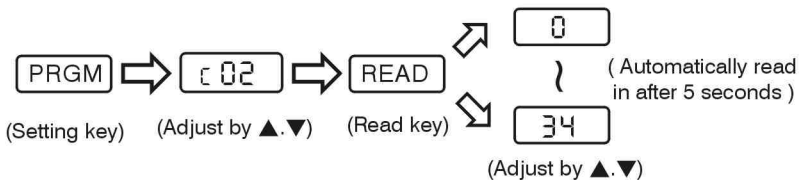




Attend the following statements when setting $\text{C01}=0, 1, 2, 3, 4$ and 5 .

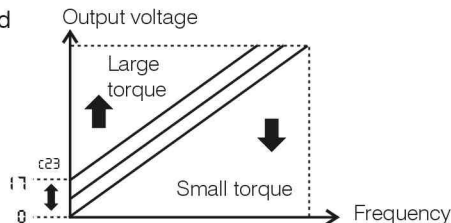
- (1) The function setting must apply the adjustment of DIP switch J1.
Refer to P.24~P.27 for descriptions.
- (2) The keypad means the control box for inverter operation. It includes the keys for monitor parameter setting and the potentiometer (B10K Ω /16 Φ or 24 Φ).
- (3) The control terminals mean the main board terminals connecting to exterior control signals. Refer to P.20 for descriptions.
- (4) The control terminal functions can be set when $\text{C01}=2, 3$ or 5 . Reset the parameter when the FWD-COM and REV-COM terminals are open and the monitor displays $-0-$.
- (5) 0~20mA current signal input for $\text{C01}=1$ or 3 .
4~20mA current signal input for $\text{C01}=4$ or 5 .

C02 V/F torque characteristic curve selection



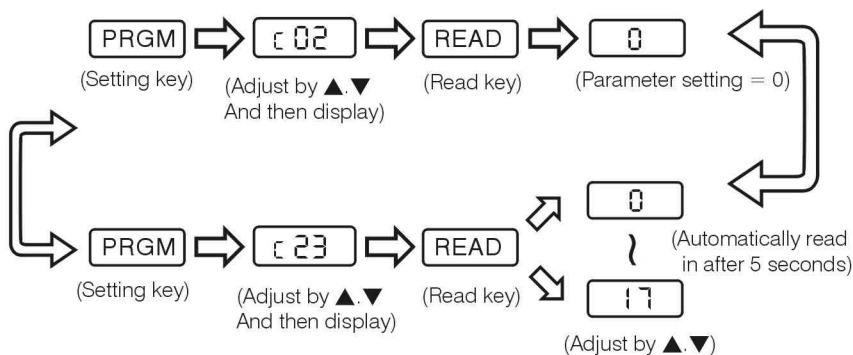
$\text{C02}=0$: The function can adjust the torque value according the automatic torque compensation mode at low frequency. It does not need to set the parameter in general. It can slightly raise the setting value of C23 to assist the torque function when motor torque is not sufficient and under the primary consideration of inverter to motor rated current.

* Only both C02 and C23 be set simultaneously is valid.



9 PARAMETER SETTING METHOD

Operation flow diagram of $\tau 02$ and $\tau 23$



The current will increase when the parameter value is too high at automatic compensation mode. Revolution in low speed over long hours could result in heat up or burn out of inverter, or a fire.



Extra install a cooling fan to prevent overheating of motor for revolution in low speed over long hours.

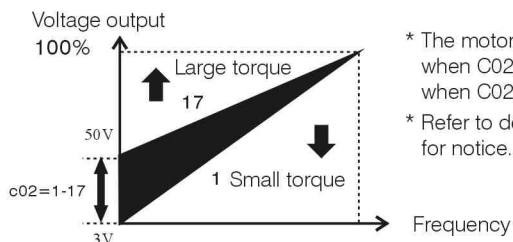


The parameter setting must be done by professional personnel. It is better to set the torque value equals 3Hz, which is sufficient for motor starting up.



The initial factory value is $\tau 23=3$. The selective values of $\tau 23$ are 0~17 under the mode of $\tau 02=0$

The curve is straight line for $\tau 02=1\sim 17$. It does not offer the function of automatic torque compensation under normal V/F torque control mode.



