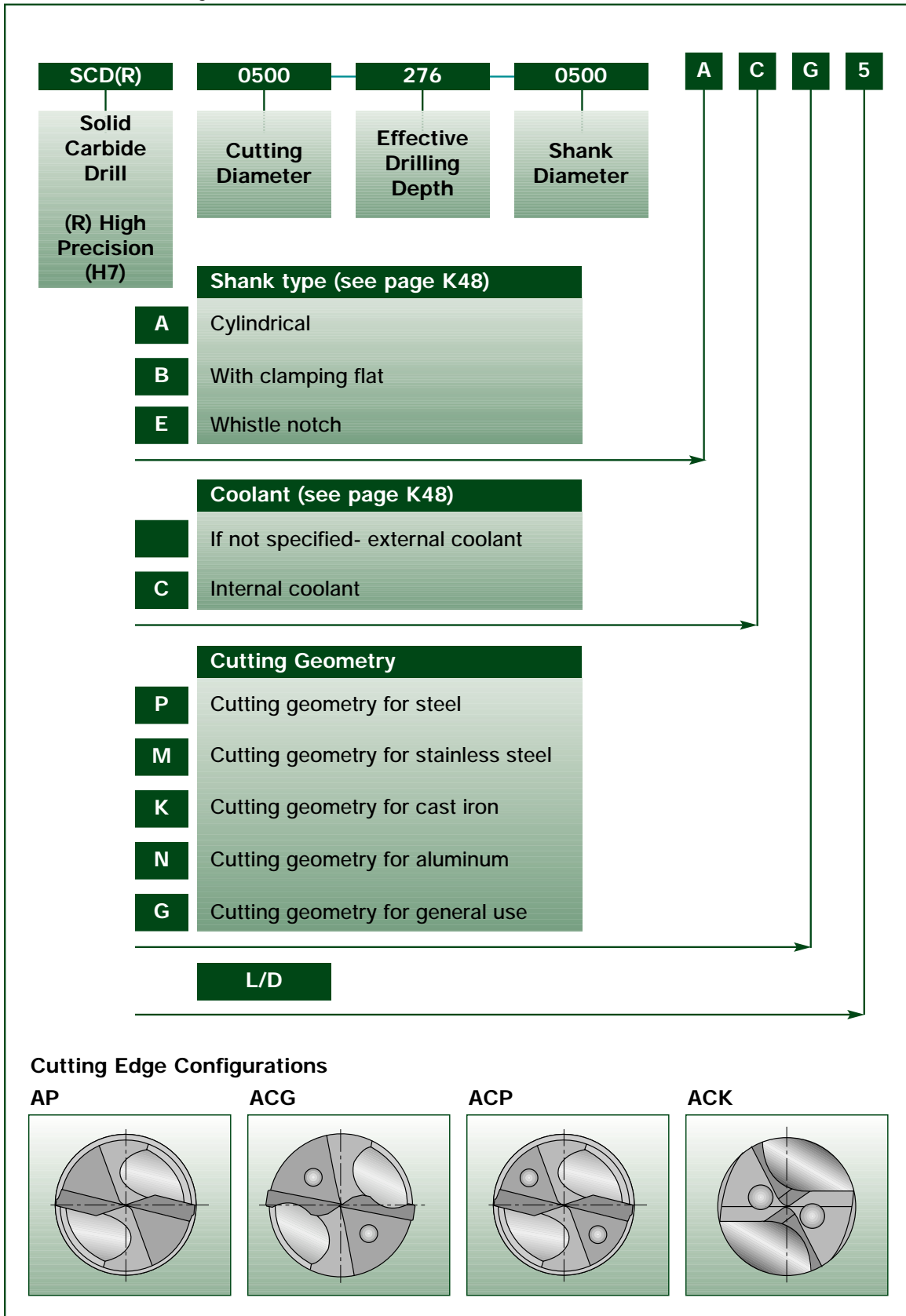


SOLIDDRILL

Identification System

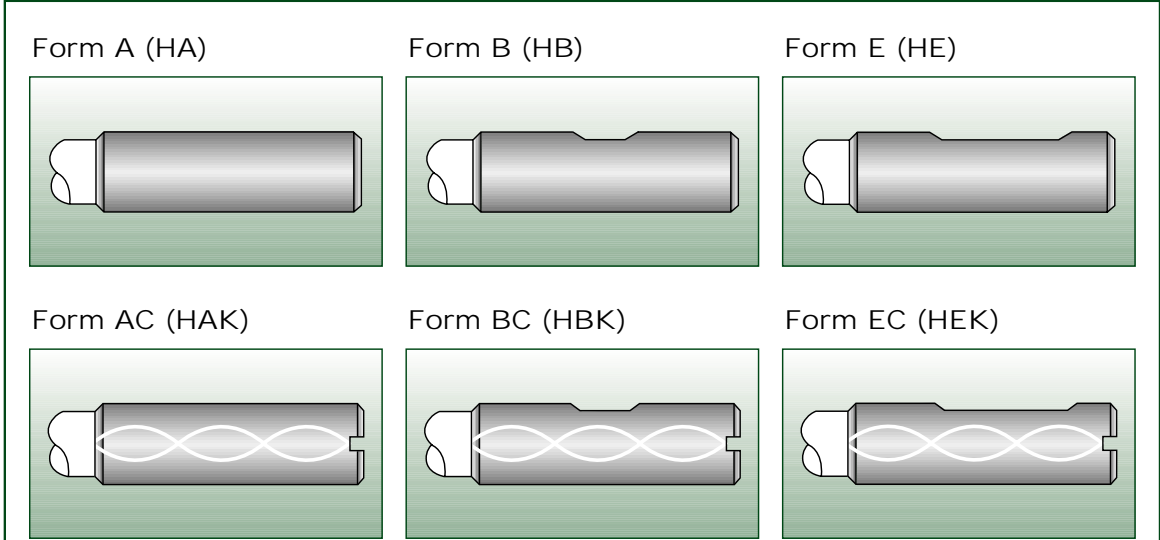


User Guide:

