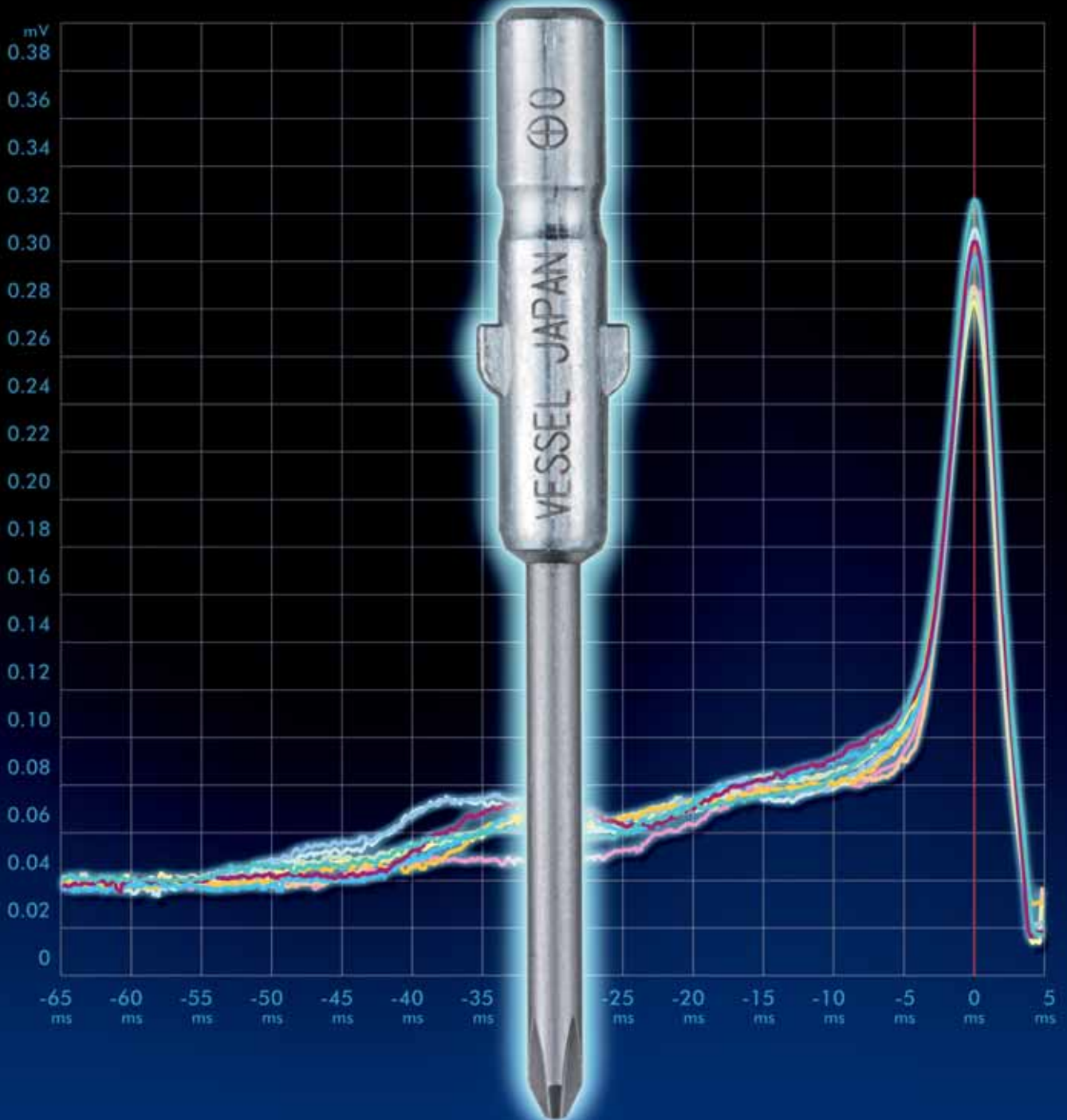


Shockless Bit

PAT.

