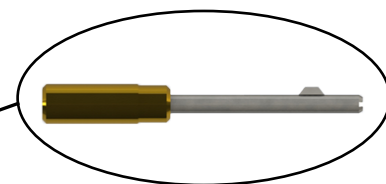


MICHIGAN DEBURRING TOOL

*Deburring in push and/or pull - Long-lasting, high-quality components.
Designed for high-volume productions - Lower operating costs, reduced cost per hole.
Blade adjustment can be done in the machine - Quick change of blade and pin in the machine.
Simple, robust, reliable construction - Standard from $\varnothing$ 1 to 31mm.
Possibility of building special tools*

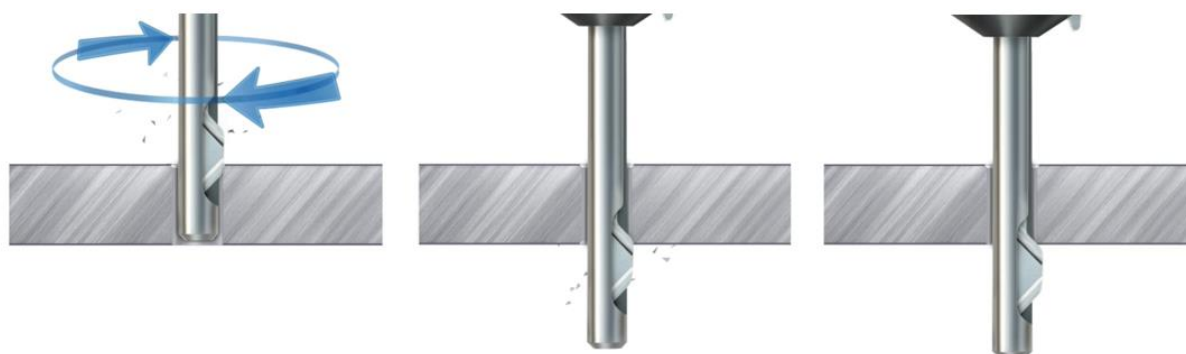
Micro Series from 1.00 to 2.34mm



Modular Series from 1.45 to 6.4mm



Autolock Series from 6.5 to 31mm



MADE IN
USA

STM
SYSTEMY TECHNOLOGIE MECHANICZNE

ul. Dziewosłuby 14/1 - 04-403 Warszawa
Tel: +48 22 6735548
E-mail: info@stmech.pl - www.stmech.pl

Modular Series from 1.45 to 6.4mm

BODY

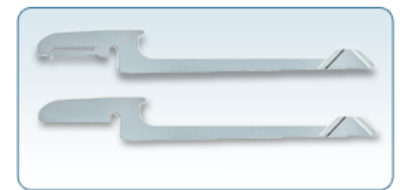
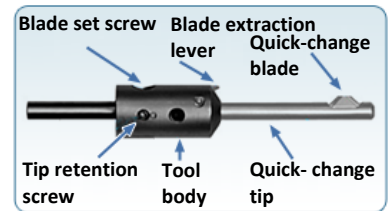
Key component of the modular system. Presetting is only necessary when first mounted on the spindle; there is no need to check during any subsequent change of tip or blade, as quick-change components assume precise positions. The lateral locking and unlocking grain of the tip allows for quick and easy changes directly on the machine. The lateral screw allows for adjustment of the blade elevation and its rapid replacement—half a turn is sufficient to go from maximum blade elevation to the extraction position, an operation that can be performed directly on the machine.

