

NPA

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New Product Announcement No. 2014-22



High Speed Jet Spindle



New Product Announcement No. 2014-22



Typhoon

High Speed Jet Spindle

TaeguTec has launched a revolutionary new high-speed spindle developed for applications using high RPM for small diameter tools that can be used on limited RPM machines. The new spindle is designed for high-speed machining in milling, holmaking and grinding applications.

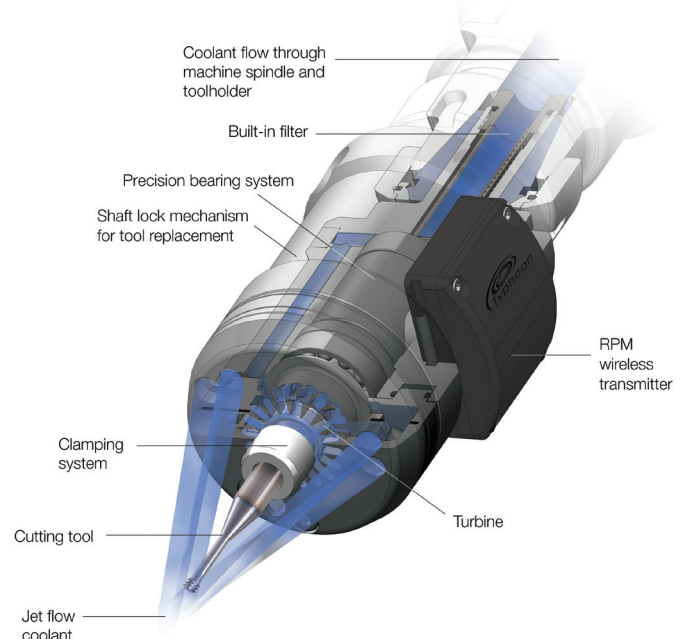
The system utilizes the machine tool's existing coolant supply, driven by a high-pressure pump (minimum 20 bars) as an energy source, to rotate a built-in turbine at speeds of up to 40,000 RPM.

The TYPHOON does not replace the existing machine's spindle. Instead, it improves the existing machine's performance, surface finish and tool life capabilities.

General View



Internal Structure



New Product Announcement No. 2014-22

ADVANTAGES

- **Reduced machining time**-Higher table speed means faster machining due to higher rotation speed.
- **High efficiency**-Up to 65% increased productivity on low RPM spindle machines.
- **Energy savings**-The machine spindle is idle while the TYPHOON is in operation.
- **High precision**-Excellent surface quality due to optimized machining conditions.
- **Plug & Play**-Easy installation on existing machines with no modification required.
- **Extended tool life**-Due to optimal cutting conditions and strong coolant jet flow.



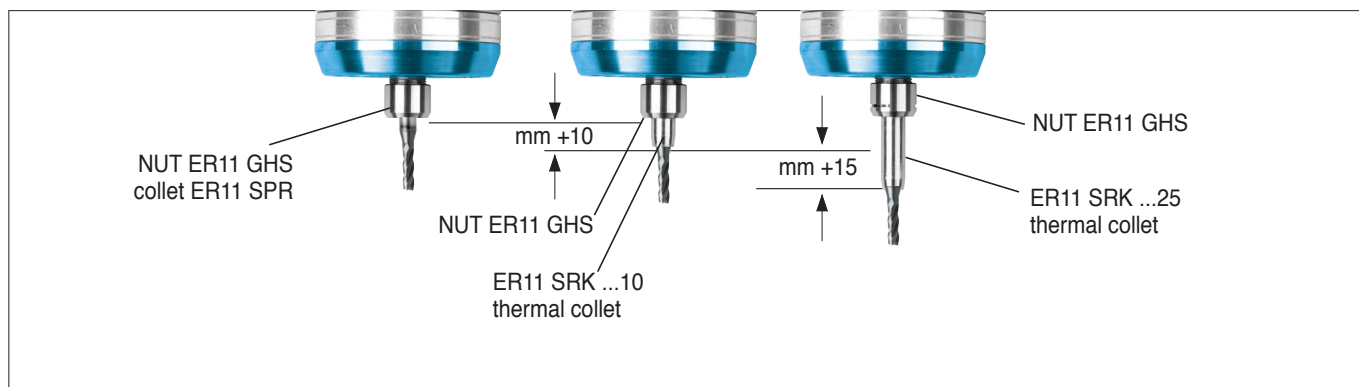
FEATURES

- **Direct wireless rotation speed display.**
The Typhoon comes with an online speed display system that monitors the actual cutting rotation speed during machining.
- **2.4 GHz radio frequency transmission.**
- **Direct wireless rotational speed monitoring of up to 5 meters.**
- **Wireless LED display enables the reading of the TYPHOON's RPM in real time.**



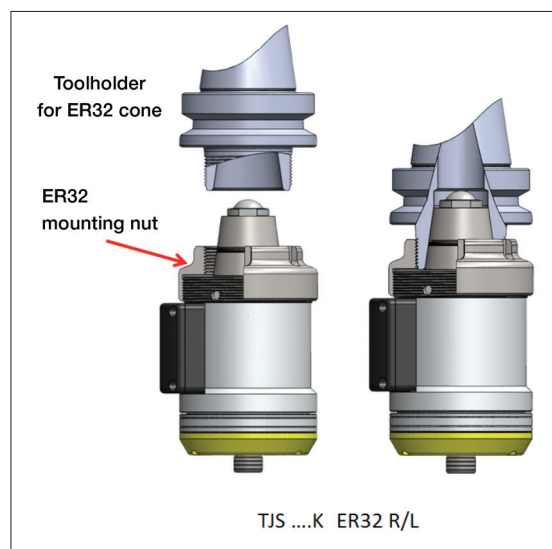
New Product Announcement No. 2014-22

A new solution for cutting tool overhang



Built-in ER32 collet chuck

Featuring high precision and low runout, suitable for various standard toolholders with an ER32 taper.



Target market and industries

- Typhoon is designed for applications requiring shanks of up to 6 mm and cutting diameters up to 3.5 mm.
- Specifically adapted to workshops where CNC machines have a spindle capacity of up to 15K RPM and through coolant with a minimum 20 bar.



Turn mill



Milling



Turning

New Product Announcement No. 2014-22

The new spindles are an ideal solution for the growing demand in finish and semi-finish operations on a wide range of processed materials in the die and mould industry as well as high precision machining in the aerospace and medical industries.

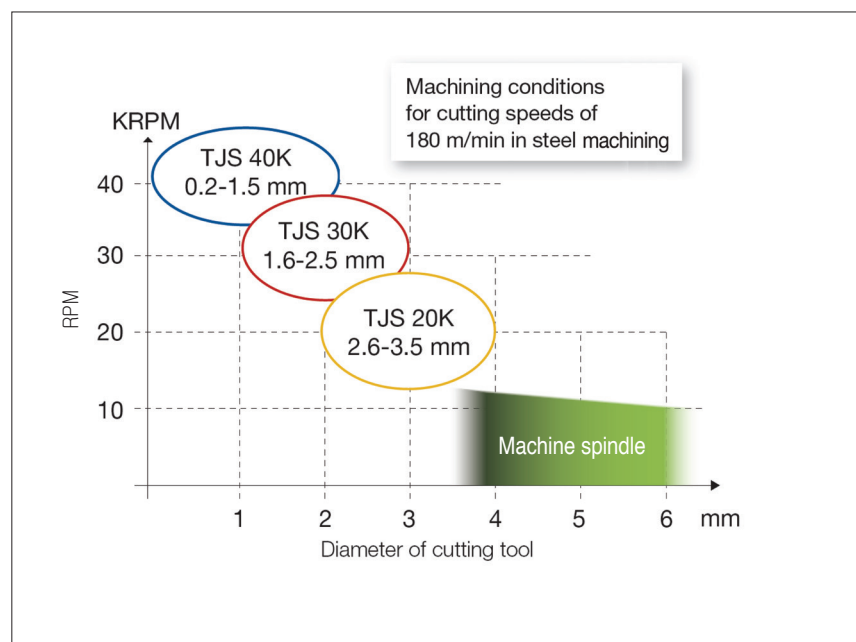
Productivity booster

These coolant driven spindles lead to a significant widening of the application range on medium/large machine tools that lead to improved productivity, higher efficiency, minimal set-up time and decreased machining time, all of which reduce overall costs.



