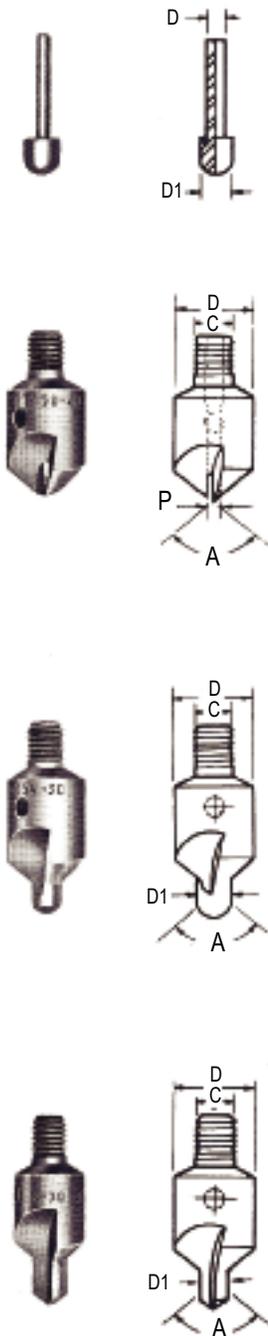




TOOLS ENGINEERED TO PERFORM

## MICRO STOP COUNTERSINKS CUTTERS AND PILOTS

For ALUMINUM AND DURAL... These two-flute cutters are precision ground with perfect cutting edges for chatterless countersinking. Easily resharpened