- Use of internal and external coolant during drilling is recommended for achieving prolonged edge life. In case of non-coolant drill type, external cooling jets are necessary.
- Semi-synthetic or emulsion lubricants are recommended in order to extend tool life. Minimal lubrication or an emulsion spray may be applied for ISO K and ISO N materials.
- Drilling stainless steel or high temperature alloys requires a high oil pressure of 7-15% mineral or vegetable-based oil emulsion for prolonged edge life.
- Dry machining will affect hole quality and drill tool life.
- We recommend using our solid carbide drills in rotating or stationary applications with a maximum of .0008" outer cutting points or chisel runout for optimal performance. Larger runout will influence drill performance and hole quality ([see page 5](#)).
- In case of stationary application we recommend clamping the drill in an orientation which directs both outer cutting points parallel to machine "X" axis.
- On stationary (lathe) applications, if there are misalignment problems it is recommended to use alignment devices such as the ISCAR/ETM GYRO device ([see page 4](#)).
- Difficult to machine materials may require pecking cycle for improved chip evacuation.
- The new solid carbide drills can be clamped in ISCAR tooling systems such as:
 - Collet chucks
 - Shrink system
 - Power chucks
- We recommend:
 - JET 2 collet chucks for internal and external coolant jets.
 - "SCD" drills in SHORTIN adaptation with "AA" super precision collets for a high level of hole quality and prolonged drill life.
 - Using shrink system for SCDR drills for maximum accuracy and best performance.
 - Drilling stacked plates with internal coolant drills only. Both options of stacked plate applications - with and without gap. (A minimum gap of .08" between plates is recommended).
 - Drilling sloped surfaces of a maximum 6°. Sloped surfaces of more than 6° require spot or pre-hole centering to avoid drill deviation or poor drill performance.
- Interrupted cut has direct influence on hole accuracy, quality and drill tool life.
- Solid carbide drills can not be used on FITBORE or any other radial adjustment adaptation devices.
- Regrinding instructions can be found on [pages 13-14](#).
- Troubleshooting instructions can be found on [pages 15-16](#).

SOLIDDRILL USER GUIDE

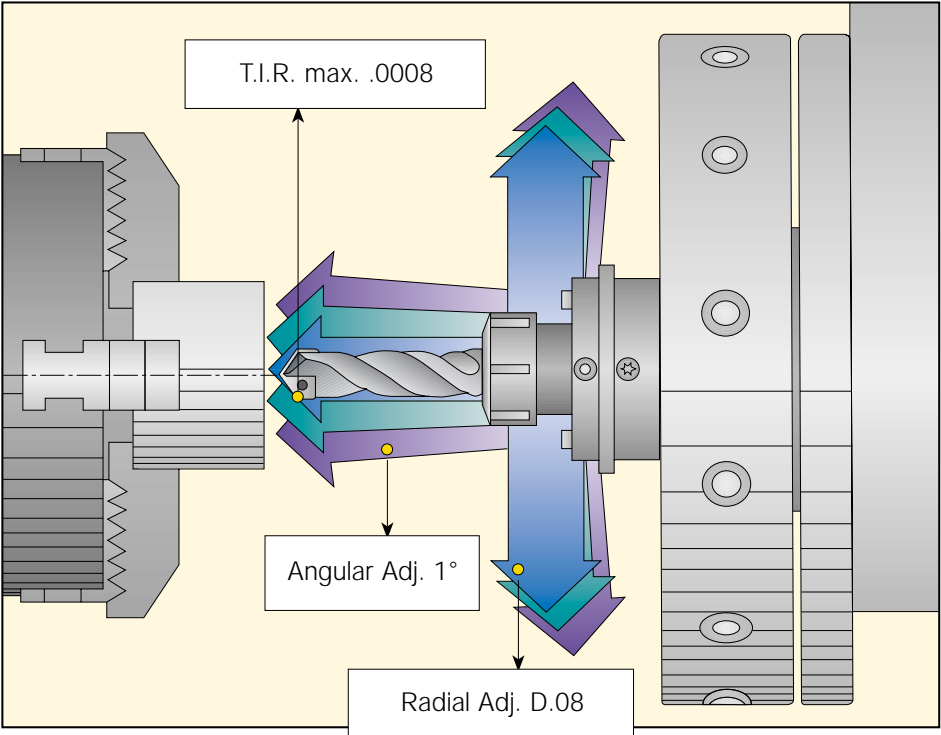
Shank Standard (Based on DIN 6535)