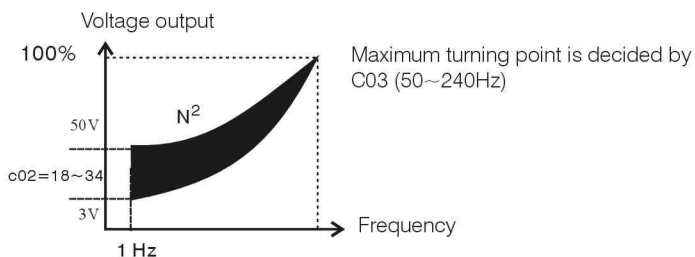
* The motor torque is minimum when $\tau 02=1$ and maximum when $\tau 02=17$.

* Refer to descriptions in $\tau 02=0$ for notice.

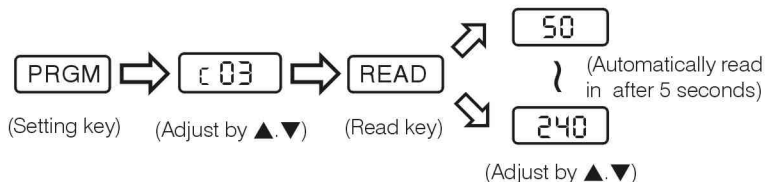


- (1) Choose the parameter $\text{C02}=1\sim 17$ when no sufficient torque can be obtained by choosing the voltage vector automatic compensation mode of $\text{C02}=0$.
- (2) The voltage vector automatic compensation mode of $\text{C02}=0$ is invalid when choosing $\text{C02}=1\sim 17$.
- (3) The parameter setting offers the most wide revolution range for normally using and is suitable for traditional machine.
- (4) Slightly tuning the curves $1\sim 17$ to prevent the heat up of motor.

$\text{C02}=18\sim 34$: N^2 increasing parabolic curve. It has the effect of energy saving and suitable for transmission of fan, hydraulic pump and liquid machine; or load of large torque.

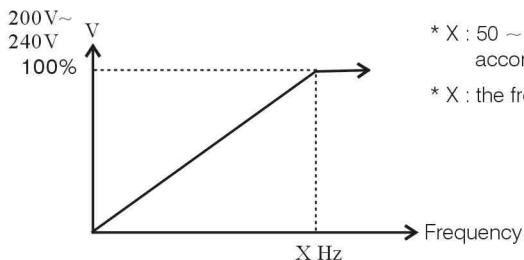


C03 V/F turning point selection (Basic frequency)



C03 : 100% voltage output decided by 50Hz ~ 240Hz output frequency.

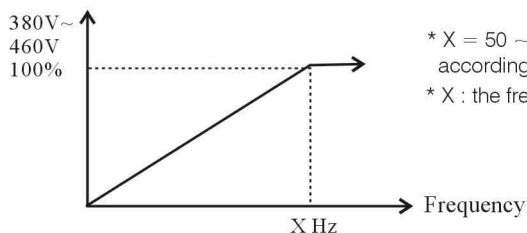
(1) 200V ~ 240V curve graph



- * X : 50 ~ 240Hz selects voltage according to motor characteristics.
- * X : the frequency code

9 PARAMETER SETTING METHOD

(2) 380V ~ 460V curve graph



* X = 50 ~ 240Hz selects voltage according to motor characteristics.

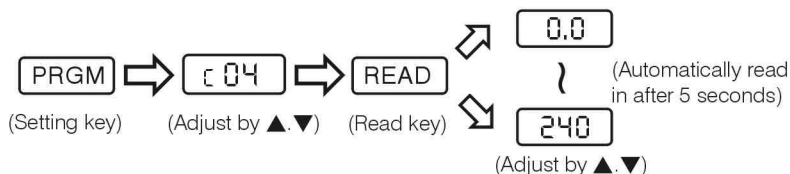
* X : the frequency code



CAUTION

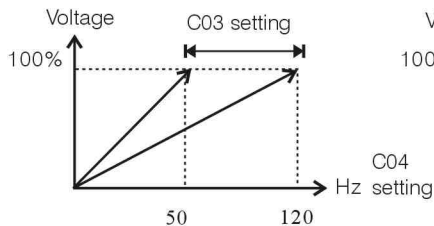
- (3) Set X more than the motor operation frequency 50/60Hz to prevent heat up of motor.
 (4) Set V/F curve tuning point according to the motor rated frequency. For example, C03 should be equal to or more than 50Hz if the motor rated frequency is 50Hz.