TYPHOON operation range

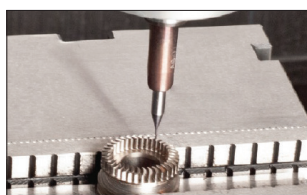
Operation speed range vs tool diameter



New Product Announcement No. 2014-22

Applications

Clamping type: ER11 collet size



Milling

Slotting-up to $ae=3.0$ mm, $ap=0.1D$

Shouldering- up to $D=3.5$ mm, $ae=D$, $ap=0.25D$



Thread milling

Maximum M5 thread

Right-or left-hand rotation



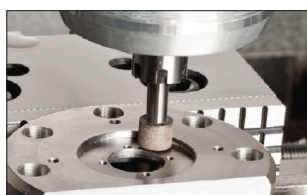
Drilling

Maximum drill diameter=2 mm



Engraving/Chamfering

Maximum shank diameter=6 mm



Fine radial grinding

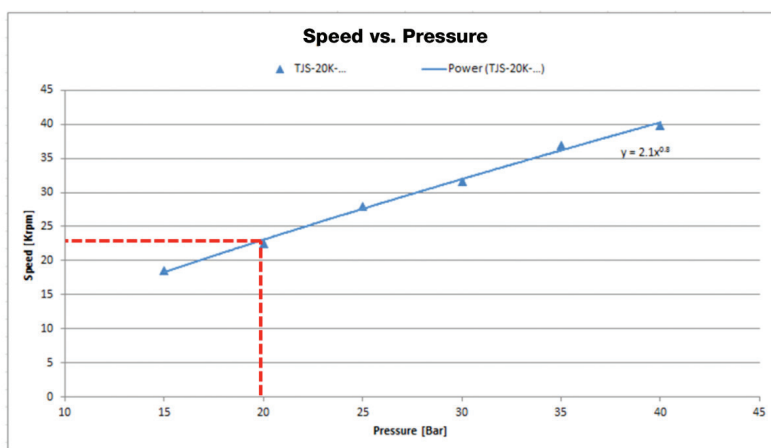
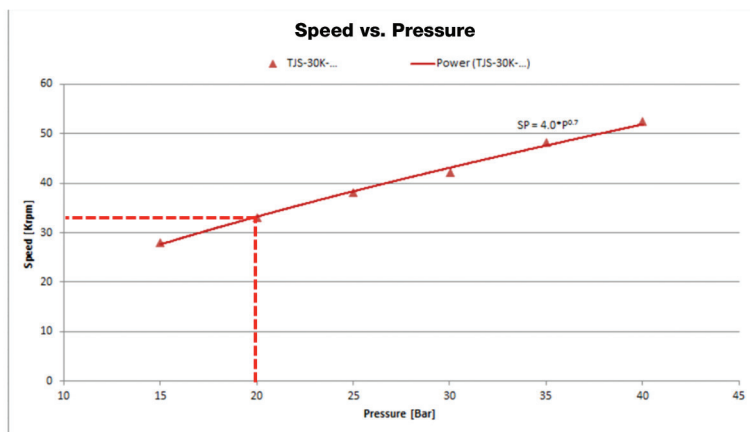
Grinding wheels: 1A1W up to 10 mm

Balanced WC shank

Maximum shank diameter=6 mm

New Product Announcement No. 2014-22

Increasing pressure and flow rate provides higher rotation speed and higher output



Speed vs. Pressure

TYPHOON type/RPM	Coolant pressure		
	20 Bar	30 Bar	40 Bar
TJS 20K ER32	20000* RPM	30000* RPM	40000* RPM
TJS 30K ER32	30000* RPM	40000* RPM	50000* RPM
TJS 40K ER32	40000* RPM	50000* RPM	60000* RPM

* Approximate RPM values - dependent on pressure, flow rate and coolant type

New Product Announcement No. 2014-22

Case study - Milling / Profiling

Workpiece material: Electrolytic copper

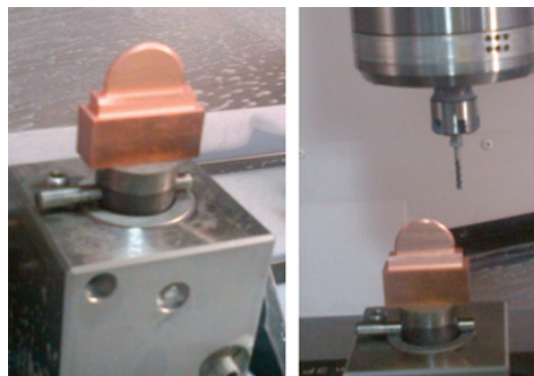
(C11000ASTMB 152/2009)

Machine type: OKUMA M650V

Machine pump pressure: 22 bar

Liquid type: Emulsion

Application type: Profiling



	Semi Finishing	
Application type	Current process	TYPHOON
Tool description	TSE 2020M-4 TT5525	
Tool diameter (D) (mm)	2.0	
Number of teeth (Z) per tool	2	
Cutting width (ae) (mm)	0.08	
Depth of cut (ap) (mm)	0.08	
Runout (micron)	7	5
External pump pressure (bar)	30	
	Machine spindle	TJS 30K ST20 R
Spindle speed (n) (RPM)	10,000	29,000
Cutting speed (Vc) (m/min)	63	183
Feed per tooth (fz) (mm/tooth)	0.05	0.045
Table feed (f) (mm/min)	1,000	2,600
Machining time (min) per part	17	10

	Finishing	
Application type	Current process	TYPHOON
Tool description	HSB 2010S TT5505	
Tool diameter (D) (mm)	1.0	
Number of teeth (Z) per tool	2	
Cutting width (ae) (mm)	0.04	
Depth of cut (ap) (mm)	0.04	
Runout (micron)	6	4
External pump pressure (bar)	30	
	Machine spindle	TJS 30K ST20 R
Spindle speed (n) (RPM)	11,000	30,000
Cutting speed (Vc) (m/min)	35	95
Feed per tooth (fz) (mm/tooth)	0.027	0.025
Table feed (f) (mm/min)	600	1,500
Machining time (min) per part	30	10

Total machining time [min]

With machine spindle: 47 min.

With TYPHOON: 20 min.