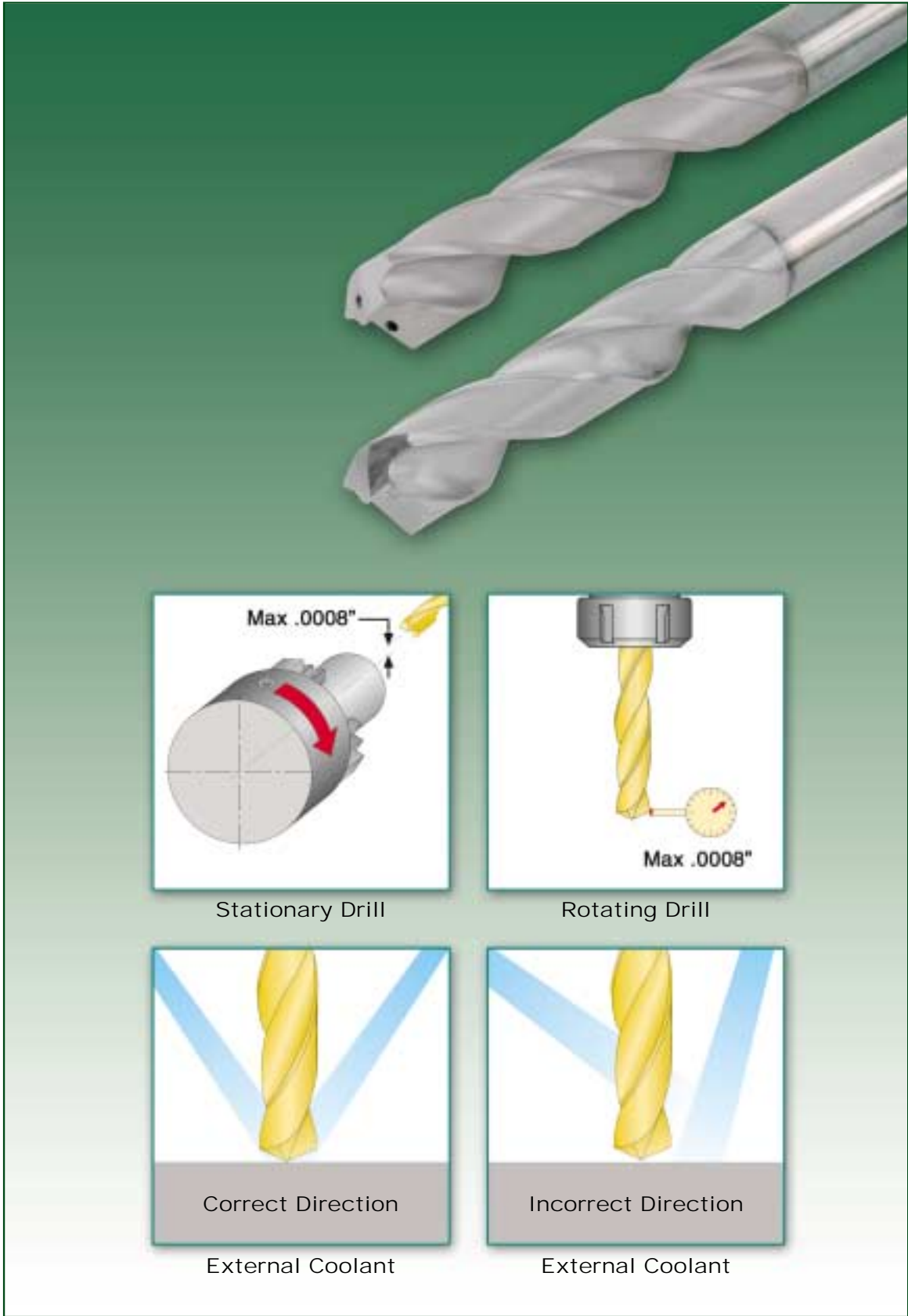
Stationary Application User Guide

GYRO

Misalignment Correcting Device for Stationary Operations
Misalignment will cause poor performance of the solid carbide drill or even tool breakage!

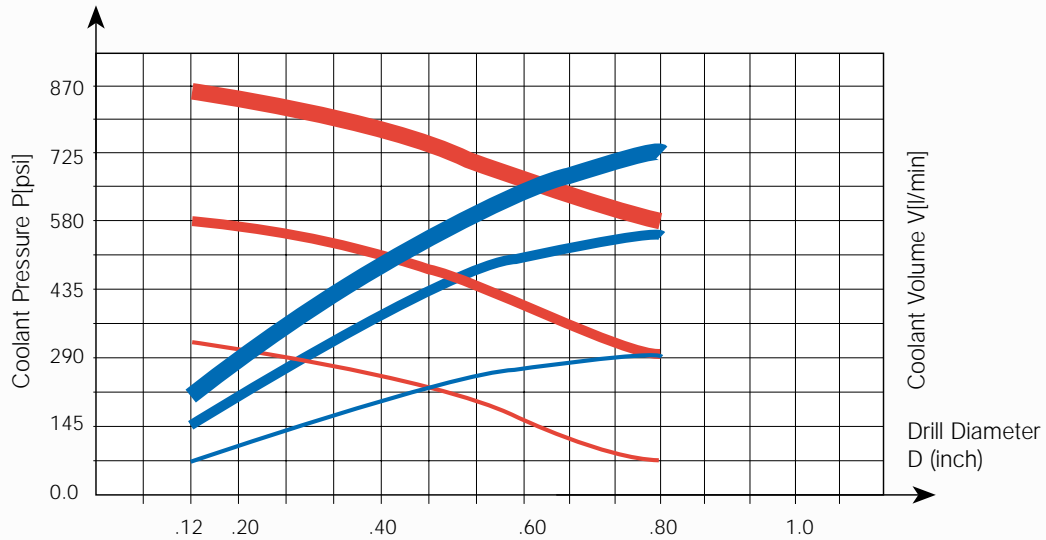


SOLIDDRILL USER GUIDE



SOLIDDRILL USER GUIDE

Coolant Pressure and Volume Recommendations



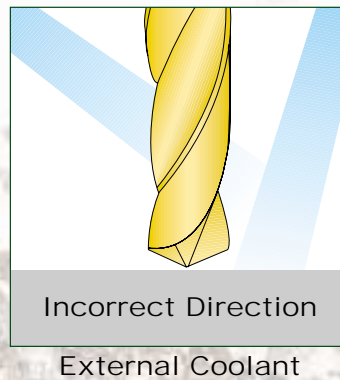
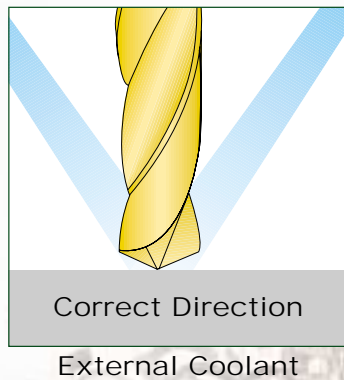
Required coolant pressure and volume for SCD drills with internal spiral coolant nozzles.

Required Coolant Pressure

- Optimum pressure
- Good pressure
- Minimum pressure

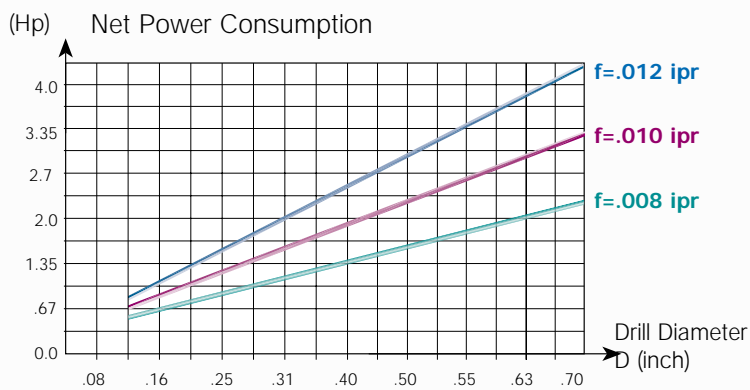
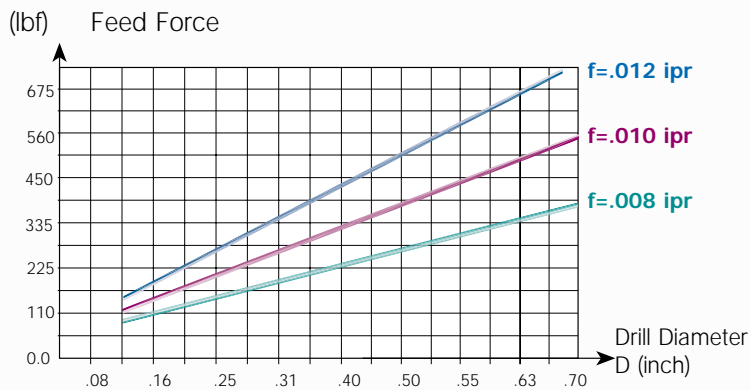
Required Coolant Volume