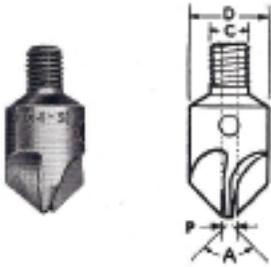


Pilot Number	Shank Diameter	Head Diameter D1 +0.000 -0.001	Cutter in which Used							
			Cutter Number							
Used on Countersink Model	Cutter Diameter D	Pilot Hole Diameter P	Cutter Thread C	100° A	78° A	82° A	110° A	115° A		
				ZT300	5/64"	When ordering specify head diameter desired example ZT300-1/8	ZT150 with 5/64" Pilot Hole			
ZT301	1/8"	ZT150 with 1/8" Pilot Hole								
ZT302	3/16"	ZT150 with 5/64" Pilot Hole								
ZT330	1/4"	5/64"	1/4"-28	ZT150-17	ZT150-15	ZT150-16	ZT150-18	ZT150-19		
	3/8"	5/64"	1/4"-28	ZT150-22	ZT150-20	ZT150-21	ZT150-23	ZT150-44		
	5/16"	5/64"	1/4"-28	ZT150-12	ZT150-10	ZT150-11	ZT150-13	ZT150-14		
	7/16"	5/64"	1/4"-28	ZT150-26	ZT150-24	ZT150-25	ZT150-27	ZT150-45		
	1/2"	5/64"	1/4"-28	ZT150-30	ZT150-28	ZT150-29	ZT150-31	ZT150-46		
	1/2"	1/8"	1/4"-28	ZT150-42	ZT150-40	ZT150-41	ZT150-43	ZT150-49		
	9/16"	1/8"	1/4"-28	ZT150-58	ZT150-56	ZT150-57	ZT150-59	ZT150-60		
	5/8"	1/8"	1/4"-28	ZT150-52	ZT150-50	ZT150-51	ZT150-53	ZT150-54		
ZT331	3/4"	3/16"	3/8"-24	ZT152-21	ZT152-19	ZT152-20	ZT152-22	ZT152-23		
	7/8"	3/16"	3/8"-24	ZT152-26	ZT152-24	ZT152-25	ZT152-27	ZT152-33		
	1"	3/16"	3/8"-24	ZT152-36	ZT152-34	ZT152-35	ZT152-37	ZT152-38		
	1-1/8"	3/16"	3/8"-24	ZT152-41	ZT152-39	ZT152-40	ZT152-42	ZT152-43		
	1-1/4"	3/16"	3/8"-24	ZT152-46	ZT152-44	ZT152-45	ZT152-47	ZT152-48		
	1-3/8"	3/16"	3/8"-24	ZT152-51	ZT152-49	ZT152-50	ZT152-52	ZT152-53		
ZT331	7/8"	3/16"	7/16"-20	ZT151-26	ZT151-24	ZT151-25	ZT151-27	ZT151-33		
	1"	3/16"	7/16"-20	ZT151-36	ZT151-34	ZT151-35	ZT151-37	ZT151-38		
	1-1/8"	3/16"	7/16"-20	ZT151-41	ZT151-39	ZT151-40	ZT151-42	ZT151-43		
	1-1/4"	3/16"	7/16"-20	ZT151-46	ZT151-44	ZT151-45	ZT151-47	ZT151-48		
	1-3/8"	3/16"	7/16"-20	ZT151-51	ZT151-49	ZT151-50	ZT151-52	ZT151-53		
	1-1/2"	3/16"	7/16"-20	ZT151-56	ZT151-54	ZT151-55	ZT151-57	ZT151-58		
ZT330	1/4"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT154-20-1/8	1/4"-28	ZT154-17	ZT154-15	ZT154-16	ZT154-18	ZT154-19		
	3/8"		1/4"-28	ZT154-22	ZT154-20	ZT154-21	ZT154-23	ZT154-44		
	5/16"		1/4"-28	ZT154-12	ZT154-10	ZT154-11	ZT154-13	ZT154-14		
	7/16"		1/4"-28	ZT154-26	ZT154-24	ZT154-25	ZT154-27	ZT154-45		
	1/2"		1/4"-28	ZT154-30	ZT154-28	ZT154-29	ZT154-31	ZT154-46		
	9/16"		1/4"-28	ZT154-58	ZT154-56	ZT154-57	ZT154-59	ZT154-60		
5/8"	1/4"-28		ZT154-49	ZT154-47	ZT154-48	ZT154-50	ZT154-51			
ZT331	3/4"		When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT155-20-1/8	3/8"-24	ZT156-21	ZT156-19	ZT156-20	ZT156-22	ZT156-23	
	7/8"			3/8"-24	ZT156-26	ZT156-24	ZT156-25	ZT156-27	ZT156-33	
	1"			3/8"-24	ZT156-36	ZT156-34	ZT156-35	ZT156-37	ZT156-38	
	1-1/8"			3/8"-24	ZT156-41	ZT156-39	ZT156-40	ZT156-42	ZT156-43	
	1-1/4"			3/8"-24	ZT156-46	ZT156-44	ZT156-45	ZT156-47	ZT156-48	
	1-3/8"	3/8"-24		ZT156-51	ZT156-49	ZT156-50	ZT156-52	ZT156-53		
ZT334	7/8"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT155-20-1/8		7/16"-20	ZT153-26	ZT153-24	ZT153-25	ZT153-27	ZT153-33	
	1"			7/16"-20	ZT153-36	ZT153-34	ZT153-35	ZT153-37	ZT153-38	
	1-1/8"			7/16"-20	ZT153-41	ZT153-39	ZT153-40	ZT153-42	ZT153-43	
	1-1/4"			7/16"-20	ZT153-46	ZT153-44	ZT153-45	ZT153-47	ZT153-48	
	1-3/8"			7/16"-20	ZT153-51	ZT153-49	ZT153-50	ZT153-52	ZT153-53	
	1-1/2"			7/16"-20	ZT153-56	ZT153-54	ZT153-55	ZT153-57	ZT153-58	
ZT330	3/8"		When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT155-20-1/8	1/4"-28	ZT155-22	ZT155-20	ZT155-21	ZT155-23	ZT155-44	
	7/16"			1/4"-28	ZT155-26	ZT155-24	ZT155-25	ZT155-27	ZT155-45	
	1/2"			1/4"-28	ZT155-30	ZT155-28	ZT155-29	ZT155-31	ZT155-46	
	5/8"			1/4"-28	ZT155-49	ZT155-47	ZT155-48	ZT155-50	ZT155-51	
ZT331	7/8"			When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT155-20-1/8	3/8"-24	ZT176-26	ZT176-24	ZT176-25	ZT176-27	ZT176-33
	1"				3/8"-24	ZT176-36	ZT176-34	ZT176-35	ZT176-37	ZT176-38
	1-1/8"	3/8"-24			ZT176-41	ZT176-39	ZT176-40	ZT176-42	ZT176-43	

