Prorool Industrial Corp.

Deep Hole Drilling Tools, Accessories and Grinding Machines

www.protool.com.tw

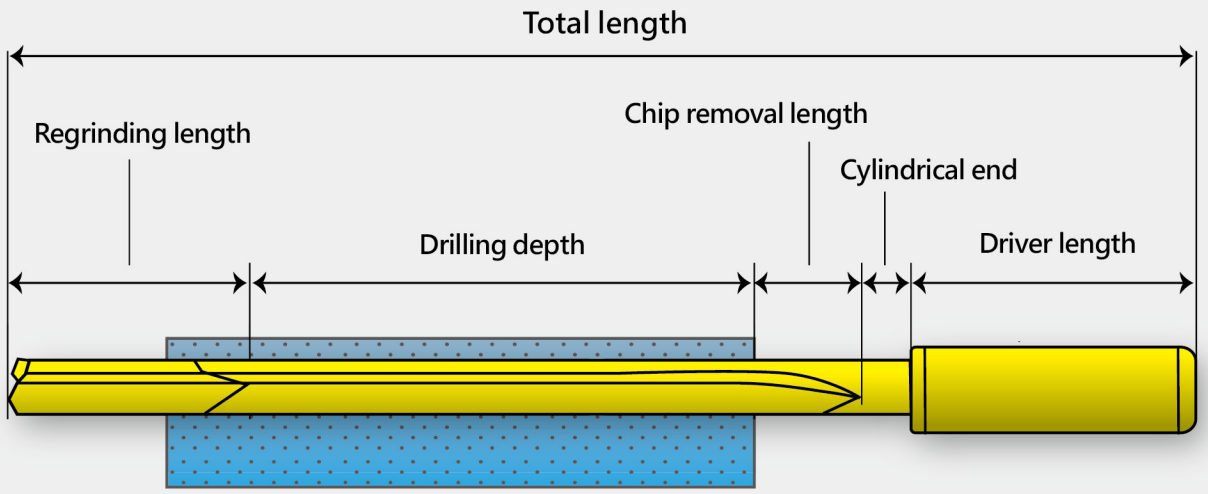
Gun drill system

- Single flue gun drill system.
- Adopt in gun drilling machine or machine center with internal coolant system.
- Diameter from 1.9mm – 50mm.
- Tool lengths up to 5000mm are available depending on tool diameter.
- Customizable carbide head length and driver depending on machine type.

Features and Advantages

- Drilling length can achieve up to D x 250.
- Diametric tolerance can achieve up to IT7 under specific cutting condition.
- Excellent hole straightness and concentricity.
- Excellent surface quality.
- Easy regrinding.
- With over 20 years of experience, we offer all sorts of geometry to fit any drilling situations.

