



# Making the cut

Cutting extruded pipe or profile to length is just one of the downstream processes that must be done properly. Of course, some pipe is provided on huge rolls, meaning that you only need one cut. But most other products – whether it is medical tubing or window profiles – must be cut properly and accurately.

UK-based Gillard has been providing extrusion cutting equipment for more than 40 years. It has developed this straightforward troubleshooting guide to common cutting problems.

## **Cut-length accuracy**

If cut-length accuracy is poor, there are a number of potential reasons for this – with a different solution in each case.

### ***Extrudate is slipping in caterpillar belts***

The extrudate must be firmly clamped between upper and lower caterpillar belts. When setting up the machine, check that it is not possible to pull the extrudate out from between them. If it is, increase nip

If your extruded products are being cut to different lengths – or not at all – these simple troubleshooting tips from cutting specialist **Gillard** can get you back on track

pressure. Also, check that the extrudate is not wet or slippery. Finally, ensure that caterpillar belts are in good condition. Worn belts should be replaced.

### ***Extrudate is being stretched***

The extrudate must be under constant tension as it enters the caterpillar belts. This is especially critical for stretchable materials such as foam rubber, silicone and very small diameter flexible plastics. Ideally, the tension on the material should be as low as possible. ►

**Blades must be sharp, and lubricated, for optimum cut quality**



**Gillard has been supplying cutting machines for more than 40 years**

***Caterpillar belt speed is varying***

The in-feed belt must be set at a constant line speed to achieve best results. Do not adjust the caterpillar speed unnecessarily. Leave it set to a constant speed. Similarly, do not adjust the nip pressure during a run. Any changes in in-feeder speed or nip pressure will immediately influence cut length accuracy.

***Cutter guide bush set-up is incorrect***

The guide bush bore should be a reasonably tight fit to the product diameter. If too tight, it may cause a product hold-up as the extrudate is pushed through by the in-feeder. If too loose, it may allow the product to move from side to side. For very flexible extrudates, the distance between the end of the caterpillar belt lean-in is kept to a minimum. It is also important that the knife blade brushes the bush face during cutting.

***Material is not exiting the guide bush***

Any material hold-up in the exit bush may cause compression of the on-coming extrudate end. This will affect the accuracy of the oncoming length. Making sure cut lengths are free to exit the bush. Do this by reducing the length of the exit bush, putting an internal cone into the bush or using air to blow the cut pieces out of the bush.

**Cut quality**

Another common problem, says Gillard, is unacceptable cut quality. Cuts should be clean and smooth: tears and ragged edges are to be avoided. Again, there are a number of underlying causes and solutions.

***Blade gap is too large***

It is critical that the knife blade actually brushes each cutter guide bush during the cut. Bushes should be as tight as possible to the blade, though still able to pass through the gap when the blade head is turned by hand.

***Bush edge is not sharp***

The bush faces, which are in contact with the blade, should be straight and clean. The 90° angle between the bush face and the product bore should be as sharp – under no circumstances should there be a bevel or radius on this edge. Check for wear periodically.

***Blade not sharp***

Check the cutting edge. Check the double bevel is even. Replace the blade if appropriate.

***Blade sticking***

For many products, particularly rubbers and flexible PVC, lubricating the blade greatly assists the cutting action and eases the passage of the blade through the material. Fill the integral blade lubrication system with a lubricant, such as water with a dash of washing-up liquid.

**Jams and snags**

Sometimes, the machine does not get as far as cutting – preferring instead to have jams and snags. There are many potential reasons for this.

***Inlet bush too short***

For very flexible extrudates, ensure that the distance between the end of the caterpillar belt nip and the bush lead-in is kept to a minimum. It may be necessary to turn the end of the inlet bush into a cone, so that it can fit between the caterpillar rollers. In extreme cases, use a small tube to fit right into the nip point and guide the material into the inlet bush.

***Inlet bush too long***

When cutting short lengths or very flexible materials, make sure that the exit bush is not over long. If it is, material will have to be pushed an excessive distance through the bush, causing drag and product hold-up.

***Bush bore is not smooth***

Make sure that the internal bush bore is smooth, and free from machining rings and other potential drag points. If possible, polish the bore or use a very low friction material like Teflon as an insert in the bush. Alternatively, use low pressure air, blown down the bush to create an air cushion around the extrudate.

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