JET SPINDLES CATALOGUE 2021

METALWORKING
INNOVATION

WOM
AROUND ALL THE MACHINES

COLIBRI
SPINDLES

CONTENTS

Founded and managed by Mr. Oren Harpaz, Colibri Spindles is an Israeli manufacturer and a world leader in designing, engineering and manufacturing high speed precision spindles for the semi-conductor industry.

Colibri Spindles is the world leader in HPC, Jet Spindle technology. Colibri Spindles is the first company in the world to develop this technology effectively, commercially.

Colibri Jet Spindles are incorporated in world leading cutting tool manufacturing.

WELCOME TO THE INNOVATIVE WORLD OF HIGH SPEED MACHINING

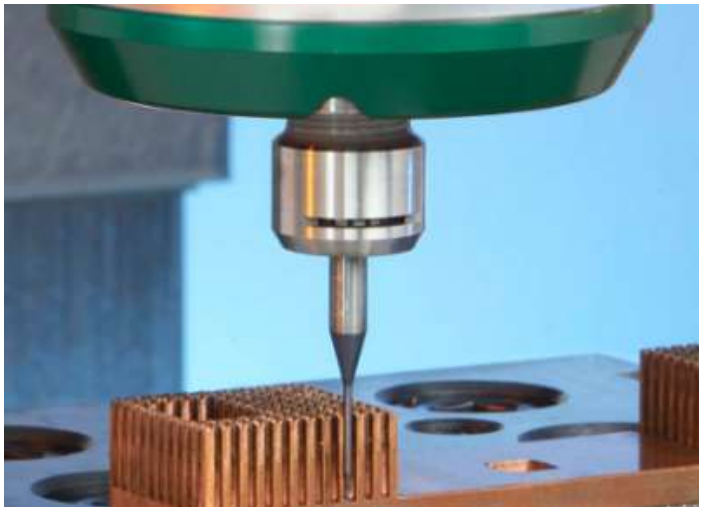
Founded in 2003, Colibri Spindles Ltd. is a world leader in advanced technologies for high speed spindles; specialized in the design and production of compact gearboxes, with operation by means of the coolant, guaranteeing excellent run-out and absence of vibrations.

The patented HSM Jet Spindle technology uses an innovative feeding system by means of the internal coolant of the machine, therefore at low cost, with real-time monitoring of the rotation thanks to the wireless display.
Continuously engaged in high-level research and development projects, Colibri is dedicated to improving existing technology and introducing new innovations in the metalworking sector.

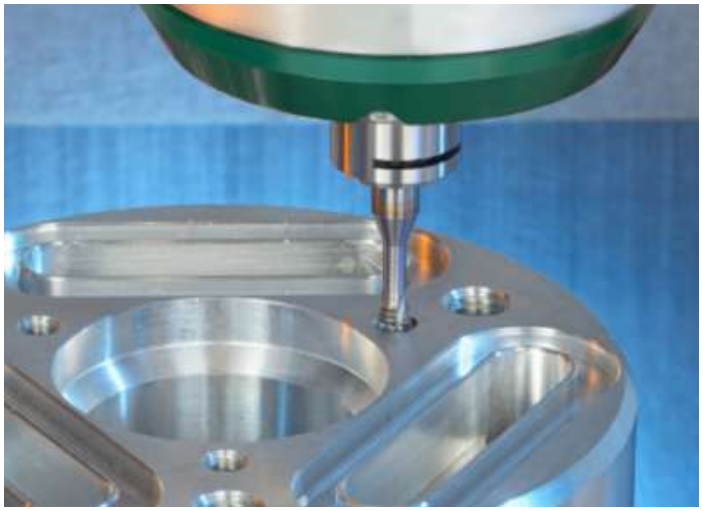
The products are specifically designed and certified to meet the extreme demands of high-speed machining environments, where accuracy and repeatability are imperative. Colibri also works closely with machine tool builders to provide efficient and customized solutions.

MARKET

Jet Spindle customers understand and invest in an integrated machine high pressure coolant via the machine spindle or turret as they appreciate extra effectiveness and efficiencies derived from cutting tools integrated with HPC.
Jet Spindle customers are looking for cost effective solutions to develop and integrate medium to micro HSM machining capabilities into their existing processes. Our customers want to setup once and finish the machine job on the same powerful turning center or milling machine. Alternatively, our customers are focused on optimizing the machining of micro precision parts. When selected a solution there are main considerations the one being tool changing, which needs to work fluidly, i.e. the integration solution cannot interfere with the machining processes of multi axis movement and tool changing. The other main consideration is the energy source required to drive the micro spindle or speed increaser which needs to available or retrofitted. World leading machine builders and cutting tool manufacturers are giving more attention to the integrated use of HPC. Colibri Jet Spindles is the world leader in integrated use of HPC, producing high precision jet spindles that use the machine's HPC as a free and available energy source, in addition to the jet spindles being integrated and changed like any tool holder.
Jet Spindles are literally Plug Play. They come with a remote screen, an ER11 collet and nut and require practically zero setup and only annual maintenance. Jet Spindle Customers cover the full spectrum from detailed work and finishing on large machined parts to the complete machining of small parts.
Customers enjoy cutting speeds of 30,000 to 40,000 RPMs with 300 W to 1.5 KW of power, enough to machine harden steel.