Machining time reduction (per part): 58% and reduced spindle wear

New Product Announcement No. 2014-22

Case study - Milling a turbine

Workpiece material: SAE 303

Hardness: 25 HRC

Machine type: LER

Machine pump pressure: 22 bar

Liquid type: Emulsion

Application type: Slotting



	CNC center	TYPHOON
Tool description	HSB 2010 010 030 TT5505	
Tool producer	IMC	
Tool diameter (D) (mm)	1.0	
Number of teeth (Z) per tool	2	
Cutting width (ae) (mm)	0.08	
Depth of cut (ap) (mm)	0.08	
Runout (micron)	7	5
Spindle speed (n) [RPM]	Machine spindle	TJS 30K ST20 R
Spindle speed (n) (RPM)	9,000	35,600
Cutting speed (Vc) (m/min)	28	120
Feed per tooth (fz) (mm/tooth)	0.016	0.016
Table feed (f) (mm/min)	300	1,200
Machining time (min) per part	60	13
Number of parts per tool	5	35
Surface quality		Good
Number of parts per hour	1	4.5
Number of tools to produce 35 parts	7	2
Number of hours to produce 35 parts	35	7.6

Reduction in machining time: 27.5 hours

Increased tool life: 300%

Decrease in spindle wear

New Product Announcement No. 2014-22

Case study - Milling mold

Workpiece material: V2

Hardness: 57-60 HRC

Machine type: HAAS VM 3

Machine pump pressure: 20 bar

Liquid type: Emulsion

Application type: Profiling



	Rough	
Application type	CNC center	TYPHOON
Tool description	HSB 4040M TT5505	
Tool diameter (D) (mm)	4	4
Number of teeth (Z) per tool	4	
Cutting width (ae) (mm)	0.1	0.2
Depth of cut (ap) (mm)	0.1	0.2
Cutting tool overhang T [mm]	25	25
Runout [micron]	10	8
	Machine spindle	TSJ 30K ST20 R
Spindle speed (n) (RPM)	8,500	27,000
Cutting speed (Vc) (m/min)	120	254
Feed per tooth (fz) (mm/tooth)	0.021	0.0145-0.0185
Table feed (f) (mm/min)	800	1,600-2,000
Machining time (min) per part	03:07	(min 35) 0.5
Number of parts per tool	1	1

	Finishing	
	CNC center	TYPHOON
	HSB 2010S TT5505	
	1	1
	2	
	0.1	0.01-0.02
	0.1	0.01-0.02
	15	15
	10	6
	Machine spindle	TSJ 30K ST20 R
	10,500	29,000
	33	91
	0.043	0.027-0.051
	900	1,600-3,000
	10:17	05:06
	1	1

Total machining time [hours]

With machine spindle: 13:24

With TYPHOON: **05:41**

Reduction in machining time: 7.30 hours per part.

Savings of 4 hours in polishing process (50% of time).

As a result of the limitations of the machine control system, the actual cutting table feed was relatively lower for TYPHOON capabilities.

Decrease in spindle wear.

New Product Announcement No. 2014-22

Case study - Thread milling

Workpiece material: SAE 4340

Hardness: 29 HRC

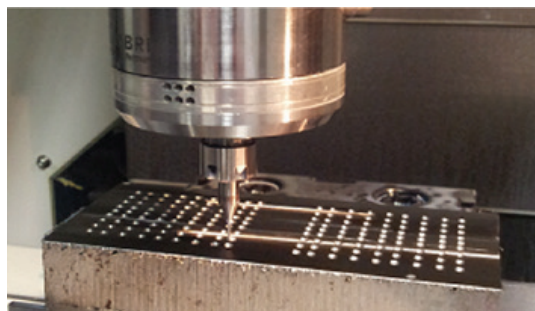
Pre-hole diameter: 1.6 mm

Machine type: Victor

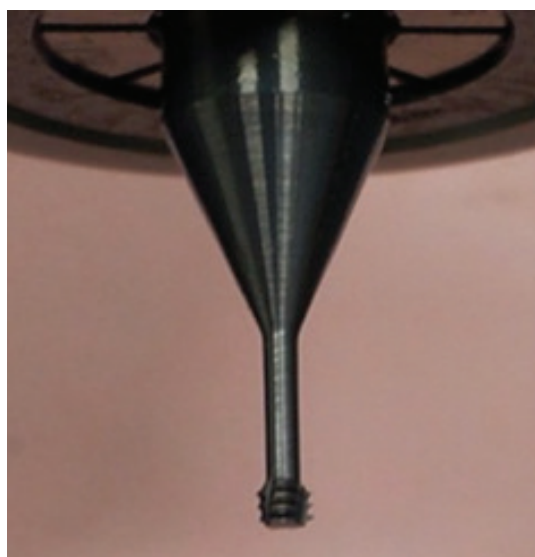
Machine pump pressure: 20 bar

Liquid type: Emulsion

TYPHOON model: TJS 30K ST20 R



	CNC center	TYPHOON
Tool diameter (D) (mm)	2.00	
Number of teeth (Z) per tool	3	
[Spindle speed (n) [RPM	6,500	30,000
Cutting speed (VC) [m/min]	41	188
Depth of thread [mm]	5	5
Number of passes/climb	1	1
Feed per tooth fz [mm/tooth]	0.014	0.014
Number of holes	81	280
Table feed F [mm/min]	273	1,260
Total machining time/hole[sec]	8	2
Tool condition	Wear	Good
Thread (GO-NOT GO gauge)	GO	GO



Machining time reduction (per part): 85%

Increased tool life: 200%

New Product Announcement No. 2014-22

TYPHOON competitors

The existing solutions currently offered pose the following limitations vs. jet coolant driven spindles:

Mechanical speed increaser gearbox

- No real-time speed monitoring.
- The spindle is not suitable for automatic tool changers.
- Special installations are required.
- The machine spindle rotates during machining, increasing its wear and reducing operating life.



Electrical high-speed spindles

- Not suitable for automatic tool changing.
- Special installations are required.
- High cost



Air turbine spindles

- High cost
- Air consumer
 - Extremely expensive resource
 - Air pipes installation necessary
 - High air flow rate
- Special installation required in order to work with the automatic tool changer.
- Limited placement in tool magazine due to large physical dimensions and weight.



New Product Announcement No. 2014-22

TYPHOON spindles are available in three versions. Each one covers a specific range of diameters and speeds for a wide range of workpiece materials and machine tools.

TYPHOON is available in several adaptation types:

- Integral ER32 taper with a special tightening nut, suitable for all standard toolholders for ER32 collets.
- Cylindrical 20 mm diameter shank that can be clamped in ER32 19-20 sealed spring collet - on request.
- Integral BT30,40,DIN69871 40,CAT 40, HSK A 63, CAMFIX C5,C6



TJS ...K BT40 R/L

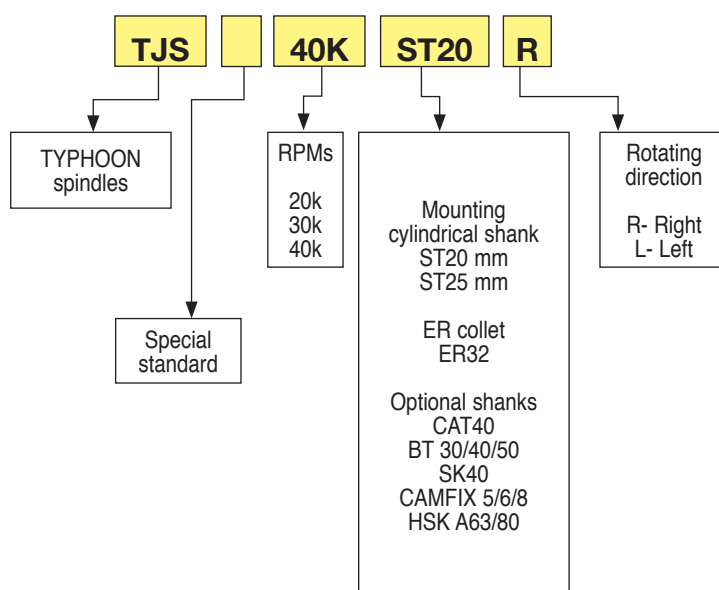


TJS ...K ER32 R/L



TJS ...K ST 20 R/L

Order example



•The TYPHOON is offered with right-hand or left-hand direction of rotation.

