MODEL: J2600/J3600
AUTOMATIC SINGLE KNIFE SLITTER

TROUBLESHOOTING HANDBOOK
SLITTING PROBLEMS

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IMPORTANT NOTE

SINGLE KNIFE SLITTING

The principle on which this type of slitting is based, depends on the knife being able to displace the roll width being slit.

Materials which are too dense or have been wound too tightly may be unsuitable to slit by this method.

In this case either the roll must be rewound to a lesser tension or the material cut on a machine known as a slit/rewinder.

Failure to pay attention to knife angle setting will result in the knife chipping or in an extreme case shatter.

An Operation & Maintenance Manual was supplied with machine, additional copies are available, at a small cost, to assist with training of new operators.

Javelín Machinery (Australia)
OPERATOR SAFETY

PLEASE NOTE FOLLOWING BEFORE COMMENCING OPERATION:

Safety should be a constant concern of everyone around any type of machinery. While more than normal precautions were taken in the manufacture of this machine, everyone connected with its operation should be made fully aware of the High Voltages, High Speed Motion and Sharp, Rotating Automatically Actuated Cutting Tools involved.

To prevent injury, the suggestions below should be followed:

1. **KEEP CLEAR** of cutting blade, rotating mandrel, chuck and material when the machine is in motion.
2. **ENSURE** all **GUARDS** in position & safety systems operational before starting the machine.
3. **DO NOT** place your hands between the knife and rolls when loading or unloading. **ENSURE** knife is in its furthest back position.
4. **KEEP** the area around the machine **CLEAN** and **DRY** proof surface or mats. Only the operator to work within area designated by hazard tape.
5. **ENSURE** main isolator is switched **OFF** before any maintenance is carried out.
6. **USE** suitable **PROTECTIVE GLOVES** when handling blades.
7. Ensure **KNIFE IS REMOVED OR KNIFE EDGE COVERED** with the flexible plastic cover provided when servicing or cleaning and when machine not in use.
8. Request **ASSISTANCE** when **CHANGING** knives or **LOADING** heavy material onto the mandrel.
9. Ensure operators & maintenance personnel have study and understood the Manual before operating or carrying out maintenance on this machine.

Ensure only qualified electricians work on the electrical components of the machine. Operators must not open the electrical cabinet, motor drive cabinet or operator panel. In the case of an electrical malfunction qualified electrical personnel/contractor should be called.
PRINCIPLES OF SINGLE KNIFE SLITTING

Slitting by the single knife method is basically the ability of a circular knife to displace the slit roll as it enters the log.

Single knife slitting is not a precise science. Slitting results are affected by a number of factors including:

- the type of backing (i.e. Polyester/Cloth/Foam)
- evenness of adhesive coating,
- tension under which the log has been wound to
- knife diameter
- knife sharpness or dullness
- air or room temperature

While Javelin can recommend settings for different products and widths, the operator must be aware of the factors mentioned and make adjustments accordingly.

- ALWAYS USE HIGH CHROME HIGH CARBON STEEL KNIVES. CHROME CONTENT RETAINS THE KNIFE EDGE (DURABILITY) WHILE THE CARBON IS FOR HARDNESS.
- ENSURE KNIVES RUN TRUE – CHECK WITH A DIAL INDICATOR.
- THE RULE IS TO USE THE SMALLEST DIAMETER KNIFE TO MINIMIZE RUNOUT AND GET BEST RESULTS
- A KNIFE WITH EQUAL BEVEL ON BOTH SIDES MUST ALWAYS BE USED ON THIS MACHINE.

CAUTION
~ always use cut resistant gloves when handling knives ~

ONLY PERSONNEL CERTIFIED TO SHARPEN AND BEVEL KNIVES SHOULD OPERATE KNIFE GRINDING FUNCTION
**TROUBLE SHOOTING**

**IMPORTANT NOTE:** Condition of the log roll will affect quality of slit rolls.  
Read the page headed “Principles of Single Knife Slitting”.