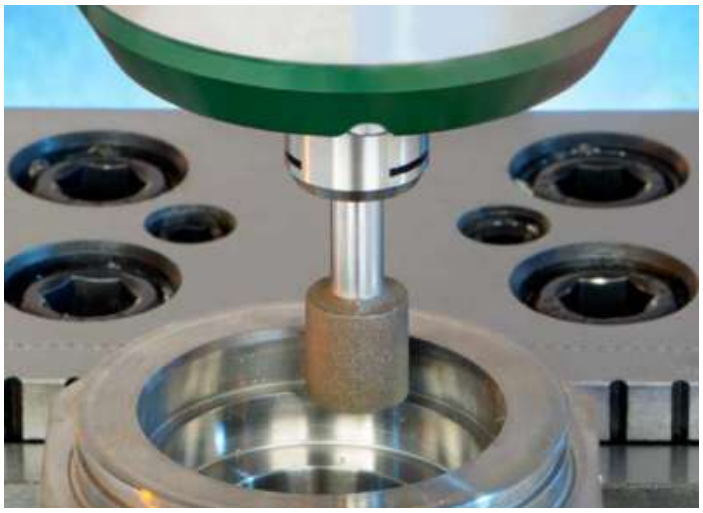


Milling

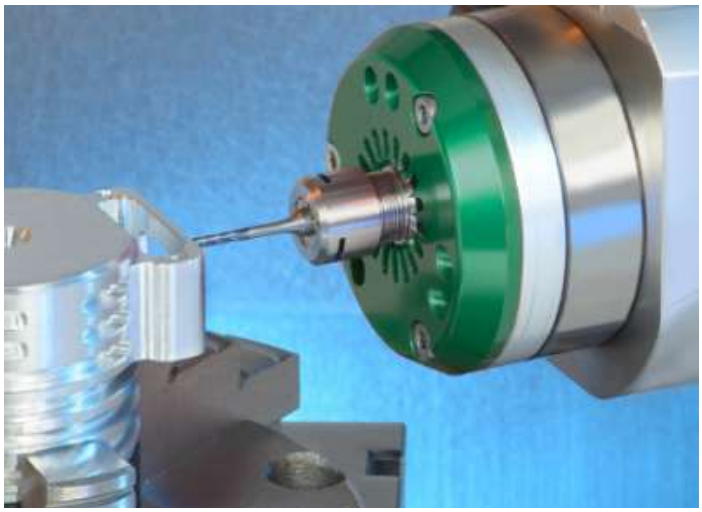


Thread Milling

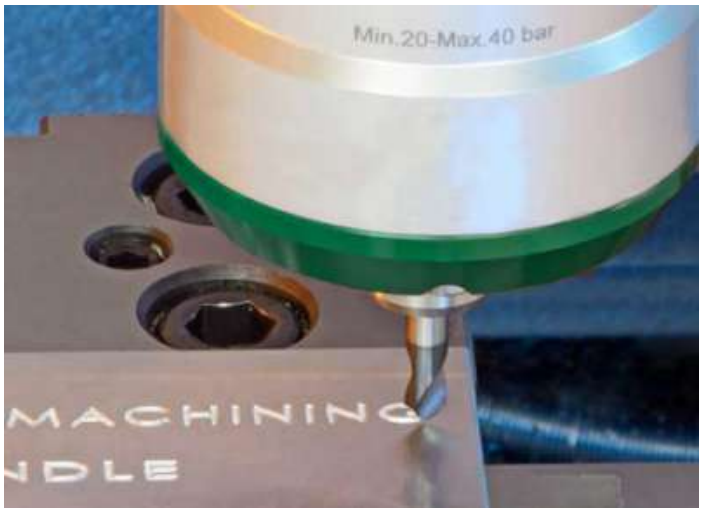
Drilling



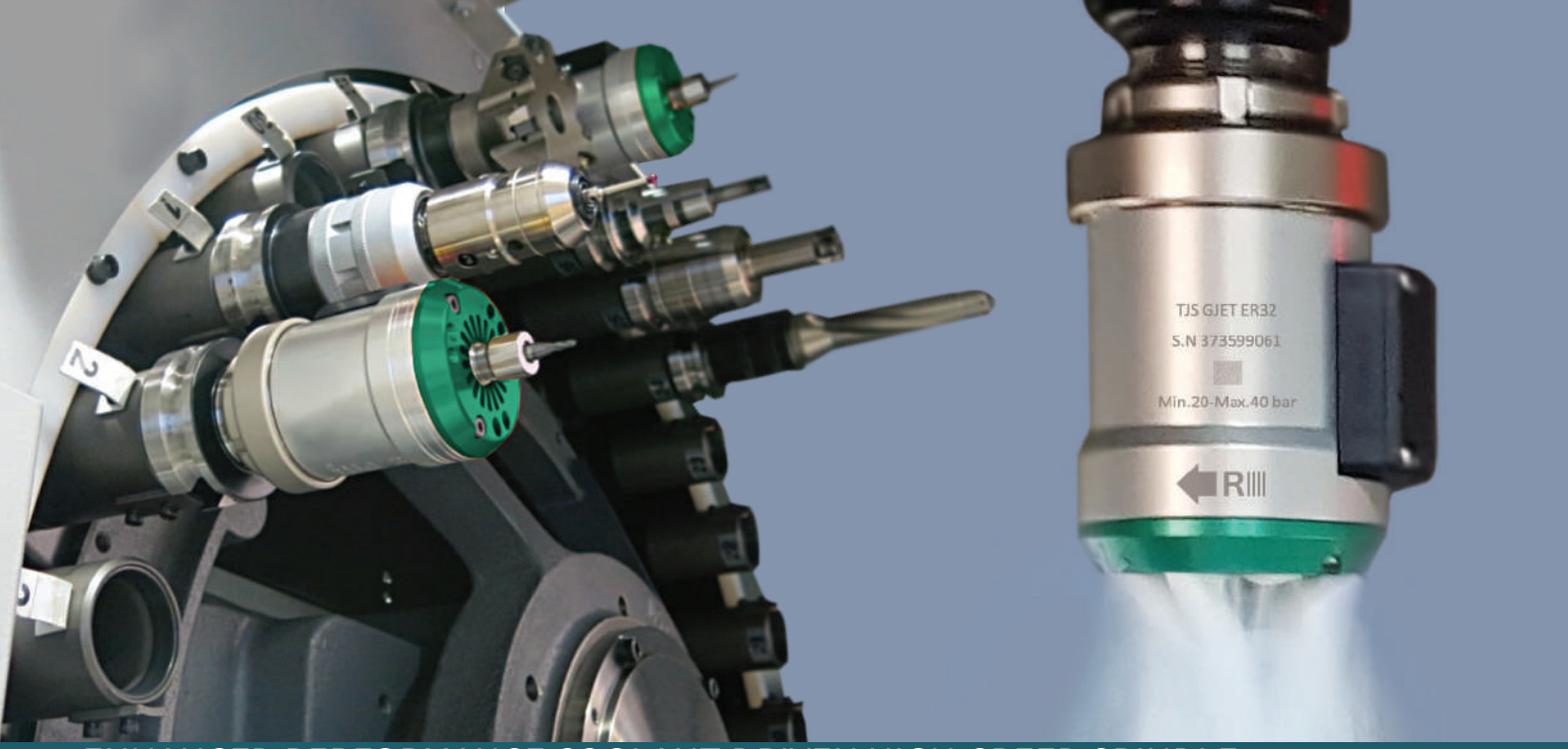
Grinding



Chamfering



Engraving

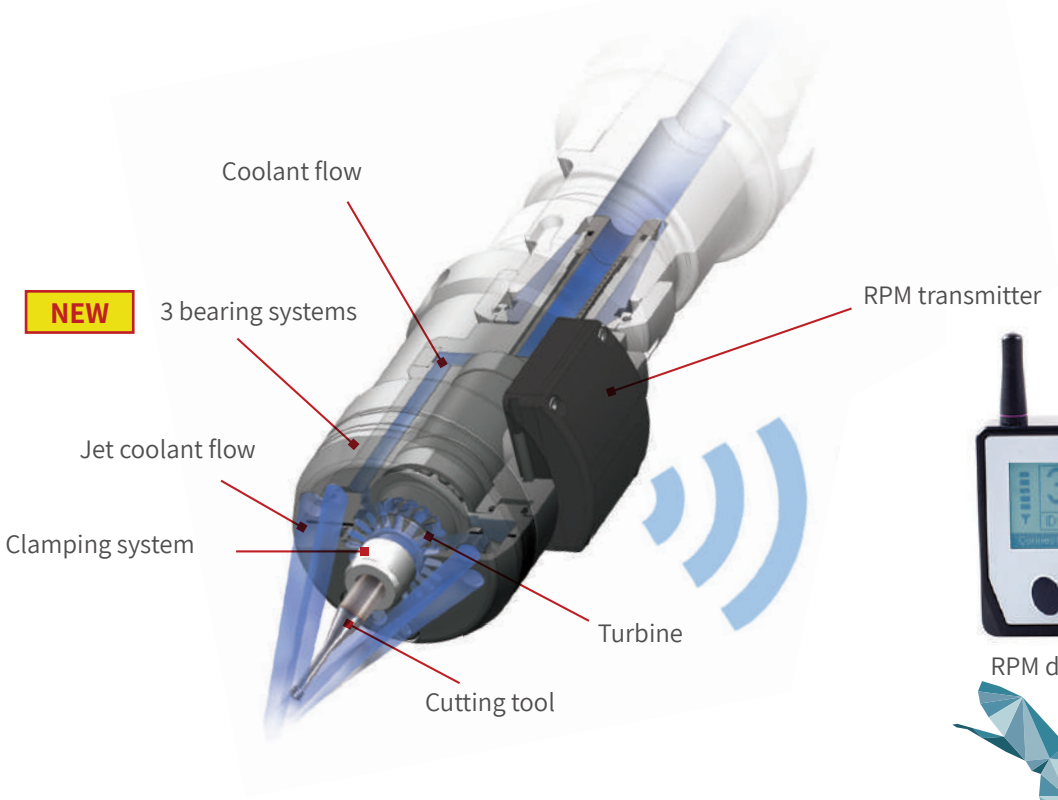


ENHANCED PERFORMANCE COOLANT-DRIVEN HIGH-SPEED SPINDLE

CUTS MACHINING TIME UP TO 70%

- Driven by internal coolant supply with no external power source
- Compact design that can be used in tool changers
- Suitable for HSM precision with small diameter tools
- Real-time, wireless device monitoring & display

Featuring high precision and low run-out, the modular Jet Spindle design, with integrated standard industry collets, offers maximum flexibility for a wide range of applications.
Tool shank diameter up to 6.0 mm.



RPM display monitoring (receiver)

COLIBRI SPINDLES

JET SPINDLES PRODUCT LINES

G Jet

The G-Jet Spindle, is more compact than the HPC and is ideal for customers looking for maximum spindle speed from 20 bar. Perfecting our first version Jet Spindles, G-Jet focuses on providing accuracy and speed for HSM of small to micro sized cutting tools.
G-Jet Spindles come already fully integrated with the following compatible adaptor models - ER32, HSK-A40, HSK-A63, BT30, BT40, CAT40, ST20, C5, C6, SK30, SK40.

HPC Jet

The HPC Jet Spindles line offers the most powerful and versatile HSM solution. The HPC Jet Spindle comfortably powers micro to small tools at lower coolant pressure starting from 15 bar **NEW** ; small tools on harden steel machining from 20 bar; and machining of soft materials like aluminum, copper and bronze using medium sized tools. HPC Jet Spindles are active in world leading cutting tool manufacturing, addressing the most demanding HSM machine tasks in a non-stop production environment.
HPC Jet Spindles come already fully integrated with the following compatible adaptor models - ER32, HSK-A40, HSK-A63, BT40, CAT40, ST20, C5, C6, SK30, SK40.

MICRO90 Jet

NEW

Colibri has begun developing a Micro line of Jet Spindles with the development of a 90 degree angle Micro Jet Spindle for milling inside large air spindle harden steel housing and bronze air bearings. These processes were originally impossible to complete internally and required outsourcing erosion services but today are completed on the same internal milling machine in Colibri manufacturing.
Micro 90 Jet Spindles are ideal for machining in hard to reach places.

TR Jet

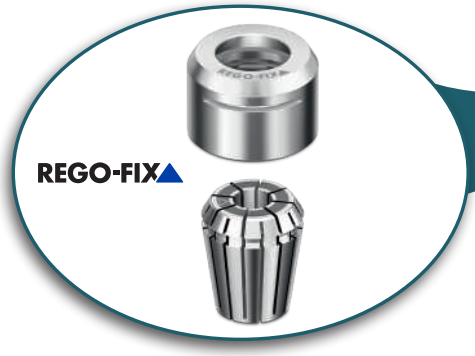
Colibri integrated Jet Spindle for tool holders and MTBs. With the massive selection of tool holder interfaces, Colibri developed a generic interface to conveniently integrate both HPC-Jet and G-Jet directly into tool holders.
World leading tool holder manufacturers and MTBs, including EWS, Benz, INDEX TRAUB, DMG Mori have already developed proprietary integrated Jet Spindle Holders but with the variety of tool holder options we view this as a fast-growing market.

COLIBRI SPINDLES

ROBUST, STABLE & FAST! The HSM Jet Spindle - GreenJET model is the culmination of an advanced R&D initiative in high speed spindle engineering; offering speeds from 35,000 to 55,000 rpm while the main machine spindle remains idle. It's ideal for a wide range of semi-finishing and finishing applications using small cutting tools such as milling, drilling, thread-milling, engraving, chamfering, deburring, grinding and more.

CLAMPING OPTIONS

High-speed clamping accessories include thermal collets, adaptors and tightening nuts to determine runout accuracy for assembled CNC machine cutting tools. Standard clamping accessories are not sufficient to ensure accuracy at higher RPMs.



- **REGO-FIX ER11 UP (ER11 UP)** for maximum tool shanks Ø6.0mm.
- **ER11 Thermal (Shrink)** for extended overhang up to 25mm and solid carbide tools with shanks Ø3.0, 4.0 and 6.0mm.
- **ER11 MS Nut**

Spindle Operating Data	G-JET
Operating range of coolant pressure [bar]	20 - 40
Operating range of coolant pressure [bar]	10-20
Rotational spindle speed [Krpm]*	35 - 55
Rotation options	Left / Right
Optimum cutting tool diameter [mm]	Drilling 0.1 - 2.0
	Milling 0.3 - 4.0
Maximum tool diameter [mm]	6.0

*Notes: Rotational spindle speed is based on coolant pressure and flow rate.
Coolant pressure is measured from the spindle inlet.

APPLICATION DATA

MILLING
- Slotting - max ae= 3.0mm & ap= 0.1D
- Shouldering - max D=3.5mm, ae=1D & ap=0.25D
- Profiling - max D=4.0mm, ap=0.2mm

THREAD MILLING
- Max. M5 thread
- Lwft or right-hand rotation

DRILLING
- Max drill dia. 2.0mm

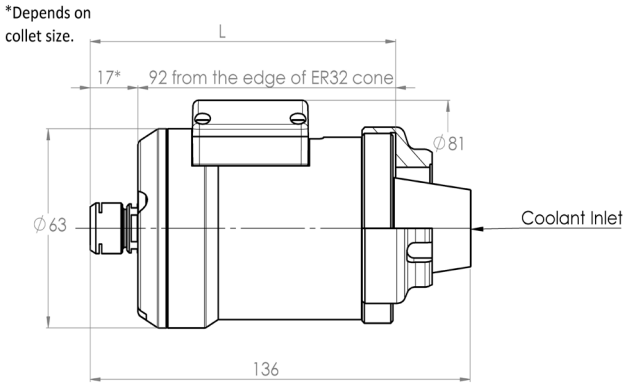
GRINDING
- Fine radial grinding G. wheels: 1A1W max 2.0mm
- WC shank max dia Ø 3.0mm

DEBURRING
- Max shank dia. 4.0mm

ENGRAVING
- Max shank dia. 6.0mm

G Jet

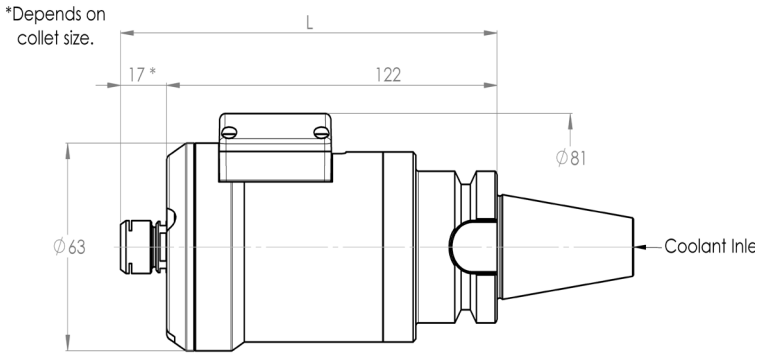
COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET ER32	37-035-599	**ER32**	109.00	6.0	1.30

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
ER32 Primary View 2D – DXF	ER32 Model 3D Detail – STP	ER32 Model 2D Light – STP

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



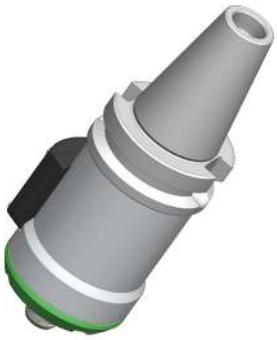
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET BT30	37-035-399	**BT30**	139.00	6.0	1.60