- Optimum volume
- Good volume
- Minimum volume



SOLIDDRILL USER GUIDE

Machining Conditions



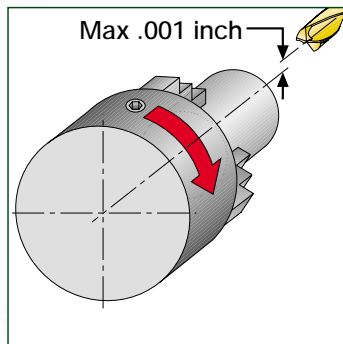
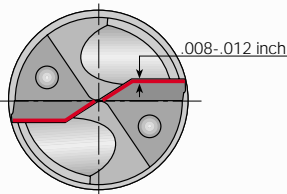
Material: SAE 4340
Speed: 330 sfm
 Values may change for different materials and drilling conditions.

Stability

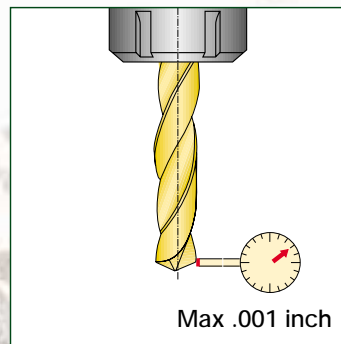
The stability of the volume of the application is important to obtain the best tool life and hole accuracy. Check the condition of the machine spindle, fixture and fixturing of the component to secure maximum stability and rigidity. Unstable conditions can cause tool breakage.

Tool Life

Drills should not be used with flank wear exceeding .008-.012 inch.



Stationary Drill



Rotating Drill

Advantages:

- High quality TiAlN coating with a special edge preparation provides a smooth cut and prolonged edge life as compared to any high quality solid carbide drill available in the market.
- Sub-micron substrate provides a high level of rigidity and accuracy.
- Semi-standard/special drills can be supplied upon request.

SOLIDDRILL

Solid Carbide Drills
Drilling Depth **3xD** (with coolant holes) DIN 6537

Range **.136 to .376**

D	Tolerance m7
.118 to .236	.00016-.00063
.237 to .394	.00024-.00083
.394 to .709	.00028-.00098
.709 to .827	.00031-.00114

The diagram shows a side view of a double-flute solid carbide drill. The cutting edge diameter is labeled D^{m7} . The total length is L . The length of the cutting edge is L_1 . The length of the flute section is L_2 . The shank diameter is d^{h6} . The drill is shown with blue dashed lines representing coolant holes.

SCD-ACP3

Designation	D	d	L	L ₁	L ₂	For Standard Thread Size
SCD 0136-075-0187ACP3	.136	.187	.531	.75	2.29	
SCD 0141-075-0187ACP3	.141	.187	.531	.75	2.29	
SCD 0150-075-0187ACP3	.150	.187	.531	.75	2.29	
SCD 0156-075-0187ACP3	.156	.187	.531	.75	2.29	
SCD 0159-075-0187ACP3	.159	.187	.531	.75	2.29	
SCD 0163-105-0187ACP3	.163	.187	.799	1.05	2.58	10-32 UNF
SCD 0180-105-0187ACP3	.180	.187	.799	1.05	2.58	12-24 UNC
SCD 0182-105-0187ACP3	.182	.187	.799	1.05	2.58	
SCD 0185-105-0187ACP3	.185	.187	.799	1.05	2.58	12-28 UNF
SCD 0187-105-0187ACP3	.187	.187	.799	1.05	2.58	
SCD 0201-128-0250ACP3	.201	.250	.960	1.28	2.82	
SCD 0207-128-0250ACP3	.207	.250	.960	1.28	2.82	1/4-20 UNC
SCD 0209-128-0250ACP3	.209	.250	.960	1.28	2.82	
SCD 0213-128-0250ACP3	.213	.250	.960	1.28	2.82	
SCD 0218-128-0250ACP3	.218	.250	.960	1.28	2.82	
SCD 0250-128-0250ACP3	.250	.250	.960	1.28	2.82	
SCD 0257-146-0312ACP3	.257	.312	1.073	1.46	3.06	
SCD 0265-146-0312ACP3	.265	.312	1.073	1.46	3.06	
SCD 0272-146-0312ACP3	.272	.312	1.073	1.46	3.06	
SCD 0276-146-0312ACP3	.276	.312	1.073	1.46	3.06	5/16-24 UNF
SCD 0281-146-0312ACP3	.281	.312	1.073	1.46	3.06	
SCD 0296-146-0312ACP3	.296	.312	1.073	1.46	3.06	
SCD 0312-146-0312ACP3	.312	.312	1.073	1.46	3.06	
SCD 0321-172-0375ACP3	.321	.375	1.274	1.72	3.42	3/8-16 UNC
SCD 0328-172-0375ACP3	.328	.375	1.274	1.72	3.42	
SCD 0332-172-0375ACP3	.332	.375	1.274	1.72	3.42	
SCD 0339-172-0375ACP3	.339	.375	1.274	1.72	3.42	3/8-24 UNF
SCD 0343-172-0375ACP3	.343	.375	1.274	1.72	3.42	
SCD 0359-172-0375ACP3	.359	.375	1.274	1.72	3.42	
SCD 0368-172-0375ACP3	.368	.375	1.274	1.72	3.42	
SCD 0375-172-0375ACP3	.375	.375	1.274	1.72	3.42	
SCD 0376-185-0437ACP3	.376	.437	1.338	1.85	3.62	7/16-14 UNC

Available grade IC908.

Shank according to DIN 6535-Form HA.

