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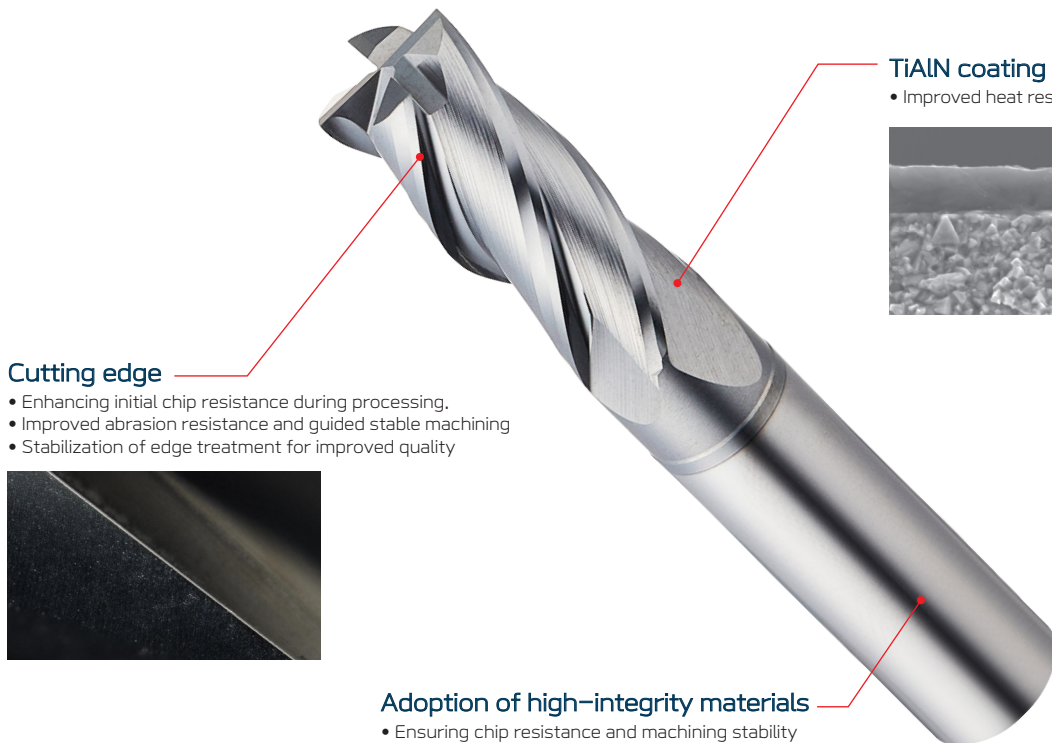
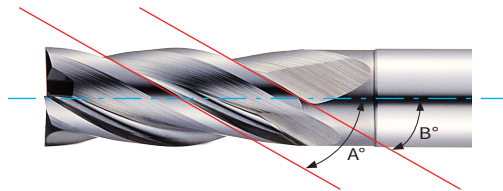
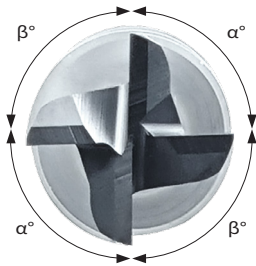
Q-WING SERIES



Q-WING ENDMILL

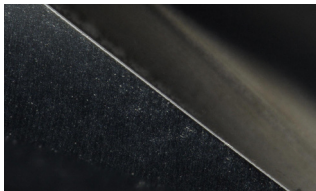
■ Characteristics

1. Implementing variable helix, index on the general purpose endmill achieved more stable machinability
2. Ensured high machinability and reduced vibration through the variable helix in the cutting edge
3. Providing excellent finish on machined surfaces, applying TiAlN Coating
4. Providing customer convenience by various line up of specifications commonly used in milling processes.



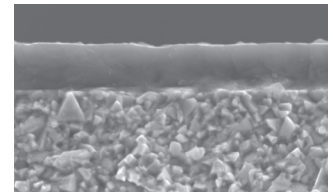
Cutting edge

- Enhancing initial chip resistance during processing.
- Improved abrasion resistance and guided stable machining
- Stabilization of edge treatment for improved quality



TiAlN coating

- Improved heat resistance

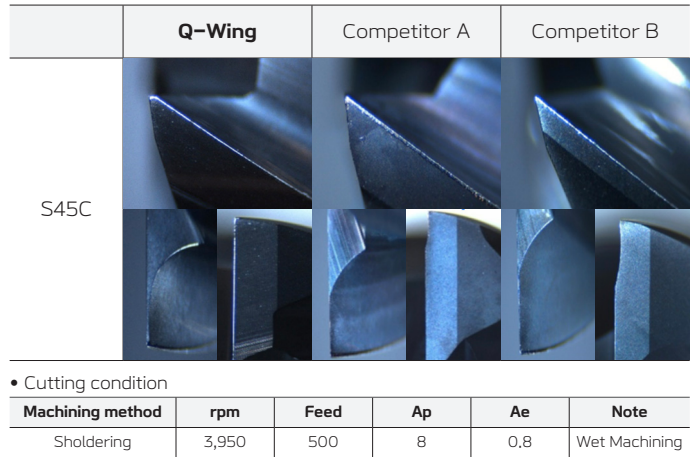
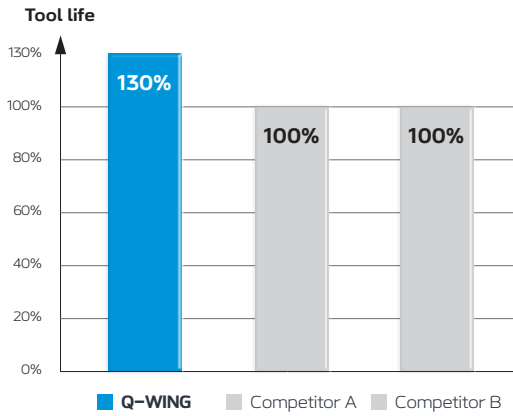


Adoption of high-integrity materials

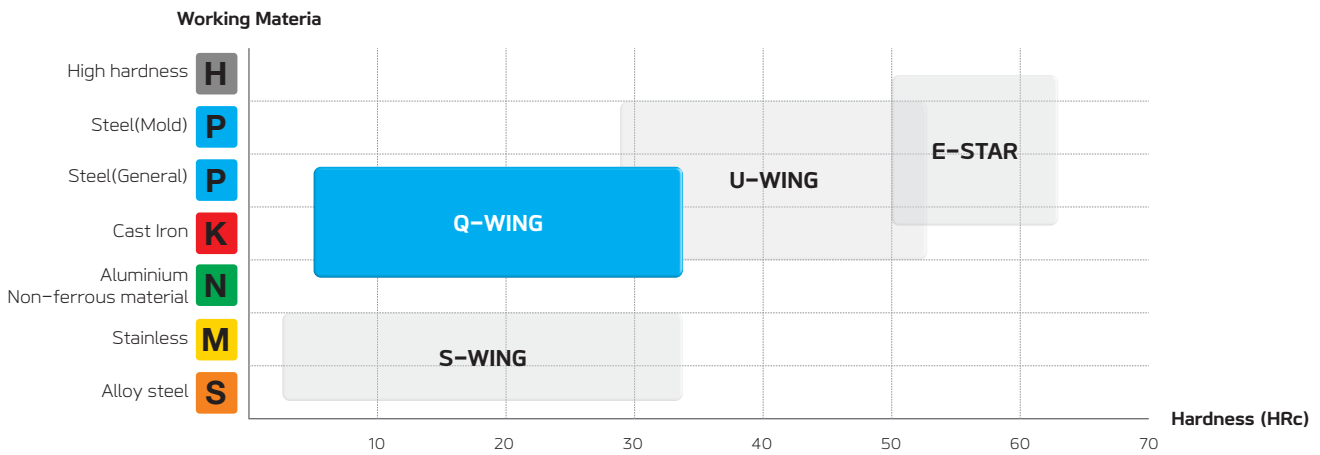
- Ensuring chip resistance and machining stability through the adoption of high-integrity materials



Case Study



Applications













EDP No.System

Section	Geometry	Grade	Length Type	Flutes	Cutting Dia	Corner Radius	Cutting Length	Neck Length	Detailed characteristics
Q (Q-WING)	E : Square	3	0 : Neck	2: 2Flute	0.2	0.1	0.4	1	S4: Shank Ø4
	R : Radius		1: Long Neck	4: 4Flute	~	~	~	~	
	B : Ball				12	3	60	68	

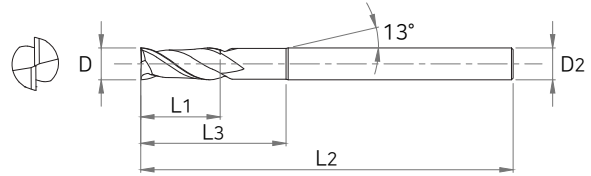
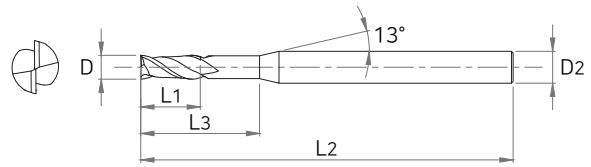
Ex) QR3140100101503 / Q-WING, 4Flute, D1.0, R0.1, Cutting Length 1.5, Neck Length 3, Corner Radius Long Neck endmill



