Automated Multi-die Workflow

v. 2.0 / November 2016

3Series / 7Series

The multi-die scan station responds to the need of high volume lab owners who require massive throughput from their scanner. It allows scanning a full plate of dies (up to 30 with 7Series), the automatic detection of their emergence and the automatic computation of a framework restoration, all from a single click.

Order Creation: There are two (2) supported workflows. One where we create one order per patient and define the restorations for each patient (just like orders that go through the arch scan station). Or the other, where we create a batch order without defining each case - details below.

Multi-die Scan: The particularity of this scan station is that it includes basic design tools that allow to design a framework restoration (coping) without going through the CAD station. They can be sent to production right from there.
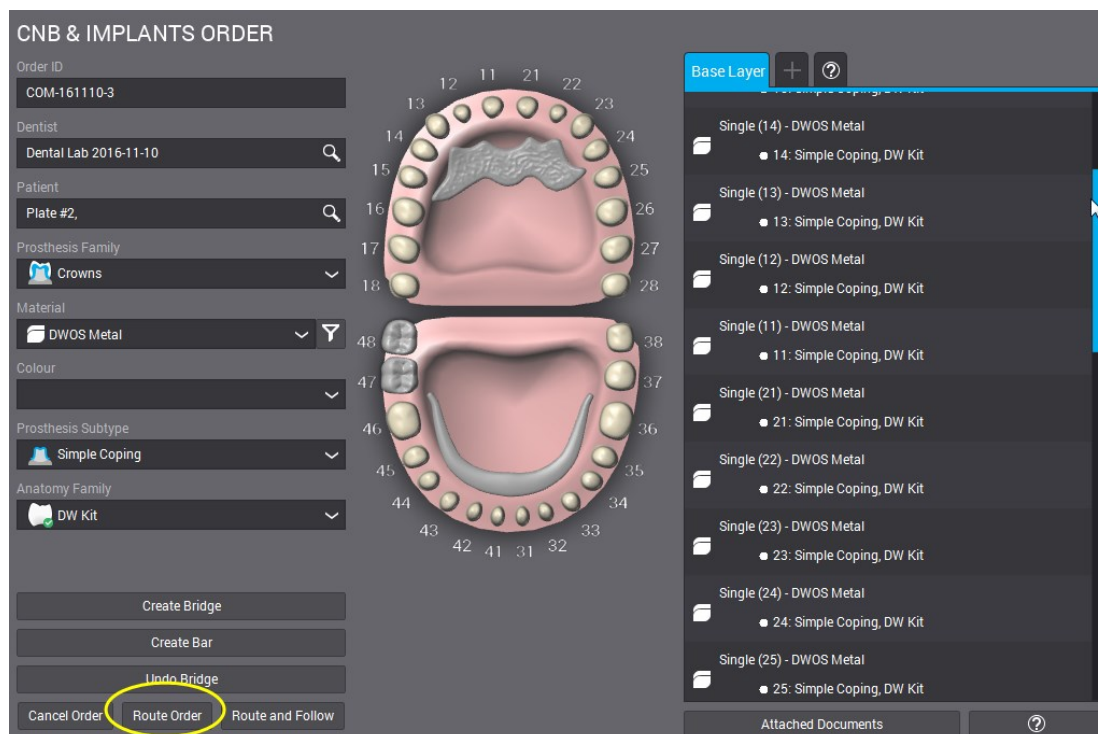
Order Creation

Unlike regular cases that are scanned with adjacents and antagonist, creating an order for every patient is not necessary when using the automated multi-die mode. We would rather create one order for the entire plate. This is the method described below:

1. Open *Order Creation* station and Select **DWOS CNB** Order type.
2. Use the **Dentist** and **Patient** fields to create an ID for the plate. For example, type in the date in the Dentist field and the order rank (first, second, etc) in the Patient field. You could also create one plate per customer, which would be identified in the dentist field.
3. **Prosthesis Family** > Select *Crowns*.
4. **Material** > Select material that will be use for manufacturing the copings.
5. **Prosthesis Subtype** > Select *Simple Coping*.
   Other types of framework restorations, such as clinical or telescopic coping or reduced crown, can be selected. However, they have to be used carefully because the anatomies can not be adjusted to contacts in the multi-die station. They can be used as global reference, but never can they be taken as a final proposition.
6. The *Anatomy Family* that is selected has no impact on simple copings.
7. Click on the arch illustration to assign the tooth. You don't have to be careful of the tooth numbers you are selecting, just the total amount of dies that you will be placing on the multi-die plate is important. If you are filling a 30-slot plate, then click on 30 teeth, whichever tooth number they are.
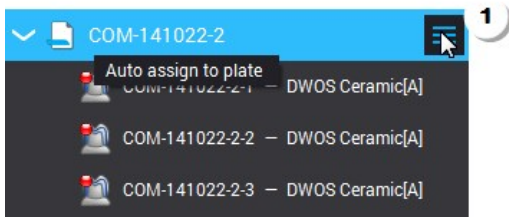8. Click *Route Order*.

Scan & Design

This station combines scan functions with basic design tools so that simple copings can be sent to production right from the Multi-die Scan station, without the need to open the case in the CAD station.

Assign dies to plate

The first step is to place the dies you want to scan on the illustration of the multi-die plate. There are 2 methods to do so.
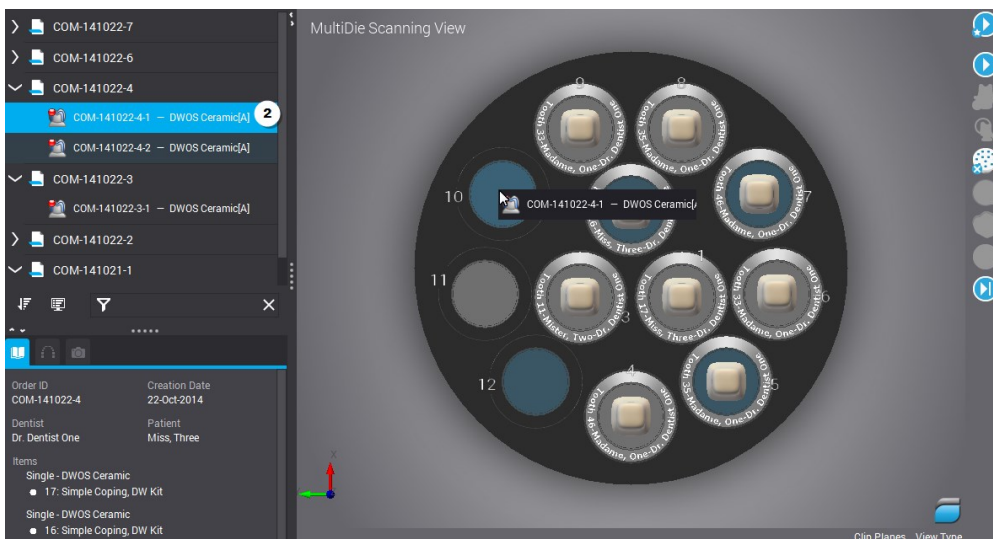
Auto assign

Auto-assign all dies of an order

1. Click on the Option icon, next to an order name ①

2. Select *Auto assign to plate*.

3. All dies of that order will be assigned to a slot in the multi-die plate, starting from number 1.
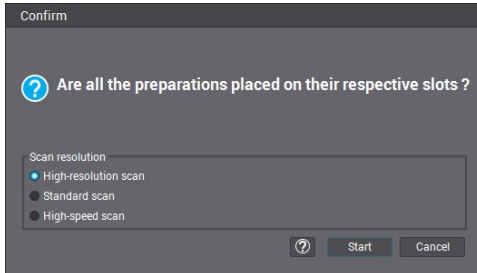
Assign manually

You could also assign manually by drag and dropping the dies onto the plate over a slot number. Fill in all emplacements using the dies from the same or different orders.

You can combine both methods to fill the plate.

Confirm

Once the scan is launched, You will be prompted to verify the proper placement of the dies on the plate.

