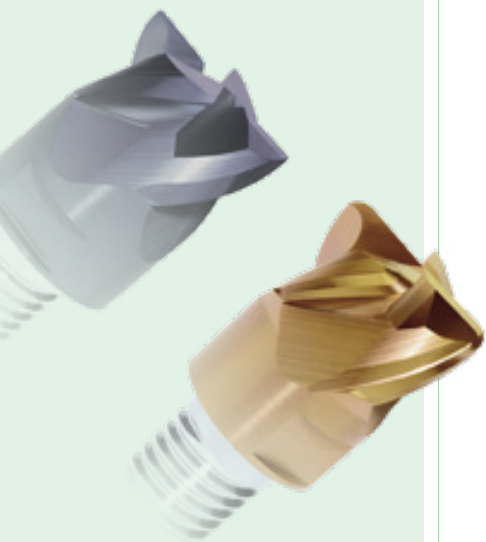


Interchangeable
modular endmills



Interchangeable modular endmills

Interchangeable modular endmills charts	E436
Code key of interchangeable modular endmills	E437
PM series interchangeable modular endmills	E440-E442
HMX Series Interchangeable modular endmills	E443-E445
VPM series interchangeable modular endmills	E446
Interchangeable straight shank	E447
Recommended cutting parameters for interchangeable modular endmills	E448-E450
Technical information for interchangeable modular endmills	E451



Product overview of interchangeable modular endmills

• PM Series--High Performance for Universal Purpose Machining

4E ▶ E440



2B ▶ E441



4B ▶ E441



4R ▶ E442



• HMX Series--High Performance for Hardened Materials Machining

4E ▶ E443



2B ▶ E444



4B ▶ E444



4R ▶ E445

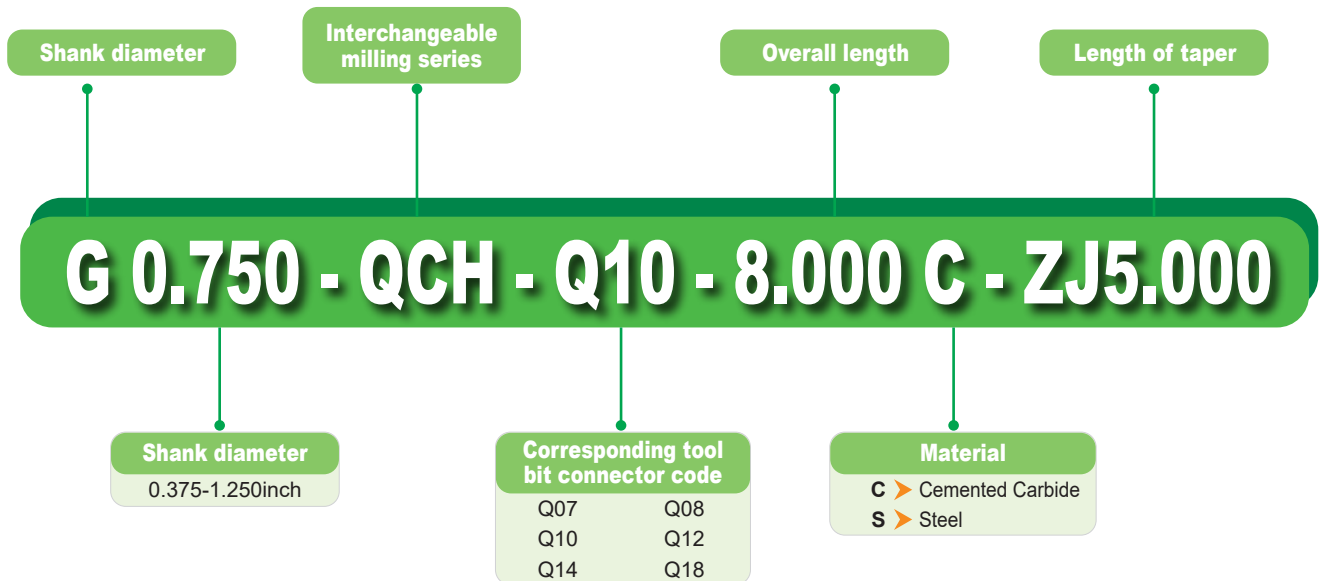


• VPM Series--Unequal Pitch & Helical Angle with High Performance for Universal Purpose Machining