C04 Main speed frequency setting

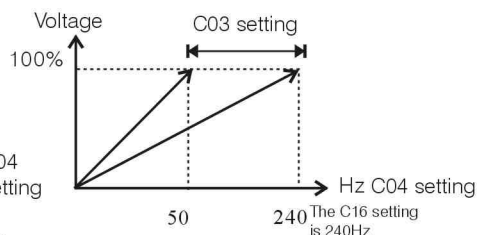


C04 : Main speed setting. Exactly adjust accelerating/decelerating range by ▲, ▼ and speed range by potentiometer.

- (1) The frequency setting range for C26=0 is 1.0Hz~120Hz. The frequency setting range for C26=1 is 1.0Hz ~ 240Hz and, at this mode, change the upper limitation of C16 to 240Hz.
 (2) Refer to descriptions in C01 for operation mode.

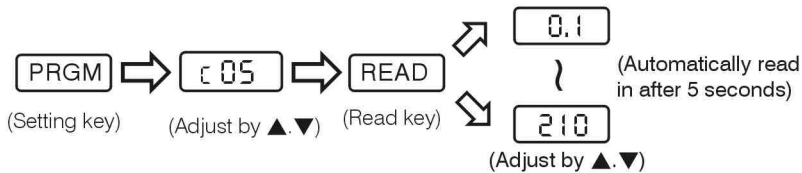


- ※ Set curve diagram of 1~120Hz
- ※ Set C03 for tuning point
- ※ Set C04 for main speed

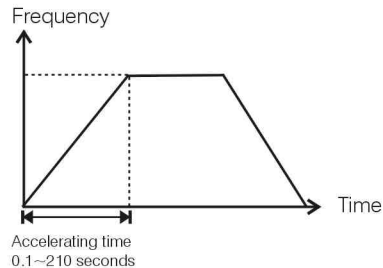


- ※ Set curve diagram of 1~240Hz
- ※ Set C03 for tuning point
- ※ Set C04 for main speed and C16 to release the upper limitation function.

c05 Main speed frequency accelerating time setting

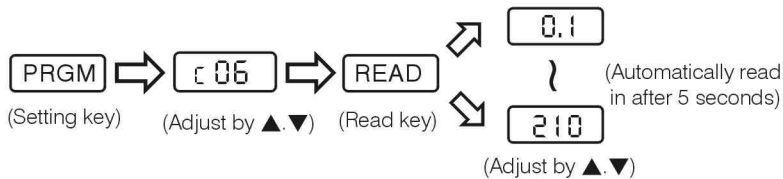


c05 : Accelerating time means the time that increases the frequency from 1Hz to 60Hz. The calculating unit for frequency more than 61Hz is calculated by the time integral. The maximum value is 210 seconds and the step time is 0.1 second.



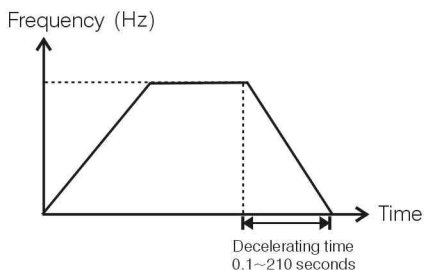
- (1) The less accelerating time could result in the large I^2t generated by current, and then causes overheating that tripping the inverter. Properly increase the accelerating time is helpful for the life of motor and machine.
- (2) The accelerating time setting value of Ls600 series is 5 seconds for less than 5Hp and 10 seconds for more than 7.5 Hp. It can be changed if necessary.
- (3) The accelerating time can be changed when operating.

c06 Main speed frequency decelerating time setting



c06 : Decelerating time means the time that decreases the frequency from 60Hz to 0Hz. The less decelerating time could result in the large GD^2 generated by regenerative voltage, and then causes the over voltage protection. Properly increase the decelerating time is helpful for the life of motor and machine. The calculating unit for frequency more than 61Hz is calculated by the time integral. The step time is 0.1 second.

