

Mass production and High performance

Indexable Reamer

- Suitable for mass production and high performance
- Using PCD or coated insert for high speed machining
- Excellent high accuracy and adjustable machining hole
- Using accuracy chucking system (Hydraulic, rotating type arbor)
- Using inner coolant type machine to evacuate chips
- Using suitable holder and insert
- As insert setting, using setting fixture (KIRSD-210)

Code system

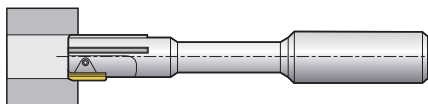
IR T 12.000 - 16 135 - 16					
Type	Application	Reamer dia.	Shank Dia.	length	Insert size
Indexable Reamer	T: Throughout hole machining B: Blind hole machining	12.000: Ø12.0	16: Ø16	135: 135	15: 15.0×3.0 16: 16.0×3.5 17: 17.0×4.5 22: 22.0×6.5

Insert code system

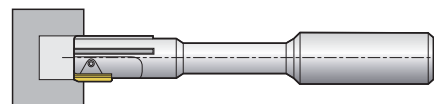
RI 16 - B 06			
Type	Insert size	Insert reed type	Angle of C/B
Reamer Insert	15: 15.0×3.0 16: 16.0×3.5 17: 17.0×4.5 22: 22.0×6.5	A: Excellent surface finish, low cutting condition B: General surface finish, high cutting condition C: Aluminum and copper alloy D: Blind hole, low feed	00: 0°, Cast iron 06: 6°, General steel 12: 12°, Stainless, Al

Application

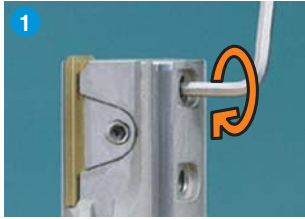
Throughout hole machining (IRT type)



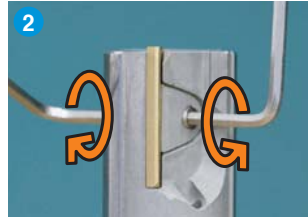
Stuffed hole machining (IRB type)



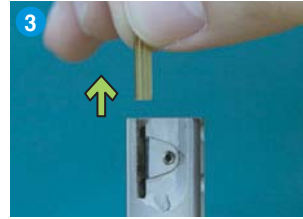
How to set an insert



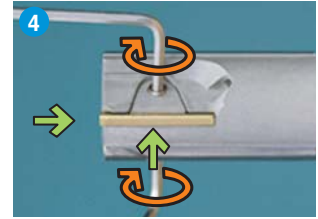
1. Screw the wedge screw counter clockwise with the exclusive wrench



2. Screw the clamp screw
① Top side: counter clockwise
② Lower side: clockwise



3. Remove the insert and clean the pocket



4. Put the insert up to the edge stopper and clamp the insert
① Top side: clockwise
② Lower side: counterclockwise

Exclusive fixture

- Designation: KIRSD-210
- Maximum diameter of reamer: $\varnothing 60 \times 210$ mm
- The fixture is also available for setting special reamer and mono tool
- Special reamers (out of maximum setting range) are available quotation



How to set an insert with fixture



1. Adjust the gauge to '0'



2. Rotate the reamer for the insert to touch the gauge



3. Set the back taper and adjust the insert height with screw the wedge screw
① Top side of insert: $+0.015 \sim +0.020$ mm
② Bottom side of insert: $+0.005 \sim +0.010$ mm
③ Back taper: $0.010 \sim 0.015$ mm

Back taper

- Ensures low cutting load and excellent surface finish with good chip evacuation
- Inaccurate back taper could cause unstable machining with wear of insert
- The size of back taper of insert down side should be less to $0.010 \sim 0.015$ mm than one of insert upper side

Insert setting with a micrometer



- Lathe with both centers or bench center are also available

Notice: The setting with a micrometer is not recommended due to chipping on the cutting edge