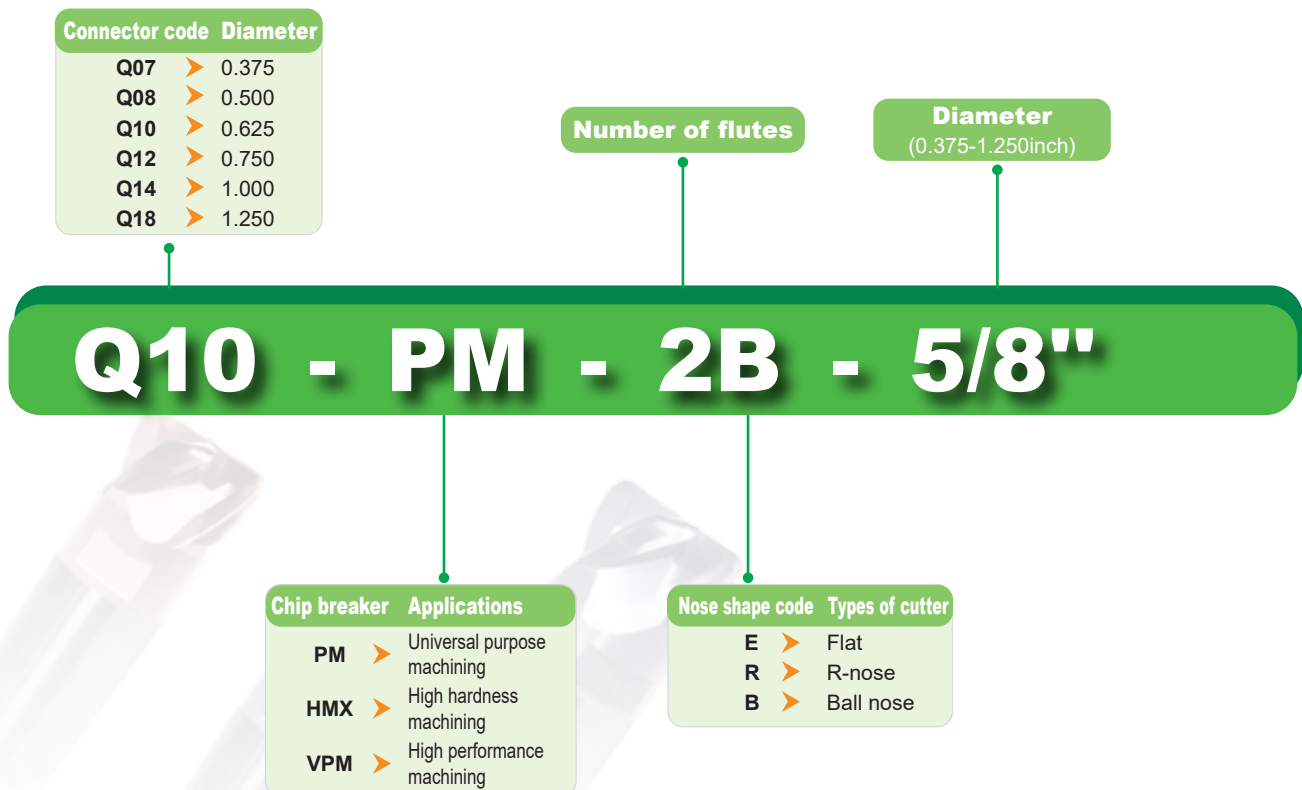
4E ▶ E446



Shank of interchangeable modular endmills



Interchangeable milling head



Interchangeable modular endmills

New series of interchangeable modular endmills combine the advantages of both solid carbide endmills and indexable toolholders to achieve high-precision, high-rigidity, and high-efficiency machining.

- Solid carbide cutting head with high precision and consistency;
- The self-centering screw thread ensures the quick replacement, high security and high strength;
- Double positioning from both radial and axial direction guarantees the high rigidity, high stability and high-precision coupling;
- Quick mounting on the machine tool would reduce the non-cutting time, which would significantly increase the productivity;
- Three cutting solid carbide head series can share the shanks with the indexable inserts type interchangeable series, which as a result can satisfy face milling, slot milling, shoulder milling, profile milling, ramping and plunging from roughing to finishing different working conditions.

Good rigidity, longer tool life

Workpiece material: NAK80(HRC40)

Machining methods: profile milling

Interchangeable head: Q10-PM-2B-5/8"

Toolholder: G0.625-QCH-Q10-5.625C

Cutting method: down milling, wet cut

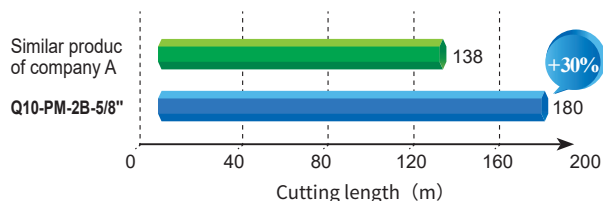
Machining requirement: $Ra \leq 0.6\mu m$,

When $Ra > 0.6\mu m$ tool failure.

Machine tool: vertical Machining Center

Cutting parameters: $V_c=800\text{SFPM}$, $f_z=0.002\text{inch/z}$,

$a_p=0.02\text{inch}$, $a_e=0.02\text{inch}$



Result: The interchangeable modular endmills has good rigidity and anti-vibration performance. Comparing with the similar product from company A, it has longer tool life and better efficiency.

Interchangeable shank

Steel shank and carbide shank are available for long overhang, high feed rate and other working conditions.

