

ZHUZHOU BETTER TUNGSTEN CARBIDE CO., LIMITED



# WIRE TOOLS

Solution for metallic wire industry



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株洲贝特  
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株洲贝特硬质合金工具有限公司  
ZHUZHOU BETTER TUNGSTEN CARBIDE CO., LIMITED





**15 Years Producing Experience**



**Excellent Company Team**

## Advanced Production Equipment

**Spray Drying**



**TPA Forming Machine**



**CIP Forming Machine**



**HIP Sinter Furnace**



### Quality Control



### ISO Certificate



### Main Manufacturing Process





### Three Dimensional Carbide Rolls

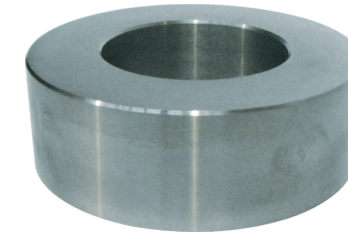


Type	Size(mm)			Tolerance of blank(mm)			Tolerance of finished(mm)		
	OD	ID	H	OD	ID	H	OD	ID	H
BT-123*82*15	123	82	15	0/+1.2	0/-1.0	0/+1.0	0/+0.02	0/-0.02	0/+0.02
BT-125*82*15	125	82	15						
BT-125*82*20	125	82	20						
BT-140*90*15	140	90	15						
BT-140*90*20	140	90	20						
BT-145*95*15	145	95	15						
BT-145*95*20	145	95	20						
BT-150*90*15	150	90	15						
BT-150*90*20	150	90	20						
BT-150*95*15	150	95	15						
BT-150*95*20	150	95	20						
BT-180*125*16	180	125	16	0/+1.5	0/-1.5	0/+1.2			
BT-180*125*18	180	125	18						

### Grades Recommendation

Grade	Density	Hardness	TRS	Application Recommended
	g/cm <sup>3</sup>	HRA	Mpa	
YGH30	13.9-14.1	≥83.5	≥2520	Cold rolling screwthread steel
YG15	13.95-14.15	≥86.5	≥2220	

### Tungsten Carbide Rolls For High Speed Rolling Mill



Flat carbide rolls



Grooved carbide rolls

Type	Size(mm)			Type	Size(mm)		
	OD	ID	H		OD	ID	H
BT-158*87*62	158	87.3	62	BT-228*126*72	228.34	126	72
BT-158*94*62	158	94	62	BT-228*130*62	228.34	130	20
BT-159*92*62	159	92	62	BT-228*135*62	228.34	135	15
BT-171*95*72	170.66	95	72	BT-285*160*70	285	160	20
BT-210*120*72	210	120	72	BT-285*160*95	285	160	16
BT-208*126*72	208	126	72	BT-340*165*95	340	165	18
BT-220*128*72	220	128	72	BT-386*243*130	386	243	130

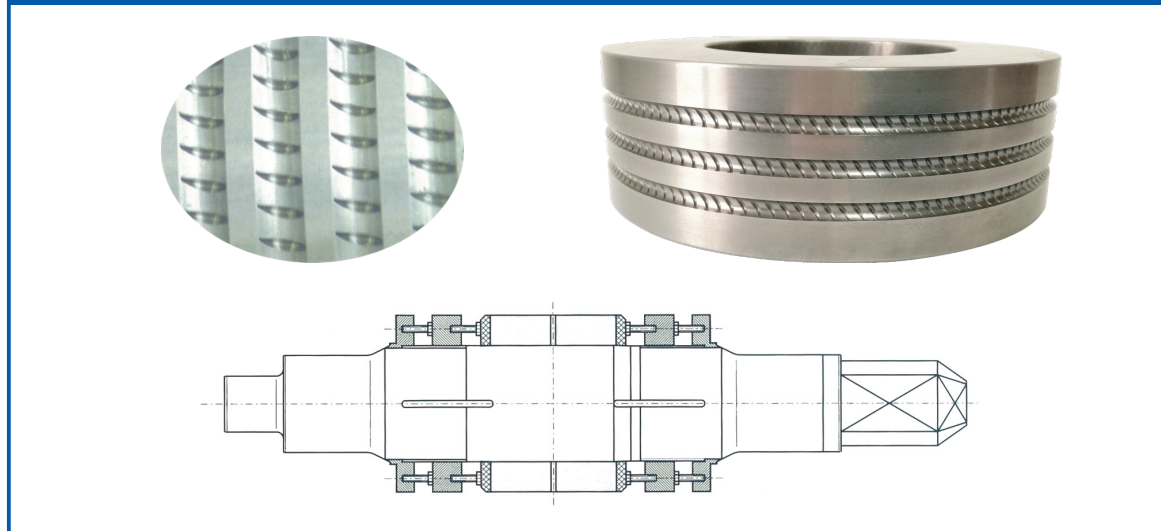
Precision tolerance class(mm)	A	B	C	D	E	F	G	X
OD(+/-)	0.02	0.05	0.1	0.15	0.3	0.5		Special requiriements
ID(+/-)	0.01	0.015	0.02	0.025	0.03	0.03		
H(+/-)	0.1	0.2	0.3	0.5	1.0	1.0	3.5	