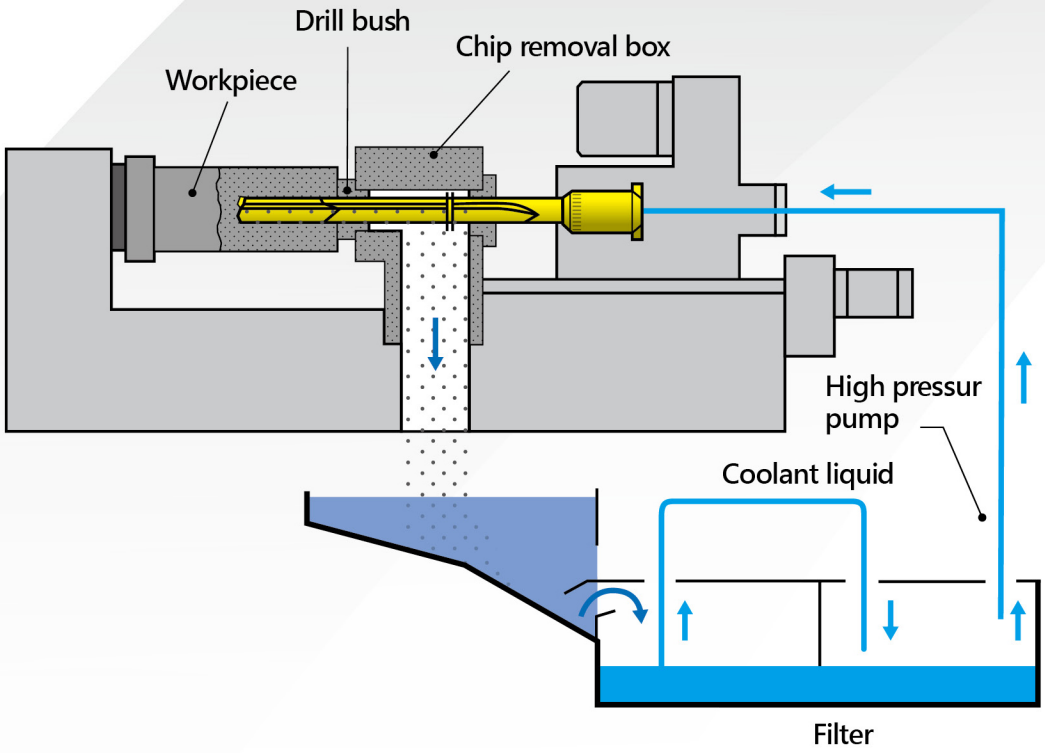
Tooling Length Calculation Chart



Length calculation data		
Drill diameter	Regrinding length	Chip removal length
1,9 - 2,99 mm	10 mm	10 mm
3,0 - 7,99 mm	15 mm	20 mm
8,0 - 19,99 mm	25 mm	40 mm
20,0 - 50,0 mm	30 mm	60 mm

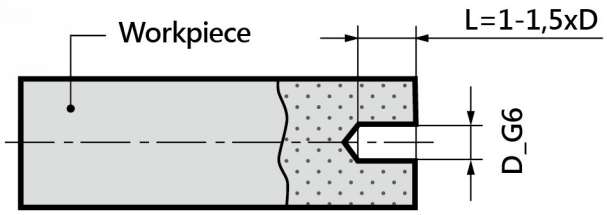
In deep hole drilling machine application, tool length should be adjusted according the machine type.