9 PARAMETER SETTING METHOD

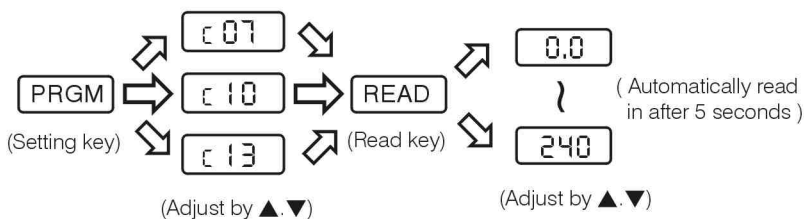


- (1) The machines with large torque load that could generate large GD^2 , such as hydraulic pump, fan, hydroextractor, turnplate and punch, must properly increase their decelerating time settings.
- (2) The decelerating time setting value of Ls600 series is 5 seconds for less than 5Hp and 10 seconds for more than 7.5 Hp. It can be changed if necessary.
- (3) The decelerating time can be changed when operating.

c07 Second speed frequency setting

c10 Third speed frequency setting

c13 Jogging speed frequency setting



c07, c10, c13 : 2nd (2X) speed, 3rd (3X) speed and jogging (JOG) speed revolution
 If it needs to apply 2nd speed, 3rd speed, or jogging speed revolution when motor is running, it can close the exterior terminals between 2X-COM, 3X-COM or JOG-COM. Set C01=1, 2, 3, 4 or 5 after completely setting the frequency value of **c07**, **c10**, and **c13**.

(1)The accelerating/decelerating time of 2X, 3X and JOG speed must completely preset. Refer to c05, c06 for the descriptions of setting method.

c08 :2X accelerating time setting, the range is 0.1 second to 210 seconds.

c09 :2X decelerating time setting, the range is 0.1 second to 210 seconds.

c11 :3X accelerating time setting, the range is 0.1 second to 210 seconds.

c12 :3X decelerating time setting, the range is 0.1 second to 210 seconds.

c14 :JOG accelerating time setting, the range is 0.1 second to 210 seconds.

c15 :JOG decelerating time setting, the range is 0.1 second to 210 seconds.

(2)The functions mentioned above can use control terminals complying with exterior selection switch or non-voltage connector to control the inverter for multi-speed revolution or jogging running.

(3)The frequency value must use interior setting and its range is 1~240Hz.
(Set C26=1 and the upper limitation frequency of C16 is 240Hz.)

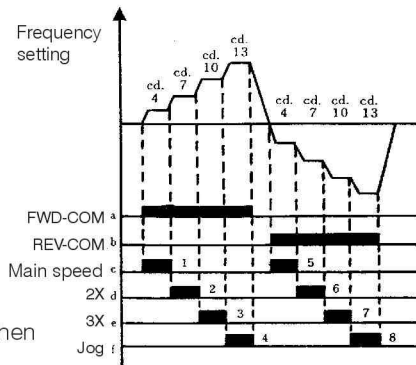
(4)Multi-speed revolution timing diagram

Description for C01=1, 2, 3, 4 or 5:

- a.Close FWD-COM terminals for forward revolution.
- b.Close REV-COM terminals for reverse revolution.
- c.C04 setting for main speed revolution.
- d.C07 setting for 2nd speed revolution.
- e.C10 setting for 3rd speed revolution.
- f.C13 setting for jogging speed revolution.

