UniCase Master®
Precision Case Hardening for High-Volume Manufacturers
4D Quenching®

Designated for automotive, transmission and bearing industry

Case hardening by low pressure carburizing and high pressure gas quenching

High Production Efficiency
- Lean Manufacturing Compatible
- Throughput up to 1 million gears per year
- Footprint 5 M x 5 M (16.5 FT x 16.5 FT)

Outstanding Quality
- Ideal repeatability of case hardening results for every single piece
- 4D Quenching® for minimal distortion
- Single-piece monitoring and reporting

Benefits and Savings
- Minimize final machining costs
- Eliminate batch material handling logistics
- Eliminate fixturing costs and energy consumption
- Eliminate oils, chemicals and washer systems
- Eliminate fire and explosion hazards
- Flexible production, on demand start-up and shut down
- Fully automated, continuous operation
- Clean, environmentally friendly technology
- Apply cutting edge LPC and HPGQ technologies

www.secowarwick.com
Technical Data

**General:**
- Working zone (Ø x H): 200 x 50 mm / 8" x 2"
- Max load weight: 3.0 kg / 6.6 lbs
- Number of positions (per process chamber): 15 for gear dia. 200 mm / 8"; 30 for gear dia. 100 mm / 4"
- Tact time: 30 s

**Heating:**
- Operating temperature: 1100°C / 2012°F
- Temperature uniformity: ± 1°C / 2°F
- Heating power: 96 kW
- Heating zones: 9

**Quenching:**
- 4D Quenching* pressure: 20 bar Nitrogen
- Nitrogen recycling system: 360 m³/h / 212 cfm

**Vacuum:**
- Operational vacuum: 10 - 10⁻² mbar
- Leakage: 10⁻⁴ mbar/l/s
- Mechanical pump: 2 x 300 m³/h / 180 cfm
- Root pump: 2 x 1000 m³/h / 600 cfm

**Utility:**
- Electrical power: 150 kW
- Cooling water: 12 m³/h, 7 cfm, 2 bar
- Acetylene: 15 l/min / 4 gpm
- Nitrogen: 30 l/min / 8 gpm
- Footprint: 5 x 5 M / 16.5 x 16.5 FT
- High: 3 M / 10 FT

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**SECO/WARWIСK Group**

**POLAND**
SECO/WARWICK S.A.
Sobieskiego 8
66-200 Świebodzin, Poland
tel. +48 68 381 0 500
fax +48 68 382 5 555
info@secowarwick.com
www.secowarwick.com

**POLAND**
SECO/WARWICK Europe Sp. z o.o.
Świeczenia 76
66-200 Świebodzin, Poland
tel. +48 68 381 8 800
fax +48 68 381 8 805
Europe@secowarwick.com
www.secowarwick.com

**USA**
SECO/WARWICK Corp.
P.O. Box 908
Meadville, PA 16335-6908, USA
tel. +1 814 332 8400
fax +1 814 724 1407
info@secowarwick.com
www.secowarwick.com

**USA**
RETECH SYSTEMS LLC
100 Henry Station Rd.
Ukiah, CA 95482, USA
tel. +1 707 462 6522
fax +1 707 462 4103
sales@retechsystemsllc.com
www.retechsystemsllc.com

**GERMANY**
SECO/WARWICK Service GmbH
An der Molterei 15
D-47551 Bedburg-Hau, Germany
tel. +49 (0)2821 713 100
fax +49 (0)2821 713 10-29
service@secowarwick.com
www.secowarwick.com

**CHINA**
SECO/WARWICK RETECH
Thermal Equipment Manufacturing
(Tianjin) Co., Ltd.
78 Second Xeda Road
Tianjin, China 300385
tel. +86 22 238 28 300
fax +86 22 238 28 305
china@secowarwick.com
www.swretech.com.cn

**INDIA**
SECO/WARWICK Allied Pvt. Ltd.
5th Floor, Amitech II Park
Road No. II, Wagle Estate
Thane (W) - 400 604, India
tel. +91 22 6730 1400
fax +91 22 6730 1488
zwa-info@secowarwick.com
www.secowarwick.com

**BRAZIL**
SECO/WARWICK do Brasil Industria de Fornos Ltda.
Parque Industrial II
Jundiaí, SP - Brasil
CEP: 13213-170
tel. +55 (11) 3109-5900
fax +55 11 4525-1047
vendas@secowarwick.com
www.secowarwick.com

**RUSSIA**
SECO/WARWICK flus Office
Azovskyaya str. 6, bl. 3
117149, Moscow, Russia
tel. +7 499 786 9731
moscow@secowarwick.com
www.secowarwick.com

**BELARUS**
SECO/WARWICK OOO
Minsk Office
8 Mielskij str., office 26
220004 Minsk, Belarus
tel./fax +375 (17) 36 23 71
secomainfonet.by
www.secowarwick.com

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Case Carbon Profile

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[Image of case carbon profile]