## SLITTING PROBLEMS – All Tapes

<table>
<thead>
<tr>
<th>PROBLEM/EFFECT</th>
<th>CAUSE</th>
<th>REMEDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Tape tears as it is unwound. This is sometimes referred to as double cutting as the knife makes two very small cuts on entry into the tape</td>
<td>• Knife diameter unsuitable</td>
<td>• Always use your smallest diameter knife to minimize runout</td>
</tr>
<tr>
<td></td>
<td>• Knife running out of tolerance</td>
<td>• Check backing plates and knife surface are clean and re-sharpen knife and ensure it is running true.</td>
</tr>
<tr>
<td></td>
<td>• Worn sleeves or poor fit between sleeve and core</td>
<td>• Replace mandrel sleeves</td>
</tr>
<tr>
<td></td>
<td>• Speed of knife entry unsuitable</td>
<td>• Slow down knife entry speed</td>
</tr>
<tr>
<td>Slit roll “telescopes” after slitting</td>
<td>• Log roll wound too tight</td>
<td>• Rewind log roll to more even tension</td>
</tr>
<tr>
<td>‘Inside of cardboard core disintegrates’ core collapses making tape difficult to remove off Mandrel.</td>
<td>• Lubrication problem</td>
<td>• Excessive spray on cardboard cores when slitting narrow widths. Restrict spray or use plastic cores (especially on narrow widths)</td>
</tr>
<tr>
<td></td>
<td>• Knife edge dull</td>
<td>• Sharpen knife</td>
</tr>
<tr>
<td></td>
<td>• Worn mandrel sleeve</td>
<td>• Replace mandrel sleeve</td>
</tr>
<tr>
<td>Adhesive smearing on sides of rolls.</td>
<td>• Knife edge unsuitable.</td>
<td>• Depends on product being slit. Knife edges that are very sharp can sometimes cause this problem – use knife with rounded edge.</td>
</tr>
<tr>
<td></td>
<td>• Knife lubrication problem.</td>
<td>• Insufficient spray – must be centralized down both sides of knife.</td>
</tr>
<tr>
<td></td>
<td>• Knife or chuck RPM unsuitable</td>
<td>• Reduce knife or mandrel RPM.</td>
</tr>
<tr>
<td></td>
<td>• Knife angle incorrect</td>
<td></td>
</tr>
</tbody>
</table>
IMPORTANT NOTE: Condition of the log roll will affect quality of slit rolls. Read the page headed “Principles of Single Knife Slitting”.

SLITTING PROBLEMS - copper aluminium foils

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<tr>
<td>Self wound foil tapes, copper, aluminium, lead, tear when being unwound after slitting</td>
<td>Knife rolls edge over, causing tape to tear when unwound</td>
<td>Foils must be interlined to be slit on a Single Knife Slitter.</td>
</tr>
</tbody>
</table>

SLITTING PROBLEMS - single sided closed cell foam sealant tapes

<table>
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<th>PROBLEM/EFFECT</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Foam tape with paper interliner leaves paper on adhesive side after slitting.</td>
<td>Knife edge dull, Knife rpm, mandrel rpm incorrect for product</td>
<td>Knife edge must be kept sharp</td>
</tr>
<tr>
<td>Paper Interliner breaks when slit roll is unwound.</td>
<td>Too much lubricant spray that is absorbed by paper interliner.</td>
<td>Cut back on spray.</td>
</tr>
<tr>
<td>Poor quality cut and appearance.</td>
<td>Knife RPM is too low or too high. Sprays not directed towards edge of knife Leading edge of material facing wrong way. Chuck/knife running in wrong direction.</td>
<td>Experiment with either lower or higher knife speeds. Centralize spray so it is directed down both sides of the knife. Flap or leading edge of foam must face away from the operator. Contact point of tape &amp; knife should be in same direction.</td>
</tr>
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SLITTING PROBLEMS – soft “open cell” foam

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<th>REMEDIES</th>
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</thead>
<tbody>
<tr>
<td>Ragged edge on slit rolls</td>
<td>Knife edge breaks down or becomes dull. Sprays not directed towards edge of knife</td>
<td>Always use High Chrome knives which retain sharp edge longer and for soft open cell foams run chuck in reverse if necessary. Centralize spray so it is directed down both sides of the knife. Generally use higher knife RPM and lower chuck/mandrel RPM for soft open cell foam.</td>
</tr>
</tbody>
</table>
**IMPORTANT NOTE:** Condition of the log roll will affect quality of slit rolls. Read the page headed “Principles of Single Knife Slitting”.

## SLITTING PROBLEMS - double sided foam mounting tapes

<table>
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| Sticky edges and generally poor quality appearance | Knife angle unsuitable | Drive the knife keeping the RPM low and also a lower Chuck/mandrel speed (eg 180rpm). When driving the knife ensure that the chuck & knife are in the same direction. Do not allow the knife to overheat. An indication of too much heat is the slit roll will have sticky sides. In this case lower knife RPM or switch off the knife drive and allow the knife to rotate freely.  