Screw thread

The screw thread has sufficient surface contact with the curved surface with high precision, which provides outstanding precision performance and stability.

High-precision positioning surface

Assurance of the perfect combination of the shank and cutting heads

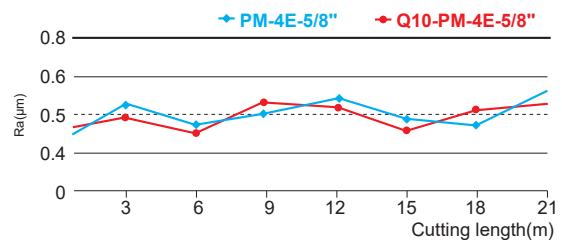
Tungsten carbide interchangeable cutting heads

Flattened endmills, Ball endmills and Radius endmills



High-precision and extraordinary surface quality

Workpiece material: 718H(HRC35)
Machining methods: side milling
Interchangeable head: Q10-PM-4E-5/8"
Toolholder: G0.625-QCH-Q10-4.375C
Cutting method: down milling and wet cut
Machine tool: vertical machining center
Cutting parameters: $V_c=650\text{SFPM}$, $f_z=0.002\text{inch/z}$,
 $a_p=0.315\text{inch}$, $a_e=0.016\text{inch}$

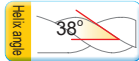
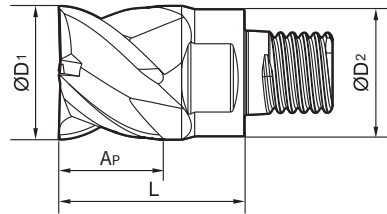


New series of interchangeable modular endmills with high precision and surface quality, which has almost the same performance as the solid carbide endmills.



4-flute unequal pitch flattened end mills

PM-4E



D	D ₁ ≤ 0.472	0-0.0008
	D ₁ > 0.472	0-0.0012



Specification	Basic dimension(inch)				Interface type (MD)	No.of teeth	Nose chamfer	Helical angle
	ØD ₁	ØD ₂	L	A _p				
Q07-PM-4E-3/8"	0.375	0.356	0.531	0.216	Q07	4	0.004"×45°	38°
Q08-PM-4E-1/2"	0.500	0.479	0.669	0.275	Q08	4	0.004"×45°	38°
Q10-PM-4E-5/8"	0.625	0.594	0.846	0.354	Q10	4	0.004"×45°	38°
Q12-PM-4E-3/4"	0.750	0.713	1.003	0.433	Q12	4	0.006"×45°	38°
Q14-PM-4E-1"	1.000	0.960	1.240	0.531	Q14	4	0.006"×45°	38°
Q18-PM-4E-5/4"	1.250	1.172	1.417	0.669	Q18	4	0.006"×45°	38°

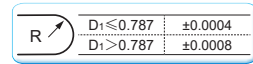
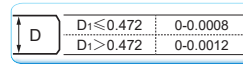
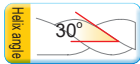
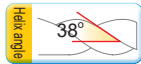
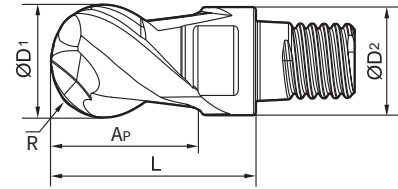
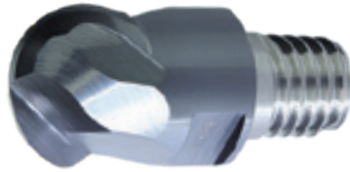
Note

1. Different ap, pitch and radius from the above table can be customized.



2/4-flute ball nose end mills

PM-2B/4B



Specification	Basic dimension (inch)					Interface type (MD)	No. of teeth	Helical angle
	ØD ₁	ØD ₂	L	A _p	R			
Q07-PM-2B-3/8"	0.375	0.356	0.531	0.216	0.188	Q07	2	38°
Q07-PM-4B-3/8"	0.375	0.356	0.531	0.216	0.188		4	30°
Q08-PM-2B-1/2"	0.500	0.479	0.669	0.275	0.250	Q08	2	38°
Q08-PM-4B-1/2"	0.500	0.479	0.669	0.275	0.250		4	30°
Q10-PM-2B-5/8"	0.625	0.594	0.846	0.354	0.313	Q10	2	38°
Q10-PM-4B-5/8"	0.625	0.594	0.846	0.354	0.313		4	30°
Q12-PM-2B-3/4"	0.750	0.713	1.003	0.433	0.375	Q12	2	38°
Q12-PM-4B-3/4"	0.750	0.713	1.003	0.433	0.375		4	30°
Q14-PM-2B-1"	1.000	0.960	1.240	0.531	0.500	Q14	2	38°
Q14-PM-4B-1"	1.000	0.960	1.240	0.531	0.500		4	30°
Q18-PM-2B-5/4"	1.250	1.172	1.417	0.669	0.628	Q18	2	38°
Q18-PM-4B-5/4"	1.250	1.172	1.417	0.669	0.625		4	30°

