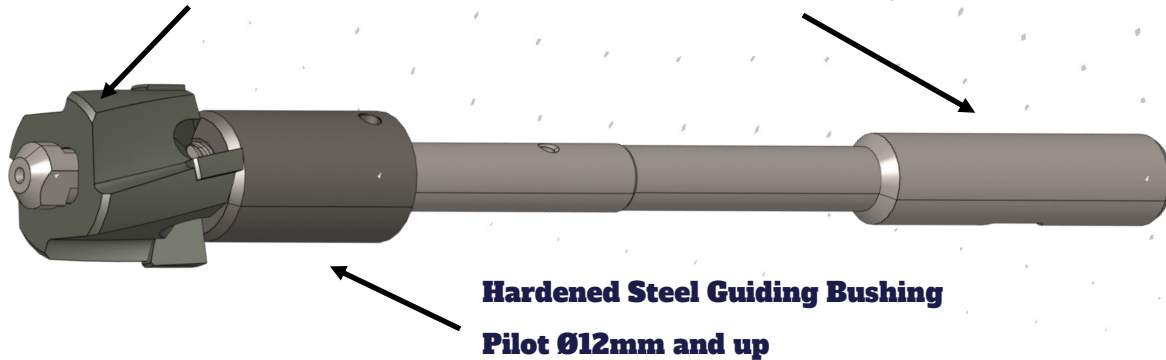


Manual Back Counterboring

Design Features:

**Cutter Head
High Speed Steel or Brazed Carbide**

**Holder with
Weldon or Morse Taper Shank**



Advantages:

- Manually operated reverse machining.
- Spotfacing or Counterboring due to fully fluted design.
- Universally applicable on all machine types.
- Bayonet style connection on cutter head for quick and reliable manual tool changes.
- Large cutting width up to $2.5 \times \varnothing d$
- Multiple regrinds are possible
- Several diameter combinations of cutter head and holder
- The same basic TUHW holder with multiple TUB bushings can cover multiple guidance diameters.



BRAZED CARBIDE (HM)



HIGH SPEED STEEL

Counterbore Ø | 10mm (0.394in) - 20mm (0.787in)

TU Cutter Head				
Dimensions			Order Number	
d	d ₁	l	HSS	Carbide
10.0	5	28	TU1000501	TU1000505
10.4			TU1040501	TU1040505
11.0			TU1100501	TU1100505
12.0			TU1200501	TU1200505
13.0			TU1300501	TU1300505

TUH Holder Cylindrical Shank						
Dimensions					Order Number	
d	d ₁	e	d ₂	l	Cylindrical Shank	
5.3	5	72	8	162	TUH0530500	
5.5					TUH0550500	
6.4					TUH0640500	
6.6					TUH0660500	
7.0					TUH0700500	

TUH Holder Morse Taper Shank					
Dimensions					Order Number
d	d ₁	e	MT	l	MT Shank
5.3	5	72	1	167	TUH0530501
5.5					TUH0550501
6.4					TUH0640501
6.6					TUH0660501
7.0					TUH0700501

13.5	6	30	TU1350601	TU1350605
14.0			TU1400601	TU1400605
14.5			TU1450601	TU1450605
15.0			TU1500601	TU1500605

8.4	6	70	10	162	TUH0840600
9.0					TUH0900600
9.5					TUH0950600

8.4	6	70	1	167	TUH0840601
9.0					TUH0900601
9.5					TUH0950601

16.0	8	32	TU1600801	TU1600805
16.5			TU1650801	TU1650805
17.0			TU1700801	TU1700805
17.5			TU1750801	TU1750805
18.0			TU1800801	TU1800805
19.0			TU1900801	TU1900805
20.0			TU2000801	TU2000805

8.4	8	88	12	182	TUH0840800
9.0					TUH0900800
10.0					TUH1000800
10.5					TUH1050800
11.0					TUH1100800
11.5					TUH1150800
12.0					TUH1200800
13.0					TUH1300800
13.5					TUH1350800
14.0					TUH1400800

