NEW SHAPER DUO

WATCH ON YouTube

■Hexalobular Socket

NEW

■Hexagon Socket

■Square Socket

- Now available for Hexalobular(6-lobe) Socket
- Perfect fit for back spinde of Swiss machine
- Achieves good corner edge sharpness
- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical double-ended insert bar (Except for Hexalobular)

Comparison Chart of Hexalobular Socket Machining

	Tool Pressure	Cycle Time	Tool Cost	High speed spindle	Program	
Shaper Duo 	◎	◎	◎	Not necessary	Simple	●No high speed spindle needed ●A lot less cycle time
End milling	○	×	△	Necessary	Complicated	●Need high speed spindle ●Time consuming process

- Small diameter endmill driven by high-speed spindle is popular way to create Hexalobular(6-lobe) socket. It has some flexibility but needs high speed spindle unit and it is a time consuming process.
- SHAPER DUO can make Hexalobular(6-lobe) socket faster and simpler.

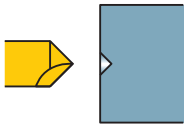
Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Flexibility	Tool Cost	
Shaper Duo 	◎	△ *Can be off-set by over-wrapping operation	○	◎	●Less tool pressure-especially on small diameter parts ●One size can cover several socket sizes
Broach Tool	△	○	×	△	●Need to have tools for each socket size

- Rotary-broach is an efficient way for Hexagon socket. But tool pressure is too much and often times it pushes part too hard.
- SHAPER DUO system enables less tool pressure process and provides better tolerance with less cost.

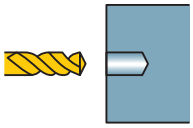
Process Chart

① Center drilling



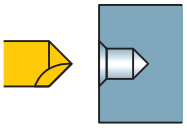
Select a pilot hole drill which is bigger dia. than AF.

② Drilling (Pilot hole)



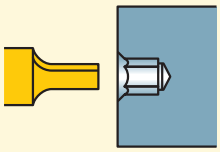
Select a drill with same dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

③ Chamfering



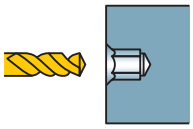
Chamfer with the same pilot hole drill as ① (Chamfer can be done at same time as ①).

④ Shaper tool



Machine HEX portion rotating 60 degrees 6 times

⑤ Deburring



Finish and deburr with the same drill as in process②
☆Reduce cutting conditions due to heavy interruption

SHAPER DUO Process Chart -Hexalobular-

Socket Size	Tool	Pilot bore Dia. (mm)	Total DOC /side (mm)	Number of passes			Estimated cycle time *		
				Total pass /side	Roughing pass 0.025mm	Finishing pass 0.010mm	ISO10664 Stadard depth of Hexalobular hole (mm)	Whole process ①-⑤	Process④ Shaper
T6	**SSP050N25T06**	1.15	0.3	13	12	1	1.82	51 sec	23.2 sec
T7	**SSP050N31T07**	1.38	0.34	15	14	1	2.44	59 sec	28.2 sec
T8	**SSP050N36T08**	1.62	0.39	17	16	1	3.05	67 sec	33.8 sec
T10	**SSP050N41T10**	1.92	0.44	19	18	1	3.56	75 sec	39.5 sec
T15	**SSP050N43T15**	2.3	0.525	22	21	1	3.81	84 sec	46.2 sec
T20	**SSP050N46T20**	2.71	0.62	26	25	1	4.07	94 sec	55.4 sec
T25	**SSP050N50T25**	3.13	0.685	29	28	1	4.45	105 sec	63.8 sec
T27	**SSP050N55T27**	3.52	0.775	32	31	1	4.70	115 sec	71.8 sec
T30	**SSP050N55T30**	3.91	0.845	35	34	1	4.95	125 sec	80.2 sec

＊Using Carbide drill

＊Shaper cutting conditions　Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.010 mm (Finishing)

SHAPER DUO Process Chart -Hexagonal-

HEX Standard	Tool	Pilot bore Dia. (mm)	Total DOC /side (mm)	Number of passes			Estimated cycle time *		
				Total pass /side	Roughing pass 0.025mm	Finishing pass 0.010mm	ISO 2936 standard depth of Hex hole (mm)	Whole process ①-⑤	Process④ Shaper
HEX 1.5	**SSP020N1130H**	1.5	0.116	6	5	1	2	39 sec	14 sec
HEX 2.0	**SSP020N1430H**	2.0	0.155	7	6	1	2.5	44 sec	16 sec
HEX 2.5	**SSP030N1940H**	2.5	0.193	9	8	1	3	50 sec	20 sec
HEX 3.0	**SSP030N1940H**	3.0	0.232	10	9	1	3.5	55 sec	23 sec
HEX 4.0	**SSP040N2450H**	4.0	0.309	13	12	1	5	73 sec	33 sec
HEX 5.0	**SSP050N3260H**	5.0	0.387	17	16	1	6	90 sec	46 sec
HEX 6.0	**SSP060N42120H**	6.0	0.464	20	19	1	8	117 sec	63 sec
HEX 8.0	**SSP080N62160H**	8.0	0.619	26	25	1	10	155 sec	92 sec

＊Pilot bore diameter is same as AF
＊Using Carbide drill

＊Shaper cutting conditions　Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.010 mm (Finishing)

Recommended Cutting Conditions

Feed : 3000 mm/min (120 IPM)
DOC : Roughing ··· 0.025 mm (.0010") + Finishing ··· 0.010 mm (.0004")