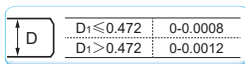
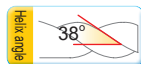
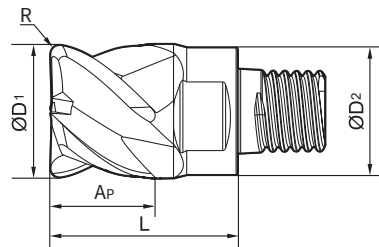
Note

1. Different ap, pitch and radius from the above table can be customized.



4-flute R end mills

PM-4R



Specification	Basic dimension (inch)					Interface type (MD)	No. of teeth	Helical angle
	ØD1	ØD2	L	Ap	R			
Q07-PM-4R-3/8"R012	0.375	0.356	0.531	0.216	0.012	Q07	4	38°
Q07-PM-4R-3/8"R020	0.375	0.356	0.531	0.216	0.020	Q07	4	38°
Q07-PM-4R-3/8"R040	0.375	0.356	0.531	0.216	0.040	Q07	4	38°
Q07-PM-4R-3/8"R060	0.375	0.356	0.531	0.216	0.060	Q07	4	38°
Q08-PM-4R-1/2"R012	0.050	0.479	0.669	0.275	0.012	Q08	4	38°
Q08-PM-4R-1/2"R020	0.050	0.479	0.669	0.275	0.020	Q08	4	38°
Q08-PM-4R-1/2"R040	0.050	0.479	0.669	0.275	0.040	Q08	4	38°
Q08-PM-4R-1/2"R060	0.050	0.479	0.669	0.275	0.060	Q08	4	38°
Q08-PM-4R-1/2"R080	0.050	0.479	0.669	0.275	0.080	Q08	4	38°
Q10-PM-4R-5/8"R020	0.625	0.594	0.846	0.354	0.020	Q10	4	38°
Q10-PM-4R-5/8"R040	0.625	0.594	0.846	0.354	0.040	Q10	4	38°
Q10-PM-4R-5/8"R060	0.625	0.594	0.846	0.354	0.060	Q10	4	38°
Q10-PM-4R-5/8"R080	0.625	0.594	0.846	0.354	0.080	Q10	4	38°
Q10-PM-4R-5/8"R120	0.625	0.594	0.846	0.354	0.120	Q10	4	38°
Q12-PM-4R-3/4"R040	0.750	0.713	1.003	0.433	0.040	Q12	4	38°
Q12-PM-4R-3/4"R060	0.750	0.713	1.003	0.433	0.060	Q12	4	38°
Q12-PM-4R-3/4"R080	0.750	0.713	1.003	0.433	0.080	Q12	4	38°
Q12-PM-4R-3/4"R120	0.750	0.713	1.003	0.433	0.120	Q12	4	38°
Q14-PM-4R-1"R060	1.000	0.960	1.240	0.531	0.060	Q14	4	38°
Q14-PM-4R-1"R080	1.000	0.960	1.240	0.531	0.080	Q14	4	38°
Q14-PM-4R-1"R100	1.000	0.960	1.240	0.531	0.100	Q14	4	38°
Q14-PM-4R-1"R120	1.000	0.960	1.240	0.531	0.120	Q14	4	38°
Q18-PM-4R-5/4"R080	1.250	1.172	1.417	0.669	0.080	Q18	4	38°
Q18-PM-4R-5/4"R100	1.250	1.172	1.417	0.669	0.100	Q18	4	38°
Q18-PM-4R-5/4"R120	1.250	1.172	1.417	0.669	0.120	Q18	4	38°
Q18-PM-4R-5/4"R160	1.250	1.172	1.417	0.669	0.160	Q18	4	38°

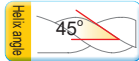
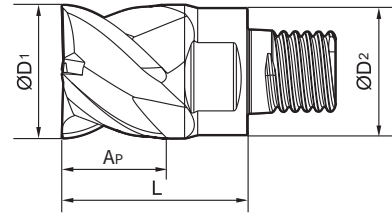
Note

1. Different ap, pitch and radius from the above table can be customized.



4-flute unequal pitch flattened end mills

HMX-4E



D	$D_1 \leq 0.472$	0-0.0008
	$D_1 > 0.472$	0-0.0012



Specification	Basic dimension (inch)				Interface type (MD)	No. of teeth	Nose chamfer	Helical angle
	ØD ₁	ØD ₂	L	A _p				
Q07-HMX-4E-3/8"	0.375	0.356	0.531	0.216	Q07	4	0.004"×45°	45°
Q08-HMX-4E-1/2"	0.500	0.479	0.669	0.275	Q08	4	0.004"×45°	45°
Q10-HMX-4E-5/8"	0.625	0.594	0.846	0.354	Q10	4	0.004"×45°	45°
Q12-HMX-4E-3/4"	0.750	0.713	1.003	0.433	Q12	4	0.006"×45°	45°
Q14-HMX-4E-1"	1.000	0.960	1.240	0.531	Q14	4	0.006"×45°	45°
Q18-HMX-4E-1-5/4"	1.250	1.172	1.417	0.669	Q18	4	0.006"×45°	45°