Whether you assign dies manually or automatically, you need to ensure that the actual dies are placed according to what the screen is showing. Moreover, the dies must be placed with their **buccal side facing the arrow(s) drawn on the top surface of the plate**.

After visual verification of the warning, click *Start*.

Start scanning and auto-computation

Once you activate the full automatic multi-die mode, the scanner will:

- scan the assigned dies,
- detect the margin on the preparations,
- compute the prosthesis type that was defined in Order Creation.

You can leave the scanner unattended until all 3 steps (scan, margin, coping) are completed for all dies on the plate: This works for any scanner and any multi-die plate size.

> To avoid inferior quality scans, Dental Wings recommends operating scanners with the door closed.

When the scan is done, you have the option of editing the margins and customizing the copings before routing it forward.

Automatic Dental Band (optional)

At this point you can use the Automatic Dental Band feature. Click the dental band icon from the toolbar on the left and a dental band is computed on all copings of the multi-die plate.

To edit the automatic dental band:

1. Right-click on the coping and select *Edit CAD design*.
2. Right-click again and select *Dental Band*.
3. Change the parameters.

Review

Review Scans

This function is an interface that lets you examine the scan results. It provides a full screen view of a preparation so that you can decide if the quality is adequate or if you need to rescan (maybe at a higher resolution). You can zoom and rotate the view. Use the *Back / Forward* arrows at the bottom to switch to another preparation scan.

If you decide that the die must be rescanned because important areas are missing, right click on the die and select *Rescan on Multi-die plate*

Review and Edit Margin

The automatic margin detection is based on an algorithm that follows the highest ridge all around. Depending on the quality of the preparation's ridge, the precision of the automatically detected margin could vary. This is why we recommend that you at least have a close look at the margin. If it is necessary you can modify the automatic proposition.

This step can be done even if the scanner is still scanning other dies.

1. Right-click on a preparation when it is done scanning and auto-computing.
2. Select *Edit current margin design*.
3. Select the second icon from the vertical menu bar: *Edit current margin design*.
4. In the editing mode, you can move the dots, click on a dot to delete it and click on the green line to add one .
5. Validate when you are done.

Along with the margin, you can edit other design parameters from that same view:

- Insertion axis
- Coping parameters
- Prosthesis type
- Collar line

Review and Edit Coping

1. Right-click on the coping that was computed over the die.
2. Select *Edit CAD design*.
3. Right-click on the coping and select *Unmerge model*.

This step is performed in a CAD Design view that opens within the scan station with a prosthesis proposition.

The available design options in the Multi-Die Scan station are a selection of design tools that apply to a single-unit framework restoration:

- Transforms
- Add / Remove Material
- Advanced Dental band

- Add Prehension items
- Add Retention beads
- Add Attachments

When your design is completed, you need to go back to the scan view to route the order.

1. Right-click and select *Merge Model*.
2. Exit the CAD view with the *Exit* button at the top ✓ .

Or click twice on *Exit*.

Route

When all preparations of an order are scanned and their copings designed, that order will be routed out of the Scan station. The others will remain for completion.

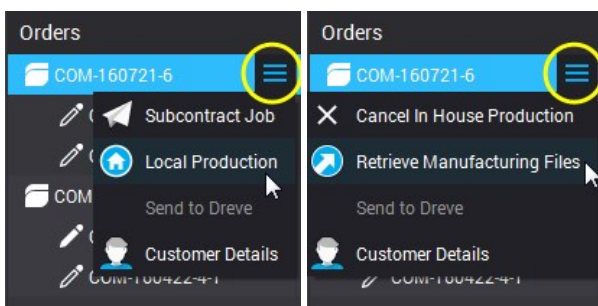Multi-Die Scan station > Right menu bar > *Route to the next operation the orders that are completed*.

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The orders that are scanned in the Multi-Die Scan station will go directly into production status.

Send to Production

1. Open the Production Management station.
2. Click the option icon next to the order and selet *Local Production* .
3. Click the option icon again and select *Retrieve Manufacturing Files*.

Or subcontract via *DWOS Connect*.