

## 7 10% SPEED DROP RULE

As the cutting tool enters the work piece, RPMs decrease due to load. The Jet Spindle RPM value when working should not drop more than 10% of the RPM value registered at 'idle speed'.

### TO REGISTER IDLE SPEED:

1. Mount Jet Spindle on the machine with cutting tool inserted.
2. Turn on fluid pressure and note RPM shown in the Jet Spindle Monitor App.

### For example:

If idle speed is 40,000 RPM then during machining the Jet Spindle speed should decrease to a **minimum of 36,000 RPM**.

If spindle speed decreases to less than 36,000 RPM, then both depth of cut (Ap) and feed (Fz) need to be reduced. Refer to Operating Data tables in the manual for further information.

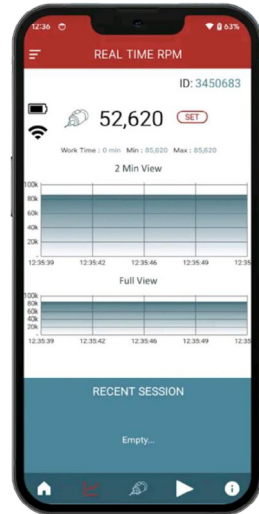


Fig. 8: Jet Spindle Monitor

## 8. MAINTENANCE

### 8.1 Periodic Maintenance

The Jet Spindle is free from periodic maintenance.

### 8.2 Battery Change on RPM Transmitter

The battery in the RPM transmitter mounted on the Jet Spindle will lose power over time. To change the battery, please proceed as described in the Manual.

### 8.3 Recommended Operating Environment

- Temperature range: 15-30° C.
- Max. altitude: 2000 m.

### 8.4 Spindle Storage

#### 8.4.1 Spindle Pre-Storage

Before storing the Jet Spindle:

- Clean the Jet Spindle by air blowing for 10-15 seconds.
- Max. air pressure for cleaning (2 bar/30 psi) – DO NOT EXCEED 50,000 RPM.
- Disconnect the Jet Spindle from the display device.
- Place the Jet Spindle back in its case.

#### 8.4.2 Recommended Storage Conditions

The Jet Spindle should be stored to meet the following conditions:

- Sheltered from possible adverse weather conditions.
- Ideal Storage Temperature Range: 15° C to 27° C.
- Humidity Range: 30% to 60% relative humidity (RH).

# PRO JET Spindle | Quick Start

## 1. Box Content

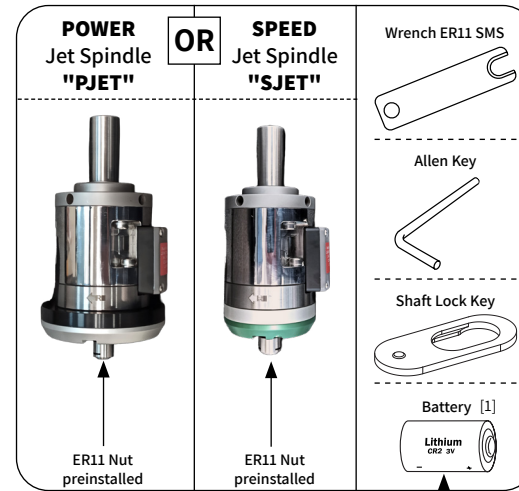


Fig. 1: Content of the box

[1] Battery Lithium CR2 3V required for sensor is not included

## 2. Prerequisites to Qualify Use:

1. Coolant flows through the main CNC machine spindle.
2. High pressure coolant, of main spindle outlet: 20-40 bar (SPEED Jet)/ 15-70 bar (POWER Jet).
3. Minimum flow rate: 10 l/min.
4. Filter element: Max. 100 µm.
5. Active mist collector.
6. When using emulsion coolant, use an anti-foaming agent additive suitable for emulsion.
7. When using oil-based coolant, high-pressure increases the oil fumes:
  - a. Use appropriate means of fire protection.
  - b. Use anti-dissolution additive suitable for oil.
8. During replacement of coolant or coolant filter:
  - a. Remove Jet Spindle from the ATC.
  - b. Run high pressure coolant pump for 10 sec before reinstalling Jet spindle in ATC.
9. Max. viscosity 15 mm<sup>2</sup>/s.

## 3. Operating Parameters

JET SPINDLE OPERATING PARAMETERS					POWER JET	
HIGH PRESSURE COOLANT (BAR)	15 BAR	20 BAR	40 BAR	70 BAR	Terms of Use	
Min Coolant Supply Diameter [mm]	4.0				Collet	ER11 AA/UP
Min flow rate (L/min)	10	12	16	22	Runout	3 Microns
Rotational spindle speed [RPM]*	20,000	25,000	35,000	45,000	Warranty	1 Year

### \* Notes:

- Rotational spindle speed is based on coolant pressure and flow rate.
- Coolant pressure is measured at the spindle inlet.