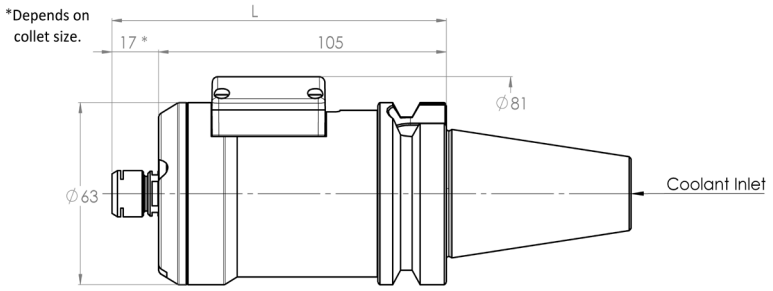
FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
BT30 Primary View 2D – DXF	BT30 Model 3D Detail – STP	BT30 Model 2D Light – STP

COLIBRI SPINDLES

G Jet

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40

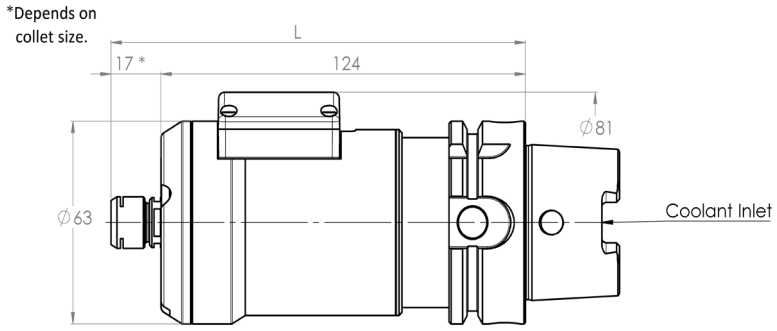




Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET BT40	37-035-799	**BT40**	122.00	6.0	1.80

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
BT40 Primary View 2D – DXF	BT40 Model 3D Detail – STP	BT40 Model 2D Light – STP

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



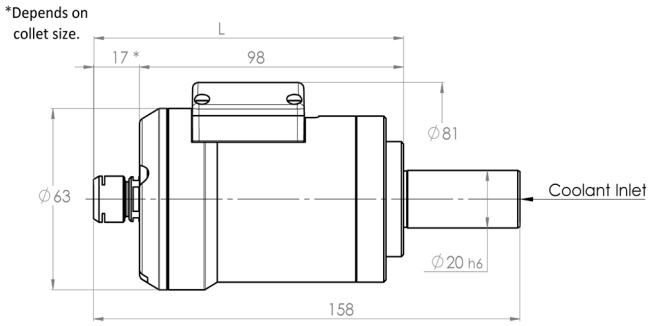
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET HSK A63	37-035-299	**HSK A63**	141.00	6.0	1.80

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
HSK A63 Primary View 2D – DXF	HSK A63 Model 3D Detail – STP	HSK A63 Model 2D Light – STP

COLIBRI SPINDLES

G Jet

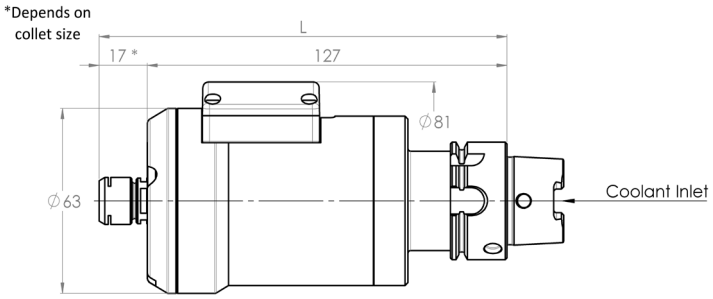
COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET ST20	37-035-099	**ST20**	115.00	6.0	1.20

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
ER32 Primary View 2D – DXF	ER32 Model 3D Detail – STP	ER32 Model 2D Light – STP

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



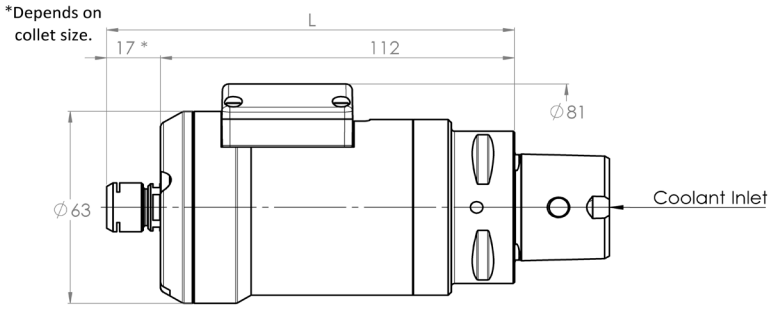
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET HSK A40	37-035-249	**HSK A40**	144.00	6.0	1.4

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
HSK A40 Primary View 2D – DXF	HSK A40 Model 3D Detail – STP	HSK A40 Model 2D Light – STP

COLIBRI SPINDLES

GJet

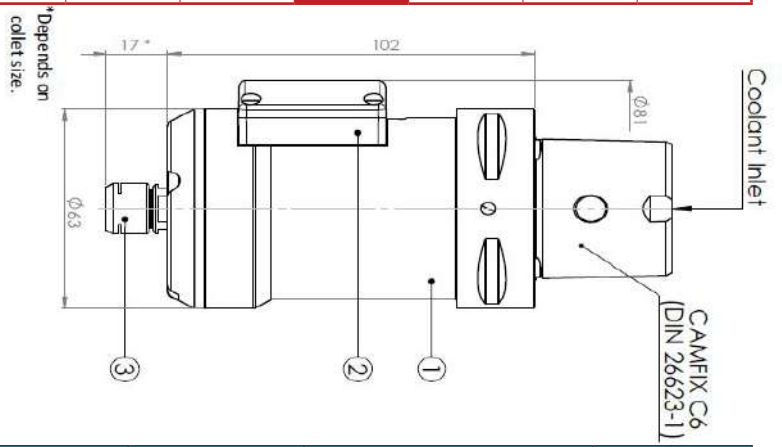
COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET C5	37-035-499	**C5**	129.00	6.0	1.50

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
C5 Primary View 2D – DXF	C5 Model 3D Detail – STP	C5 Model 2D Light – STP

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



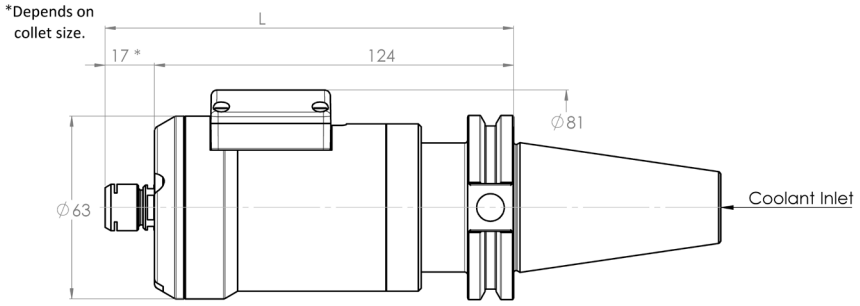
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET C6	37-035-199	**C6**	119.00	6.0	1.60

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
C6 Primary View 2D – DXF	C6 Model 3D Detail – STP	C6 Model 3D Light – STP

COLIBRI SPINDLES

GJet

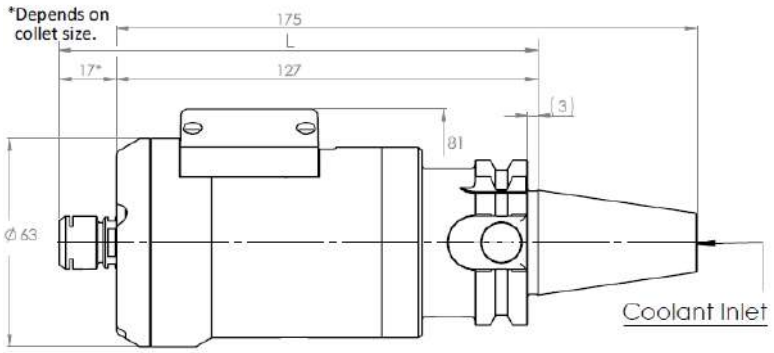
COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET CAT40	37-035-699	**CAT40**	141.00	6.0	2.00

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
CAT40 Primary View 2D – DXF	CAT40 Model 3D Detail – STP	CAT40 Model 2D Light – STP

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



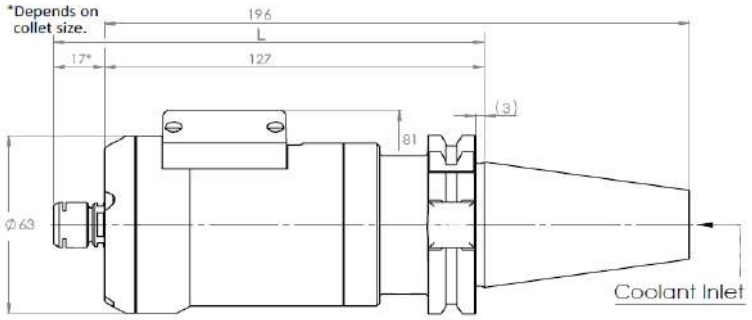
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET SK30	37-035-839	DIN69871 30	144.00	6.0	1.6

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
SK30 Primary View 2D – DXF	SK30 Model 3D Detail – STP	SK30 Model 3D Light – STP

COLIBRI SPINDLES

G Jet

COMPATIBLE ADAPTOR MODELS											
Adapter	ER32	BT30	BT40	HSK A63	ST20	HSK A40	C5	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS G-JET SK40	37-035-849	**DIN69871 40**	144.0	6.0	2.1

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
SK40 Primary View 2D – DXF	SK40 Model 3D Detail – STP	

Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

HPC Jet

HPC Jet Spindle is ideal for finishing and semi-finishing applications with small diameter tools; milling, drilling, chamfering, grinding and more.

POWER / HIGH SPEED / EFFICIENCY

The only high-speed spindle powered by the machine's internal coolant specially designed for use with high pressure coolant pumps - the robust design handles pressure up to 70 bar (7Mpa).