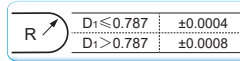
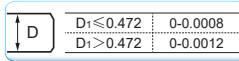
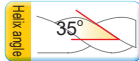
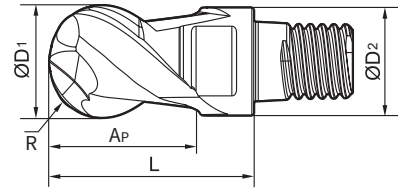
Note

1. Different ap, pitch and radius from the above table can be customized.



2/4-flute ball nose end mills

HMX-2B/4B



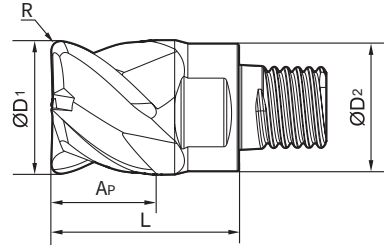
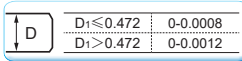
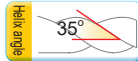
Specification	Basic dimension(inch)					Interface type (MD)	No.of teeth	Helical angle
	ØD ₁	ØD ₂	L	A _p	R			
Q07-HMX-2B-3/8"	0.375	0.356	0.531	0.216	0.188	Q07	2	35°
Q07-HMX-4B-3/8"	0.375	0.356	0.531	0.216	0.188		4	35°
Q08-HMX-2B-1/2"	0.500	0.479	0.669	0.275	0.250	Q08	2	35°
Q08-HMX-4B-1/2"	0.500	0.479	0.669	0.275	0.250		4	35°
Q10-HMX-2B-5/8"	0.625	0.594	0.846	0.354	0.313	Q10	2	35°
Q10-HMX-4B-5/8"	0.625	0.594	0.846	0.354	0.313		4	35°
Q12-HMX-2B-3/4"	0.750	0.713	1.003	0.433	0.375	Q12	2	35°
Q12-HMX-4B-3/4"	0.750	0.713	1.003	0.433	0.375		4	35°
Q14-HMX-2B-1"	1.000	0.960	1.240	0.531	0.500	Q14	2	35°
Q14-HMX-4B-1"	1.000	0.960	1.240	0.531	0.500		4	35°
Q18-HMX-2B-1-5/4"	1.250	1.172	1.417	0.669	0.628	Q18	2	35°
Q18-HMX-4B-1-5/4"	1.250	1.172	1.417	0.669	0.625		4	35°

Note

1. Different ap, pitch and radius from the above table can be customized.

4-flute R end mills

HMX-4R



Specification	Basic dimension (inch)					Interface type (MD)	No. of teeth	Helical angle
	ØD1	ØD2	L	Ap	R			
Q07-HMX-4R-3/8"R012	0.375	0.356	0.531	0.216	0.012	Q07	4	35°
Q07-HMX-4R-3/8"R020	0.375	0.356	0.531	0.216	0.020	Q07	4	35°
Q07-HMX-4R-3/8"R040	0.375	0.356	0.531	0.216	0.040	Q07	4	35°
Q07-HMX-4R-3/8"R060	0.375	0.356	0.531	0.216	0.060	Q07	4	35°
Q08-HMX-4R-1/2"R012	0.050	0.479	0.669	0.275	0.012	Q08	4	35°
Q08-HMX-4R-1/2"R020	0.050	0.479	0.669	0.275	0.020	Q08	4	35°
Q08-HMX-4R-1/2"R040	0.050	0.479	0.669	0.275	0.040	Q08	4	35°
Q08-HMX-4R-1/2"R060	0.050	0.479	0.669	0.275	0.060	Q08	4	35°
Q08-HMX-4R-1/2"R080	0.050	0.479	0.669	0.275	0.080	Q08	4	35°
Q10-HMX-4R-5/8"R020	0.625	0.594	0.846	0.354	0.020	Q10	4	35°
Q10-HMX-4R-5/8"R040	0.625	0.594	0.846	0.354	0.040	Q10	4	35°
Q10-HMX-4R-5/8"R060	0.625	0.594	0.846	0.354	0.060	Q10	4	35°
Q10-HMX-4R-5/8"R080	0.625	0.594	0.846	0.354	0.080	Q10	4	35°
Q10-HMX-4R-5/8"R120	0.625	0.594	0.846	0.354	0.120	Q10	4	35°
Q12-HMX-4R-3/4"R040	0.750	0.713	1.003	0.433	0.040	Q12	4	35°
Q12-HMX-4R-3/4"R060	0.750	0.713	1.003	0.433	0.060	Q12	4	35°
Q12-HMX-4R-3/4"R080	0.750	0.713	1.003	0.433	0.080	Q12	4	35°
Q12-HMX-4R-3/4"R120	0.750	0.713	1.003	0.433	0.120	Q12	4	35°
Q14-HMX-4R-1"R060	1.000	0.960	1.240	0.531	0.060	Q14	4	35°
Q14-HMX-4R-1"R080	1.000	0.960	1.240	0.531	0.080	Q14	4	35°
Q14-HMX-4R-1"R100	1.000	0.960	1.240	0.531	0.100	Q14	4	35°
Q14-HMX-4R-1"R120	1.000	0.960	1.240	0.531	0.120	Q14	4	35°
Q18-HMX-4R-5/4"R080	1.250	1.172	1.417	0.669	0.080	Q18	4	35°
Q18-HMX-4R-5/4"R100	1.250	1.172	1.417	0.669	0.100	Q18	4	35°
Q18-HMX-4R-5/4"R120	1.250	1.172	1.417	0.669	0.120	Q18	4	35°
Q18-HMX-4R-5/4"R160	1.250	1.172	1.417	0.669	0.160	Q18	4	35°

