NEW

Member IMC Group
Ingersoll
Cutting Tools

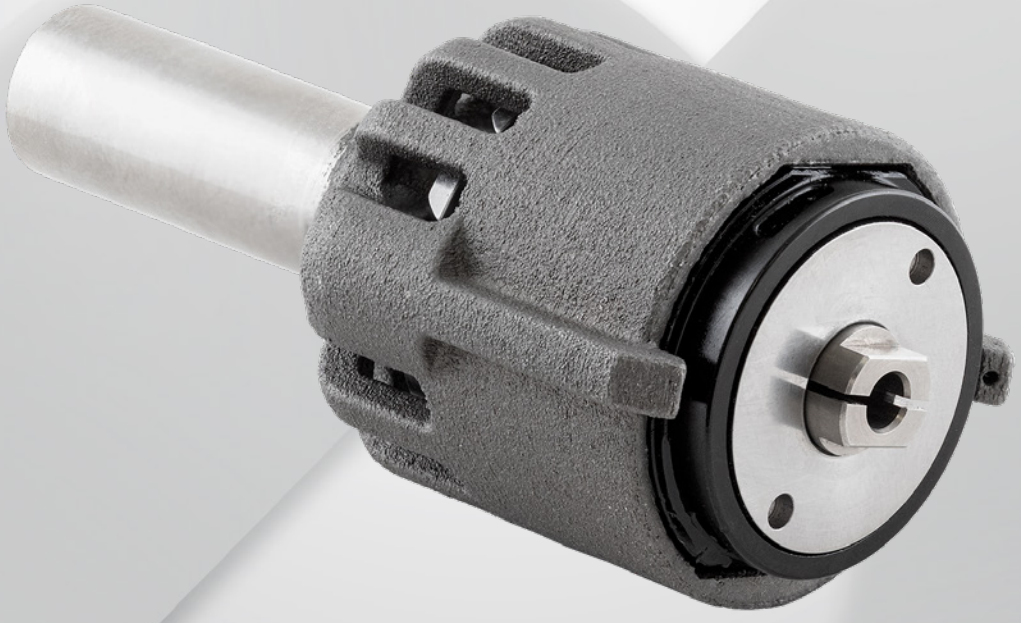
TYPHOON MICRO

HIGH SPEED MACHINING SPINDLE

TJS M00 030

SMALL HIGH-SPEED JET SPINDLE FOR COOLANT TO THE TOOLS

- *Powerful, accurate milling & drilling in difficult-to-reach spaces*
- *Pinpointed coolant to the cutting edge*
- *Simple tool change with no setup time*
- *Improved dynamic balancing due to nutless collet*
- *Low runout*



No.231 E / 04-2024

General Information

New high pressure coolant driven TyphoonMicro Jet-Spindle TJS M00 030 with coolant jet channels for coolant to the tools.

The **TyphoonMicro Jet-Spindle TJS M00 030** with a solid shell of titanium and assembled from only six parts, is built for powerful, accurate work in small and difficult-to-reach spaces.

Enables speeds from **18.000 to 40.000 rpm**, while the main machine spindle remains idle.

Ideal for a wide range of semi-finishing and finishing applications by use of small cutting tools intended for milling, drilling, thread milling, engraving, chamfering and deburring.

Features

- The **TyphoonMicro** product range supports milling and turning machines with the highest advantages found in:
  - turning machines as a result of the high speed increase and conversion of static holders to live holders.
  - smaller machines where optimizing the use of space provides an advantage.
- All **TyphoonMicro** products have identical integration options and dimensions which provide efficient inventory management.

TJS M00 030

- High-pressure coolant driven HSM spindle with a straight shank for small diameter cutting tools
- Nozzles direct coolant to the cutting edge
- High pressure coolant powered turbine
- Collet
- Supports coolant to the tool
- Requires Ø10 mm insulted collet

Advantages

- The **TyphoonMicro Jet-Spindle TJS M00 030** spindle has a universal interface for easy connection to the machine.
- The **TyphoonMicro Jet-Spindle TJS M00 030** spindle is powered by the machine's high-pressure coolant at rotation speeds up to 40.000 rpm.
- The use of machine coolant to drive the spindle provides a non-stop high-speed machining option
- The **TyphoonMicro Jet-Spindle TJS M00 030** spindle can be ideally clamped in turning and milling holders of Swiss-Type machines with limited space.
- The **TyphoonMicro** range supports milling and turning machines with the greatest possible advantages:
  - on **lathes**, since a significant increase in cutting speed is achieved when changing from stationary to rotating tools.
  - on **smaller machines**, where optimizing the use of space brings benefits.