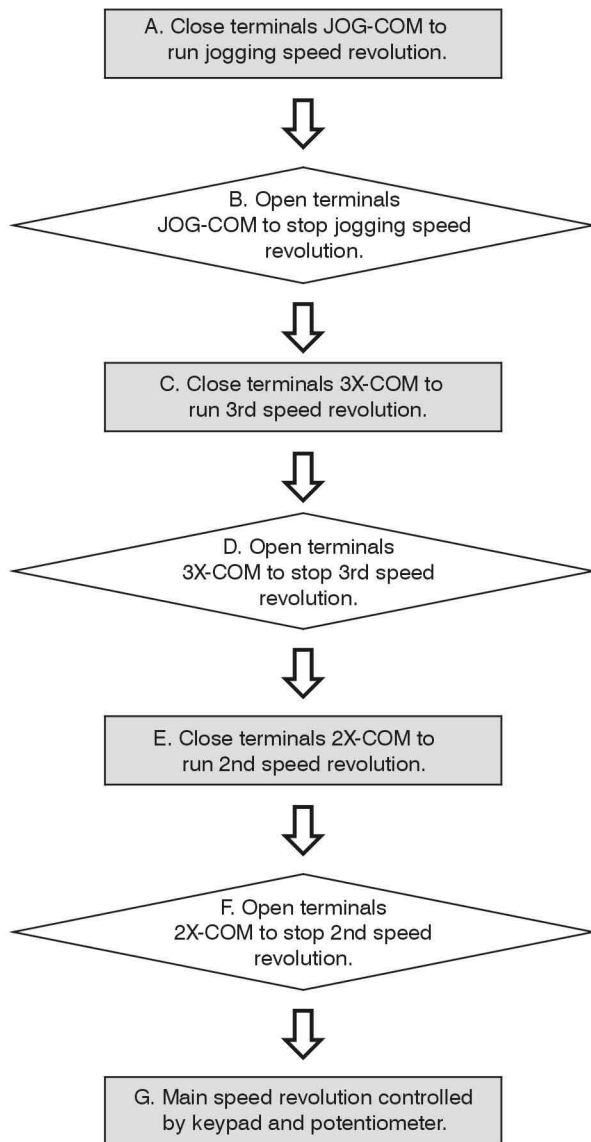


(5) The inverter can not operate when both the FWD-COM and REV-COM terminals are closed. Only one closing action is valid at one time.

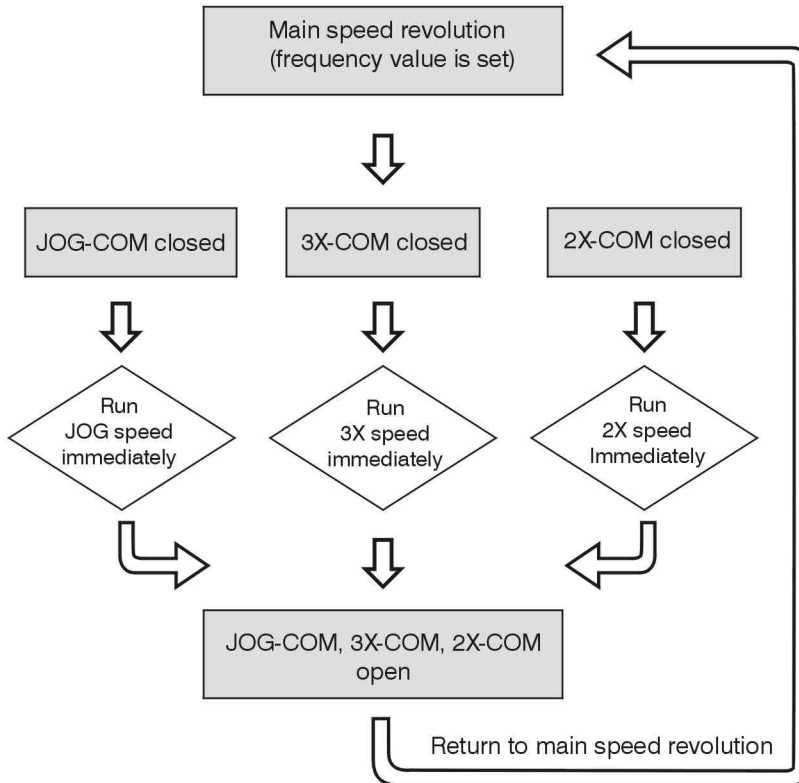


(6) Priority for speed selection when C01=1, 2, 3, 4 or 5.
JOG →3X →2X →MAIN Speed