New Product Announcement No. 2014-22

TYPHOON models:

TJS □K ER32 R/L and TJS □K ST20 R/L



TJS □K ER32 R/L



TJS □K ST20 R/L

Product description	TJS 20K...	TJS 30K...	TJS 40K...
Rotation speed (RPM)	20,000	30,000	40,000
Coolant pump pressure (bar)	20		
Flow rate (l/min)	12		
Maximum tool shank diameter (mm)	6.0		
Maximum tool diameter (mm)	3.5	2.5	1.5

WRENCH DIA3.2X35 –Shaft lock for clamping

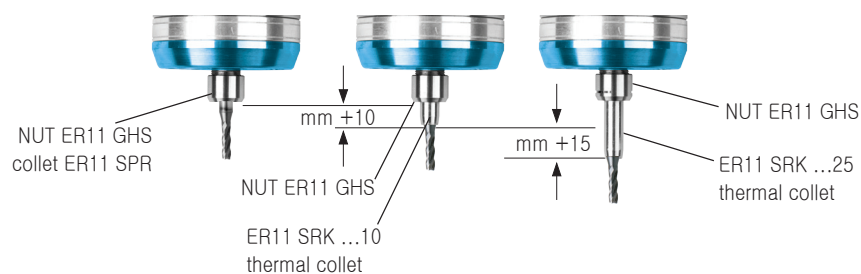


TJS TSD DISPLAY – RPM display

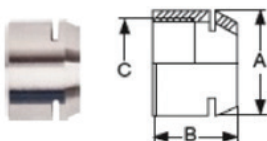


New Product Announcement No. 2014-22

Tool clamping using ER11 collets



WRENCH ER11 SMS



NUT ER11 GHS

New Product Announcement No. 2014-22

User guide

The TYPHOON system was developed to enable to apply optimal cutting speed conditions for small diameter solid carbide tools which require very high RPM.

Recommended cutting speed for shouldering operations

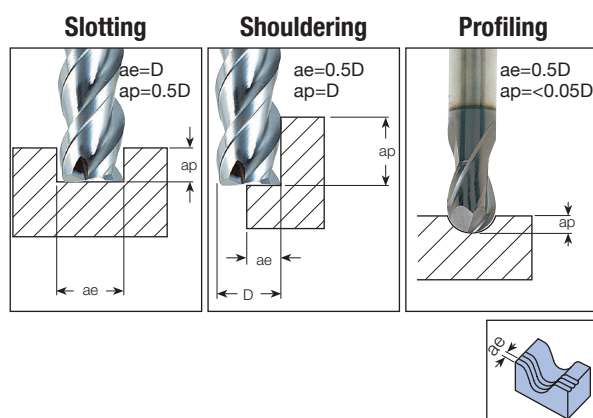
-Steel: up to 200 m/min

-Aluminum: 200 m/min and higher

TYPHOON Type	TJS 20K	TJS 30K	TJS 40K
Driven spindles by	Based on pressure of 20 bar		
Tool diameter for steel mm	2.6-3.5	1.6-2.5	0.2-1.5
Rotation speed RPM	2,000	30,000	40,000
Tool diameter for aluminum mm	2.0-3.5	3.6-5.0	0.5-3.0

Feed recommendations for small diameter solid carbide tools at high cutting speeds

Recommended feeds for solid carbide and MULTI-MASTER endmills



Slotting

Shouldering / Profiling

Dmm	Fz (min)	Fz (max)	Fz (min)	Fz (max)
1	0.003	0.005	0.003	0.007
1.3	0.003	0.010	0.003	0.012
1.5	0.003	0.020	0.003	0.022
1.8	0.005	0.025	0.005	0.028
2	0.005	0.030	0.005	0.033
2.3	0.005	0.030	0.005	0.033
2.5	0.005	0.030	0.005	0.030
2.8	0.010	0.035	0.010	0.038
3	0.010	0.040	0.010	0.044

In order to obtain the advantages of high-speed machining, minimize cutting forces and reduce wear, the tool diameter should be selected according to the spindle speed. (if possible)

- Always select the smallest tool diameter, according to the application requirements.
- Always select cutting tools in grades that are suitable for high-speed machining.

New Product Announcement No. 2014-22

Installing the TYPHOON on existing CNC machines

The feed per tooth f_z should remain constant while the table feed should be increased according to the TYPHOON's rotation speed.

For example:

Operation: Shoulder milling

Cutting tool: Endmill Ø 2.0 mm (suitable for HSM)

Current cutting conditions

Spindle speed: 8000 RPM (machine spindle)

Table feed: $f=160$ mm/min

TYPHOON spindle type: TJS 30K ER32R

The idle rotation speed with the TYPHOON spindle reached 33,000 RPM.

The TYPHOON spindle speed dropped when the tool entered the workpiece from several thousand kRPMs down to approximately 30,000 RPM. As the ratio between the machine spindle speed and TYPHOON speed is 1: 3.75, the table speed should be increased to $3.75 \times 160 = 600$ mm/min.

Note: For the first trial, it is recommended to increase the table feed gradually by 3-3.5, before setting the table feed to the above-calculated value.

New machining process

Calculate the table speed F [mm/min] according to $F = n * z * f_z$

Feed per tooth f_z (mm/tooth) - Select according to the recommendations of the tool's vendor, taking into consideration the machining material, application and the tool geometry.

Rotation speed n (RPM) - The rotation speed for table speed calculations will be determined only after reading the actual rotation speed obtained when the tool has engaged the material.

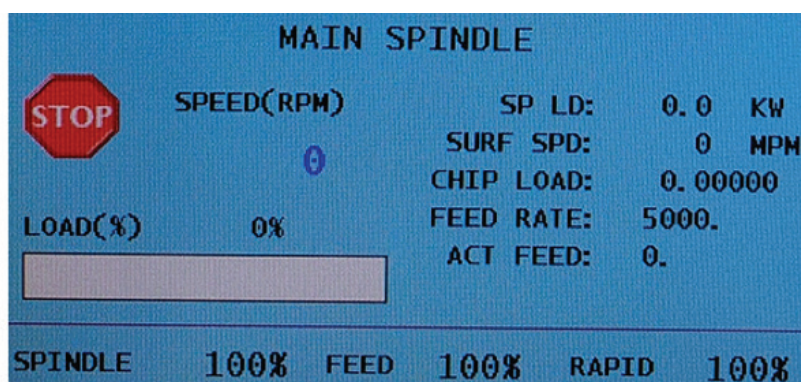
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TYPHOON orientation on main machine spindle

⚠ While the TYPHOON spindle is mounted on the machine, the main machine spindle should be stationary or spin at a minimum RPM. (5-10 RPM)

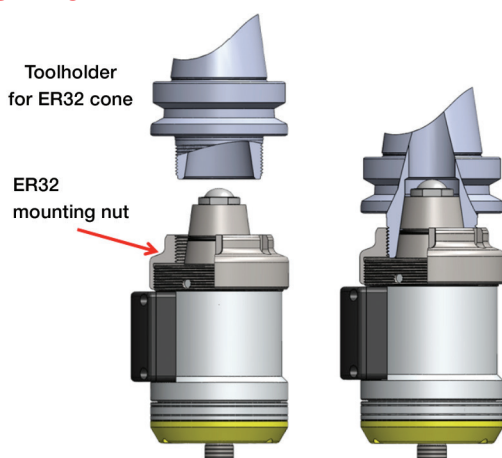
Allow the main machine spindle rotation (do not exceed 3000 RPM) only for tool runout optical check to avoid the main spindle rotations during the TYPHOON's operation, use correct M-code to lock the spindle orientation.

For example: "M19" code stops the spindle in a defined angle position.