### Grades Recommendation

Grade	Density g/cm <sup>3</sup>	Hardness HRA	TRS Mpa	Application Recommended
YGH30	13.9-14.1	≥83.5	≥2520	Used in the last 1-4 stands or all stands of finish rolling mills
YGH40	13.6-13.8	≥83.0	≥2570	Used in the front stands of good mills and in the rear stands of common mill
YGH45	13.45-13.65	≥82.0	≥2570	Used in the first and second stands of finish and prefinish rolling mills
YGH55	12.90-13.10	≥81.0	≥2570	Used in the stands of prefinish rolling mills and hot rolling screw thread steel
YGR30	13.98-13.18	≥83.0	≥2360	Used in the middle and rear stands of finish rolling mills
YGR40	13.60-13.80	≥82.0	≥2400	Used in most stands of finish rolling milland in rear stands of common mills
YGR45	13.45-13.65	≥80.5	≥2250	Used in the front stands of finish rolling mills
YGR55	13.00-13.20	≥79	≥2800	Used in the stands of prefinish rolling mills for hot rolling screw thread steel
YGR60	12.60-12.80	≥78.5	≥2600	Used in the first and second stands of prefinish rolling mills for hot rolling screw thread steel bar



## Composite Rolls



Size(mm)	Specific of steel(mm)	Rolling amount of single groove(T)			
		Stands of finishing K1	Stands of finishing K2	Stands of finishing K3	Stands of finishing K4
OD300-450mm H30-150mm	φ10	≥600	≥1500	≥3000	≥3000
	φ12	≥800	≥2000	≥4000	≥4000
	φ14	≥1400	≥3000	≥6000	≥6000
	φ16	≥1600	≥3500	≥7000	≥7000
	φ18	≥1800	≥4000	≥8000	≥8000
	φ20	≥2000	≥5000		
	φ22	≥2200	≥6000		
	φ25	≥2500	≥8000		

### Grades Recommendation

Grade	Density g/cm <sup>3</sup>	Hardness HRA	TRS Mpa	Application Recommended
YGH45	13.45-13.65	≥82.0	≥2570	Used in the first and second stands of finish and prefinish rolling mills
YGH55	12.90-13.10	≥81.0	≥2570	Used in the stands of prefinish rolling mills and hot rolling screw thread steel
YGR55	13.00-13.20	≥79	≥2800	Used in the stands of prefinish rolling mills for hot rolling screw thread steel
YGR60	12.60-12.80	≥78.5	≥2600	Used in the first and second stands of prefinish rolling mills for hot rolling screw thread steel bar

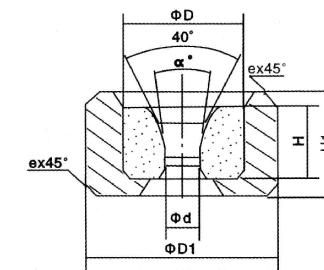
## Carbide Circular Hole Drawing Dies



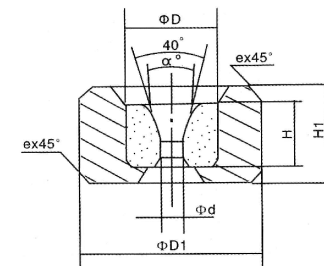
Suited for drawing various ferrous and nonferrous wires, rods and tubes with enters of 0.25mm-90.0mm. They are available in the types of 10,11,12,13,20, 21,22,23,W1,S11,S13 and(A B C D E F).