8.4	8	88	2	200	TUH0840802
9.0					TUH0900802
10.0					TUH1000802
10.5					TUH1050802
11.0					TUH1100802
11.5					TUH1150802
12.0					TUH1200802
13.0					TUH1300802
13.5					TUH1350802
14.0					TUH1400802

- All TUH holders are available with oil grooves, when ordering please add "S" to the order number. Ordering Example: TUH1400800S
- Internal coolant and intermediate sizes available on request.
- TUHW holders can be used without bushing for guidance Ød with TU/HSS cutter head only

TU Cutter Head HSS

TU Cutter Head Carbide

d	X*
10-24	0.2
25-71	0.5
72-115	1.0

* GAP BETWEEN HOLE AND CARBIDE CUTTERBLADE

TUH Holder Cylindrical Shank

TUH Holder Morse Taper Shank

Tolerances				
d _x	e6	e8	h6	k8
3 < 6	-0.020/-0.028	-0.020/-0.038	0/-0.008	+0.018/0
6 < 10	-0.025/-0.034	-0.025/-0.047	0/-0.009	+0.022/0
10 < 18	-0.032/-0.043	-0.032/-0.059	0/-0.011	+0.027/0
18 < 30	-0.040/-0.053	-0.040/-0.073	0/-0.013	+0.033/0
30 < 50	-0.050/-0.066	-0.050/-0.089	0/-0.016	+0.039/0
50 < 80	-0.060/-0.079	-0.060/-0.106	0/-0.019	+0.046/0
80 < 120	-0.072/-0.094	-0.072/-0.126	0/-0.022	+0.054/0

TU Cutter Head				
Dimensions			Order Number	
d	d ₁	l	HSS	Carbide
21.0	9	22	TU2100901	TU2100905
22.0			TU2200901	TU2200905
23.0			TU2300901	TU2300905
24.0			TU2400901	TU2400905

TUH Holder Weldon Shank							
Dimensions					Order Number		
d	d ₁	e	d ₂	l	Weldon Shank		
10.5	9	110	12	185	TUHW1050912		
11.0					TUHW1100912		
Holder and Sleeve, 2 Parts (TUHW + TUB)							
Part 1: Holder							
9.0	9	110	12	185	TUHW090912		
Part 2: Sleeve							
					d ₄	l ₂	Sleeve
					>=12	30	TUB(d ₄)0930

TUH Holder Morse Taper Shank					
Dimensions					Order Number
d	d ₁	e	MT	l	MT Shank
10.5	9	118	2	220	TUH1050902
11.0					TUH1100902
12.0					TUH1200902
13.0					TUH1300902
13.5					TUH1350902
14.0					TUH1400902
15.0					TUH1500902
16.0					TUH1600902

25.0	11	24	TU2501101	TU2501105
26.0			TU2601101	TU2601105
27.0			TU2701101	TU2701105
28.0			TU2801101	TU2801105
29.0			TU2901101	TU2901105
30.0			TU3001101	TU3001105

12.0	11	130	12	205	TUHW1201112		
13.0					TUHW1301112		
13.5					TUHW1351112		
Holder and Sleeve, 2 Parts (TUHW + TUB)							
Part 1: Holder							
11.0	11	130	12	205	TUHW111112		
Part 2: Sleeve							
					d ₄	l ₂	Sleeve
					>=14	35	TUB(d ₄)1135

12.0	11	135	3	259	TUH1201103
13.0					TUH1301103
13.5					TUH1351103
14.0					TUH1401103
15.0					TUH1501103
16.0					TUH1601103
17.0					TUH1701103
17.5					TUH1751103
18.0					TUH1801103
19.0					TUH1901103
20.0					TUH2001103

31.0	13	26	TU3101301	TU3101305
32.0			TU3201301	TU3201305
33.0			TU3301301	TU3301305
34.0			TU3401301	TU3401305
35.0			TU3501301	TU3501305
36.0			TU3601301	TU3601305

