TB0434 Setting Up Deep Y notches on ZX5

The saw "Y drive" on a ZX5 is limited in its depth range to +/- 20mm from the centreline of the profile, and 20mm from the backfence. This is fine for most normal Y notching, but there are combinations when a particularly deep Y notch is required. This process is also useful on an Autoflow where the SY axis distance is limited by the backfence / top clamp interference

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Similar problem is apparent on Autoflows see Minimum Residual on Autoflow Machines

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Title:	Setting Up "Deep" Y notches on ZX5

Problem

The saw "Y drive" on a ZX5 is limited in its depth range to +/- 20mm from the centreline of the profile, and 20mm from the backfence. This is fine for most normal Y notching, but there are combinations when a particularly deep Y notch is required.
For example: Reversible windows - have a wide transom (84mm) and narrow outer frame (60mm)
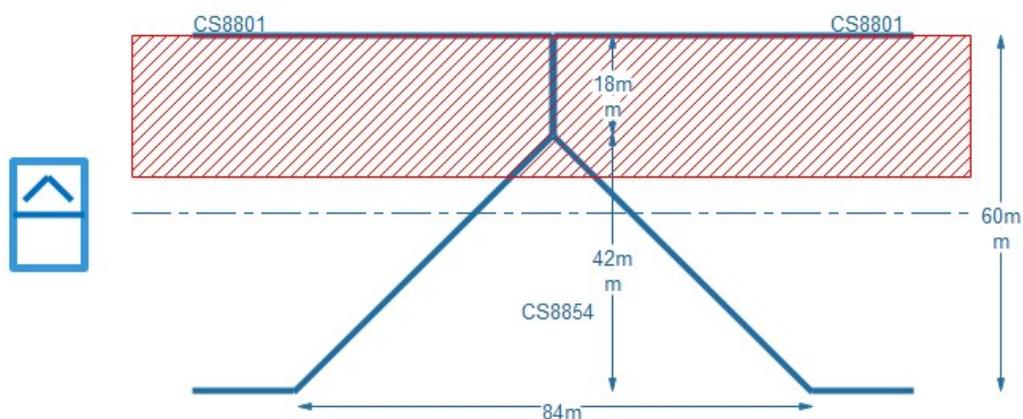
This gives a Y notch depth of 42mm in a 60mm wide profile, leaving 18mm "residual" square cut on the end. This is outside the minimum threshold of 20mm from the backfence and the saw centraliser would bottom out.

> ℹ️ ...On an Autoflow Mk4, the minimum residual should be set to 26mm

Solution

To solve this problem, the machine has an automatic feature to allow the use of a SQCUT to create the Y notch – this operation uses the 10mm datum tool to make a square slot on the machining centre side, and then the saw side cuts a mitre to finish it off.

The software has to increase the length of the part to allow for this, using the following calculations:

These calculations are done automatically from the dimensions of profile width and Y notch depth. The Y notch depth is taken from the tool code (YFL475 will give a 47.5mm depth), plus the globalYDepthAdjustment parameter.

w = width of profile
d = depth of Y notch
r = residual = $w-d$
o = cutter offset = r - cutter radius
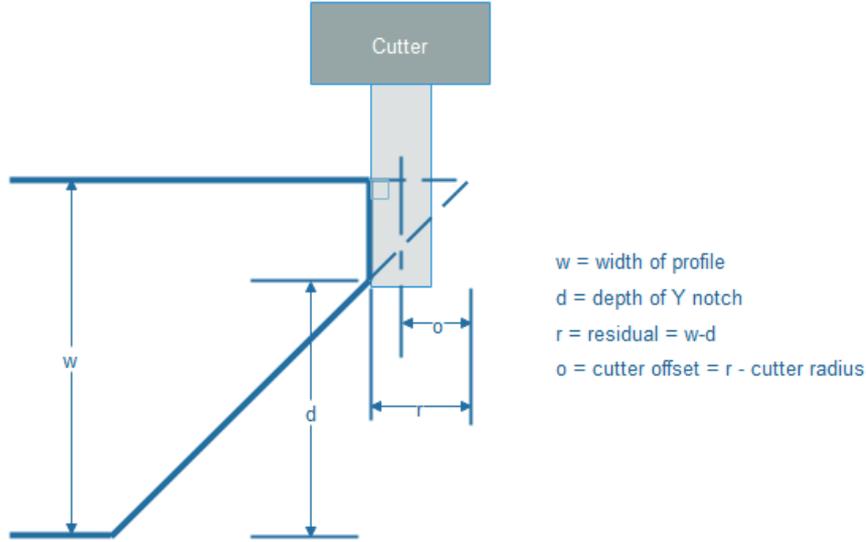
Application

To enable this feature carry out these steps:

Step	Instruction
1	Ensure Front End version 6.3.4.0 or later is installed
2	Set the minYNotchResidual parameter correctly ZX5 - 21mm Autoflow Mk4 -26mm
3	Identify the profiles and tool codes that will give you a residual of < minYNotchResidual
4	Create a new specific operation entry for these Y notch depths on the profiles affected. Use the SQCUT operation that uses the datum spindle [SQC2DS] for these instead of the normal YFL / YFR std op code. Ensure the offset (if it is a variable) is set to zero – the offset will be calculated and added automatically. Set the start height and speeds as per other SQCUT operations for the profile

Max Centreline Offset on Wider Profiles

The issue also applies to the maximum range that the SY axis can travel from its centreline (+/-20mm)
The following examples show how the profile width can affect what sizes of Y notches are possible

30mm Deep Y notch in the "Red" zone beyond +/-20mm from centreline		Not Possible

40mm Deep Y notch in the "Green" zone within +/-20mm from centreline		Possible
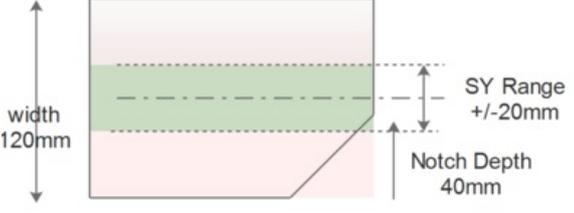
Error Messages and Parameters Used

There are 2 distinct errors on batch loading to filter our impossible Y notches

Parameter	Autoflow Mk1-3	Autoflow Mk4	ZX5 / Flowline Default	Error Message Displayed
minYNotchResidual	26mm	26mm	20mm	This leaves a residual of... which is less than minimum [minYNotchResidual]. This operation will be skipped
maxOffsetFromCentreline	55	55	20mm	This exceeds the maximum centreline offset of ... which is greater than maximum [maxOffsetFromCentreline]. This operation will be skipped