- Excellent pressure range [15 - 70] bars **NEW**
- Power available from 0.35 to 1.5 [Kw]
- Revolutions range from 21 to 45 [Krpm]
- ER11 standard collets precise type UP
- Low run out down to 3 micron run-out
- Compatible with almost all types of machine attachments

Spindle Operating Data	HPC-JET
Operating range of coolant pressure [bar]	**NEW** 15 - 70
Operating range of coolant flow rate [l/min]	10 - 20
Rotational spindle speed [Krpm]*	21 - 45
Power (kW)	0.35 - 1.5
Optimum cutting tool diameter [mm]	Drilling 0.3 - 2.0
	Milling 0.3 - 3.5
Maximum tool shank diameter [mm]	6.0

APPLICATIONS DATA

MILLING
- Slotting - up to ae= 3.0mm & ap= 0.1D
- Shouldering – up to D=3.5mm, ae=1D & ap=0.25D
- Profiling - up to D=6.0mm, ap=0.2mm

THREAD MILLING
- Max. M10 thread
- Left or right-hand rotation

DRILLING
- Max drill dia. 2mm

GRINDING
- Fine radial grinding G. wheels: 1A1W up to 4.0mm
- WC shank max shank dia. 6.0mm

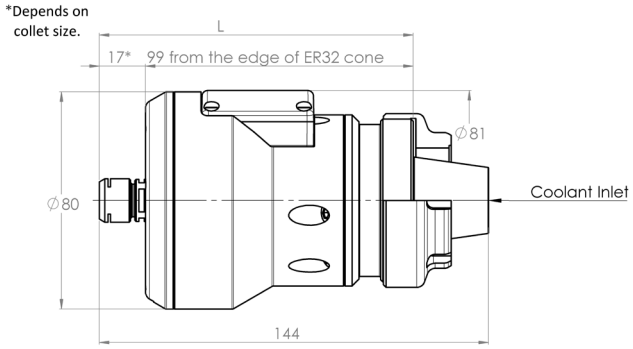
DEBURRING
- Max shank dia. 4.0mm

ENGRAVING
- Max shank dia. 6.0mm

COLIBRI SPINDLES

HPC Jet

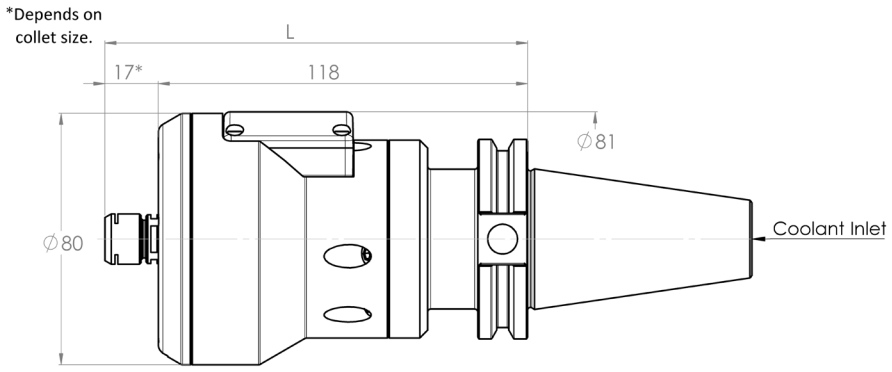
COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC ER32	47-055-599	**ER32**	116.00	6.0	1.70

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
ER32 Primary View 2D – DXF	ER32 Model 3D Detail – STP	ER32 Model 3D Light – STP

COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



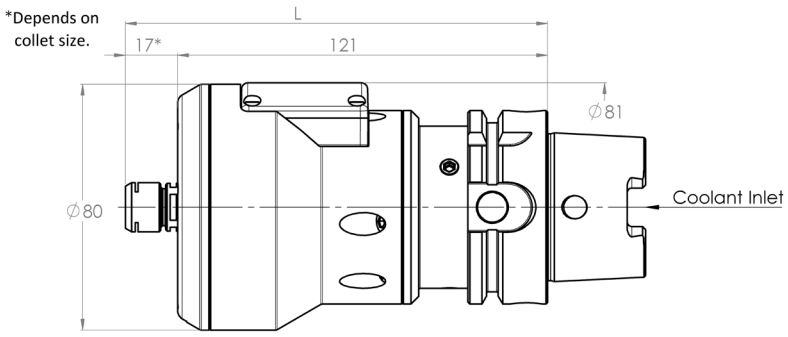
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC BT40	47-055-799	**BT40**	135.00	6.0	1.60

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
BT40 Primary View 2D – DXF	BT40 Model 3D Detail – STP	BT40 Model 3D Light – STP

COLIBRI SPINDLES

HPC Jet

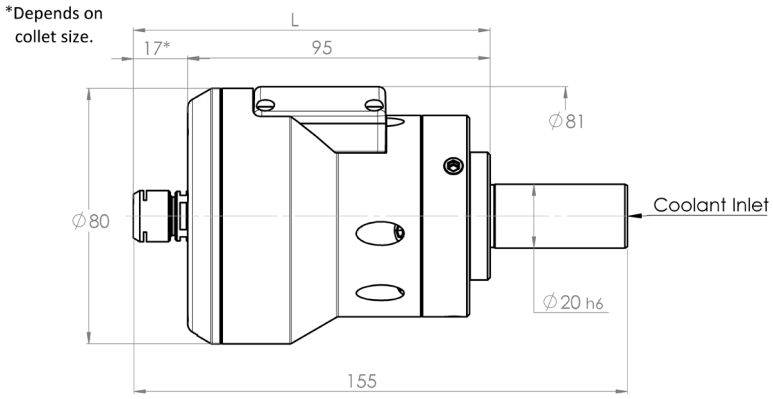
COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC HSK A63	47-055-299	**HSK A63**	138.00	6.0	2.00

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
HSK A63 Primary View 2D – DXF	HSK A63 Model 3D Detail – STP	HSK A63 Model 3D Light – STP

COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



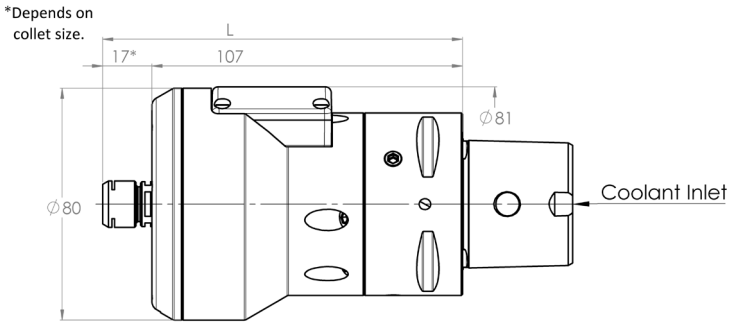
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC ST20	47-055-099	**ST20**	112.00	6.0	1.50

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
ST20 Primary View 2D – DXF	ST20 Model 3D Detail – STP	ST20 Model 3D Light – STP

COLIBRI SPINDLES

HPC Jet

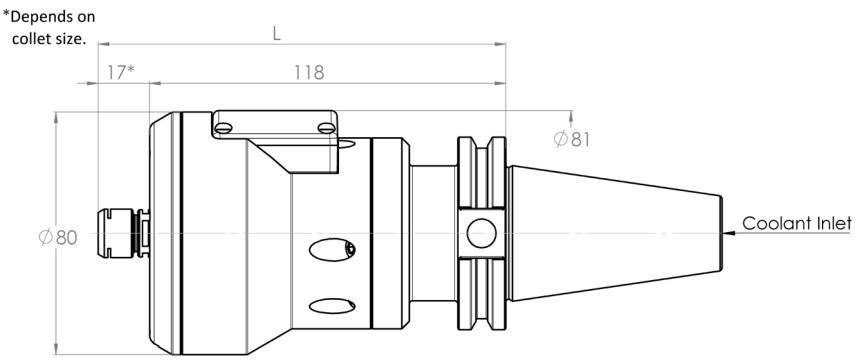
COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC C6	47-055-199	**C6**	124.00	6.0	2.0

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
C6 Primary View 2D – DXF	C6 Model 3D Detail – STP	C6 Model 3D Light – STP

COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



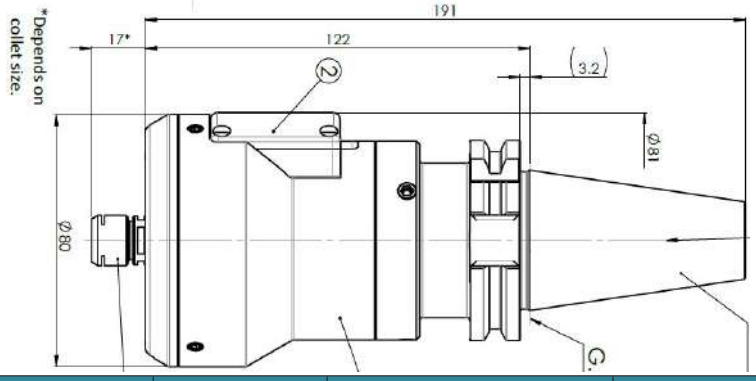
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC CAT40	47-055-699	**CAT 40**	135.00	6.0	2.3

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
CAT40 Primary View 2D – DXF	CAT40 Model 3D Detail – STP	CAT40 Model 2D Light – STP

COLIBRI SPINDLES

HPC Jet

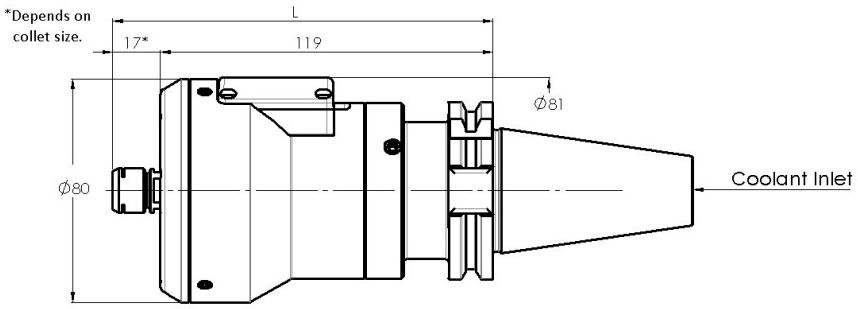
COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC DIN69871-30	47-055-839	**SK30**	139.00	6.0	2.0

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		

COMPATIBLE ADAPTOR MODELS								
Adapter	ER32	BT40	HSK A63	ST20	C6	CAT40	SK30	SK40



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TJS HPC DIN69871-40	47-055-849	**SK40**	135.00	6.0	2.3

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
SK40 Primary View 2D – DXF	SK40 Model 3D Detail – STP	SK40 Model – PDF

COLIBRI SPINDLES

COLIBRI GENERIC INTERFACE FOR NEW ASSEMBLIES.

TR Jet

TR Product line is the Colibri JET generic interface for implementation into new assemblies, giving machine and holder manufacturers a straight forward geometry to integrate Colibri HPC and GJET Jet's into machine holders. The TR integration profile is perfectly cylindrical, including both flange and rear clamping options and is identical for both GJET and HPC Jets.
Comes standard with ER11 UP collects and nut.

Spindle Operating Data	TR G-JET	TR HPC-JET
Operating range of coolant pressure [bar]	20 - 40	15 - 70
Operating range of coolant flow rate [l/min]	10 - 20	10 - 20
Rotational spindle speed [Krpm]	35 - 55	21 - 45
Rotational direction	Left / Right	
Optimum cutting tool diameter [mm]	Drilling 0.3 - 2.0	Drilling 0.3 - 2.0
	Milling 0.3 - 4.0	Milling 0.3 - 6.0
Maximum tool shank diameter [mm]	4.0	6.0
Cimpatible adptor models	Flange of Rear Clamping	

NEW

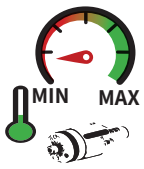
CHALLENGES

Maximum live tool speeds of 6000 – 8000 RPM are too low for HSM on turning machines.

Machining at maximum speed is limited for short periods, as excessive usage results in spindle overheating and long term damage.

Separate high speed milling or turning processes require large capital investment, increased overhead, and wasted resources on additional setup.

OPPORTUNITES



Cost effective addition of unlimited, non-stop HSM capabilities to existing machines – 15,000 – 50,000 RPM.

