

moderate

unfavorable


machining conditions

# Drill B 4212 Xtra·tec® Insert Drill



Cylindrical shank with flat

- diameter range 0.531–2.250 in
- right-hand cutting
- drilling depth  $2 \times D_c$

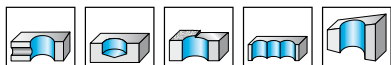
Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4212.UF31.297.Z1.059R-5	1.171	1.250	1.575	3.470	2.280	2.340	1.5	1/1	P484 . P-5R P484 . C-5R
B 4212.UF31.301.Z1.060R-5	1.187	1.250	1.575	3.500	2.280	2.370	1.5	1/1	
B 4212.UF31.318.Z1.064R-5	1.250	1.250	1.575	3.630	2.280	2.500	1.6	1/1	
B 4212.UF31.333.Z1.067R-5	1.312	1.250	1.575	3.750	2.280	2.620	1.7	1/1	
B 4212.UF31.341.Z1.068R-5	1.343	1.250	1.575	3.820	2.280	2.690	1.7	1/1	
B 4212.UF31.349.Z1.070R-5	1.375	1.250	1.575	3.880	2.280	2.750	1.8	1/1	P484 . P-6R P484 . C-6R
B 4212.UF31.361.Z1.072R-6	1.421	1.250	1.575	3.970	2.280	2.840	1.7	1/1	
B 4212.UF38.365.Z1.073R-6	1.437	1.500	1.940	4.250	2.690	2.870	2.6	1/1	
B 4212.UF38.381.Z1.076R-6	1.500	1.500	1.940	4.380	2.690	3.000	2.7	1/1	
B 4212.UF38.397.Z1.079R-6	1.562	1.500	1.940	4.500	2.690	3.120	2.9	1/1	
B 4212.UF38.413.Z1.083R-6	1.625	1.500	1.940	4.630	2.690	3.250	3.0	1/1	P484 . P-7R P484 . C-7R
B 4212.UF38.428.Z1.086R-7	1.687	1.500	1.940	4.750	2.690	3.370	3.0	1/1	
B 4212.UF38.445.Z1.089R-7	1.750	1.500	1.940	4.880	2.690	3.500	3.2	1/1	
B 4212.UF38.460.Z1.092R-7	1.812	1.500	1.940	5.000	2.690	3.620	3.3	1/1	
B 4212.UF38.476.Z1.095R-7	1.875	1.500	1.940	5.130	2.690	3.750	3.5	1/1	
B 4212.UF38.492.Z1.098R-7	1.937	1.500	1.940	5.250	2.690	3.870	3.7	1/1	P484 . P-8R P484 . C-8R
B 4212.UF51.508.Z1.102R-8	2.000	2.000	2.440	5.620	3.250	4.000	5.9	1/1	
B 4212.UF51.524.Z1.105R-8	2.062	2.000	2.440	5.740	3.250	4.120	6.1	1/1	
B 4212.UF51.540.Z1.108R-8	2.125	2.000	2.440	5.870	3.250	4.250	6.3	1/1	
B 4212.UF51.555.Z1.111R-8	2.187	2.000	2.440	5.990	3.250	4.370	6.6	1/1	
B 4212.UF51.572.Z1.114R-8	2.250	2.000	2.440	6.120	3.250	4.500	6.9	1/1	


Bodies, assembly parts and screwdrivers are included in the standard pack.



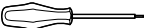
Note: where through holes are created by a rotating tool, a disc forms which is ejected.

Please implement safety measures.





Assembly parts		D <sub>c</sub> in	1.171 - 1.375	1.421 - 1.625	1.687 - 2.250
	Clamping screw for insert		FS2080 (Torx 15 IP)	FS1453 (Torx 15 IP)	FS1495 (Torx 20 IP)
	Tightening torque		22 in lbs	31 in lbs	44 in lbs

Accessories		D <sub>c</sub> in	1.171 - 1.625	1.687 - 2.250
	Torque screwdriver		FS2004	FS2004
	Interchangeable blade		FS2014 (Torx 15 IP)	FS2015 (Torx 20 IP)
	Screwdriver		FS1485 (Torx 15 IP)	FS1486 (Torx 20 IP)


### Indexable inserts


	Designation	Size	P		M		K		N		S		H	HC
			HC	HC	HC	HC	HC	HC	HC	HC	HC			
Outer insert	P4840P- . R-A57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4840P- . R-E57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4840P- . R-E67	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4841P- . R-A57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4841P- . R-E57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
Center insert	P4841C- . R-A57	5-8	⊕	⊕			⊕	⊕						⊕
	P4841C- . R-E57	5-8	⊕	⊕			⊕	⊕						⊕
	P4840C- . R-E67	5-8	⊕	⊕			⊕	⊕						⊕


HC = Coated carbide

WALTER SELECT

Best insert for:

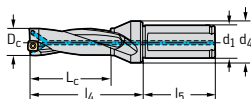
  
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moderate

  
unfavorable


machining conditions

# Drill B 4213 Xtra-tec® Insert Drill



Cylindrical shank with flat

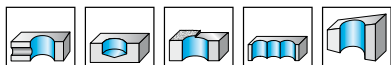
- diameter range 0.531–2.250 in
- right-hand cutting
- drilling depth  $3 \times D_c$

Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4213.UF19.135.Z1.040R-1	0.531	0.750	1.000	2.380	2.031	1.593	0.4	1/1	P484 . P-1R P484 . C-1R
B 4213.UF19.139.Z1.042R-1	0.547	0.750	1.000	2.428	2.031	1.641	0.4	1/1	
B 4213.UF19.143.Z1.043R-1	0.562	0.750	1.000	2.473	2.031	1.686	0.4	1/1	
B 4213.UF19.147.Z1.044R-1	0.578	0.750	1.000	2.521	2.031	1.734	0.4	1/1	
B 4213.UF19.151.Z1.045R-1	0.594	0.750	1.000	2.569	2.031	1.782	0.4	1/1	
B 4213.UF19.155.Z1.046R-1	0.609	0.750	1.000	2.615	2.031	1.827	0.4	1/1	
B 4213.UF19.159.Z1.048R-1	0.625	0.750	1.000	2.662	2.031	1.875	0.5	1/1	
B 4213.UF26.167.Z1.050R-2	0.656	1.000	1.260	2.970	2.280	1.970	0.8	1/1	
B 4213.UF26.170.Z1.051R-2	0.671	1.000	1.260	3.010	2.280	2.010	1.0	1/1	
B 4213.UF26.174.Z1.052R-2	0.687	1.000	1.260	3.060	2.280	2.060	1.0	1/1	
B 4213.UF26.179.Z1.054R-2	0.703	1.000	1.260	3.110	2.280	2.110	1.0	1/1	
B 4213.UF26.182.Z1.055R-2	0.718	1.000	1.260	3.150	2.280	2.150	1.0	1/1	
B 4213.UF26.191.Z1.057R-2	0.750	1.000	1.260	3.250	2.280	2.250	1.0	1/1	
B 4213.UF26.194.Z1.058R-2	0.765	1.000	1.260	3.300	2.280	2.300	1.0	1/1	
B 4213.UF26.198.Z1.059R-2	0.781	1.000	1.260	3.340	2.280	2.340	1.1	1/1	
B 4213.UF26.206.Z1.062R-3	0.812	1.000	1.260	3.440	2.280	2.440	1.1	1/1	P484 . P-3R P484 . C-3R
B 4213.UF26.214.Z1.064R-3	0.843	1.000	1.260	3.530	2.280	2.530	1.1	1/1	
B 4213.UF31.222.Z1.067R-3	0.875	1.250	1.575	3.760	2.280	2.630	1.6	1/1	
B 4213.UF31.230.Z1.069R-3	0.906	1.250	1.575	3.850	2.280	2.720	1.6	1/1	
B 4213.UF31.234.Z1.070R-3	0.921	1.250	1.575	3.890	2.280	2.760	1.6	1/1	
B 4213.UF31.238.Z1.071R-3	0.937	1.250	1.575	3.940	2.280	2.810	1.7	1/1	
B 4213.UF31.246.Z1.074R-4	0.968	1.250	1.575	4.030	2.280	2.900	1.7	1/1	
B 4213.UF31.250.Z1.075R-4	0.984	1.250	1.575	4.080	2.280	2.950	1.7	1/1	
B 4213.UF31.254.Z1.076R-4	1.000	1.250	1.575	4.130	2.280	3.000	1.7	1/1	P484 . P-4R P484 . C-4R
B 4213.UF31.266.Z1.080R-4	1.046	1.250	1.575	4.270	2.280	3.140	1.8	1/1	
B 4213.UF31.270.Z1.081R-4	1.062	1.250	1.575	4.320	2.280	3.190	1.8	1/1	
B 4213.UF31.282.Z1.085R-4	1.109	1.250	1.575	4.460	2.280	3.330	1.9	1/1	
B 4213.UF31.286.Z1.086R-4	1.125	1.250	1.575	4.510	2.280	3.380	1.9	1/1	

Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.

Please implement safety measures.



Assembly parts		D <sub>c</sub> in	.531 - .625	.656 - .781	.812 - .937	.968 - 1.125
	Clamping screw for insert		FS2120 (Torx 6 IP)	FS2111 (Torx 7 IP)	FS1454 (Torx 8 IP)	FS1457 (Torx 9 IP)
	Tightening torque		3.5 in lbs	8 in lbs	10.6 in lbs	17.7 in lbs

Accessories		D <sub>c</sub> in	.531 - .625	.656 - .781	.812 - .937	.968 - 1.125
	Torque screwdriver		FS2002			FS2004
		Interchangeable blade	FS2085 (Torx 6 IP)	FS2011 (Torx 7 IP)	FS2012 (Torx 8 IP)	FS2013 (Torx 9 IP)
	Screwdriver		FS2086 (Torx 6 IP)	FS2088 (Torx 7 IP)	FS1483 (Torx 8 IP)	FS1484 (Torx 9 IP)

### Indexable inserts

	Designation	Size	P		M		K		N		S		H	HC		
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC				
			WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840P- . R-A57	1-4	☺	☺	☺			☺	☺	☺	☺			☺		
	P4840P- . R-E57	1-4	☺	☺	☺			☺	☺	☺	☺			☺		
	P4840P- . R-E67	1-4	☺	☺	☺			☺	☺	☺	☺			☺		
	P4841P- . R-A57	1-4	☺	☺	☺			☺	☺	☺	☺			☺		
	P4841P- . R-E57	1-4	☺	☺	☺			☺	☺	☺	☺			☺		
	P4841C- . R-A57	1-4		☺												☺
	P4841C- . R-E57	1-4		☺												☺
	P4840C- . R-E67	1-4		☺												☺

HC = Coated carbide

**WALTER SELECT**

Best insert for:

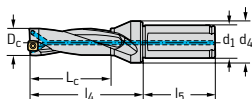
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moderate

unfavorable


machining conditions

# Drill B 4213 Xtra·tec® Insert Drill



Cylindrical shank with flat

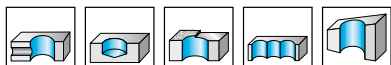
- diameter range 0.531–2.250 in
- right-hand cutting
- drilling depth  $3 \times D_c$


Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4213.UF31.297.Z1.089R-5	1.171	1.250	1.575	4.640	2.280	3.510	1.9	1/1	P484 . P-5R P484 . C-5R
B 4213.UF31.301.Z1.090R-5	1.187	1.250	1.575	4.690	2.280	3.560	1.9	1/1	
B 4213.UF31.318.Z1.095R-5	1.250	1.250	1.575	4.880	2.280	3.750	1.9	1/1	
B 4213.UF31.333.Z1.100R-5	1.312	1.250	1.575	5.070	2.280	3.940	2.0	1/1	
B 4213.UF31.341.Z1.102R-5	1.343	1.250	1.575	5.160	2.280	4.030	2.0	1/1	
B 4213.UF31.349.Z1.105R-5	1.375	1.250	1.575	5.260	2.280	4.130	2.1	1/1	P484 . P-6R P484 . C-6R
B 4213.UF31.361.Z1.108R-6	1.421	1.250	1.575	5.390	2.280	4.260	2.1	1/1	
B 4213.UF38.365.Z1.109R-6	1.437	1.500	1.940	5.690	2.690	4.310	3.0	1/1	
B 4213.UF38.381.Z1.114R-6	1.500	1.500	1.940	5.880	2.690	4.500	3.1	1/1	
B 4213.UF38.397.Z1.119R-6	1.562	1.500	1.940	6.070	2.690	4.690	3.3	1/1	
B 4213.UF38.413.Z1.124R-6	1.625	1.500	1.940	6.260	2.690	4.880	3.5	1/1	P484 . P-7R P484 . C-7R
B 4213.UF38.428.Z1.129R-7	1.687	1.500	1.940	6.440	2.690	5.060	3.6	1/1	
B 4213.UF38.445.Z1.133R-7	1.750	1.500	1.940	6.630	2.690	5.250	3.8	1/1	
B 4213.UF38.460.Z1.138R-7	1.812	1.500	1.940	6.820	2.690	5.440	4.5	1/1	
B 4213.UF38.476.Z1.143R-7	1.875	1.500	1.940	7.010	2.690	5.630	4.4	1/1	
B 4213.UF38.492.Z1.148R-7	1.937	1.500	1.940	7.190	2.690	5.810	4.6	1/1	P484 . P-8R P484 . C-8R
B 4213.UF51.508.Z1.152R-8	2.000	2.000	2.440	7.620	3.250	6.000	6.8	1/1	
B 4213.UF51.524.Z1.157R-8	2.062	2.000	2.440	7.810	3.250	6.190	7.2	1/1	
B 4213.UF51.540.Z1.162R-8	2.125	2.000	2.440	8.000	3.250	6.380	7.5	1/1	
B 4213.UF51.555.Z1.167R-8	2.187	2.000	2.440	8.180	3.250	6.560	7.9	1/1	
B 4213.UF51.572.Z1.171R-8	2.250	2.000	2.440	8.370	3.250	6.750	8.3	1/1	



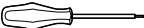
Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.



Please implement safety measures.



Assembly parts		D <sub>c</sub> in	1.171 - 1.375	1.421 - 1.625	1.687 - 2.250
	Clamping screw for insert		FS2080 (Torx 15 IP)	FS1453 (Torx 15 IP)	FS1495 (Torx 20 IP)
	Tightening torque		22 in lbs	31 in lbs	44 in lbs

Accessories		D <sub>c</sub> in	1.171 - 1.625	1.687 - 2.250
	Torque screwdriver		FS2004	FS2004
	Interchangeable blade		FS2014 (Torx 15 IP)	FS2015 (Torx 20 IP)
	Screwdriver		FS1485 (Torx 15 IP)	FS1486 (Torx 20 IP)


### Indexable inserts


	Designation	Size	P		M		K		N		S		H	HC
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC		
 Outer insert	P4840P- . R-A57	5-8	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		
	P4840P- . R-E57	5-8	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		
	P4840P- . R-E67	5-8	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		
	P4841P- . R-A57	5-8	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		
	P4841P- . R-E57	5-8	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗		
 Center insert	P4841C- . R-A57	5-8	⊗	⊗			⊗	⊗						⊗
	P4841C- . R-E57	5-8	⊗	⊗			⊗	⊗						⊗
	P4840C- . R-E67	5-8	⊗	⊗			⊗	⊗						⊗


HC = Coated carbide

WALTER SELECT

Best insert for:

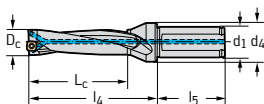
  
 good

  
 moderate

  
 unfavorable


machining conditions

# Drill B 4214 Xtra·tec® Insert Drill



Cylindrical shank with flat

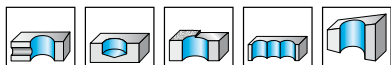
- diameter range 0.656–2.250 in
- right-hand cutting
- drilling depth 4 x  $D_c$


Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4214.UF26.167.Z1.067R-2	0.656	1.000	1.260	3.620	2.280	2.620	0.8	1/1	P484 . P-2R P484 . C-2R
B 4214.UF26.170.Z1.068R-2	0.671	1.000	1.260	3.680	2.280	2.680	0.8	1/1	
B 4214.UF26.174.Z1.070R-2	0.687	1.000	1.260	3.750	2.280	2.750	0.8	1/1	
B 4214.UF26.179.Z1.071R-2	0.703	1.000	1.260	3.810	2.280	2.810	0.9	1/1	
B 4214.UF26.182.Z1.073R-2	0.718	1.000	1.260	3.870	2.280	2.870	0.9	1/1	
B 4214.UF26.191.Z1.076R-2	0.750	1.000	1.260	4.000	2.280	3.000	0.9	1/1	
B 4214.UF26.194.Z1.078R-2	0.765	1.000	1.260	4.060	2.280	3.060	0.9	1/1	
B 4214.UF26.198.Z1.079R-2	0.781	1.000	1.260	4.120	2.280	3.120	0.9	1/1	P484 . P-3R P484 . C-3R
B 4214.UF26.206.Z1.082R-3	0.812	1.000	1.260	4.250	2.280	3.250	1.0	1/1	
B 4214.UF26.214.Z1.086R-3	0.843	1.000	1.260	4.370	2.280	3.370	1.0	1/1	
B 4214.UF31.222.Z1.089R-3	0.875	1.250	1.575	4.630	2.280	3.500	1.5	1/1	
B 4214.UF31.230.Z1.092R-3	0.906	1.250	1.575	4.750	2.280	3.620	1.5	1/1	
B 4214.UF31.234.Z1.094R-3	0.921	1.250	1.575	4.810	2.280	3.680	1.5	1/1	
B 4214.UF31.238.Z1.095R-3	0.937	1.250	1.575	4.880	2.280	3.750	1.6	1/1	
B 4214.UF31.246.Z1.098R-4	0.968	1.250	1.575	5.000	2.280	3.870	1.6	1/1	P484 . P-4R P484 . C-4R
B 4214.UF31.250.Z1.100R-4	0.984	1.250	1.575	5.070	2.280	3.940	1.6	1/1	
B 4214.UF31.254.Z1.102R-4	1.000	1.250	1.575	5.130	2.280	4.000	1.6	1/1	
B 4214.UF31.266.Z1.106R-4	1.046	1.250	1.575	5.310	2.280	4.180	1.7	1/1	
B 4214.UF31.270.Z1.108R-4	1.062	1.250	1.575	5.380	2.280	4.250	1.7	1/1	
B 4214.UF31.282.Z1.113R-4	1.109	1.250	1.575	5.570	2.280	4.440	1.8	1/1	
B 4214.UF31.286.Z1.114R-4	1.125	1.250	1.575	5.630	2.280	4.500	1.8	1/1	


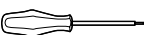
Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.



Please implement safety measures.



Assembly parts		D <sub>c</sub> in	0.656 - 0.781	0.812 - 0.937	0.968 - 1.125
	Clamping screw for insert		FS2111 (Torx 7 IP)	FS1454 (Torx 8 IP)	FS1457 (Torx 9 IP)
	Tightening torque		8 in lbs	11 in lbs	18 in lbs

Accessories		D <sub>c</sub> in	0.656 - 0.781	0.812 - 0.937	0.968 - 1.125
	Torque screwdriver		FS2002	FS2002	FS2004
	Interchangeable blade		FS2011 (Torx 7 IP)	FS2012 (Torx 8 IP)	FS2013 (Torx 9 IP)
	Screwdriver		FS2088 (Torx 7 IP)	FS1483 (Torx 8 IP)	FS1484 (Torx 9 IP)


### Indexable inserts

	Designation	Size	P		M		K		N		S		H	HC
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC		
	P4840P- . R-A57	2-4	⊕	⊕	⊗		⊕	⊕			⊕			
	P4840P- . R-E57	2-4	⊕	⊕	⊗		⊕	⊕			⊕			
	P4840P- . R-E67	2-4	⊕	⊕	⊗		⊕	⊕			⊕			
	P4841P- . R-A57	2-4	⊕	⊕	⊗		⊕	⊕			⊕			
	P4841P- . R-E57	2-4	⊕	⊕	⊗		⊕	⊕			⊕			
	P4841C- . R-A57	2-4		⊗				⊗						⊗
	P4841C- . R-E57	2-4		⊗				⊗						⊗
	P4840C- . R-E67	2-4		⊗				⊗						⊗


HC = Coated carbide

**WALTER SELECT**


Best insert for:



good



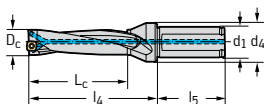
moderate



unfavorable


machining conditions

# Drill B 4214 Xtra·tec® Insert Drill



Cylindrical shank with flat

- diameter range 0.656–2.250 in
- right-hand cutting
- drilling depth 4 x  $D_c$

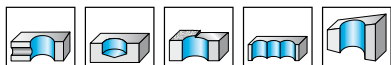
Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4214.UF31.297.Z1.119R-5	1.171	1.250	1.575	5.810	2.280	4.680	1.9	1/1	P484 . P-5R P484 . C-5R
B 4214.UF31.301.Z1.121R-5	1.187	1.250	1.575	5.880	2.280	4.750	1.9	1/1	
B 4214.UF31.318.Z1.127R-5	1.250	1.250	1.575	6.130	2.280	5.000	2.1	1/1	
B 4214.UF31.333.Z1.133R-5	1.312	1.250	1.575	6.380	2.280	5.250	2.3	1/1	
B 4214.UF31.341.Z1.136R-5	1.343	1.250	1.575	6.500	2.280	5.370	2.4	1/1	
B 4214.UF31.349.Z1.140R-5	1.375	1.250	1.575	6.630	2.280	5.500	2.5	1/1	P484 . P-6R P484 . C-6R
B 4214.UF31.361.Z1.144R-6	1.421	1.250	1.575	6.810	2.280	5.680	2.4	1/1	
B 4214.UF38.365.Z1.146R-6	1.437	1.500	1.940	7.130	2.690	5.750	3.3	1/1	
B 4214.UF38.381.Z1.152R-6	1.500	1.500	1.940	7.380	2.690	6.000	3.5	1/1	
B 4214.UF38.397.Z1.159R-6	1.562	1.500	1.940	7.630	2.690	6.250	3.8	1/1	
B 4214.UF38.413.Z1.165R-6	1.625	1.500	1.940	7.880	2.690	6.500	4.1	1/1	P484 . P-7R P484 . C-7R
B 4214.UF38.428.Z1.171R-7	1.687	1.500	1.940	8.120	2.690	6.750	4.1	1/1	
B 4214.UF38.445.Z1.178R-7	1.750	1.500	1.940	8.380	2.690	7.000	4.5	1/1	
B 4214.UF38.460.Z1.184R-7	1.812	1.500	1.940	8.630	2.690	7.250	4.8	1/1	
B 4214.UF38.476.Z1.191R-7	1.875	1.500	1.940	8.880	2.690	7.500	5.2	1/1	
B 4214.UF38.492.Z1.197R-7	1.937	1.500	1.940	9.130	2.690	7.750	5.5	1/1	P484 . P-8R P484 . C-8R
B 4214.UF51.508.Z1.203R-8	2.000	2.000	2.440	9.620	3.250	8.000	7.8	1/1	
B 4214.UF51.524.Z1.209R-8	2.062	2.000	2.440	9.970	3.250	8.250	8.2	1/1	
B 4214.UF51.540.Z1.216R-8	2.125	2.000	2.440	10.120	3.250	8.500	8.7	1/1	
B 4214.UF51.555.Z1.222R-8	2.187	2.000	2.440	10.370	3.250	8.750	9.2	1/1	
B 4214.UF51.572.Z1.229R-8	2.250	2.000	2.440	10.620	3.250	9.000	9.7	1/1	


Bodies, assembly parts and screwdrivers are included in the standard pack.



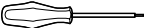
Note: where through holes are created by a rotating tool, a disc forms which is ejected.

Please implement safety measures.





Assembly parts		D <sub>c</sub> in	1.171 - 1.375	1.421 - 1.625	1.687 - 2.250
	Clamping screw for insert Tightening torque		FS2080 (Torx 15 IP) 22 in lbs	FS1453 (Torx 15 IP) 31 in lbs	FS1495 (Torx 20 IP) 44 in lbs

Accessories		D <sub>c</sub> in	1.171 - 1.625	1.687 - 2.250
	Torque screwdriver		FS2004	FS2004
	Interchangeable blade		FS2014 (Torx 15 IP)	FS2015 (Torx 20 IP)
	Screwdriver		FS1485 (Torx 15 IP)	FS1486 (Torx 20 IP)


### Indexable inserts


	Designation	Size	P		M		K		N		S		H	HC
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC		
Outer insert	P4840P- . R-A57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4840P- . R-E57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4840P- . R-E67	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4841P- . R-A57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4841P- . R-E57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
Center insert	P4841C- . R-A57	5-8	⊕	⊕			⊕	⊕						⊕
	P4841C- . R-E57	5-8	⊕	⊕			⊕	⊕						⊕
	P4840C- . R-E67	5-8	⊕	⊕			⊕	⊕						⊕


HC = Coated carbide

**WALTER SELECT**

Best insert for:

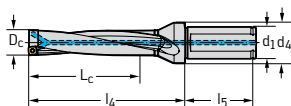
  
good

  
moderate

  
unfavorable


machining conditions

# Drill B 4215 Xtra·tec® Insert Drill



Cylindrical shank with flat

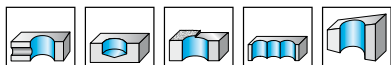
- diameter range 0.656–2.250 in
- right-hand cutting
- drilling depth  $5 \times D_c$


Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4215.UF26.167.Z1.083R-2	0.656	1.000	1.260	4.280	2.280	3.280	0.9	1/1	P484 . P-2R P484 . C-2R
B 4215.UF26.170.Z1.085R-2	0.671	1.000	1.260	4.355	2.280	3.355	0.9	1/1	
B 4215.UF26.174.Z1.087R-2	0.687	1.000	1.260	4.435	2.280	3.435	0.9	1/1	
B 4215.UF26.179.Z1.089R-2	0.703	1.000	1.260	4.515	2.280	3.515	0.9	1/1	
B 4215.UF26.182.Z1.091R-2	0.718	1.000	1.260	4.590	2.280	3.590	0.9	1/1	
B 4215.UF26.191.Z1.095R-2	0.750	1.000	1.260	4.750	2.280	3.750	0.9	1/1	
B 4215.UF26.194.Z1.097R-2	0.765	1.000	1.260	4.825	2.280	3.825	0.9	1/1	
B 4215.UF26.198.Z1.099R-2	0.781	1.000	1.260	4.905	2.280	3.905	0.9	1/1	P484 . P-3R P484 . C-3R
B 4215.UF26.206.Z1.103R-3	0.812	1.000	1.260	5.060	2.280	4.060	0.9	1/1	
B 4215.UF26.214.Z1.107R-3	0.843	1.000	1.260	5.215	2.280	4.215	0.9	1/1	
B 4215.UF31.222.Z1.111R-3	0.875	1.250	1.575	5.505	2.280	4.375	0.9	1/1	P484 . P-4R P484 . C-4R
B 4215.UF31.230.Z1.115R-3	0.906	1.250	1.575	5.660	2.280	4.530	1.1	1/1	
B 4215.UF31.234.Z1.117R-3	0.921	1.250	1.575	5.735	2.280	4.605	1.1	1/1	
B 4215.UF31.238.Z1.119R-3	0.937	1.250	1.575	5.815	2.280	4.685	1.3	1/1	P484 . P-4R P484 . C-4R
B 4215.UF31.246.Z1.123R-4	0.968	1.250	1.575	5.970	2.280	4.840	1.3	1/1	
B 4215.UF31.250.Z1.125R-4	0.984	1.250	1.575	6.050	2.280	4.920	1.3	1/1	
B 4215.UF31.254.Z1.127R-4	1.000	1.250	1.575	6.130	2.280	5.000	1.3	1/1	
B 4215.UF31.266.Z1.133R-4	1.046	1.250	1.575	6.360	2.280	5.230	1.8	1/1	
B 4215.UF31.270.Z1.135R-4	1.062	1.250	1.575	6.440	2.280	5.310	2.2	1/1	
B 4215.UF31.282.Z1.141R-4	1.109	1.250	1.575	6.675	2.280	5.545	2.4	1/1	
B 4215.UF31.286.Z1.143R-4	1.125	1.250	1.575	6.755	2.280	5.625	2.6	1/1	



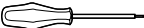
Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.

Please implement safety measures.



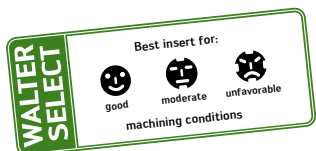
Assembly parts		D <sub>c</sub> in	0.656 - 0.781	0.812 - 0.937	0.968 - 1.125
	Clamping screw for insert Tightening torque		FS2111 (Torx 7 IP) 8 in lbs	FS1454 (Torx 8 IP) 11 in lbs	FS1457 (Torx 9 IP) 18 in lbs

Accessories		D <sub>c</sub> in	0.656 - 0.781	0.812 - 0.937	0.968 - 1.125
	Torque screwdriver		FS2002	FS2002	FS2004
	Interchangeable blade		FS2011 (Torx 7 IP)	FS2012 (Torx 8 IP)	FS2013 (Torx 9 IP)
	Screwdriver		FS2088 (Torx 7 IP)	FS1483 (Torx 8 IP)	FS1484 (Torx 9 IP)

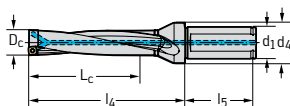
### Indexable inserts

	Designation	Size	P		M		K		N		S		H	HC		
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC				
Outer insert	P4840P- . R-A57	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840P- . R-E57	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840P- . R-E67	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841P- . R-A57	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841P- . R-E57	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
Center insert	P4841C- . R-A57	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4841C- . R-E57	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
	P4840C- . R-E67	2-4	WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40

HC = Coated carbide




# Drill B 4215 Xtra·tec® Insert Drill



Cylindrical shank with flat

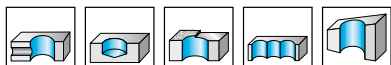
- diameter range 0.656–2.250 in
- right-hand cutting
- drilling depth  $5 \times D_c$


Designation	$D_c$ in	$d_1$ in	$d_4$ in	$l_4$ in	$l_5$ in	$L_c$ in	 lbs	No. of indexable inserts	Type
B 4215.UF31.297.Z1.149R-5	1.171	1.250	1.575	6.985	2.280	5.855	2.9	1/1	P484 . P-5R P484 . C-5R
B 4215.UF31.301.Z1.151R-5	1.187	1.250	1.575	7.065	2.280	5.935	2.9	1/1	
B 4215.UF31.318.Z1.159R-5	1.250	1.250	1.575	7.380	2.280	6.250	3.1	1/1	
B 4215.UF31.333.Z1.167R-5	1.312	1.250	1.575	7.690	2.280	6.560	3.3	1/1	
B 4215.UF31.341.Z1.171R-5	1.343	1.250	1.575	7.845	2.280	6.715	3.5	1/1	
B 4215.UF31.349.Z1.175R-5	1.375	1.250	1.575	8.005	2.280	6.875	3.7	1/1	P484 . P-6R P484 . C-6R
B 4215.UF31.361.Z1.180R-6	1.421	1.250	1.575	8.240	2.280	7.110	2.7	1/1	
B 4215.UF38.365.Z1.182R-6	1.437	1.500	1.940	8.570	2.690	7.190	3.7	1/1	
B 4215.UF38.381.Z1.191R-6	1.500	1.500	1.940	8.880	2.690	7.500	3.9	1/1	
B 4215.UF38.397.Z1.198R-6	1.562	1.500	1.940	9.190	2.690	7.810	4.2	1/1	
B 4215.UF38.413.Z1.206R-6	1.625	1.500	1.940	9.510	2.690	8.130	4.6	1/1	P484 . P-7R P484 . C-7R
B 4215.UF38.428.Z1.214R-7	1.687	1.500	1.940	9.820	2.690	8.440	4.8	1/1	
B 4215.UF38.445.Z1.222R-7	1.750	1.500	1.940	10.130	2.690	8.750	5.1	1/1	
B 4215.UF38.460.Z1.230R-7	1.812	1.500	1.940	10.440	2.690	9.060	5.5	1/1	
B 4215.UF38.476.Z1.238R-7	1.875	1.500	1.940	10.760	2.690	9.380	5.9	1/1	
B 4215.UF38.492.Z1.246R-7	1.937	1.500	1.940	11.070	2.690	9.690	6.4	1/1	P484 . P-8R P484 . C-8R
B 4215.UF51.508.Z1.254R-8	2.000	2.000	2.440	11.620	3.250	10.000	8.8	1/1	
B 4215.UF51.524.Z1.262R-8	2.062	2.000	2.440	11.930	3.250	10.310	9.3	1/1	
B 4215.UF51.540.Z1.270R-8	2.125	2.000	2.440	12.250	3.250	10.630	9.8	1/1	
B 4215.UF51.555.Z1.278R-8	2.187	2.000	2.440	12.560	3.250	10.940	10.4	1/1	
B 4215.UF51.572.Z1.286R-8	2.250	2.000	2.440	12.870	3.250	11.250	11.1	1/1	



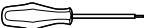
Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.