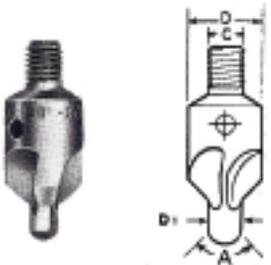


# MICRO STOP COUNTERSINKS CUTTERS AND PILOTS

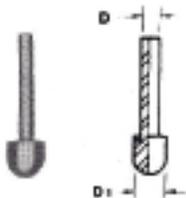
For STAINLESS STEEL AND TITANIUM...These three-flute cutters are made from special steel and are specially heat treated for efficient cutting of Stainless steel and titanium.



Removable Pilot Type  
for Stainless Steel  
and Titanium



Integral Pilot Type  
for Stainless Steel  
and Titanium



Hardened  
Countersink Cutter Pilots

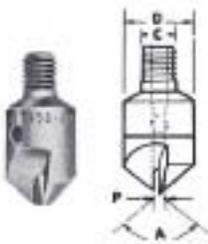
Used on Countersink Model	Cutter Diameter	Pilot Hole Diameter	Cutter Thread	Cutter Number				
				100° A	78° A	82° A	110° A	115° A
ZT330	1/4"	5/64"	1/4"-28	ZT164-17	ZT164-15	ZT164-16	ZT164-18	ZT164-19
	3/8"	5/64"	1/4"-28	ZT164-22	ZT164-20	ZT164-21	ZT164-23	ZT164-44
	5/16"	5/64"	1/4"-28	ZT164-12	ZT164-10	ZT164-11	ZT164-13	ZT164-14
	7/16"	5/64"	1/4"-28	ZT164-26	ZT164-24	ZT164-25	ZT164-27	ZT164-45
	1/2"	5/64"	1/4"-28	ZT164-30	ZT164-28	ZT164-29	ZT164-31	ZT164-46
	1/2"	1/8"	1/4"-28	ZT164-42	ZT164-40	ZT164-41	ZT164-43	ZT164-49
	9/16"	1/8"	1/4"-28	ZT164-58	ZT164-56	ZT164-57	ZT164-59	ZT164-60
	5/8"	1/8"	1/4"-28	ZT164-52	ZT164-50	ZT164-51	ZT164-53	ZT164-54
ZT331	3/4"	3/16"	3/8"-24	ZT165-21	ZT165-19	ZT165-20	ZT165-22	ZT165-23
	7/8"	3/16"	3/8"-24	ZT165-26	ZT165-24	ZT165-25	ZT165-27	ZT165-33
	1"	3/16"	3/8"-24	ZT165-36	ZT165-34	ZT165-35	ZT165-37	ZT165-38
	1-1/8"	3/16"	3/8"-24	ZT165-41	ZT165-39	ZT165-40	ZT165-42	ZT165-43
	1-1/4"	3/16"	3/8"-24	ZT165-46	ZT165-44	ZT165-45	ZT165-47	ZT165-48
	1-3/8"	3/16"	3/8"-24	ZT165-51	ZT165-49	ZT165-50	ZT165-52	ZT165-53
	1-3/8"	3/16"	3/8"-24	ZT165-51	ZT165-49	ZT165-50	ZT165-52	ZT165-53
ZT331	7/8"	3/16"	7/16"-20	ZT163-26	ZT163-24	ZT163-25	ZT163-27	ZT163-33
	1"	3/16"	7/16"-20	ZT163-36	ZT163-34	ZT163-35	ZT163-37	ZT163-38
	1-1/8"	3/16"	7/16"-20	ZT163-41	ZT163-39	ZT163-40	ZT163-42	ZT163-43
	1-1/4"	3/16"	7/16"-20	ZT163-46	ZT163-44	ZT163-45	ZT163-47	ZT163-48
	1-3/8"	3/16"	7/16"-20	ZT163-51	ZT163-49	ZT163-50	ZT163-52	ZT163-53