VESSEL Shockless Bit



Our exclusive technology for bit production has enabled this unique and innovative bit with stable torque and increased durability.

Posed with the challenge “Can fastening precision be improved with the bit itself?”

VESSEL sought out a single answer.

We found the hint in torsion bits.

By providing the bit with a torsion zone, the impact applied in the instant that the screw is seated is absorbed, and chipping of the tool tip is suppressed.

We were also able to greatly reduce the rush acceleration at the time of seating by reducing the bit's weight.

A more stable torque accuracy can be attained with the “Impact & Moment of Inertia Absorption” effect applied on the bit. **VESSEL Shockless Bit.**



■ Features

Stable tightening torque

Durability improved

Eco-friendly

Shockless Bit

■ Structure

Zinc die cast

Acts as cushioning to absorb the impact when the screw is seated.

Combination of different materials

This is Vessel's original technology that brings out the bit's performance to the fullest.

Our "eco-friendly bit" reduces the discharge of cutting chips during manufacturing.

ECO Eco-friendly product

Special alloy steel Precision cutting and hardening

Vessel's original blend of steel exclusively for bits is processed and hardened to achieve a high hardness and wear resistance.
Core deviation accuracy:
Standard within 0.2 mm
(40 mm product)



Shockless effect for stable torque and increase durability

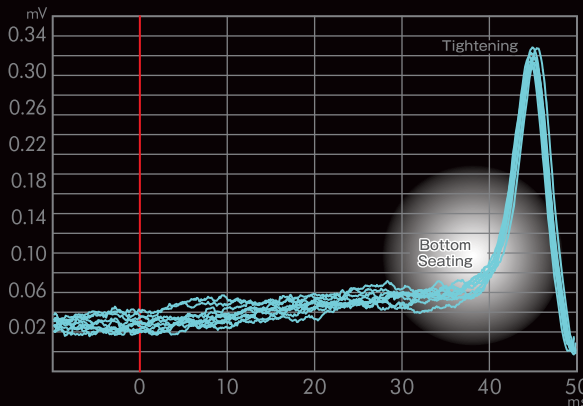
Stable tightening torque

The combination of alloy steel and zinc creates a shockless effect and stabilizes the tightening torque.

[Measurement of tightening waveform] The load during screw tightening is indicated as a waveform

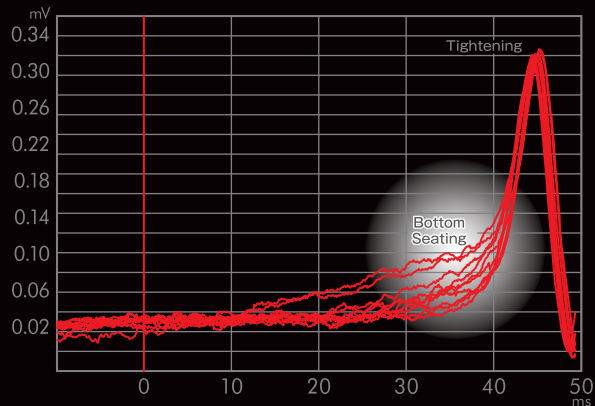
- Precision cross-head hole No. 0: Nickel small pan-head screw M2 × 2
- Test plate: SKD steel
- Electric screwdriver: HIOS CLF-4000
- Pre-Set torque : 0.2 N.m
- Rotation speed : 1000 rpm
- Oscilloscope : TDS4004B

Shockless Bit



The shockless bit fluctuates little during the seating timing or the start of tightening, and repeatedly attains a stable torque.