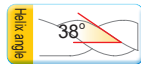
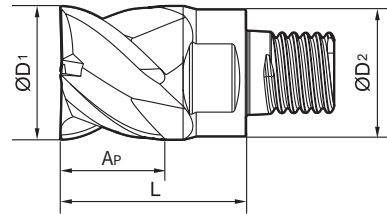
Note

1. Different ap, pitch and radius from the above table can be customized.



4-flute unequal pitch flattened end mills

VPM-4E



D	D ₁ ≤ 0.472	0-0.0008
	D ₁ > 0.472	0-0.0012



Specification	Basic dimension(inch)				Interface type (MD)	No. of teeth	Nose chamfer
	ØD ₁	ØD ₂	L	A _p			
Q07-VPM-4E-3/8"	0.375	0.356	0.531	0.216	Q07	4	0.002"×45°
Q08-VPM-4E-1/2"	0.500	0.479	0.669	0.275	Q08	4	0.004"×45°
Q10-VPM-4E-5/8"	0.625	0.594	0.846	0.354	Q10	4	0.004"×45°
Q12-VPM-4E-3/4"	0.750	0.713	1.003	0.433	Q12	4	0.004"×45°
Q14-VPM-4E-1"	1.000	0.960	1.240	0.531	Q14	4	0.004"×45°
Q18-VPM-4E-5/4"	1.250	1.172	1.417	0.669	Q18	4	0.004"×45°

Note

1. Different ap, pitch and radius from the above table can be customized.

Round shanks of interchangeable modular milling tools

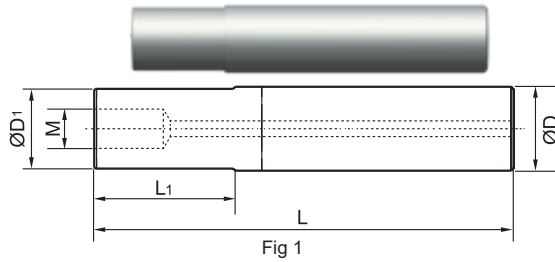


Fig 1

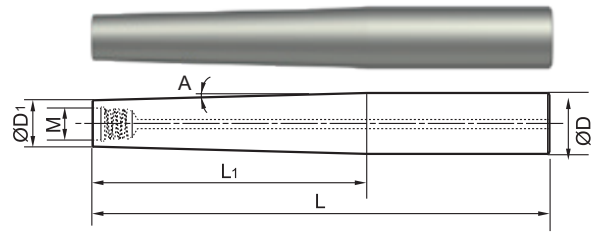


Fig 2

h6	0.500 ≤ D4 ≤ 0.625	0.750 ≤ D4 ≤ 1.000	1.000 ≤ D4 ≤ 1.250
	0-0.0004	0-0.0005	0-0.0006

