TB044 (Rev4) - Basic PID Parameter Values

Purpose:

To provide optimum starting values for the **Kp**, **Ki**, and **Kd** parameters which are found in the PID Configuration menu. These figures represent the optimum values based on motor size and drive current. The values for **Kp** and **Ki** should generally match the values listed below(DC - Kp = 1, Ki = .004, and AC Kp = 2, Ki = 0.0125). **Kd** may be changed depending on your machine and the load that is on the motor.

Note: Always call Centroid and discuss the reasons for wanting to change these parameters. Improper adjustment of these parameters can cause the motion of the machine to be rough and unstable, and can also cause the motors to run hot, even though they may not actually be making heavy cuts. **(***Refer to chart on back for AC motor PID settings***)**

CNC11 Torque Mode PID Settings:

Motor	Drive Current	Kp	Ki	Kd	Limit
Glentek 16inlb	6A	1	0.004	2	32000
Redcom 17inlb	9A	0.5	0.004	1	32000
Glentek 29inlb	12A	1	0.004	3	32000
Glentek 40inlb	15A	1	0.004	3	32000

CNC7 and CNC10 PID Settings:

Motor	Drive Current	Kp	Ki	Kd	Limit
Redcom 7inlb	3A	0.5	0.00391	5	32000
Redcom 10inlb	6A	0.5	0.00391	2	32000
Redcom 15inlb	9A	1	0.00391	15	32000
Redcom 17inlb	12A	1	0.00391	10	32000
SEM 29inlb	12A	1	0.00391	15	32000
SEM 40inlb	15A	1	0.00391	15	32000
SEM 40inlb	25A	1	0.00391	10	32000

To check your drives current rating, look on the drive cover for a label with 2T, 3T, or 4T written on it.

    2T = 25amp
    3T = 15amp
    4T = 12amp
    5T = 9amp
    6T = 6amp
    7T = 3amp

Common Drive Configurations:

	Knee mill M-15 Knee	Knee Mill M-400	Bed type mill M-400*	Bed mill 4 axis M400 *
X	9	12	12 or 15**	12 or 15**
Y	9	12	12 or 15**	12 or 15**
Z	9	12	12 or 15**	12 or 15**
W			12 or 15**	12 or 15**

* In most cases, all axes are either 12amp or 15amp, except in cases as below.
** In the case of a rotary 4th axis with smaller motor, the 4th axis may be configured for 6-9amp separately.

Centroid AC Brushless Motor Configuration:

Motor	Power	PID Menu								Drive Menu							
		Kp	Ki	Kd	Kg	Kv1	Ka	Accel	Max Velocity**	Motor Poles	Drive Current	Drive Angle	Current Feedback			Feed Forward	
													Kp	Ki	Kd	% Fixed	% RPM
HJ130C8-64S	1kW	2	0.0125	10	0	10	0	0.4	3400/pitch	8	16	5	0.5	0.0125	1	0.25	0.1
HJ130E8	1.6kW	2	0.0125	10	0	10	0	0.4	3400/pitch	8	16	5	0.5	0.0125	1	0.25	0.1
HJ130G8-64S	2kW	2	0.0125	10	0	10	0	0.4	2500/pitch	8	16	5	0.5	0.0125	1	0.25	0.1
HJT155B8-110	3kW	2	0.0125	10	0	10	0	0.4	1350/pitch	8	12	5	0.5	0.0125	1	0.25	0.1
HJT155D8-110	4kW	2	0.0125	10	0	10	0	0.4	1350/pitch	8	16	5	0.5	0.0125	1	0.25	0.1
HR70A4	400W	2	0.0125	10	0	10	0	0.4	3400/pitch	4	8	5	0.5	0.0125	1	0.25	0.1
LD85 750W	750W	2	0.0125	10	0	10	0	0.4	3600/pitch	8	8	5	0.5	0.0125	1	0.25	0.1
CM1K-0-2	1kW	2	0.0125	10	0	10	0	0.4	3400/pitch	8	12	5	0.5	0.0125	1	0.25	0.1
CM2K-0-1	2kW	2	0.0125	10	0	10	0	0.4	2000/pitch	8	16	5	0.5	0.0125	1	0.25	0.1
CM3K-0-1	3kW	2	0.0125	5	0	10	0	0.4	1700/pitch	8	16	5	0.5	0.0125	1	0.25	0.1
CM4K-0-1	4kW	2	0.0125	10	0	10	0	0.4	1700/pitch	8	16	5	0.5	0.0125	1	0.25	0.1

* Kg, Kv1, Ka are values to be set before autotune is performed, autotune will then calculate values suited to the application.
**This is the value expected after autotune, it is dependant on the pitch of the bal screw and the belting.

Document History

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