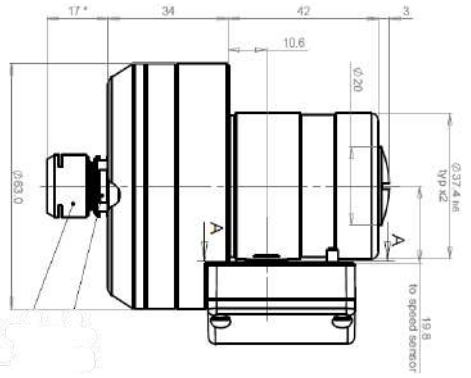
Natural integration that does not require capital investment, additional setup or changing the machine infrastructure.

Integration using machines static holders provide live tooling capabilities to static pockets.

COLIBRI SPINDLES

TR Jet

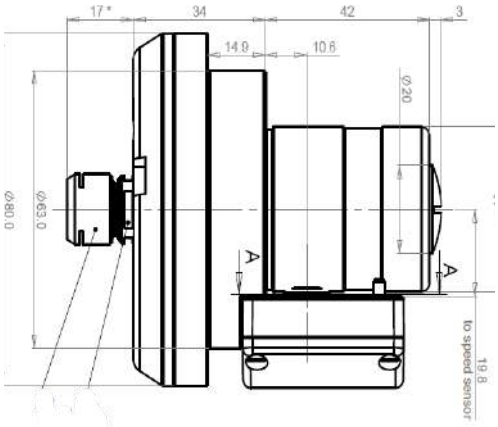
COMPATIBLE ADAPTOR MODELS				
Adapter	TR G-JET FC	TR HPC-JET FC	TR G-JET RC	TR HPC-JET RC



Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TR G-JET FC	37-035-996	**FLANGE CLAMP**	96.00	3.5	1.20

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
TR G-JET FC Primary View 2D – DXF	TR G-JET FC Model 3D Detail – STP	

COMPATIBLE ADAPTOR MODELS				
Adapter	TR G-JET FC	TR HPC-JET FC	TR G-JET RC	TR HPC-JET RC



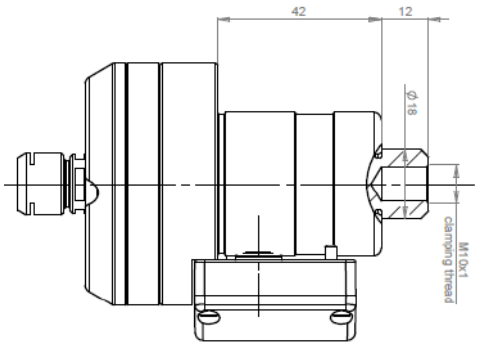
Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TR HPC FC	47-055-996	**FLANGE CLAMP**	96.00	6.0	1.8

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
TR HPC FC Primary View 2D – DXF	TR HPC FC Model 3D Detail – STP	

COLIBRI SPINDLES

TR Jet

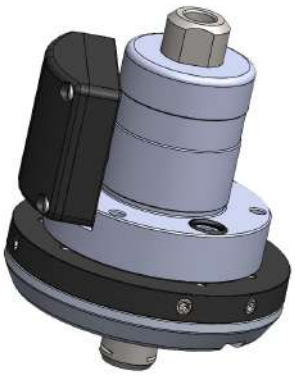
COMPATIBLE ADAPTOR MODELS				
Adapter	TR G-JET FCFC	TR HPC-JET FC	TR G-JET RC	TR HPC-JET RC

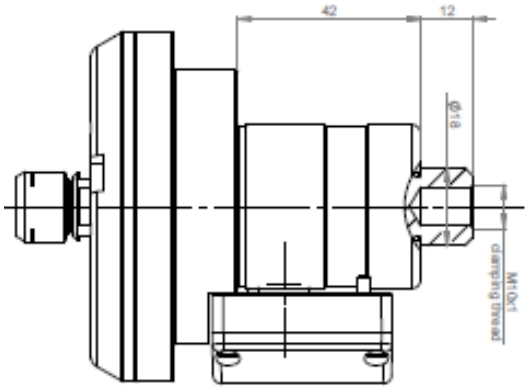


Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TR G-JET RC	37-035-995	**REAR CLAMP**	105.00	6.0	1.20

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
TR G-JET RC Primary View 2D – DXF	TR G-JET RC Model 3D Detail – STP	

COMPATIBLE ADAPTOR MODELS				
Adapter	TR G-JET FCFC	TR HPC-JET FC	TR G-JET RC	TR HPC-JET RC





Designation	P/N	Adapter	L mm	Tool d max mm	Kg
TR HPC RC	47-055-995	**REAR CLAMP**	105.00	6.0	1.80

FILES AVAILABLE FOR DOWNLOAD IN ONLINE CATALOGUE: https://colibrispindles.com/catalog/		
TR HPC RC Primary View 2D – DXF	TR HPC RC Model 3D Detail – STP	

COLIBRI SPINDLES

TR Jet

MACHINE REQUIREMENTS

Integrated high pressure coolant (HPC) with minimum pressure of 15 bar for soft metals and 20 bars for hard metals are the machine requirements.

Jet units and advanced cutting holders integrated with high pressure coolant increase the solutions possible on existing machines.

BENZ TOOLING

HOLDER RANGE

The TR product range supports milling and turning machines, with the biggest advantages found in (1) turning machines because of the massive speed increase and conversion of static holders to live holders; (2) angular holders because of simple and cheap production of angle holders as they do not require gears; and (3) smaller machines where optimizing space is a prerogative.

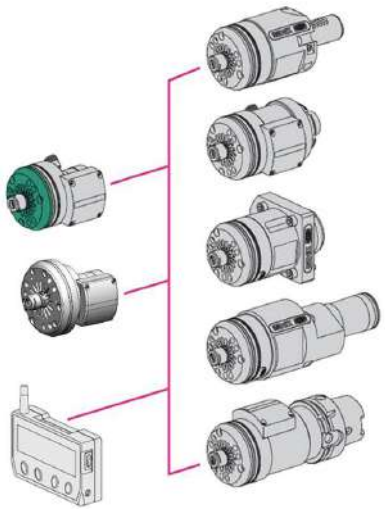
All TR products have identical integration options and dimensions allowing for efficient management of inventory and service.

EWS Tool Technologies

HOLDER INTEGRATION

TR units offer two convenient options of integration from the rear of the unit or with the flange of the unit. Again, both units offer exactly the same options and dimensions for integration.

To the right is an example of TR GJET Unit integrated using the flange option in the assembly of a 90 degree ER32 milling holder.



TR units GJET and HPC can be integrated into both milling machines and turning turrets. Integrated TR holders include ST20, ER32, HSK, BT, CAPTO, BMT, VDI and more.

COLIBRI SPINDLES

JET KIT

The JET KIT provides the most cost effective alternartive starting to work with Jet Spindles.

Kits come in various configurations which include:

- Jet Spindle TJS G-JET e/o TJS HPC-JET ER32
- Display Monitor EUR/USA
- Spindle clamping tools/accessories
- High precision spring collets

The complete KIT also contains:

- ER11 shrink collets
- Adapter for shrink-collets

Designation Jet Spindle Kit	Part Number
KIT HSM G-JET ER32	27-088-154
KIT HSM HPC-JET ER32	27-088-174
KIT HSM G-JET/HPC-JET ER32 DUO	27-088-134
KIT HSM G-JET/HPC-JET ER32 FULL	27-088-130

COLIBRI SPINDLES

JET KIT

Fig. 1. KIT G-JET

Fig. 2. KIT HPC-JET

Fig. 3. KIT DUO

Fig. 4. KIT FULL

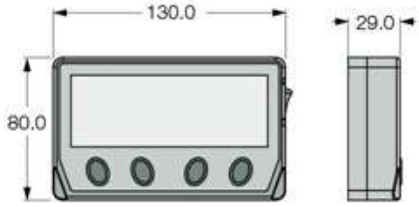
COLIBRI SPINDLES

JET DISPLAY

All HSM Jet Spindle models including the High Pressure, can be paired with the wireless Display Unit, allowing real-time monitoring of spindle rotation speed during machining.

The Spindle body is fitted with a wireless transmitter that sends RPM data to the Display Unit (receiver) mounted outside of the CNC machine for easy viewing.

Accessory Discription	Part Number
TJS TSD Display	27-088-009
2.4GHz Sensor Replacement Kit	27-080-102



Display Unit is powered by a 5 VDC universal AC/DC power adapter connected to 220/110 VAC power source.

Transmitter is powered by a non-rechargeable CR2 lithium battery that comes with the spindle package.

Display Unit can read up to 127 Jet Spindles installed on a single CNC machine. The active spindle is monitored.

Display Unit is mounted outside of the CNC machine – spindle transmission distance is approx. 10 M.

Refer to the Spindle User Manual for prerequisite Display installation and device pairing instructions.

Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

SMART HUB

The SMARTHUB is an innovative real time data monitoring, processing, and switching unit for safe, efficient operating of the HSM Jet Spindle (SPINJET/Typhoon/TR speed increasers) installed on CNC milling or turning center.

Accessory Discription	Part Number
Smart Hub	TJCR
SmartHub Combo (smartHUB + tablet + Device Monitoring App)	27-088-010

RPM status of the spindle (rotating or stationary), enables or disables the door lock mechanism as a safety measure. Additional functions include stopping the work cycle if speed is too low. Extra device monitoring sensors may be added, such as heat, vibration, strain, pressure, etc.

Data is displayed and managed via the user-friendly Tablet/ Mobile APP. Operators can view a real time speed graph screen, along with short-term speed history, sensor battery levels and RF signal strength.

Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

CLAMPING & COOLANT

MICRO90 Jet

NEW

High-speed clamping includes simplified "nutless" collet improves dynamic balancing with pointed flow towards the cutting edge. One minute simple tool change with no setup, with minimum runout.

CHS (Nakanishi) collet type.

COOLANT OUTLETS from the turbine outlet and pointed nozzle towards the cutting edge.

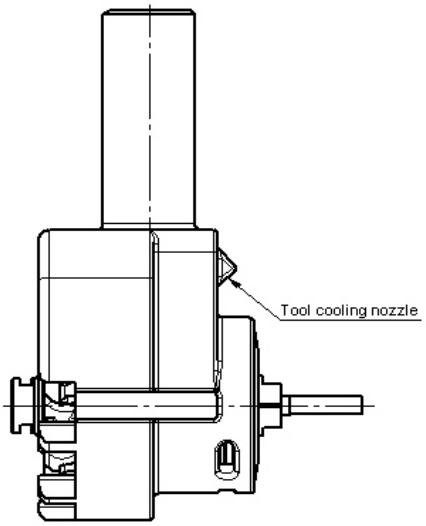
REGO-FIX

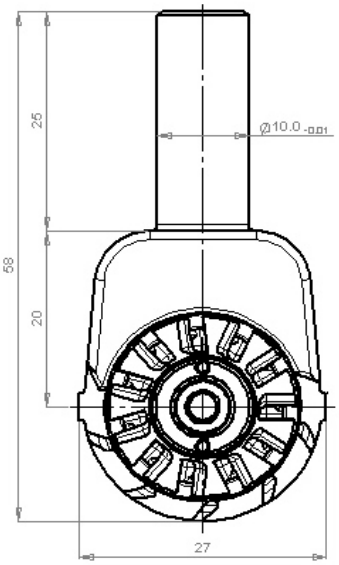
FEATURES

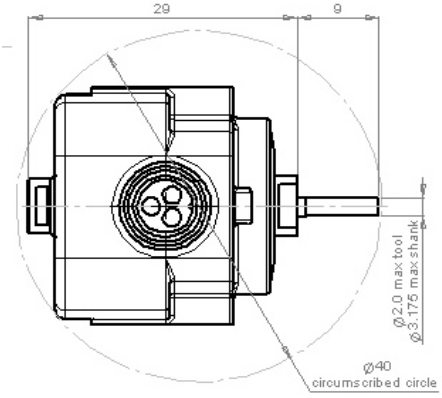
The Micro product range supports milling and turning machines, with the biggest advantages found in (1) turning machines because of the massive speed increase and conversion of static holders to live holders; (2) angular holders because of simple and cheap production of angle holders as they do not require gears; and (3) smaller machines where optimizing space is a prerogative.