Connector (MD)	Specification	Basic diminsion(inch)				Material	Fig
		L	L ₁	D	D ₁		
Q07	G0.375-QCH-Q07-2.250S	2.250	0.250	0.375	0.356	Steel	1
	G0.375-QCH-Q07-2.625S	2.625	0.625				
	G0.375-QCH-Q07-3.000S	3.000	1.000				
	G0.375-QCH-Q07-2.250C	2.250	0.250			Solid Carbide	
	G0.375-QCH-Q07-3.625C	3.625	0.625				
	G0.375-QCH-Q07-3.375C	3.375	1.375				
	G0.375-QCH-Q07-4.250C	4.250	2.250				
	G0.375-QCH-Q07-5.000C	5.000	3.000				
	G0.375-QCH-Q07-5.750C	5.750	3.750				
G0.500-QCH-Q07-4.750C-ZJ2.750	4.750	2.750	0.500		2		
Q08	G0.500-QCH-Q08-2.375S	2.375	0.375	0.500	0.479	Steel	1
	G0.500-QCH-Q08-2.750S	2.750	0.750				
	G0.500-QCH-Q08-3.250S	3.250	1.250				
	G0.500-QCH-Q08-2.375C	2.375	0.375			Solid Carbide	
	G0.500-QCH-Q08-2.750C	2.750	0.750				
	G0.500-QCH-Q08-3.750C	3.750	1.750				
	G0.500-QCH-Q08-4.750C	4.750	2.750				
	G0.500-QCH-Q08-5.625C	5.625	3.625				
	G0.500-QCH-Q08-6.625C	6.625	4.625				
	G0.625-QCH-Q08-2.500S	2.500	0.500	0.625	Steel		
G0.625-QCH-Q08-5.500C-ZJ3.500	5.500	3.500	Solid Carbide		2		
Q10	G0.625-QCH-Q10-2.500S	2.500	0.500	0.625	0.594	Steel	1
	G0.625-QCH-Q10-3.125S	3.125	1.125				
	G0.625-QCH-Q10-3.750S	3.750	1.750				
	G0.625-QCH-Q10-2.500C	2.500	0.500			Solid Carbide	
	G0.625-QCH-Q10-3.125C	3.125	1.125				
	G0.625-QCH-Q10-4.375C	4.375	2.375				
	G0.625-QCH-Q10-5.625C	5.625	3.625				
	G0.625-QCH-Q10-6.875C	6.875	4.875				
	G0.625-QCH-Q10-8.125C	8.125	6.125				
	G0.750-QCH-Q10-2.500S	2.500	0.500	0.750	Steel		
G0.750-QCH-Q10-8.000C-ZJ5.000	8.000	5.000	Solid Carbide		2		

Connector (MD)	Specification	Basic dimension(inch)				Material	Fig
		L	L ₁	D	D ₁		
Q12	G0.750-QCH-Q12-3.125S	3.125	0.625	0.750	0.713	Steel	1
	G0.750-QCH-Q12-3.875S	3.875	1.375				
	G0.750-QCH-Q12-4.750S	4.750	2.250				
	G0.750-QCH-Q12-3.125C	3.125	0.625			Solid Carbide	
	G0.750-QCH-Q12-3.875C	3.875	1.375				
	G0.750-QCH-Q12-3.500C	3.500	3.000				
	G0.750-QCH-Q12-6.125C	6.125	4.625				
	G0.750-QCH-Q12-8.625C	8.625	6.125				
	G0.750-QCH-Q12-10.250C	10.250	7.750	Steel			
	G1.000-QCH-Q12-3.500S	3.500	0.500		Solid Carbide		
G1.000-QCH-Q12-10.500C-ZJ7.500	10.500	7.500	1.000	2			
Q14	G1.000-QCH-Q14-3.750S	3.750	0.750	1.000	0.960	Steel	1
	G1.000-QCH-Q14-4.750S	4.750	1.750				
	G1.000-QCH-Q14-5.750S	5.750	2.750				
	G1.000-QCH-Q14-3.750C	3.750	0.750			Solid Carbide	
	G1.000-QCH-Q14-4.750C	4.750	1.750				
	G1.000-QCH-Q14-6.750C	6.750	3.750				
	G1.000-QCH-Q14-8.750C	8.750	5.750				
	G1.000-QCH-Q14-10.750C	10.750	7.750				
	G1.000-QCH-Q14-12.625	12.625	9.625	Steel			
	G1.250-QCH-Q14-3.500S	3.500	0.500		Solid Carbide		
G1.250-QCH-Q14-10.500C-ZJ7.500	10.500	7.500	1.250	2			
Q18	G1.250-QCH-Q18-4.125S	4.125	1.125	1.250	1.172	Steel	1
	G1.250-QCH-Q18-5.375S	5.375	2.375				
	G1.250-QCH-Q18-6.625S	6.625	3.625				
	G1.250-QCH-Q18-4.125C	4.125	1.125			Solid Carbide	
	G1.250-QCH-Q18-5.375C	5.375	2.375				
	G1.250-QCH-Q18-8.000C	8.000	5.000				
	G1.250-QCH-Q18-10.500C	10.500	7.500				
	G1.250-QCH-Q18-13.000C	13.000	10.000				
	G1.250-QCH-Q18-15.500C	15.500	12.500				

**PM-4E★PM-2B★PM-4B★PM-4R**

● Recommended cutting speed

Workpiece material Cutting speed Vc	P	M	K	N	S	H
Vc (SFPM)	220 ~ 900	200 ~ 500	250 ~ 900	860 ~ 2700	60 ~ 220	100 ~ 250

● Cutting parameters: (inch)

Machining methods Shank diameter	Slotting			Side, Face milling			Profiling		
	f _z (inch/z)	Cutting width a _e	Cutting depth a _p	f _z (inch/z)	Cutting width a _e	Cutting depth a _p	f _z (inch/z)	Cutting width a _e	Cutting depth a _p
1/2"	0.002~0.004	1D	0.1 ~ 0.5D	0.001~0.004	0.03~ 0.05D	0.1 ~ 0.5D	0.001~0.004	0.1 ~ 0.3R	0.05 ~ 0.15R
5/8"	0.002~0.005			0.002~0.005			0.002~0.005		
3/4"	0.002~0.006			0.002~0.007			0.002~0.007		
1"	0.002~0.006			0.002~0.007			0.002~0.007		
5/4"	0.002~0.007			0.002~0.009			0.002~0.009		