Please implement safety measures.



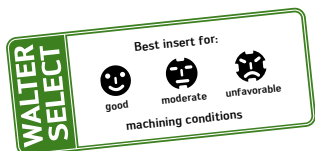
Assembly parts	D <sub>c</sub> in	1.171 - 1.375	1.421 - 1.625	1.687 - 2.250
	Clamping screw for insert Tightening torque	FS2080 (Torx 15 IP) 22 in lbs	FS1453 (Torx 15 IP) 31 in lbs	FS1495 (Torx 20 IP) 44 in lbs

Accessories	D <sub>c</sub> in	1.171 - 1.625	1.687 - 2.250
	Torque screwdriver	FS2004	FS2004
	Interchangeable blade	FS2014 (Torx 15 IP)	FS2015 (Torx 20 IP)
	Screwdriver	FS1485 (Torx 15 IP)	FS1486 (Torx 20 IP)

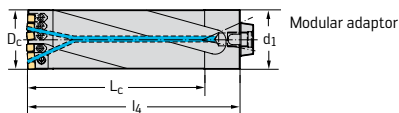
### Indexable inserts

	Designation	Size	P		M		K		N		S		H	HC
			HC	HC	HC	HC	HC	HC	HC	HC	HC	HC		
 Outer insert	P4840P- . R-A57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4840P- . R-E57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4840P- . R-E67	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4841P- . R-A57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
	P4841P- . R-E57	5-8	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		
 Center insert	P4841C- . R-A57	5-8	⊕	⊕			⊕	⊕						⊕
	P4841C- . R-E57	5-8	⊕	⊕			⊕	⊕						⊕
	P4840C- . R-E67	5-8	⊕	⊕			⊕	⊕						⊕

HC = Coated carbide



# Drill B 4213.N Xtra·tec® Insert Drill






- diameter range 65–80 mm
- right handed
- drilling depth 3 x D<sub>c</sub>

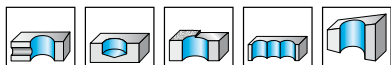
Designation	D <sub>c</sub> mm	d <sub>1</sub> mm	l <sub>4</sub> mm	L <sub>c</sub> mm	Number of external cartridges	Number of internal cartridges	kg	No. of indexable inserts	Type
B4213.N8.065.Z1.195R-5	65	NCT 80	245	195	1xFR738 +FR741	1xFR737C-5	4,1	3/1	P484 . P-5R P484 . C-5R
B4213.N8.068.Z1.204R-6	68	NCT 80	254	204	1xFR744 +FR745	1xFR743C-6	4,5	3/1	P484 . P-6R P484 . C-6R
B4213.N8.070.Z1.210R-6	70	NCT 80	260	210	1xFR744 +FR746	1xFR743C-6	4,7	3/1	
B4213.N8.078.Z1.234R-6	78	NCT 80	284	234	1xFR744 +FR748	1xFR743C-6	6	3/1	
B4213.N8.080.Z1.240R-5	80	NCT 80	290	240	1xFR738 +FR739	1xFR737C-5	6,2	1/1	P484 . P-5R P484 . C-5R

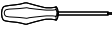

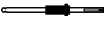

Bodies, assembly parts and screwdrivers are included in the standard pack.

Note: where through holes are created by a rotating tool, a disc forms which is ejected.



Please implement safety measures.

Assembly parts	D <sub>c</sub> mm	65	68	70	78	80
	Internal cartridge	FR737C-5	FR743C-6	FR743C-6	FR743C-6	FR737C-5
	Internal cartridge clamping screw	FS1149 (SW4)	FS1149 (SW4)	FS1149 (SW4)	FS1149 (SW4)	FS1149 (SW4)
	Tightening torque	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm
	Intermediate cartridge	FR738P-5	FR744P-6	FR744P-6	FR744P-6	FR738P-5
	Intermediate cartridge clamping screw	FS1149 (SW4)	FS1149 (SW4)	FS1149 (SW4)	FS1149 (SW4)	FS1149 (SW4)
	Tightening torque	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm
	External cartridge	FR741P-5	FR745P-6	FR746P-6	FR748P-6	FR739P-5
	External cartridge clamping screw	FS966 (SW5)	FS966 (SW5)	FS966 (SW5)	FS966 (SW5)	FS966 (SW5)
	Tightening torque	8 Nm	8 Nm	8 Nm	8 Nm	8 Nm
	Clamping screw for insert	FS1453 (Torx 15 IP)				
	Tightening torque	31 in lbs				
	Radial adjusting screw	FS334				



Accessories	D <sub>c</sub> mm	65-68	70	75-80
	Screwdriver	FS1485 (Torx 15IP)	FS1485 (Torx 15IP)	FS1485 (Torx 15IP)
	Torque screwdriver	FS2003	FS2003	FS2003
	Interchangeable blade	FS2014 (Torx 15 IP)	FS2014 (Torx 15 IP)	FS2014 (Torx 15 IP)
	Key ISO 2936	ISO2936-4 (SW 4)	ISO2936-5 (SW 5)	ISO2936-4 (SW 4)



### Indexable inserts

	Designation	Size	P		M		K		N	S	H	HC				
			HC	HC	HC	HC	HC	HC	HC							
			WKP25 S	WKP35 S	WSP45	WMP35	WXP45	WSP45	WMP35	WKP25 S	WKP35 S	WXK25	WNN25	WSP45	WMP35	WXP40
 Outer insert	P4840P- . R-A57	5-8	☺	☺	☺			☺	☺	☺	☺			☺		
	P4840P- . R-E57	5-8	☺	☺	☺			☺	☺	☺	☺			☺		
	P4840P- . R-E67	5-8	☺	☺	☺			☺	☺	☺	☺			☺		
	P4841P- . R-A57	5-8	☺	☺	☺			☺	☺	☺	☺			☺		
	P4841P- . R-E57	5-8	☺	☺	☺			☺	☺	☺	☺			☺		
 Center insert	P4841C- . R-A57	5-8		☺												☺
	P4841C- . R-E57	5-8		☺												☺
	P4840C- . R-E67	5-8		☺												☺

HC = Coated carbide

Walter Select Optimum indexable insert for the following machining conditions: ☺ = good ☺ = moderate ☺ = unfavorable

# Cutting data for drilling with Xtra-tec® Insert Drill D<sub>c</sub> 0.531–2.250 inches



<b>Material group</b>	 = Cutting data for wet machining  = Dry machining is possible			
	<b>Structure of main material groups and identification letters</b>			
<b>P</b>	Unalloyed steel	C ≤ 0.25%	annealed	
		C > 0.25 ... ≤ 0.55 %	annealed	
		C > 0.25 ... ≤ 0.55 %	tempered	
		C > 0.55 %	annealed	
		C > 0.55 %	tempered	
	Low-alloyed steel	free cutting steel (short-chipping)		annealed
				annealed
				tempered
	High-alloyed steel and high-alloyed tool steel			tempered
				tempered
Stainless steel			annealed	
			hardened and tempered	
<b>M</b>	Stainless steel	hardened and tempered		
		ferritic / martensitic, annealed		
		martensitic, tempered		
<b>K</b>	Malleable cast iron	austenitic, quench hardened		
		austenitic, precipitation hardened (PH)		
	Grey cast iron	austenitic / ferritic, duplex		
	Cast iron with spheroidal graphite	ferritic		
pearlitic				
GGV (CGI)				
<b>N</b>	Copper and copper alloys (bronze / brass)	low tensile strength		
		high tensile strength / austenitic		
		ferritic		
		pearlitic		
<b>S</b>	Tungsten alloys			
<b>S</b>	Molybdenum alloys	unalloyed, electrolytic copper		
		brass, bronze, red brass		
		Cu-alloys, short-chipping		
		high-strength, Ampco		

## Footnotes to tables on page 46 to 53:

The machining group assignments can be found in the Walter general catalog 2012 from page H 8 onwards

- Recommended application (the specified cutting data should be considered starting values for the recommended application).
- Alternative application, limited to 2x D<sub>c</sub> drills. MMs or compressed air is recommended



	Brinell hardness HB	Tensile strength R <sub>m</sub> psi	Machining group <sup>1</sup>			Insert geometry					
						Starting values for feed f [in/rev]					
						A 57					
						Size -1 D <sub>c</sub> [in]	Size -2 D <sub>c</sub> [in]	Size -3 D <sub>c</sub> [in]	Size -4 D <sub>c</sub> [in]	Size -5, size -6 D <sub>c</sub> [in]	Size -7, size -8 D <sub>c</sub> [in]
	125	62,000	P1	●●		0.002	0.002	0.002	0.004	0.005	0.005
	190	93,000	P2	●●		0.003	0.004	0.004	0.005	0.007	0.007
	210	103,000	P3	●●		0.003	0.004	0.004	0.005	0.007	0.007
	190	93,000	P4	●●		0.003	0.004	0.004	0.005	0.007	0.007
	300	147,000	P5	●●		0.003	0.004	0.004	0.005	0.007	0.007
	220	108,000	P6	●●	●	0.003	0.004	0.004	0.005	0.007	0.007
	175	86,000	P7	●●		0.003	0.004	0.005	0.006	0.008	0.008
	300	147,000	P8	●●		0.003	0.004	0.004	0.005	0.006	0.006
	380	186,000	P9	●●		0.003	0.004	0.004	0.005	0.006	0.006
	430	214,000	P10	●●		0.005	0.002	0.002	0.004	0.005	0.005
	200	98,000	P11	●●		0.003	0.004	0.005	0.006	0.007	0.007
	300	147,000	P12	●●		0.003	0.004	0.004	0.005	0.006	0.006
	400	197,000	P13	●●		0.002	0.003	0.004	0.005	0.006	0.006
	200	98,000	P14	●●		0.003	0.004	0.004	0.005	0.006	0.006
	330	162,000	P15	●●		0.002	0.003	0.004	0.005	0.006	0.006
	200	98,000	M1	●●		0.002	0.003	0.003	0.004	0.005	0.006
	300	147,000	M2	●●		0.002	0.003	0.003	0.004	0.005	0.006
	230	113,000	M3	●●		0.002	0.003	0.003	0.004	0.005	0.006
	200	98,000	K1	●●	●	0.004	0.005	0.006	0.007	0.009	0.009
	260	126,000	K2	●●	●	0.003	0.004	0.004	0.006	0.007	0.008
	180	87,000	K3	●●	●	0.004	0.005	0.006	0.007	0.009	0.009
	245	120,000	K4	●●	●	0.003	0.004	0.005	0.006	0.008	0.008
	155	75,000	K5	●●	●	0.004	0.005	0.006	0.007	0.009	0.009
	265	128,000	K6	●●		0.003	0.004	0.005	0.007	0.009	0.009
	200	98,000	K7	●●	●	0.004	0.005	0.006	0.007	0.009	0.009
	100	50,000	N7								
	90	46,000	N8								
	110	55,000	N9								
	300	147,000	N10	●●	●	0.002	0.003	0.003	0.004	0.005	0.006
	300	147,000	S9	●●		0.002	0.002	0.002	0.004	0.004	0.005
	300	147,000	S10	●●		0.002	0.002	0.002	0.004	0.004	0.005

