

BIG KAISER



A Member of the
BIG DAISHOWA Group

EMMA



The future of fine boring



BENEFITS

- Increase Productivity
- Man-less, Lights-out operation
- Shorter cycle time
- Adjust in difficult-to-reach locations
- Reduction of scrap due to human error
- One tool for multiple bore sizes (EWA68)
- Compatible with most machine tools and all probing systems
- Simple communication principle
- Simple installation

BIG KAISER shows full automatic fine boring

The EWA is an intelligent, fully automatic fine boring tool, which performs closed-loop boring operations. With the EWA there is no need to stop the machine tool to take measurements and manually adjust the boring tool, resulting in considerable time savings.

By eliminating human interaction, the likelihood of scrapping expensive workpieces is minimized.

This reduces costs and improves accuracy, enables handling of multiple bore sizes and repeatable bores, and avoids time-consuming manual wear-out compensation.

Developed solely by BIG KAISER, the EWA system is based on BIG KAISER's EWE digital fine boring heads and the EWN precision boring heads.

The EWA can be integrated in two primary configurations:

App Control

It can be operated as a stand-alone tool, controlled manually with the BiKaiser App via wireless connection.

Macro Variable Integration

Either for new or legacy machine tools, a PC-based interface between the machine tool and the EWA provides a fully automated, closed-loop control cycle. Commands are sent to the EWA system using macro-variables, automatically adjusting the tool in synchronization with the machining process.

EWA 68

- Range: Ø 68-134mm (three different insert holders)
- Boring precision of IT3
- Stroke: 22mm Ø
- Absolute Linear Sensor: Precision 2µm

Fully automatic Measuring and Cutting Process



Integration



App Control

Model 1

- Easy start
- Adjustment in difficult to reach locations

The basic level of integration within the EWA family is the 'App Control'

With this control method the user needs to be present during the machining process and make the adjustments on the App (tablet or phone).

The measurement may be done by probe or by hand (common micrometer) and the adjustments need to be given by the user via

the app to the EWA head, which will adjust itself via the built-in drive and measurement method.

This control method is an easy start into the world of automatic fine boring, with no deep machine integration needed, a limited invest, very manageable training of

users, useable on multiple machines without any supplemental calibration.

Finally, the system can also be used to just to adjust the fine boring size in difficult to reach locations in very large machines, that is why the system boasts a maximum boring diameter of 3000 mm.



Macro Variable Integration

Model 2

- Fully automated system
- Lights off manufacturing
- Reduction of human error

The next level of integration within the EWA family is the 'Macro variable integration' which is a giant leap forward when compared to the App Control.

With this control method the user does not need to be present during the machining process. The adjustment values are calculated by the machine tool code, based on the measurements of a tactile probe from any manufacturer.

These values will be communicated bidirectionally to the industrial PC via ether-

net and an industrial Bluetooth antenna to the EWA head that will adjust itself via the built-in drive and measurement method.

This control method is good start into the world of automatic fine boring, with some machine integration needed, a manageable invest, some training of users, usable only on machines where the industrial PC can

be integrated – integration of the industrial PC is possible on almost every modern machine, when new, or as a retrofit on every given point in time in collaboration with the machine manufacturer.

These features make the system ideally suited for 'lights off' manufacturing and – on top: reduction of human error.

Software

The EWA-SYNC control Software runs on Windows 7 or higher, industrial PC is provided by BIG Kaiser. This software provides the communication to the machine tool control via Ethernet and to the EWA fine boring head via Bluetooth®. The Bluetooth® connection is established thanks to a trough-hole antenna directly connected to the PC, and placed inside the working area of the machine tool.

The main function of the control software is to synchronize the machining process with the automatic tool adjustment by sending information from the machine tool to the EWA and vice-versa. Additional functions include:

- Semi-automatic control of the EWA by manually introducing adjustment data in the software
- EWA tool configuration
- System configuration
- Detailed information on error codes (e.g. battery low, tool blocked, etc.)
- Reading log file of the EWA tool
- Installation support functions