Recommended cutting condition

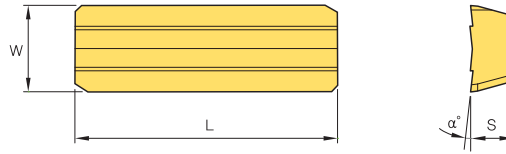
Workpiece	Insert type		Feed rate (mm/rev) per drill dia. (mm)	Cutting speed v_c (m/min)		
	Rake angle	Lead type		Coated	Uncoated	Cermet
Carbon steel General steel	6	A	0.1~0.4	60~80	40~60	110~160
		B	0.1~0.3	80~120	60~80	
		D	0.05~0.2			
Mild steel Alloy steel	6	A	0.1~0.4	40~60	20~40	110~160
		B	0.1~0.3	80~120	60~80	
		D	0.05~0.2			
High alloy steel Tool steel	6	A	0.1~0.4	20~60	20~40	20~60
		B	0.1~0.3	40~80	40~60	40~80
		D	0.05~0.2			
Stainless steel	12	A	0.1~0.3	40~60	20~40	40~60
		B	0.1~0.2	60~80	40~60	60~80
		D	0.05~0.2			
Cast iron	0.6	A	0.1~0.3	60~100	40~60	
		B	0.1~0.25	80~120	60~80	
		D	0.05~0.2			
Alloyed aluminum	12	B	0.1~0.3		160~200	
		C	0.15~0.3		150~250	
		D	0.05~0.2		110~200	
Alloyed copper	0	B	0.1~0.2		80~100	
		D	0.05~0.2			
Non-ferrous alloy	0	B	0.1~0.3		10~70	

Parts

Reamer size	Clamp	Wedge	Clamp Screw	Wedge Screw	Clamp Wrench	Wedge Wrench
10.0~11.9	CV 15	AW2430	DHA0308	HSO306	HW15L	HW15L
12.0~17.9	CV 16	AW2435				
18.0~27.9	CV 17	AW3240	DHA0409	HSO406	HW20L	HW20L
28.0~31.9	CV 22	AW3260				



Indexable Reamer Insert



Designation	Grade			Dimensions			Reed type	Rake angle (α°)			
	K10 (Uncoated)	BPK110 (TiAlN)	BPK210 (TiN)	L	W	S					
RI	15-A06		○	15	3.0	1.5	A	6°			
	15-A12	○		15	3.0	1.5	A	12°			
	15-B06		○	15	3.0	1.5	B	6°			
	15-B12		○	15	3.0	1.5	B	12°			
	16-A06			○	16	3.5	1.5	A	6°		
	16-A12	○			16	3.5	1.5	A	12°		
	16-B06		○	○	16	3.5	1.5	B	6°		
	16-B12		○		16	3.5	1.5	B	12°		
	17-A06				○	17	4.5	2.0	A	6°	
	17-A12	○				17	4.5	2.0	A	12°	
	17-B06		○	○	17	4.5	2.0	B	6°		
	17-B12		○		17	4.5	2.0	B	12°		
	22-A06					○	22	6.5	3.0	A	6°
	22-A12	○					22	6.5	3.0	A	12°
	22-B06		○	○	22	6.5	3.0	B	6°		
	22-B12		○		22	6.5	3.0	B	12°		

※ ○ This is recommended grade as for insert type

Angle of chip breaker

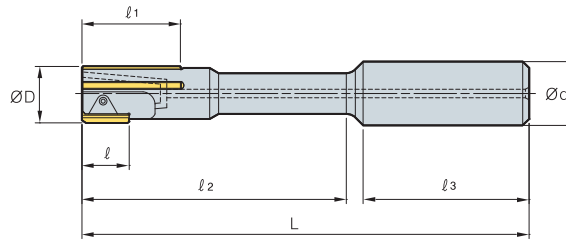
Division	00	06	12
Shape			
Application	For cast iron machining	For general machining	For stainless and aluminum machining

Insert lead type

Type	Shape	Working condition	Type	Shape	Working condition
A		For excellent surface, low cutting condition	C		For aluminum and copper alloy machining
B		For general application, high cutting condition	D		For blind hole machining, low feed

Indexable Reamer-IRT

Throughout hole



(mm)