(6) - 1 Steps of first kind



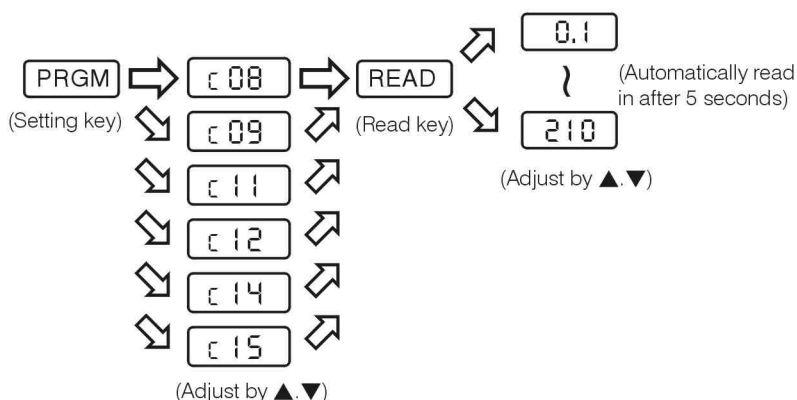
(6) - 2 Steps of second kind



- Remark: (1) It runs JOG-COM speed when all JOG-COM, 3X-COM and 2X-COM are closed. It runs 3X-COM speed when JOG-COM is open. It runs 2X-COM speed when 3X-COM is open.
- (2) Wiring on connectors of control terminal and take non-voltage connector as switch.

9 PARAMETER SETTING METHOD

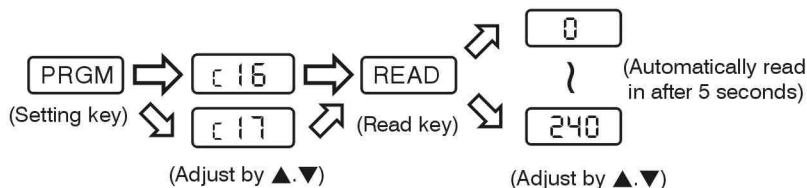
c08	Second speed accelerating time setting
c09	Second speed decelerating time setting
c11	Third speed accelerating time setting
c12	Third speed decelerating time setting
c14	Jogging speed accelerating time setting
c15	Jogging speed decelerating time setting



c08, c09, c11, c12, c14, c15 :

Refer to descriptions on C05 and C06 for parameters setting and changing. The accelerating/decelerating time can be changed when operating.

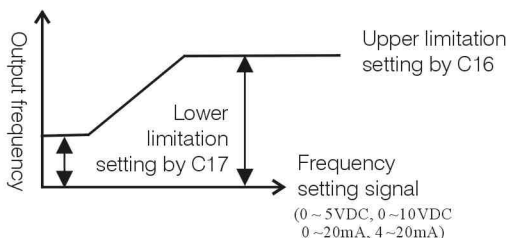
c16	Frequency upper limitation setting
c17	Frequency lower limitation setting



C16 : Frequency upper limitation setting

C17 : Frequency lower limitation setting

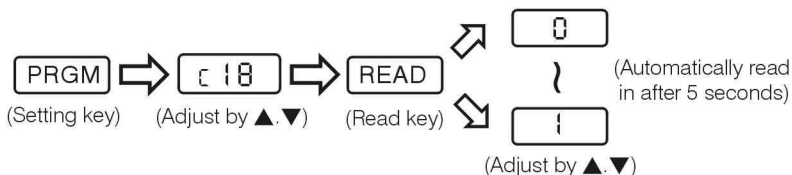
- (1) The frequency setting range of upper/lower limitation is 0~240Hz.
- (2) The upper limitation must be more than the lower limitation.
- (3) Frequency speed adjustment range is between upper limitation and lower limitation.
- (4) The main speed frequency setting must be equal to or less than the frequency upper limitation.
- (5) The frequency raises to the lower limitation value after pressing the **[RUN]** key when the frequency setting is less than the lower limitation. When the frequency is higher than the lower limitation during operation, the inverter operates with actual frequency value.
- (6) Upper/lower limitation diagram



DANGER

The function setting must be performed by professional personnel. The improper upper/lower limitation setting could result in the damage of equipment and injury of member.

C18 Braking selection



C18 : Offers the function of enforced braking to prevent the motor free running when the output frequency is less than 0Hz.

C18=0 : Without DC braking function.

C18=1 : With DC braking function. The DC dynamic braking acts immediately when the frequency is reduced to 0Hz, and the monitor displays **b t E**. The RUN indicator keeps on when the DC dynamic braking is running. The RUN indicator goes out and the STOP indicator turns on when the DC dynamic braking stops.