Clamping and Coolant

- When machining at high speeds, use a nutless collet to improve dynamic balancing
- With pinpointed coolant to the cutting edge.
- Assures a simple tool change with no setup time and a low runout.
- Coolant outlets from the front housing nozzles direct high-pressure coolant to the cutting edge.

Micro 00 Collets		
TJS-COLLET1.6	D = 1.600 mm	
TJS-COLLET2.0	D = 2.000 mm	
TJS-COLLET3.0	D = 3.000 mm	
TJS-COLLET3.175	D = 3.175 mm	

Note: The collet is purchased separately

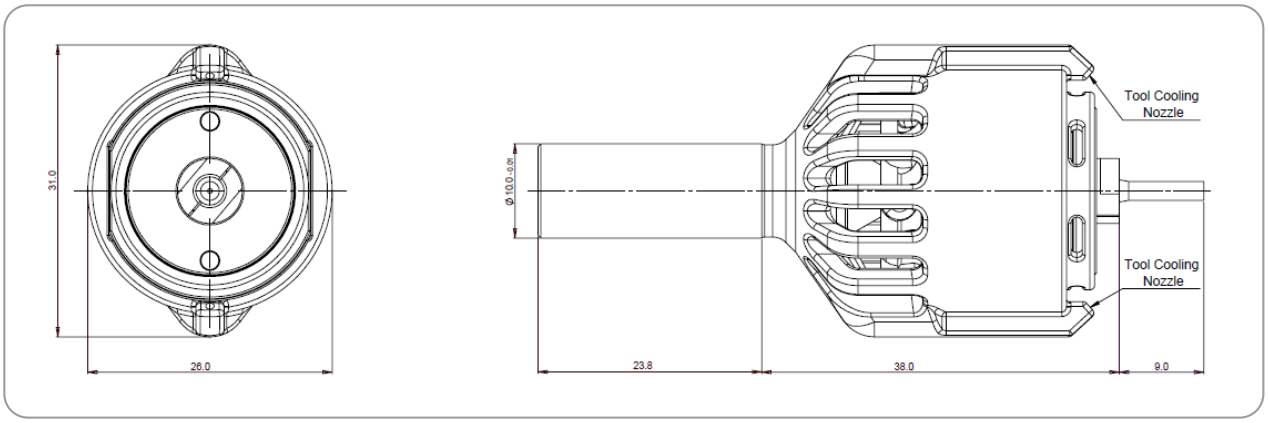
Micro M00 Wrench	
TJS M00-SHAFT-LOCK	TJS M00-WRENCH-COLLET
	

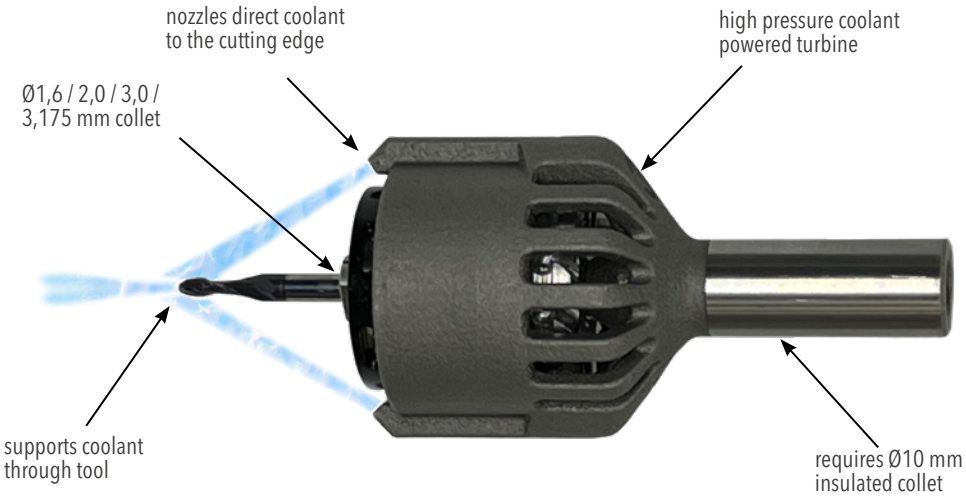
Micro 00 Coolant Through Plug	
TJS MJ-PLUG COOLANT	
Coolant through tool instructions **Supply coolant flow into the cutting tool shank:** Step 1: Open and remove plug using an Allen key 2.0 mm. Step 2: Insert the coolant through cutting tool into Micro 00 Collet.	

