

BTi Intelligent Spindle System



Cleco

| Tame the Line

HERMES
TOOLS

Agenda

Product Overview

Trusted Solutions

Product Overview



Cleco | Tame the Line

Fixtured Spindle System History

1979

Cleco's fixtured spindle legacy begins with the founding of DGD in Germany. Setting the stage for precision fastening excellence.

1980

Early DC electric systems mark Cleco's first step toward fully controlled, data-driven tightening.

1995

A new modular platform debuts, designed for flexibility, easy maintenance, and long-term value.

1984

Cleco launches the first electric spindles with freely programmable control — a revolution in precision assembly.

2007

Cleco introduces the industry's first spindle with an onboard servo module. Compact, smart, and automation-ready.

2018

All fixtured assembly expertise merges under the Cleco brand — delivering global innovation from one trusted name.

2025

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2022

Next-generation spindles bring advanced diagnostics, real-time data, and higher uptime to smart factories.

Current Spindle System Portfolio

NEW

BTi

(Intelligent)

Replacing BTS

Mini
(Conventional)

BTS
(Intelligent)

BD
(Conventional) Launched in 2024



BTi Spindle System Features & Benefits

Simplicity

Patented daisy-chain cables, spindles with on-board servo, and system modularity enables simple set up without compromising productivity.

Smaller System Footprint

On-board servo, daisy-chain cable, and modular compact controller combine to deliver reduced footprint.

Rapid Fault Recovery & System Restart

Advanced IntelliArmed™ Error Management System facilitates rapid fault recovery diagnostics. Upon unexpected interruptions, system can restart within ~40 seconds.



Lower Total Cost of Ownership

Costs are reduced due to simple set up, single cable design, system modularity, and ability for rapid line rebalancing and ease of future upgrades.

New BTi vs BTS



Patent #WO 2022/164973 A1

Why BTi?

- Expanded spindle capability
- Improved troubleshooting (intelliArmed™ - Error Management system)
 - ✓ User friendly interfaces
 - ✓ Increase productivity
 - ✓ Time efficiency (MTTR)
 - ✓ Enhanced decision making
 - ✓ Diagnostics
- Proven system reliability
- Mounting compatibility with legacy



Smart, Flexible & Simple Assembly Solutions

BTi System Architecture

Up to 16 Spindles



Power Distribution Module

PDMi



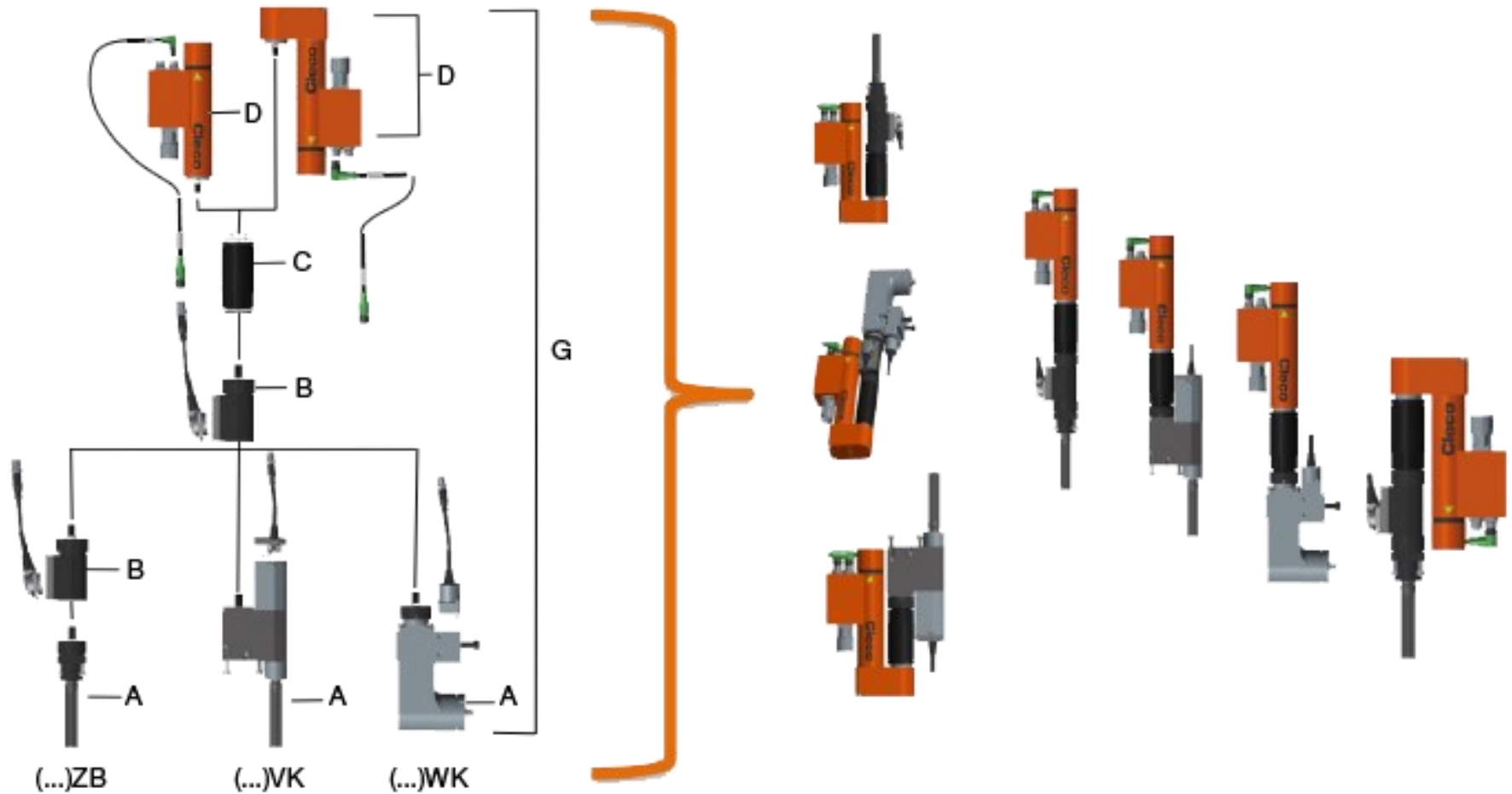
Voltage Adjusting Module)