The sketches and sizes of the drawing dies common in use are shown in the following figures and table.

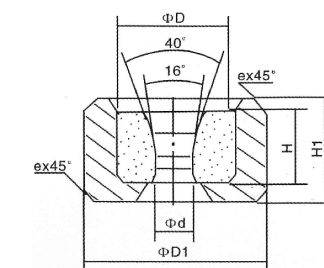
Type10 For Ferrous And Nonferrous Wires



Type11 For Ferrous Wires



Type12 For Nonferrous Wires



Type	Size of nib blank			Size of Steel sleeve		Range of nib diameter
	D	H	α°	D1	H1	
10	6	4	40°	25	12	0.25~0.8
	8	6	40°	28	12	0.4~0.8
11	8	6	10°	28	12	0.4~1.0
	13	10	10°	30	16	0.4~1.6
	16	14	12°	32	23	0.4~2.8
	22	18	14°	40	26	1.8~4.7
12	22	20	14°	40	28	5.2~5.7
	8	6	16°	25	10	0.4~0.8
	13	8	16°	30	14	0.4~2.3
	16	10	16°	32	16	0.8~2.8
	20	12	16°	40	20	2.3~3.8
	22	14	16°	45	24	4.2~5.7
	26	16	16°	50	28	6.4~0.8



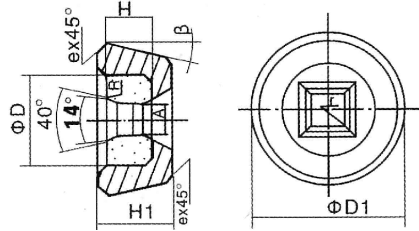
### Carbide Non-standard Drawing Dies

Drawing dies frequently used for various square, flat, rectangular and hexagonal ferrous and nonferrous materials with size of 1.8x2.7-5.91x75mm are available in types of 40, 41, 42, 60 and (L, N, R, S).

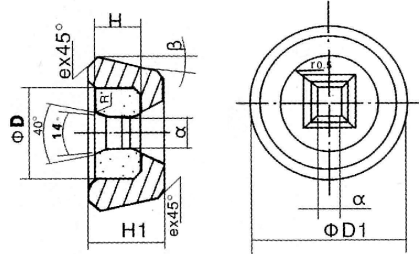
The sketches and sizes are indicated in the following figures and table.



