

Spindle Control Q+A

➔ Answers to questions:

1. **S1287 M04**
2. 955 r/min - using the metric formula in answer #8
3. Spindle orientation is a feature found on CNC machining centers. Its purpose to orient the spindle into position that can be repeated any time. The feature is a necessary part of the ATC (Automatic Tool Change) process, and for some fixed cycles, namely G76 and G87
4. 1528 r/min - using the English formula in answer #7
5. r/min (rpm) - ft/min (FPM or SFPM) - m/min (MPM)
6. **G96 S300 M03**
.... specifies 300 surface speed amount, either as 300 ft/min or 300 m/min, and clockwise spindle rotation
G97 S300 M03
.... specifies 300 r/min (revolutions per minute), and clockwise spindle rotation
7.
$$r/min = \frac{12 \times ft/min}{\pi \times D}$$
8.
$$r/min = \frac{1000 \times m/min}{\pi \times D}$$
9. M00, M01, M05, M30 M06 and M19 may also stop spindle on some machines but it is not recommended
10. CSS stands for **Constant Surface Speed**
11. Ø1.3957 - the formula used is:
$$D = \frac{12 \times ft/min}{\pi \times r/min}$$
12. 1945 r/min - using the metric formula in answer #8
13. G21 specifies metric units, G50 S1800 specifies clamping the maximum spindle speed to 1800 r/min, when used in constant surface speed mode G96 - G96 S100 M03 specifies constant surface speed using 100 m/min value and CW spindle rotation - this is a lathe application
14. Typical M-functions that are spindle related: M03, M04, M05, and M19 - also S--, G96, G97, G50 S--, and gear ranges
15. The spindle rotation CW or CCW can be established by looking from the headstock towards the spindle face