**Footnotes to tables on page 46 to 53:**



When using drills with a depth >3xD, the following reductions are recommended:



>3xD: cutting speed v<sub>c</sub> -20%, feed f - 30% when spot drilling, feed f - 50% when starting on an inclined surface

>4xD: cutting speed v<sub>c</sub> -30%: feed f - 40% when spot drilling



HC = Coated carbide

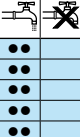
# Cutting data for drilling with Xtra-tec® Insert Drill D<sub>C</sub> 0.531–2.250 inches

<b>Material group</b>	 = Cutting data for wet machining  = Dry machining is possible			
	<b>Structure of main material groups and identification letters</b>			
<b>P</b>	Unalloyed steel	C ≤ 0.25%	annealed	
		C > 0.25 ... ≤ 0.55 %	annealed	
		C > 0.25 ... ≤ 0.55 %	tempered	
		C > 0.55 %	annealed	
		C > 0.55 %	tempered	
	Low-alloyed steel	free cutting steel (short-chipping)		annealed
				annealed
				tempered
	High-alloyed steel and high-alloyed tool steel			tempered
				tempered
		tempered		
Stainless steel	annealed			
	hardened and tempered			
<b>M</b>	Stainless steel	hardened and tempered		
		ferritic / martensitic, annealed		
		martensitic, tempered		
		austenitic, quench hardened		
<b>K</b>	Malleable cast iron	austenitic, precipitation hardened (PH)		
		austenitic / ferritic, duplex		
	Grey cast iron	ferritic		
		pearlitic		
Cast iron with spheroidal graphite	low tensile strength			
	high tensile strength / austenitic			
<b>N</b>	Aluminum wrought alloys	ferritic		
		pearlitic		
	Cast Aluminum alloys	GGV (CGI)		
<b>S</b>	Heat-resistant alloys	cannot be hardened		
		hardenable, hardened		
	Titanium alloys	≤ 12 % Si, cannot be hardened	annealed	
		≤ 12 % Si, hardenable, hardened	hardened	
Tungsten alloys	> 12 % Si, cannot be hardened	annealed		
		hardened		
Molybdenum alloys	pure titanium	cast		
	α and β alloys, hardened			
	β alloys			



	Brinell hardness HB	Tensile strength R <sub>m</sub> psi	Machining group <sup>1</sup>			Insert geometry					
						Starting values for feed f [in/rev]					
						E 57					
						Size -1 D <sub>c</sub> [in]	Size -2 D <sub>c</sub> [in]	Size -3 D <sub>c</sub> [in]	Size -4 D <sub>c</sub> [in]	Size -5, size -6 D <sub>c</sub> [in]	Size -7, size -8 D <sub>c</sub> [in]
						0.531 - 0.625	0.656 - 0.781	0.812 - 0.937	0.968 - 1.125	1.171 - 1.625	1.687 - 2.250
	125	62,000	P1	●●		0.002	0.002	0.002	0.004	0.005	0.005
	190	93,000	P2	●●		0.002	0.003	0.003	0.004	0.007	0.007
	210	103,000	P3	●●		0.002	0.003	0.003	0.004	0.007	0.007
	190	93,000	P4	●●		0.002	0.003	0.003	0.004	0.007	0.007
	300	147,000	P5	●●		0.002	0.003	0.003	0.004	0.007	0.007
	220	108,000	P6	●●	●	0.002	0.003	0.003	0.004	0.007	0.007
	175	86,000	P7	●●		0.002	0.003	0.004	0.005	0.007	0.008
	300	147,000	P8	●●		0.002	0.003	0.003	0.004	0.006	0.006
	380	186,000	P9	●●		0.002	0.003	0.003	0.004	0.006	0.006
	430	214,000	P10	●●		0.002	0.002	0.002	0.004	0.004	0.005
	200	98,000	P11	●●		0.002	0.003	0.004	0.005	0.007	0.007
	300	147,000	P12	●●		0.002	0.003	0.003	0.004	0.006	0.006
	400	197,000	P13	●●		0.002	0.002	0.003	0.004	0.005	0.006
	200	98,000	P14	●●		0.002	0.003	0.003	0.004	0.006	0.006
	330	162,000	P15	●●		0.002	0.002	0.003	0.004	0.005	0.006
	200	98,000	M1	●●		0.002	0.003	0.003	0.004	0.005	0.006
	300	147,000	M2	●●		0.002	0.003	0.003	0.004	0.005	0.006
	230	113,000	M3	●●		0.002	0.003	0.003	0.004	0.005	0.006
	200	98,000	K1	●●	●	0.003	0.004	0.004	0.006	0.008	0.009
	260	126,000	K2	●●	●	0.002	0.003	0.003	0.004	0.007	0.007
	180	87,000	K3	●●	●	0.003	0.004	0.005	0.006	0.009	0.009
	245	120,000	K4	●●	●	0.002	0.003	0.004	0.005	0.007	0.008
	155	75,000	K5	●●	●	0.003	0.004	0.005	0.006	0.009	0.009
	265	128,000	K6	●●		0.002	0.003	0.004	0.005	0.009	0.009
	200	98,000	K7	●●	●	0.003	0.004	0.004	0.006	0.008	0.009
	30	-	N1								
	100	50,000	N2	●●		0.003	0.004	0.004	0.005	0.007	0.007
	75	38,000	N3	●●		0.003	0.004	0.005	0.006	0.007	0.007
	90	46,000	N4	●●		0.003	0.004	0.005	0.006	0.007	0.007
	130	65,000	N5	●●	●	0.003	0.004	0.005	0.006	0.007	0.007
	70	36,000	N6	●●		0.003	0.004	0.005	0.006	0.007	0.007
	100	50,000	N7								
	90	46,000	N8	●●		0.004	0.005	0.006	0.007	0.009	0.009
	110	55,000	N9	●●	●	0.004	0.005	0.006	0.007	0.009	0.009
	300	147,000	N10	●●	●	0.002	0.003	0.003	0.004	0.005	0.006
	200	98,000	S1	●●		0.002	0.002	0.003	0.004	0.005	0.006
	280	137,000	S2	●●		0.002	0.002	0.002	0.004	0.004	0.005
	250	122,000	S3	●●		0.002	0.002	0.003	0.004	0.005	0.005
	350	171,000	S4	●●		0.002	0.002	0.002	0.004	0.004	0.005
	320	156,000	S5	●●		0.002	0.002	0.002	0.004	0.004	0.005
	200	98,000	S6								
	375	183,000	S7	●●		0.002	0.002	0.003	0.004	0.005	0.005
	410	202,000	S8	●●		0.002	0.002	0.002	0.004	0.004	0.005
	300	147,000	S9	●●		0.002	0.002	0.002	0.004	0.004	0.005
	300	147,000	S10	●●		0.002	0.002	0.002	0.004	0.004	0.005



# Cutting data for drilling with Xtra-tec® Insert Drill D<sub>C</sub> 0.531–2.250 inches

<b>Material group</b>	 = Cutting data for wet machining  = Dry machining is possible		
	<b>Structure of main material groups and identification letters</b>		
<b>P</b>	Unalloyed steel	C ≤ 0.25%	annealed
		C > 0.25 ... ≤ 0.55 %	annealed
		C > 0.25 ... ≤ 0.55 %	tempered
		C > 0.55 %	annealed
		C > 0.55 %	tempered
	Low-alloyed steel	free cutting steel (short-chipping)	annealed
			annealed
			tempered
	High-alloyed steel and high-alloyed tool steel		tempered
			tempered
Stainless steel		annealed	
		hardened and tempered	
<b>M</b>	Stainless steel		hardened and tempered
			ferritic / martensitic, annealed
			martensitic, tempered
<b>K</b>	Malleable cast iron		austenitic, quench hardened
			austenitic, precipitation hardened (PH)
	Grey cast iron		austenitic / ferritic, duplex
			ferritic
Cast iron with spheroidal graphite		pearlitic	
	GGV (CGI)		
<b>N</b>	Aluminum wrought alloys		low tensile strength
			high tensile strength / austenitic
	Cast Aluminum alloys		ferritic
			pearlitic
	Magnesium alloys		
Copper and copper alloys (bronze / brass)		cannot be hardened	
		hardenable, hardened	
		≤ 12 % Si, cannot be hardened	
<b>S</b>	Heat-resistant alloys		≤ 12 % Si, hardenable, hardened
			> 12 % Si, cannot be hardened
	Titanium alloys		unalloyed, electrolytic copper
			brass, bronze, red brass
Tungsten alloys		Cu-alloys, short-chipping	
	Molybdenum alloys		high-strength, Ampco
<b>S</b>	Heat-resistant alloys	Fe-based	annealed
			hardened
	Titanium alloys	Ni or Co base	annealed
			hardened
	Tungsten alloys		cast
Molybdenum alloys			

	Brinell hardness HB	Tensile strength R <sub>m</sub> psi	Machining group <sup>1</sup>		Insert geometry						
					Starting values for feed f [in/rev]						
					E 67						
					Size -1 D <sub>c</sub> [in]	Size -2 D <sub>c</sub> [in]	Size -3 D <sub>c</sub> [in]	Size -4 D <sub>c</sub> [in]	Size -5, size -6 D <sub>c</sub> [in]	Size -7, size -8 D <sub>c</sub> [in]	
	125	62,000	P1	●●		0.002	0.002	0.002	0.004	0.005	0.005
	190	93,000	P2	●●		0.002	0.003	0.003	0.004	0.007	0.007
	210	103,000	P3	●●							
	190	93,000	P4	●●							
	300	147,000	P5	●●							
	220	108,000	P6	●●	●						
	175	86,000	P7	●●		0.002	0.003	0.004	0.006	0.008	0.008
	300	147,000	P8	●●							
	380	186,000	P9	●●							
	430	214,000	P10	●●							
	200	98,000	P11	●●		0.002	0.003	0.004	0.005	0.006	0.007
	300	147,000	P12	●●							
	400	197,000	P13	●●							
	200	98,000	P14	●●		0.002	0.003	0.003	0.004	0.006	0.006
	330	162,000	P15	●●		0.002	0.002	0.003	0.004	0.005	0.006
	200	98,000	M1	●●		0.002	0.003	0.004	0.005	0.006	0.006
	300	147,000	M2	●●		0.002	0.003	0.004	0.005	0.006	0.006
	230	113,000	M3	●●		0.002	0.003	0.004	0.005	0.006	0.006
	200	98,000	K1	●●	●	0.003	0.004	0.004	0.006	0.008	0.009
	260	126,000	K2	●●	●	0.002	0.003	0.004			
	180	87,000	K3	●●	●	0.003	0.004	0.005	0.006	0.009	0.009
	245	120,000	K4	●●	●						
	155	75,000	K5	●●	●	0.003	0.004	0.005	0.006	0.009	0.009
	265	128,000	K6	●●		0.002	0.003				
	200	98,000	K7	●●	●	0.003	0.004	0.004	0.006	0.008	0.009
	30	-	N1								
	100	50,000	N2	●●		0.003	0.004	0.004	0.005	0.007	0.007
	75	38,000	N3	●●		0.003	0.004	0.005	0.006	0.007	0.007
	90	46,000	N4	●●		0.003	0.004	0.005	0.006	0.007	0.007
	130	65,000	N5	●●	●	0.003	0.004	0.005	0.006	0.007	0.007
	70	36,000	N6	●●		0.003	0.004	0.005	0.006	0.007	0.007
	100	50,000	N7								
	90	46,000	N8	●●		0.004	0.005	0.006	0.007	0.009	0.009
	110	55,000	N9	●●	●	0.004	0.005	0.006	0.007	0.009	0.009
	300	147,000	N10	●●	●	0.002	0.003	0.004	0.005	0.006	0.006
	200	98,000	S1	●●		0.002	0.002	0.003	0.004	0.005	0.006
	280	137,000	S2	●●		0.002	0.002	0.002	0.004	0.004	0.005
	250	122,000	S3	●●		0.002	0.002	0.003	0.004	0.005	0.005
	350	171,000	S4	●●		0.002	0.002	0.002	0.004	0.004	0.005
	320	156,000	S5	●●		0.002	0.002	0.002	0.004	0.004	0.005
	200	98,000	S6								
	375	183,000	S7	●●		0.002	0.002	0.003	0.004	0.005	0.005
	410	202,000	S8	●●		0.002	0.002	0.002	0.004	0.004	0.005
	300	147,000	S9	●●		0.002	0.002	0.002	0.004	0.004	0.005
	300	147,000	S10	●●		0.002	0.002	0.002	0.004	0.004	0.005