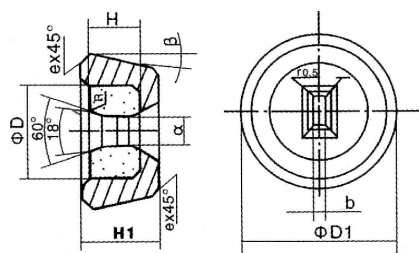
#### Type40 For Square Rods



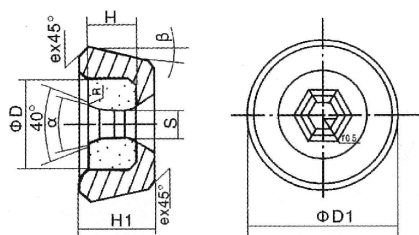
#### Type41 For Flat Materials



#### Type42 For Rectangular Materials



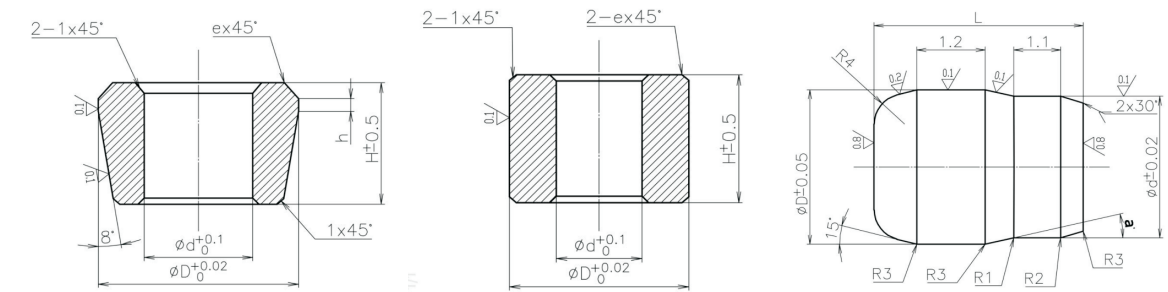
#### Type60 For Hexagonal Materials



Type	Size of nib blank			Size of Steel sleeve		Range of nib diameter
	D	H	$\alpha^\circ$	D1	H1	
40	16	12	14°	33	20	1.8-2.7
	22	18	14°	40	26	2.8-4.6
	30	21	14°	66	30	4.7-7.7
	35	25	14°	70	35	7.8-10.7
	45	25	14°	100	35	10.8-15.7
	50	28	14°	125	45	15.8-19.7
	60	30	16°	135	50	19.8-24.7
	65	32	16°	140	50	24.8-28.5
	70	35	16°	150	55	28.6-32.5
	80	35	16°	170	55	32.6-38.5
	90	40	20°	180	65	38.6-42.5
	100	40	20°	190	70	42.6-49.5
41	120	45	20°	200	70	49.6-55
	30	21		66	30	aXb 6.7X4.7
	35	25		70	35	7.7-9.7X2.7-7.7
	45	25		100	35	11.7X7.7-9.7
	50	28		125	45	13.7-17.6X6.7-15
	60	30		135	50	19.6-23.6X7.7-14.7
42	20	12		40	20	aXb 19.6-3.8X1.0-2.0
	25	15		45	23	3.9-7.1X1.0-4.0
	35	18		70	26	7.2-12.7X1.1-6.5
	45	20		100	30	12.8-15X1.4-60
	50	20		125	35	16.5-24X1.0-60
	60	20		135	35	24.5-32X1.0-40
60	30	21	14°	66	30	S 2.5-8.5
	35	21	14°	70	30	8.6-11.0
	40	25	14°	90	35	11.5-13.0
	45	25	14°	100	35	13.5-19.0
	55	28	14°	130	40	19.5-24.0
	65	30	16°	140	50	24.5-29.0
	75	35	16°	160	55	29.5-38.0
	90	35	16°	180	65	38.3-50.0
	100	40	16°	190	70	52.0-58.5
	120	42	16°	200	70	59.5-75.0

### Carbide Floating Plugs For Drawing Tubes

Used for drawing seamless tubes. Ordinary types are 30, 31 and 32.



Type	Size(mm)				
	D	H	d	h	e
30-d/D	26.00~32.99	27	17	2.5	2
30-d/D	33.00~35.99	27	17	3	2
30-d/D	36.00~38.99	27	19	3.5	2
30-d/D	39.00~42.49	27	21	4	3
30-d/D	43.50~45.49	32	23	4.5	3
30-d/D	45.50~52.49	32	25	5	4
30-d/D	52.50~56.49	32	28	5.5	4
30-d/D	56.50~63.49	35	28	6	4

Type	Size(mm)			
	D	H	d	e
31-d/D	13.00~15.49	25	7	1
31-d/D	15.50~17.49	25	8	1
31-d/D	17.50~21.49	30	10	1.5
31-d/D	21.50~26.49	30	12	1.5
31-d/D	26.50~29.49	35	16	2
31-d/D	29.50~31.49	35	16	2
31-d/D	31.50~41.49	35	20	2.5
31-d/D	41.50~43.49	40	22	3
31-d/D	43.50~46.49	45	26.4	3

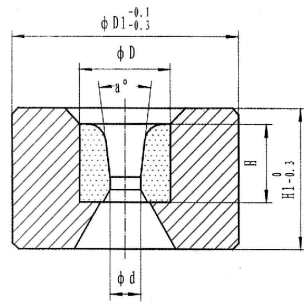
Type	d	D	L	L1	L2	$\alpha^\circ$	R1	R2	R3	R4
32-d/D	3.00~6.00	4.00~7.50	18	4	4	11~13°	0.1	1	0.4	2
32-d/D	6.01~10.00	7.50~11.00	22	5	5	11~13°	0.1	1	0.4	2
32-d/D	10.01~15.00	11.00~17.50	28	6	6	11~13°	0.2	1.5	0.4	2
32-d/D	15.01~18.00	17.50~19.50	32	7.5	7	11~13°	0.2	1.5	0.5	2.5
32-d/D	18.01~25.00	19.50~27.5	38	9	8	11~13°	0.2	2	0.5	2.5
32-d/D	25.01~30.00	27.5~37.00	42	10.5	9	11~13°	0.2	2	0.5	2.5
32-d/D	30.01~35.00	37.00~42.00	48	12	10	11~13°	0.3	2	0.6	2.5
32-d/D	35.01~40.00	42.00~50.00	52	14	11	11~13°	0.3	2.5	0.6	3



