General Data

Operating Data	Values
Operating range of coolant pressure [bar]	40-70
Operating range of coolant flow rate [l/min]	16-22
Rotational spindle speed [rpm]*	25,000-45,000
Optimum cutting tool diameter [mm]	Drilling: 0.5 - 3.0
	Milling: 1.0 - 4.0
Maximum tool shank diameter [mm]	7

General operating parameters

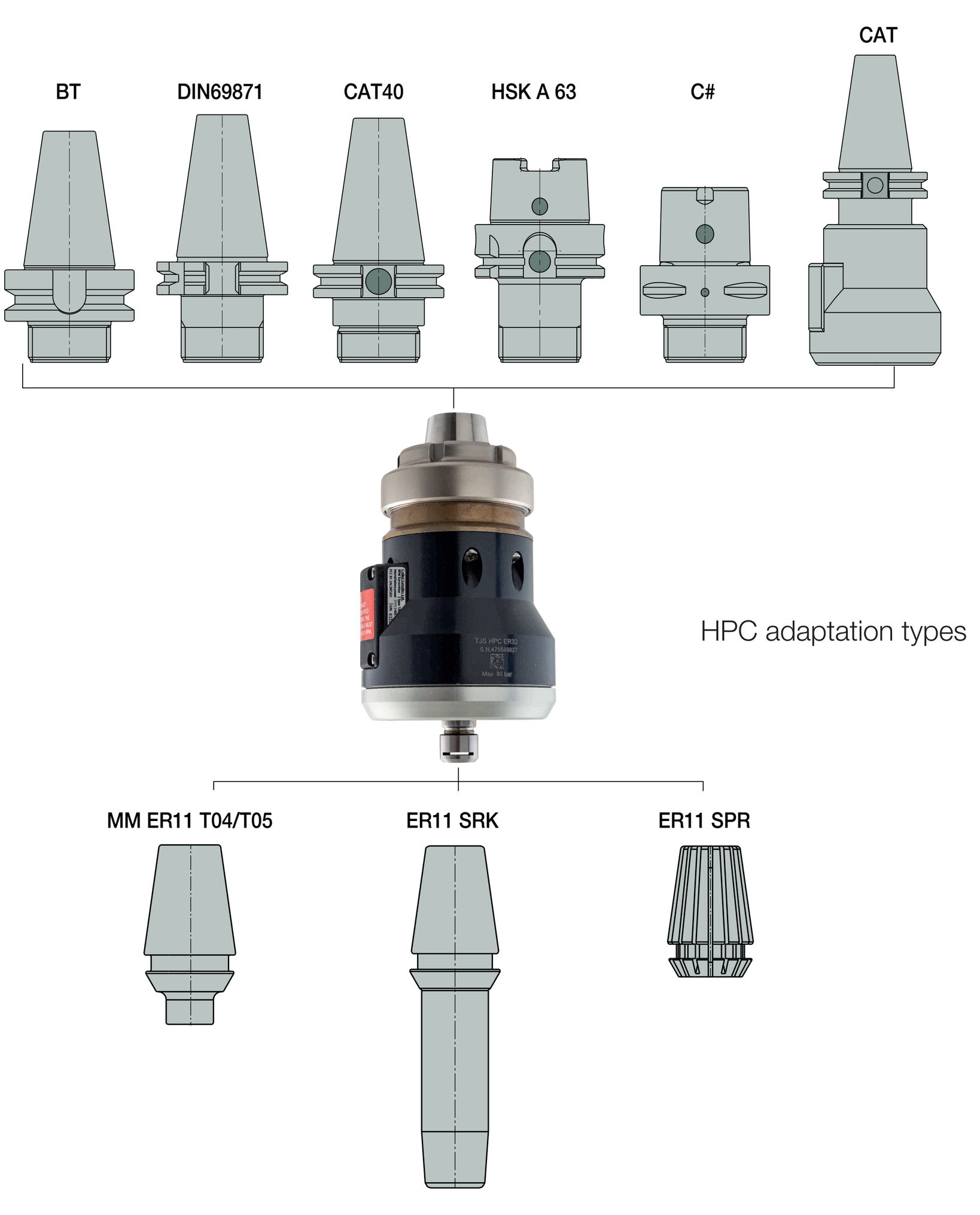
SPINJET-HPC LINE SPINDLES – Special Features

Rotational speed monitoring and display

- SPINJET-HPC LINE spindles are equipped with a real-time, wireless speed display system, cutting tool rotational speed monitor, programmable spindle parameters, and warning/alarm alerts during spindle operation.
- 2.4 GHz radio frequency transmission
- Speed monitoring range of up to 10 meters
- Externally powered display can read multiple SPINJET-HPC LINE spindles mounted on the machine