	1-1/2"	3/16"	7/16"-20	ZT163-56	ZT163-54	ZT163-55	ZT163-57	ZT163-58
	1-1/2"	3/16"	7/16"-20	ZT163-56	ZT163-54	ZT163-55	ZT163-57	ZT163-58
ZT330	1/4"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT154-20-1/8	1/4"-28	ZT170-17	ZT170-15	ZT170-16	ZT170-18	ZT170-19
	3/8"		1/4"-28	ZT170-22	ZT170-20	ZT170-21	ZT170-23	ZT170-44
	5/16"		1/4"-28	ZT170-12	ZT170-10	ZT170-11	ZT170-13	ZT170-14
	7/16"		1/4"-28	ZT170-26	ZT170-24	ZT170-25	ZT170-27	ZT170-45
	1/2"		1/4"-28	ZT170-30	ZT170-28	ZT170-29	ZT170-31	ZT170-46
	9/16"		1/4"-28	ZT170-58	ZT170-56	ZT170-57	ZT170-59	ZT170-60
	5/8"		1/4"-28	ZT170-49	ZT170-47	ZT170-48	ZT170-50	ZT170-51
ZT331	3/4"		3/8"-24	ZT171-21	ZT171-19	ZT171-20	ZT171-22	ZT171-23
	7/8"		3/8"-24	ZT171-26	ZT171-24	ZT171-25	ZT171-27	ZT171-33
	1"		3/8"-24	ZT171-36	ZT171-34	ZT171-35	ZT171-37	ZT171-38
	1-1/8"		3/8"-24	ZT171-41	ZT171-39	ZT171-40	ZT171-42	ZT171-43
	1-1/4"		3/8"-24	ZT171-46	ZT171-44	ZT171-45	ZT171-47	ZT171-48
	1-3/8"		3/8"-24	ZT171-51	ZT171-49	ZT171-50	ZT171-52	ZT171-53
ZT334	7/8"		7/16"-20	ZT174-26	ZT174-24	ZT174-25	ZT174-27	ZT174-33
	1"	7/16"-20	ZT174-36	ZT174-34	ZT174-35	ZT174-37	ZT174-38	
	1-1/8"	7/16"-20	ZT174-41	ZT174-39	ZT174-40	ZT174-42	ZT174-43	
	1-1/4"	7/16"-20	ZT174-46	ZT174-44	ZT174-45	ZT174-47	ZT174-48	
	1-3/8"	7/16"-20	ZT174-51	ZT174-49	ZT174-50	ZT174-52	ZT174-53	
	1-1/2"	7/16"-20	ZT174-56	ZT174-54	ZT174-55	ZT174-57	ZT174-58	

Pilot Number	Shank Diameter	Head Diameter D1 + .000 - .001	Cutter in which Used
ZT300	5/64"	When ordering specify head diameter desired	ZT164 with 5/64" Pilot Hole
ZT301	1/8"	example ZT300-1/8	ZT164 with 1/8" Pilot Hole
ZT302	3/16"		ZT165 with 5/64" Pilot Hole



## MICRO STOP COUNTERSINKS CUTTERS AND PILOTS

### CUTTERS

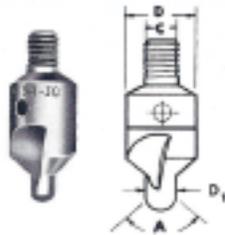


Carbide Tipped  
Removable Pilot  
Countersink Cutters

These cutters with solid carbide heads are designed for use in microstop countersink units. They have been specifically designed for use in countersinking of stainless steel, inconel and titanium alloys.