TYPHOON mounting

TJS-ER32



TJSK ER32 R/L

New Product Announcement No. 2014-22

Placement of TYPHOON in the toolholder

Caution: Deviation from these steps might lead to the locking of the tightening nut to the TYPHOON tool.

The TYPHOON can function only with toolholders that have coolant through holes.

Mounting the TYPHOON in a toolholder:

- ❶ Loosen the TYPHOON tightening nut turning it 1.5 turns in order to enable the differential clamping.
- ❷ Tighten the TYPHOON clamping nut onto the collet chuck.
- ❸ Insert the locking pin to stop the spindle shaft from moving.
- ❹ Fasten the tool into the TYPHOON collet chuck. Do not hold the shaft while tightening the collet nut.



New Product Announcement No. 2014-22

Basic requirements for the CNC machine

1. Coolant flows through the main machine spindle.
2. High pressure coolant: **minimum** 20 bar, **maximum** 40 bar, **recommended range** 25-35 bar.
3. Flow rate: **minimum** 12 L/min, **recommended range** 18-25 L/min
4. Coolant filtration level: minimum 100 μ m.
5. Machine tool ability to operate when its original spindle does not rotate. If not possible, use minimal RPM.
6. An active mist collector.
7. With the emulsion coolant, use an anti-foaming agent additive to prevent foaming.
8. With oil coolant, the high pressure increases the amount of oil fumes.
9. Use appropriate means of fire protection.
10. Use anti-dissolution additive suitable for your oil.



Example of a toolholder with a coolant hole

Availability

- TJS 20K, 30K ER32 - In stock
- TJS 20K, 30K BT, HSK, C, ST, CAT, DIN69871 - Available upon request
- TJS 40K - Will be ready Q-1 2015

Sincerely,
TaeguTec

Shin Su-yong
Rotating & Non-Rotating Product Manager

Price

Available in the GAL system

Sincerely,
TaeguTec

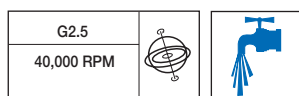
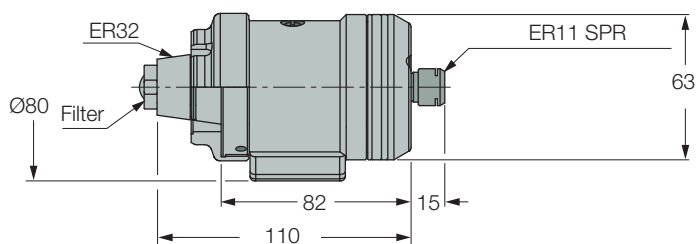
Lee Jae-wook
Milling Product Manager

New Product Announcement No. 2014-22



TJS-ER32

Coolant driven high-speed compact spindles with ER32 shanks



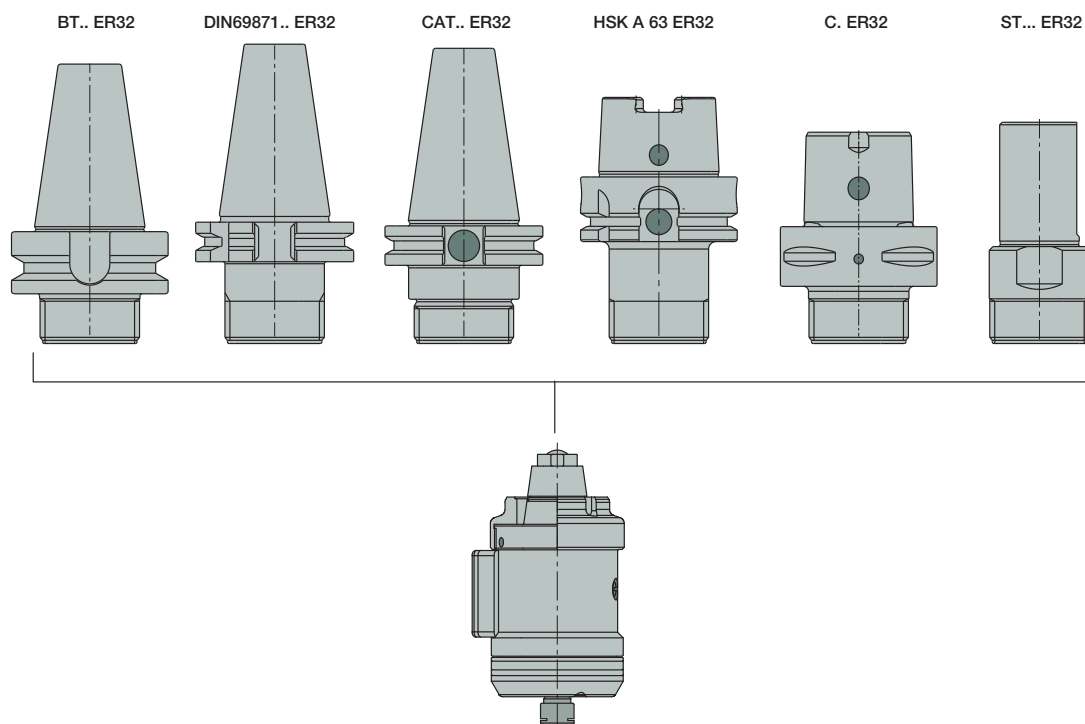
Designation	d max(1)	Kg
TJS 20K ER32L	3.5	1.10
TJS 20K ER32R	3.5	1.10
TJS 30K ER32L	2.5	1.10
TJS 30K ER32R	2.5	1.10
TJS 40K ER32L	1.5	1.10
TJS 40K ER32R	1.5	1.10

• Maximum tool shank diameter 6.0 mm • Minimum coolant pressure 20 bar and flow rate 12 l/min

(1) Maximum cutting tool diameter

Spare parts

Designation	Mini ER nut	ER wrench	Locking pin
TJS-ER32	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

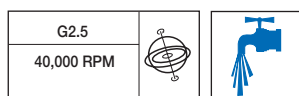
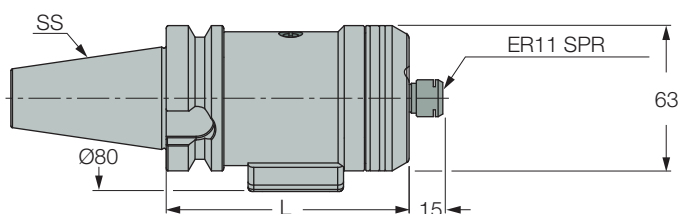


New Product Announcement No. 2014-22



TJS-BT

Coolant driven high-speed compact spindles with BT shanks



Designation	SS	L	d max (1)	Kg
TJS 20K BT30L	BT30	116.00	3.5	1.50
TJS 20K BT30R	BT30	116.00	3.5	1.50
TJS 30K BT30L	BT30	116.00	2.5	1.50
TJS 30K BT30R	BT30	116.00	2.5	1.50
TJS 40K BT30L	BT30	116.00	1.5	1.50
TJS 40K BT30R	BT30	116.00	1.5	1.50
TJS 20K BT40L	BT40	105.00	3.5	1.90
TJS 20K BT40R	BT40	105.00	3.5	1.90
TJS 30K BT40L	BT40	105.00	2.5	1.90
TJS 30K BT40R	BT40	105.00	2.5	1.90
TJS 40K BT40L	BT40	105.00	1.5	1.90
TJS 40K BT40R	BT40	105.00	1.5	1.90

• Maximum tool shank diameter 6.0 mm • Minimum coolant pressure 20 bar and flow rate 12 l/min

(1) Maximum cutting tool diameter

Spare parts

Designation	Display	Mini ER nut	ER wrench	Locking pin
TJS-BT	*TJS TSD DISPLAY	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