VAMi



- Patented Daisy Chain Connection
- IP 54 rating
- STO feature
- Fast and clear error diagnosis possible through Ethernet based communication

BTi Spindle Modular Design

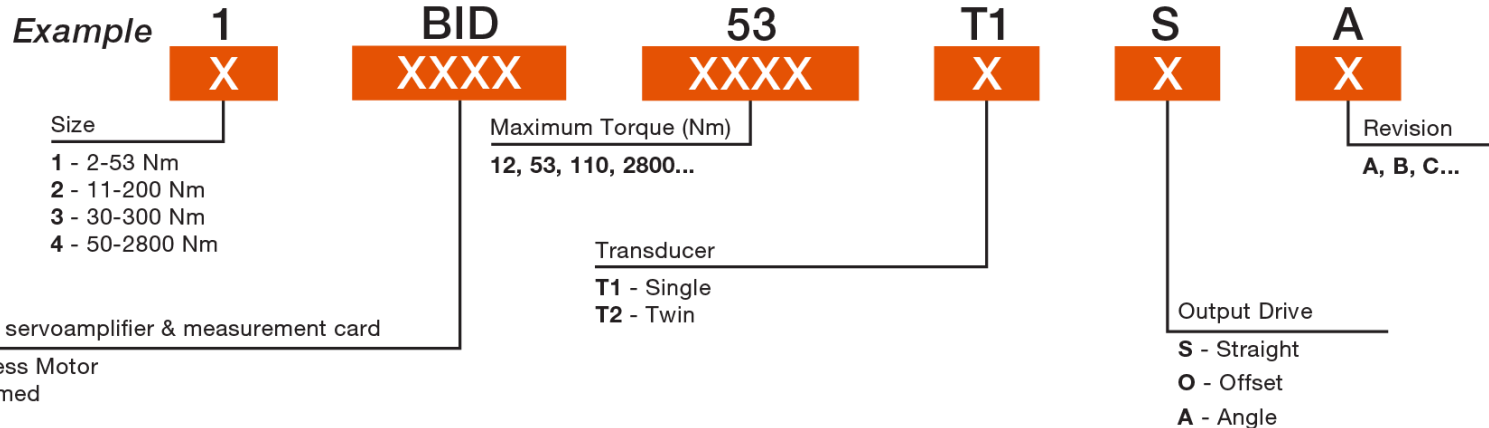
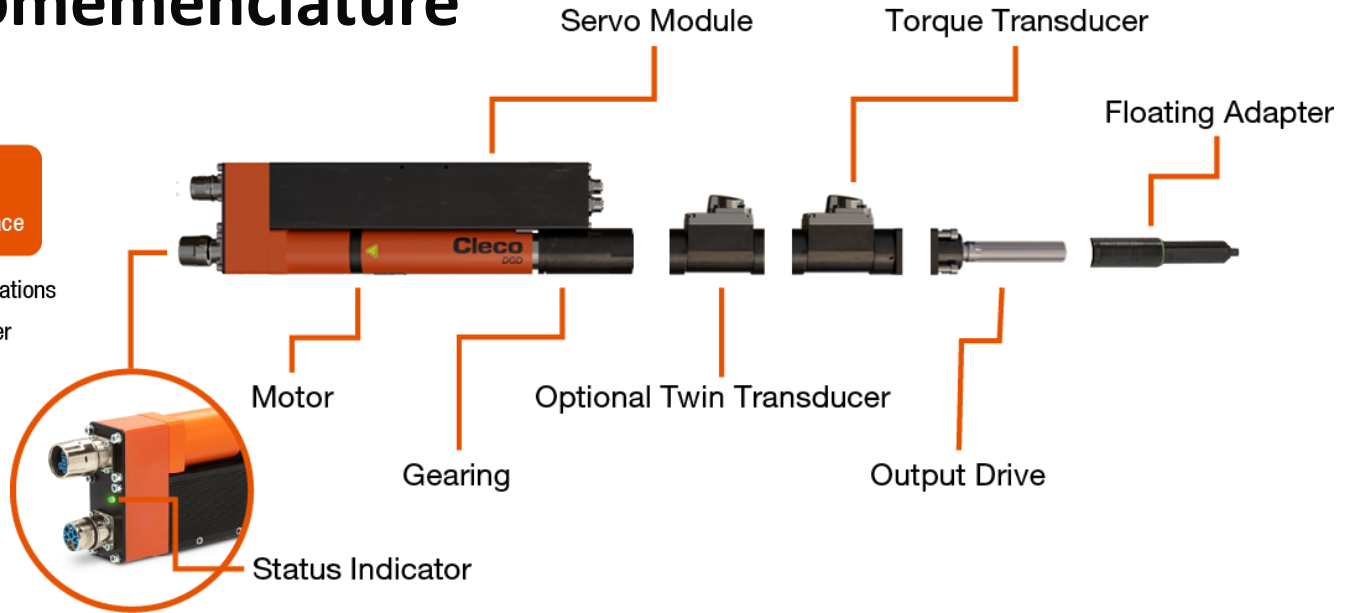