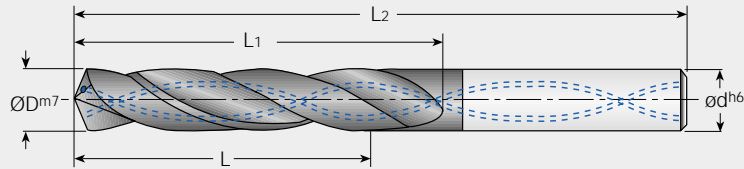
User guide, cutting conditions and regrinding instructions, see pages 14-18.

SOLIDDRILL

Solid Carbide Drills
Drilling Depth **3xD** (with coolant holes) DIN 6537

Range **.382 to .813**

D	Tolerance m7
.118 to .236	.00016-.00063
.237 to .394	.00024-.00083
.394 to .709	.00028-.00098
.709 to .827	.00031-.00114



SCD-ACP3

Designation	D	d	L	L ₁	L ₂	For Standard Thread Size
SCD 0382-185-0437ACP3	.382	.437	1.338	1.85	3.62	
SCD 0390-185-0437ACP3	.390	.437	1.338	1.85	3.62	
SCD 0394-185-0437ACP3	.394	.437	1.338	1.85	3.62	7/16-20 UNF
SCD 0406-185-0437ACP3	.406	.437	1.338	1.85	3.62	
SCD 0421-185-0437ACP3	.421	.437	1.338	1.85	3.62	
SCD 0434-185-0437ACP3	.434	.437	1.338	1.85	3.62	1/2-13 UNC
SCD 0437-185-0437ACP3	.437	.437	1.338	1.85	3.62	
SCD 0453-185-0500ACP3	.453	.500	1.338	1.85	3.74	
SCD 0457-185-0500ACP3	.457	.500	1.338	1.85	3.74	1/2-20 UNF
SCD 0468-185-0500ACP3	.468	.500	1.338	1.85	3.74	
SCD 0484-185-0500ACP3	.484	.500	1.338	1.85	3.74	
SCD 0491-185-0500ACP3	.491	.500	1.338	1.85	3.74	9/16-12 UNC
SCD 0500-185-0500ACP3	.500	.500	1.338	1.85	3.74	
SCD 0508-197-0562ACP3	.508	.562	1.346	1.97	3.86	
SCD 0514-197-0562ACP3	.514	.562	1.346	1.97	3.86	9/16-18 UNF
SCD 0515-197-0562ACP3	.515	.562	1.346	1.97	3.86	
SCD 0531-197-0562ACP3	.531	.562	1.346	1.97	3.86	
SCD 0547-197-0562ACP3	.547	.562	1.346	1.97	3.86	5/8-11 UNC
SCD 0562-197-0562ACP3	.562	.562	1.346	1.97	3.86	
SCD 0577-208-0625ACP3	.577	.625	1.384	2.08	4.09	5/8-18 UNF
SCD 0609-208-0625ACP3	.609	.625	1.384	2.08	4.09	
SCD 0625-208-0625ACP3	.625	.625	1.384	2.08	4.09	
SCD 0633-235-0687ACP3	.633	.687	1.608	2.35	4.36	
SCD 0656-235-0687ACP3	.656	.687	1.608	2.35	4.36	
SCD 0664-235-0687ACP3	.664	.687	1.608	2.35	4.36	3/4-10 UNC
SCD 0687-235-0687ACP3	.687	.687	1.608	2.35	4.36	
SCD 0696-235-0750ACP3	.696	.750	1.608	2.35	4.44	3/4-16 UNF
SCD 0703-235-0750ACP3	.703	.750	1.608	2.35	4.44	
SCD 0734-235-0750ACP3	.734	.750	1.608	2.35	4.44	
SCD 0750-235-0750ACP3	.750	.750	1.608	2.35	4.44	
SCD 0758-242-0812ACP3	.758	.812	1.608	2.42	4.50	
SCD 0765-242-0812ACP3	.765	.812	1.608	2.42	4.50	
SCD 0779-242-0812ACP3	.779	.812	1.608	2.42	4.50	7/8-9 UNC
SCD 0813-278-0875ACP3	.813	.875	1.860	2.78	4.95	7/8-14 UNF

Available grade IC908.
Shank according to DIN 6535-Form HA.

User guide, cutting conditions and regrinding instructions, see pages 14-18.

SOLIDDRILL

Solid Carbide Drills
Drilling Depth **5xD** (With Coolant Holes)

Range **.136 to .376**

D	Tolerance m7
.118 to .236	.00016-.00063
.237 to .394	.00024-.00083
.394 to .709	.00028-.00098
.709 to .827	.00031-.00114

The diagram shows a side view of a double-flute solid carbide drill. The cutting edge diameter is labeled as ØD^{m7} . The length of the cutting edge is L_1 , the length of the flute is L_2 , and the total length is L . The shank diameter is labeled as ødh6 . Dashed lines indicate the internal coolant holes.

SCD-ACP5

Designation	D	d	L	L ₁	L ₂	For Standard Thread Size
SCD 0136-106-0187ACP5	.136	.187	.843	1.06	2.60	
SCD 0141-106-0187ACP5	.141	.187	.843	1.06	2.60	
SCD 0150-106-0187ACP5	.150	.187	.843	1.06	2.60	
SCD 0156-106-0187ACP5	.156	.187	.843	1.06	2.60	10-32" UNF
SCD 0159-106-0187ACP5	.159	.187	.843	1.06	2.60	
SCD 0163-138-0187ACP5	.163	.187	1.126	1.38	2.91	
SCD 0180-138-0187ACP5	.180	.187	1.126	1.38	2.91	
SCD 0182-138-0187ACP5	.182	.187	1.126	1.38	2.91	
SCD 0185-138-0187ACP5	.185	.187	1.126	1.38	2.91	
SCD 0187-138-0187ACP5	.188	.187	1.126	1.38	2.91	3/16"
SCD 0201-169-0250ACP5	.201	.250	1.374	1.69	3.23	
SCD 0207-169-0250ACP5	.207	.250	1.374	1.69	3.23	
SCD 0209-169-0250ACP5	.209	.250	1.374	1.69	3.23	
SCD 0213-169-0250ACP5	.213	.250	1.374	1.69	3.23	1/4"-28 UNF
SCD 0218-169-0250ACP5	.218	.250	1.374	1.69	3.23	7/32"
SCD 0250-169-0250ACP5	.250	.250	1.374	1.69	3.23	
SCD 0257-197-0312ACP5	.257	.312	1.587	1.97	3.58	5/16"-18 UNC
SCD 0265-197-0312ACP5	.265	.312	1.587	1.97	3.58	17/64"
SCD 0272-197-0312ACP5	.272	.312	1.587	1.97	3.58	
SCD 0276-197-0312ACP5	.276	.312	1.587	1.97	3.58	
SCD 0281-197-0312ACP5	.281	.312	1.587	1.97	3.58	
SCD 0296-197-0312ACP5	.296	.312	1.587	1.97	3.58	
SCD 0312-197-0312ACP5	.312	.312	1.587	1.97	3.58	3/8"-16 UNC
SCD 0321-236-0375ACP5	.321	.375	1.917	2.36	4.06	
SCD 0328-236-0375ACP5	.328	.375	1.917	2.36	4.06	3/8"-24 UNF
SCD 0332-236-0375ACP5	.332	.375	1.917	2.36	4.06	
SCD 0339-236-0375ACP5	.339	.375	1.917	2.36	4.06	
SCD 0343-236-0375ACP5	.343	.375	1.917	2.36	4.06	
SCD 0359-236-0375ACP5	.359	.375	1.917	2.36	4.06	23/64"
SCD 0368-236-0375ACP5	.368	.375	1.917	2.36	4.06	
SCD 0375-236-0375ACP5	.375	.375	1.917	2.36	4.06	3/8"
SCD 0376-260-0437ACP5	.376	.437	2.091	2.60	4.37	