15.0	13	150	16	230	TUHW1501316		
15.5					TUHW1551316		
Holder and Sleeve, 2 Parts (TUHW + TUB)							
Part 1: Holder							
13.0	13	150	16	230	TUHW131316		
Part 2: Sleeve							
					d ₄	l ₂	Sleeve
					>= 16	40	TUB(d ₄)1340

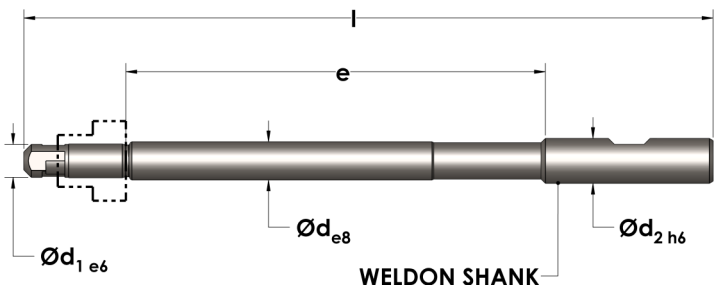
15.0	13	154	3	280	TUH1501303
16.0					TUH1601303
17.0					TUH1701303
17.5					TUH1751303
18.0					TUH1801303
19.0					TUH1901303
20.0					TUH2001303
21.0					TUH2101303
22.0					TUH2201303
23.0					TUH2301303
24.0					TUH2401303
25.0					TUH2501303

37.0	17	28	TU3701701	TU3701705
38.0			TU3801701	TU3801705
39.0			TU3901701	TU3901705
40.0			TU4001701	TU4001705
41.0			TU4101701	TU4101705
42.0			TU4201701	TU4201705
43.0			TU4301701	TU4301705

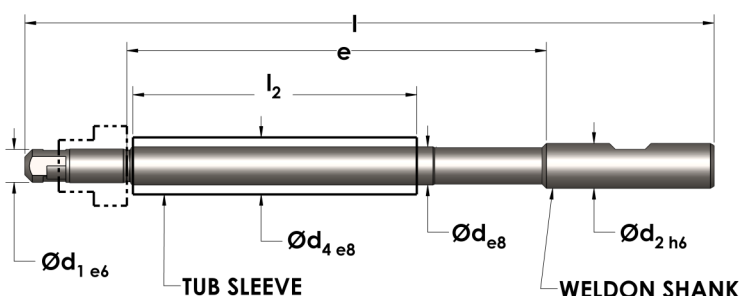
19.0	17	167	20	252	TUHW1901720		
Holder and Sleeve, 2 Parts (TUHW + TUB)							
Part 1: Holder							
17.0	17	167	20	252	TUHW171720		
Part 2: Sleeve							
					d ₄	l ₂	Sleeve
					>= 20	50	TUB(d ₄)1750

19.0	17	172	3	301	TUH1901703
20.0					TUH2001703
21.0					TUH2101703
22.0					TUH2201703
23.0					TUH2301703
24.0					TUH2401703
25.0					TUH2501703
26.0					TUH2601703
28.0					TUH2801703
30.0					TUH3001703

TUHW Holder Weldon Shank



TUHW Holder Weldon Shank With TUB Bushing



Counterbore Ø | 44mm (1.732in) - 62mm (2.441in)

TU Cutter Head				
Dimensions			Order Number	
d	d ₁	l	HSS	Carbide
44.0	19	32	TU4401901	TU4401905
45.0			TU4501901	TU4501905
46.0			TU4601901	TU4601905
47.0			TU4701901	TU4701905
48.0			TU4801901	TU4801905

TUH Holder Weldon Shank					
Dimensions					Order Number
d	d ₁	e	d ₂	l	Weldon Shank
Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
19.0	19	183	20	272	TUHW191920
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>=22	55	TUB(d ₄)1955	

TUH Holder Morse Taper Shank					
Dimensions					Order Number
d	d ₁	e	MT	l	MT Shank
22.0	19	188	3	321	TUH2201903
23.0					TUH2301903
24.0					TUH2401903
25.0					TUH2501903
26.0					TUH2601903
28.0					TUH2801903
30.0					TUH3001903
32.0					TUH3201903
33.0					TUH3301903