Deep hold drining machine

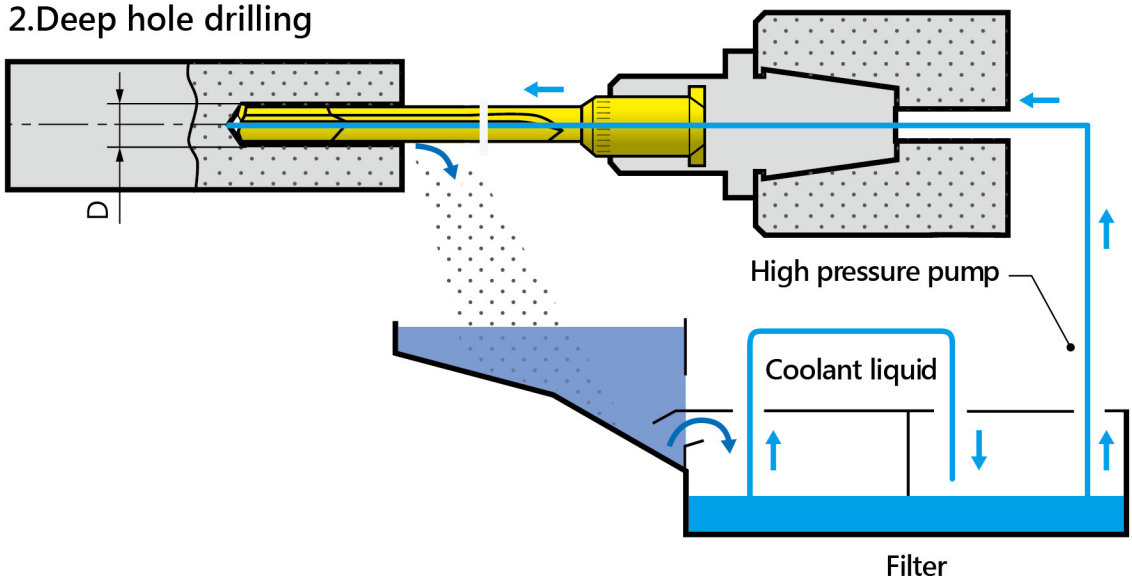


Machining Center

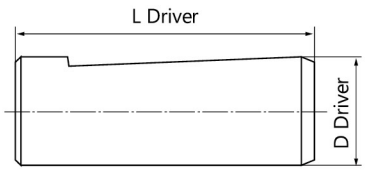
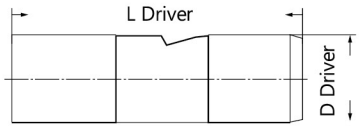
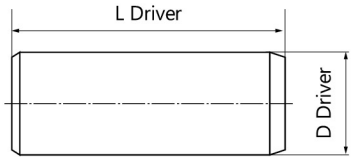
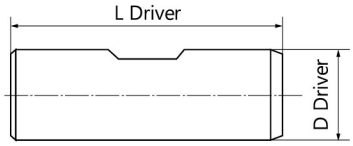
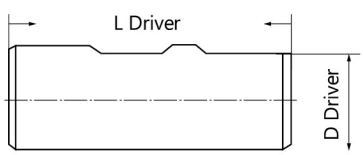
1.Drill a pilot hole



2.Deep hole drilling



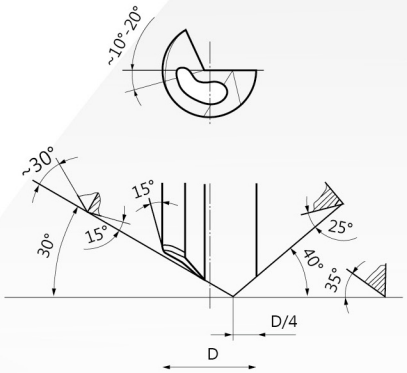
The gun drill is typically connected to the machine's spindle by a driver. We manufacture many different standard drivers for stock and are also capable of providing customized drivers.

Design		Drawing	Drill diameter range	Driver length=L
Diameterø	Type			
12.7	1/2 "		1.850 - 9.699	38.1
19.05	3/4 "		3.960 - 15.899	70
25.4	1 "		6.000 - 22.599	70
31.7	11/4 "		9.700 - 26.599	70
38.1	11/2 "		9.700 - ∞	70
25	Weldon		1.850 – 19.509	70
10	DIN 6535-HA		1.850 – 7.299	40
12			1.850 – 8.999	45
16			1.850 – 12.399	48
20			5.000 – 15.899	50
25			6.000 – 19.509	56
32			9.700 – 25.599	60
40			9.700 - ∞	70
10	DIN 6535-HB		1.850 – 7.299	40
12			1.850 – 8.999	45
16			1.850 – 12.399	48
20			5.000 – 15.899	50
25			6.000 – 19.509	56
32			9.700 – 25.599	60
40			9.700 - ∞	70

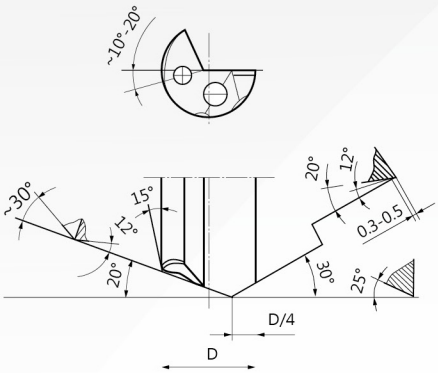
Nose grind geometry

The nose grind geometry will affect: hole tolerance, chip formation, concentricity deviation, surface quality, tool life and coolant liquid flow.
Our standard nose grind geometry is applied for most drilling material. For some extreme application, we offer special nose grind or chipbreaker solution

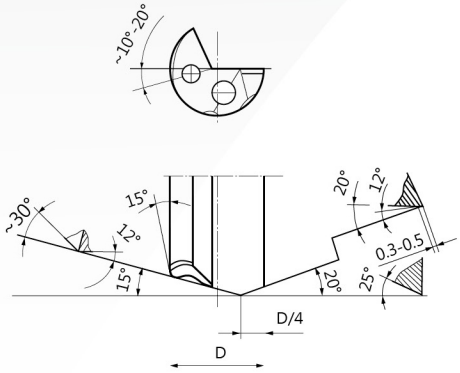
★ Special geometry is available as flat or radius nose grind



Nose grind geometry range
1.85-4.000mm



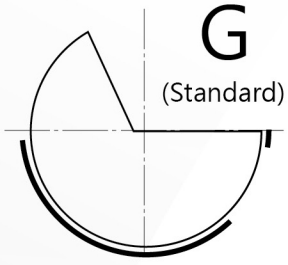
Nose grind geometry range
4.0001-20.000mm



Nose grind geometry range
20.001-max mm

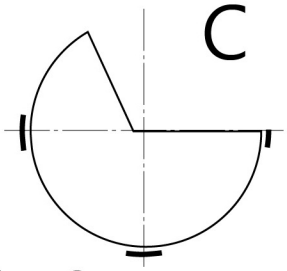
Peripheral contours

Gun drill has guide pad that supports in polishing and guide straightness, which is a decisive factor on the accuracy and surface of drilled hole.