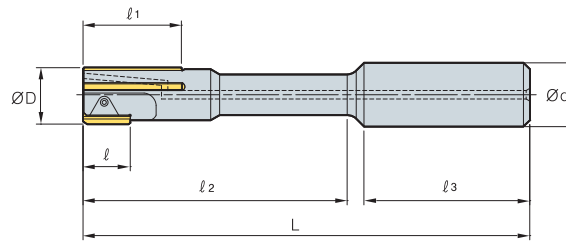
	Designation	ØD	l	l ₁	l ₂	l ₃	L	Ød	Insert
IRT	10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11.000-16125-15	11	15	30	75	45	125	16	RI 15
	12.000-16135-16	12	16	30	85	45	135	16	RI 16
	13.000-16135-16	13	16	30	85	45	135	16	RI 16
	14.000-16135-16	14	16	30	85	45	135	16	RI 16
	15.000-16135-16	15	16	30	85	45	135	16	RI 16
	16.000-20155-16	16	16	30	100	50	155	20	RI 16
	17.000-20155-16	17	16	30	100	50	155	20	RI 16
	18.000-20155-17	18	17	30	100	50	155	20	RI 17
	19.000-20155-17	19	17	30	100	50	155	20	RI 17
	20.000-25165-17	20	17	30	110	56	165	25	RI 17
	21.000-25165-17	21	17	30	110	56	165	25	RI 17
	22.000-25165-17	22	17	30	110	56	165	25	RI 17
	23.000-25165-17	23	17	30	110	56	165	25	RI 17
	24.000-25165-17	24	17	30	110	56	165	25	RI 17
	25.000-25165-17	25	17	30	110	56	165	25	RI 17
	26.000-25165-17	26	17	30	110	56	165	25	RI 17
	27.000-25165-17	27	17	30	110	56	165	25	RI 17
	28.000-32165-22	28	22	30	110	56	165	32	RI 22
	29.000-32165-22	29	22	30	110	56	165	32	RI 22
	30.000-32165-22	30	22	30	110	56	165	32	RI 22
31.000-32165-22	31	22	30	110	56	165	32	RI 22	

➔ Applicable inserts **G82**



Indexable Reamer-IRB

Stuffed hole



(mm)

	Designation	ØD	l	l ₁	l ₂	l ₃	L	Ød	Insert
IRB	10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11.000-16125-15	11	15	30	75	45	125	16	RI 15
	12.000-16135-16	12	16	30	85	45	135	16	RI 16
	13.000-16135-16	13	16	30	85	45	135	16	RI 16
	14.000-16135-16	14	16	30	85	45	135	16	RI 16
	15.000-16135-16	15	16	30	85	45	135	16	RI 16
	16.000-20155-16	16	16	30	100	50	155	20	RI 16
	17.000-20155-16	17	16	30	100	50	155	20	RI 16
	18.000-20155-17	18	17	30	100	50	155	20	RI 17
	19.000-20155-17	19	17	30	100	50	155	20	RI 17
	20.000-25165-17	20	17	30	110	56	165	25	RI 17
	21.000-25165-17	21	17	30	110	56	165	25	RI 17
	22.000-25165-17	22	17	30	110	56	165	25	RI 17
	23.000-25165-17	23	17	30	110	56	165	25	RI 17
	24.000-25165-17	24	17	30	110	56	165	25	RI 17
	25.000-25165-17	25	17	30	110	56	165	25	RI 17
	26.000-25165-17	26	17	30	110	56	165	25	RI 17
	27.000-25165-17	27	17	30	110	56	165	25	RI 17
	28.000-32165-22	28	22	30	110	56	165	32	RI 22
	29.000-32165-22	29	22	30	110	56	165	32	RI 22
	30.000-32165-22	30	22	30	110	56	165	32	RI 22
31.000-32165-22	31	22	30	110	56	165	32	RI 22	