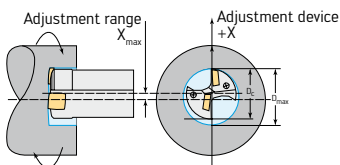
# Cutting data for drilling with Xtra-tec® Insert Drill D<sub>C</sub> 0.531–2.250 inches

Material group	 = Cutting data for wet machining  = Dry machining is possible		
	<b>Structure of main material groups and identification letters</b>		
<b>P</b>	Unalloyed steel	C ≤ 0.25%	annealed
		C > 0.25 ... ≤ 0.55 %	annealed
		C > 0.25 ... ≤ 0.55 %	tempered
		C > 0.55 %	annealed
		C > 0.55 %	tempered
		free cutting steel (short-chipping)	annealed
	Low-alloyed steel		annealed
			tempered
			tempered
			tempered
High-alloyed steel and high-alloyed tool steel		annealed	
		hardened and tempered	
		hardened and tempered	
Stainless steel		ferritic / martensitic, annealed	
		martensitic, tempered	
<b>M</b>	Stainless steel		austenitic, quench hardened
			austenitic, precipitation hardened (PH)
			austenitic / ferritic, duplex
<b>K</b>	Malleable cast iron		ferritic
			pearlitic
	Grey cast iron		low tensile strength
			high tensile strength / austenitic
Cast iron with spheroidal graphite		ferritic	
		pearlitic	
	GGV (CGI)		
<b>N</b>	Aluminum wrought alloys		cannot be hardened
			hardenable, hardened
	Cast Aluminum alloys		≤ 12 % Si, cannot be hardened
			≤ 12 % Si, hardenable, hardened
			> 12 % Si, cannot be hardened
	Magnesium alloys		
Copper and copper alloys (bronze / brass)		unalloyed, electrolytic copper	
		brass, bronze, red brass	
		Cu-alloys, short-chipping	
		high-strength, Ampco	
<b>S</b>	Heat-resistant alloys	Fe-based	annealed
			hardened
		Ni or Co base	annealed
			hardened
		cast	
	Titanium alloys		pure titanium
			α and β alloys, hardened
		β alloys	
Tungsten alloys			
Molybdenum alloys			

Brinell hardness HB	Tensile strength $R_m$ psi	Machining group <sup>1</sup>			Cutting material grade, outer insert (P484.P..)								
					Starting values for cutting speed $v_c$ [SFM]								
					WKP 25S			HC			WSP 45		
					f [in/rev]			f [in/rev]			f [in/rev]		
					0.002	0.004	0.006	0.002	0.004	0.006	0.002	0.004	0.006
125	62,000	P1	●●		1150	1050		980	890		820	720	
190	93,000	P2	●●		850	790	720	720	660	590	560	520	490
210	103,000	P3	●●		790	720	660	660	590	490	490	460	430
190	93,000	P4	●●		720	660	590	590	490	460	460	430	390
300	147,000	P5	●●		620	560	490	490	430	390	430	390	360
220	108,000	P6	●●	●	720	660	590	590	490	460	460	430	390
175	86,000	P7	●●		850	790	720	720	660	590	560	520	520
300	147,000	P8	●●		750	690	620	620	560	460	460	430	390
380	186,000	P9	●●		690	620	560	590	520	430	460	390	360
430	214,000	P10	●●		620	560	520	560	460	430	460	390	360
200	98,000	P11	●●		720	660	590	660	560	490	460	430	390
300	147,000	P12	●●		660	560	490	590	460	430	430	390	360
400	197,000	P13	●●		620	520	460	560	430	390	390	360	330
200	98,000	P14	●●					620	560	490	460	430	390
330	162,000	P15	●●					490	430	390	390	360	330
200	98,000	M1	●●					720	660	590	590	560	490
300	147,000	M2	●●					490	430	360	430	360	330
230	113,000	M3	●●					390	330	260	330	260	230
200	98,000	K1	●●	●	690	620	560	620	590	520	560	460	390
260	126,000	K2	●●	●	620	460	390	430	390	360	430	390	360
180	87,000	K3	●●	●	720	660	590	660	620	560	590	520	430
245	120,000	K4	●●	●	590	490	430	490	430	360	490	430	360
155	75,000	K5	●●	●	490	460	430	460	390	360	490	430	390
265	128,000	K6	●●		460	430	390	390	360	330	390	360	360
200	98,000	K7	●●	●	590	490	430	490	430	360	490	430	360
30	-	N1											
100	50,000	N2	●●								1480	1480	1480
75	38,000	N3	●●								980	980	980
90	46,000	N4	●●								820	820	820
130	65,000	N5	●●	●							660	660	660
70	36,000	N6	●●								980	980	980
100	50,000	N7											
90	46,000	N8	●●								980	820	660
110	55,000	N9	●●	●							1150	980	820
300	147,000	N10	●●	●				490	430	360	430	360	330
200	98,000	S1	●●		330	330		330	330		300	300	
280	137,000	S2	●●		260	260		260	260		230	230	
250	122,000	S3	●●		200	200		200	200		160	160	
350	171,000	S4	●●		160	160		160	160		130	130	
320	156,000	S5	●●		160	160		160	160		130	130	
200	98,000	S6											
375	183,000	S7	●●					160	160		160	150	
410	202,000	S8	●●					160	160		130	130	
300	147,000	S9	●●		230	200							
300	147,000	S10	●●		230	200							

# Drilling with X offset

## Xtra-tec® Insert Drill B421x



**Drilling with X offset:**  
**Drill: stationary**  
**Workpiece: rotating**

$$D = D_c + 2 \cdot X$$

Indexable insert size	Range 1		Range 2		
	D <sub>c</sub> [inch]	Offset x inches	D x inches	Offset x <sub>max</sub> inches	D <sub>max</sub> inches
<b>1</b>	0.562	0.014	0.590	0.022	0.605
	0.578	0.012	0.602	0.020	0.617
	0.594	0.008	0.610	0.016	0.626
	0.625	0.004	0.633	0.014	0.653
<b>2</b>	0.656	0.024	0.703	0.033	0.723
	0.671	0.020	0.710	0.030	0.730
	0.687	0.016	0.719	0.026	0.738
	0.703	0.012	0.727	0.024	0.750
	0.718	0.012	0.742	0.022	0.761
	0.750	0.006	0.762	0.018	0.785
	0.765	0.004	0.772	0.014	0.793
	0.781			0.012	0.805
<b>3</b>	0.812	0.014	0.839	0.026	0.863
	0.843	0.008	0.859	0.020	0.882
	0.875	0.004	0.882	0.016	0.907
	0.906			0.012	0.930
	0.921*			0.008	0.937
	0.937*			0.004	0.945
<b>4</b>	0.968	0.020	1.007	0.033	1.035
	0.984	0.014	1.011	0.030	1.043
	1.000	0.010	1.020	0.026	1.051
	1.046	0.001	1.048	0.016	1.078
	1.062	0.001	1.064	0.016	1.093
	1.109*			0.008	1.125
	1.125*			0.004	1.133
<b>5</b>	1.171	0.024	1.218	0.043	1.257
	1.187	0.022	1.230	0.041	1.270
	1.250	0.010	1.270	0.028	1.305
	1.312	0.003	1.318	0.020	1.351
	1.343			0.016	1.374
	1.375*			0.012	1.399
<b>6</b>	1.421	0.031	1.484	0.053	1.527
	1.437	0.028	1.492	0.049	1.535
	1.500	0.020	1.539	0.041	1.583
	1.562	0.008	1.578	0.030	1.621
	1.625	0.005	1.634	0.024	1.672

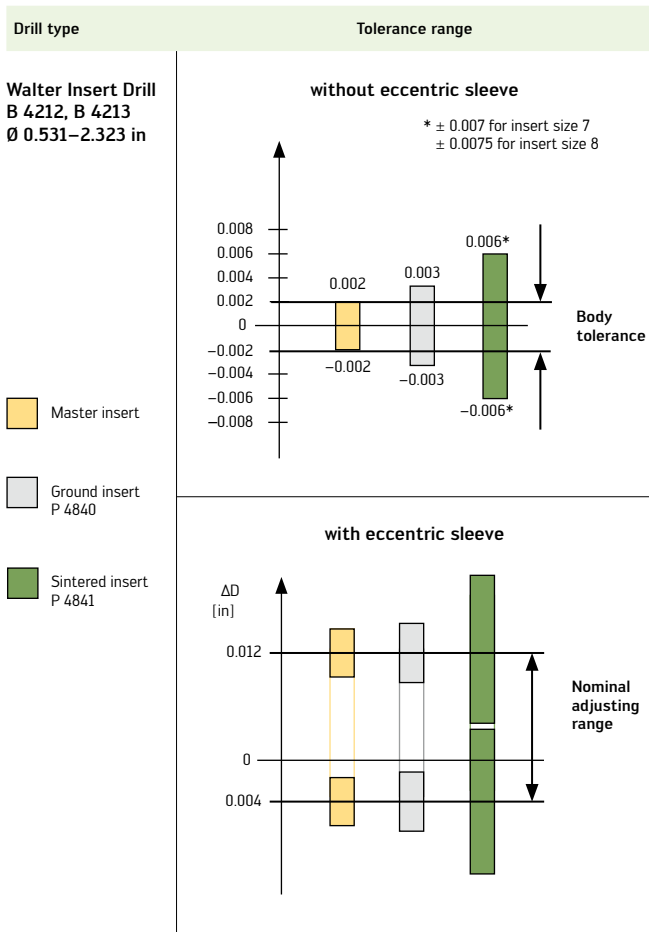


Indexable insert size	D <sub>c</sub> [inch]	Range 1		Range 2	
		Offset x inches	D x inches	Offset x <sub>max</sub> inches	D <sub>max</sub> inches
<b>7</b>	1.687	0.035	1.758	0.061	1.809
	1.750	0.028	1.805	0.053	1.856
	1.812	0.020	1.851	0.047	1.906
	1.875	0.010	1.895	0.035	1.946
	1.937	0.004	1.946	0.030	1.996
<b>8</b>	2.000	0.039	2.079	0.071	2.142
	2.062	0.033	2.129	0.063	2.188
	2.125	0.022	2.168	0.053	2.231
	2.187	0.016	2.219	0.047	2.281
	2.250	0.010	2.270	0.039	2.329

Range 1 for normal conditions    Range 2 for ideal conditions

\* with wiper insert (P4840...) only two cutting edges can be used

# Tool diameter tolerance ranges for Xtra·tec® Insert Drill B421x



The resulting workpiece diameter may differ due to the drilling depth, workpiece material, feed rate and chip removal conditions.