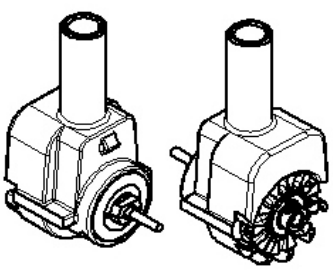
All Micro products have identical integration options and dimensions allowing for efficient management of inventory and service.

DESIGN









COLIBRI SPINDLES

MICRO90 Jet

NEW

The MICRO 90 Jet Spindle, with a solid shell of titanium and assembled from only six parts is build for powerful, accurate work in small and difficult to reach spaces.
Offering speeds from 35,000 to 45,000 rpm while the main machine spindle remains idle. Ideal for a wide range of semi-finishing and finishing applications using small cutting tools such as milling, drilling, thread-milling, engraving, chamfering and deburring.

Spindle Operating Data	MICRO90
Operating range of coolant pressure [bar]	20 - 40
Operating range of coolant flow rate [l/min]	10 - 20
Rotational spindle speed [Krpm]*	35 - 45
Optimum cutting tool diameter [mm]	Drilling 0.3 - 2.0
	Milling 0.3 - 3.0
Maximum tool shank diameter [mm]	3.175
Maximum Output Power [Watt]	50

APPLICATIONS DATA

MILLING
- Slotting - up to ae= 0.5mm & ap= 0.1D
- Shouldering – up to D=1.0mm, ae=0.1D & ap=0.1D

THREAD MILLING
- Max. M2 thread
- Left or right-hand rotation

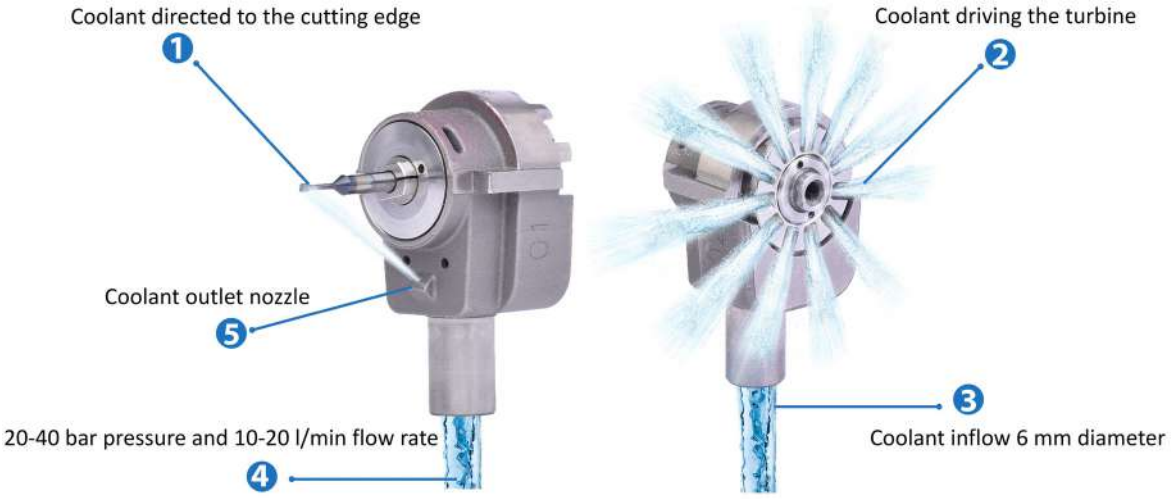
DRILLING
- Max drill dia. 1.5mm

GRINDING
- Fine radial grinding G. wheels: 1A1W up to 1mm
- WC shank max shank dia. 3.175mm

DEBURRING
- Max tool dia. 3.0mm

ENGRAVING
- Max tool dia. 2.0mm

MICRO 90 Coolant Flow



COLIBRI SPINDLES

ACCESSORIES

All HSM Jet Spindle models are supported by specially designed tools and accessories to ensure high accuracy at high speeds.

Standard clamping accessories may not always be sufficient for best performance at higher RPMs.

ACCESSORY	Designation	P/N
	Display unit	27-088-009
 REGO-FIX	Ultra Precision Spring Collets	
	ER11 3.0 UP	27-188-513
	ER11 4.0 UP	27-188-514
	ER11 6.0 UP	27-188-516
	Thermal Shrink Collets:	
	ER11 SRK 3X10	27-088-011
	ER11 SRK 4X10	27-088-012
	ER11 SRK 3X25	27-088-013
	ER11 SRK 4X25	27-088-014
	Shrink Collet Fixture Assembly	2430-060

Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

SPARE PARTS

Jet Spindle, when operated correctly, can work well for years. To support existing customers we provide a full range of spare parts.

In addition, refurbished Jet Spindle units are immediately availble to replace existing damaged units. Contact Colibri Spindles Support Team for more details.

SPARE PART	Designation	P/N
	Nut ER11 MS	27-188-518
	ER11 MS Wrench	27-188-519
	Shaft Lock Flat Key	27-188-206
	2.4GHz Sensor Rep kit for GJET / HPC	27-080-103
	CR 3V Lithium Battery (non-rechargeable)	27-188-092

Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

OPERATING CONDITIONS FOR THE HPC-JET SPINDLE

The HPC-Jet Spindle is designed for Finishing and Semi-finishing operations using small cutting tools; recommended max diameter of 4.0mm (5/32").

1. Coolant flow through the main CNC machine spindle.
2. Min. coolant pressure, at main spindle outlet: 20 bar (290 psi).
3. Max. coolant pressure, at main spindle outlet: 70 bar (1020 psi).
4. Minimum flow rate: 12 L/min (3.17 Gal/min.).
5. Coolant filtration level: Max. 100 µm.

Follow the 10% Rule:

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

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.

Subjecting the HPC Jet Spindle to incorrect cutting conditions, may result in damage to the Spindle, the tool, the work-piece or the machine.

The HPC Jet Spindle is an auxiliary spindle speed increaser and is not to be used as a replacement for the CNC main machine spindle.

Do not allow main spindle to rotate during HPC Jet Spindle operation.

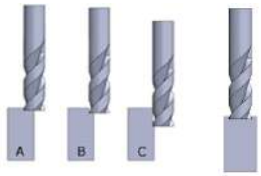
1. When the HPC Jet Spindle is mounted on the machine, the CNC machine spindle must be locked in a stationary position.
2. Use the correct software M-code to lock: M19 code locks spindle at a defined angle.

NOTE: Some CNC machines do not enable main spindle locking. Check with the manufacture.

TO REGISTER IDLE SPEED

1. Mount the HPC Jet Spindle on the machine with cutting tool installed.
2. Turn on fluid pressure and note RPMs on the display monitor.

EXAMPLE: Improper conditions
HPC Jet Spindle: TJS HPC-ER32
Application: SLOT MILLING
Material: DIN ST 52-3
Cutting tool: Cutting Tool Ø2.0 mm
No. of teeth: Z = 2



Cutting conditions: Ae = 2.0mm, **Ap** = 0.5mm, **fz** = 0.012mm/dente, **Vc** = 250m/min)
N - Idle: 37,000 RPM
RPM during machining: 29,600 RPM spindle overload!

In the **IMPROPER EXAMPLE**, following the 10% rule means that RPMs during machining should be a minimum of 33,300 RPM, however RPMs are only 29,600. Therefore load on the tool should be reduced by decreasing the cutting parameters; depth of cut (ap) and feed (Fz) should be lessened.

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 2mm

Idle Speed RPM	Working Speed RPM	Material	SAE 4340		Al-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	36,450	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

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 2mm

Idle Speed RPM	Working Speed RPM	Material	SAE 4340		Al-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

COLIBRI SPINDLES

OPERATING CONDITIONS FOR THE HPC-JET SPINDLE

SHOULDER MILLING

Cutting Tool Ø 3 mm

Idle Speed RPM	Working Speed RPM	Material	Al-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 mm

Idle Speed RPM	Working Speed RPM	Material Hard-ness	SAE 4340 / 38 HRC		Al-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 mm

Idle Speed RPM	Working Speed RPM	Material	SAE 4340				Al-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

SLOT MILLING

Cutting Tool Ø 4 mm

Idle Speed RPM	Working Speed RPM	Material Hardness	SAE 4340 / 38 HRC		Al-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	0.35	.0137	0.35	.0137	0.35	.0137	0.30	.012
		fz	0.02	.0008	0.05	.0002	0.017	.0007	0.022	.0009
37,000	33,300	ap	0.35	.0137	0.35	.0137	0.35	.0137	0.30	.012
		fz	0.022	.0009	0.065	.0025	0.022	.0009	0.022	.0009
40,500	36,450	ap	0.40	.0157	0.35	.0137	0.40	.016	0.30	.012
		fz	0.015	.0006	0.085	.0033	0.022	.0009	0.022	.0009
42,500	38,250	ap	0.50	.020	0.40	.016	0.40	.016	0.30	.012
		fz	0.015	.0006	0.08	.003	0.027	.001	0.022	.0009

HPC-JET SPINDLE STORAGE :

The HPC Jet Spindle is free from periodic maintenance, however before storage it is recommended to :

- Clean the HPC Jet Spindle by air blowing for 10-15 seconds.
- Max. air pressure for cleaning: (2 bar / 30 psi) DO NOT EXCEED 60,000 RPM.
- Disconnect the HPC-Jet Spindle from the Display.
- Place the HPC Jet Spindle back in its case.

COLIBRI SPINDLES

OPERATING CONDITIONS FOR G-JET SPINDLE

The manufacturer's limited warranty states that its spindles are to be free from defects in material, design and workmanship under normal and proper use.

Following these guidelines will ensure proper functionality of the Spindle and should yield optimum machining results. See Spindle Warranty at: **www.colibrispindles.com/downloads/.**

The Jet Spindle is designed for Finishing and Semi-finishing operations using a max. cutting tool diameter of 4.0mm (5/32").

CNC MACHINE PREREQUISITES

1. Coolant flow through the main CNC machine spindle.
2. Min. coolant pressure, at main spindle outlet: 20 bar (290 psi).
3. Max. coolant pressure, at main spindle outlet: 40 bar (580 psi).
4. Minimum flow rate: 12 L/min (3.17 Gal/min.)
5. Coolant filtration level: Max. 100 ⊠m

Subjecting the Jet Spindle to incorrect cutting conditions, may result in damage to the Spindle, the tool, the work-piece or the machine.

The Jet Spindle is an auxiliary spindle speed increaser and is not to be used as a replacement for the CNC main machine spindle.

Do not allow main spindle to rotate during Jet Spindle operation.