Used on Countersink Model	Cutter Diameter	Pilot Hole Diameter	Cutter Thread	Cutter Number				
	D	P	C	100° A	78° A	82° A	110° A	115° A
ZT330	3/8"	5/64"	1/4"-28	ZT350-22	ZT350-20	ZT350-21	ZT350-23	ZT350-44
	7/16"	5/64"	1/4"-28	ZT350-26	ZT350-24	ZT350-25	ZT350-27	ZT350-45
	1/2"	5/64"	1/4"-28	ZT350-30	ZT350-28	ZT350-29	ZT350-31	ZT350-46
	1/2"	1/8"	1/4"-28	ZT350-42	ZT350-40	ZT350-41	ZT350-43	ZT350-49
	5/8"	1/8"	1/4"-28	ZT350-52	ZT350-50	ZT350-51	ZT350-53	ZT350-54
ZT331	7/8"	3/16"	3/8"-24	ZT352-26	ZT352-24	ZT352-25	ZT352-27	ZT352-33
	1"	3/16"	3/8"-24	ZT352-36	ZT352-34	ZT352-35	ZT352-37	ZT352-38
	1-1/8"	3/16"	3/8"-24	ZT352-41	ZT352-39	ZT352-40	ZT352-42	ZT352-43
	1-1/4"	3/16"	3/8"-24	ZT352-46	ZT352-44	ZT352-45	ZT352-47	ZT352-48
	1-3/8"	3/16"	3/8"-24	ZT352-51	ZT352-49	ZT352-50	ZT352-52	ZT352-53

Note: MAXIMUM NON CUTTING (DEAD CENTER) DIAMETER 1/32" LARGER THAN PILOT HOLE.  
USE CUTTERS WITH PILOT HOLE A MINIMUM OF 1/32" SMALLER THAN DESIRED PILOT DIAMETER.



Carbide Tipped  
Integral Pilot  
Countersink Cutters

Used on Countersink Model	Cutter Diameter	Pilot Hole Diameter	Cutter Thread	Cutter Number				
	D	P	C	100° A	78° A	82° A	110° A	115° A
ZT330	3/8"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT154-20-1/8	1/4"-28	ZT354-22	ZT354-20	ZT354-21	ZT354-23	ZT354-44
	7/16"		1/4"-28	ZT354-26	ZT354-24	ZT354-25	ZT354-27	ZT354-45
	1/2"		1/4"-28	ZT354-30	ZT354-28	ZT354-29	ZT354-31	ZT354-46
	5/8"		1/4"-28	ZT354-49	ZT354-47	ZT354-48	ZT354-50	ZT354-51
ZT331	7/8"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT154-20-1/8	3/8"-24	ZT356-26	ZT356-24	ZT356-25	ZT356-27	ZT356-33
	1"		3/8"-24	ZT356-36	ZT356-34	ZT356-35	ZT356-37	ZT356-38
	1-1/8"		3/8"-24	ZT356-41	ZT356-39	ZT356-40	ZT356-42	ZT356-43
	1-1/4"		3/8"-24	ZT356-46	ZT356-44	ZT356-45	ZT356-47	ZT356-48
	1-3/8"		3/8"-24	ZT356-51	ZT356-49	ZT356-50	ZT356-52	ZT356-53



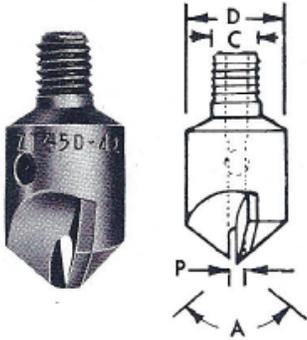
Hardened  
Countersink Cutter Pilots

Pilot Number	Shank Diameter	Head Diameter D1 +0.000 -0.001	Cutter in which Used
ZT300	5/64"	When ordering specify head diameter desired example ZT300-1/8	ZT350 with 5/64" Pilot Hole
ZT301	1/8"		ZT350 with 1/8" Pilot Hole
ZT302	3/16"		ZT352 with 5/64" Pilot Hole