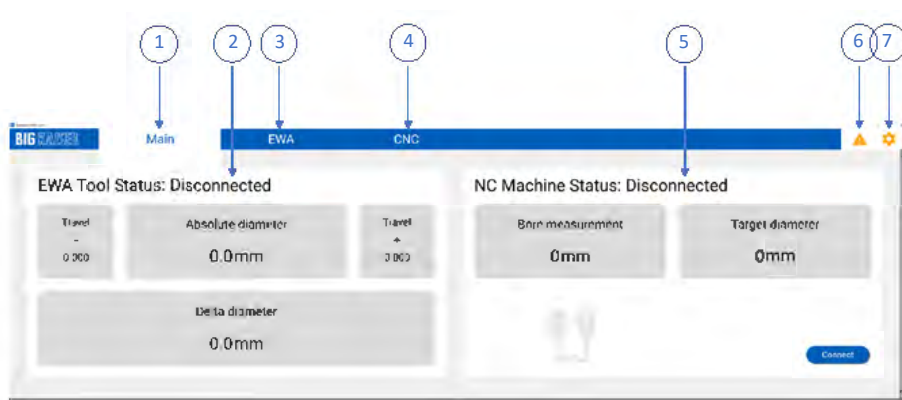
The software is prepared for communication with the most common controls:

Supported control Systems

	Control Manufacturer	Supported Control Sys.	Models
Macro Variable Integration	Fanuc	Controls with FOCAS2	
	Heidenhain	All systems with «option18»	Heidenhain DNC, TNC640, TNC620, etc.
	Siemens	SINUMERIK with OPC-UA server	SINUMERIK 1, SINUMERIK 828D, etc.
	Mazak*	Mazatrol with API option	
	Okuma*	Thinc-API	OSP-P100II, OSP-P200 and newer OSP-P controls

* Pending final validation. Market launch in 2024.

Main Screen (UI)



1. Main screen with overview
2. Tool status with the maximum travel
3. EWA Tool settings including possibility of manual adjustment
4. Settings for the communication with the machine tool
5. Status of the machine tool incl. Measured diameter of the probe & programmed diameter in the g-code
6. Error messages of the EWA-Systems
7. Settings of the User-Interface



EWA Fine Boring Tool Kit

The ultimate expression of automatic boring. Flexibility, precision and safety all rolled into one. In conjunction with any measuring probe, it makes the boring process automatic and always in tolerance. The wide range of diameters is covered with just three insert holders.

EWA 68 Set Contents (100979.001.0)



Model	Order No.	Qty.
Boring Head		
EWA 68-134CKB6	100928.001.0	1
Storage case		
Mechanical Accessories / Insert holder		
ENH8-1T	100934.001.0	1
ENH8-2T	100934.002.0	1
ENH8-3T	100934.003.0	1
Mechanical Accessories / Insert		
TCGT-110204-M20C	655.318	10

EWA Integration Set „Macro Variable Integration“ (101096.00X)



Model	Order No.	Qty.
Hardware		
Enbeded industrial PC	N10434.001.0	1
Industrial PoE+ Injector	N10438.001.0	1
Wireless Bolt	N10415.002.0	1
Case	101094.001.0	1
Software		
According to Set Specification		1

Boring Range

Ø 68 - 134

EWA68	
Insert Holder	Ø
100220.001.0	68-90
100220.002.0	90-112
100220.003.0	112-134

Ø 134 ~ 200

EWA68	
Flange ck-ck 101172.001.0	
Insert Holder	Ø
100220.001.0	134-156
100220.002.0	156-178
100220.003.0	178-200

Ø >200 <651

EWA68		Pos.1			Pos.2		
Slide	Insert Holder Ø	100220.001.0	100220.002.0	100220.003.0	100220.001.0	100220.002.0	100220.003.0
	318.222	200-222	222-244	244-266	235-257	257-279	279-301
	318.223	270-292	292-314	314-336	305-327	327-349	349-371
	318.224	340-362	362-384	384-406	375-397	397-419	419-441
	318.225	410-432	432-454	454-476	445-467	467-489	489-511
	318.226	480-502	502-524	524-546	515-537	537-559	559-581
	318.227	550-572	572-594	594-616	585-607	607-629	629-651