## High Speed Drawing Dies



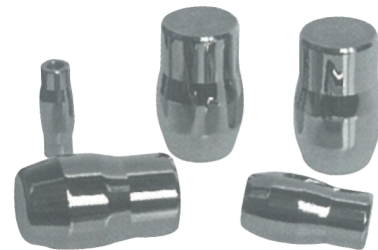
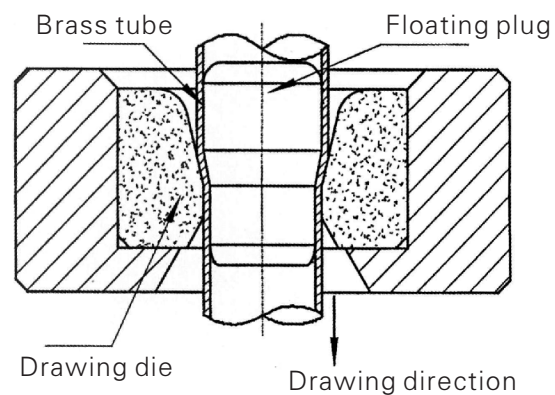
Used for drawing low relaxation stress steel wire, with advantages of high speed and long working life.



Type	D×H(mm)	d(mm)	a	D1×H1(mm)
A16-d	Φ16×13	<math>< \Phi 2.2</math>	10°~14°	Φ40×23
A20-d	Φ20×17	Φ2.2~Φ4.8	10°~14°	Φ40×23
A20-d-20E	Φ20×20	Φ2.8~Φ5.3	12°~14°	Φ53×40
A30-d-25E	Φ30×25	Φ4.8~Φ11.5	12°~16°	Φ60×40
A30-d-30E	Φ30×30	Φ9.5~Φ10.5	12°~16°	Φ60×45
A35-d-30E	Φ35×20	Φ10.7~Φ13.0	14°~18°	Φ70×45
A40-d-25E	Φ40×25	Φ9.5~Φ13.0	14~18°	Φ80×40

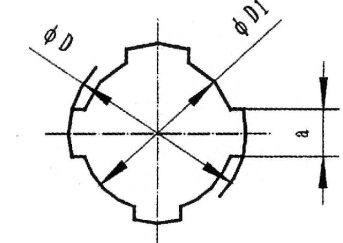
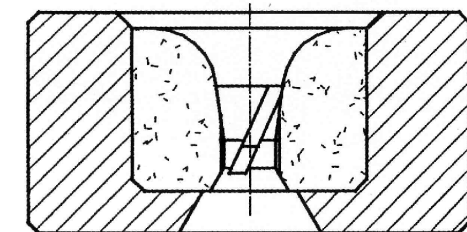
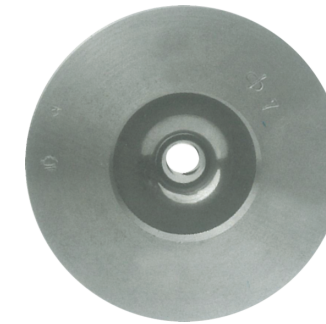
## Carbide Drawing Dies For Brass Tubes And Floating Plugs

Used for drawing seamless tubes. Mainly for drawing air conditioning, fridge and other condensation brass tubes, with high hardness and wear resistance.



## Carbide Spiral Dies

The carbide spiral dies can be classified by rib quantity (3 ribs, 4 ribs and 6 ribs), and by spiral direction (left spiral and right spiral). This type of drawing dies can be used for stress spiral wire and decorative thread drawing. Spiral rib steel is widely used in high speed road and airport, which has higher combination with cement and better performance than cold milled steels.