## Recommended values for Xtra-tec® Insert Drill B421x



Outer insert  
P 484 . P

**Tiger-tec® Silver**



Outer inserts now  
in Tiger-tec® Silver

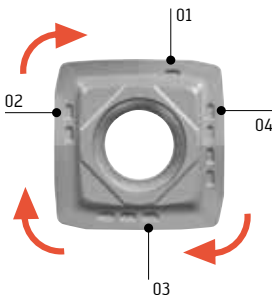


Center insert  
P 484 . C

Symbol for  
Center insert



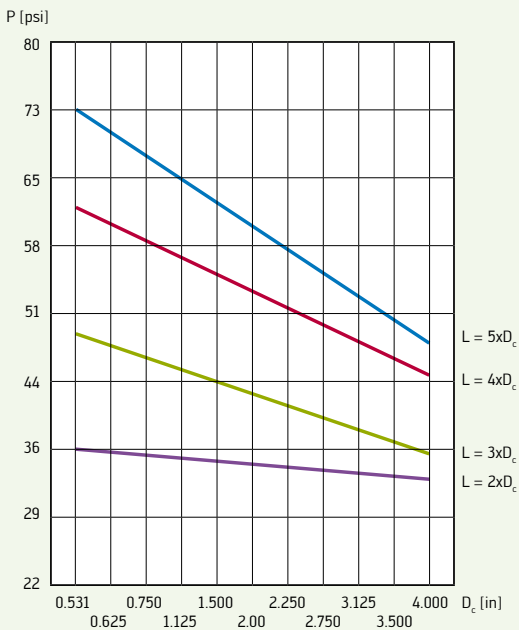
Center inserts in Tiger-tec® Silver  
and WXP40



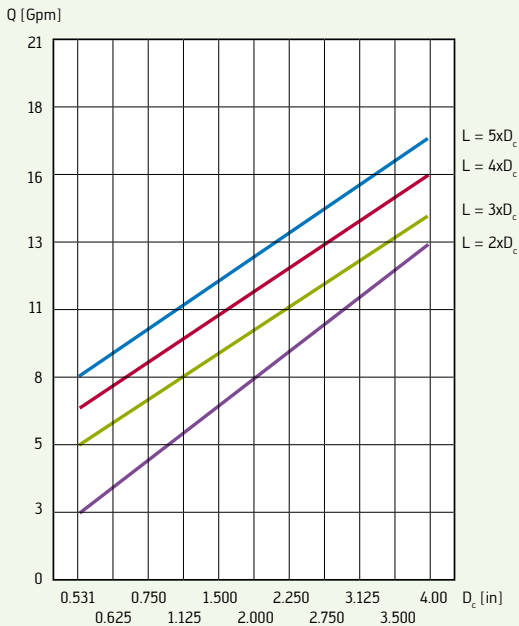
**Use**  
Cutting edge identification for  
1st to 4th use

## Recommended values for Xtra·tec® Insert Drill B421x

### Coolant pressure for horizontal machining direction



### Coolant quantity for horizontal machining direction



#### Increase or reduction of coolant flow rate $Q$ and coolant pressure $P$ compared with minimum values:

Bad chip breaking: increase of up to +50 %

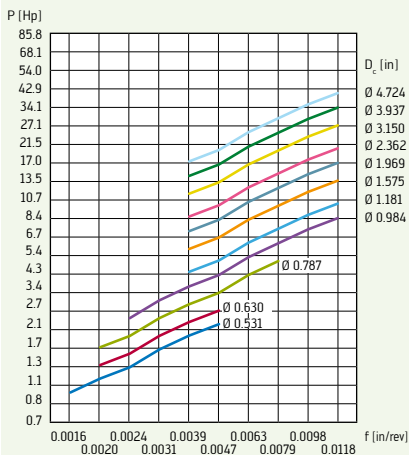
Vertical machining direction: increase of 30–40 %

## Recommended values for drilling

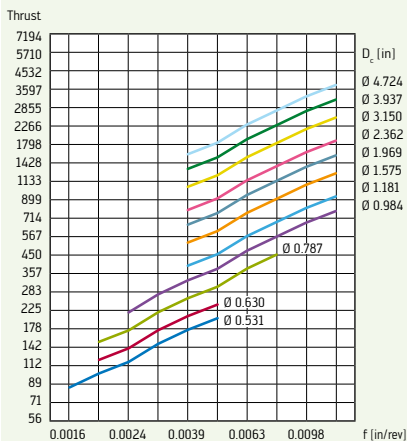
### Xtra·tec® Insert Drill B421x

Material: 1045 – (1.0503) steel, cast steel [ $R_m = 650 \text{ N/mm}^2$ ]

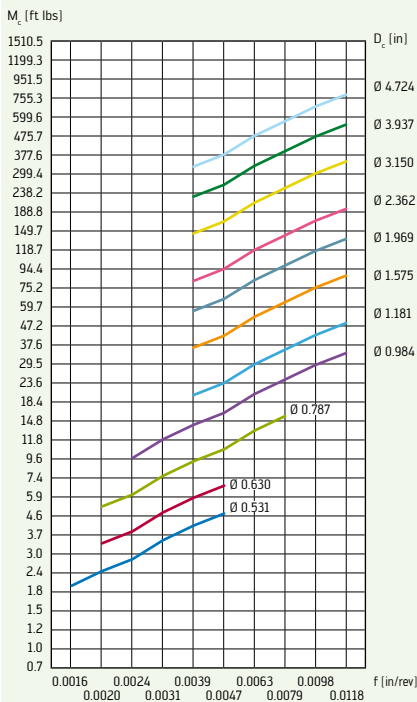
#### Power requirement<sup>1</sup>



#### Feed force



## Torque



The power requirement<sup>1</sup> data is based on a cutting speed of 330 SFM.

If the cutting speed is doubled, the power requirement also doubles, i.e. the power requirement is directly proportional to the cutting speed.

For steels with a higher tensile strength, the power and torque required are correspondingly higher.

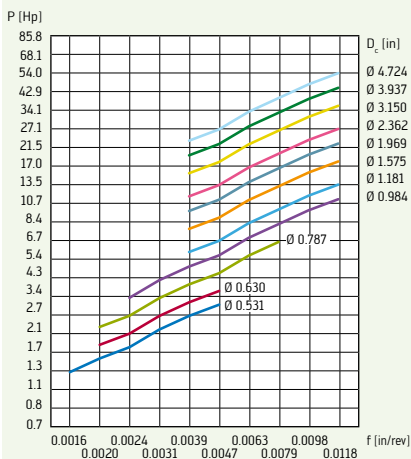
## Recommended values for drilling

### Xtra·tec® Insert Drill B421x

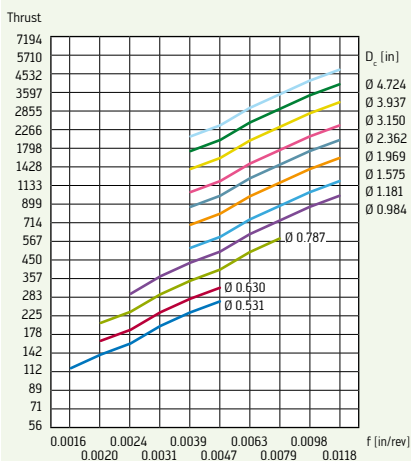
Material: 4140 – Cr-Mo alloyed heat treatable steel

[Rm = 750–900 N/mm<sup>2</sup>]

#### Power requirement<sup>1</sup>

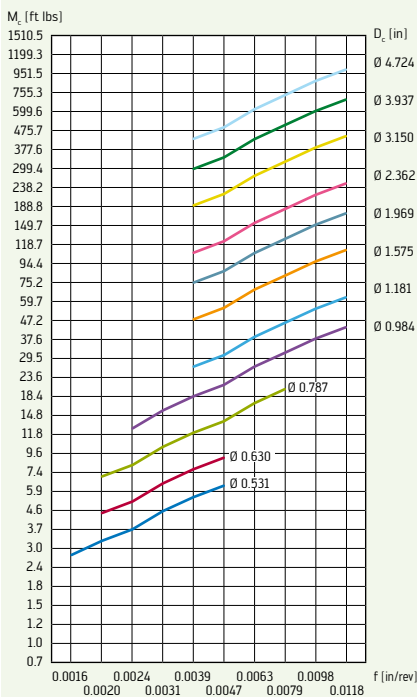


#### Feed force





## Torque



The power requirement<sup>1</sup> data is based on a cutting speed of 330 SFM.

If the cutting speed is doubled, the power requirement also doubles, i.e. the power requirement is directly proportional to the cutting speed.

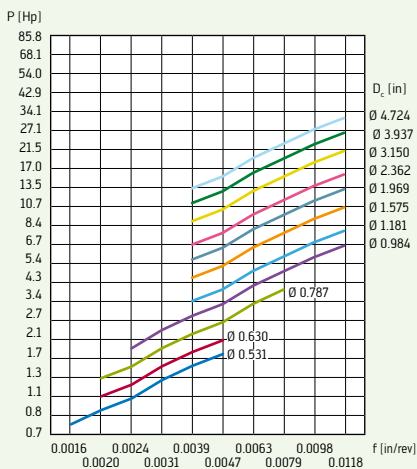
For steels with a higher tensile strength, the power and torque required are correspondingly higher.