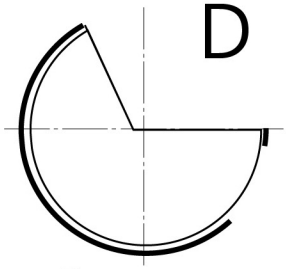
Type G

Suitable for all materials.



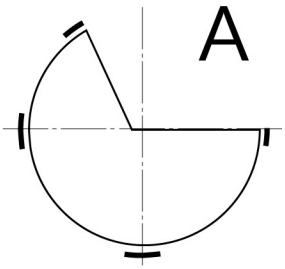
Type C

Suitable for stainless and difficult machining material.
Outstanding surface quality.



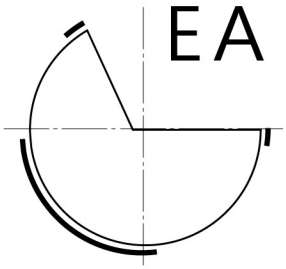
Type D

Suitable for cast iron and graphite.



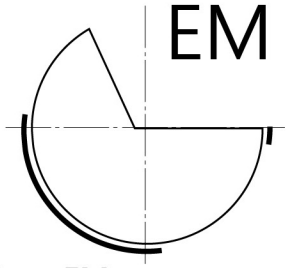
Type A

Suitable for Aluminum.
Narrow tolerance and great surface quality.



Type EA

Suitable for unfavourable cutting conditions of steel and aluminum.



Type EM

Suitable for steel, cast iron and soft materials.

Cutting parameters

Important: Feed should be reduced at start, exit and crosse.

Materials group	Structural steel, Carbon steel, Case hardening steel, Low alloyed steel	Alloyed tempered steels, case-hardened steels, nitriding steels, tool steels	Spring steels, hardened steels, high-tem- perature steels, cast steel / chilled cast iron, Special alloys, e.g. Nimonic, Inconel, titanium, titanium alloys	Stainless, acid-resistant steel + cast steel, austenitic 18-25% Cr, Ni > 8%	Stainless steel + cast steel, martensitic/ ferritic 13-25% Cr (sulphurated)
	(< 900N/mm2)	(> 900N/mm2)			
Cutting speed	70-100 m/min	60-80 m/min	25-60 m/min	30-60 m/min	40-70 m/min
Drill-Ø in mm	Feed in mm				
from - to	from - to	from - to	from - to	from - to	from - to
1,85-2,49	0,003-0,007	0,002-0,005	0,001-0,002	0,002-0,005	0,002-0,006
2,50-2,99	0,005-0,010	0,004-0,006	0,001-0,005	0,004-0,007	0,004-0,007
3,00-3,49	0,007-0,013	0,005-0,007	0,002-0,007	0,006-0,008	0,005-0,009
3,50-3,99	0,009-0,015	0,007-0,010	0,004-0,008	0,008-0,009	0,007-0,011
4,00-4,49	0,012-0,019	0,008-0,012	0,006-0,009	0,009-0,010	0,008-0,013
4,50-4,99	0,014-0,020	0,011-0,015	0,008-0,011	0,010-0,013	0,009-0,017
5,00-5,99	0,016-0,026	0,013-0,018	0,010-0,014	0,012-0,015	0,013-0,019
6,00-6,99	0,018-0,028	0,015-0,022	0,012-0,016	0,014-0,017	0,015-0,023
7,00-7,99	0,021-0,035	0,018-0,025	0,015-0,018	0,016-0,019	0,018-0,026
8,00-8,99	0,024-0,036	0,020-0,027	0,018-0,021	0,018-0,021	0,020-0,031
9,00-9,99	0,027-0,040	0,023-0,030	0,021-0,025	0,020-0,028	0,023-0,034
10,00-11,99	0,030-0,049	0,025-0,038	0,024-0,030	0,025-0,033	0,025-0,041
12,00-13,99	0,036-0,060	0,029-0,044	0,027-0,033	0,030-0,038	0,030-0,045
14,00-15,99	0,042-0,071	0,035-0,050	0,029-0,040	0,035-0,044	0,035-0,052
16,00-17,99	0,048-0,079	0,039-0,053	0,033-0,044	0,041-0,050	0,042-0,060
18,00-19,99	0,054-0,091	0,044-0,060	0,037-0,049	0,045-0,062	0,045-0,067
20,00-23,99	0,060-0,107	0,046-0,069	0,041-0,054	0,049-0,071	0,050-0,079
24,00-27,99	0,069-0,117	0,054-0,077	0,045-0,057	0,052-0,083	0,054-0,090
28,00-31,99	0,079-0,134	0,059-0,085	0,049-0,062	0,057-0,091	0,059-0,098
32,00-39.99	0,085-0,154	0,063-0,098	0,052-0,065	0,063-0,098	0,065-0,107
40,00-50,00	0,091-0,169	0,068-0,105	0,055-0,069	0,068-0,105	0,071-0,113