Each package contains:
1 x TJS MJ00
1 x MJ SHAFT LOCK
1 x MJ COLLET WRENCH
1 x MJ COOLANT THROUGH PLUG

Required Prerequisites for CNC Machines

- Coolant supply through the main spindle of the CNC machine
- Minimum coolant pressure at main spindle outlet: 15 bar
- Maximum coolant pressure at main spindle outlet: 40 bar
- Minimum flow rate: 10 l/min
- Filter element: max. 100 µm
- Active mist collector
- When using cooling emulsion, use a suitable anti-foaming agent additive to avoid foaming.
- When using an oil-based coolant, the high pressure increases the amount of oil fume:
  - Provide suitable fire protection and fire extinguishing devices.
  - Add a suitable anti-dissolving additive to the oil.

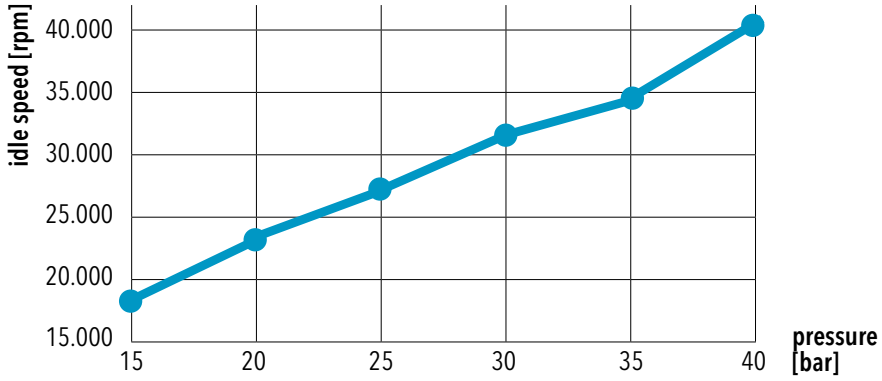




Operating Data of Spindle

operating parameters of jet spindle					Micro00
high pressure coolant	15 bar	20 bar	40 bar	terms of use	
min. coolant supply diameter [mm]	4	4	4	collet:	0,500 to 3,175
min. flow rate (L/min)	10	12	20	clamping example:	ST 20X100 ER16 ER16 SEAL 10 AA
rotational spindle speed [RPM]*	18.000	23.000	40.000		
cutting tool [mm]:	P	M	SST	N	S
drilling	0,1 – 1,0	0,1 – 1,0	–	0,1 – 2,0	0,1 – 1,0
ball nose	0,5 – 3,0	0,5 – 3,0	–	0,5 – 3,0	0,5 – 3,0
chamfering	0,5 – 3,0	0,5 – 3,0	–	0,5 – 3,0	0,5 – 3,0
deburring	0,5 – 3,0	0,5 – 3,0	–	0,5 – 3,0	0,5 – 3,0
engraving 45 / 60 degree	0,1 – 3,0	0,1 – 3,0	–	0,1 – 3,0	0,1 – 3,0
milling	0,3 – 2,0	0,3 – 2,0	–	0,3 – 2,0	0,3 – 2,0
ball nose with 120 deg. ball angle	1,0 – 3,0	1,0 – 3,0	–	1,0 – 3,0	1,0 – 3,0

Pressure vs. Speed



bar	idle speed [rpm]
15	18.000
20	23.000
25	27.000
30	31.000
35	34.000
40	40.000

Recommended operating parameters:

Milling
- Slot milling – D=2,0 mm and ap=0,05xD
- Shoulder milling – D=2,0 mm, ae=0,1xD and ap=0,1xD

Thread milling
- max. M3 thread

Drilling
- max. drill dia. D 1,0 mm (2,0 mm in nonferrous metals)

Deburring / Chamfering
- max. tool dia. D 3,0 mm
- 45° to 60° end mills can be used also for deburring