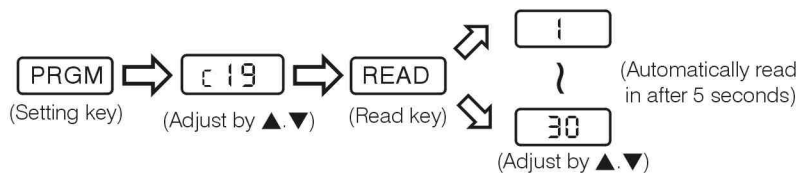


CAUTION

The motor will cause DC overcurrent when quick DC braking. The braking energy setting of C19 is very important and suggestion to perform the setting by professional personnel.

9 PARAMETER SETTING METHOD

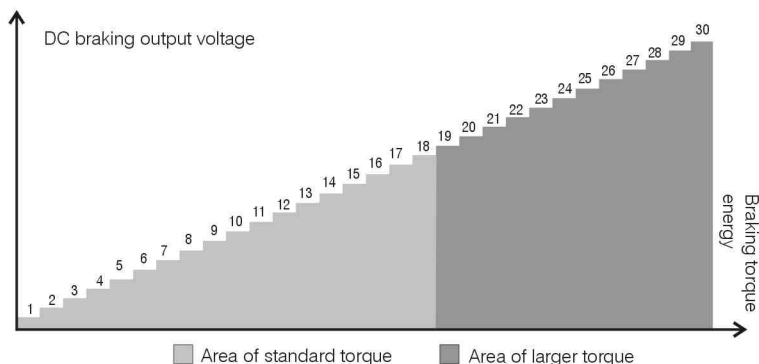
└19 Braking energy setting



└19 : Decides the motor torque energy in braking.

└19=1 : With weak braking energy.

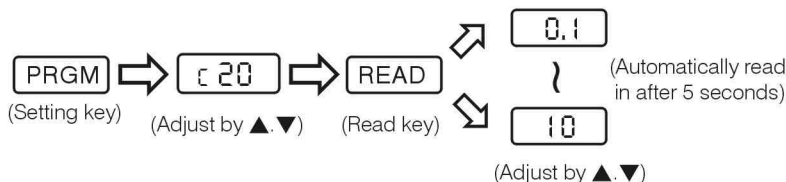
└19=30 : With strong braking energy.



- (1) The above diagram shows the relationship of DC output voltage and braking torque energy. It shows that the higher DC output voltage could result in the larger braking torque.
- (2) Suggestion to set the baking torque less than C19=18. The principle of setting standard is that the motor will not free run and keep standstill under 0Hz.
- (3) The big setting energy of C19 and frequent braking could result in the heating of motor, burn out of coil and even a fire.
- (4) The braking energy is correlated with the braking time and is set by C20.

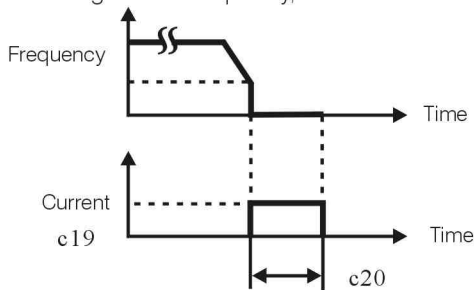


└20 Braking time setting

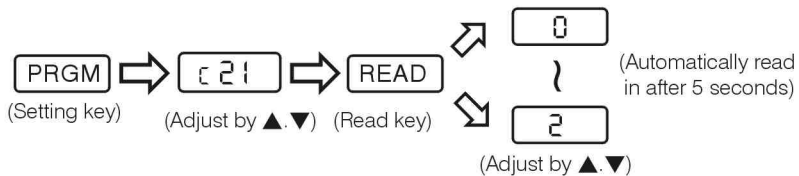


c20 : The lasting time of the braking torque energy after tuning is 0.1~10 seconds.

- (1) The DC dynamic braking time setting is 0.1~10 seconds.
- (2) The monitor displays **b-t-E** and the RUN indicator keeps on when the DC dynamic braking acts. The RUN indicator goes out and the STOP indicator turns on when the DC dynamic braking stops.
- (3) The braking time setting is according to the criterion that could keep motor standstill.
- (4) The output frequency reduced to 0Hz when inverter stops and it starts the DC braking action. It can fix the motor bearing to prevent motor slide in the braking time. And it loses the function after the end of the braking time.
- (5) Relation diagrams of frequency, current and braking time.



c21 Forward/reverse revolution setting



c21 : Decides the turning direction of motor. Set **c21** for bi-directional, forward and reverse revolution.