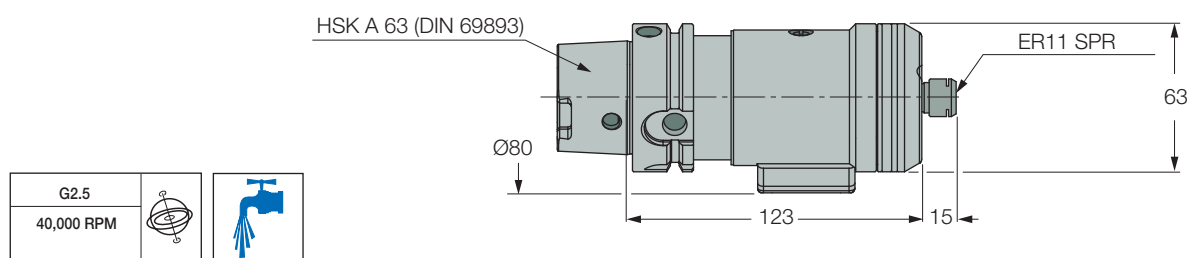
*Optional, should be ordered separately

New Product Announcement No. 2014-22



TJS-HSK A63

Coolant driven high-speed compact spindles with HSK shanks



Designation	d max (1)	Kg
TJS 20K HSK A63L	3.5	1.60
TJS 20K HSK A63R	3.5	1.60
TJS 30K HSK A63L	2.5	1.60
TJS 30K HSK A63R	2.5	1.60
TJS 40K HSK A63L	1.5	1.60
TJS 40K HSK A63R	1.5	1.60

• Maximum tool shank diameter 6.0 mm • Minimum coolant pressure 20 bar and flow rate 12 l/min

(1) Maximum cutting tool diameter

Spare parts

Designation				
TJS-HSK A63	Display	Mini ER nut	ER wrench	Locking pin
	*TJS TSD DISPLAY	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

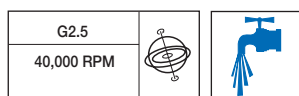
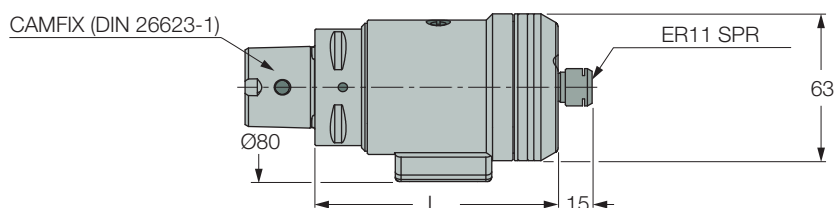
*Optional, should be ordered separately

New Product Announcement No. 2014-22



TJS-C#

Coolant driven high-speed compact spindles with (CAMFIX) ISO 26623-1 shanks



Designation	SS	L	d max (1)	Kg
TJS 20K C5L	C5	104.00	3.5	1.50
TJS 20K C5R	C5	104.00	3.5	1.50
TJS 30K C5L	C5	104.00	2.5	1.50
TJS 30K C5R	C5	104.00	2.5	1.50
TJS 40K C5L	C5	104.00	1.5	1.50
TJS 40K C5R	C5	104.00	1.5	1.50
TJS 20K C6L	C6	106.00	3.5	1.65
TJS 20K C6R	C6	106.00	3.5	1.65
TJS 30K C6L	C6	106.00	2.5	1.65
TJS 30K C6R	C6	106.00	2.5	1.65
TJS 40K C6L	C6	106.00	1.5	1.65
TJS 40K C6R	C6	106.00	1.5	1.65

• Maximum tool shank diameter 6.0 mm • Minimum coolant pressure 20 bar and flow rate 12 l/min

(1) Maximum cutting tool diameter

Spare parts

Designation	Display	Mini ER nut	ER wrench	Locking pin
TJS-C#	*TJS TSD DISPLAY	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

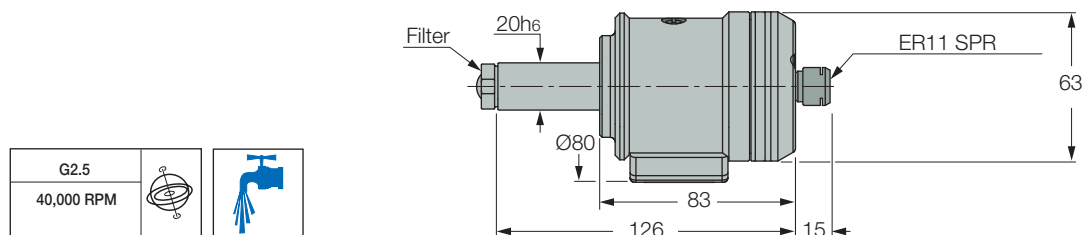
*Optional, should be ordered separately

New Product Announcement No. 2014-22



TJS-ST

Coolant driven high-speed compact spindles with cylindrical shanks



G2.5		
40,000 RPM		

Designation	d max (1)	Kg
TJS 20K ST20L	3.5	1.10
TJS 20K ST20R	3.5	1.10
TJS 30K ST20L	2.5	1.10
TJS 30K ST20R	2.5	1.10
TJS 40K ST20L	1.5	1.10
TJS 40K ST20R	1.5	1.10

• Maximum tool shank diameter 6.0 mm • Minimum coolant pressure 20 bar and flow rate 12 l/min

(1) Maximum cutting tool diameter

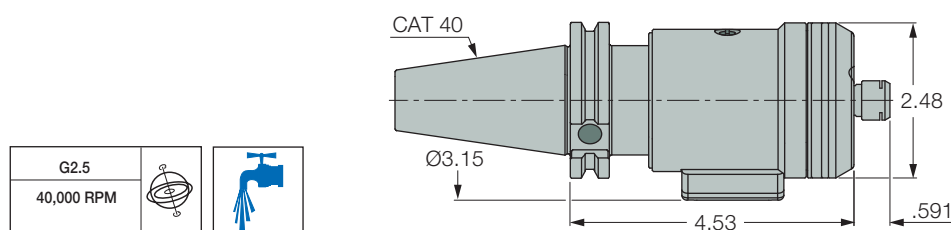
Spare parts

Designation	Display	Mini ER nut	ER wrench	Locking pin
TJS-ST	*TJS TSD DISPLAY	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

*Optional, should be ordered separately

TJS-CAT

Coolant driven high-speed compact spindles with caterpillar tapered shanks



G2.5		
40,000 RPM		

Designation	d max (1)	Lbs
TJS 20K CAT40L	138.	3.528
TJS 20K CAT40R	138.	3.528
TJS 30K CAT40L	100.	3.528
TJS 30K CAT40R	100.	3.528
TJS 40K CAT 40L	060.	3.528
TJS 40K CAT 40R	060.	3.528

• Maximum tool shank diameter .236" • Minimum coolant pressure 290 psi and flow rate 3.17 GPM

(1) Maximum cutting tool diameter

Spare parts

Designation	Display	Mini ER nut	ER wrench	Locking pin
TJS-CAT	*TJS TSD DISPLAY	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

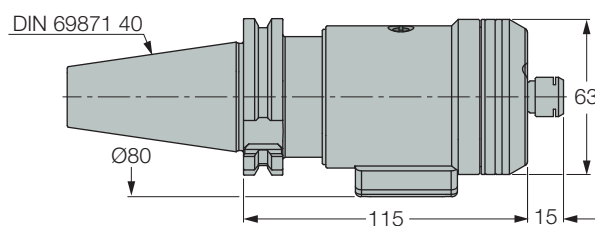
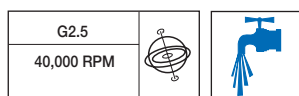
*Optional, should be ordered separately