Rotational speed monitoring display

SPINJET-HPC ER32 LINE - Adaptation Options

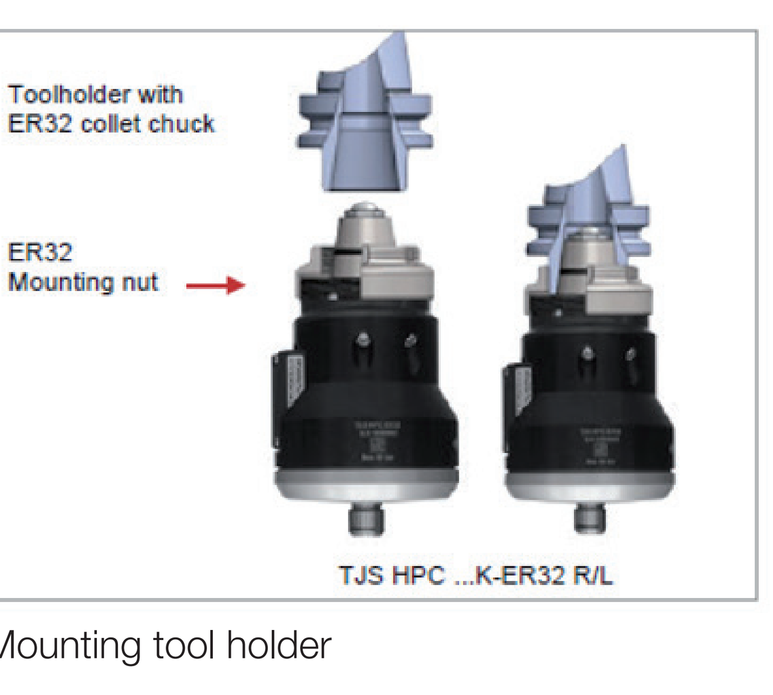


HPC adaptation types

SPINJET-HPC LINE Spindle – Tool Holding & Mounting

Required:
Pull stud with coolant- through hole

Pull Stud

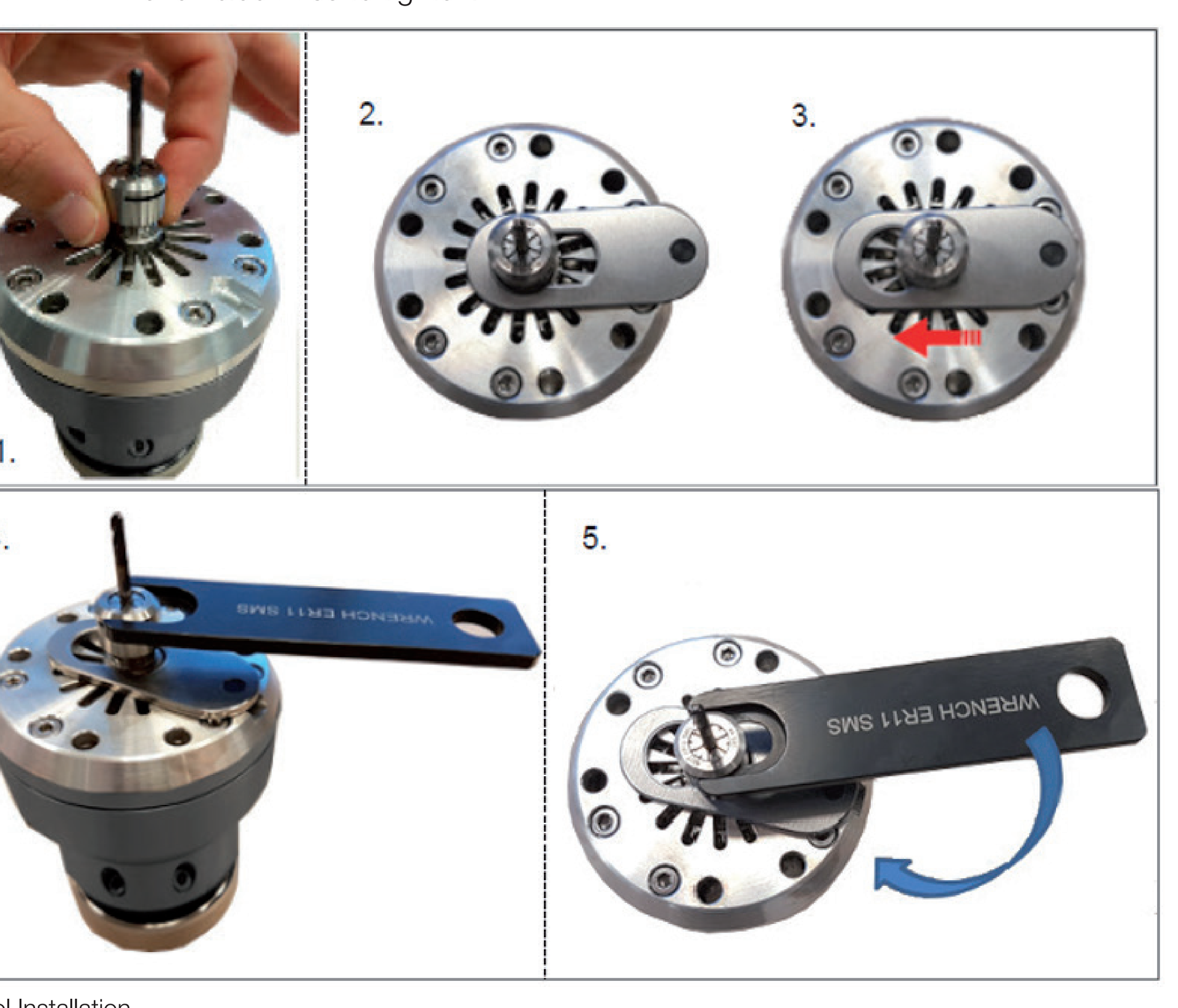


Mounting tool holder

SPINJET-HPC LINE Spindle - Tool Installation

First assemble the ER 11 collet and tool.

1. Insert nut for tightening. Align flat sides of the shaft with the positioning slot on the spindle cover.
2. Position shaft lock flat key over the nut. Black dot fits into the positioning slot underneath.
3. Slide shaft lock flat key to the left to secure it in place.
4. Insert ER11 wrench into the grooves on the nut.
5. Turn ER11 wrench clockwise to tighten.