## Recommended values for drilling

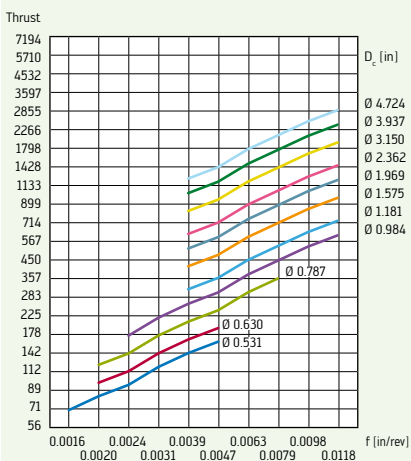
### Xtra·tec® Insert Drill B421x

Material: A48-40B – (0.6025) cast iron, ferritic [180-200 HB]

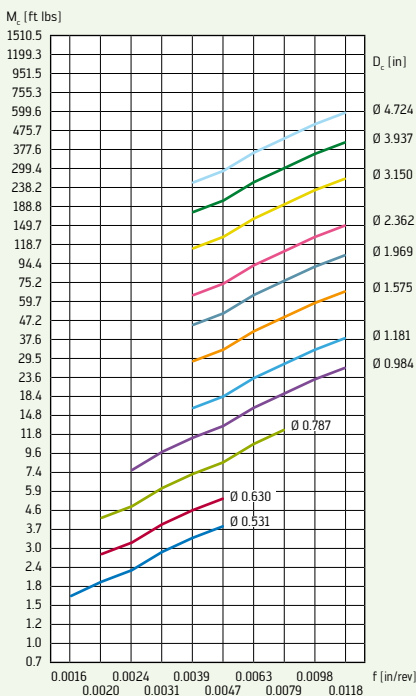
#### Power requirement<sup>1</sup>



#### Feed force



## Torque



The power requirement<sup>1</sup> data is based on a cutting speed of 330 SFM.

If the cutting speed is doubled, the power requirement also doubles, i.e. the power requirement is directly proportional to the cutting speed.

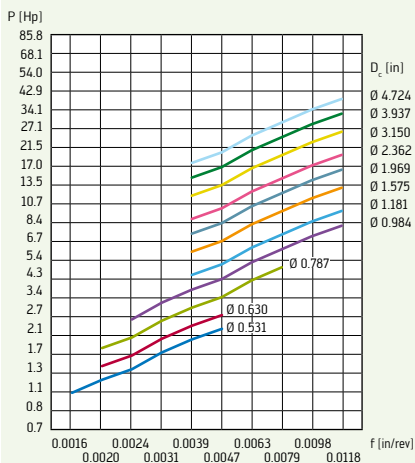
For steels with a higher tensile strength, the power and torque required are correspondingly higher.

## Recommended values for drilling

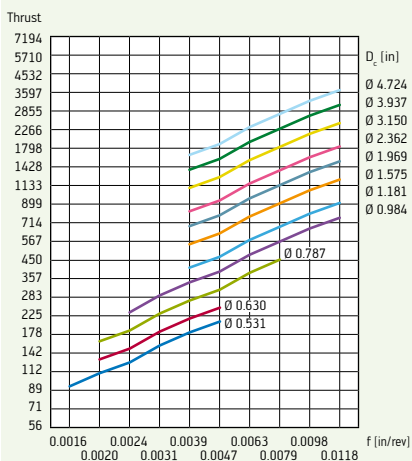
### Xtra·tec® Insert Drill B421x

Material: 100-70-30 – (0.7070) cast iron with spheroidal graphite  
[Rm = 690 N/mm<sup>2</sup>]

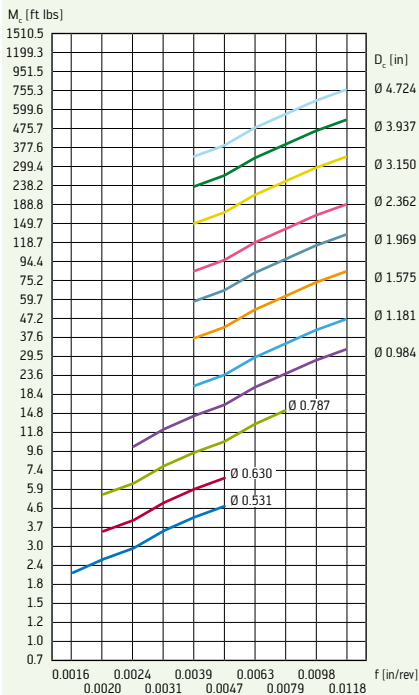
#### Power requirement<sup>1</sup>



#### Feed force



## Torque

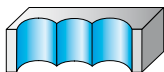


The power requirement<sup>1</sup> data is based on a cutting speed of 330 SFM.

If the cutting speed is doubled, the power requirement also doubles, i.e. the power requirement is directly proportional to the cutting speed.

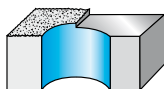
For steels with a higher tensile strength, the power and torque required are correspondingly higher.

## Application possibilities for Xtra·tec® Insert Drill



### Chain drilling

If problems occur  
– Reduce feed by 30 %



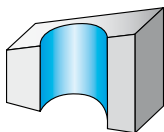
### Unmachined and stepped surfaces

If the drill entry angle  $> 30^\circ$   
– Reduce feed by 50 % during entry



### Interrupted cut

Problems with interrupted cut  
– Feed  $< 30\%$



### Angled entry drilling

Reduce feed by 30 % during entry



### Cross holes

Reducing the feed by 30 % achieves the best results

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### Stack drilling

Is not possible



### Inner cutting edge breaks

- Check machine alignment (lathe)
- Check workpiece clamping and ensure that there is max. tool stability
- Use tougher carbide grade
- Reduce feed values by 50–70 %



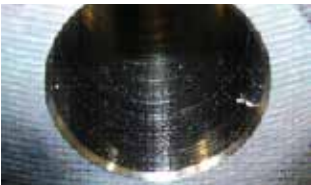
### Chip removal not efficient

- Select optimum indexable insert geometry
- Increase coolant pressure
- Increase cutting speed by 20 %
- Optimise chip breaking by increasing feed by ~10 %



### Excessive insert wear

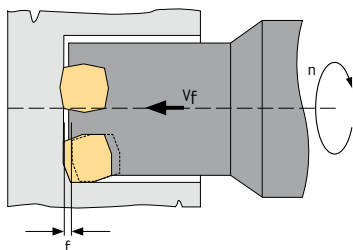
- Reduce cutting speed by 20 %
- Increase coolant pressure
- Use more wear-resistant carbide grade, e.g. WKP25 instead of WKP35



### Poor surface quality

- Increase coolant pressure
- Improve clamping situation of workpiece and tool
- Increase cutting speed by 20 %
- Reduce feed by 10 %

## Drilling calculation formula



<b>Number of revolutions</b> n [rpm]	$n = \frac{v_c \cdot 12}{D_c \cdot \pi}$	[rpm]
<b>Cutting speed</b> v <sub>c</sub> [ft/min]	$v_c = \frac{D_c \cdot \pi \cdot n}{12}$	[ft/min]
<b>Feed rate per revolution</b> f [in]	$f = f_z \cdot z$	[in]
<b>Feed rate</b> v <sub>f</sub> [in/min]	$v_f = f \cdot n$	[in/min]
<b>Metal removal rate</b> Q [in <sup>3</sup> /min]	$Q = v_f \cdot \pi \cdot (D_c / 2)^2$	[in <sup>3</sup> /min]
<b>Power requirement</b> P <sub>mot</sub> [HP]	$P_{mot} = \frac{D_c \cdot v_c \cdot f \cdot k_C}{132,000 \cdot \eta}$	[HP]
<b>Specific cutting force</b> k <sub>C</sub> [lbs/in <sup>2</sup> ]	$k_C = k_{cW} 1.1 \cdot h^{-m_{cW}}$	[lbs/in <sup>2</sup> ]
<b>Chip thickness</b> h [in]	$h = f_z \cdot \sin \kappa$	[in]
<b>Torque</b> M <sub>C</sub> [in lb]	$M_C = \frac{D_c^2 \cdot f_z \cdot k_C}{8}$	[in lb]





## Workpiece material groups

### Steel

<b>P</b>	Low-carbon soft steel; low tensile ferritic steel
	Low-carbon free cutting steel
	Normal structural steel, low to medium content of carbon (< 0.5% C)
	Normal, low-alloy steel and steel casting; tempering steel; carbon steel (> 0.5% C); ferritic and martensitic stainless steel
	Normal tool steel; harder tempering steel; martensitic, stainless steel
	Tool steel featuring difficult cutting properties; hard, high-alloyed steel and steel casting; martensitic, stainless steel
	High tensile steel with difficult cutting properties; hardened steels of the groups 3 –6; martensitic, stainless steel

### Stainless Steel

<b>M</b>	Stainless steel featuring less difficult cutting properties, calcium treated stainless steel
	Molybdenum stainless steel; austenite and duplex, difficult cutting properties
	Austenite and duplex featuring difficult cutting properties
	Austenite and duplex featuring extremely difficult cutting properties

### Cast Iron

<b>K</b>	Cast iron of medium hardness, grey cast iron
	Low-alloyed cast iron, malleable cast iron, nodular cast iron
	Cast iron alloy of medium hardness, malleable cast iron, GGG, medium cutting properties
	High-alloyed cast iron with difficult cutting properties; malleable cast iron, GGG, difficult cutting properties

### NF Metal

<b>N</b>	Nonferrous alloys which are easy to machine, Aluminum with <16% Si, brass, zinc, magnesium
	Nonferrous alloys which are difficult to machine; Aluminum with >16% Si, bronze, copper, Aluminum alloys (nickel, copper, magnesium)

### High Temperature Alloys and Titanium Alloys

<b>S</b>	High temperature alloys containing nickel, cobalt, iron, hardness <30 HRC, Incoly 800 and Inconel 601, 617 and 625, Monel 400
	High temperature alloys containing nickel, cobalt, iron, hardness >30 HRC, Inconel 718 and 750-X and Incoly 925, Monel K-5008
	Titanium alloys, Ti-6Al-4V

\*The  $k_{cw}$  1.1 and  $m_{cw}$  values should be used only with the listed formulas in the 2012 General Catalog

$k_{cw}$  1.1 value = specific cutting force with a rake angle of 0°.

With other rake angles,  $k_{cw}$  1.1 should be increased/decreased accordingly, i.e. 1% each degree of rake angle.

	<b>k<sub>cw</sub> 1.1*</b> <b>(lbs/in<sup>2</sup>)</b>	<b>m<sub>cw</sub> *</b>
	260,950	0.1062
	178,400	0.1063
	247,200	0.1062
	274,700	0.1062
	247,200	0.1062
	274,700	0.1062
	302,150	0.1063
	185,400	0.1063
	206,000	0.1062
	247,200	0.1062
	271,900	0.1063
	192,300	0.1061
	211,500	0.1061
	221,100	0.1061
	230,700	0.1061
	82,400	0.1062
	82,400	0.1062
	302,150	0.1062
	332,350	0.1062
	178,550	0.1061





## Walter USA, LLC

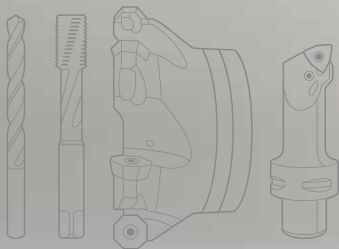
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## Walter Canada

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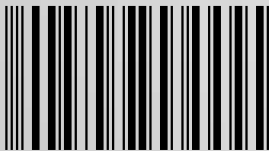
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