1. When the Jet Spindle is mounted on the machine, the CNC machine spindle must be locked in a stationary position.
2. Use the correct software M-code to lock: M19 code locks spindle at a defined angle.

NOTE: Some CNC machines do not enable main spindle locking. Check with the manufacturer..

Follow the 10% Rule:

As the cutting tool enters the workpiece, RPMs will be reduced 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 the Jet Spindle on the machine with cutting tool installed.
2. Turn on fluid pressure and note RPMs on the display monitor.

EXAMPLE: Improper conditions
G-JET Spindle: TJS G-JET HSK A63
Application: Milling/Slotting
Material: acciaio DIN ST 52-3
Cutting tool: End Mill Ø2.0 mm (Ø.079")
No. of teeth: Z = 2
Cutting conditions: Ae – cutting width = 2.0mm (.079"), **Ap –** depth of cut = 0.5mm (.02"), **fz** = 0.012mm/tooth (.0005" /tooth), **Vc** = 250m/min (820 SFM)
N – Idle: 40,000 RPM

RPM during machining: 30,000 RPM spindle overload

In the EXAMPLE, following the 10% rule would mean that RPMs during machining should be a minimum of 36,000 RPM, however RPMs are only 30,000. Therefore load on the tool should be reduced by decreasing the cutting parameters; depth of cut (ap) and feed (Fz) should be lessened.

Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

CUTTING CONDITIONS:

1. Monitoring RPMs during Jet Spindle operation is critical, to ensure optimum machining conditions and to aviod damage.
2. Cutting speed may be influenced by material Hardness, workpiece topography and/or cutting tool geometry. Refer to cutting tool manufacturer's documentation.
3. Dramatic fluctuations of RPMS during Jet Spindle operation can indicate problems such as inadequate coolant pressure or a broken cutting.

G-JET Spindle Operating Guidelines

Application	Material	Cutting Tool Dia.		Z Teeth	Ap - Depth of Cut		Ae - Width of Cut		Coolant Pressure (bar)	RPM	Fz per tooth	
		mm	inch		mm	inch	mm	inch			mm	inch
Milling Full Slot	SAE 4340 (24-25HRC)	End Mill Ø 1.0	End Mill Ø .040	2	0.1	.004	1.0	0.040	40	47,000	0.04	.0015
	SAE 4340 (42-45HRC)	End Mill Ø 2.0	End Mill Ø .080	2	0.1	.004	2.0	0.080	40	47,000	0.007	.0003
	SAE 4340 (24-25HRC)	End Mill Ø 2.0	End Mill Ø .080	2	0.1	.004	2.0	0.080	40	47,000	0.02	.0008
	SAE 4340 (24-25HRC)	End Mill Ø 2.0	End Mill Ø .080	2	0.1	.004	2.0	0.080	40	47,000	0.02	.0008
	SAE 4340 (24-25HRC)	End Mill Ø 3.0	End Mill Ø .120	4	0.1	.004	3.0	0.120	40	47,000	0.002	.00008
	SAE 316L 130-136 HB	End Mill Ø 1.0	End Mill Ø .040	2	0.1	.004	1.0	0.040	40	47,000	0.03	.0001
	SAE 316L 130-136 HB	End Mill Ø 2.0	End Mill Ø .080	2	0.1	.004	2.0	0.080	40	47,000	0.02	.0008
	SAE 316L 130-136 HB	End Mill Ø 3.0	End Mill Ø .120	4	0.1	.004	3.0	0.120	40	47,000	0.005	.0002
	Aluminum SI 9% 30 HB	End Mill Ø 1.0	End Mill Ø .040	3	0.1	.004	1.0	0.040	40	47,000	0.015	.0006
	Aluminum SI 9% 30 HB	End Mill Ø 2.0	End Mill Ø .080	2	0.3	.012	2.0	0.080	40	47,000	0.02	.0008
	Aluminum SI 9% 30 HB	End Mill Ø 3.0	End Mill Ø .120	3	0.2	.008	3.0	0.120	40	47,000	0.025	.0010
Milling Shoulder	SAE H13 (40-42Hrc)	End mill Ø 1.5	End mill Ø .059	2	0.3	.012	0.3	.012	40	47,000	0.008	.0003
	St 52-3 (A 36)	End mill Ø 1.0	End mill Ø .040	2	0.5	.020	0.1	.004	40	47,000	0.005	.0002
	SAE 4340 (24-25HRC)	Ball nose Ø 1.0	Ball nose Ø .040	2	0.5	.020	0.03	.0012	40	47,000	0.03	.0012
	SAE 4340 (24-25HRC)	Ball nose Ø 3.0	Ball nose Ø .120	2	0.5	.020	0.05	.002	40	47,000	0.07	.0027
	SAE 316L 130-136 HB	Ball nose Ø 3.0	Ball nose Ø .120	2	0.5	.020	0.05	.002	40	47,000	0.04	.0015
	Aluminum SI 9% 30 HB	Ball nose Ø 1.0	Ball nose Ø .040	3	0.5	.020	0.06	.0024	40	47,000	0.03	.012
	Aluminum SI 9% 30 HB	Ball nose Ø 3.0	Ball nose Ø .120	3	1.5	.060	0.05	.002	40	47,000	0.03	.012

G-JET SPINDLE STORAGE :

G-JET Spindle is free from periodic maintenance, however after use and before storage it is recommended to :

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

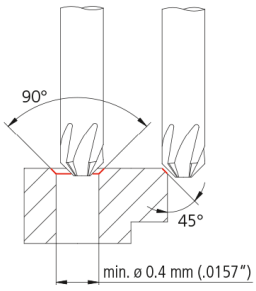
Coolant delivered DIRECTLY to the cutting edge
No deflection or vibration

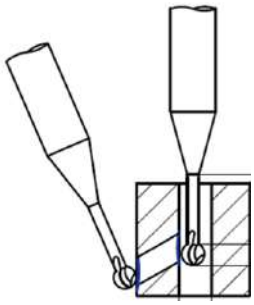
In addition, the Jet Spindle technology allows operators the ability to monitor the rotational speed of cutting tools in real-time; optimizing cutting conditions for even more all-around machining efficiency.

COLIBRI SPINDLES

ENGRAVING / CAMFERING / DEBURRING

Jet Spindle offers an ideal solution for a wide range of micro tool applications, on any type of machine tool. In particular it is very suitable for engraving, chamfering, deburring and centering on all types of materials, from light alloys to stainless steel and titanium, guaranteeing very reduced working times thanks to the high number of revolutions and consequently to the feed minute of the tool. Integral tools or mechanically fastened tools can be used as per images below with a shank diameter not exceeding 6 mm.





Data Colibri G-JET Steel 250HB	
PRESSURE	25 bar
FLOW RATE	18 l/min
RPM	30.000 r/min
Cutting Diameter	2mm
	
Spherical cutter with 2 cutting edges	
Data:	N= 30.000 RPM/min f= 0,03 mm/turn
	Vf= 1.000 mm/min ap= 0,3 mm ae= 0,5 mm

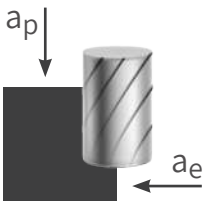
Data Colibri HPC JET Brass	
PRESSURE	40 bar
FLOW RATE	24 l/min
RPM	34.300 r/min
Cutting Diameter	2mm
	
Spherical cutter with 2 cutting edges	
Data:	N= 30.000 RPM/min f= 0,03 mm/turn
	Vf= 3.000 mm/min ap= 0,2 mm ae= 0,2 mm
	Vf= 1.000 mm/min ap= 0,3 mm ae= 0,5 mm

COLIBRI SPINDLES

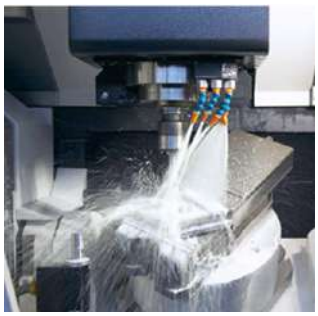
ENGRAVING / CAMFERING / DEBURRING

Jet Spindle offers an ideal solution for a wide range of micro tool applications, on any type of machine tool. In particular it is very suitable for engraving, chamfering, deburring and centering on all types of materials, from light alloys to stainless steel and titanium, guaranteeing very reduced working times thanks to the high number of revolutions and consequently to the feed minute of the tool. Integral tools or mechanically fastened tools can be used as per images below with a shank diameter not exceeding 6 mm.

HPC ER32 Operating Data				
Machine Type	Mori Seiki NVD4000 BT40			
Alloy Steel	52 HRC			
PRESSURE / FLOW	20bar			
Revolutions [rpm]	21.000 r/min			
Process	CONTOURING			
Machining / No. cutting edges	Toric cutter Z4 radius 0.02			
Diameter	0,7mm			
WORK DATA				
Turn/1’	Apmm	Aemm	F mm/turn	Vfmm/1’
20.000	0,02	0,5	0,009	180

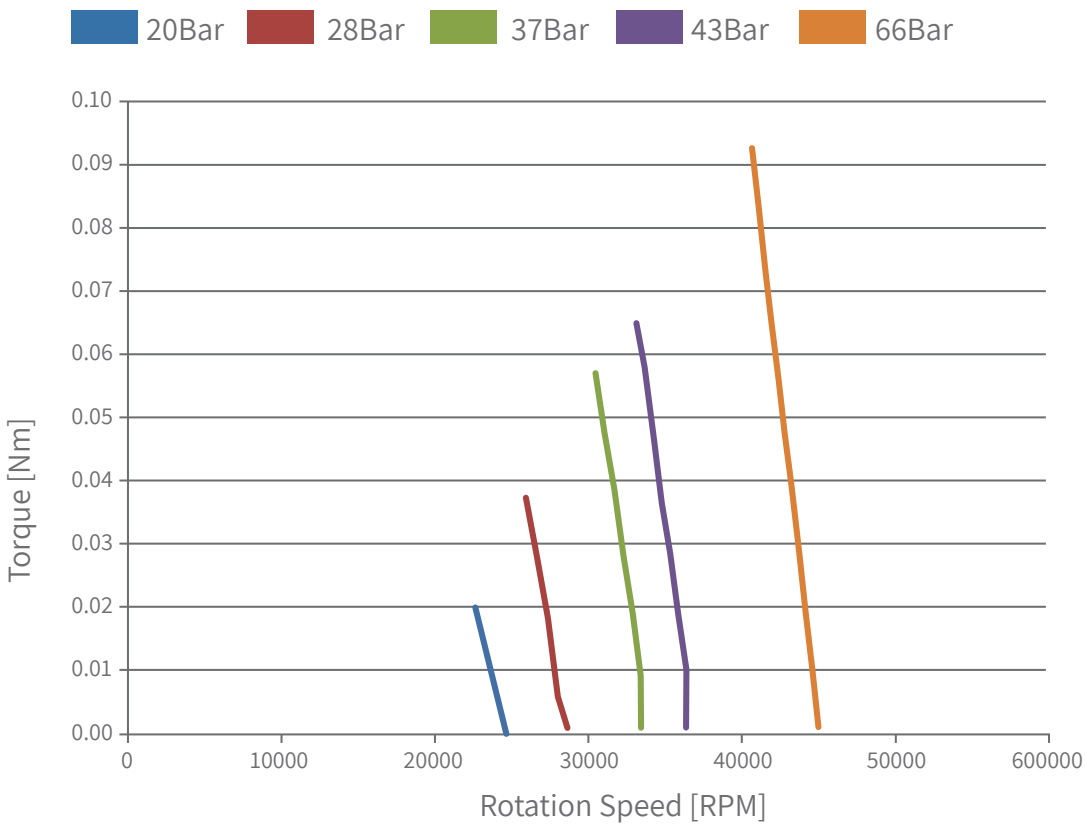


HPC ER32 Operating Data				
TipoMacchina	Mori Seiki NVD4000 BT40			
Alloy Steel	48 HRC			
PRESSURE / FLOW	25bar 20 l/mm			
Revolutions [rpm]	29.000			
Process	CONTOURING			
Machining / No. cutting edges	Mill 90 ° Z2			
Diameter	0,7mm			
WORK DATA				
Turn/1’	Apmm	Aemm	F mm/turn	Vfmm/1’
26.500	0,1	0,010	0,015	435
26.000	0,1	0,015	0,020	520