BTi Spindle Nomenclature



PATENTED

- Industry-first daisy chain system
- Industry-first compact on-board intelligence
- Wide variety of spindle sizes and configurations
- Twin digital torque transducer and encoder



Motor with servoamplifier & measurement card

B - Brushless Motor
I - intelliArmed
D - Digital
U - Reversible gear

Note: Floating spindle adapter must be ordered separately.

BTi Torque-Range and Speed

Size	Torque Range		Speed
	Min (Nm)	Max (Nm)	rpm
1	2	12	3317
1	3.5	35	1255
1	5.3	53	737
2	11	110	890
2	20	200	501
3	30	300	480
4	50	500	269
4	66	660	183
4	320	1250	91
4	400	1600	72
4	980	2800	38

Power Control Package with intelliArmed™

Controller **PDMi** (Power Distribution Module)

- TSNet system Bus
- 7" color display with touch function
- Rapid start-up <40 ms after reset of emergency stop
- IP 42
- TÜV certified STO (Safe torque off)
- AnyBus® fieldbus modules available
- PROFIsafe
- Energy Save



VAMi (Voltage Adjusting Module)

- Module converts the mains voltage (3-phase) to a supply voltage (3-phase) of 3× 270 VAC for the PDMi.
- Energy save function (stand by mode). Power loss is reduced by approximately 10 watts per fixtured spindle in standby mode.
- Main switch, circuit breaker and status light on front.
- IP54
- CE





Maximum number of fixtured spindles per system

The number can vary depending on the demands of the application.

System	Maximum number of fixtured spindles				Max. number of strands
	1BID(U)-(...)	2BID(U)-(...)	3BID(U)-(...)	4BID(U)-(...)	
1x VAMi(E) + 1x PDMi(...)	16	6	6	6	1
1x VAMi(E)-3S + 3x PDMi(...)	32	6	6	6	3

New BTi vs BTS

Improved Safety Efficiency, Integration and Lower Energy Consumption Specifics

	BTi	BTS
		
STO Reset Time	~0.2 sec	~ 2 sec
Safety Architecture	PL d Cat.3 Distributed (PDMi...n Spindles) integrated circuitry (less wires, less space, less component cost)	PL d Cat.3 Centralized discrete (wired) safety components
Integration in Higher Level System	Discrete 24 V STOA/STOB signals or via PROFIsafe Protocol	Discrete 24 V STOA/STOB signals
Energy Consumption	~ 2 W	~ 12 W

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Cleco Fixtured Spindle Solutions

Intelligent Spindle Gen II (Series: BTi)

Value enhancements to our existing system:

- Improved troubleshooting (EMS System)
- Quicker response time to cycle interruptions
- Mounting compatibility with legacy
- Increased data transfer speed
- Global standard product
- Expanded torque range
- Increased free speed
- Ease of integration
- Energy efficient



Conventional Spindle (Series: BD)

Value:

- Speed
- System simplicity
- Common gear sets
- Adapters
- Proven productivity



Intelligent Spindle (Series: BTS)