Tool Installation

To remove the tool

1. Slide the shaft lock flat key to the right to unlock.
2. Insert the wrench and turn counter-clockwise to loosen the nut (this may take a few turns).
3. Keep the shaft lock in the secure position if you wish to insert a new tool.

Using Precision ER11 Collets
When using ER11 spring collets, it is recommended to use only high quality precise collets that are engineered for maximum accuracy and tool life.

Max. collet runout (TIR) - 5 µm

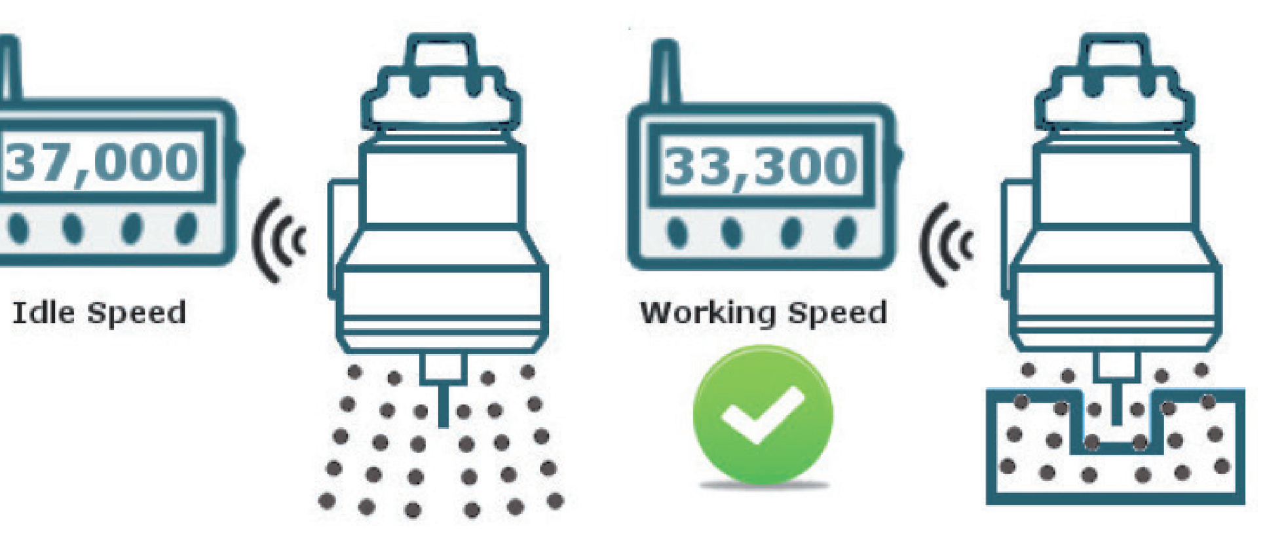
To maximize SPINJET-HPC LINE spindle tool life, we recommend following the "10% rule":

The working rotational speed (rpm) should drop by up to 10% of the rotational speed (rpm), which is registered at 'idle speed'.