TIP

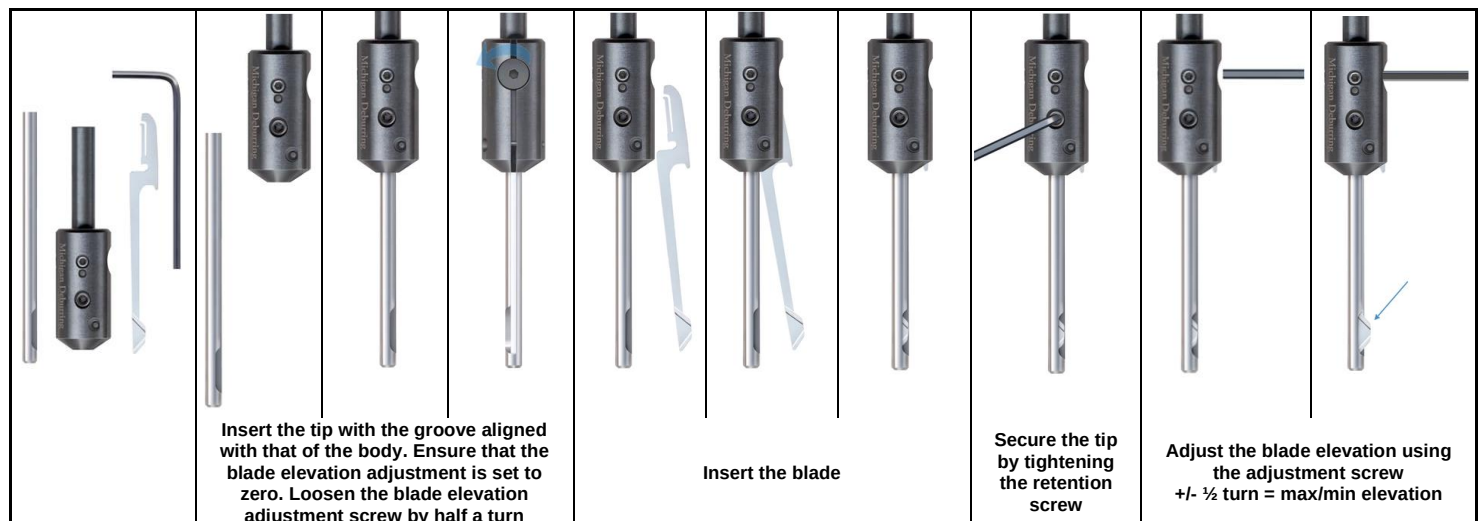
The small-diameter tips, such as A, B, and C types (Ø1.45-2.3mm), are made from raw drill blanks, while the larger-diameter models like D, E, F, and G types (Ø2.4-6.4mm) are crafted from high-quality tool steel. These features make it a component with a long lifespan and low cost. Additionally, it can be replaced quickly and easily directly in the machine.

BLADE

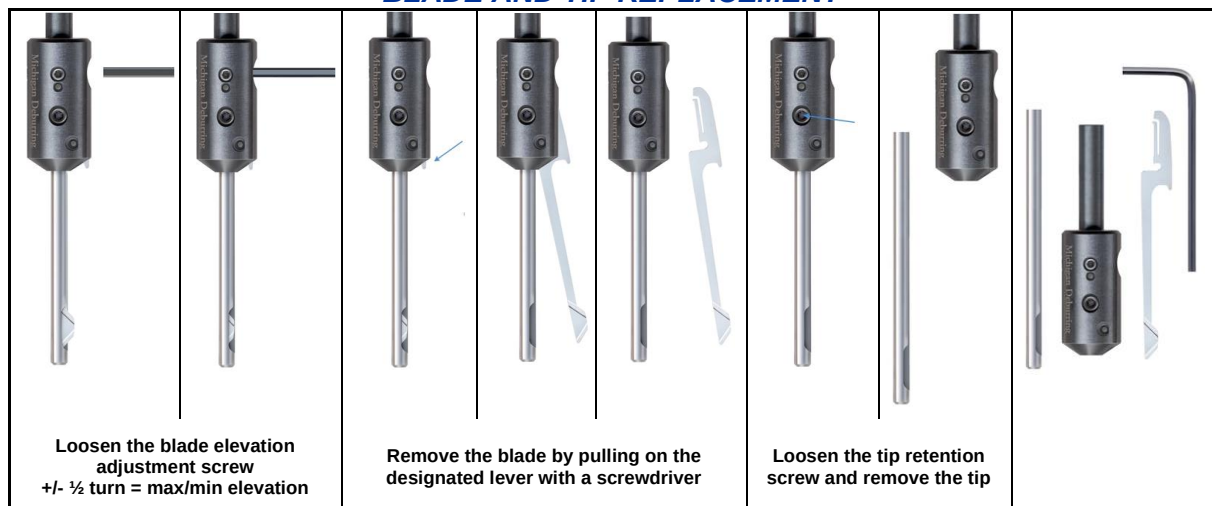
The adjustable quick-change blade also functions as a spring. The blade has a stroke limitation that prevents excessive elevation and subsequent breakage. With the adjustment screw fully tightened, maximum elevation is achieved, resulting in a very aggressive cutting action. Loosening the screw by a quarter turn provides a softer adjustment. Adjust the blade elevation to the minimum height that allows you to achieve the desired result; this way, it will exert less force. Blade elevation adjustment is also used to compensate for blade wear, increasing the projection as the cutting edge wears out