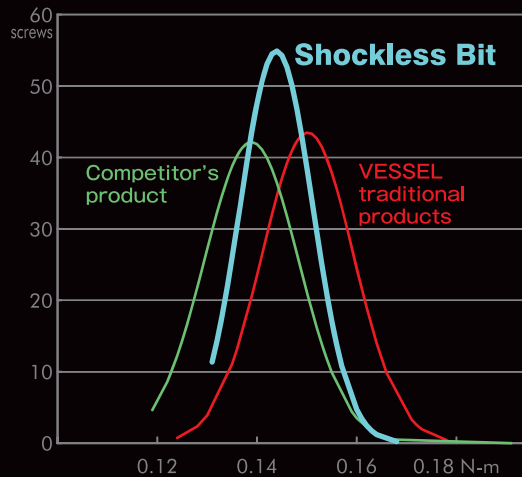
VESSEL traditional products



VESSEL traditional products are greatly affected by the moment of inertia during seating, causing a fluctuation from the bottom seating to the start of tightening.

[Return torque test] Measure the screw's return torque when tightening a screw with a screw tightening robot.

- Precision cross-head hole No. 0: Nickel small pan-head screw M1.7 × 4
- Driving tester: CAST-DH2
- Test plate: Steel plate SS400 t = 3.2 mm
- Electric screwdriver: HIOS CLF-4000
- Pre-Set torque : 0.2 N.m
- Rotation speed: 1000 rpm
- Torque Meter : HP10

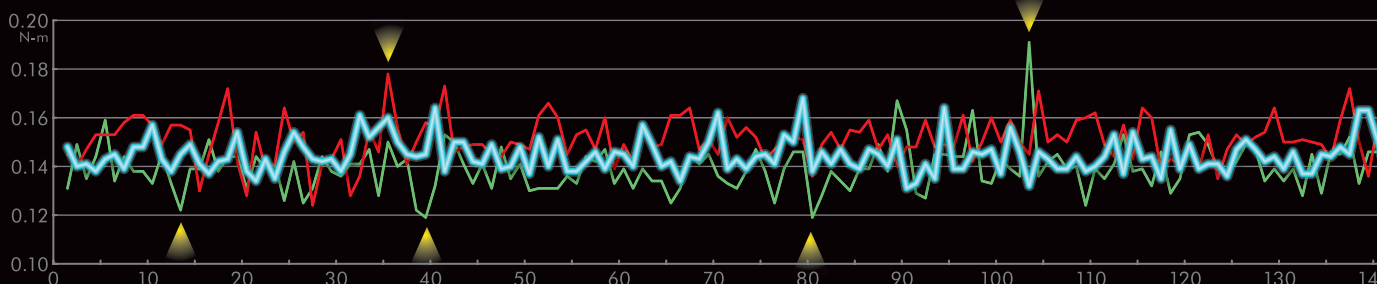


- According to the normal distribution table (right table):

The shockless bit's return torque varies little, and the tightening is extremely stable.

- According to the return torque measurement data (bottom table):

The values do not fluctuate greatly for the shockless bit.

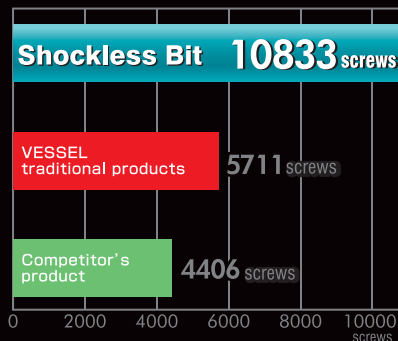


Break-resistant with improved durability

The shockless effect of the alloy steel and zinc combination greatly improves the durability of the tool tip.

[Driving durability test] Number of tools which do not break when continuously screwed in by a screw tightening robot.

- Precision cross-head hole No. 0: Small screw type, M1.7 × 4 hardened
- Driving tester: CAST-DH2
- Test plate: Steel plate SS400 t = 3.2 mm
- Electric screwdriver: HIOS CLF-4000
- Pre-Set torque : 0.2 N.m
- Rotation speed: 1000 rpm



● Cushioning effect of compound materials

The load applied on the tool tip is absorbed, and breakage is prevented. This material is not only hard, it is also elastic, so less damage to the screws and the workpieces is to be protected.