● Adjustments of the cutting parameters for different xD shanks

Cutting parameters Overhang xD	Cutting speed (%)	Feed rate (%)	Cutting width (%)
2	100	100	100
3	100	100	100
4	80	90	70
5	60	80	40
7	30	60	20
9	20	50	10

HMX-4E★HMX-2B★HMX-4B★HMX-4R

● Recommended cutting speed

Workpiece material Cutting speed Vc	H (40 - 50HRC)	H (50 - 60HRC)	H (60 - 68HRC)
Vc (SFPM)	850 ~ 1000	500 ~ 700	300 ~ 600

● Cutting parameters: (inch)

Machining methods Shank diameter	Side, Face milling			Profiling		
	f _z (inch/z)	Cutting width a _e	Cutting depth a _p	f _z (inch/z)	Cutting width a _e	Cutting depth a _p
1/2"	0.001~0.003	0.02 ~ 0.05D	0.1 ~ 0.5D	0.002~0.006	0.3R	0.1R
5/8"	0.001~0.003			0.003~0.007	0.35R	0.1R
3/4"	0.002~0.003			0.004~0.009	0.4R	0.1R
1"	0.002~0.003			0.005~0.010	0.5R	0.12R
5/4"	0.002~0.004			0.006~0.012	0.6R	0.12R

● Adjustments of the cutting parameters for different xD shanks

Cutting parameters Overhang xD	Cutting speed (%)	Feed rate (%)	Cutting width (%)
2	100	100	100
3	100	100	100
4	80	90	70
5	60	80	40
7	30	60	20
9	20	50	10

**VPM-4E★VPM-4R**

● Recommended cutting speed

Workpiece material Cutting speed Vc	P	M	K	N	S	H
Vc (SFPM)	220 ~ 900	200 ~ 500	250 ~ 900	860 ~ 2700	60 ~ 220	100 ~ 250

● Cutting parameters: (inch)

Machining methods Shank diameter	Slotting			Side, Face milling			Profiling		
	f _z (inch/z)	Cutting width a _e	Cutting depth a _p	f _z (inch/z)	Cutting width a _e	Cutting depth a _p	f _z (inch/z)	Cutting width a _e	Cutting depth a _p
1/2"	0.002~0.004	1D	0.1 ~ 0.5D	0.001~0.004	0.03~ 0.05D	0.1 ~ 0.5D	0.001~0.004	0.1 ~ 0.3R	0.05 ~ 0.15R
5/8"	0.002~0.005			0.002~0.005			0.002~0.005		
3/4"	0.002~0.006			0.002~0.007			0.002~0.007		
1"	0.002~0.006			0.002~0.007			0.002~0.007		
5/4"	0.002~0.007			0.002~0.009			0.002~0.009		

● Adjustments of the cutting parameters for different xD shanks

Cutting parameters Overhang xD	Cutting speed (%)	Feed rate (%)	Cutting width (%)
2	100	100	100
3	100	100	100
4	80	90	70
5	60	80	40
7	30	60	20
9	20	50	10

● Tolerance of shank (inch)

Diameter (inch)	0.375	0.500/0.625	0.750	1.000	1.125
radial runout	0.0004	0.0006	0.0006	0.0008	0.0008
total runout	0.0004	0.0004	0.0004	0.0004	0.0004

● Wrench

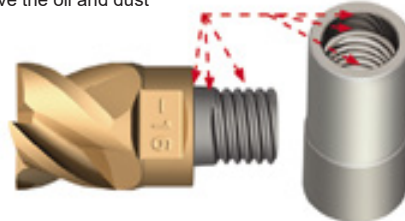
	Interface type	Applicative series	Wrench specifications	Installation torque
	Q08	PM/HMX	QCH-10×13	16N.M
	Q10			20N.M
	Q12		QCH-16×20	30N.M
	Q14	PM/HMX		40N.M
	Q18	PM/HMX	QCH-26	50N.M
	Q07	XM	QCH-5×6.5	10N.M
	Q08			16N.M
	Q07	PM/HMX	QCH-7.5×8	10N.M
	Q10	XM		20N.M

The wrench need to be purchased separately

Cutting head installation instructions

- 1. Use the clean cotton to remove the oil and dust on the interface cone, end face, and threads.
- 2. Direct hand contact with the cutting edges during clamping may cause injury. Please handle with protective equipment.
- 3. After installing the cutting head, if there is a gap between the cutting head and the end face of the shank, please use the wrench to tighten it until it fits completely.
- 4. The strict requirement is a torque should be used to install the cutting head.

Remove the oil and dust



Gap

No gap