New Product Announcement No. 2014-22



TJS-DIN69871

Coolant driven high-speed compact spindles with DIN69871 shanks



Designation	d max (1)	Kg
TJS 20K DIN69871 40L	3.5	1.60
TJS 20K DIN69871 40R	3.5	1.60
TJS 30K DIN69871 40L	2.5	1.60
TJS 30K DIN69871 40R	2.5	1.60
TJS 40K DIN69871 40L	1.5	1.60
TJS 40K DIN69871 40R	1.5	1.60

• Maximum tool shank diameter 6.0 mm • Minimum coolant pressure 20 bar and flow rate 12 l/min

(1) Maximum cutting tool diameter

Spare parts

Designation	Display	Mini ER nut	ER wrench	Locking pin
TJS-DIN69871	*TJS TSD DISPLAY	NUT ER11 GHS	WRENCH ER11 SMS	WRENCH DIA3.2X35

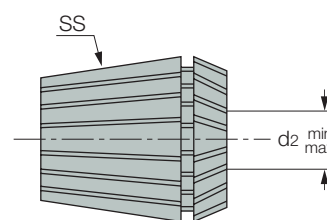
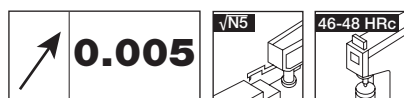
*Optional, should be ordered separately

New Product Announcement No. 2014-22



ER-SPR-AA

DIN 6499 'AA' ultra precise ER spring collets with hard touch coating



Designation	SS	d2 min	d2 max
ER11 SPR 0.5- 1 AA	ER11	0.50	1.00
ER11 SPR 1-2 AA	ER11	1.00	2.00
ER11 SPR 2-3 AA	ER11	2.00	3.00
ER11 SPR EX3.0AAA (1)	ER11	3.00	3.00
ER11 SPR 3-4 AA	ER11	3.00	4.00
ER11 SPR EX4.0AAA (1)	ER11	4.00	4.00
ER11 SPR 4-5 AA	ER11	4.00	5.00
ER11 SPR 5-6 AA	ER11	5.00	6.00
ER11 SPR EX6.0AAA (1)	ER11	6.00	6.00
ER11 SPR 6-7 AA	ER11	6.00	7.00

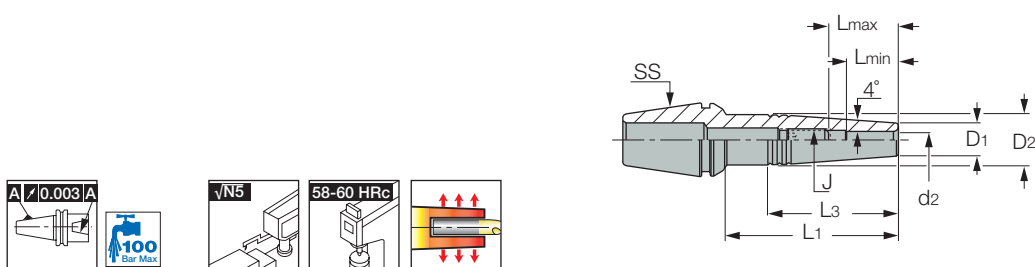
(1)0.003mm runout accuracy

New Product Announcement No. 2014-22



ER-SRK

Thermal shrink chucks with an integral ER collet



Designation	SS	d2	L1	L min	D2	D1
ER11 SRK 3X10 (1)	ER11	3.00	10.0	9.5	8.50	7.6
ER11 SRK 3X25	ER11	3.00	25.0	11.5	8.50	7.6
ER11 SRK 4X10	ER11	4.00	10.0	9.5	8.50	7.6
ER11 SRK 4X25	ER11	4.00	25.0	11.5	8.50	7.6

• For carbide tools only

(1) To be used only for TYPHOON spindles

NUT ER11 GHS

Tightening nut DIN 6499 for thermal collet

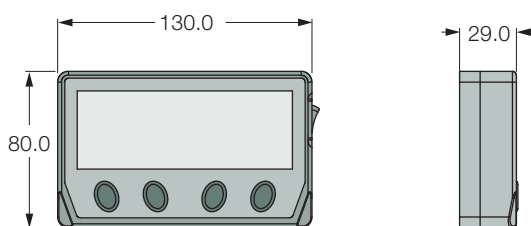
Product description	ØA	B	C	Wrench
Nut ER11 GHS	16.00	11.5	M13X0.75	WRENCH ER11 SMS

New Product Announcement No. 2014-22



TJS TSD DISPLAY

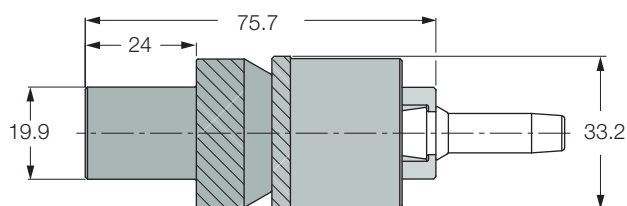
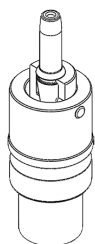
RPM speed display for TYPHOON high-speed spindles



Designation	Machines
TJS TSD DISPLAY	TJS spindles

IND ER11 TOOL ADAPTER

ER 11 shrink collet adapter for induction heating device



Designation
IND ER11 TOOL ADAPTER

New Product Announcement No. 2014-22

Compatible solid carbide tools from TaeguTec program

Designation							
AEB	3020M	HSB	2008 008 020	HSB	2020 030 180	HSB	2020 030 160 S6
	3030M		2008 008 030		2020 030 200		2010S
AES	2010		2008 008 040		2020 030 250		2015S
	2010-6		2008 008 050		2020 030 300		2020S
	2015-6		2008 008 060		2025 035 080		2030S
	2020		2008 008 080		2025 035 100	HSF	2003 004 010
	2020-6		2008 008 100		2025 035 120		2003 004 020
	2025		2008 008 120		2025 035 160		2003 004 030
	2025-6		2010 010 030		2025 035 200		2004 006 010
	2030		2010 010 040		2030 040 080		2004 006 015
	2035		2010 010 050		2030 040 100		2004 006 020
	2020XL		2010 010 060		2030 040 120		2004 006 025
	2030XL		2010 010 070		2030 040 140		2004 006 030
	3020-6		2010 010 080		2030 040 160		2004 006 040
	3030		2010 010 090		2030 040 180		2004 006 050
	3030ML		2010 010 100		2030 040 200		2004 006 060
HSB	2003 003 010		2010 010 120		2030 040 250		2005 007 010
	2003 003 020		2010 010 140		2030 040 300		2005 007 015
	2003 003 030		2010 010 160		2030 040 350		2005 007 020
	2004 004 010		2010 010 180		2030 040 400		2005 007 025
	2004 004 015		2010 010 200		2006 006 020 S6		2005 007 030
	2004 004 020		2012 012 040		2006 006 040 S6		2005 007 040
	2004 004 025		2012 012 060		2006 006 060 S6		2005 007 050
	2004 004 030		2012 012 080		2008 008 020 S6		2005 007 060
	2004 004 040		2012 012 100		2008 008 040 S6		2005 007 080
	2005 005 010		2012 012 120		2008 008 060 S6		2006 009 020
	2005 005 015		2015 015 040		2008 008 080 S6		2006 009 030
	2005 005 020		2015 015 060		2010 010 030 S6		2006 009 040
	2005 005 025		2015 015 080		2010 010 040 S6		2006 009 050
	2005 005 030		2015 015 100		2010 010 060 S6		2006 009 060
	2005 005 040		2015 015 120		2010 010 080 S6		2006 009 080
	2005 005 050		2015 015 140		2010 010 100 S6		2006 009 100
	2005 005 060		2015 015 160		2015 015 040 S6		2007 012 020
	2005 005 080		2015 015 180		2015 015 060 S6		2007 012 040
	2006 006 020		2015 015 200		2015 015 080 S6		2007 012 060
	2006 006 030		2020 030 060		2015 015 100 S6		2007 012 080
	2006 006 040		2020 030 080		2015 015 120 S6		2007 012 100
	2006 006 050		2020 030 100		2020 030 060 S6		2008 012 020
	2006 006 060		2020 030 120		2020 030 080 S6		2008 012 040
	2006 006 080		2020 030 140		2020 030 100 S6		2008 012 060
	2006 006 100		2020 030 160		2020 030 120 S6		2008 012 080

New Product Announcement No. 2014-22

Designation							
HSF	2008 012 100	HSF	2030 045 080	HSR	2005 005 010	HSR	2010 030 030
	2008 012 120		2030 045 100		2005 005 015		2010 030 040
	2010 015 030		2030 045 120		2005 005 025		2010 030 060
	2010 015 040		2030 045 160		2005 005 030		2010 030 080
	2010 015 060		2030 045 180		2005 005 040		2010 030 100
	2010 015 080		2030 045 200		2006 005 020		2012 010 040
	2010 015 100		2030 045 250		2006 005 040		2012 010 060
	2010 015 120		2030 045 300		2006 005 060		2012 010 080
	2010 015 140		2030 045 350		2006 010 020		2012 010 100
	2010 015 160		2030 045 400		2006 010 040		2012 020 040
	2010 015 180		4010 015 030		2006 010 060		2012 020 060
	2010 015 200		4010 015 040		2006 020 020		2012 020 080
	2012 018 040		4010 015 060		2006 020 040		2012 020 100
	2012 018 060		4010 015 080		2006 020 060		2012 030 040
	2012 018 080		4010 015 100		2008 005 020		2012 030 060
	2012 018 100		4015 025 040		2008 005 040		2012 030 080
	2012 018 120		4015 025 060		2008 005 060		2012 030 100
	2012 018 160		4015 025 080		2008 005 080		2015 005 040
	2015 023 040		4015 025 100		2008 010 020		2015 005 060
	2015 023 060		4015 025 120		2008 010 040		2015 005 080
	2015 023 080		4015 025 160		2008 010 060		2015 005 100
	2015 023 100		4020 030 060		2008 010 080		2015 005 120
	2015 023 120		4020 030 080		2008 020 020		2015 010 040
	2015 023 140		4020 030 100		2008 020 040		2015 010 060
	2015 023 160		4020 030 120		2008 020 060		2015 010 080
	2015 023 180		4020 030 160		2008 020 080		2015 010 100
	2015 023 200		4020 030 200		2010 005 030		2015 010 120
	2020 030 060		4030 045 080		2010 005 040		2015 020 040
	2020 030 080		4030 045 100		2010 005 060		2015 020 060
	2020 030 100		4030 045 120		2010 005 080		2015 020 080
	2020 030 120		4030 045 160		2010 005 100		2015 020 100
	2020 030 160		4030 045 200		2010 010 030		2015 020 120
	2020 030 180		6030M		2010 010 040		2015 030 040
	2020 030 200	HSR	2003 005 010		2010 010 060		2015 030 060
	2020 030 250		2003 005 020		2010 010 080		2015 030 080
	2020 030 300		2003 005 030		2010 010 100		2015 030 100
	2025 040 080		2004 005 010		2010 020 030		2015 030 120
	2025 040 100		2004 005 015		2010 020 040		2015 050 040
	2025 040 120		2004 005 025		2010 020 060		2015 050 060
	2025 040 160		2004 005 030		2010 020 080		2015 050 080
	2025 040 200		2004 005 040		2010 020 100		2015 050 100

New Product Announcement No. 2014-22

Designation									
HSR	2015 050 120	HSR	2030 010 200	HSR	4020 030 080	TMTECS	06028C10 0.6 ISO		
	2020 010 060		2030 020 080		4020 050 060		06031C12 0.7 ISO		
	2020 010 080		2030 020 100		4020 050 080	TMTECSH	03011C4 0.3 ISO		
	2020 010 100		2030 020 120		4030 010 080		03012C5 0.35 ISO		
	2020 010 120		2030 020 160		4030 010 100		03016C6 0.4 ISO		
	2020 010 160		2030 020 200		4030 010 120		06016C4 0.4 ISO		
	2020 010 200		2030 030 080		4030 010 160		06017C5 0.45 ISO		
	2020 020 060		2030 030 100		4030 010 200		0602C5 0.45 ISO		
	2020 020 080		2030 030 120		4030 020 080		06024C6 0.5 ISO		
	2020 020 100		2030 030 160		4030 020 100		06028C7 0.6 ISO		
	2020 020 120		2030 030 200		4030 020 120		06031C9 0.7 ISO		
	2020 020 160		2030 050 080		4030 020 160	TMTECS	06014C3 72 UN		
	2020 020 200		2030 050 100		4030 020 200		06014C3 64 UN		
	2020 030 060		2030 050 120		4030 030 080		06016C4 56 UN		
	2020 030 080		2030 050 160		4030 030 100		06019C5 48 UN		
	2020 030 100		2030 050 200		4030 030 120		06021C8 40 UN		
	2020 030 120		2030 100 080		4030 030 160		06021C6 40 UN		
	2020 030 160		2030 100 100		4030 030 200		06024C7 40 UN		
	2020 030 200		2030 100 120		4030 050 080		06033C9 36 UN		
	2020 050 060		2030 100 160		4030 050 100		06025C7 32 UN		
	2020 050 080		2030 100 200		4030 050 120		06032C9 32 UN		
	2020 050 100		4010 010 030		4030 050 160		06012C4 80 UN		
	2020 050 120		4010 010 040		4030 050 200		03015C6 72 UN		
	2020 050 160		4010 010 060		4030 100 080		03016C6 56 UN		
	2020 050 200		4010 020 030		4030 100 100		06016C6 56 UN		
	2025 020 080		4010 020 040		4030 100 120		06024C9 40 UN		
	2025 020 100		4010 020 060		4030 100 160		03026C10 32 UN		
	2025 020 120		4010 030 030		4030 100 200		06032C12 32 UN		
	2025 020 160		4010 030 040	TMTECS	06016C4 0.4 ISO	TMTECSH	06014C3 72 UN		
	2025 030 080		4010 030 060		06017C5 0.45 ISO		06014C3 64 UN		
	2025 030 100		4015 010 040		0602C5 0.45 ISO		06016C4 56 UN		
	2025 030 120		4015 010 060		06024C6 0.5 ISO		06019C5 48 UN		
	2025 030 160		4015 020 040		06028C7 0.6 ISO		06021C6 40 UN		
	2025 050 080		4015 020 060		06031C9 0.7 ISO		06024C7 40 UN		
	2025 050 100		4015 030 040		03007C2 0.25 ISO		06033C9 36 UN		
	2025 050 120		4015 030 060		03009C3 0.25 ISO		06025C7 32 UN		
	2025 050 160		4020 010 060		03011C4 0.3 ISO		06032C9 32 UN		
	2030 010 080		4020 010 080		03012C5 0.35 ISO				
	2030 010 100		4020 020 060		03016C6 0.4 ISO				
	2030 010 120		4020 020 080		0602C7 0.45 ISO				
	2030 010 160		4020 030 060		06024C9 0.5 ISO				