Max. Tool Diameter [mm]	Application	P	M	N [Al]	N [Cu]	S [Ti]
	Drilling		3.0		4.0	3.0
Slot Milling		6.0	4.0	6.0	4.0	
Profile Milling		6.0				
Shoulder Milling						
Chamfering						
Deburring						
Engraving						

JET SPINDLE OPERATING PARAMETERS				SPEED JET	
HIGH PRESSURE COOLANT (BAR)	20 BAR	30 BAR	40 BAR	Terms of Use	
Min Coolant Supply Diameter [mm]	4.0			Collet	ER11 AA/UP
Min flow rate (L/min)	10	15	20	Runout	3 Microns
Rotational spindle speed [RPM]*	33,000	44,000	55,000	Warranty	1 Year

**\* Notes:**

- Rotational spindle speed is based on coolant pressure and flow rate.
- Coolant pressure is measured at the spindle inlet.

Max. Tool Diameter [mm]	Application	P	M	N [Al]	N [Cu]	S [Ti]
	Drilling	2.0		3.0	2.0	
Profile Milling	6.0	4.0	6.0	4.0		
Slot Milling	4.0	3.0	4.0	3.0		
Shoulder Milling	4.0	6.0				
Chamfering	6.0					
Deburring						
Engraving						

**4. Clamp the Cutting Tool**

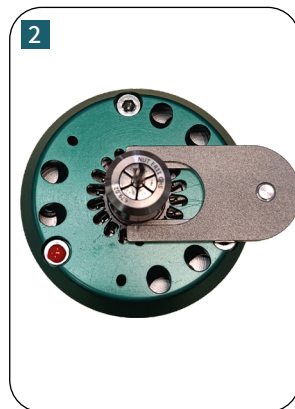
**Note: Example made here with SPEED JET, but same principle applies for POWER JET!**

Assemble the ER 11 AA/UP collet, the cutting tool and ER 11 nut:  
Firstly, ensure Jet Spindle cone and collet are thoroughly cleaned.

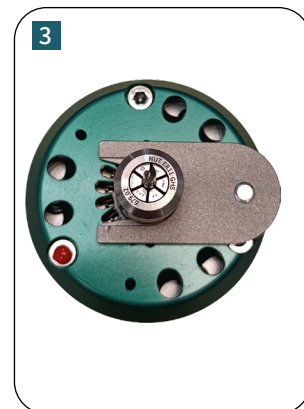
1. Insert ER11 AA/UP collet and cutting tool into clean Jet Spindle cone. Screw on ER11 nut and tighten by hand.
2. Align shaft lock with the positioning slot on the spindle cover. Raised button fits into the positioning slot.
3. Slide shaft lock flat key to secure it in place.
4. Insert ER11 wrench into the grooves on the ER11 nut. Turn ER11 wrench clockwise to tighten (9 Nm)



**Fig. 2:** Tighten ER 11 nut by hand



**Fig. 3:** Position shaft lock key



**Fig. 4:** Slide shaft lock key into place

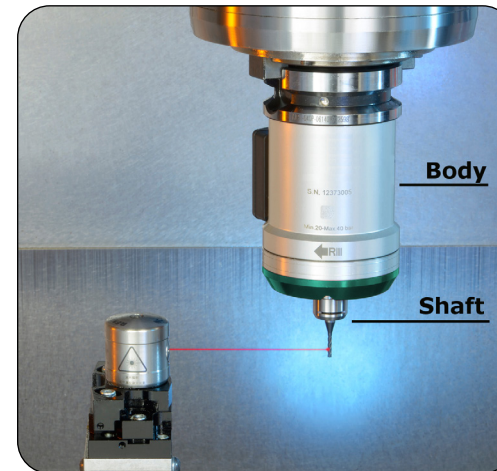


**Fig. 5:** Insert wrench into slots on nut – turn **clockwise**

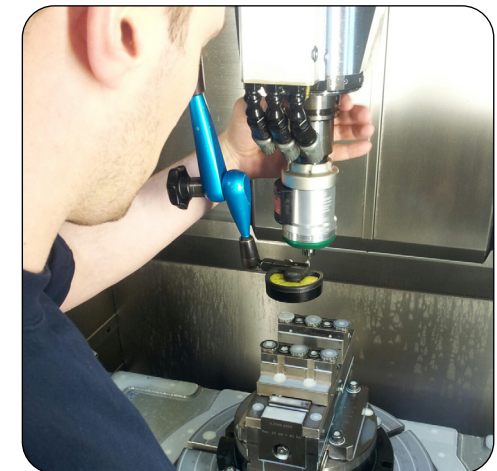
**To Remove a Tool:**

- Slide the shaft lock flat key into place.
- Insert the wrench and turn **counterclockwise** to loosen the nut (this may take a few turns).
- Keep the shaft lock in the secure position if you wish to insert a new tool.

**5. Runout Check**



**Fig. 6:** Optical runout testing



**Fig. 7:** Manual runout testing

- During machining with the High-Speed Jet Spindle, the CNC machine spindle must be locked, i.e. not rotate or rotate at a minimum speed.
- Runout is measured by rotating the shaft manually, or running an air supply through the machine spindle.

**6. Download the "Jet Spindle Monitor" APP**