Cutting parameters

Important: Feed should be reduced at start, exit and crosses.

Materials group	Cast iron, grey cast iron (> 300N/mm2), ductile cast iron (> 400N/mm2), general steel casting	Cast iron, grey cast iron (< 300N/mm2), ductile cast iron (< 400N/mm2), malleable cast iron, whiteheart malleab- le iron, blackheart malleable iron	Copper, bronze, brass, plastics	Aluminium + cast aluminium Si content > 5% „good processable"	Aluminium + aluminium alloy< 5% „not hardened"
Cutting speed	60-90 m/min	70-100 m/min	70-100 m/min	80-160 m/min	100-300 m/min
Drill-Ø in mm	Feed in mm				
1,82-2,49	0,005-0,018	0,005-0,019	0,003-0,015	0,002-0,012	0,002-0,005
2,50-2,99	0,008-0,028	0,008-0,026	0,005-0,020	0,004-0,026	0,004-0,008
3,00-3,49	0,009-0,038	0,009-0,038	0,006-0,030	0,006-0,037	0,006-0,012
3,50-3,99	0,011-0,042	0,011-0,046	0,007-0,045	0,007-0,055	0,007-0,025
4,00-4,49	0,012-0,047	0,012-0,050	0,008-0,050	0,008-0,071	0,008-0,026
4,50-4,99	0,016-0,052	0,016-0,057	0,009-0,057	0,009-0,094	0,009-0,028
5,00-5,99	0,018-0,065	0,018-0,068	0,010-0,069	0,010-0,109	0,010-0,036
6,00-6,99	0,024-0,071	0,024-0,074	0,012-0,079	0,012-0,125	0,012-0,045
7,00-7,99	0,028-0,084	0,028-0,085	0,014-0,092	0,018-0,130	0,014-0,049
8,00-8,99	0,032-0,092	0,032-0,096	0,016-0,101	0,020-0,144	0,016-0,056
9,00-9,99	0,036-0,110	0,036-0,114	0,018-0,113	0,023-0,158	0,018-0,064
10,00-11,99	0,045-0,116	0,050-0,120	0,020-0,139	0,025-0,174	0,020-0,074
12,00-13,99	0,051-0,126	0,060-0,138	0,024-0,156	0,030-0,182	0,024-0,087
14,00-15,99	0,057-0,138	0,070-0,154	0,028-0,179	0,035-0,194	0,028-0,099
16,00-17,99	0,062-0,158	0,079-0,170	0,033-0,199	0,050-0,209	0,033-0,108
18,00-19,99	0,066-0,173	0,090-0,191	0,036-0,224	0,054-0,228	0,036-0,130
20,00-23,99	0,069-0,189	0,106-0,207	0,040-0,249	0,060-0,254	0,040-0,146
24,00-27,99	0,076-0,210	0,120-0,221	0,048-0,291	0,072-0,295	0,048-0,169
28,00-31,99	0,079-0,212	0,140-0,237	0,056-0,327	0,084-0,360	0,056-0,194
32,00-39,99	0,086-0,228	0,160-0,245	0,064-0,380	0,096-0,455	0,064-0,221
40,00-50,00	0,089-0,239	0,180-0,254	0,072-0,399	0,105-0,488	0,072-0,239

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