Available grade IC908.
Shank according to DIN 6535-Form HA.

User guide, cutting conditions and regrinding instructions, see pages 14-18.

SOLIDDRILL

Solid Carbide Drills
Drilling Depth **5xD** (With Coolant Holes)

Range **.382 to .687**

D	Tolerance m7
.118 to .236	.00016-.00063
.237 to .394	.00024-.00083
.394 to .709	.00028-.00098
.709 to .827	.00031-.00114

SCD-ACP5

Designation	D	d	L	L ₁	L ₂	For Standard Thread Size
SCD 0382-260-0437ACP5	.382	.437	2.091	2.60	4.37	
SCD 0390-260-0437ACP5	.390	.437	2.091	2.60	4.37	25/64"
SCD 0394-260-0437ACP5	.394	.437	2.091	2.60	4.37	
SCD 0406-260-0437ACP5	.406	.437	2.091	2.60	4.37	
SCD 0421-260-0437ACP5	.421	.437	2.091	2.60	4.37	1/2"-13 UNC
SCD 0434-260-0437ACP5	.434	.437	2.091	2.60	4.37	
SCD 0437-260-0437ACP5	.437	.437	2.091	2.60	4.37	7/16"
SCD 0453-276-0500ACP5	.453	.500	2.189	2.76	4.65	1/2"-20 UNF
SCD 0457-276-0500ACP5	.457	.500	2.189	2.76	4.65	
SCD 0468-276-0500ACP5	.468	.500	2.189	2.76	4.65	9/16"-12 UNC
SCD 0484-276-0500ACP5	.484	.500	2.189	2.76	4.65	31/64"
SCD 0491-276-0500ACP5	.491	.500	2.189	2.76	4.65	
SCD 0500-276-0500ACP5	.500	.500	2.189	2.76	4.65	9/16"-18 UNF
SCD 0508-299-0562ACP5	.508	.562	2.362	2.99	4.88	
SCD 0514-299-0562ACP5	.514	.562	2.362	2.99	4.88	
SCD 0515-299-0562ACP5	.515	.562	2.362	2.99	4.88	33/64"
SCD 0531-299-0562ACP5	.531	.562	2.362	2.99	4.88	
SCD 0547-299-0562ACP5	.547	.562	2.362	2.99	4.88	
SCD 0562-299-0562ACP5	.562	.562	2.362	2.99	4.88	5/8"-18 UNF
SCD 0577-323-0625ACP5	.577	.625	2.539	3.23	5.24	
SCD 0609-323-0625ACP5	.609	.625	2.539	3.23	5.24	
SCD 0625-323-0625ACP5	.625	.625	2.539	3.23	5.24	
SCD 0633-362-0687ACP5	.633	.687	2.874	3.62	5.63	
SCD 0656-362-0687ACP5	.656	.687	2.874	3.62	5.63	21/32"
SCD 0664-362-0687ACP5	.664	.687	2.874	3.62	5.63	
SCD 0687-362-0687ACP5	.687	.687	2.874	3.62	5.63	3/4"-16 UNF

Available grade IC908.
Shank according to DIN 6535-Form HAK.

User guide, cutting conditions and regrinding instructions, see pages 14-18.

SOLIDDRILL

Solid Carbide Drills
Drilling Depth **5xD** (With Coolant Holes)

Range **.696 to .813**

D	Tolerance m7
.118 to .236	.00016-.00063
.237 to .394	.00024-.00083
.394 to .709	.00028-.00098
.709 to .827	.00031-.00114

The diagram shows a side view of a double-flute solid carbide drill bit. Key dimensions are labeled: L is the total length of the cutting edge; L_1 is the length of the first flute; L_2 is the length of the second flute; and ød^{h6} is the diameter of the shank. The cutting edge diameter is indicated as ØD^{m7} .

SCD-ACP5

Designation	D	d	L	L ₁	L ₂	For Standard Thread Size
SCD 0696-374-0750ACP5	.696	.750	2.933	3.74	5.83	
SCD 0703-374-0750ACP5	.703	.750	2.933	3.74	5.83	
SCD 0734-374-0750ACP5	.734	.750	2.933	3.74	5.83	
SCD 0750-374-0750ACP5	.750	.750	2.933	3.74	5.83	
SCD 0758-394-0812ACP5	.758	.812	3.071	3.94	6.02	
SCD 0765-394-0812ACP5	.765	.812	3.071	3.94	6.02	7/8"-9 UNC
SCD 0779-394-0812ACP5	.779	.812	3.071	3.94	6.02	
SCD 0813-441-0875ACP5	.813	.875	3.488	4.41	6.58	

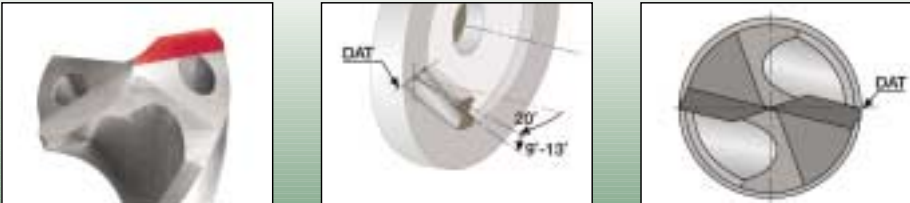
Available grade IC908.
Shank according to DIN 6535-Form HAK.
User guide, cutting conditions and regrinding instructions, see pages 14-18.