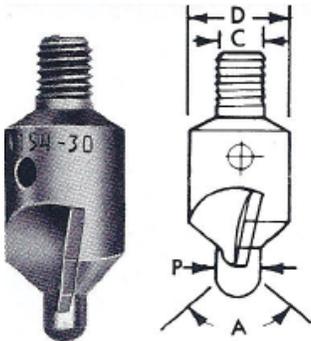


# MICRO STOP COUNTERSINKS CUTTERS AND PILOTS

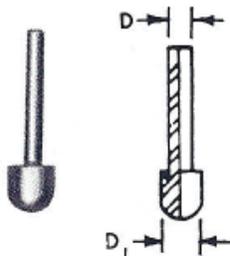
## CUTTERS



**Carbide Insert  
Removable Pilot  
Countersink Cutters**



**Carbide Insert  
Integral Pilot  
Countersink Cutters**



**Hardened  
Countersink Cutter Pilots**

These carbide cutters are designed for use in microstop countersink units. They have been specifically designed for use in countersinking of stainless steel, inconel and titanium alloys.

Used on Countersink Model	Cutter Diameter	Pilot Hole Diameter	Cutter Thread	Cutter Number				
	D	P	C	100° A	78° A	82° A	110° A	115° A
ZT330	7/16"	5/64"	1/4"-28	ZT450-26	ZT450-24	ZT450-25	ZT450-27	ZT450-45
	1/2"	5/64"	1/4"-28	ZT450-30	ZT450-28	ZT450-29	ZT450-31	ZT450-46
	1/2"	1/8"	1/4"-28	ZT450-42	ZT450-40	ZT450-41	ZT450-43	ZT450-49
	5/8"	1/8"	1/4"-28	ZT450-52	ZT450-50	ZT450-51	ZT450-53	ZT450-54
ZT331	3/4"	3/16"	3/8"-24	ZT452-21	ZT452-19	ZT452-20	ZT452-22	ZT452-23
	7/8"	3/16"	3/8"-24	ZT452-26	ZT452-24	ZT452-25	ZT452-27	ZT452-33
	1"	3/16"	3/8"-24	ZT452-36	ZT452-34	ZT452-35	ZT452-37	ZT452-38
	1-1/8"	3/16"	3/8"-24	ZT452-41	ZT452-39	ZT452-40	ZT452-42	ZT452-43
	1-1/4"	3/16"	3/8"-24	ZT452-46	ZT452-44	ZT452-45	ZT452-47	ZT452-48
	1-3/8"	3/16"	3/8"-24	ZT452-51	ZT452-49	ZT452-50	ZT452-52	ZT452-53

Note: MAXIMUM NON CUTTING (DEAD CENTER) DIAMETER 1/32" LARGER THAN PILOT HOLE.  
USE CUTTERS WITH PILOT HOLE A MINIMUM OF 1/32" SMALLER THAN DESIRED PILOT DIAMETER.

ZT450 & 452 SERIES  
78°, 110° & 115° MADE TO ORDER ONLY

Used on Countersink Model	Cutter Diameter	Pilot Hole Diameter	Cutter Thread	Cutter Number				
	D	P	C	100° A	78° A	82° A	110° A	115° A
ZT330	7/16"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT154-20-1/8	1/4"-28	ZT454-26	ZT454-24	ZT454-25	ZT454-27	ZT454-45
	1/2"		1/4"-28	ZT454-30	ZT454-28	ZT454-29	ZT454-31	ZT454-46
	5/8"		1/4"-28	ZT454-49	ZT454-47	ZT454-48	ZT454-50	ZT454-51
ZT331	3/4"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT154-20-1/8	3/8"-24	ZT456-21	ZT456-19	ZT456-20	ZT456-22	ZT456-23
	7/8"		3/8"-24	ZT456-26	ZT456-24	ZT456-25	ZT456-27	ZT456-33
	1"		3/8"-24	ZT456-36	ZT456-34	ZT456-35	ZT456-37	ZT456-38
	1-1/8"		3/8"-24	ZT456-41	ZT456-39	ZT456-40	ZT456-42	ZT456-43
	1-1/4"		3/8"-24	ZT456-46	ZT456-44	ZT456-45	ZT456-47	ZT456-48
	1-3/8"		3/8"-24	ZT456-51	ZT456-49	ZT456-50	ZT456-52	ZT456-53

