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**Note on replacement parts for Monarch 10EE "modular drive" lathes
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C3J thyatron tubes:

C3J, 5632, C3JA, 5684

The C3JA / 5684 tubes are the same as the C3J / 5632 tubes but with improved specs. Avoid tubes with an "L" suffix as these have the wrong base and won't plug into the socket. You can often find these as new old stock on ebay.

Spindle Module diodes:

The type of diode you need are basically ordinary standard recovery (don't have to be fast switching) silicon rectifier diodes rated for a minimum of 1 amp and 600 volts. Suitable replacements are:

1N4005, 1N4006, 1N4007, 1N5406, 1N5407, 1N5408

The 1N5408 is a 3 amp 1000 volt diode that would be much more robust than the original. There are many other choices as well. You can buy them from just about any electrical component supply house such as Mouser, Digikey, Newark, etc. You will need to adapt any modern diodes to fit the spindle module diode sockets by making something to mimick the original diode form factor, or simply by soldering the replacement diodes into the diode sockets.

T4 Transformer Capacitor:

This is a 1uf 660vac metal cased motor run type capacitor strapped to the side of the T4 transformer which sometimes fails. Suitable replacements are:

GE type 26F6616, GE type 26F1054

You can often find these as new old stock on ebay.

T4 Transformer:

In the original design, T4 is wound with an auxiliary pony winding that is connected to a metal cased 1 uf 660 volt motor run type capacitor. The function of the pony winding and capacitor are to introduce a harmonic into the transformer secondary and produce a quasi square wave output. The purpose of this is to provide a waveform to the Spindle Module that is conditioned for rectification into a dc voltage. A square wave is better for this than a more rounded sin wave. However, I've found that this level of conditioning is not necessary.

You can use any transformer with a 240 vac primary and 120 vac secondary in place of the original T4 transformer/capacitor combination. A small one with a 50 va power rating is sufficient. This is a very common transformer and there are probably a number of choices from ebay and other sources. Two possibilities are the following:

Hamond SP50MQMJ available from Automation Direct

[https://www.automationdirect.com/adc/shopping/catalog/power_products_\(electrical\)/transformers/open_core_industrial_control_transformers/sp50mqmj](https://www.automationdirect.com/adc/shopping/catalog/power_products_(electrical)/transformers/open_core_industrial_control_transformers/sp50mqmj)

FMX CPT-0050A-1F available from Factorymation

<https://www.factorymation.com/CPT-0050A-1F>

On a transformer, what is called "primary" and "secondary" or "step up" and "step down" is irrelevant and only a matter of convention, so don't be thrown that you may be using the primary side of the transformer as the secondary or a step down transformer as a step up. Connect the replacement transformer on the rear transformer compartment terminal block in place of the original T4 as follows:

<u>Circuit</u>	<u>Function</u>
1	120 vac input
2	120 vac input
31	240 vac output
32	240 vac output

