TB044 (Rev2) - Basic PID parameter values

Overview

The following charts list the optimum values for the **Kp**, **Ki**, and **Kd** parameters found on the PID configuration page. These figures represent the optimum values based on motor size and drive current. The values for **Kp** and **Ki** should always match the values given here (DC - Kp = 1, Ki = .004, and AC Kp = 2, Ki = 0.0125). **Kd** may be changed in some rare cases. However, 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.

These values should be checked on every machine before you send it out to the customer. If you have any questions concerning these parameters or the correct value, please contact your authorized technical representative. **(***Refer to chart on back for AC motor PID settings***)**

CNC11 Torque Mode PID Settings

DC Motor/Drive current Combination	Kp	Ki	Kd	Limit
Redcom 17" lb. 9A	0.5	0.004	1	32000
Glentek 29" lb. 12A	1.0	0.004	3	32000
Glentek 40" lb. 15A	1.0	0.004	3	32000

CNC7 and CNC10 PID Settings

DC Motor/drive amp combination	Kp	Ki	Kd	Limit
Redcom 7"/lb 3A	.5	.00391	5	32,000
Redcom 10"/lb 6A	.5	.00391	2	32,000
15 in/lb 9A	1	0.00391	15	32,000
Redcom 17 in/lb 12A	1	0.00391	10	32,000
SEM 29 in/lb 12A	1	0.00391	15	32,000
SEM 29 in/b 15A	1	0.00391	15	32,000
SEM 40 in/lb15A	1	0.00391	15	32,000
SEM 40 in/lb 25A	1	0.00391	10	32,000

To check you're 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:

		PID Menu								**Drive Menu**							
MOTOR	Motor	Kp	Ki	Kd	Kg	Kv1	Ka	Accel	MaxVel**	Motor	Drive	Drive	Current Feedback			Feed Forward	
	Power									Poles	Current	Angle	Kp	Ki	Kd	% Fixed	% RPM
HJ130C8-64S	1 KW	2	0.0125	10	0	10	0	0.4	3400 / IPM (pitch)	8	16	5	0.5	0.0125	1	0.25	0.1
HJ130E8	1.6 KW	2	0.0125	10	0	10	0	0.4	3400 / IPM (pitch)	8	16	5	0.5	0.0125	1	0.25	0.1
HJ130G8-88S	2 KW	2	0.0125	10	0	10	0	0.4	2500 / IPM (pitch)	8	16	5	0.5	0.0125	1	0.25	0.1
HJT155B8-110	3 KW	2	0.0125	10	0	10	0	0.4	1350 / IPM (pitch)	8	12	5	0.5	0.0125	1	0.25	0.1
HJT155D8-110	4 KW	2	0.0125	10	0	10	0	0.4	1350 / IPM (pitch)	8	16	5	0.5	0.0125	1	0.25	0.1
HR70A4	400 W	2	0.0125	10	0	10	0	0.2	3400 / IPM (pitch)	4	8	5	1	0.0125	1	0.25	0.1
LD85 750W	750W	2	0.0125	10	0	10	0	0.4	3600 / IPM (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 / IPM (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 / IPM (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 / IPM (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 / IPM (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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