MODULAR SERIES TOOL ASSEMBLY



BLADE AND TIP REPLACEMENT



MICHIGAN
DEBURRING
TOOL



mm		inches		Tip	Tip	A	B	C
Min	Max	Min	Max	Pull + Push	Pull-only	mm	mm	mm
1.00	1.06	.0400	.0410	MDC0400-B	MDC0400-R	48.25	3.80	6.35
1.07	1.13	.0420	.0440	MDC0420-B	MDC0420-R	48.25	3.80	6.35
1.14	1.22	.0450	.0480	MDC0450-B	MDC0450-R	48.25	3.80	6.35
1.23	1.31	.0485	.0510	MDC0485-B	MDC0485-R	50.00	4.00	7.90
1.32	1.36	.0520	.0530	MDC0520-B	MDC0520-R	50.00	4.00	7.90
1.37	1.44	.0540	.0560	MDC0540-B	MDC0540-R	50.00	4.00	7.90
1.45	1.55	.0570	.0610	MDC0570-B	MDC0570-R	52.30	4.80	9.65
1.56	1.65	.0615	.0650	MDC0615-B	MDC0615-R	53.35	4.80	11.20
1.66	1.74	.0655	.0680	MDC0655-B	MDC0655-R	54.10	4.80	11.20
1.75	1.82	.0690	.0710	MDC0690-B	MDC0690-R	56.10	5.30	12.70
1.83	1.89	.0720	.0740	MDC0720-B	MDC0720-R	56.10	5.30	12.70
1.90	1.97	.0750	.0770	MDC0750-B	MDC0750-R	56.10	5.30	12.70
1.98	2.03	.0780	.0800	MDC0780-B	MDC0780-R	56.90	6.10	12.70
2.04	2.12	.0805	.0830	MDC0805-B	MDC0805-R	56.90	6.10	12.70
2.13	2.22	.0840	.0870	MDC0840-B	MDC0840-R	56.90	6.10	12.70
2.23	2.34	.0880	.0920	MDC0880-B	MDC0880-R	56.90	6.10	12.70
MDC-HOLDER: Body								

TYPE A - 1.45mm – 1.75mm (.057" - .069") holes



Working range				Complete Tool Code (Code for pull-only blade)	Components codes		
Min	Max	Min	Max		Body	Tip	Blade
1.45	1.55	.0570	.0620	TA-0570-5252S (TA-0570-R52S)	HA-0570	P-0570	BA5252S (Push+pull)
1.60	1.65	.0625	.0665	TA-0625-5252S (TA-0625-R52S)	HA-0625	P-0625	
1.70	1.75	.0670	.0695	TA-0670-5252S (TA-0670-R52S)	HA-0670	P-0670	BAR52S (Pull-only)