**CAUTION:** With large diameter knives (400mm [16"] and above) it is recommended you do not set Knife RPM below 80 to avoid overloading knife drive |  |
| | Lubricant Sprays not centralized. |  |
| | Leading edge of material facing wrong way. |  |
| | Chuck/knife running in opposite directions. |  |
| Slit rolls have a stepped appearance | Liner has moved off tape. | Warm tape prior to slitting in temperature controlled cabinet. |
| Double cutting on plastic liner. | Knife edge too sharp. | Round off cutting edge of knife. |
SLITTING TECHNIQUES

SLITTING INTERLINED MATERIALS

Any interlined material especially large diameters need to be glued with a hot melt glue at the chuck end only, to prevent the centre of the log roll slipping away whilst it is being cut.

**Note:** When slitting copper, lead or aluminium foil whether or not coated with a pressure sensitive adhesive, an interlining paper is essential to achieve quality slit rolls.
KNIFE SELECTION

Note: A rust inhibitor or light oil should be regularly wiped over the knife and backing plates to prevent any rust build up.

~ always use cut resistant gloves when handling knives ~

A ‘PLUS’ angle (to a maximum of +3) must ONLY be used when making the last cut at the R/Hand end of machine (chuck end).

<table>
<thead>
<tr>
<th>Angle°</th>
<th>Slitting range</th>
</tr>
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<tbody>
<tr>
<td>-6° - -4°</td>
<td>Up to 22 mm (7/8”)</td>
</tr>
<tr>
<td>-6° - -4°</td>
<td>Tape on an interliner</td>
</tr>
<tr>
<td>-4°</td>
<td>25.4 mm (1”) - 38 mm (1½”)</td>
</tr>
<tr>
<td>-4° - -0°</td>
<td>40 mm (1 5/8”) - 96mm (4”)</td>
</tr>
<tr>
<td>-2° - -0°</td>
<td>Over 100mm (4”)</td>
</tr>
</tbody>
</table>

THE ABOVE DIMENSIONS ARE A GUIDE ONLY AND WILL VARY ACCORDING TO THE DENSITY OF THE MATERIAL TO BE SLIT.

Diagram 4: Knife with equal bevel both sides

NOTE:
A rounded edge is preferred for most adhesive tapes. Some exceptions would be, for example, foam sealant tapes (w/paper liner) which require a sharp edge, polyimide film is another

NOTE: KNIFE WITH EQUAL BEVEL BOTH SIDES SHOULD BE USED AT ALL TIMES ON THIS MACHINE

KNIFE DIAMETER
The rule is to use the smallest diameter knife possible to minimise any run out. Using a dial indicator check the knife for run out. It is preferable to be within .1mm (4thou)

ONLY PERSONNEL CERTIFIED TO SHARPEN AND BEVEL KNIVES ARE TO OPERATE KNIFE GRINDING FUNCTION
KNIFE STORAGE

The knife is the most important item on your machine. Knives should be kept in a purpose built cabinet and knife edge protected with protective strip.

~ always use approved protective gloves when handling knives~

Operators should read the guidelines for knife selection, preparation and maintenance carefully.

ROUNDING KNIFE EDGE

Operator MUST wear cut proof gloves when performing this function.

Turn off power at main isolating switch and using a Shielded Oil Stone (see Fig 3.3.1) hold the stone flat against knife edge and slowly rotate the knife with the other gloved hand. This will have the effect of dulling the sharp edge. Polish knife edge with Scotch Bright™

IMPORTANT NOTE

If knife is slightly chipped you will need to return it to JAVELIN for repair. The knife grinder on this machine is not intended for heavy grinding.
a. CHECKING FOR BACKING PLATE RUNOUT:

**BACKING PLATES THAT HAVE BEEN DROPPED ONTO A HARD SURFACE MAY BE OUT OF SPECIFICATION AND WILL NEED TO BE REPLACED.**

i) Run a smooth flat file across the face of the backing plate and washer to ensure there are no burrs.

ii) Check spindle face for burrs or grit.

iii) Fit backing plate and washer and check for runout with dial indicator (See Note).

iv) Runout should not be more than .08mm (.003”). If runout exceeds tolerance, mark backing plate in 2 positions and one position on spindle with marking pen.

v) Rotate backing plate to position 2 and re check if runout is excessive.

![Diagram](image)

b. CHECKING FOR KNIFE RUNOUT

Place dial indicator on knife face (1 at top-Picture A) and rotate knife to 2 (Picture B). A runout of not more than .08mm (.003”) is permissible.

![Images](image)
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