Ø >=620

Flange		Slide		Insert Holder / Position1			Insert Holder / Position2			Coolant Supply
ØD	Article No.	Article No.	Assembly	100220.001.0	100220.002.0	100220.003.0	100220.001.0	100220.002.0	100220.003.0	Article No.
620-721			min	620-642	642-664	664-686	655-677	677-699	699-721	
690-791	318.421	318.431	medium	690-712	712-734	734-756	725-747	747-769	769-791	318.441
760-861			max	760-782	782-804	804-826	795-817	817-839	839-861	
830-931			min	830-852	852-874	874-896	865-887	887-909	909-931	
900-1001	318.422	318.432	1	900-922	922-944	944-966	935-957	957-979	979-1001	318.441
970-1071			2	970-992	992-1014	1014-1036	1005-1027	1027-1049	1049-1071	
1040-1141			max	1040-1062	1066-1084	1088-1106	1075-1097	1097-1119	1119-1141	
1110-1201			min	1110-1132	1132-1154	1154-1176	1145-1167	1167-1189	1189-1211	
1180-1281			1	1180-1202	1202-1224	1224-1266	1215-1237	1237-1259	1259-1281	
1250-1351	318.423	318.433	2	1250-1272	1272-1294	1294-1316	1285-1307	1307-1329	1329-1351	318.442
1320-1421			3	1320-1342	1342-1364	1364-1386	1355-1377	1377-1399	1399-1421	
1390-1491			4	1390-1412	1412-1434	1434-1456	1425-1447	1447-1469	1469-1491	
1460-1561			max	1460-1482	1482-1504	1504-1526	1495-1517	1517-1539	1539-1561	
1530-1631			min	1530-1552	1552-1574	1574-1596	1565-1587	1587-1609	1609-1631	
1600-1701			1	1600-1622	1622-1644	1644-1666	1635-1657	1657-1679	1679-1701	
1670-1771			2	1670-1692	1692-1714	1714-1736	1705-1727	1727-1749	1749-1771	
1740-1841	318.424	318.434	3	1740-1762	1762-1784	1784-1806	1775-1797	1797-1819	1819-1841	318.443
1810-1911			4	1810-1832	1832-1854	1854-1876	1845-1867	1867-1889	1889-1911	
1880-1981			5	1880-1902	1902-1924	1924-1946	1915-1937	1937-1959	1959-1981	
1950-2051			max	1950-1972	1972-1994	1994-2016	1985-2007	2007-2029	2029-2051	
2020-2121			min	2020-2042	2042-2064	2064-2086	2055-2077	2077-2099	2099-2121	
2090-2191			1	2090-2112	2112-2134	2134-2156	2125-2147	2147-2169	2169-2191	
2160-2261			2	2160-2182	2182-2204	2204-2226	2195-2217	2217-2239	2239-2261	
2230-2331	318.425	318.434	3	2230-2252	2252-2274	2274-2296	2265-2287	2287-2309	2309-2331	318.443
2300-2401			4	2300-2322	2322-2344	2344-2366	2335-2357	2357-2379	2379-2401	
2370-2471			5	2370-2392	2392-2414	2414-2436	2405-2427	2427-2449	2449-2471	
2440-2541			max	2440-2462	2462-2484	2484-2506	2475-2497	2497-2519	2519-2541	
2510-2611			min	2510-2532	2532-2554	2554-2576	2545-2567	2567-2589	2589-2611	
2580-2681			1	2580-2602	2602-2624	2624-2646	2615-2637	2637-2659	2659-2681	
2650-2751			2	2650-2672	2672-2694	2694-2716	2685-2707	2707-2729	2729-2751	
2720-2821	318.425	318.435	3	2720-2742	2742-2764	2764-2786	2755-2777	2777-2799	2799-2821	318.444
2790-2891			4	2790-2812	2812-2834	2834-2856	2825-2847	2847-2869	2869-2891	
2860-2961			5	2860-2882	2882-2904	2904-2926	2895-2917	2917-2939	2939-2961	
2930-3031			max	2930-2952	2952-2974	2974-2996	2965-2987	2987-3009	3009-3031	

EWA68 Specifications

Wireless Communication	Bluetooth® Low Energy
Adjusting Range	Ø 68 – 134 mm with overlaps (3 insert holders)
Adjusting Precision	±2 µm
Maximum Cutting Speed	300 m/min
Recommended coolant Pressure	max. 40 bar
Battery	CR123
Battery Life	Approx. 10 m of total adjustment
Adjusting Speed	Approx. 0.8 mm/s
Communication Range	10 m
Cutting Allowance	max. Ø 0.3 mm
Wake-Up Function	Accelerometer (tool ON with movement or rotation)
LED Indicator	Blinking Green: Tool is ON Blinking Blue: Tool is connected Blinking Yellow: Tool is being Adjusted Blinking Red: Error OFF: Tool is on Stand-by