TYPE B - 1.80mm – 1.95mm (.070" - .076") holes



Working range				Complete Tool Code (Code for pull-only blade)	Components codes		
Min	Max	Min	Max		Body	Tip	Blade
1.80	1.80	.0700	.0725	TB-0700-5252S (TB-0700-R52S)	HB-0700	P-0700	BB5252S (Push+pull)
1.85	1.90	.0730	.0755	TB-0730-5252S (TB-0730-R52S)	HB-0730	P-0730	
1.95	1.95	.0760	.0780	TB-0760-5252S (TB-0760-R52S)	HB-0760	P-0760	BBR52S (Pull-only)

TYPE C - 2.00mm – 2.30mm (.079" - .093") holes



Working range				Complete Tool Code (Code for pull-only blade)	Components codes		
Min	Max	Min	Max		Body	Tip	Blade
2.00	2.05	.0785	.0815	TC-0785-5252S (TC-0785-R52S)	HC-0785	P-0785	BC5252S (Push+pull)
2.10	2.15	.0820	.0855	TC-0820-5252S (TC-0820-R52S)	HC-0820	P-0820	
2.20	2.25	.0860	.0885	TC-0860-5252S (TC-0860-R52S)	HC-0860	P-0860	BCR52S (Pull-only)
2.30	2.35	.0890	.0930	TC-0890-5252S (TC-0890-R52S)	HC-0890	P-0890	

TYPE D - 2.40mm – 3.15mm (.094" - .124") holes



Working range				Complete Tool Code	Components codes		
Min	Max	Min	Max		Body	Tip	Blade
2.40	2.45	.0935	.0975	TD-0935-4545P (TD-0935-R45P)	HD-0935	P-0935	BD4545P (Push+pull) BDR45P (Pull-only) Different blade configurations upon request
2.50	2.55	.0980	.1035	TD-0980-4545P (TD-0980-R45P)	HD-0980	P-0980	
2.60	2.70	.1040	.1085	TD-1040-4545P (TD-1040-R45P)	HD-1040	P-1040	
2.75	2.85	.1090	.1125	TD-1090-4545P (TD-1090-R45P)	HD-1090	P-1090	
2.90	2.95	.1130	.1175	TD-1130-4545P (TD-1130-R45P)	HD-1130	P-1130	
3.00	3.05	.1180	.1195	TD-1180-4545P (TD-1180-R45P)	HD-1180	P-1180	
3.10	3.15	.1200	.1245	TD-1200-4545P (TD-1200-R45P)	HD-1200	P-1200	

TYPE E - 3.20mm – 3.95mm (.125" - .155") holes



Working range				Complete Tool Code	Components codes		
Min	Max	Min	Max		Body	Tip	Blade
3.20	3.25	.1250	.1295	TE-1250-4545P (TE-1250-R45P)	HE-1250	P-1250	BE4545P (Push+pull) BER45P (Pull-only) Different blade configurations upon request
3.30	3.45	.1300	.1355	TE-1300-4545P (TE-1300-R45P)	HE-1300	P-1300	
3.50	3.55	.1360	.1400	TE-1360-4545P (TE-1360-R45P)	HE-1360	P-1360	
3.60	3.65	.1405	.1465	TE-1405-4545P (TE-1405-R45P)	HE-1405	P-1405	
3.70	3.85	.1470	.1515	TE-1470-4545P (TE-1470-R45P)	HE-1470	P-1470	
3.90	3.95	.1520	.1555	TE-1520-4545P (TE-1520-R45P)	HE-1520	P-1520	