Section		EDP No	Geometry	Type	Cutting Dia (mm)		Page
Type	Flutes				Min	Max	
Square	2F	QE302		2 FLUTES NECK SQUARE ENDMILL	0.2	12	5
	2F	QE312		2 FLUTES LONG NECK SQUARE ENDMILL	0.3	12	7
	4F	QE304		4 FLUTES NECK SQUARE ENDMILL	1	12	8
Ball	2F	QB302		2 FLUTES NECK BALL ENDMILL	0.2	12	9
	2F	QB312		2 FLUTES LONG NECK BALL ENDMILL	0.2	12	10
	4F	QB304		4 FLUTES NECK BALL ENDMILL	1	12	12
Radius	2F	QR302		2 FLUTES NECK RADIUS ENDMILL	1	12	13
	2F	QR312		2 FLUTES LONG NECK RADIUS ENDMILL	0.6	12	14
	4F	QR304		4 FLUTES NECK RADIUS ENDMILL	3	12	17
	4F	QR314		4 FLUTES LONG NECK RADIUS ENDMILL	1	12	18
Recommended Cutting Condition							20

QE302

2 FLUTES SQUARE ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D0.2 ~ D9.5	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE302002004	0.2	0.4	-	50	4
QE30200200402	0.2	0.4	2	50	4
QE302003006	0.3	0.6	-	50	4
QE30200300602	0.3	0.6	2	50	4
QE302004008	0.4	0.8	-	50	4
QE30200400802	0.4	0.8	2	50	4
QE302005010	0.5	1	-	50	4
QE30200501003	0.5	1	3	50	4
QE302006012	0.6	1.2	-	50	4
QE30200601204	0.6	1.2	4	50	4
QE302007014	0.7	1.4	-	50	4
QE30200701404	0.7	1.4	4	50	4
QE302008016	0.8	1.6	-	50	4
QE30200801604	0.8	1.6	4	50	4
QE302009018	0.9	1.8	-	50	4
QE30200901804	0.9	1.8	4	50	4
QE302010025	1	2.5	-	50	6
QE30201003005S4	1	3	5	50	4
QE302010030	1	3	-	50	6
QE30201003005	1	3	5	50	6
QE302010040	1	4	-	50	6
QE30201004006	1	4	6	50	6
QE302015040	1.5	4	-	50	6
QE30201504006	1.5	4	6	50	6
QE302015060	1.5	6	-	50	6
QE30201506008	1.5	6	8	50	6
QE302015080	1.5	8	-	50	6
QE30201508011	1.5	8	11	50	6
QE302020060	2	6	-	50	6
QE30202006008	2	6	8	50	6
QE302020080	2	8	-	50	6

EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE30202008011	2	8	11	50	6
QE302020100	2	10	-	50	6
QE30202010013	2	10	13	50	6
QE302025080	2.5	8	-	50	6
QE30202508011	2.5	8	11	50	6
QE302025100	2.5	10	-	50	6
QE30202510013	2.5	10	13	50	6
QE302025120	2.5	12	-	50	6
QE30202512016	2.5	12	16	50	6
QE302030100	3	10	-	50	6
QE30203010013	3	10	13	50	6
QE302030120	3	12	-	50	6
QE30203012016	3	12	16	50	6
QE30203015020	3	15	20	75	6
QE30203020026	3	20	26	75	6
QE302035100	3.5	10	-	50	6
QE30203510013	3.5	10	13	50	6
QE302040120	4	12	-	50	6
QE30204012016	4	12	16	50	6
QE302040160	4	16	-	75	6
QE30204016021	4	16	21	75	6
QE30204020026	4	20	26	75	6
QE302045140	4.5	14	-	50	6
QE30204514019	4.5	14	19	50	6
QE302050150	5	15	-	75	6
QE30205015020	5	15	20	75	6
QE30205020026	5	20	26	75	6
QE30205025033	5	25	33	75	6
QE302055150	5.5	15	-	75	6
QE30205515020	5.5	15	20	75	6
QE30206016021	6	16	21	75	6

Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

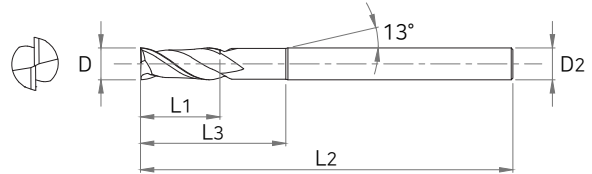
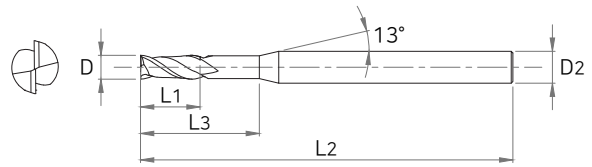
EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE30206020026	6	20	26	75	6
QE30206030039	6	30	39	75	6
QE30206040052	6	40	52	100	6
QE302065180	6,5	18	-	75	8
QE30206518024	6,5	18	24	75	8
QE302070200	7	20	-	75	8
QE30207020026	7	20	26	75	8
QE302075200	7,5	20	-	75	8
QE30207520026	7,5	20	26	75	8
QE30208020026	8	20	26	75	8
QE30208030039	8	30	39	75	8
QE30208040052	8	40	52	100	8
QE302085220	8,5	22	-	75	10
QE30208522029	8,5	22	29	75	10
QE302090220	9	22	-	75	10
QE30209022029	9	22	29	75	10
QE302095240	9,5	24	-	75	10
QE30209524032	9,5	24	32	75	10

EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE30210025033	10	25	33	75	10
QE30210030039	10	30	39	80	10
QE30210035046	10	35	46	100	10
QE30210040052	10	40	52	100	10
QE30210045059	10	45	59	100	10
QE30210055072	10	55	72	150	10
QE302105260	10,5	26	-	75	12
QE30210526034	10,5	26	34	75	12
QE302110300	11	30	-	80	12
QE30211030039	11	30	39	80	12
QE302115300	11,5	30	-	80	12
QE30211530039	11,5	30	39	80	12
QE30212030039	12	30	39	80	12
QE30212030039100	12	30	39	100	12
QE30212040052	12	40	52	100	12
QE30212045059	12	45	59	100	12
QE30212050065	12	50	65	150	12

■ Applicable Working Material

P		H		K	N	M	
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC0500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT



Tolerance

Cutting Dia (mm)		Shank Dia
D0.3 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE31200300501	0.3	0.5	1	50	4
QE31200300502	0.3	0.5	2	50	4
QE31200300503	0.3	0.5	3	50	4
QE31200300504	0.3	0.5	4	50	4
QE31200400601	0.4	0.6	1	50	4
QE31200400602	0.4	0.6	2	50	4
QE31200400603	0.4	0.6	3	50	4
QE31200400604	0.4	0.6	4	50	4
QE31200500702	0.5	0.7	2	50	4
QE31200500703	0.5	0.7	3	50	4
QE31200500704	0.5	0.7	4	50	4
QE31200500706	0.5	0.7	6	50	4
QE31200600902	0.6	0.9	2	50	4
QE31200600903	0.6	0.9	3	50	4
QE31200600904	0.6	0.9	4	50	4
QE31200600906	0.6	0.9	6	50	4
QE31200600908	0.6	0.9	8	50	4
QE31200801202	0.8	1.2	2	50	4
QE31200801204	0.8	1.2	4	50	4
QE31200801206	0.8	1.2	6	50	4
QE31200801208	0.8	1.2	8	50	4
QE31201001504	1	1.5	4	50	4
QE31201001506	1	1.5	6	50	4
QE31201001508	1	1.5	8	50	4
QE31201001510	1	1.5	10	50	4
QE31201001512	1	1.5	12	50	4
QE31201001516	1	1.5	16	50	4
QE31201201804	1.2	1.8	4	50	4
QE31201201806	1.2	1.8	6	50	4
QE31201201808	1.2	1.8	8	50	4
QE31201201810	1.2	1.8	10	50	4

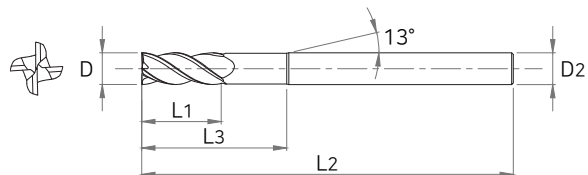
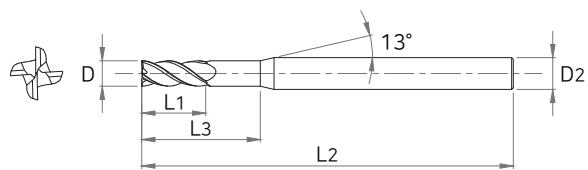
EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE31201201812	1.2	1.8	12	50	4
QE31201502306	1.5	2.3	6	50	4
QE31201502308	1.5	2.3	8	50	4
QE31201502310	1.5	2.3	10	50	4
QE31201502312	1.5	2.3	12	50	4
QE31201502316	1.5	2.3	16	50	4
QE31202003006	2	3	6	50	4
QE31202003008	2	3	8	50	4
QE31202003010	2	3	10	50	4
QE31202003012	2	3	12	50	4
QE31202003016	2	3	16	50	4
QE31202003020	2	3	20	50	4
QE31202003025	2	3	25	75	4
QE31203004508	3	4.5	8	50	6
QE31203004510	3	4.5	10	50	6
QE31203004512	3	4.5	12	50	6
QE31203004516	3	4.5	16	75	6
QE31203004520	3	4.5	20	75	6
QE31203004525	3	4.5	25	75	6
QE31204006010	4	6	10	50	6
QE31204006012	4	6	12	50	6
QE31204006016	4	6	16	75	6
QE31204006020	4	6	20	75	6
QE31204006025	4	6	25	75	6
QE31204006030	4	6	30	75	6
QE31205008020	5	8	20	75	6
QE31206009020	6	9	20	75	6
QE31206009030	6	9	30	75	6
QE31208012020	8	12	20	75	8
QE31210015025	10	15	25	75	10
QE31212018030	12	18	30	80	12

Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QE304 | 4 FLUTES SQUARE ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D1 ~ D9.5	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE30401002505S4	1	2.5	5	50	4
QE304010025	1	2.5	-	50	6
QE30401002505	1	2.5	5	50	6
QE304015040	1.5	4	-	50	6
QE30401504006	1.5	4	6	50	6
QE30401504006S4	1.5	4	6	50	4
QE304020060	2	6	-	50	6
QE30402006008	2	6	8	50	6
QE304020100S4	2	10	-	50	4
QE304020100	2	10	-	50	6
QE304025080	2.5	8	-	50	6
QE30402508011	2.5	8	11	50	6
QE304030100	3	10	-	50	6
QE30403010013	3	10	13	50	6
QE30403015020	3	15	20	75	6
QE30403020026	3	20	26	75	6
QE304035100	3.5	10	-	50	6
QE30403510013	3.5	10	13	50	6
QE304040120	4	12	-	50	6
QE30404012016	4	12	16	50	6
QE30404015020	4	15	20	75	6
QE30404020026	4	20	26	75	6
QE30404514019	4.5	12	16	50	6
QE304050150	5	15	-	75	6
QE30405015020	5	15	20	75	6
QE30405020026	5	20	26	75	6
QE30405025033	5	25	33	75	6
QE304055150	5.5	15	-	75	6
QE30405515020	5.5	15	20	75	6
QE30406015020	6	15	20	75	6
QE30406020026	6	20	26	75	6

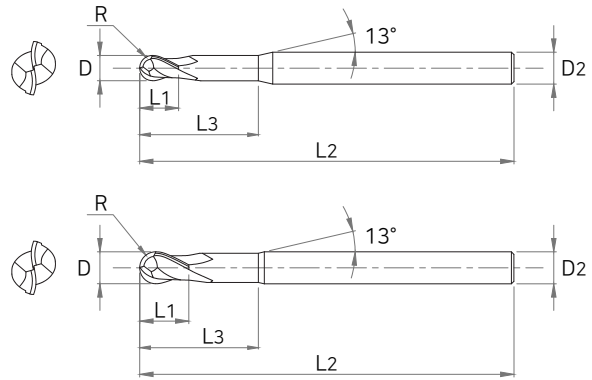
EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QE30406030039	6	30	39	75	6
QE30406040052	6	40	52	100	6
QE304065180	6.5	18	-	75	8
QE30406518024	6.5	18	24	75	8
QE304070200	7	20	-	75	8
QE30407020026	7	20	26	75	8
QE304075200	7.5	20	-	75	8
QE30407520026	7.5	20	26	75	8
QE30408020026	8	20	26	75	8
QE30408030039	8	30	39	75	8
QE30408035046	8	35	46	100	8
QE30408040052	8	40	52	100	8
QE304085220	8.5	22	-	75	10
QE30408522029	8.5	22	29	75	10
QE304090220	9	22	-	75	10
QE30409022029	9	22	29	75	10
QE304095240	9.5	24	-	75	10
QE30409524032	9.5	24	32	75	10
QE30410025033	10	25	33	75	10
QE30410030039	10	30	39	100	10
QE30410035046	10	35	46	100	10
QE30410040052	10	40	52	100	10
QE304105260	10.5	26	-	80	12
QE30410526034	10.5	26	34	80	12
QE304110300	11	30	-	80	12
QE30411030039	11	30	39	80	12
QE304115300	11.5	30	-	80	12
QE30411530039	11.5	30	39	80	12
QE30412030039	12	30	39	75	12
QE30412040052	12	40	52	100	12
QE30412045059	12	45	59	100	12

Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QB302 | 2 FLUTES BALL ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D0.2 ~ D9	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB302002004	0.2	0.4	-	50	4
QB30200200401	0.2	0.4	1	50	4
QB302003006	0.3	0.6	-	50	4
QB30200300601	0.3	0.6	1	50	4
QB302004008	0.4	0.8	-	50	4
QB30200400802	0.4	0.8	2	50	4
QB302005010	0.5	1	-	50	4
QB30200501002	0.5	1	2	50	4
QB302006012	0.6	1.2	-	50	4
QB30200601202	0.6	1.2	2	50	4
QB302008016	0.8	1.6	-	50	4
QB30200801603	0.8	1.6	3	50	4
QB302010025S4	1	2.5	-	50	4
QB30201002504S4	1	2.5	4	50	4
QB302010025	1	2.5	-	50	6
QB30201002504	1	2.5	4	50	6
QB302012030	1.2	3	-	50	6
QB30201203004	1.2	3	4	50	6
QB302015040S4	1.5	4	-	50	4
QB30201504006S4	1.5	4	6	50	4
QB302015040	1.5	4	-	50	6
QB30201504006	1.5	4	6	50	6
QB302020050S4	2	5	-	50	4
QB30202005007S4	2	5	7	50	4
QB302020050	2	5	-	50	6
QB30202005007	2	5	7	50	6
QB302025070	2.5	7	-	75	6
QB30202507010	2.5	7	10	75	6
QB302030080S4	3	8	-	75	4
QB302030080	3	8	-	75	6

EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB30203008011	3	8	11	75	6
QB302035080	3.5	8	-	75	6
QB30203508011	3.5	8	11	75	6
QB302040080	4	8	-	75	6
QB30204008011	4	8	11	75	6
QB30204508011	4.5	8	11	75	6
QB30205010013	5	10	13	50	6
QB302050120	5	12	-	100	6
QB30205012016	5	12	16	100	6
QB302055120	5.5	12	-	100	6
QB30205512016	5.5	12	16	100	6
QB30206012016	6	12	16	100	6
QB30206015020	6	15	20	120	6
QB30206015020150	6	15	20	150	6
QB30206512016	6.5	12	16	100	8
QB302070140	7	14	-	100	8
QB30207014019	7	14	19	100	8
QB30208016021	8	16	21	100	8
QB30208020026	8	20	26	120	8
QB30208020026150	8	20	26	150	8
QB30209018024	9	18	24	100	10
QB30210018024	10	18	24	75	10
QB30210018024100	10	18	24	100	10
QB30210025033120	10	25	33	120	10
QB30210025033150	10	25	33	150	10
QB30212022029	12	22	29	75	12
QB30212022029100	12	22	29	100	12
QB30212025033	12	25	33	120	12
QB30212030039	12	30	39	150	12

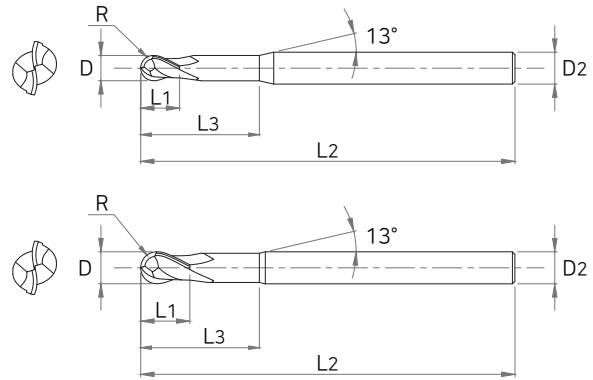
Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QB312

2 FLUTES LONG NECK BALL ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D0.2 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB31200200201	0.2	0.2	1	50	4
QB31200200202	0.2	0.2	2	50	4
QB31200300301	0.3	0.3	1	50	4
QB31200300302	0.3	0.3	2	50	4
QB31200300303	0.3	0.3	3	50	4
QB31200400401	0.4	0.4	1	50	4
QB31200400402	0.4	0.4	2	50	4
QB31200400403	0.4	0.4	3	50	4
QB31200400404	0.4	0.4	4	50	4
QB31200400406	0.4	0.4	6	50	4
QB31200500502	0.5	0.5	2	50	4
QB31200500503	0.5	0.5	3	50	4
QB31200500504	0.5	0.5	4	50	4
QB31200500506	0.5	0.5	6	50	4
QB31200500508	0.5	0.5	8	50	4
QB31200600602	0.6	0.6	2	50	4
QB31200600603	0.6	0.6	3	50	4
QB31200600604	0.6	0.6	4	50	4
QB31200600605	0.6	0.6	5	50	4
QB31200600606	0.6	0.6	6	50	4
QB31200600608	0.6	0.6	8	50	4
QB31200700704	0.7	0.7	4	50	4
QB31200800802	0.8	0.8	2	50	4
QB31200800803	0.8	0.8	3	50	4
QB31200800804	0.8	0.8	4	50	4
QB31200800806	0.8	0.8	6	50	4
QB31200800808	0.8	0.8	8	50	4
QB31201001003	1	1	3	50	4
QB31201001004	1	1	4	50	4
QB31201001005	1	1	5	50	4

EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB31201001006	1	1	6	50	4
QB31201001007	1	1	7	50	4
QB31201001008	1	1	8	50	4
QB31201001010	1	1	10	50	4
QB31201001012	1	1	12	50	4
QB31201001014	1	1	14	50	4
QB31201001016	1	1	16	50	4
QB31201001025	1	1	25	75	4
QB31201201204	1.2	1.2	4	50	4
QB31201201206	1.2	1.2	6	50	4
QB31201201208	1.2	1.2	8	50	4
QB31201201210	1.2	1.2	10	50	4
QB31201201212	1.2	1.2	12	50	4
QB31201501504	1.5	1.5	4	50	4
QB31201501506	1.5	1.5	6	50	4
QB31201501508	1.5	1.5	8	50	4
QB31201501510	1.5	1.5	10	50	4
QB31201501512	1.5	1.5	12	50	4
QB31201501514	1.5	1.5	14	50	4
QB31201501516	1.5	1.5	16	50	4
QB31202003006	2	3	6	50	4
QB31202003008	2	3	8	50	4
QB31202003010	2	3	10	50	4
QB31202003012	2	3	12	50	4
QB31202003014	2	3	14	50	4
QB31202003016	2	3	16	50	4
QB31202003018	2	3	18	50	4
QB31202003020	2	3	20	50	4
QB31202003025	2	3	25	75	4
QB31202003030	2	3	30	75	4

Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB31202503510	2,5	3,5	10	50	4
QB31202503512	2,5	3,5	12	50	4
QB31203004008	3	4	8	50	6
QB31203004010	3	4	10	50	6
QB31203004012	3	4	12	50	6
QB31203004014	3	4	14	75	6
QB31203004016	3	4	16	75	6
QB31203004018	3	4	18	75	6
QB31203004020	3	4	20	75	6
QB31203004025	3	4	25	75	6
QB31203004030	3	4	30	75	6
QB31203004035	3	4	35	75	6
QB31204005010	4	5	10	50	6
QB31204005012	4	5	12	50	6

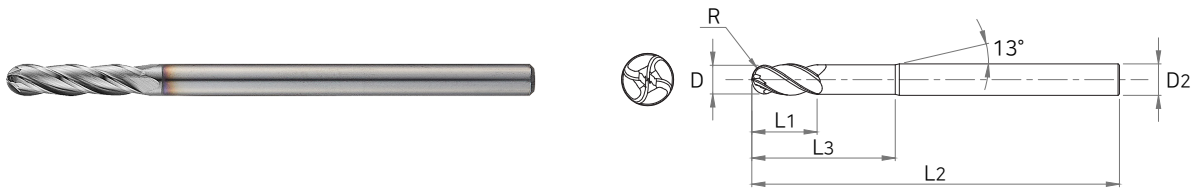
EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB31204005016	4	5	16	75	6
QB31204005020	4	5	20	75	6
QB31204005025	4	5	25	75	6
QB31204005030	4	5	30	75	6
QB31204005035	4	5	35	75	6
QB31204005040	4	5	40	80	6
QB31204005045	4	5	45	100	6
QB31204005050	4	5	50	100	6
QB31205006020	5	6	20	75	6
QB31206008020	6	8	20	75	6
QB31208010020	8	10	20	80	8
QB31210012025	10	12	25	80	10
QB31210018059	10	18	59	100	12
QB31212014025	12	14	25	80	12

■ Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC0500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QB304 | 4 FLUTES BALL ENDMILL



■ Tolerance

Cutting Dia (mm)		Shank Dia
D1 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



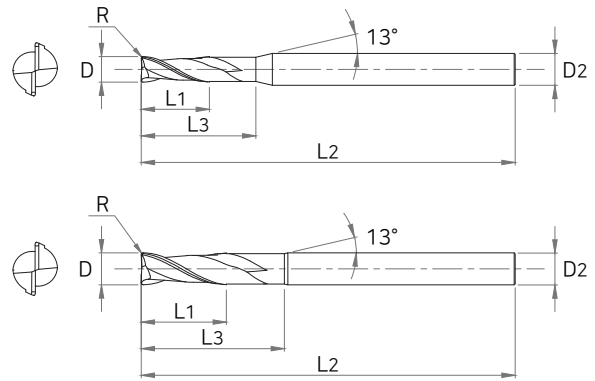
EDP No	SIZES (mm)				
	D	L1	L3	L2	D2
QB30401002004	1	2	4	50	4
QB30402004006	2	4	6	50	4
QB30403006008	3	6	8	50	4
QB30404008011	4	8	11	50	4
QB30405010013	5	10	13	50	6
QB30406012016	6	12	16	50	6
QB30408014019	8	14	19	75	8
QB30410018024	10	18	24	75	10
QB30412022029	12	22	29	75	12

■ Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QR302 | 2 FLUTES RADIUS ENDMILL



■ Tolerance

Cutting Dia (mm)		Shank Dia
D1 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3020100202504	1	0.2	2.5	4	50	4
QR30201002025	1	0.2	2.5	-	50	6
QR30203005080	3	0.5	8	-	60	6
QR3020300508011	3	0.5	8	11	60	6
QR3020400211015	4	0.2	11	15	75	6
QR30204003110	4	0.3	11	-	75	6
QR3020400311015	4	0.3	11	15	75	6
QR30204005110	4	0.5	11	-	75	6
QR3020400511015	4	0.5	11	15	75	6
QR30204010110	4	1	11	-	75	6
QR3020401011015	4	1	11	15	75	6
QR3020600215020	6	0.2	15	20	100	6
QR3020600315020	6	0.3	15	20	100	6
QR3020600515020	6	0.5	15	20	100	6
QR3020601015020	6	1	15	20	100	6
QR3020801520026	8	1.5	20	26	100	8
QR3020800220026	8	0.2	20	26	100	8

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3020800320026	8	0.3	20	26	100	8
QR3020800520026	8	0.5	20	26	100	8
QR3020801020026	8	1	20	26	100	8
QR3020802020026	8	2	20	26	100	8
QR3021000322029	10	0.3	22	29	100	10
QR3021000522029	10	0.5	22	29	100	10
QR3021001022029	10	1	22	29	100	10
QR3021001522029	10	1.5	22	29	100	10
QR3021002022029	10	2	22	29	100	10
QR3021002522029	10	2.5	22	29	100	10
QR3021003022029	10	3	22	29	100	10
QR3021200526034	12	0.5	26	34	120	12
QR3021201026034	12	1	26	34	120	12
QR3021201526034	12	1.5	26	34	120	12
QR3021202026034	12	2	26	34	120	12
QR3021202526034	12	2.5	26	34	120	12
QR3021203026034	12	3	26	34	120	12

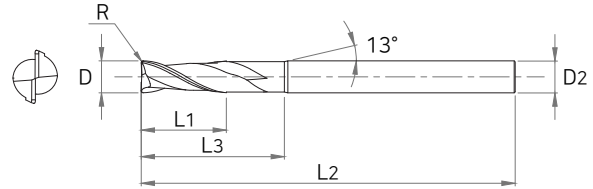
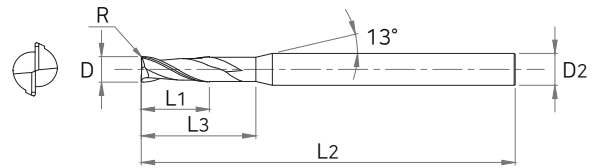
■ Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QR312

2 FLUTES LONG NECK RADIUS ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D0.6 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3120060100902	0.6	0.1	0.9	2	50	4
QR3120060200902	0.6	0.2	0.9	2	50	4
QR3120060100903	0.6	0.1	0.9	3	50	4
QR3120060200903	0.6	0.2	0.9	3	50	4
QR3120060101004	0.6	0.1	0.9	4	50	4
QR3120060200904	0.6	0.2	0.9	4	50	4
QR3120060101006	0.6	0.1	0.9	6	50	4
QR3120060200906	0.6	0.2	0.9	6	50	4
QR3120060100908	0.6	0.1	0.9	8	50	4
QR3120080101002	0.8	0.1	1.2	2	50	4
QR3120080201202	0.8	0.2	1.2	2	50	4
QR3120080101203	0.8	0.1	1.2	3	50	4
QR3120080201203	0.8	0.2	1.2	3	50	4
QR3120080101204	0.8	0.1	1.2	4	50	4
QR3120080201204	0.8	0.2	1.2	4	50	4
QR3120080101206	0.8	0.1	1.2	6	50	4
QR3120080201206	0.8	0.2	1.2	6	50	4
QR3120080101208	0.8	0.1	1.2	8	50	4
QR3120080201208	0.8	0.2	1.2	8	50	4
QR3120080101210	0.8	0.1	1.2	10	50	4
QR3120080201210	0.8	0.2	1.2	10	50	4
QR3120100101503	1	0.1	1.5	3	50	4
QR3120100201503	1	0.2	1.5	3	50	4
QR3120100301503	1	0.3	1.5	3	50	4
QR3120100101504	1	0.1	1.5	4	50	4
QR3120100201504	1	0.2	1.5	4	50	4
QR3120100301504	1	0.3	1.5	4	50	4
QR3120100101506	1	0.1	1.5	6	50	4
QR3120100201506	1	0.2	1.5	6	50	4
QR3120100301506	1	0.3	1.5	6	50	4
QR3120100101508	1	0.1	1.5	8	50	4

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3120100201508	1	0.2	1.5	8	50	4
QR3120100301508	1	0.3	1.5	8	50	4
QR3120100101510	1	0.1	1.5	10	50	4
QR3120100201510	1	0.2	1.5	10	50	4
QR3120100301510	1	0.3	1.5	10	50	4
QR3120100101512	1	0.1	1.5	12	50	4
QR3120100201512	1	0.2	1.5	12	50	4
QR3120100301512	1	0.3	1.5	12	50	4
QR3120100101514	1	0.1	1.5	14	50	4
QR3120100201514	1	0.2	1.5	14	50	4
QR3120100301514	1	0.3	1.5	14	50	4
QR3120100101516	1	0.1	1.5	16	50	4
QR3120100201516	1	0.2	1.5	16	50	4
QR3120100301516	1	0.3	1.5	16	50	4
QR3120120101803	1.2	0.1	1.8	3	50	4
QR3120120201803	1.2	0.2	1.8	3	50	4
QR3120120301803	1.2	0.3	1.8	3	50	4
QR3120120101804	1.2	0.1	1.8	4	50	4
QR3120120201804	1.2	0.2	1.8	4	50	4
QR3120120301804	1.2	0.3	1.8	4	50	4
QR3120120101806	1.2	0.1	1.8	6	50	4
QR3120120201806	1.2	0.2	1.8	6	50	4
QR3120120301806	1.2	0.3	1.8	6	50	4
QR3120120101808	1.2	0.1	1.8	8	50	4
QR3120120201808	1.2	0.2	1.8	8	50	4
QR3120120301808	1.2	0.3	1.8	8	50	4
QR3120120101810	1.2	0.1	1.8	10	50	4
QR3120120201810	1.2	0.2	1.8	10	50	4
QR3120120301810	1.2	0.3	1.8	10	50	4
QR3120150102304	1.5	0.1	2.3	4	50	4
QR3120150202304	1.5	0.2	2.3	4	50	4

Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3120150302304	1,5	0,3	2,3	4	50	4
QR3120150502304	1,5	0,5	2,3	4	50	4
QR3120150102306	1,5	0,1	2,3	6	50	4
QR3120150202306	1,5	0,2	2,3	6	50	4
QR3120150302306	1,5	0,3	2,3	6	50	4
QR3120150502306	1,5	0,5	2,3	6	50	4
QR3120150102308	1,5	0,1	2,3	8	50	4
QR3120150202308	1,5	0,2	2,3	8	50	4
QR3120150302308	1,5	0,3	2,3	8	50	4
QR3120150502308	1,5	0,5	2,3	8	50	4
QR3120150102310	1,5	0,1	2,3	10	50	4
QR3120150202310	1,5	0,2	2,3	10	50	4
QR3120150302310	1,5	0,3	2,3	10	50	4
QR3120150502310	1,5	0,5	2,3	10	50	4
QR3120150102312	1,5	0,1	2,3	12	50	4
QR3120150202312	1,5	0,2	2,3	12	50	4
QR3120150302312	1,5	0,3	2,3	12	50	4
QR3120150502312	1,5	0,5	2,3	12	50	4
QR3120150102314	1,5	0,1	2,3	14	50	4
QR3120150202314	1,5	0,2	2,3	14	50	4
QR3120150302314	1,5	0,3	2,3	14	50	4
QR3120150502314	1,5	0,5	2,3	14	50	4
QR3120150102316	1,5	0,1	2,3	16	50	4
QR3120150202316	1,5	0,2	2,3	16	50	4
QR3120150302316	1,5	0,3	2,3	16	50	4
QR3120150502316	1,5	0,5	2,3	16	50	4
QR3120150202320	1,5	0,2	2,3	20	50	4
QR3120200103006	2	0,1	3	6	50	4
QR3120200203006	2	0,2	3	6	50	4
QR3120200303006	2	0,3	3	6	50	4
QR3120200503006	2	0,5	3	6	50	4
QR3120200103008	2	0,1	3	8	50	4
QR3120200203008	2	0,2	3	8	50	4
QR3120200303008	2	0,3	3	8	50	4
QR3120200503008	2	0,5	3	8	50	4
QR3120200103010	2	0,1	3	10	50	4
QR3120200203010	2	0,2	3	10	50	4
QR3120200303010	2	0,3	3	10	50	4
QR3120200503010	2	0,5	3	10	50	4
QR3120200103012	2	0,1	3	12	50	4
QR3120200203012	2	0,2	3	12	50	4
QR3120200303012	2	0,3	3	12	50	4
QR3120200503012	2	0,5	3	12	50	4
QR3120200103014	2	0,1	3	14	50	4
QR3120200203014	2	0,2	3	14	50	4
QR3120200303014	2	0,3	3	14	50	4
QR3120200503014	2	0,5	3	14	50	4
QR3120200103016	2	0,1	3	16	50	4
QR3120200203016	2	0,2	3	16	50	4

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3120200303016	2	0,3	3	16	50	4
QR3120200503016	2	0,5	3	16	50	4
QR3120200103020	2	0,1	3	20	50	4
QR3120200203020	2	0,2	3	20	50	4
QR3120200303020	2	0,3	3	20	50	4
QR3120200503020	2	0,5	3	20	50	4
QR3120300104508	3	0,1	4,5	8	50	6
QR3120300204508	3	0,2	4,5	8	50	6
QR3120300304508	3	0,3	4,5	8	50	6
QR3120300504508	3	0,5	4,5	8	50	6
QR3120301004508	3	1	4,5	8	50	6
QR3120300104510	3	0,1	4,5	10	50	6
QR3120300204510	3	0,2	4,5	10	50	6
QR3120300304510	3	0,3	4,5	10	50	6
QR3120300504510	3	0,5	4,5	10	50	6
QR3120301004510	3	1	4,5	10	50	6
QR3120300104512	3	0,1	4,5	12	50	6
QR3120300204512	3	0,2	4,5	12	50	6
QR3120300304512	3	0,3	4,5	12	50	6
QR3120300504512	3	0,5	4,5	12	50	6
QR3120301004512	3	1	4,5	12	50	6
QR3120300104514	3	0,1	4,5	14	75	6
QR3120300204514	3	0,2	4,5	14	75	6
QR3120300304514	3	0,3	4,5	14	75	6
QR3120300504514	3	0,5	4,5	14	75	6
QR3120301004514	3	1	4,5	14	75	6
QR3120300104516	3	0,1	4,5	16	75	6
QR3120300204516	3	0,2	4,5	16	75	6
QR3120300304516	3	0,3	4,5	16	75	6
QR3120300504516	3	0,5	4,5	16	75	6
QR3120301004516	3	1	4,5	16	75	6
QR3120300104520	3	0,1	4,5	20	75	6
QR3120300204520	3	0,2	4,5	20	75	6
QR3120300304520	3	0,3	4,5	20	75	6
QR3120300504520	3	0,5	4,5	20	75	6
QR3120301004520	3	1	4,5	20	75	6
QR3120300104525	3	0,1	4,5	25	75	6
QR3120300304525	3	0,3	4,5	25	75	6
QR3120300504525	3	0,5	4,5	25	75	6
QR3120301004525	3	1	4,5	25	75	6
QR3120400106010	4	0,1	6	10	50	6
QR3120400206010	4	0,2	6	10	50	6
QR3120400306010	4	0,3	6	10	50	6
QR3120400506010	4	0,5	6	10	50	6
QR3120401006010	4	1	6	10	50	6
QR3120400106012	4	0,1	6	12	50	6
QR3120400206012	4	0,2	6	12	50	6
QR3120400306012	4	0,3	6	12	50	6
QR3120400506012	4	0,5	6	12	50	6

■ Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3120401006012	4	1	6	12	50	6
QR3120400106014	4	0.1	6	14	60	6
QR3120400206014	4	0.2	6	14	75	6
QR3120400306014	4	0.3	6	14	75	6
QR3120400506014	4	0.5	6	14	50	6
QR3120401006014	4	1	6	14	75	6
QR3120400106016	4	0.1	6	16	75	6
QR3120400206016	4	0.2	6	16	75	6
QR3120400306016	4	0.3	6	16	75	6
QR3120400506016	4	0.5	6	16	75	6
QR3120401006016	4	1	6	16	75	6
QR3120400106020	4	0.1	6	20	75	6
QR3120400206020	4	0.2	6	20	75	6
QR3120400306020	4	0.3	6	20	75	6
QR3120400506020	4	0.5	6	20	75	6
QR3120401006020	4	1	6	20	75	6
QR3120400206025	4	0.2	6	25	75	6
QR3120400306025	4	0.3	6	25	75	6
QR3120400506025	4	0.5	6	25	75	6
QR3120401006025	4	1	6	25	75	6
QR3120400506030	4	0.5	6	30	75	6
QR3120401006030	4	1	6	30	75	6
QR3120600109020	6	0.1	9	20	75	6
QR3120600209020	6	0.2	9	20	75	6
QR3120600309020	6	0.3	9	20	75	6

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3120600509020	6	0.5	9	20	75	6
QR3120601009020	6	1	9	20	75	6
QR3120601509020	6	1.5	9	20	75	6
QR3120602009020	6	2	9	20	75	6
QR3120800112025	8	0.1	12	25	75	8
QR3120800212025	8	0.2	12	25	75	8
QR3120800312025	8	0.3	12	25	75	8
QR3120800512025	8	0.5	12	25	75	8
QR3120801012025	8	1	12	25	75	8
QR3120801512025	8	1.5	12	25	75	8
QR3120802012025	8	2	12	25	75	8
QR3121000115030	10	0.1	15	30	75	10
QR3121000215030	10	0.2	15	30	75	10
QR3121000315030	10	0.3	15	30	75	10
QR3121000515030	10	0.5	15	30	75	10
QR3121001015030	10	1	15	30	75	10
QR3121001515030	10	1.5	15	30	75	10
QR3121002015030	10	2	15	30	75	10
QR3121200218032	12	0.2	18	32	80	12
QR3121200318032	12	0.3	18	32	80	12
QR3121200518032	12	0.5	18	32	80	12
QR3121201018032	12	1	18	32	80	12
QR3121201518032	12	1.5	18	32	80	12
QR3121202018032	12	2	18	32	80	12

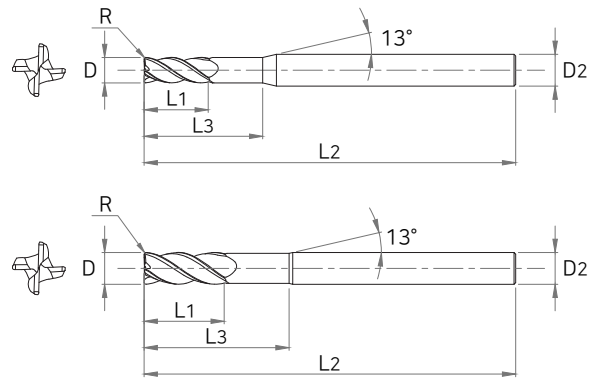
■ Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QR304

4 FLUTES RADIUS ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D3 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR30403002080	3	0.2	8	-	75	6
QR3040300208011	3	0.2	8	11	75	6
QR30403003080	3	0.3	8	-	75	6
QR3040300308011	3	0.3	8	11	75	6
QR30403005080	3	0.5	8	-	75	6
QR3040300508011	3	0.5	8	11	75	6
QR30404002110	4	0.2	11	-	75	6
QR3040400211015	4	0.2	11	15	75	6
QR30404003110	4	0.3	11	-	75	6
QR3040400311015	4	0.3	11	15	75	6
QR30404005110	4	0.5	11	-	75	6
QR3040400511015	4	0.5	11	15	75	6
QR30404010110	4	1	11	-	75	6
QR3040401011015	4	1	11	15	75	6
QR30405002130	5	0.2	13	-	80	6
QR3040500213017	5	0.2	13	17	80	6
QR30405003130	5	0.3	13	-	80	6
QR3040500313017	5	0.3	13	17	80	6
QR30405005130	5	0.5	13	-	80	6
QR3040500513017	5	0.5	13	17	80	6

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR30405010130	5	1	13	-	80	6
QR3040501013017	5	1	13	20	80	6
QR3040600215020	6	0.2	15	20	100	6
QR3040600315020	6	0.3	15	20	100	6
QR3040600515020	6	0.5	15	20	100	6
QR3040601015020	6	1	15	20	100	6
QR3040800522029	8	0.5	22	29	100	8
QR3040801022029	8	1	22	29	100	8
QR3041000522029	10	0.5	25	29	100	10
QR3041001022029	10	1	25	29	100	10
QR3041001522029	10	1.5	25	29	100	10
QR3041002022029	10	2	25	29	100	10
QR3041002522029	10	2.5	25	29	100	10
QR3041200528034	12	0.5	28	34	120	12
QR3041201028034	12	1	28	34	120	12
QR3041201528034	12	1.5	28	34	120	12
QR3041202028034	12	2	28	34	120	12
QR3041202528034	12	2.5	28	34	120	12
QR3041203028034	12	3	28	34	120	12

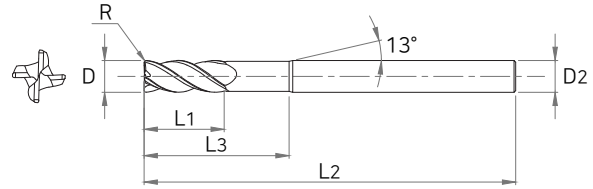
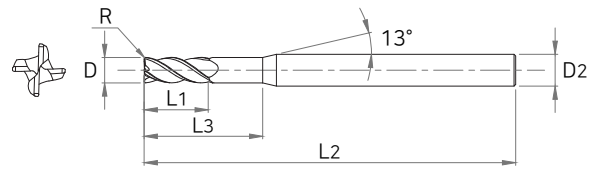
Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

QR314

4 FLUTES LONG NECK RADIUS ENDMILL



Tolerance

Cutting Dia (mm)		Shank Dia
D3 ~ D8	0 ~ -0.02	
D10 ~ D12	0 ~ -0.03	h5



EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3140100101503	1	0.1	1.5	3	50	4
QR3140100201503	1	0.2	1.5	3	50	4
QR3140100301503	1	0.3	1.5	3	50	4
QR3140100101504	1	0.1	1.5	4	50	4
QR3140100201504	1	0.2	1.5	4	50	4
QR3140100301504	1	0.3	1.5	4	50	4
QR3140100101506	1	0.1	1.5	6	50	4
QR3140100201506	1	0.2	1.5	6	50	4
QR3140100301506	1	0.3	1.5	6	50	4
QR3140100101508	1	0.1	1.5	8	50	4
QR3140100201508	1	0.2	1.5	8	50	4
QR3140100301508	1	0.3	1.5	8	50	4
QR3140100101510	1	0.1	1.5	10	50	4
QR3140100201510	1	0.2	1.5	10	50	4
QR3140100301510	1	0.3	1.5	10	50	4
QR3140150102304	1.5	0.1	2.3	4	50	4
QR3140150202304	1.5	0.2	2.3	4	50	4
QR3140150302304	1.5	0.3	2.3	4	50	4
QR3140150102306	1.5	0.1	2.3	6	50	4
QR3140150202306	1.5	0.2	2.3	6	50	4
QR3140150302306	1.5	0.3	2.3	6	50	4
QR3140150102308	1.5	0.1	2.3	8	50	4
QR3140150202308	1.5	0.2	2.3	8	50	4
QR3140150302308	1.5	0.3	2.3	8	50	4
QR3140150102310	1.5	0.1	2.3	10	50	4
QR3140150202310	1.5	0.2	2.3	10	50	4
QR3140150302310	1.5	0.3	2.3	10	50	4
QR3140150102312	1.5	0.1	2.3	12	50	4
QR3140150202312	1.5	0.2	2.3	12	50	4
QR3140150302312	1.5	0.3	2.3	12	50	4
QR3140150102314	1.5	0.1	2.3	14	50	4
QR3140150202314	1.5	0.2	2.3	14	50	4

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3140150302314	1.5	0.3	2.3	14	50	4
QR3140150102316	1.5	0.1	2.3	16	50	4
QR3140150202316	1.5	0.2	2.3	16	50	4
QR3140150302316	1.5	0.3	2.3	16	50	4
QR3140200103006	2	0.1	3	6	50	4
QR3140200203006	2	0.2	3	6	50	4
QR3140200303006	2	0.3	3	6	50	4
QR3140200503006	2	0.5	3	6	50	4
QR3140200103008	2	0.1	3	8	50	4
QR3140200203008	2	0.2	3	8	50	4
QR3140200303008	2	0.3	3	8	50	4
QR3140200503008	2	0.5	3	8	50	4
QR3140200103010	2	0.1	3	10	50	4
QR3140200203010	2	0.2	3	10	50	4
QR3140200303010	2	0.3	3	10	50	4
QR3140200503010	2	0.5	3	10	50	4
QR3140200103012	2	0.1	3	12	50	4
QR3140200203012	2	0.2	3	12	50	4
QR3140200303012	2	0.3	3	12	50	4
QR3140200503012	2	0.5	3	12	50	4
QR3140200103014	2	0.1	3	14	50	4
QR3140200203014	2	0.2	3	14	50	4
QR3140200303014	2	0.3	3	14	50	4
QR3140200503014	2	0.5	3	14	50	4
QR3140200103016	2	0.1	3	16	50	4
QR3140200203016	2	0.2	3	16	50	4
QR3140200303016	2	0.3	3	16	50	4
QR3140200503016	2	0.5	3	16	50	4
QR3140200103020	2	0.1	3	20	50	4
QR3140200203020	2	0.2	3	20	50	4
QR3140200303020	2	0.3	3	20	50	4
QR3140200503020	2	0.5	3	20	50	4

Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FC500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

○ : GOOD ◎ : EXCELLENT

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3140300104508	3	0.1	4.5	8	50	6
QR3140300204508	3	0.2	4.5	8	50	6
QR3140300304508	3	0.3	4.5	8	50	6
QR3140300504508	3	0.5	4.5	8	50	6
QR3140301004508	3	1	4.5	8	50	6
QR3140300104510	3	0.1	4.5	10	50	6
QR3140300204510	3	0.2	4.5	10	50	6
QR3140300304510	3	0.3	4.5	10	50	6
QR3140300504510	3	0.5	4.5	10	50	6
QR3140301004510	3	1	4.5	10	50	6
QR3140300104512	3	0.1	4.5	12	50	6
QR3140300204512	3	0.2	4.5	12	50	6
QR3140300304512	3	0.3	4.5	12	50	6
QR3140300504512	3	0.5	4.5	12	50	6
QR3140301004512	3	1	4.5	12	50	6
QR3140300104514	3	0.1	4.5	14	75	6
QR3140300204514	3	0.2	4.5	14	75	6
QR3140300304514	3	0.3	4.5	14	75	6
QR3140300504514	3	0.5	4.5	14	75	6
QR3140301004514	3	1	4.5	14	75	6
QR3140300104516	3	0.1	4.5	16	75	6
QR3140300204516	3	0.2	4.5	16	75	6
QR3140300304516	3	0.3	4.5	16	75	6
QR3140300504516	3	0.5	4.5	16	75	6
QR3140301004516	3	1	4.5	16	75	6
QR3140300104520	3	0.1	4.5	20	75	6
QR3140300204520	3	0.2	4.5	20	75	6
QR3140300304520	3	0.3	4.5	20	75	6
QR3140300504520	3	0.5	4.5	20	75	6
QR3140301004520	3	1	4.5	20	75	6
QR3140300104525	3	0.1	4.5	25	75	6
QR3140300204525	3	0.2	4.5	25	75	6
QR3140300304525	3	0.3	4.5	25	75	6
QR3140300504525	3	0.5	4.5	25	75	6
QR3140301004525	3	1	4.5	25	75	6
QR3140400106010	4	0.1	6	10	50	6
QR3140400206010	4	0.2	6	10	50	6
QR3140400306010	4	0.3	6	10	50	6
QR3140400506010	4	0.5	6	10	50	6
QR3140401006010	4	1	6	10	50	6
QR3140400106012	4	0.1	6	12	50	6
QR3140400206012	4	0.2	6	12	50	6
QR3140400306012	4	0.3	6	12	50	6
QR3140400506012	4	0.5	6	12	50	6
QR3140401006012	4	1	6	12	50	6
QR3140400106014	4	0.1	6	14	75	6
QR3140400206014	4	0.2	6	14	75	6
QR3140400306014	4	0.3	6	14	75	6
QR3140400506014	4	0.5	6	14	75	6
QR3140401006014	4	1	6	14	75	6

EDP No	SIZES (mm)					
	D	R	L1	L3	L2	D2
QR3140400106016	4	0.1	6	16	75	6
QR3140400206016	4	0.2	6	16	75	6
QR3140400306016	4	0.3	6	16	75	6
QR3140400506016	4	0.5	6	16	75	6
QR3140401006016	4	1	6	16	75	6
QR3140400106020	4	0.1	6	20	75	6
QR3140400206020	4	0.2	6	20	75	6
QR3140400306020	4	0.3	6	20	75	6
QR3140400506020	4	0.5	6	20	75	6
QR3140401006020	4	1	6	20	75	6
QR3140400106025	4	0.1	6	25	75	6
QR3140400206025	4	0.2	6	25	75	6
QR3140400306025	4	0.3	6	25	75	6
QR3140400506025	4	0.5	6	25	75	6
QR3140401006025	4	1	6	25	75	6
QR3140400106030	4	0.1	6	30	75	6
QR3140400206030	4	0.2	6	30	75	6
QR3140400306030	4	0.3	6	30	75	6
QR3140400506030	4	0.5	6	30	75	6
QR3140500308015	5	0.3	8	15	75	6
QR3140500508015	5	0.5	8	15	75	6
QR3140501008015	5	1	8	15	75	6
QR3140600109020	6	0.1	9	20	75	6
QR3140600209020	6	0.2	9	20	75	6
QR3140600309020	6	0.3	9	20	75	6
QR3140600509020	6	0.5	9	20	75	6
QR3140601009020	6	1	9	20	75	6
QR3140601509020	6	1.5	9	20	75	6
QR3140602009020	6	2	9	20	75	6
QR3140800212025	8	0.2	12	25	75	8
QR3140800312025	8	0.3	12	25	75	8
QR3140800512025	8	0.5	12	25	75	8
QR3140801012025	8	1	12	25	75	8
QR3140800520035	8	0.5	20	35	100	8
QR3140801020035	8	1	20	35	100	8
QR3141000515030	10	0.5	15	30	75	10
QR3141000315030	10	0.3	15	30	75	10
QR3141001015030	10	1	15	30	75	10
QR3141001515030	10	1.5	15	30	75	10
QR3141002015030	10	2	15	30	75	10
QR3141000325040	10	0.3	25	40	100	10
QR3141000525040	10	0.5	25	40	100	10
QR3141001025040	10	1	25	40	100	10
QR3141200318032	12	0.3	18	32	80	12
QR3141200518032	12	0.5	18	32	80	12
QR3141201018032	12	1	18	32	80	12
QR3141200330050	12	0.3	30	50	120	12
QR3141200530050	12	0.5	30	50	120	12
QR3141201030050	12	1	30	50	120	12

■ Applicable Working Material

P			H		K	N	M
Carbon Steel ~HB225	Alloy Steel HB225~325	Prehardned Steel HRc30 ~ 50	Hardened Steel		Cast Iron ~FCD500	Aluminium	Stainless steel
			SKD61 ~HRc55	SKD11 HRc55~			
◎	◎	○			◎		○

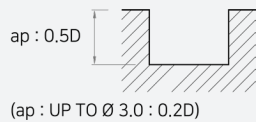
○ : GOOD ◎ : EXCELLENT

Recommended Cutting Conditions

QE302, QE312 SERIES ► General Processing

Workpiece	Alloy steel, Heat-resistant steel		Heat Treatment Steel		Stainless Steel	
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		-	
Strength	1000 ~ 1250N/mm ²		1250 ~ 1750N/mm ²		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
2	9,700	220	6,350	135	5,300	105
3	7,500	240	4,670	160	3,880	135
4	6,350	345	3,880	205	3,250	175
5	5,300	370	3,170	220	2,650	185
6	4,670	405	2,830	255	2,380	205
8	3,530	435	2,120	230	1,760	205
10	2,730	380	1,680	185	1,420	185
12	2,310	320	1,420	150	1,140	150

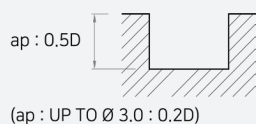
RPM = rev / min
FEED = mm / min



QE302, QE312 SERIES ► High Speed Processing

Workpiece	Alloy steel, Heat-resistant steel		Heat Treatment Steel			Stainless Steel		
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc40 ~ HRc55	-		
Strength	1000 ~ 1250N/mm ²		1250 ~ 1750N/mm ²		1750 ~ 2000N/mm ²	-		
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	18,000	665	11,800	415	8,700	175	9,800	345
3	11,000	655	6,800	435	5,600	185	6,200	370
4	10,300	725	6,300	430	4,300	185	5,300	370
5	9,350	715	5,570	420	3,700	185	4,620	355
6	8,200	750	4,930	470	3,250	185	4,100	390
8	6,300	770	3,780	410	2,470	185	3,120	355
10	4,830	750	2,940	360	2,000	160	2,470	310
12	4,100	750	2,520	345	1,680	160	2,100	300

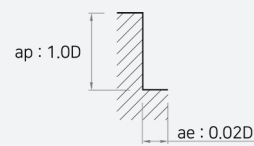
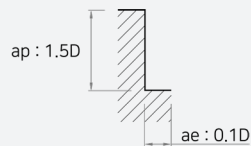
RPM = rev / min
FEED = mm / min



QE304 SERIES ► General Processing

Workpiece	Alloy steel, Heat-resistant steel		Heat Treatment Steel				Stainless Steel	
Hardness	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	12,100	320	7,900	195	2,700	47	6,600	160
3	9,400	370	5,840	230	2,000	58	4,850	195
4	7,900	655	4,850	405	1,500	58	4,070	320
5	6,600	690	3,970	415	1,300	58	3,320	345
6	5,830	760	3,530	470	1,150	58	2,980	380
8	4,410	815	2,650	435	880	58	2,200	405
10	3,420	700	2,100	345	720	46	1,760	345
12	2,880	600	1,760	290	590	46	1,430	275

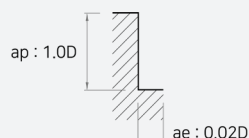
RPM = rev / min
FEED = mm / min



QE304 SERIES ► High Speed Processing

Workpiece	Alloy steel, Heat-resistant steel		Heat Treatment Steel				Stainless Steel	
Hardness	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	31,400	1,230	23,500	520	12,600	275	21,600	465
3	19,300	1,210	13,600	735	8,900	390	13,500	660
4	18,100	1,330	12,600	865	7,090	465	11,800	775
5	16,400	1,310	11,100	1,010	6,040	530	10,300	910
6	14,400	1,380	9,900	1,100	5,300	580	9,100	990
8	11,000	1,430	7,600	1,090	3,990	575	6,900	980
10	8,500	1,380	5,880	1,110	3,150	580	5,420	1,000
12	7,200	1,380	5,040	1,090	2,620	575	4,600	985

RPM = rev / min
FEED = mm / min



Recommended Cutting Conditions

QE304 ERIES ► Slotting Process

Workpiece	Non-ferrous Steel, Alloy Steel, Cast Iron		Alloy steel, Heat-resistant steel		Heat Treatment Steel	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	6,950	160	4,500	80	3,300	55
4	5,600	195	3,600	100	2,700	60
5	4,800	240	3,050	115	2,350	75
6	4,150	290	2,650	145	2,050	90
8	3,150	210	2,000	145	1,600	90
10	2,150	250	1,700	140	1,250	90
12	1,800	200	1,500	135	1,050	75

RPM = rev / min
FEED = mm / min



QR304, QR314 SERIES

Workpiece	Non-ferrous Steel, Alloy Steel, Cast Iron		Alloy steel, Heat-resistant steel		Heat Treatment Steel	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	6,950	195	4,500	150	3,300	100
4	5,600	240	3,600	170	2,700	105
5	4,800	250	3,050	210	2,350	125
6	4,150	250	2,650	210	2,050	125
8	3,150	265	2,000	210	1,600	125
10	2,150	265	1,700	210	1,250	125
12	1,800	210	1,500	185	1,050	105

RPM = rev / min
FEED = mm / min



QB302, QB312 SERIES ► General Processing

Workpiece	Non-ferrous Steel, Alloy Steel, Cast Iron		Alloy steel, Heat-resistant steel		Heat Treatment Steel	
Hardness	~ HRC30		HRC30 ~ HRC40		HRC40 ~ HRC55	
Strength	~ 1000N/mm ²		1000 ~ 1250N/mm ²		1500N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	16,500	290	13,300	230	6,100	105
1.5	16,500	405	12,700	310	5,590	140
2	15,100	865	11,200	565	4,900	175
2.5	15,100	865	11,200	565	4,900	175
3	13,800	780	10,500	530	4,750	175
4	11,000	850	8,800	610	4,410	205
5	9,600	945	7,600	665	3,860	205
6	8,900	1,150	7,200	955	3,340	220
8	7,500	1,500	6,050	1,060	2,590	255
10	6,700	1,750	5,300	1,170	2,140	260
12	6,150	2,000	4,900	1,280	1,840	280

RPM = rev / min
FEED = mm / min

ap : D1~D6=0.2mm ae : 0.2XD
D8~D12=0.3mm

ap : D1~D4=0.05XD ae : 0.1XD
D5~D8=0.25mm
D10~D12=0.3mm

※ Please reduce cutting speed around 20~30% from the above table for QB312 series.

