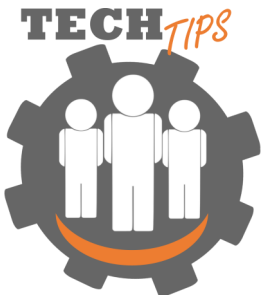




# CASTING CONNECTION



## Jewelry Injection Wax Troubleshooting



R&R recommends utilizing the following problems and remedies to guide you through any difficulties you may encounter with your jewelry injection waxes.

This information is intended to help you troubleshoot these problems.

**Problem: Parts Not Filled**

**Remedies:**

- Increase wax temperature
- Increase injection air pressure
- Increase sprue size
- Reduce clamping pressure
- Use a lower viscosity wax
- Clean injection nozzle
- Increase/clean mold vents
- Reduce amount of release spray/Talc

**Problem: Poor Wax Surface**

**Remedies:**

- Reduce amount of release spray/Talc

**Problem: Air Bubbles in Wax**

**Remedies:**

- Reduce wax temperature
- Increase wax temperature
- Reduce injection air pressure
- Ensure wax is properly conditioned
- Ensure wax pot is full
- Ensure no moisture in air lines
- Ensure clamp pressure is even

**Problem: Flashing-Overfilled Molds**

**Remedies:**

- Reduce wax temperature
- Reduce injection air pressure
- Ensure clamp pressure is even

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For a simple overview, refer to the Neycraft duplicating unit quick guide tech tip. For more detailed instructions, refer to the Neycraft duplicating unit instruction manual. Both are available for download at [www.ransom-randolph.com](http://www.ransom-randolph.com).

If you have any questions, contact the R&R technical department at 800-253-4502 or [technical@ransom-randolph.com](mailto:technical@ransom-randolph.com).

## Neycraft™ Duplicating Unit

The Neycraft duplicating unit is an innovative and user-friendly machine for conditioning hydrocolloid materials. It offers precise and reliable operation as well as an automated power saving on/off feature for an extended motor life. The Neycraft duplicating unit will run a complete cycle and return to holding temperature within 3 hours. It offers a programmable timer for delayed starts, and the ability to adjust features easily. The Neycraft duplicating unit comes preprogrammed, ready-to-use, and is available in two models (3 gallon and 5 gallon capacity).

Model	535570000	535571000
Voltage	110 V	220 V
Current	8.5 A	8.5 A
Power	920 W	1400 W
Frequency	50 Hz	
Weight	67 LBS	110 LBS
Size	22" L x 18" W x 22" H (55.9 cm L x 45.7 cm W x 55.9 cm H)	14" L x 16" W x 26" H (35.6 cm L x 40.6 cm W x 66 cm H)
Capacity	3 GAL	5 GAL



## Save the Date: 31<sup>st</sup> International Conference & Exhibition

*"Materials & Supplies – Challenges for the Investment Casting Industry"*

**What:** Lectures & Suppliers Exhibition

**When:** May 15-18, 2022

**Where:** Santander, Spain

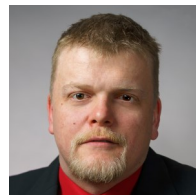
**Venue:** Palacio de Exposiciones y Congresos de Santander

For show information, visit: [eicf.org/events/santander-2022/welcome](http://eicf.org/events/santander-2022/welcome)

**Stop by to see the R&R team in booth 28!**



**Carel Wegman**  
Application Engineer



**Bastian Schulte**  
Application Engineer



**Stefan Frank**  
European Regional Sales Manager



**Mike Hendricks**  
Vice President of Technology



## Avoid Autoclave Cracking

Under certain operating conditions, autoclaves can often be the cause of shell cracking problems. R&R recommends adhering to the following autoclave operating procedures to prevent or minimize shell cracking in your foundry:

1. Preheat the autoclave by running it through a complete operating cycle before dewaxing any shells.
2. After the preheat cycle, check the time it takes for the autoclave to get up to dry steam pressure. It should typically take no more than 10 seconds to reach 80 psi (5.5 bars) from the time the valve is quickly opened.
3. It is recommended that the autoclave be operated to at least 100 psi. The temperature inside the autoclave will be about 340 °F (171 °C). Comparing the pressure and temperature readings will let you know that both are functioning properly.

Pressure (psi)	Temperature
60	308 °F (153 °C)
70	316 °F (158 °C)
80	324 °F (162 °C)
90	332 °F (167 °C)
100	340 °F (171 °C)
110	345 °F (174 °C)
120	350 °F (177 °C)

4. Release pressure gradually after the cycle has been completed. A minimum of 2 minutes should be taken to let pressure down to 20 psi. At 20 psi, the pressure can be released immediately.
5. Check for dry steam — the autoclave should only accumulate a certain

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## R&R Technical Support

Looking for more technical tips or just need general technical support?

Check out our tech tip page online at:

[www.ransom-randolph.com/technical-tips](http://www.ransom-randolph.com/technical-tips)

Or email our technical experts at:

[Technical@ransom-randolph.com](mailto:Technical@ransom-randolph.com)

## TECH TIPS



Should your issue persist, please contact our technical team at [Technical@ransom-randolph.com](mailto:Technical@ransom-randolph.com) for additional assistance.