SOLIDDRILL USER GUIDE

Regrinding Instructions for ACP3 and ACP5 Geometries

For Each Grinding Operation Rotate the Drill 180° and Repeat the Grinding Procedure

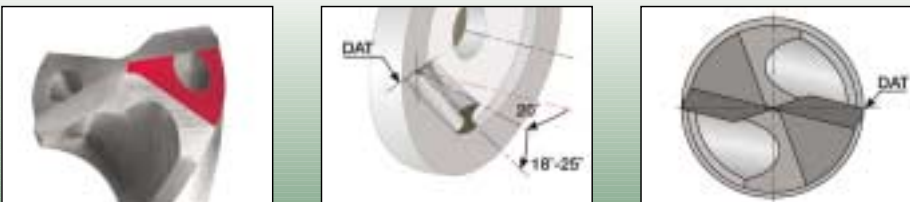
1



Primary Clearance

The first row illustrates the primary clearance grinding process. It consists of three panels: a 3D perspective view of the drill tip with a red highlight on the primary clearance angle; a 3D side view showing the grinding wheel with a 20° angle and a 7°-13° secondary angle, with a DAT (Datum A Tangent) line; and a 2D cross-sectional view of the drill showing the grinding wheel's position and the DAT line.


2



Secondary Clearance

The second row illustrates the secondary clearance grinding process. It consists of three panels: a 3D perspective view of the drill tip with a red highlight on the secondary clearance angle; a 3D side view showing the grinding wheel with a 20° angle and an 18°-25° secondary angle, with a DAT line; and a 2D cross-sectional view of the drill showing the grinding wheel's position and the DAT line.

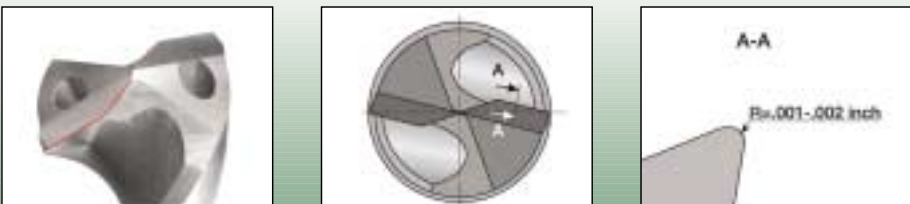
3



Chisel

The third row illustrates the chisel grinding process. It consists of three panels: a 3D perspective view of the drill tip with a red highlight on the chisel edge; a 3D side view showing the grinding wheel with a 40°-50° angle; and a 2D cross-sectional view of the drill showing the grinding wheel's position, a 30°-33° angle, and a 0-.002 inch clearance.

4

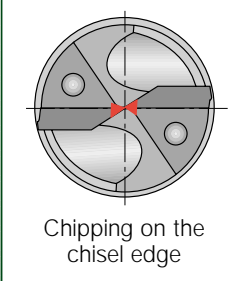
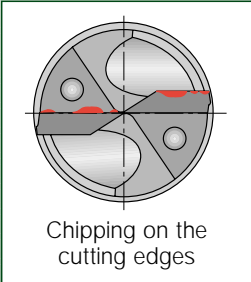
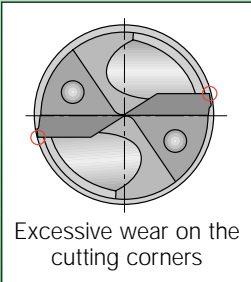
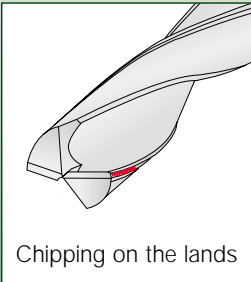
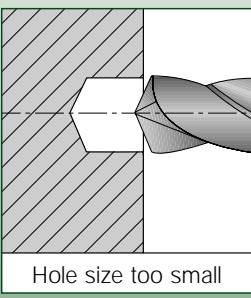


Honing

The fourth row illustrates the honing process. It consists of three panels: a 3D perspective view of the drill tip with a red highlight on the honing area; a 2D cross-sectional view of the drill showing the honing wheel's position and a section line A-A; and a 2D detail view of the honed surface with a section line A-A and a surface finish specification of Ra=0.001-0.002 inch.

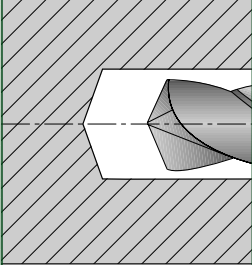
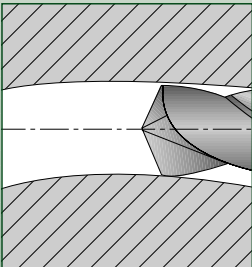
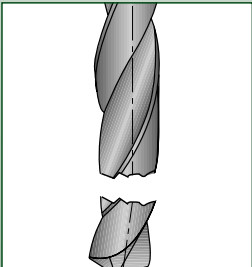
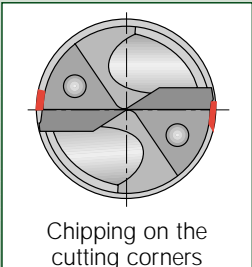
SOLIDDRILL USER GUIDE

Troubleshooting Problem

Problem	Cause	Solution
 <p>Chipping on the chisel edge</p>	<ul style="list-style-type: none"> Poor clamping of the chuck Unsuitable cutting conditions Chisel runout Workpiece movement 	<ul style="list-style-type: none"> Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system. Decrease feed. Check or replace the clamping adaptation. Increase workpiece chucking force.
 <p>Chipping on the cutting edges</p>	<ul style="list-style-type: none"> Poor clamping of the chuck Unsuitable cutting conditions Insufficient coolant 	<ul style="list-style-type: none"> Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system. Increase cutting speed. Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
 <p>Excessive wear on the cutting corners</p>	<ul style="list-style-type: none"> Insufficient coolant Unsuitable cutting conditions Poor clamping of the chuck 	<ul style="list-style-type: none"> Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets. Reduce cutting speed, increase feed. Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system.
 <p>Chipping on the lands</p>	<ul style="list-style-type: none"> Workpiece movement Insufficient coolant Wrong drill Unsuitable cutting conditions 	<ul style="list-style-type: none"> Increase workpiece chucking force. Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets. Check drill type, drilling depth, cooling system and workpiece material. Increase feed. When spot drilling, reduce feed.
 <p>Hole size too small</p>	<ul style="list-style-type: none"> Insufficient coolant Unsuitable cutting conditions Worn out drill 	<ul style="list-style-type: none"> Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets. Reduce cutting speed, increase feed. Check cutting edge diameter. Regrind cutting edge.