49.0	21	34	TU4902101	TU4902105
50.0			TU5002101	TU5002105
51.0			TU5102101	TU5102105
52.0			TU5202101	TU5202105
53.0			TU5302101	TU5302105
54.0			TU5402101	TU5402105

Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
21.0	21	199	25	296	TUHW212125
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>=24	60	TUB(d ₄)2160	

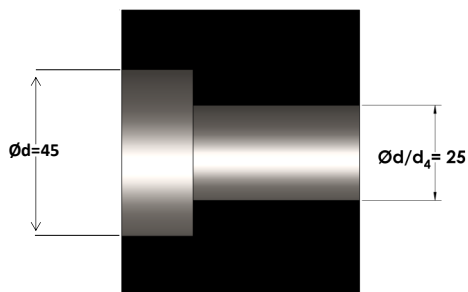
24.0	21	205	4	364	TUH2402104
25.0					TUH2502104
26.0					TUH2602104
28.0					TUH2802104
30.0					TUH3002104
32.0					TUH3202104
33.0					TUH3302104
35.0					TUH3502104
36.0					TUH3602104

55.0	25	36	TU5502501	TU5502505
56.0			TU5602501	TU5602505
57.0			TU5702501	TU5702505
58.0			TU5802501	TU5802505
59.0			TU5902501	TU5902505
60.0			TU6002501	TU6002505
61.0			TU6102501	TU6102505
62.0			TU6202501	TU6202505

Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
25.0	25	218	25	317	TUHW252525
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>= 28	65	TUB(d ₄)2565	

28.0	25	224	4	385	TUH2802504
30.0					TUH3002504
32.0					TUH3202504
33.0					TUH3302504
35.0					TUH3502504
36.0					TUH3602504
39.0					TUH3902504

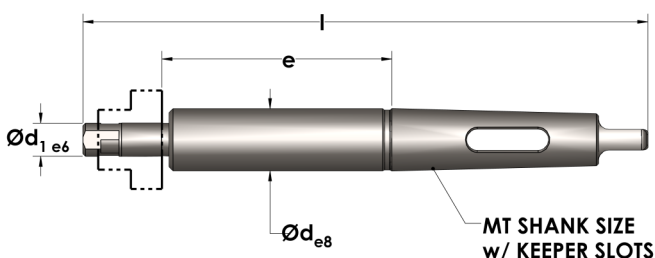
Ordering example for counterbore d = 45 and pilot hole d₄ = 25 +.052/-0 (H9)



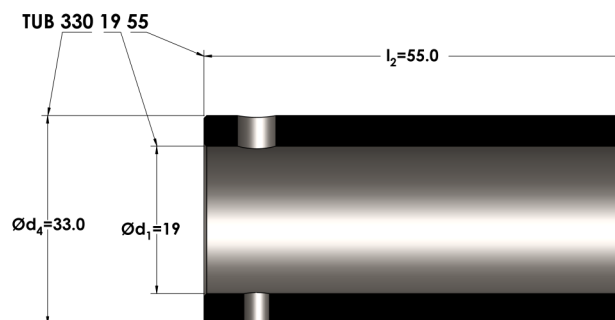
TU Cutter Head	TU 450 19 01
d = 45, HSS	
Option 1 (2 Piece w/sleeve, Weldon Shank) *	
TUH Holder	TUHW 19 19 20
d = 19, Weldon	
Sleeve	TUB 250 19 55
d4 = 25	
Option 2 (1 Piece, Morse Taper Shank)	
TUH Holder	TUH 250 19 03
d = 25, MT 3	

* Option 1 (2 Piece version) comes complete with 4 threaded pins to secure the sleeve. TUB Bushings must be ordered separately. For double guidance length order 2 pcs of the TUB Bushing.