↻ Applicable inserts **G82**

Chucking/Machine Reamer

Recommended cutting condition

Workpiece	Hardness (HB)	Cutting condition	Diameter		
			~Ø9	Ø10~25	Ø26~60
Steel	~100kg/mm ²	vc (m/min)	8~12	8~12	8~12
		fn (mm/rev)	0.15~0.25	0.20~0.40	0.30~0.50
	100~140kg/mm ²	vc (m/min)	5~10	5~10	5~10
		fn (mm/rev)	0.10~0.20	0.15~0.25	0.20~0.40
Cast iron	HB~220	vc (m/min)	6~12	6~12	8~15
		fn (mm/rev)	0.15~0.30	0.30~0.50	0.40~0.80
	HB 220~	vc (m/min)	5~10	5~10	8~12
		fn (mm/rev)	0.10~0.20	0.20~0.35	0.30~0.50
Brass	HB 50~120	vc (m/min)	8~12	10~15	10~15
		fn (mm/rev)	0.10~0.15	0.15~0.25	0.25~0.40
Bronze	HB 60~100	vc (m/min)	8~12	10~15	10~15
		fn (mm/rev)	0.10~0.15	0.15~0.25	0.25~0.40
Alloyed aluminum	HB 90~120	vc (m/min)	15~25	15~25	20~30
		fn (mm/rev)	0.15~0.25	0.25~0.40	0.40~0.70
Synthetic resins	-	vc (m/min)	15~30	20~35	30~40
		fn (mm/rev)	0.15~0.25	0.25~0.40	0.40~0.50



Chucking Reamer-SCRS

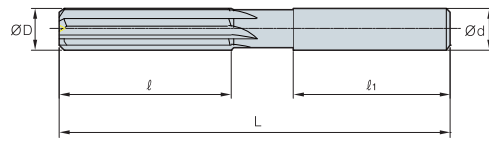


Fig.1

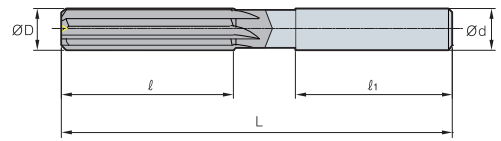


Fig.2

(mm)

Designation	No. of flute	ØD	Ød	ℓ	ℓ ₁	L	Fig.	
SCRS	050S	4	5.0	6.0	20	40	100	1
	060S	4	6.0	6.0	20	40	115	1
	070S	4	7.0	8.0	20	40	125	1
	080S	4	8.0	8.0	20	40	135	1
	090S	4	9.0	10.0	20	45	140	1
	100B	4	10.0	10.0	25	50	145	2
	110B	4	11.0	12.0	25	50	150	2
	120B	4	12.0	12.0	25	50	160	2
	130B	4	13.0	16.0	25	50	165	2
	140B	6	14.0	16.0	25	50	170	2
	150B	6	15.0	16.0	30	50	180	2
	160B	6	16.0	16.0	30	50	190	2
	180B	6	18.0	20.0	30	55	210	2
	200B	6	20.0	20.0	40	60	230	2

Chucking Reamer-SCRH

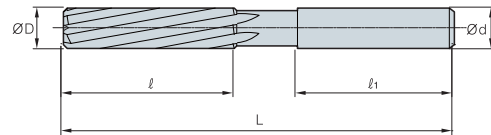


Fig.1

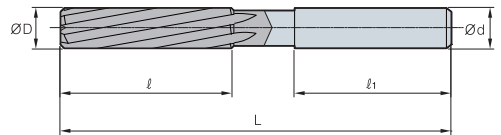
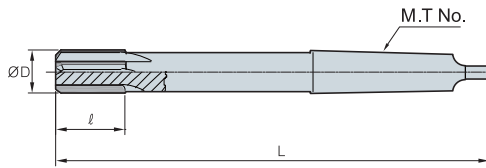


Fig.2

(mm)

Designation	No. of flute	ØD	Ød	ℓ	ℓ ₁	L	Fig.	
SCRS	050S	4	5.0	6.0	20	40	100	1
	060S	4	6.0	6.0	20	40	115	1
	070S	4	7.0	8.0	20	40	125	1
	080S	4	8.0	8.0	20	40	135	1
	090S	4	9.0	10.0	20	45	140	1
	100B	4	10.0	10.0	25	50	145	2
	110B	4	11.0	12.0	25	50	150	2
	120B	4	12.0	12.0	25	50	160	2
	130B	4	13.0	16.0	25	50	165	2
	140B	6	14.0	16.0	25	50	170	2
	150B	6	15.0	16.0	30	50	180	2
	160B	6	16.0	16.0	30	50	190	2
	180B	6	18.0	20.0	30	55	210	2
	200B	6	20.0	20.0	40	60	230	2

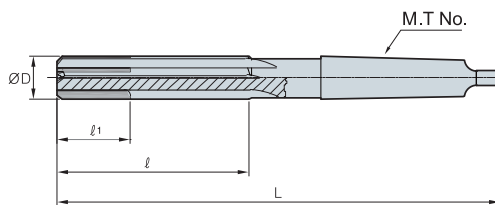
Chucking Reamer-TCRS



(mm)