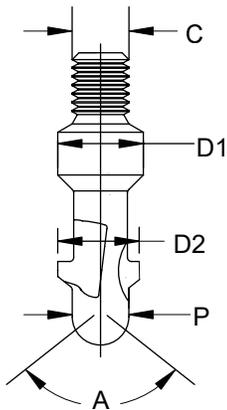
Pilot Number	Shank Diameter	Head Diameter D1 +.000 -.001	Cutter in which Used
ZT300	5/64"	When ordering specify head diameter desired example ZT300-1/8	ZT450 with 5/64" Pilot Hole
ZT301	1/8"		ZT450 with 1/8" Pilot Hole
ZT302	3/16"		ZT452 with 5/64" Pilot Hole



## MICRO STOP COUNTERSINKS CUTTERS AND PILOTS

### CUTTERS

#### ZT385 SHOWN



#### ZT386 SHOWN



For ALUMINUM AND DURAL... These two flute cutters are precision ground with perfect cutting edges for chatterless countersinking. The undercut body diameter provides for faster chip ejection. These cutters are designed to produce close tolerance countersinking and to eliminate sheet damage. Factory regrind service is available on all Zephyr cutters.

Used on Countersink Model	Cutter Diameter D	Pilot Hole Diameter P	Cutter Thread C	Cutter Number					Type of Grind
				100° A	78° A	82° A	110° A	115° A	
ZT330	3/8"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT385-20-1/8	1/4"-28	ZT385-22	ZT385-20	ZT385-21	ZT385-23	ZT385-44	Primary
	7/16"		1/4"-28	ZT385-26	ZT385-24	ZT385-25	ZT385-27	ZT385-45	
	1/2"		1/4"-28	ZT385-30	ZT385-28	ZT385-29	ZT385-31	ZT385-46	

Used on Countersink Model	Cutter Diameter D1	Cutter Diameter D2	Pilot P	Cutter Thread C	Cutter Number					Type of Grind
					100° A	78° A	82° A	110° A	115° A	
ZT330-M	3/8"	.256	.0980	1/4"-28	ZT389-22	ZT389-20	ZT389-21	ZT389-23	ZT389-44	Primary
	3/8"	.256	.1270	1/4"-28	ZT385-27	ZT389-25	ZT389-26	ZT389-28	ZT389-29	
	3/8"	.317	.1575	1/4"-28	ZT385-32	ZT389-30	ZT389-31	ZT389-33	ZT389-34	
	3/8"	.375	.1860	1/4"-28	ZT385-37	ZT389-35	ZT389-36	ZT389-38	ZT389-39	
	3/8"	.385	.1895	1/4"-28	ZT385-42	ZT389-40	ZT389-41	ZT389-43	ZT389-44	
	3/8"	.382	.1562	1/4"-28	ZT385-47	ZT389-45	ZT389-46	ZT389-48	ZT389-49	

For Stainless Steel and Titanium. These three-flute cutters are made from special steel and are specially heat treated for efficient cutting of stainless steel and Titanium.

Used on Countersink Model	Cutter Diameter D	Pilot Hole Diameter P	Cutter Thread C	Cutter Number					Type of Grind
				100° A	78° A	82° A	110° A	115° A	
ZT330	3/8"	When ordering these integral pilot cutters, specify dash number and pilot diameter D1 required. Example: ZT386-20-1/8	1/4"-28	ZT386-22	ZT386-20	ZT386-21	ZT386-23	ZT386-44	Primary
	7/16"		1/4"-28	ZT386-26	ZT386-24	ZT386-25	ZT386-27	ZT386-45	
	1/2"		1/4"-28	ZT386-30	ZT386-28	ZT386-29	ZT386-31	ZT386-46	