TYPE F - 4.00mm – 4.75mm (.156" - .187") holes



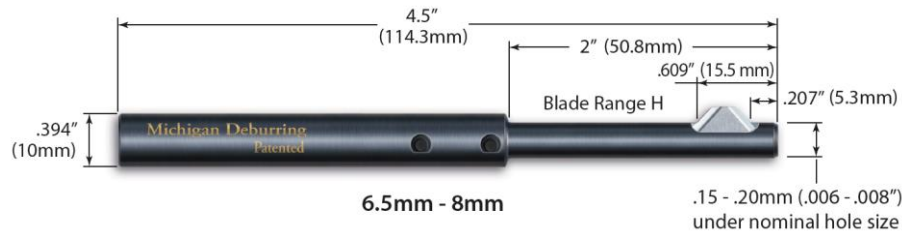
Working range				Complete Tool Code	Components codes		
mm		inches			Body	Tip	Blade
Min	Max	Min	Max	(Code for pull-only blade)			
4.00	4.15	.1560	.1655	TF-1560-4545P (TF-1560-R45P)	HF-1560	P-1560	BF4545P (Push+pull)
4.20	4.35	.1660	.1710	TF-1660-4545P (TF-1660-R45P)	HF-1660	P-1660	
4.40	4.45	.1715	.1765	TF-1715-4545P (TF-1715-R45P)	HF-1715	P-1715	BFR45P (Pull-only)
4.50	4.55	.1770	.1815	TF-1770-4545P (TF-1770-R45P)	HF-1770	P-1770	
4.60	4.75	.1820	.1865	TF-1820-4545P (TF-1820-R45P)	HF-1820	P-1820	Different blade configurations upon request

TYPE G - 4.80mm – 6.45mm (.187" - .255") holes



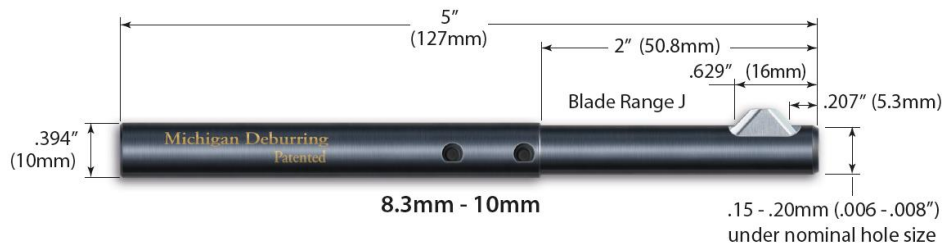
Working range				Complete Tool Code	Components codes		
mm		inches			Body	Tip	Blade
Min	Max	Min	Max	(Code for pull-only blade)			
4.80	4.95	.1870	.1930	TG-1875-4545P (TG-1875-R45P)	HG-1875	P-1875	BG4545P (Push+pull)
5.00	5.15	.1935	.2025	TG-1935-4545P (TG-1935-R45P)	HG-1935	P-1935	
5.20	5.25	.2030	.2085	TG-2030-4545P (TG-2030-R45P)	HG-2030	P-2030	BGR45P (Pull-only)
5.30	5.45	.2090	.2125	TG-2090-4545P (TG-2090-R45P)	HG-2090	P-2090	
5.50	5.55	.2130	.2180	TG-2130-4545P (TG-2130-R45P)	HG-2130	P-2130	Different blade configurations upon request
5.60	5.75	.2185	.2275	TG-2185-4545P (TG-2185-R45P)	HG-2185	P-2185	
5.80	5.95	.2280	.2355	TG-2280-4545P (TG-2280-R45P)	HG-2280	P-2280	
6.00	6.15	.2360	.2415	TG-2360-4545P (TG-2360-R45P)	HG-2360	P-2360	
6.20	6.35	.2420	.2495	TG-2420-4545P (TG-2420-R45P)	HG-2420	P-2420	
6.40	6.45	.2500	.2555	TG-2500-4545P (TG-2500-R45P)	HG-2500	P-2500	

TYPE H - 6.4mm – 8.2mm (.253" - .324") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	Min	Max	Min	Max		
6.5	6.4	6.9	.253	.272	TH-249-065-4545P (TH-249-065-R45P)	BH4545P (Push+pull) BHR45P (Pull-only) Different blade configurations upon request
7.0	6.9	7.4	.273	.291	TH-269-070-4545P (TH-269-070-R45P)	
7.5	7.4	7.9	.292	.311	TH-288-075-4545P (TH-288-075-R45P)	
8.0	7.9	8.2	.312	.324	TH-308-080-4545P (TH-308-080-R45P)	