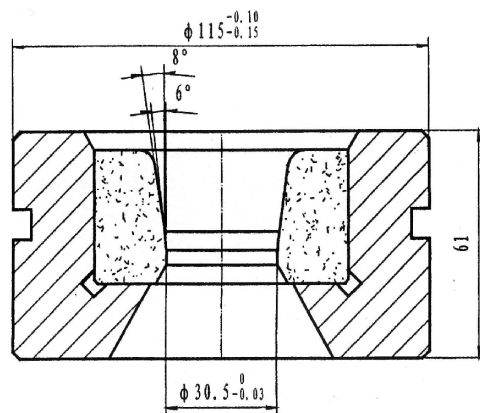
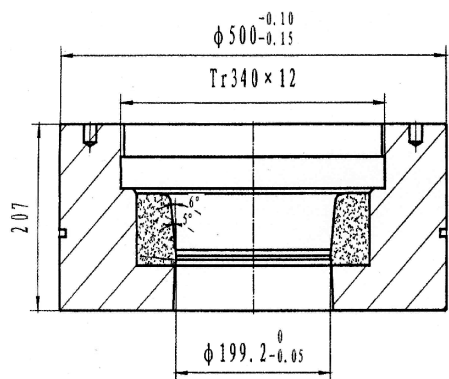
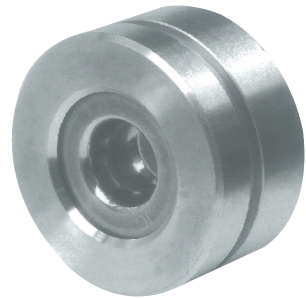
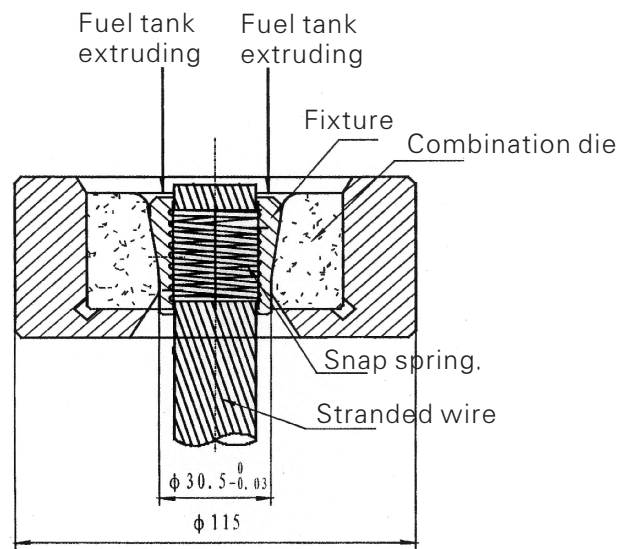
d/mm	Ribs	Size(mm)					(c)
		D1	Tolerance	D	Tolerance	a	
3.00	3-4	2.80	±0.05	3.2	±0.05	0.9~1.3	24~30
4.00	3-4	3.85	±0.05	4.25	±0.05	0.9~1.3	24~30
4.80	4	4.60	±0.05	5.10	±0.05	1.3~1.7	28~36
5.00	4	4.80	±0.05	5.30	±0.05	1.3~1.7	28~36
6.00	4	5.80	±0.05	6.30	±0.05	1.6~2.0	30~38
6.25	4	6.00	±0.05	6.70	±0.05	1.6~2.0	30~40
7.00	4	6.73	±0.05	7.46	±0.1	1.8~2.2	35~45
8.00	4-6	7.75	±0.05	8.45	±0.1	2.0~3.4	40~50
9.00	4-6	8.75	±0.05	9.45	±0.1	2.1~3.7	42~52
10.00	4-6	9.75	±0.05	10.45	±0.1	2.5~4.0	45~58
11.00	6	10.5	±0.05	11.6	±0.1	2.5~3.0	65~80
12.00	6	11.5	±0.05	12.6	±0.1	3.0~3.5	75~85
13.00	6	12.4	±0.05	13.5	±0.1	3.2~3.8	75~90



### Carbide Extrusion Dies



Tungsten carbide extrusion die is also called combination die, which is used to fix the two ends of stranded wires. With good wear resistance, it can be used more than 5000 times. Diameter vary from 20mm to 200mm.



### Other Tungsten Carbide Wire Tools

Wire Guide & Straightening Dies	Powder Spraying Dies
	
Expansion And Contraction Tube Dies	Carbide Pressure Rolls
	
PCD Drawing Dies	Carbide Micropore Drawing Dies
	