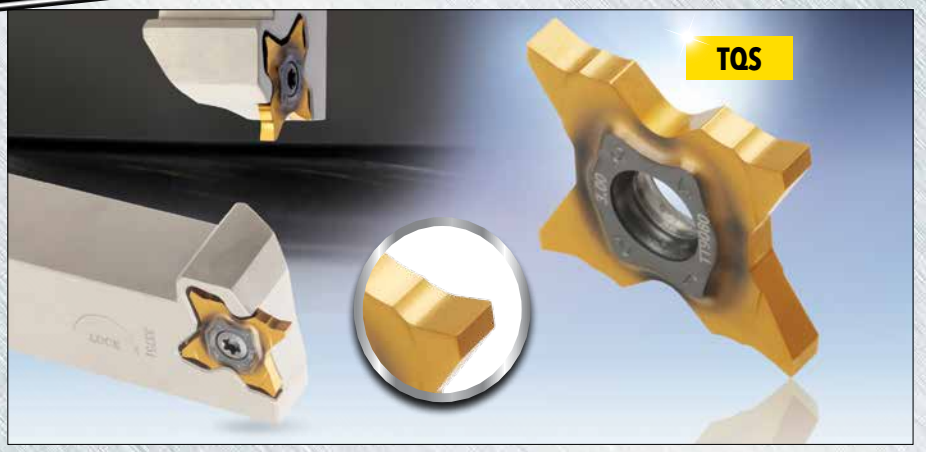
GOLDFLEX
QUAD GROOVE LINE

NEW CHIPBREAKERS TQS AND TQC



INSERTS:
- Width: .020" - .125" (.5mm – 3.18mm)
- Nose Radius: From Sharp to Full Radius
- Lead Angles also available to eliminate burrs
- T-Max (Groove Depth): Up to .252"
- Feed Rates: Up to .010ipr

GRADES:
- TT9080 for General Purpose,
- CT3000 (TQS only) for high speeds and good surface finish

APPLICATIONS:
- Parting off - Where higher feed rates are needed
- Grooving - Where perfectly flat bottom groove is required
- Turn / Grooving
- Chamfering

*** Note: For TQJ inserts and GoldFlex Holder information please refer to the 2013/2014 Fine Gold Catalog**

Ingersoll has added two new chipbreakers to the GoldFlex product line, expanding the range of materials and applications covered by this economical and excellent-performing 4-edge parting & grooving system.

The new TQS chipbreaker was developed for parting and grooving in a wide range of cutting conditions, and features a high positive rake angle that reduces cutting forces. This insert, available in widths up to 5.2mm (.205"), is also suitable for use as a blank to grind special forms in order to provide tailor-made inserts for special grooving applications. It is offered in both carbide and cermet grades.

The new TQC chipbreaker was developed for more aggressive cutting conditions, in particular higher feed rates, in parting and grooving applications. The strong cutting edge allows higher productivity to be achieved without compromising tool life. It is offered in universal, coated carbide grade TT9080, which is suitable for a wide range of materials.

Both inserts feature a straight cutting edge, meaning they will generate a perfectly flat bottom groove.

These two new additions complement the previously-introduced TQJ insert, which is still the first choice for lighter feed rate applications, softer materials, tubes, stainless steel and high temp alloys.

Collectively, these three chipbreakers make GoldFlex the ideal, 4-edge shallow parting & grooving solution.