Designation	No. of flute	ØD	ℓ	L	M.T No.	
TCRS	070	4	7.0	20	150	1
	080	4	8.0	20	150	1
	090	4	9.0	20	160	1
	100	4	10.0	25	160	1
	110	4	11.0	25	170	1
	120	4	12.0	25	170	1
	130	4	13.0	25	180	1
	140	6	14.0	25	190	1
	150	6	15.0	30	200	2
	160	6	16.0	30	200	2
	180	6	18.0	30	220	2
	200	6	20.0	40	230	2
	250	6	25.0	40	260	3
	280	8	28.0	40	270	3
	300	8	30.0	50	290	3

Chucking Reamer-TMRS



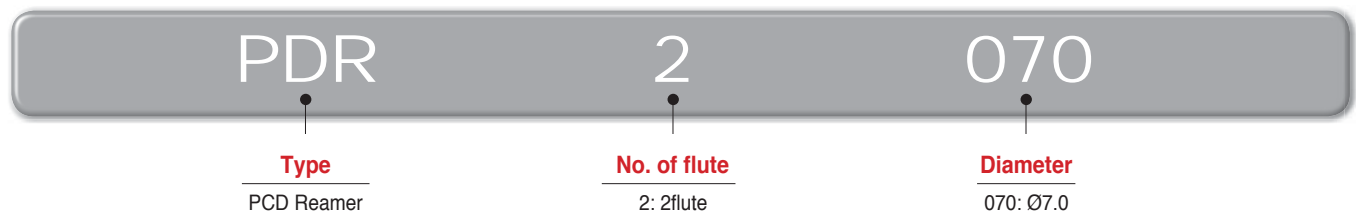
(mm)

Designation	No. of flute	ØD	ℓ	ℓ ₁	L	M.T No.
TMRS	070	4	7.0	60	150	1
	080	4	8.0	70	150	1
	090	4	9.0	70	160	1
	100	4	10.0	75	170	1
	110	4	11.0	75	170	1
	120	4	12.0	80	180	1
	130	4	13.0	85	190	1
	140	6	14.0	90	210	1
	150	6	15.0	90	215	2
	160	6	16.0	100	220	2
	180	6	18.0	105	225	2
	200	6	20.0	120	240	2
	250	6	25.0	130	270	3
	280	8	28.0	140	280	3
	300	8	30.0	150	290	3



PCD Reamer

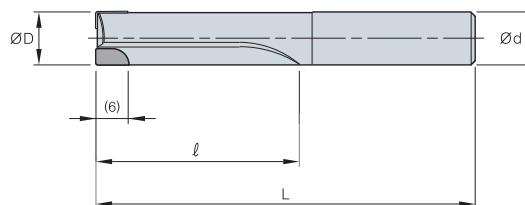
Code system



Recommended cutting condition (For high speed and high precision machining)

Workpiece	vc (m/min)	fn (mm/rev)
Aluminum alloy	50~250	0.05~0.20

PCD Reamer-PDR

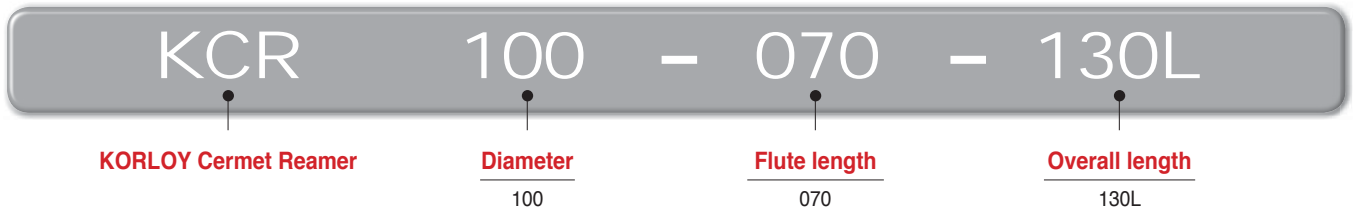


Designation		No. of flute	ØD	Ød	ℓ	L
PDR	2050	2	5.0	6.0	30	65
	2060	2	6.0	6.0	40	75
	2070	2	7.0	8.0	40	75
	2080	2	8.0	8.0	40	75
	2090	2	9.0	10.0	40	85
	2100	2	10.0	10.0	40	85
	2120	2	12.0	12.0	50	95
	2140	2	14.0	16.0	50	95
	2150	2	15.0	16.0	50	100
	4160	4	16.0	16.0	50	100
	4180	4	18.0	20.0	60	110
	4200	4	20.0	20.0	60	110