TUH Holder Morse Taper Shank Sizes MT3 and up



TUB Bushing Ordering Example



TU Cutter Head				
Dimensions			Order Number	
d	d ₁	l	HSS	Carbide
63.0	28	38	TU6302801	TU6302805
64.0			TU6402801	TU6402805
65.0			TU6502801	TU6502805
66.0			TU6602801	TU6602805
67.0			TU6702801	TU6702805
68.0			TU6802801	TU6802805
69.0			TU6902801	TU6902805
70.0			TU7002801	TU7002805
71.0			TU7102801	TU7102805

TUH Holder Weldon Shank					
Dimensions					Order Number
d	d ₁	e	d ₂	l	Weldon Shank
Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
28.0	28	235	32	341	TUHW282832
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>=32	70	TUB(d ₄)2870	

TUH Holder Morse Taper Shank					
Dimensions					Order Number
d	d ₁	e	MT	l	MT Shank
32.0	28	241	4	405	TUH3202804
33.0					TUH3302804
35.0					TUH3502804
36.0					TUH3602804
39.0					TUH3902804
40.0					TUH4002804
42.0					TUH4202804
45.0					TUH4502804

74.0	30	50	TU7403001	TU7403005
76.0			TU7603001	TU7603005
78.0			TU7803001	TU7803005
80.0			TU8003001	TU8003005

Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
30.0	30	250	32	364	TUHW303032
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>=33	75	TUB(d ₄)3075	

33.0	30	256	5	460	TUH3303005
36.0					TUH3603005

82.0	35	50	TU8203501	TU8203505
85.0			TU8503501	TU8503505
90.0			TU9003501	TU9003505

Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
35.0	35	250	40	374	TUHW353540
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>= 39	80	TUB(d ₄)3580	

36.0	35	258	5	460	TUH3603505
39.0					TUH3903505
42.0					TUH4203505
45.0					TUH4503505
48.0					TUH4803505

92.0	40	60	TU9204001	TU9204005
95.0			TU9504001	TU9504005
98.0			TU9804001	TU9804005
100.0			TU10004001	TU10004005

Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
40.0	40	260	40	394	TUHW404040
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>=45	85	TUB(d ₄)4085	

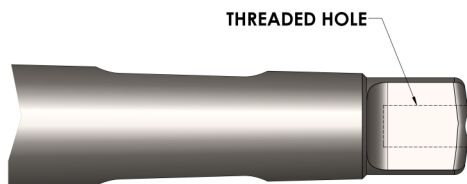
42.0	40	266	5	480	TUH4204005
45.0					TUH4504005
48.0					TUH4804005
52.0					TUH5204005

105.0	45	70	TU10504501	TU10504505
107.0			TU10704501	TU10704505
110.0			TU11004501	TU11004505
112.0			TU11204501	TU11204505
115.0			TU11504501	TU11504505

Holder and Sleeve, 2 Parts (TUHW + TUB)					
Part 1: Holder					
45.0	45	250	50	404	TUHW454550
Part 2: Sleeve					
		d ₄	l ₂	Sleeve	
		>=48	90	TUB(d ₄)4590	

48.0	45	256	5	480	TUH4804505
52.0					TUH5204505
62.0					TUH6204505

TUH Morse Taper shank holders available with fastening thread on request



Cutting Data Recommendations:

		Mild Steel	Prehardened Steel	Stainless Steel	Cast Iron	Aluminum
HSS	Speed (SFM)	50-70	50-70	25-40	<i>Not Recommended</i>	65-230
HM / Carbide	Speed (SFM)	130-260	100-230	100-230	160-300	130-260
Ø10.0-20.0 (.393-.787)	Feed Rate (IPR)	.0035-.008	.0035-.008	.003-.008	.004-.008	.004-.010
Ø21.0-36.0 (.827-1.417)	Feed Rate (IPR)	.006-.012	.005-.010	.004-.010	.006-.012	.006-.012
Ø37.0-54.0 (1.457-2.125)	Feed Rate (IPR)	.008-.013	.006-.012	.005-.012	.010-.015	.010-.015
Ø55.0-115.0 (2.165-4.528)	Feed Rate (IPR)	.008.013	.007-.014	.006-.012	.012-.024	.012-.024

Operating Sequence:

