

Innovative manufacturer of ultra-precise tool and workpiece motor spindles for milling, grinding, drilling and turning applications.



LEVICRON

NON-CONTACT PRECISION MOTION

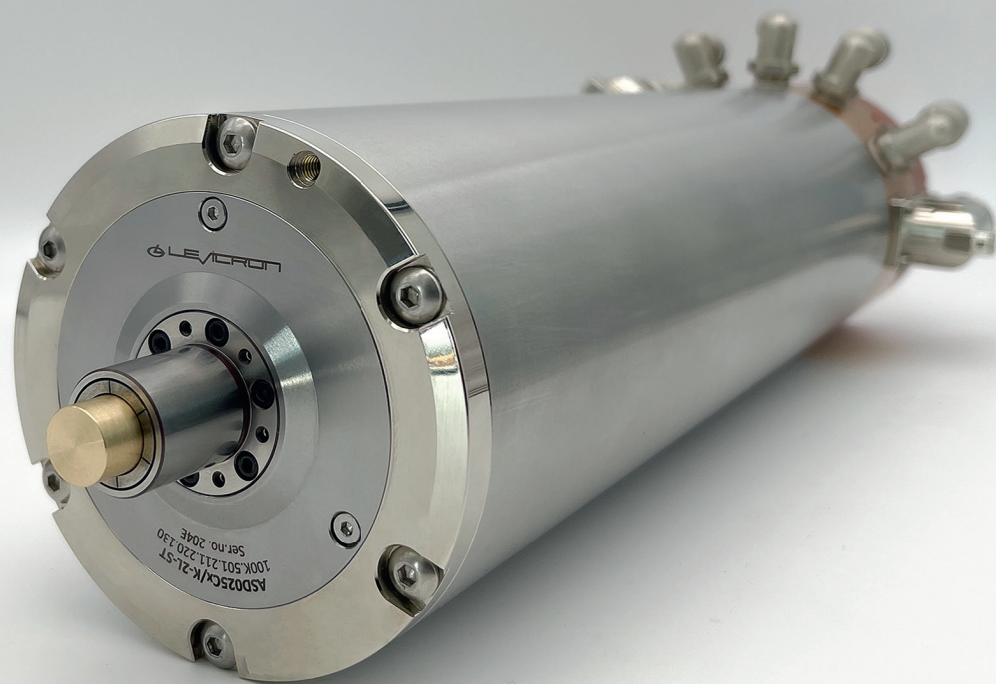
(High-pressure) aerostatic tool motor spindle with a pneumatically operated collet chuck system: **U/ASD-Cx/ ASD-CLT**



Levicron GmbH

ASD-Cx/ UASD-Cx & ASD-CLT (Specification)

(High-pressure) aerostatically mounted tool motor spindle with pneumatically operated collet system



General information at a glance

Tool interface	Automatic direct tool shank clamping (precision collet), pneumatically operated
Available Tool clamping diameters	U/ASD-Cx: 1/4", 1/8" (Inch), 6 mm, 4 mm and 3 mm (metric)
	ASD-CLT: 1/2" (Inch) and 13 mm (metric)
Housing diameter	Ø 100 mm
Available speeds	0 - 60.000 rpm; 0 - 80.000 rpm; 0 - 100.000 rpm (U/ASD-Cx)
	0 - 25.000 rpm (ASD-CLT)
Motor options	max. 400V - High performance, 0,7 Nm S1
	max. 200V - High performance, 0,7 Nm S1
	max. 400V - Iron-less, 0,33 Nm S1
	max. 200V - Iron-less 0,33 Nm S1
Angular position control	1 VSS SinCos, 80 lines, with reference
Tool change system	Pneumatic, taper cleaning air
Spindle cooling	Thin-film liquid cooling
Bearing system	Aerostatic (ASD-Cx), 6-10 bar
	High-pressure Aerostatic (UASD-Cx), 20-30 bar
Accuracy, dynamics	Static tool run-out < 0,5 µm
	Shaft Error in motion < 30 nm (U/ASD-Cx); < 20 nm (ASD-CLT)
Spindle connections	Radially outgoing

Values of: May 2024

About

Our **U/ASD-Cx** (x = tool shank diameter) features a self-developed, automatic precision collet system, which, unlike our other spindle solutions, enables exceptionally high speeds of up to 100,000 rpm. Combined with an extremely precise tool clamping system that guarantees tool runout deviations of less than 0.5 µm TIR, this spindle ensures outstanding machining quality and the highest precision. The spindle combines the ultra-precise characteristics required for generating optical surfaces with the robustness and functionality of modern tool spindles for precision machining. In addition to our self-developed high-resolution rotary encoder, efficient thin-film liquid cooling, and a steel housing with a standardized diameter, our system offers flexibility, exceptional thermal stability, and high material removal rates thanks to its rigidity and load-bearing capacity.