**Cynthia Gonzalez**  
Customer Service Representative



**Darin Wise**  
Sales Manager - West Region

# Jewelry Injection Wax Troubleshooting

• continued from page 1 •

### Problem: Shrinkage

#### Remedies:

- Reduce wax temperature
- Reduce injection air pressure
- Increase sprue size
- Use a low shrink wax
- Increase dwell time

### Problem: Cavitation/Sink Areas

#### Remedies:

- Reduce wax temperature
- Increase injection air pressure
- Increase sprue size
- Use a low shrink wax

- Increase dwell time

### Problem: Brittle/Cracked Wax

#### Remedies:

- Use a more ductile/flexible wax

### Problem: Rough Wax Surface

#### Remedies:

- Reduce amount of release spray/Talc

### Problem: Wax Breaks While Removing from Mold

#### Remedies:

- Reduce wax temperature
- Increase dwell time

## Welcome, Cynthia Gonzalez!

R&R is pleased to welcome Cynthia Gonzalez to the R&R team as a Customer Service Representative.

Cynthia has extensive experience in customer service, exports, and telecommunications. She earned her Bachelor's and Master's degrees, both Cum Laude, from Universidad Francisco Marroquin in

Guatemala. A Spanish-speaking native, Cynthia resides in Panama City, Florida.

### Contact Cynthia

800-800-7496 ext. 55220  
[cgonzalez@ransom-randolph.com](mailto:cgonzalez@ransom-randolph.com)

*Please join us in welcoming Cynthia to the R&R team!*

## Congratulations, Darin Wise!

Darin Wise, R&R's Sales Manager - West Region, who joined R&R in August 2021 to focus on our dental product line, will now also be responsible for ceramic shell and solid mold product lines in the west coast region.

In this new role, Darin will be responsible for managing needs, conducting field evaluations, and troubleshooting problems. He will serve customers in the United States: AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY; Canada: AB, BC; and Mexico.

Darin joined the R&R team with 33 years of technical and sales experience in the dental industry. Throughout his career, Darin has held various positions including laboratory specialist, prosthetics representative, and sales and technical consultant.

Darin resides in Lake Elsinore, CA. He can be reached at: [dwise@ransom-randolph.com](mailto:dwise@ransom-randolph.com) or 951-481-2112.

*Please join us in congratulating Darin on his new role!*

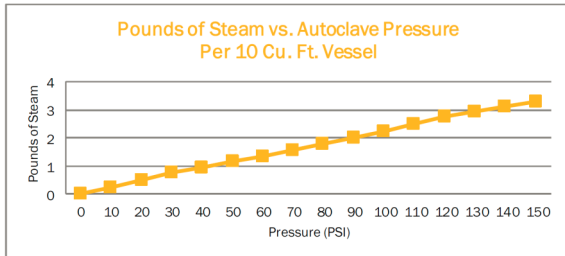


# Avoid Autoclave Cracking

• continued from page 3 •

amount of water during a complete cycle. If more water than allowed is being accumulated, the steam source (boiler or accumulator) is too close to the autoclave. This excess water will be deposited on the shells which will prevent the steam from reaching them properly and cause the wax to heat too slowly. The wax will then expand, causing a higher incidence of shell cracking. Refer to the Pounds of Steam vs. Autoclave Pressure graph and Standard Autoclave Sizes and Steam Capacities table below.

The Pounds of Steam vs. Autoclave Pressure graph below shows the expected amount of water to be accumulated in various sized autoclaves.



## Standard Autoclave Sizes and Steam Capacities

The Standard Autoclave Sizes and Steam Capacities table provides the necessary information and uses pressures of 100 and 120 psi as examples.

Diameter (in)	Length (in)	Straight Vessel Volume (FT <sup>3</sup> )	Volume of STD ASTM Domes	Total Volume (FT <sup>3</sup> )	Accum. Water (lbs at 100 PSI)	Accum. Water (lbs at 120 PSI)
24	36	9.4	2.0	11.4	2.6	3.1
30	36	14.7	4.0	18.7	4.2	5.1
36	36	21.7	7.0	28.4	6.4	7.7
36	48	31.4	7.0	38.4	8.7	10.4
42	48	38.5	11.5	50.0	11.3	13.6
48	48	50.3	16.5	66.8	15.1	18.1
48	60	62.8	16.5	79.3	17.9	21.5
48	66	69.1	16.5	85.6	19.4	23.2
48	72	75.4	16.5	91.9	20.8	24.9
54	72	95.4	24.0	119.4	27.0	32.4
60	60	98.2	32.0	130.2	29.5	35.3
60	72	117.8	32.0	149.8	33.9	40.6
72	72	169.6	56.0	225.6	51.0	61.1

Graph and table data: Shell Cracking, American Foundrymen's Society, 1987.



## Save the Date: LMT® LAB DAY® West



**What:** The Second Largest Dental Laboratory Event in America

**When:** May 20-21, 2022

**Where:** Garden Grove, CA

**Venue:** Hyatt Regency Orange County

For show information, visit: [lmtmag.com/lmtlabdaywest](http://lmtmag.com/lmtlabdaywest)

Stop by to see the R&R team!



**Steve Jonas**  
Director, R&R  
Dental Lab



**Darin Wise**  
Sales Manager -  
West Region

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[shop.ransom-randolph.com](http://shop.ransom-randolph.com)

Social:



## Ransom & Randolph



At R&R, *Investing with Innovation™* is more than just a slogan, it's a way of life. Dedicated to advancing the investment casting industry, we take pride in providing foundries with extensive process knowledge, exceptional technical expertise and innovative product technology. By coupling our revolutionary product developments with our experienced staff, manufacturing and warehousing facilities, we successfully help you become a casting industry leader.

R&R's core businesses are comprised of ceramic shell, industrial mold, jewelry and dental investment casting.

R&R takes great pride in providing customers with a pleasant procurement experience. R&R's Maumee, Ohio based customer service team services North America and US export customers. Our UK-based agent, HTM Tradeco, Ltd., provides service for the European Union. From initial order placement through delivery, R&R's customer service team takes responsibility for accurate and efficient processing of your material needs. As a result, R&R's customer service team is unmatched in the industry.

*Investing with Innovation™*