Engraving
- max. tool dia. D 3,0 mm
- max. ap 0,25 mm

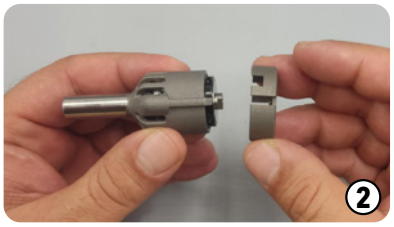
Recommended Cutting Data - Milling

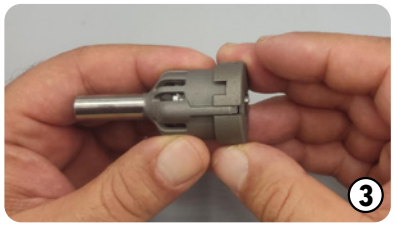
	material	process	type	tool-Ø	hardness	pressure	speed (n)	ae (mm)	ap (mm)	F_z (mm)
N	Aluminum Alloy	Profile Milling	Ball Nose	1,00	80-160 HB	15	18.000	0,06	0,05	0,008
				1,00		20	23.000	0,06	0,05	0,008
				1,00		30	31.000	0,06	0,05	0,008
				1,00		40	40.000	0,07	0,13	0,008
				2,00		15	18.000	0,07	0,08	0,010
				2,00		20	23.000	0,07	0,08	0,010
				2,00		30	31.000	0,07	0,08	0,010
				2,00		40	40.000	0,08	0,15	0,010
				3,00		15	18.000	0,08	0,08	0,015
				3,00		20	23.000	0,08	0,08	0,015
				3,00		30	31.000	0,09	0,09	0,015
				3,00		40	40.000	0,10	0,15	0,015
		Slot Milling	End Mill	0,50		15	18.000	0,50	0,10	0,010
				0,50		20	23.000	0,50	0,10	0,010
				0,50		30	31.000	0,50	0,12	0,010
				0,50		40	40.000	0,50	0,15	0,010
				1,00		15	18.000	1,00	0,10	0,015
				1,00		20	23.000	1,00	0,10	0,015
				1,00		30	31.000	1,00	0,15	0,015
				1,00		40	40.000	1,00	0,15	0,015
				2,00		15	18.000	2,00	0,20	0,025
				2,00		20	23.000	2,00	0,20	0,025
				2,00		30	31.000	2,00	0,20	0,025
				2,00		40	40.000	2,00	0,20	0,025
		Shoulder Mill		1,00		15	18.000	0,50	0,25	0,020
				1,00		20	23.000	0,50	0,25	0,020
				1,00		30	31.000	0,50	0,50	0,020
				1,00		40	40.000	0,50	0,50	0,020
				2,00		15	18.000	0,20	0,10	0,030
				2,00		20	23.000	0,20	0,10	0,030
				2,00		30	31.000	0,20	0,10	0,030
				2,00		40	40.000	0,20	0,10	0,030
P	Alloy Steel	Profile Milling	Ball Nose	1,00	220-240 HB	15	18.000	0,05	0,05	0,003
				1,00		20	23.000	0,05	0,05	0,003
				1,00		30	31.000	0,05	0,05	0,003
				1,00		40	40.000	0,05	0,05	0,003
				2,00		15	18.000	0,05	0,05	0,004
				2,00		20	23.000	0,08	0,08	0,004
				2,00		30	31.000	0,08	0,08	0,004
				2,00		40	40.000	0,08	0,08	0,004
				3,00		15	18.000	0,08	0,08	0,004
				3,00		20	23.000	0,10	0,10	0,006
				3,00		30	31.000	0,10	0,10	0,006
				3,00		40	40.000	0,10	0,10	0,006
		Slot Milling	End Mill	0,50		15	18.000	0,50	0,05	0,004
				0,50		20	23.000	0,50	0,05	0,004
				0,50		30	31.000	0,50	0,05	0,004
				0,50		40	40.000	0,50	0,05	0,004
				1,00		15	18.000	1,00	0,05	0,004
				1,00		20	23.000	1,00	0,10	0,006
				1,00		30	31.000	1,00	0,10	0,006
				1,00		40	40.000	1,00	0,15	0,006
				2,00		15	18.000	2,00	0,07	0,006
				2,00		20	23.000	2,00	0,12	0,010
				2,00		30	31.000	2,00	0,14	0,010
				2,00		40	40.000	2,00	0,14	0,010
		Shoulder Mill		1,00		15	18.000	0,30	0,25	0,008
				1,00		20	23.000	0,40	0,50	0,010
				1,00		30	31.000	0,50	0,50	0,010
				1,00		40	40.000	0,50	0,50	0,010
				2,00		15	18.000	0,50	0,06	0,008
				2,00		20	23.000	0,50	0,08	0,015
				2,00		30	31.000	0,75	0,08	0,015
				2,00		40	40.000	1,00	0,09	0,015
M	Stainless Steel	Slot Milling	End Mill	1,00	180-250 HB	15	18.000	1,00	0,08	0,005
				1,00		20	23.000	1,00	0,10	0,005
				1,00		30	31.000	1,00	0,12	0,005
				1,00		40	40.000	1,00	0,15	0,005
				2,00		15	18.000	2,00	0,05	0,010
				2,00		20	23.000	2,00	0,10	0,010
				2,00		30	31.000	2,00	0,12	0,010
				2,00		40	40.000	2,00	0,15	0,010
		Shoulder Mill	End Mill	1,00		15	18.000	0,30	0,08	0,010
				1,00		20	23.000	0,35	0,10	0,010
				1,00		30	31.000	0,40	0,15	0,010
				1,00		40	40.000	0,50	0,18	0,010
				2,00		15	18.000	0,75	0,07	0,015
				2,00		20	23.000	1,00	0,07	0,015
				2,00		30	31.000	1,20	0,07	0,015
				2,00		40	40.000	1,30	0,08	0,015