Cermet Reamer

- Cermet reamer realizes high performance in high hardness steel machining (lower performance in casting machining)
- High machinability and wear resistance extend the tool life
- Over 30% higher productivity, surface roughness, and tool life than carbide reamer

Code system



Recommended cutting condition

Workpiece	Hardness	fz (mm/t)	vc (m/min)
Carbon steel	Under 30HRC	0.1~0.4	50~80
High carbon steel, Alloy steel	30~40HRC	0.1~0.4	80~120
	40~50HRC	0.1~0.4	50~80
Alloy steel	More than 50HRC	0.05~0.2	30~60

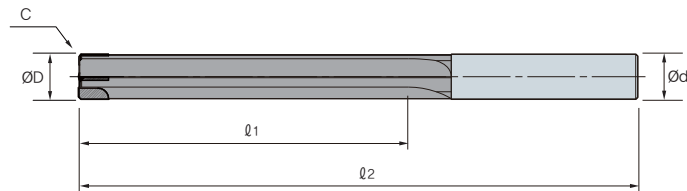
Application examples



- **Cutting condition**
- Workpiece: S55CR
- Hardness: 23~30HRC
- fn(mm/rev): 0.4
- vc(m/min): 20

Cermet Reamer-KCR

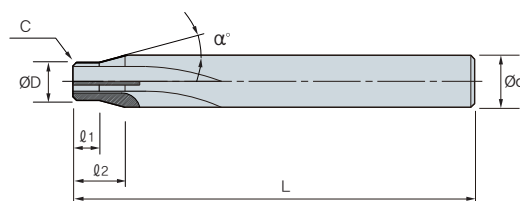
Standard type



(mm)

Designation	No. of flute	ØD	Ød	l ₁	L	
KCR	060~079-25-70L	2	6.0~7.9	8	25	70
	080~099-035-90L	2	8.0~9.9	10	35	90
	100~119-050-100L	4	10.0~11.9	12	50	100
	120~159-060-110L	4	12.0~15.9	12	60	110
	160~199-060-110L	4	16.0~19.9	16	60	110
	200~259-060-110L	4	20.0~25.9	20	60	110
	260~300-070-130L	4	26.0~30	25	70	130

• The length of flute and overhang length of reamer are available for quotation • The maximum overhang length is 150mm



(mm)

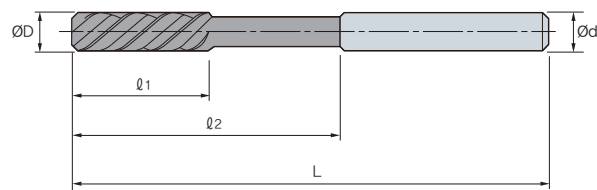
Designation	No. of flute	ØD	Ød	l ₁	l ₂	L	α°	
KCR	□□□~□□□-□□□L	2~4	8.0~25.9	12~30	7~18	2~15	70	10°~60°



Broach Reamer

- Optimal for thru hole machining with high precision with long tool life
- High helix angle (45 degree) improves machinability
- Superior surface roughness and high precision
- Strong cutting edge and excellent chip evacuation
- Dia. Ø3.0~Ø25.0

Broach Reamer-HBRE



								(mm)
Designation	No. of flute	ØD	Ød	l ₁	l ₂	L	Type	
HBRE	030	3	3.0	3.0	20	40	70	Solid
	040	3	4.0	4.0	25	40	70	Solid
	060	4	6.0	6.0	30	50	80	Solid
	080	4	8.0	8.0	30	60	100	Solid
	100	4	10.0	10.0	30	60	100	Solid
	120	4	12.0	12.0	40	70	120	Top Solid
	160	6	16.0	16.0	40	80	130	Top Solid
	200	6	20.0	20.0	50	90	150	Top Solid
	250	6	25.0	25.0	50	90	150	Top Solid