TYPE J1 - 8.2mm – 10.2mm (.325" - .403") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	Min	Max	Min	Max		
8.3	8.2	8.4	.325	.332	TJ-320-083-4545P (TJ-320-083-R45P)	BJ4545P (Push+pull) BJR45P (Pull-only) Different blade configurations upon request
8.5	8.4	8.6	.333	.340	TJ-328-085-4545P (TJ-328-085-R45P)	
8.7	8.6	8.9	.341	.351	TJ-336-087-4545P (TJ-336-087-R45P)	
9.0	8.9	9.4	.352	.371	TJ-347-090-4545P (TJ-347-090-R45P)	
9.5	9.4	9.9	.372	.391	TJ-367-095-4545P (TJ-367-095-R45P)	
10.0	9.9	10.2	.392	.403	TJ-387-100-4545P (TJ-387-100-R45P)	

TYPE J2 - 10.2mm – 12.9mm (.404" - .509") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	Min	Max	Min	Max		
10.3	10.2	10.4	.404	.410	TJ-399-103-4545P (TJ-399-103-R45P)	BJ4545P (Push+pull) BJR45P (Pull-only) Different blade configurations upon request
10.5	10.4	10.9	.411	.430	TJ-406-105-4545P (TJ-406-105-R45P)	
11.0	10.9	11.4	.431	.450	TJ-426-110-4545P (TJ-426-110-R45P)	
11.5	11.4	11.9	.451	.469	TJ-446-115-4545P (TJ-465-115-R45P)	
12.0	11.9	12.4	.470	.489	TJ-465-120-4545P (TJ-465-120-R45P)	
12.5	12.4	12.6	.490	.497	TJ-485-125-4545P (TJ-485-125-R45P)	
12.7	12.6	12.9	.498	.509	TJ-493-127-4545P (TJ-493-127-R45P)	

TYPE J3 - 12.9mm – 15.8mm (.510" - .621") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	Min	Max	Min	Max		
13.0	12.9	13.4	.510	.528	TJ-505-130-4545P (TJ-505-130-R45P)	BJ4545P (Push+pull) BJR45P (Pull-only) Different blade configurations upon request
13.5	13.4	13.9	.529	.548	TJ-524-135-4545P (TJ-524-135-R45P)	
14.0	13.9	14.4	.549	.568	TJ-544-140-4545P (TJ-544-140-R45P)	
14.5	14.4	14.9	.569	.588	TJ-564-145-4545P (TJ-564-145-R45P)	
15.0	14.9	15.4	.589	.607	TJ-584-150-4545P (TJ-584-150-R45P)	
15.5	15.4	15.6	.608	.621	TJ-603-155-4545P (TJ-603-155-R45P)	

TYPE J4 - 15.8mm – 18.9mm (.622" - .746") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	Min	Max	Min	Max		
15.9	15.8	16.3	.622	.641	TJ-617-159-4545P (TJ-617-159-R45P)	BJ4545P (Push+pull) BJR45P (Pull-only) Different blade configurations upon request
16.0	15.9	16.4	.628	.647	TJ-623-160-4545P (TJ-623-160-R45P)	
16.5	16.4	16.9	.648	.666	TJ-643-165-4545P (TJ-643-165-R45P)	
17.0	16.9	17.4	.667	.686	TJ-662-170-4545P (TJ-662-170-R45P)	
17.5	17.4	17.9	.687	.706	TJ-682-175-4545P (TJ-682-175-R45P)	
18.0	17.9	18.4	.707	.725	TJ-702-180-4545P (TJ-702-180-R45P)	
18.5	18.4	18.9	.726	.746	TJ-721-185-4545P (TJ-721-185-R45P)	