NEW PRODUCT ANNOUNCEMENT ·2014·

Member IMC Group
Ingersoll Cutting Tools

GOLD FLEX EXPANSION

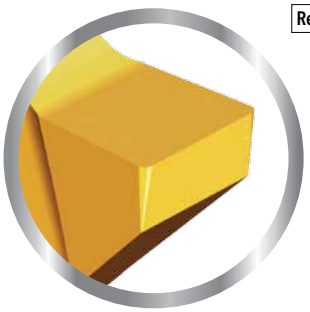
TQS Series Inserts with Positive, Flat Top Cutting Surface

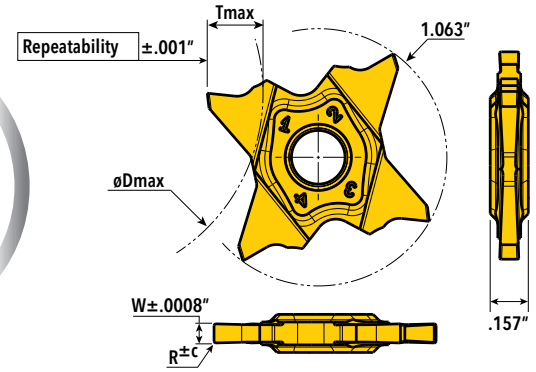
- High positive rake angle for reduced cutting forces.
- Standard widths from 1mm (.039") to 3mm (.125").
- Special width capability from .5mm (.020") to 5.2mm (.205").
- Ability to produce special forms according to customer requirements.
- Straight cutting edge provides a perfectly flat groove.
- Two standard grades avaiable including cermet grade CT3000 for improved surface quality, extended tool life and higher cutting speeds.

CASE STUDY 1

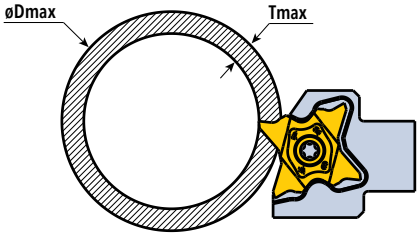
	Competitor	Ingersoll
Material	Low carbon steel	
Insert	Competitor 'C'	TQS 27-4030R15C
Grade	PVD	CT3000
V(sfm)	1200	1200
f(ipr)	.008	.008
Depth of cut (inch)	.024	.024
Tool life/Corner	300	900
No. of corners	3	4
Total Tool life (pcs)	300 X 3 =900	900 x 4 = 3,600

TQS 27 - FOR PRECISION GROOVING, STRAIGHT CUTTING EDGES WITH HIGH POSITIVE RAKE ANGLE





Tolerance	
R	C
R≤.004"	.0008"
.004"<R≤.016"	.0012"
R>.016"	.0020"



ITEM DESCRIPTION	W± 0.0008"	R (inch)	Tmax (inch)	ØDmax (inch) T=Groove Depth										Grade TT9080	Feed (ipr)
				T≤.118	T≤.138	T≤.157	T≤.177	T≤.197	T≤.217	T≤.224	T≤.236	T≤.244	T≤.252		
TQS 27-1.00-0.10	0.040	0.004	0.138	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.003
TQS 27-1.50-0.20	0.059	0.008	0.224	N.L.	23.62	11.02	7.09	5.12	4.13	3.35	2.36	1.97	1.18	•	.002-.0025
TQS 27-2.00-0.20	0.079	0.008	0.252	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.006
TQS 27-2.39-0.15	0.094	0.006	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.006
TQS 27-2.50-0.20	0.098	0.008	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.008
TQS 27-3.00-0.20	0.118	0.008	0.252	N.L.	23.62	11.02	7.09	5.31	4.13	3.74	3.35	3.07	2.17	•	.0025-.009

- Other sizes of width from .020" up to .205" can be supplied as special
- N.L = No limit

SPECIAL PROFILE INSERTS

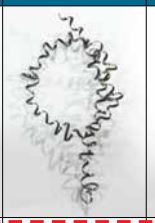
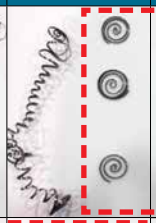
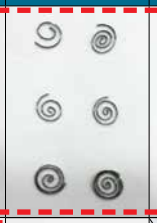
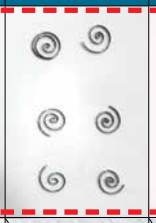
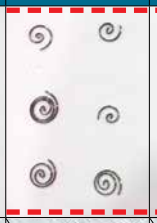
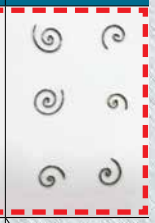
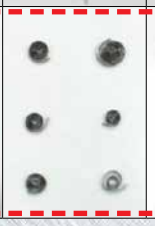
GOLD FLEX EXPANSION