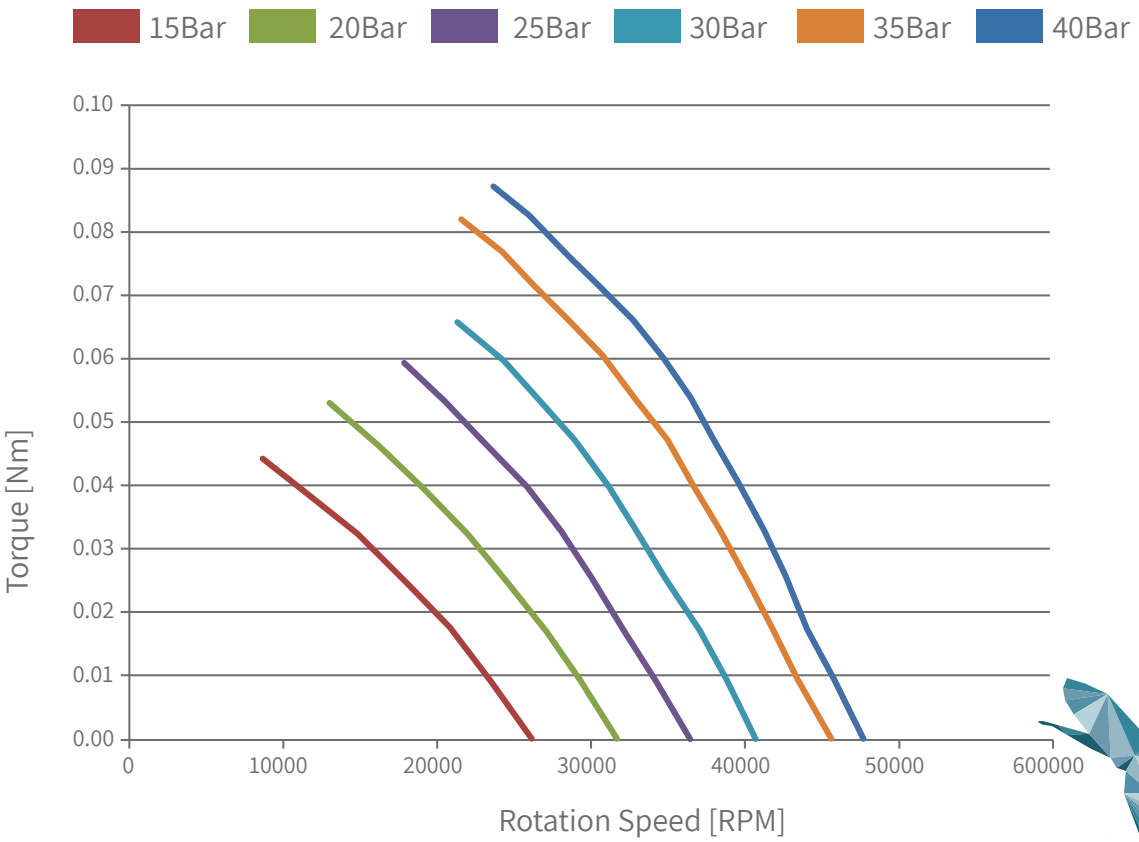


COLIBRI SPINDLES

Torque Vs. Speed – **HPC**

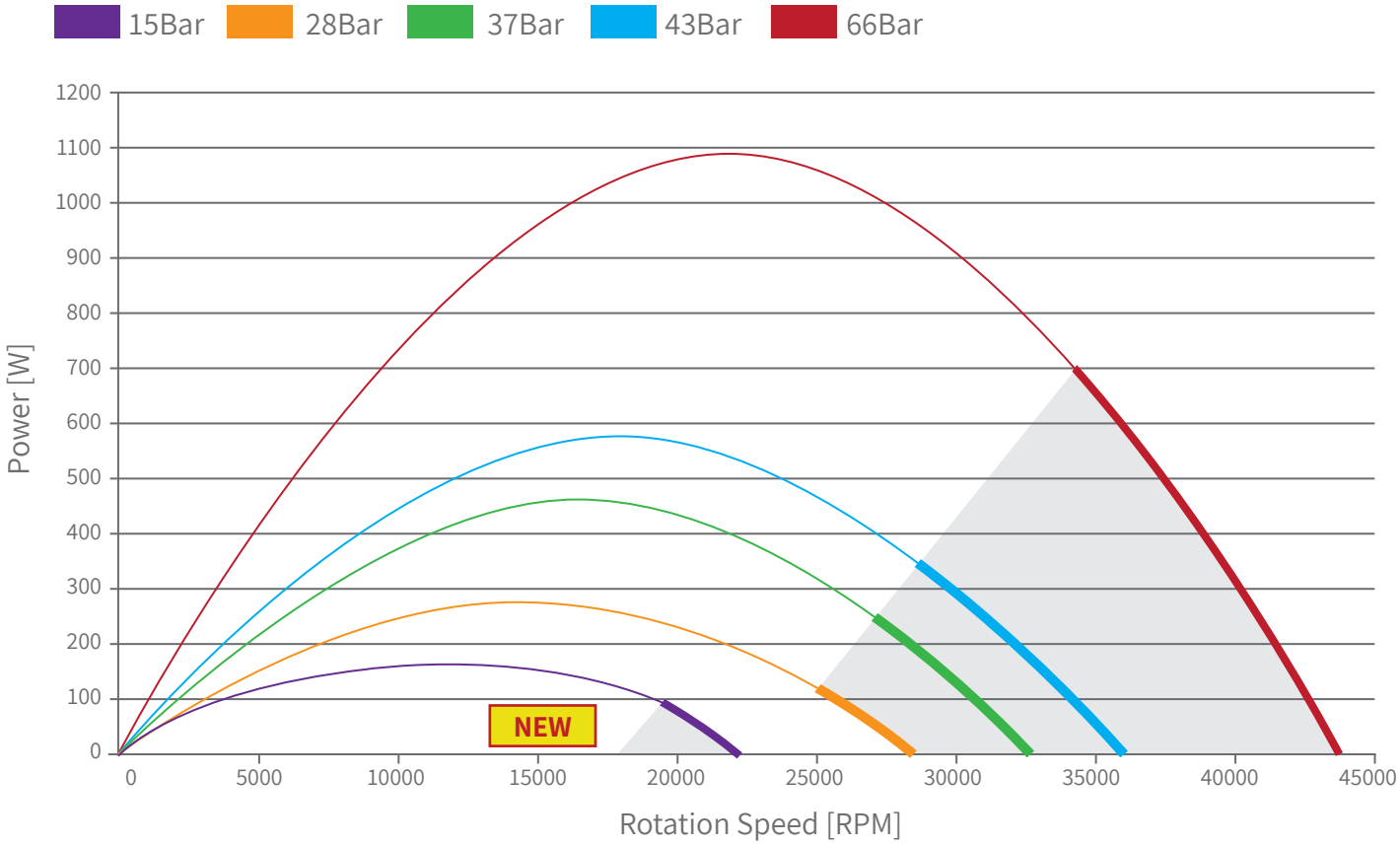


Torque Vs. Speed – **GJET**

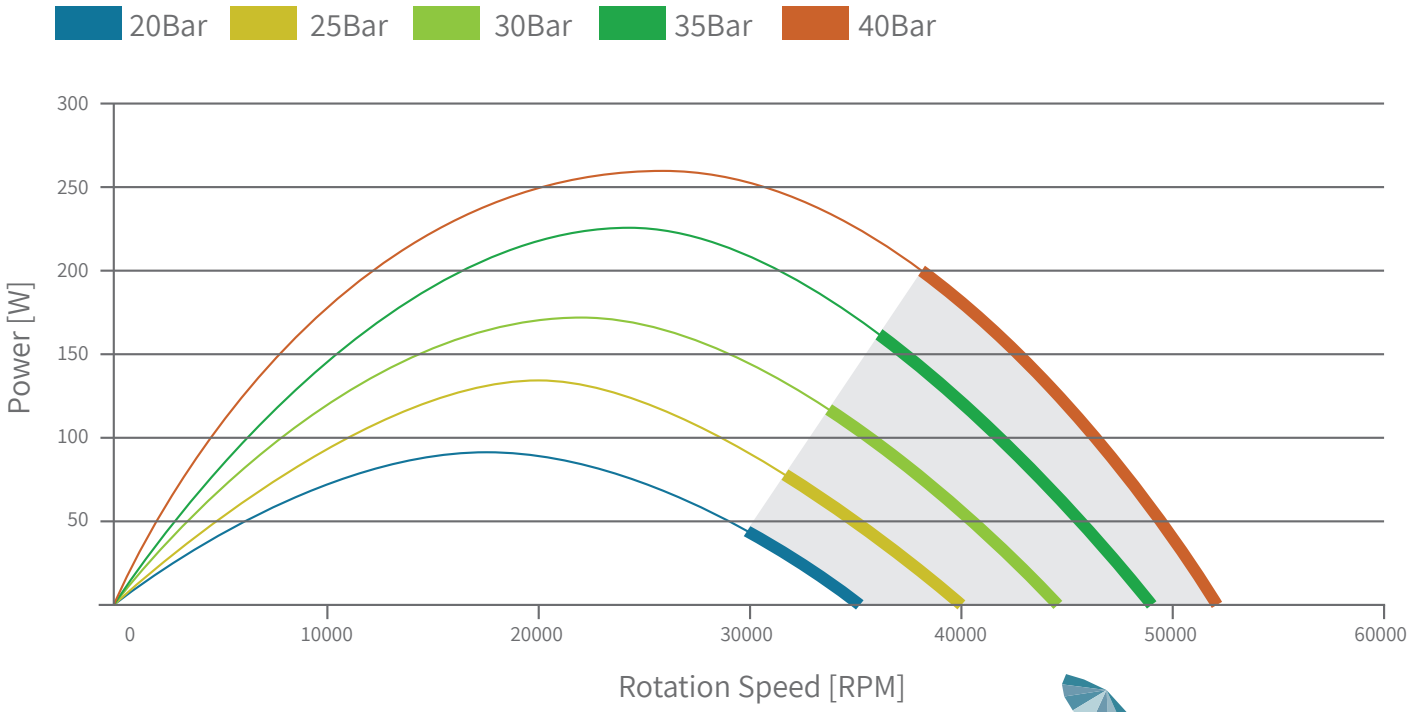


COLIBRI SPINDLES

Recommended Working Zone for **TJS HPC**



Recommended Working Zone for **TJS GJET**



COLIBRI SPINDLES

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