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Troubleshooting Problem

Problem	Cause	Solution
 <p>Hole size too large</p>	<ul style="list-style-type: none"> • Unsuitable cutting conditions • Poor clamping of the chuck • Worn out center point (chisel) 	<ul style="list-style-type: none"> • Increase cutting speed or reduce feed. • Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system. • Regrind cutting edge.
 <p>Hole not straight</p>	<ul style="list-style-type: none"> • Insufficient chip evacuation • Poor clamping of the chuck • Workpiece rigidity • Worn out drill center point (chisel) • Unsuitable cutting conditions 	<ul style="list-style-type: none"> • Use pecking cycle. • Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system. • Increase workpiece chucking force. • Regrind cutting edge. • Increase feed. When spot drilling, reduce feed.
 <p>Drill breakage</p>	<ul style="list-style-type: none"> • Poor clamping of the chuck • Workpiece movement • Wrong drill • Insufficient coolant • Unsuitable cutting conditions • Worn out drill center point (chisel) • Insufficient chip evacuation 	<ul style="list-style-type: none"> • Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system. • Increase workpiece chucking force. • Check drill type and drilling depth, cooling system and workpiece material. • Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets. • Reduce feed. • Regrind cutting edge. • Use pecking cycle.
 <p>Chipping on the cutting corners</p>	<ul style="list-style-type: none"> • Poor clamping of the chuck • Workpiece movement • Wrong drill • Insufficient coolant • Unsuitable cutting conditions • Worn out or broken cutting corner 	<ul style="list-style-type: none"> • Check the clamping. Use hydraulic clamping chuck, MAXIN power chuck or a shrink system. • Increase workpiece chucking force. • Check drill type and drilling depth, cooling system and workpiece material. Possibly use longer drill. • Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets. • Check cutting parameters, and possibly reduce feed. • Replace drill or regrind cutting edge.

SOLIDDRILL USER GUIDE

Machining Data for Solid Carbide Drills - IC908

ISO	Material	Condition	Tensile Strength [Kpsi]	Hardness HB	Material No.
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C Annealed	61	125	1
		>= 0.25 %C Annealed	94	190	2
		< 0.55 %C Quenched and tempered	123	250	3
		>= 0.55 %C Annealed	109	220	4
		Quenched and tempered	145	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed	87	200	6
		Quenched and tempered	135	275	7
			145	300	8
			174	350	9
	High alloyed steel, cast steel, and tool steel	Annealed	99	200	10
		Quenched and tempered	160	325	11
M	Stainless steel and cast steel	ferritic/martens.	99	200	12
		martensitic	119	240	13
		austenitic	87	180	14
K	Cast iron nodular (GGG)	Ferritic/pearlitic		180	15
		Pearlitic		260	16
	Grey cast iron (GG)	Ferritic		160	17
		Pearlitic		250	18
	Malleable cast iron	Ferritic		130	19
		Pearlitic		230	20
N	Aluminum-wrought alloy	Not cureable		60	21
		Cured		100	22
	Aluminum-cast, alloyed	<=12% Si Not cureable		75	23
		Cured		90	24
		>12% Si High temperature		130	25
	Copper alloys	>1% Pb Free cutting		110	26
		Brass		90	27
		Electrolytic copper		100	28
	Non metallic	Duroplastics, fiber plastics			29
		Hard rubber			30
S	High temp. alloys Fe based	Annealed		200	31
		Cured		280	32
	Super alloys Ni or Co based	Annealed		250	33
		Cured		350	34
		Cast		320	35
	Titanium Ti alloys		58		36
		Alpha+beta alloys cured	152		37
H	Hardened steel	Hardened		55 HRC	38
		Hardened		60 HRC	39
	Chilled cast iron	Cast		400	40
	Cast iron	Hardened		55 HRC	41

Edge geometry should be selected based on our geometry recommendations, (Page 2).

When using coolant supply only, reduce cutting speed by 10%.

Use internal coolant supply when machining austenitic stainless steel.

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Cutting Speed Vc sfm	Dril Diameter				
	.118-.197	.201-.315	.319-.472	.476-.630	.634-.787
260-390	.004-.007	.006-.010	.008-.012	.008-.014	.010-.016
260-360	.004-.007	.006-.010	.008-.012	.008-.014	.010-.016
230-330	.004-.007	.006-.011	.008-.014	.008-.015	.010-.017
230-300	.004-.007	.006-.010	.008-.012	.008-.014	.010-.016
200-260	.004-.007	.006-.010	.008-.012	.008-.014	.010-.016
160-230	.004-.007	.006-.011	.008-.014	.008-.015	.010-.017
200-260	.004-.007	.006-.011	.007-.014	.008-.015	.010-.017
160-230	.004-.006	.005-.008	.006-.010	.006-.012	.007-.013
80-250	.002-.004	.002-.006	.002-.007	.003-.008	.004-.008
280-340	.006-.010	.008-.014	.010-.018	.012-.020	.014-.022
250-300	.006-.010	.008-.014	.010-.018	.012-.020	.014-.022
210-260	.005-.008	.006-.010	.008-.014	.010-.016	.012-.018
230-980	.004-.010	.006-.014	.010-.018	.012-.020	.014-.022
230-660					
230-980	.003-.007	.005-.010	.008-.014	.010-.018	.012-.020
50-110	.001-.003	.002-.004	.002-.005	.003-.006	.003-.007
130-230	.002-.004	.003-.005	.004-.006	.005-.006	.006-.007