Discharge of cutting chips during manufacture reduced

The shank is formed with zinc die casting, so discharge of scraps from the shaft steel material is suppressed to a minimum.

Shockless bit
(total length 40 mm)

VESSEL traditional products
(total length 40 mm)



Scraps (Shaft section only) **0.03g**



Scraps (Entire bit) **1.63g**



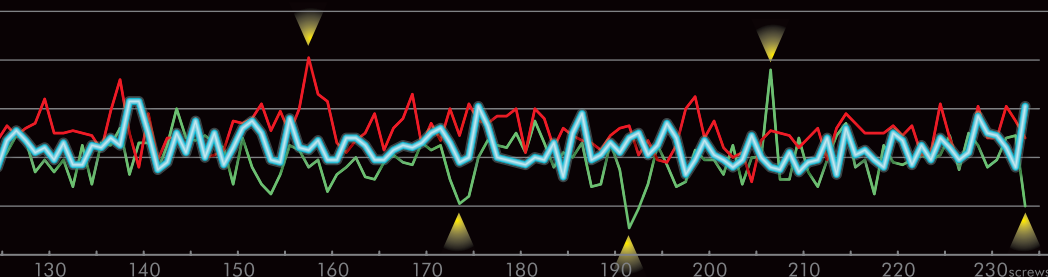
Before cutting: — 0.93g
After cutting: — 0.9g



Before cutting: — 3.92g
After cutting: — 2.29g



Zinc material used for the shockless bits can be recycled during manufacture.

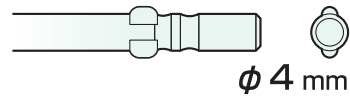


Comparison of precision	Shockless bit	VESSEL traditional products	Competitor's product
MIN _n (N·m)	0.131	0.124	0.111
MAX _n (N·m)	0.168	0.181	0.191
AVG _n (N·m)	0.144	0.151	0.139
Error	12.4%	18.7%	26.5%

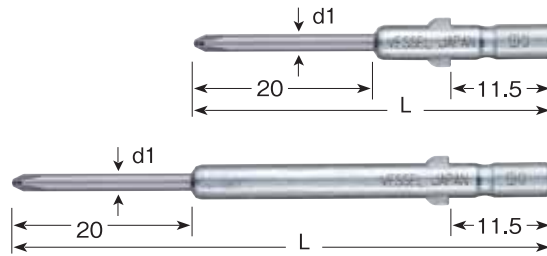
Number of tightened screws: 233 screws

Items

No. DS73

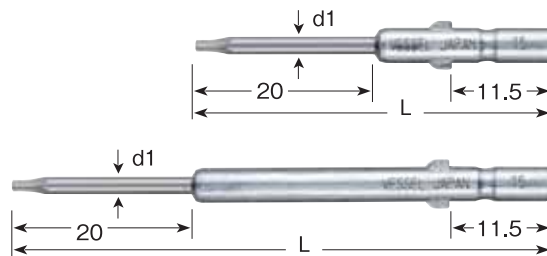


φ 4 mm



Size Tip×Overall Length L (mm)	d1 (mm)	Inner Ctn.	Outer Ctn.
⊕00 ×1.5×40	1.5	10	100
60	1.5	10	100
⊕0 ×1.5×40	1.5	10	100
60	1.5	10	100
⊕0 ×1.7×40	1.7	10	100
60	1.7	10	100
⊕0 ×2.0×40	2.0	10	100
60	2.0	10	100

No. DS73 TORX Bit



Size Tip×Overall Length L (mm)	mm	d1 (mm)	Inner Ctn.	Outer Ctn.
T5 ×2.0×40	1.37	2.0	10	100
60	1.37	2.0	10	100
T6 ×2.0×40	1.65	2.0	10	100
60	1.65	2.0	10	100

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