QB302, QB312 SERIES ► High Speed Processing

Workpiece	Non-ferrous Steel, Alloy Steel, Cast Iron		Alloy steel, Heat-resistant steel	
Hardness	~ HRC45		HRC30 ~ HRC40	
Strength	~ 1000N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED
1	26,000	1,500	26,000	920
1.5	24,000	1,600	24,000	990
2	22,000	1,700	22,000	1,080
2.5	22,000	2,000	20,000	1,130
3	22,000	2,300	17,800	1,200
4	22,000	3,350	14,300	1,300
5	22,000	4,150	12,600	1,380
6	22,000	4,600	11,000	1,440
8	17,500	4,600	8,800	1,440
10	14,700	4,450	7,350	1,380
12	12,800	4,450	6,400	1,330

RPM = rev / min
FEED = mm / min

ap : D1~D6=0.2mm ae : 0.2XD
D8~D12=0.3mm

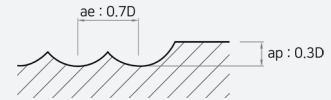
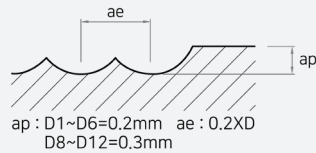
※ Please reduce cutting speed around 20~30% from the above table for QB312 series.

Recommended Cutting Conditions

QB302, QB312 SERIES

Workpiece	carbon steel, Alloy Steel, Tool Steel				Heat Treatment Steel		Cast Iron		Aluminum alloy	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC50		-		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500N/mm ²		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	12,350	640	9,150	415	4,000	125	10,500	220	30,800	395
3	11,400	575	8,550	390	3,800	125	7,050	230	20,500	395
4	8,950	630	7,150	450	3,600	150	5,150	285	15,400	395
5	7,800	700	6,200	490	3,100	150	4,150	330	12,100	470
6	7,250	870	5,900	705	2,700	160	3,400	360	10,300	470
8	6,100	1,090	4,900	785	2,050	190	2,500	460	7,900	540
10	5,450	1,330	4,350	870	1,750	190	2,050	460	6,150	540
12	4,990	1,500	3,950	950	1,500	210	1,750	460	5,150	630

RPM = rev / min
FEED = mm / min






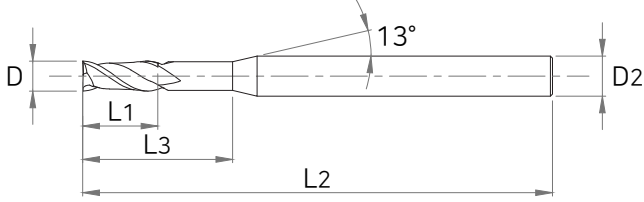



※ Please reduce cutting speed around 20~30% from the above table for QB312 series.






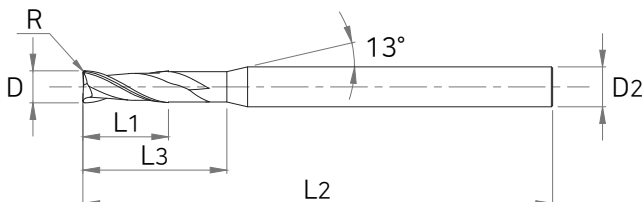

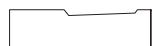
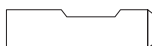
QB304 SERIES

Workpiece	Alloy Steel, Tool Steel				Heat Treatment Steel		Cast Iron		Aluminum alloy	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC50		-		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500N/mm ²		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	15,400	1,000	11,400	600	5,000	200	13,100	300	38,500	600
3	14,300	900	10,700	600	4,800	200	8,800	300	25,600	600
4	11,200	900	8,900	700	4,500	200	6,400	400	19,300	600
5	9,800	1,100	7,800	700	3,900	200	5,200	500	15,100	700
6	9,100	1,300	7,400	1,100	3,400	200	4,300	500	12,900	700
8	7,600	1,600	6,100	1,200	2,600	300	3,100	700	9,900	800
10	6,800	2,000	5,400	1,300	2,200	300	2,600	700	7,700	800
12	6,200	2,300	4,900	1,400	1,900	300	2,200	700	6,400	900






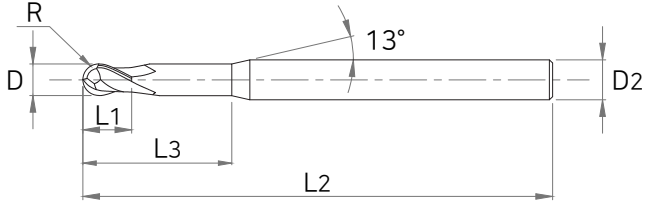



Sqaure Type

Workpiece		① Carbon steel, Alloy steel		<input type="checkbox"/>		
		② Cast iron		<input type="checkbox"/>		
		③ Stainless steel		<input type="checkbox"/>		
		④ Heat resisting alloy, Titanium		<input type="checkbox"/>		
		⑤ Nonferrous, Aluminium		<input type="checkbox"/>		
		⑥ etc		<input type="checkbox"/>		
Work processing		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						
		Shouldering	Slotting	Hlical Ramping	Pocket	Ramping
Specification	Geometry					
	Number of Flutes					
	D1					
	L1					
	L2					
	L3					
	D2					
Shank Type		Plain	<input type="checkbox"/>			
		Whistle Notch	<input type="checkbox"/>			
		Flat	<input type="checkbox"/>			
Oil	Internal				External	
Coating	Coating				Non Coating	
MOQ	Cutting Dia (D)0.5~8.0(100EA) Cutting Dia (D)8.1~12.0(50EA)					
Details						

Radius Type

Workpiece	① Carbon steel, Alloy steel		<input type="checkbox"/>			
	② Cast iron		<input type="checkbox"/>			
	③ Stainless steel		<input type="checkbox"/>			
	④ Heat resisting alloy, Titanium		<input type="checkbox"/>			
	⑤ Nonferrous, Aluminium		<input type="checkbox"/>			
	⑥ etc		<input type="checkbox"/>			
Work processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
						
	Shouldering	Slotting	Helical Ramping	Pocket	Ramping	
						
						Geometry
Number of Flutes						
D1						
Specification	L1					
	L2					
	L3					
	D2					
	Shank Type	Plain	<input type="checkbox"/>	  		
		Whistle Notch	<input type="checkbox"/>			
Flat		<input type="checkbox"/>				
Oil	Internal		External			
	Coating		Non Coating			
MOQ	Cutting Dia (D)0.5~8.0(100EA) Cutting Dia (D)8.1~12.0(50EA)					
Details						

Ball Type

Workpiece		① Carbon steel, Alloy steel		<input type="checkbox"/>				
		② Cast iron		<input type="checkbox"/>				
		③ Stainless steel		<input type="checkbox"/>				
		④ Heat resisting alloy, Titanium		<input type="checkbox"/>				
		⑤ Nonferrous, Aluminium		<input type="checkbox"/>				
		⑥ etc		<input type="checkbox"/>				
Work processing		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
								
		Shouldering	Slotting	Helical Ramping	Pocket	Ramping		
		Specification		Geometry				
				Number of Flutes				
D1								
L1								
L2								
D2								
Shank Type		Plain	<input type="checkbox"/>					
		Whistle Notch	<input type="checkbox"/>	Plain	Whistle notch	Flat		
		Flat	<input type="checkbox"/>					
Oil	Internal		External					
Coating	Coating		Non Coating					
MOQ	Cutting Dia (D)0.5~8.0(100EA) Cutting Dia (D)8.1~12.0(50EA)							
Details								



HQ & Changwon Factory

172, Sahwa-ro, Uichang-gu, Changwon-si, Gyeongsangnam-do, Korea [51389]

HQ : TEL +82-55-286-0905 FAX : +82-55-286-0978

WIDIN Viet Nam(Office & Factory)

Lot CN5, Hop Thinh Industrial Zone, Hop Thinh Commune, Hiep Hoa District,
Bac Giang Province, Viet Nam

TEL : +84-20-4248-4883

└**Viet Nam, Ha Noi Office**

8th Floor – Hoang Ngoc Building, Lot C2C, Cau Giay Focus Areas of Information
Technology, Dich Vong Hau Ward, Cau Giay District, Ha Noi City, Viet Nam

TEL : +84-24-6287-3828

└**Viet Nam, Ho Chi Minh Office**

4th Floor – Hai Au Building, 39B Truong Son, Ward 4, Tan Binh isDtrict,
Ho Chi Minh City, Viet Nam

TEL : +84-28-6297-3858