TQC Series Inserts with "C" type Chipbreaker for a Wide Range of Materials and Higher Feed Rates

- Unique chipbreaker for parting and grooving of steel and other hard materials.
- Wide range of cutting conditions (.002-.010 ipr) with very good chip control.
- Ideal for medium to high feed rate applications.
- Straight cutting edge provides a perfectly flat groove.

RECOMMENDED FEED RATE RANGE COMPARED TO TQJ SERIES

- Material : Carbon Steel
- Cutting Speed : 500 SFM
- Depth of Cut : .200", Wet
- Insert Width: 2mm (.079")

Feedrate	.002"	.003"	.004"	.005"	.006"	.007"	.008"	.010"
TQC 								
TQJ 								

• TQC insert is suitable for high feed rate cutting condtion

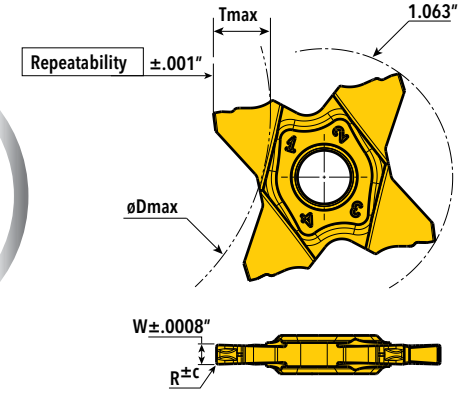
CASE STUDY 1

	Competitor	Ingersoll
Material	Carbon steel	
Insert	Competitor 'A'	TQC 27-1.50-0.20
Grade	PVD	TT9080
V(sfm)	720	560
f(ipr)	.0035"	.0055"
Depth of cut (inch)	.200"	.200"
Tool life/Corner	300	1,200
No. of corners	3	4
Total Tool life (pcs)	300 X 3 = 900	1200 X 4 = 4,800

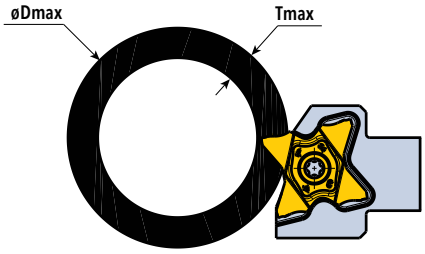
CASE STUDY 2

	Competitor	Ingersoll
Material	Alloy steel	
Insert	Competitor 'B'	TQC 27-1.70-0.10
Grade	PVD	TT9080
V(sfm)	800	800
f(ipr)	.0035"	.0035"
Depth of cut (inch)	.050"	.050"
Tool life/Corner	250	300
No. of corners	3	4
Total Tool life (pcs)	750	1200

TQC 27 - FOR PARTING AND GROOVING OF TOUGH AND GENERAL APPLICATIONS



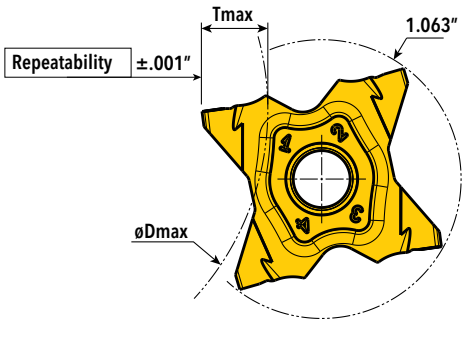
Tolerance	
R	C
R≤.004"	.0008"
.004"<R≤.016"	.0012"
R>.016"	.0020"

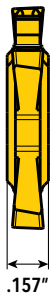


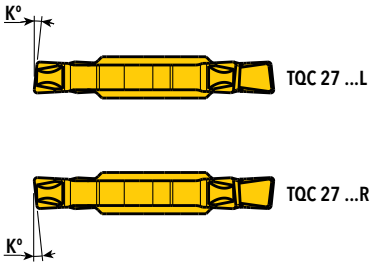
ITEM DESCRIPTION	W± 0.0008"	R (inch)	Tmax (inch)	ØDmax (inch) T=Groove Depth										Grade TT9080	Feed (ipr)
				T≤.118	T≤.138	T≤.157	T≤.177	T≤.197	T≤.217	T≤.224	T≤.236	T≤.244	T≤.252		
TQC 27-1.50-0.10	0.059	0.004	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.003
TQC 27-1.50-0.20	0.059	0.008	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.0025
TQC 27-1.57-0.15	0.062	0.006	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.003
TQC 27-1.70-0.10	0.067	0.004	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.0035
TQC 27-1.75-0.10	0.069	0.004	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.004
TQC 27-1.75-0.20	0.069	0.008	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.0035
TQC 27-1.78-0.18	0.070	0.007	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.004
TQC 27-1.85-0.20	0.073	0.008	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.004
TQC 27-1.96-0.15	0.077	0.006	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.002-.004
TQC 27-2.00-0.10	0.079	0.004	0.252	N.L.	23.62	11.02	7.09	5.12	1.97	3.35	2.36	1.97	1.18	•	.002-.0065
TQC 27-2.00-0.20	0.079	0.008	0.252	N.L.	23.62	11.02	7.09	5.12	1.97	3.35	2.36	1.97	1.18	•	.002-.006
TQC 27-2.22-0.15	0.087	0.006	0.138	N.L.	23.62	-	-	-	-	-	-	-	-	•	.002-.006
TQC 27-2.30-0.20	0.091	0.008	0.138	N.L.	23.62	-	-	-	-	-	-	-	-	•	.002-.006
TQC 27-2.39-0.15	0.094	0.006	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.006
TQC 27-2.47-0.20	0.097	0.008	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.0075
TQC 27-2.50-0.10	0.098	0.004	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.008
TQC 27-2.50-0.30	0.098	0.012	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.002-.0065
TQC 27-2.70-0.10	0.106	0.004	0.244	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	-	•	.002-.0075
TQC 27-2.87-0.20	0.113	0.008	0.244	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	-	•	.002-.0075
TQC 27-3.00-0.00	0.118	0.000	0.252	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	2.17	•	.002-.004
TQC 27-3.00-0.20	0.118	0.008	0.252	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	2.17	•	.0025-.009
TQC 27-3.00-0.30	0.118	0.012	0.252	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	2.17	•	.0025-.010
TQC 27-3.00-0.40	0.118	0.016	0.252	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	2.17	•	.0025-.010
TQC 27-3.15-0.15	0.124	0.006	0.252	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	2.68	•	.0025-.008
TQC 27-3.18-0.20	0.125	0.008	0.252	N.L.	23.62	11.02	7.09	5.12	4.13	3.74	2.36	3.07	2.68	•	.0025-.009