TYPE J5 - 18.9mm – 22.4mm (.747" - .884") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	Min	Max	Min	Max		
19.0	18.9	19.4	.747	.766	TJ-741-190-4545P (TJ-741-190-R45P)	BJ4545P (Push+pull) BJR45P (Pull-only) Different blade configurations upon request
19.5	19.4	19.9	.767	.785	TJ-761-195-4545P (TJ-761-195-R45P)	
20.0	19.9	20.4	.786	.805	TJ-780-200-4545P (TJ-780-200-R45P)	
20.5	20.4	20.9	.806	.825	TJ-800-205-4545P (TJ-800-205-R45P)	
21.0	20.9	21.4	.826	.844	TJ-820-210-4545P (TJ-820-210-R45P)	
21.5	21.4	21.9	.845	.864	TJ-839-215-4545P (TJ-839-215-R45P)	
22.0	21.9	22.4	.865	.884	TJ-859-220-4545P (TJ-859-220-R45P)	

TYPE J6 - 22.4mm – 26.0mm (.885" - 1.022") holes



Size Nominal	Working range				Complete Tool Code (Code for pull-only blade)	Blade
	mm Min	mm Max	inches Min	inches Max		
22.5	22.4	22.9	.885	.904	TJ-879-225-4545P (TJ-879-225-R45P)	BJ4545P (Push+pull) BJR45P (Pull-only) Different blade configurations upon request
23.0	22.9	23.4	.905	.923	TJ-899-230-4545P (TJ-899-230-R45P)	
23.5	23.4	23.9	.924	.943	TJ-918-235-4545P (TJ-918-235-R45P)	
24.0	23.9	24.4	.944	.963	TJ-938-240-4545P (TJ-938-240-R45P)	
24.5	24.4	24.9	.964	.982	TJ-958-245-4545P (TJ-958-245-R45P)	
25.0	24.9	25.4	.982	.998	TJ-977-250-4545P (TJ-977-250-R45P)	
25.4	25.3	26.0	.999	1.022	TJ-993-254-4545P (TJ-993-254-R45P)	
26.0	25.9	26.4	1.020	1.059	TJ-1015-260-4545P (TJ-993-260-R45P)	
27.0	26.9	27.4	1.059	1.098	TJ-1054-270-4545P (TJ-1054-270-R45P)	
28.0	27.9	28.4	1.098	1.138	TJ-1093-280-4545P (TJ-1093-280-R45P)	
29.0	28.9	29.4	1.138	1.177	TJ-1133-290-4545P (TJ-1133-290-R45P)	
30.0	29.9	30.4	1.177	1.217	TJ-1172-300-4545P (TJ-1172-300-R45P)	
31.0	30.9	31.4	1.217	1.256	TJ-1211-310-4545P (TJ-1211-310-R45P)	

BLADES

S cutting edge – Neutral

Ideal for carbon and alloyed steel, cast iron

P cutting edge – Positive

Ideal for stainless steel, ductile steel, aluminum, brass, etc.

R: pull-only cutting edge

A, B, C tools:

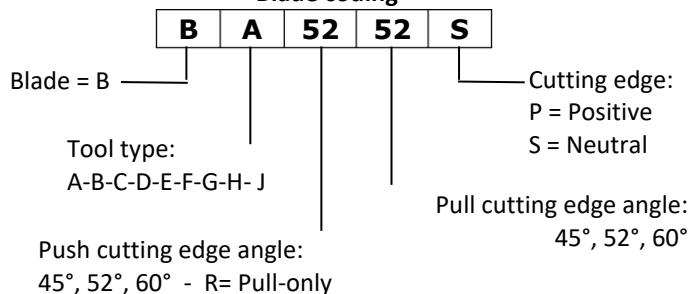
- Only 5252S or R52S blades available
- Supplied with 5252S blade unless otherwise specified

D,E,F,G,H, J tools:

- Supplied with 4545P blade unless otherwise specified

Custom configurations available upon request

Blade coding



A-B-C type Blade coding			
Blade type	Push angle	Pull angle	Cutting edge
5252S	52	52	S
R52S	*R	52	S
D-E-F-G-H-J type Blade coding			
Blade type	Push angle	Pull angle	Cutting edge
4545P	45	45	P
4560P	45	60	P
6060P	60	60	P
R45P	*R	45	P
R60P	*R	60	P
4545S	45	45	S
4560S	45	60	S
6060S	60	60	S
R45S	*R	45	S
R60S	*R	60	S



SPEED AND WORKING CYCLE

It is possible to perform two different types of work cycles based on usage. Cycle A is used for the majority of applications, while cycle B is recommended for CNC use and in case of a high thickness transition between the entry and exit on the other side.