Keeping this rule ensures reducing axial and radial load on the internal mechanism.

To register idle rotational speed:

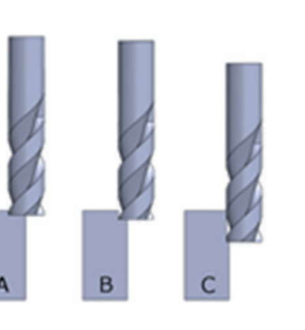
1. Install the **SPINJET-HPC LINE** spindle carrying a cutting tool into the machine.
2. Start spindle rotation by turning on the fluid supply at required pressure and find the idle RPM speed by reading the display monitor of the spindle.



Example illustrating "10% rule"

HPC Jet Spindle Operating Guidelines
Cutting Conditions:

1. Monitoring RPMs during HPC Jet Spindle operation is critical to ensure optimum machining conditions and to avoid damage.
2. Cutting speed may be influenced by material hardness, work piece topography and /or cutting tool geometry.
3. Dramatic RPM fluctuations during HPC Jet Spindle operation may indicate insufficient coolant pressure or a broken cutting tool.



Shoulder Milling
Tool sizes less than Ø 2 (.078")

Please refer to the cutting tool manufacturer's documentation for recommended cutting conditions using tool sizes under Ø 2 (.078")

Cutting Tool Ø 2 (.078")

Idle Speed RPM	Working Speed RPM	Material	SAE 4340		AI-SI 9%		SAE H13					
		Hardness	38 HRC		55HB		52 HRC					
		Method	A		B		A		B		C	
		Data	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
33,000	29,700	ap	0.50	.020	1.00	.040	2.00	.078	0.20	.008	1.00	.040
		ae	1.00	.040	1.00	.040	0.20	.008	2.00	.078	0.80	.0314
		fz	0.05	.002	0.05	.002	0.013	.0005	0.025	.001	0.025	.001
37,000	33,300	ap	0.50	.020	1.00	.040	2.00	.078	0.30	.012	1.50	.060
		ae	1.00	.040	1.00	.040	0.25	.010	2.00	.078	0.80	.040
		fz	0.05	.002	0.08	.003	0.013	.0005	0.003	.009	0.03	.0004
40,500	29,700	ap	0.50	.020	1.00	.040	2.00	.078	0.40	.016	1.50	.060
		ae	1.00	.040	1.00	.040	0.35	.014	2.00	.078	0.60	.0236
		fz	0.05	.002	0.10	.004	0.013	.0005	0.013	.0005	0.02	.0008
42,500	36,450	ap	0.50	.020	1.00	.040	2.00	.078	0.50	0.02	1.50	.060
		ae	1.00	.040	1.00	.040	0.40	.016	2.00	0.08	0.60	.0236
		fz	0.06	.0024	0.13	.005	0.013	.0005	0.013	.0005	0.025	.0004

Slot Milling
Tool sizes less than Ø 2 (.078")

Please refer to the cutting tool manufacturer's documentation for recommended cutting conditions using tool sizes under Ø 2 (.078")

Cutting Tool Ø 2 (.078")

Idle Speed RPM	Working Speed RPM	Material	SAE 4340		AI-SI 9%		SAE H13	
		Hardness	38 HRC		55HB		52 HRC	
		Data	mm	inch	mm	inch	mm	inch
33,000	29,700	ap	0.70	.0275	1.00	.040	0.70	.0275
		fz	0.012	.0005	0.025	.001	0.012	.0005
37,000	33,300	ap	0.90	.0354	1.00	.040	0.80	.031
		fz	0.01	.0004	0.025	.001	0.01	.0004
40,500	36,450	ap	1.00	.040	1.00	.040	0.80	.031
		fz	0.01	.004	0.03	.012	0.01	.0004
42,500	38,250	ap	1.20	.048	1.00	.040	0.90	.0354
		fz	0.01	.0004	0.03	.012	0.01	.0004

Shoulder Milling
Cutting Tool Ø 3 (.118")

Idle Speed RPM	Working Speed RPM	Material	AI-SI 9%				SAE 316L		SAE H13	
		Hardness	55HB				95 HB		52 HRC	
		Method	A		C		A		B	
		Data	mm	inch	mm	inch	mm	inch	mm	inch
33,000	29,700	ap	0.40	.016	3.50	.138	0.60	.024	0.70	.027
		ae	1.20	.047	0.20	.008	1.70	.067	0.80	.031
		fz	0.025	.001	0.05	.002	0.028	.0011	0.04	.0016
37,000	33,300	ap	0.60	.024	3.50	.138	0.60	.024	0.80	.031
		ae	1.40	.055	0.30	.011	1.80	.071	0.80	.031
		fz	0.03	.001	0.05	.002	0.032	.0013	0.04	.0016
40,500	36,450	ap	0.80	.031	3.50	.138	0.60	.024	0.90	.035
		ae	1.60	.063	0.30	.012	1.50	.059	0.80	.031
		fz	0.035	.001	0.09	.0035	0.03	.0012	0.045	.0018
42,500	38,250	ap	1.00	.040	3.50	.138	0.60	.024	1.00	.040
		ae	1.60	.063	0.30	.012	1.80	.070	0.80	.031
		fz	0.040	.001	0.10	.004	0.032	.0013	0.045	.0018

Slot Milling
Cutting Tool Ø 3 (.118")

Idle Speed RPM	Working Speed RPM	Material	SAE 4340 / 38 HRC		AI-SI 9% / 55 HB		SAE 316L / 95 HB		SAE H13 / 52 HRC	
		Data	mm	inch	mm	inch	mm	inch	mm	inch
33,000	29,700	ap	0.30	.012	0.45	.0177	0.50	.0020	0.35	.0138
		fz	0.015	.0006	0.055	.0022	0.011	.0004	0.015	.0006
37,000	33,300	ap	0.30	.012	0.45	.0177	0.55	.0022	0.35	.0138
		fz	0.015	.0006	0.08	.0031	0.011	.0004	0.015	.0006
40,500	36,450	ap	0.35	.014	0.45	.0177	0.50	.0020	0.35	.0138
		fz	0.015	.0006	0.09	.0035	0.012	.0005	0.015	.0006
42,500	38,250	ap	0.45	.018	0.45	.0177	0.50	.0020	0.30	.012
		fz	0.015	.0006	0.11	.0043	0.015	.0006	0.015	.0006

Shoulder Milling
Cutting Tool Ø 4 (.157")

Idle Speed RPM	Working Speed RPM	Material	SAE 4340				AI-SI 9%				SAE 316L		SAE H13	
		Hardness	38 HRC				55HB				95 HB		52 HRC	
		Method	A		C		A		C		A		A	
		Data	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
33,000	29,700	ap	0.50	.020	4.00	.157	0.35	.014	3.00	.118	0.40	.016	0.50	.020
		ae	1.50	.059	0.20	.008	1.70	.067	0.20	.008	2.10	.0826	1.20	.047
		fz	0.03	.0012	0.03	.0012	0.09	.0035	0.07	.0027	0.025	.001	0.04	.0016
37,000	33,300	ap	1.50	.059	3.90	.153	0.40	.016	3.50	.138	0.40	.016	0.50	.020
		ae	0.10	.004	0.25	.001	1.80	.071	0.20	.008	2.10	.0826	1.20	.047
		fz	0.02	.0008	0.03	.0012	0.10	.004	0.09	.0035	0.025	.001	0.03	.0012
40,500	36,450	ap	2.00	.078	3.90	.1535	0.40	.016	3.50	.138	0.04	.0016	0.50	.020
		ae	0.10	.004	0.30	.012	1.90	.075	0.20	.008	2.10	.0826	1.20	.047
		fz	0.02	.0008	0.02	.0008	0.10	.004	0.10	.004	0.03	.0012	0.03	.0012
42,500	38,250	ap	2.50	.010	3.90	.153	0.50	.020	3.50	.138	0.50	.020	0.50	.020
		ae	0.10	.004	0.45	.018	1.90	.075	0.30	.012	2.10	.0826	1.20	.047
		fz	0.03	.0012	0.03	.0012	0.11	.0043	0.08	.003	0.025	.001	0.03	.0012

Spindle Case Contents	Display Case Contents
	
1. TJS SHAFT LOCK KEY HPC 2. WRENCH ER11 SMS 3. HW2.0: HEX (ALLEN) KEY	For Europe: 1. TJS TSD display EUR - wireless RPM display 2. TJS DISP. power supply EUR - AC/DC 5V For USA/Japan: 1. TJS TSD display - USA 2. TJS DISP. power supply - USA - AC/DC 5V
	

***** New Warranty Policy**
Warranty policy for new SPINJET-HPC LINE spindles:
At least 300 hours of use or 12 months from the date of invoice, whichever comes first.

Warranty policy for repaired / refurbished SPINJET-HPC LINE spindles:
At least 200 hours of use or 6 months from the date of invoice, whichever comes first.