With the **U/ASD-Cx**, users benefit from unprecedented precision, thermal stability, and the ability to process optical surfaces in both milling and grinding applications for ultra-precision machining and CNC operations.

Note: By default, our U/ASD-Cx comes equipped with a collet system. Upon customer request, the installed collet can be swapped for one with a different clamping diameter. The following sizes are available: 6 mm, 4 mm, 3 mm, 1/8", and 1/4".

Contact lens processing

Based on our proven design, our U/ASD-Cx is now also available for clamping 1/2" shafts (**ASD-CLT**) to hold workpieces that are required for processing contact lenses, for example.



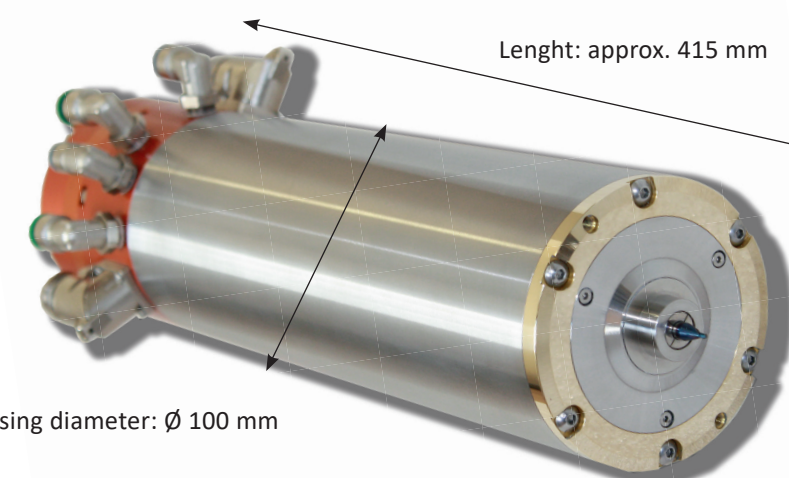
High speeds for the production of optical surfaces up to 100,000 rpm



Minimal spindle errors for the processing of optical components



With an **automatic precision collet system**



High-Pressure Aerostatic Bearing System (UASD-Cx)

ASD-Cx and UASD-Cx in comparison *)

		ASD060Cx	UASD060Cx **)
Bearing air supply pressure	[bar]	6-10	20-30
Available speed	[rpm]	0 - 60,000	0 - 60,000
Radial load capacity at the spindle nose	[N]	330	900
Axial load capacity at the spindle nose	[N]	650	1,300
Static radial zero point stiffness at the spindle nose	[N/ µm]	41	83
Static axial zero point stiffness at the spindle nose	[N/ µm]	60	75
Static air consumption	[l/min]	50	90
Dynamic tool run-out ***)	[µm]	< 0.4	< 0.3
Shaft Error in motion ***)	[nm]	< 23	< 28

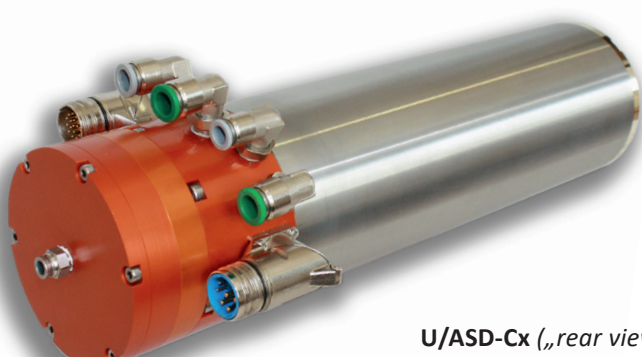
*) ASD-Cx= aerostatic; UASD-Cx= high-pressure aerostatic

**) all values at 20 bar bearing feed pressure (gauge pressure)

Values of: May 2024



ASD-CLT („front view“)



U/ASD-Cx („rear view“)

Data Sheet ASD-Cx (Aerostatic)