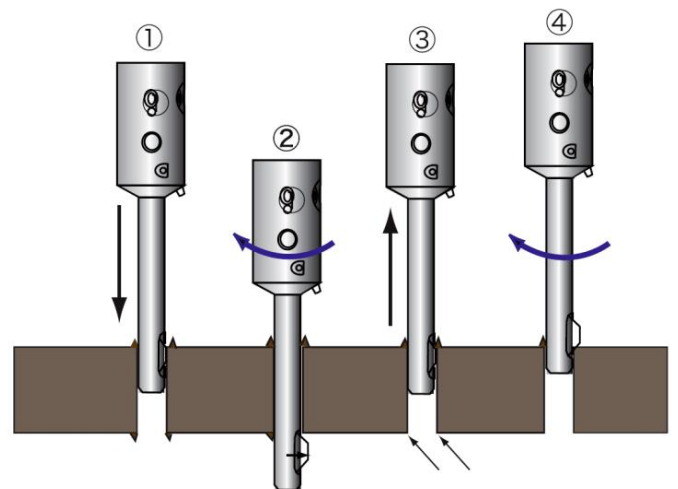
CYCLE A

1. Hole entry in rotation with deburring while entering.
Optional feed pause for sustained deburring.
2. Passage through hole still in rotation, deburring while exiting.
Optional feed pause for sustained deburring.
3. Retraction from the hole while still in rotation, or stopping the spindle.



CYCLE B

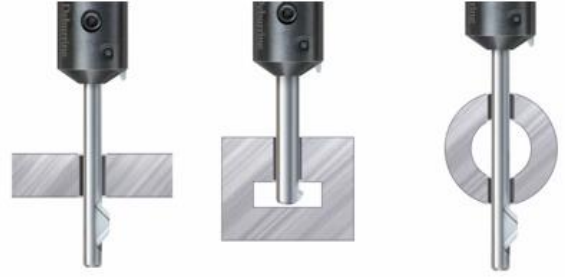
1. Hole entry with stationary spindle.
2. Exit to the other side until the blade is completely open.
Start the rotation and the feed pulling up through the hole with speeds adequate for the hole diameter and material.
Pause the feed for as long as necessary to obtain the desired deburring or chamfer size.
Slow feed to disengage the blade from the cutting action.
Stop spindle rotation.
3. Retraction from the hole with stationary spindle until the blade is completely open
4. Start the rotation and the feed pushing back towards the hole with speeds adequate for the hole diameter and material
Pause the feed for as long as necessary to obtain the desired deburring or chamfer size
Slow feed to disengage the blade from the cutting action.
Stop spindle rotation and proceed to the next hole.



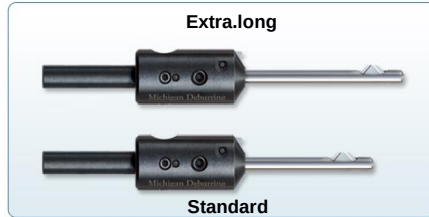
Material	m/min	mm/rev
AVP	23-38	0.08-0.25
Aluminum	27-46	0.08-0.20
Cast iron	12-12	0.08-0.25
Low carbon steel	18-30	0.10-0.28
High carbon steel	14-24	0.08-0.25
Stainless steel	6-12	0.08-0.25
Alloyed steel	8-15	0.08-0.25

SPECIAL TOOLS

Although standard tools can handle most applications, sometimes the geometry of the parts or working conditions do not allow their use. Special tools can be designed to meet the specific needs of the customer. Here are some examples:



- Tip length (extra-short or extra-long tools)
- Reduced tip projection (tight spaces on the exit side)
- Reduced blade height (presence of shoulders)
- Cutting angle (difficult materials)



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TOOL