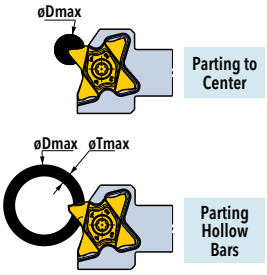
• N.L = No limit

TQC 27 - FOR PARTING



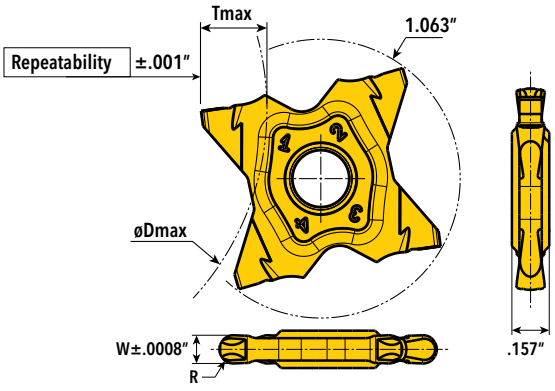






ITEM DESCRIPTION	W± 0.0008"	R (inch)	K°	Parting to Center	Parting Hollow Bars		Grade TT9080	Feed (ipr)
				ØDmax (inch)	ØTmax (inch)	ØDmax (inch)		
TQC 27-1.50-6R/L	0.059	0.0024	6	0.472	0.224	1.38	•	.001-.003
TQC 27-1.50-15R/L	0.059	0.0024	15	0.472	0.224	1.38	•	.001-.003
TQC 27-2.00-6R/L	0.079	0.0040	6	0.512	0.252	1.18	•	.002-.006
TQC 27-2.00-15R/L	0.079	0.0040	15	0.512	0.252	1.18	•	.002-.006

TQC 27 - FULL RADIUS



ITEM DESCRIPTION	W± 0.0008"	R (inch)	Tmax (inch)	ØDmax (inch) T=Groove Depth										Grade TT9080	Feed (ipr)
				T≤.118	T≤.138	T≤.157	T≤.177	T≤.197	T≤.217	T≤.224	T≤.236	T≤.244	T≤.252		
TQC 27-1.57-0.79	0.062	0.031	0.118	N.L.	-	-	-	-	-	-	-	-	-	•	.0020-.0035
TQC 27-2.00-1.00	0.079	0.039	0.138	N.L.	23.62	-	-	-	-	-	-	-	-	•	.0020-.0050
TQC 27-2.39-1.20	0.094	0.047	0.224	N.L.	23.62	11.02	7.09	5.12	1.97	1.38	-	-	-	•	.0025-.0065
TQC 27-3.00-1.50	0.118	0.059	0.252	N.L.	23.62	11.02	7.09	5.31	4.13	3.74	3.35	3.07	2.17	•	.0025-.0080

• N.L = No limit

RECOMMENDED CUTTING CONDITIONS

ISO	Material		Condition	Tensile Strength Rm(N/mm²)	Hardness HB	Coated Carbide	Cermet
						TT9080	CT3000
P	Non-alloy steel, cast steel, free cutting steel	<0.25 %C	Annealed	420	125	460-820	525-920
		>=0.25 %C	Annealed	650	190	425-720	495-820
		<0.55 %C	Quenched and tempered	850	250	295-650	360-750
		>=0.55%C	Annealed	750	220	330-720	395-790
			Quenched and tempered	1000	300	230-560	295-650
	Low alloy steel and cast steel (less than 5% alloying elements)		Annealed	600	200	295-395	360-525
			Quenched and tempered	930	275	260-560	330-650
				1000	300	230-425	295-650
				1200	350	165-395	260-525
	High alloy steel, cast steel and tool steel.		Annealed	680	200	200-460	260-330
			Quenched and tempered	1100	325	165-230	230-330
M	Stainless steel and cast steel		Ferritic/martensitic	680	200	230-560	330-650
			Martensitic	820	240	200-495	295-590
			Austenitic	600	180	295-590	395-650
K	Gray cast iron (GG)		Ferritic	-	160	325-750	-
			Pearlitic	-	250	295-590	-
	Cast iron nodular (GGG)		Ferritic	-	130	625-985	-
			Pearlitic	-	230	395-720	-
	Malleable cast iron		Ferritic	-	180	395-820	-
			Pearlitic	-	260	330-690	-
S	High temp. alloys	Fe based	Annealed	-	200	130-230	-
			Cured	-	280	100-165	-
		Ni or Co based	Annealed	-	250	100-130	-
			Cured	-	350	50-80	-
			Cast	-	320	50-100	-
	Titanium, Ti alloys			Rm 400	-	295-625	-
			Alpha+beta alloys cured	Rm 1050	-	100-200	-

Steel | Stainless Steel | Cast Iron | Nonferrous | High Temp. Alloys | Hardened Steel