		ASD060Cx	ASD080Cx	ASD0100Cx
General	Housing diameter [mm]	100	100	100
	Lenght over all [mm]	415	415	415
	Weight [kg]	16	16	16
	Available Speeds [rpm]	0 - 60,000	0 - 80,000	0 - 100,000
Motor option „High performance“, max. 400V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.7	0.7	0.7
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	270	370	440
	Rated current [A]	10	10	10
	Peak current [A]	20	20	20
	Shaft power [kVA]	4.3	5.8	7.1
Motor option „High performance“, max. 200V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.7	0.7	0.7
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	170	205	265
	Rated current [A]	18	18	18
	Peak current [A]	36	36	36
Motor option „Iron-less“, max. 400V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.33	0.33	0.33
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	260	330	415
	Rated current [A]	5	5	5
	Peak current [A]	11	11	11
Motor option „Iron-less“, max. 200V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.33	0.33	0.33
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	160	180	240
	Rated current [A]	9	9	9
	Peak current [A]	18	18	18
Rotary encoder	Encoder type [-]	incremental	incremental	incremental
	Periods [-]	80	80	80
	Signal A/B [-]	SinCos, 1 VSS	SinCos, 1 VSS	SinCos, 1 VSS
	Zero flag [-]	yes (digital/ analog)	yes (digital/ analog)	yes (digital/ analog)
Bearing system	Bearing supply pressure [bar]	6-10	6-10	6-10
	Air cleanliness, ISO 8573 [-]	3 or better	3 or better	3 or better
	Radial zero point stiffness at the spindle nose, static [N/μm]	> 40	> 30	> 18
	Radial load capacity at the spindle nose, static [N]	> 330	> 300	> 270
	Axial zero point stiffness at the spindle nose, static [N/μm]	> 60	> 40	> 25
	Axial load capacity at the spindle nose, static [N]	> 600	> 550	> 500
Stability and precision	Taper runout TIR [nm]	< 100	< 100	< 100
	Shaft Error in motion [nm]	< 30	< 35	< 50
	Dynamic tool run-out *) [μm]	< 0.5	< 0.8	< 1.3
	Spindle soak time [min]	< 3	< 3	< 3
	Axial shaft growth [μm]	< 3	< 5	< 7

all values at 6 bar bearing supply pressure (gauge pressure)

*) only for field-weakened converter operation

Values of: May 2024

Data Sheet UASD-Cx (High-pressure Aerostatic)

		UASD060Cx	UASD080Cx	UASD0100Cx
General	Housing diameter [mm]	100	100	100
	Lenght over all [mm]	415	415	415
	Weight [kg]	16	16	16
	Available Speeds [rpm]	0 - 60,000	0 - 80,000	0 - 100,000
Motor option „High performance“, max. 400V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.7	0.7	0.7
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	270	370	440
	Rated current [A]	10	10	10
	Peak current [A]	20	20	20
	Shaft power [kVA]	4.3	5.8	7.1
Motor option „High performance“, max. 200V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.7	0.7	0.7
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	170	205	265
	Rated current [A]	18	18	18
	Peak current [A]	36	36	36
Motor option „Iron-less“, max. 400V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.33	0.33	0.33
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	260	330	415
	Rated current [A]	5	5	5
	Peak current [A]	11	11	11
Motor option „Iron-less“, max. 200V	Motor type [-]	3 phases, synchronous	3 phases, synchronous	3 phases, synchronous*)
	Constant torque, S1 [Nm]	0.33	0.33	0.33
	Number of poles [-]	2	2	2
	max. Phase voltage [V]	160	180	240
	Rated current [A]	9	9	9
	Peak current [A]	18	18	18
Rotary encoder	Encoder type [-]	incremental	incremental	incremental
	Periods [-]	80	80	80
	Signal A/B [-]	SinCos, 1 VSS	SinCos, 1 VSS	SinCos, 1 VSS
	Zero flag [-]	yes (digital/ analog)	yes (digital/ analog)	yes (digital/ analog)
Bearing system	Bearing supply pressure [bar]	20-30	20-30	20-30
	Air cleanliness, ISO 8573 [-]	3 or better	3 or better	3 or better
	Radial zero point stiffness at the spindle nose, static [N/μm]	> 70	> 50	> 35
	Radial load capacity at the spindle nose, static [N]	> 900	> 800	> 750
	Axial zero point stiffness at the spindle nose, static [N/μm]	> 75	> 70	> 60
	Axial load capacity at the spindle nose, static [N]	> 1,300	> 1,200	> 1,100
Stability and precision	Taper run-out TIR [nm]	< 100	< 100	< 100
	Shaft Error in motion [nm]	< 35	< 40	< 55
	Dynamic tool runout *) [μm]	< 0.5	< 0.8	< 1.3
	Spindle soak time [min]	< 3	< 3	< 3
	Axial shaft growth [μm]	< 3	< 5	< 7

all values at 20 bar bearing supply pressure (gauge pressure)

*) only for field-weakened converter operation

Values of: May 2024



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