Value :

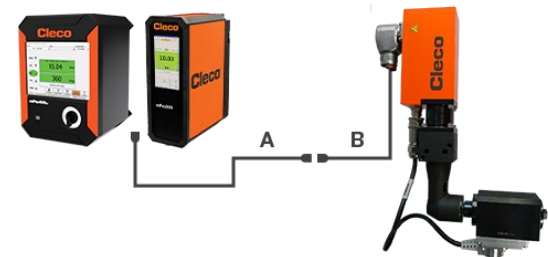
- Optimized cable management
- Single "Daisy chain" cable design
- Lower total cost of ownership
- Proven productivity



Conventional Mini Spindle (Series: Mini 5-35 nm torque)

Value:

- Light weight
- Fast
- Compact for tight areas
- Proven productivity

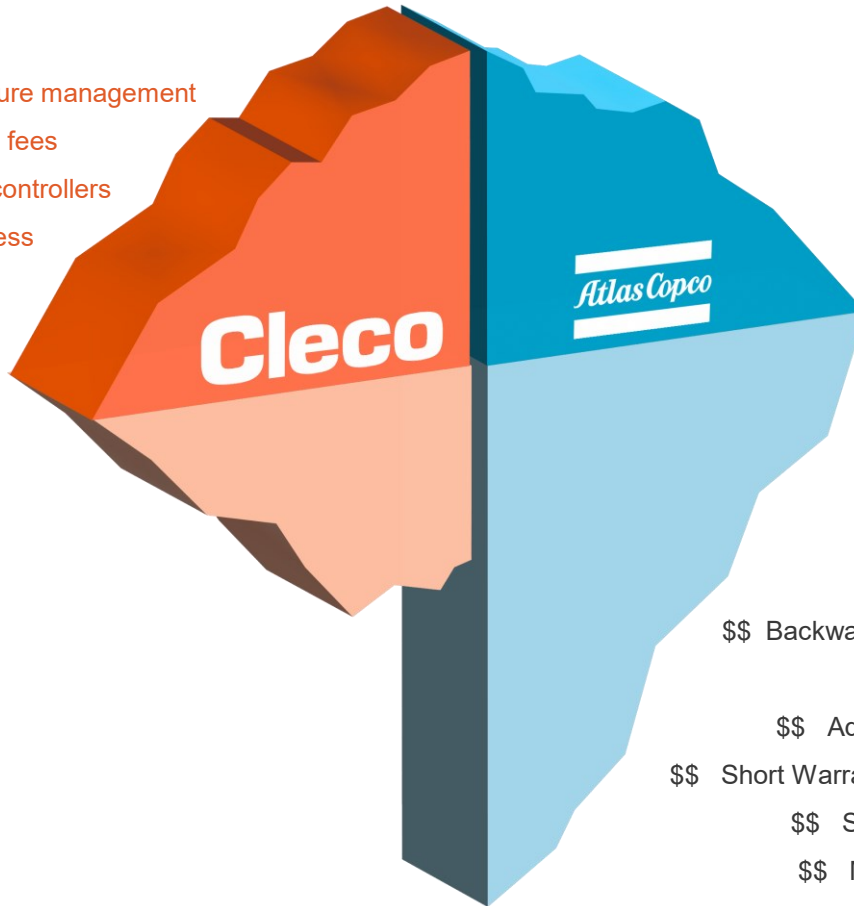


Highly Productive Engineered Assembly Solutions

Total Cost of Ownership Advantage

- ✓ Visual Operator Guidance (free with Cleco controller)
- ✓ No controller software update fees
- ✓ No controller/tool functionality credits needed for feature management
- ✓ No controller remote access software fees or upgrade fees
- ✓ No license fee for adding additional cordless tools to controllers
- ✓ No additional licenses for full fastening strategies access
- ✓ No extra licenses needed for fixture tools

INITIAL PURCHASE COST



- \$\$ Backwards Compatibility Fees
- \$\$ Licensing Fees
- \$\$ Added Connectivity Fees
- \$\$ Short Warranty & Paid Extensions
- \$\$ Software Upgrade Fees
- \$\$ Maintenance Contracts
- \$\$ Limited Scalability

ONGOING EXTRA COSTS

Proven BTi System Installations



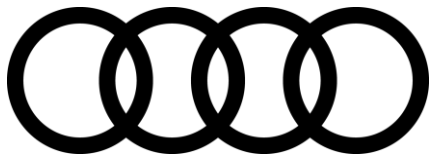
Germany & Mexico



Germany



Turkey



Germany



Czech Republic



Germany

Trusted by leading brands

A trusted leader in assembly tools serving the best manufacturers in the world.

We are focused on building long-term relationships by anticipating the needs of our customers and providing them with the tools they need to finish their jobs safely and efficiently.





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