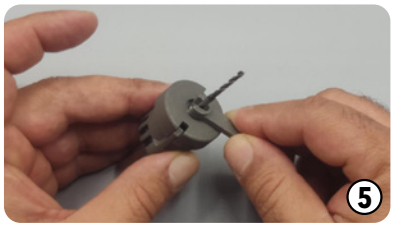
Recommended Cutting Data - Drilling

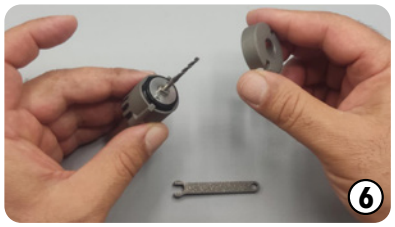
	material	process	type	tool-Ø	hardness	pressure	speed (n)	L/D hole (mm)	pecking steps QX (mm)	F_{rev} (mm/rev)
N	Aluminium Alloy	Drilling	Drill	0,50	80-160 HB	15	18.000	3/5	0,50 x D	0,007
				0,50		20	23.000	3/5	0,50 x D	0,007
				0,50		30	31.000	3/5	0,50 x D	0,007
				0,50		40	40.000	3/5	0,50 x D	0,007
				1,00		15	18.000	3/5	0,25 x D	0,010
				1,00		20	23.000	3/5	0,50 x D	0,010
				1,00		30	31.000	3/5	0,50 x D	0,010
				1,00		40	40.000	3/5	0,50 x D	0,010
				2,00		15	18.000	3	0,15 x D	0,010
				2,00		20	23.000	3	0,20 x D	0,010
				2,00		30	31.000	3	0,25 x D	0,010
				2,00		40	40.000	3	0,25 x D	0,010
M	Stainless Steel	Drilling	Drill	0,50	180-250 HB	15	18.000	4	0,15 x D	0,005
				0,50		20	23.000	4	0,20 x D	0,005
				0,50		30	31.000	4	0,25 x D	0,005
				0,50		40	40.000	4	0,25 x D	0,005
				1,00		15	18.000	4	0,15 x D	0,007
				1,00		20	23.000	4	0,20 x D	0,007
				1,00		30	31.000	4	0,25 x D	0,007
				1,00		40	40.000	4	0,25 x D	0,010

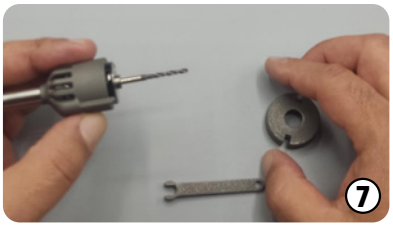
Tool Installation











Assembly Instructions:

Pic. 2 - 3: Hold the spindle with the lock key so that the shaft does not rotate

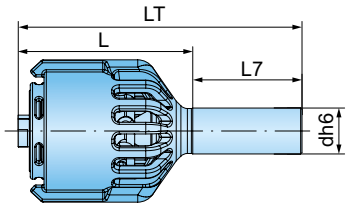
Pic. 4 - 5: After inserting the tool into the collet, tighten the collet to secure it.

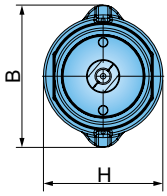
Pic. 6 - 7: Remove the lock key and use the tool assembled Micro 00 030 spindle.

TYPHOON HSM HIGH SPEED MACHINING SPINDLE TJS M00 030

special

CHS





Designation	dh6	LT	L	L7	H	B	kg
TJS M00 030	10	61,8	38	23,8	26	31	0,07

Order no.: digital • version 4-2024

Ingersoll Werkzeuge GmbH

Main Office:
Kalteiche-Ring 21–25 • 35708 Haiger, Germany
Tel.: +49 2773 742-0 • E-mail: info@ingersoll-imc.de

Office South:
Florianstraße 13–17 • 71665 Vaihingen-Horrheim
Tel.: +49 7042 8316-0 • E-mail: horrheim@ingersoll-imc.de

www.ingersoll-imc.de