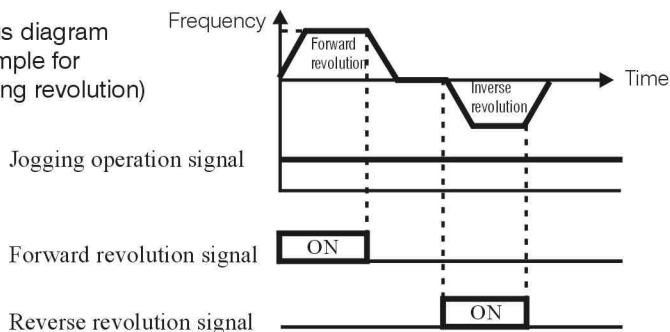
c21=0 : It can make forward and reverse revolutions.

c21=1 : It can only make forward revolution and the forward (FWD) indicator is on. Change any two input terminals of motor to change the motor polarity. It is invalid to change the input terminals of the power supply.

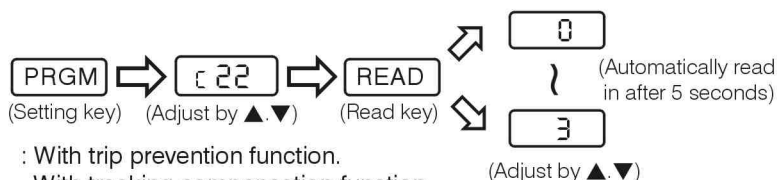
c21=2 : It can only make reverse revolution and the reverse (REV) indicator is on. Change any two input terminals of motor to change the motor polarity. It is invalid to change the input terminals of the power supply.

9 PARAMETER SETTING METHOD

└21 Status diagram
(example for
jogging revolution)



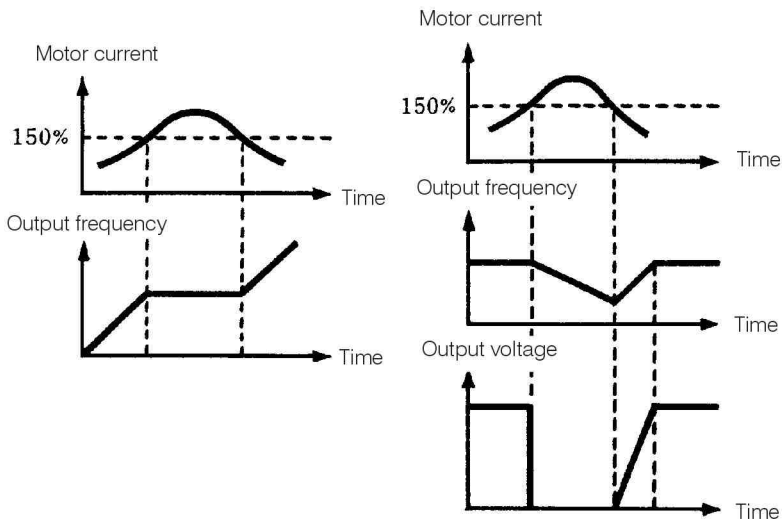
└22 Stall prevention for overcurrent and overvoltage



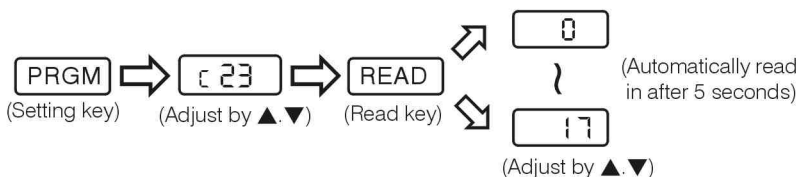
- └22 : With trip prevention function.
With tracking compensation function.
With automatic speed search function.
- └22=0 : Without stall prevention function of overcurrent and overvoltage. It does change the accelerating and decelerating time.
- └22=1 : The accelerating time will be changed when output current of inverter is more than 150% of rated current and DC side voltage of inverter reaches DC350V (AC200~AC240 series) or DC650V (AC380~460 series) when accelerating. The output frequency of inverter never increases or the inverter stops to prevent trip causing by overcurrent and overvoltage. It restores the accelerating function after under the protection level.
- └22=2 : The decelerating time will be changed when output current of inverter is more than 150% of rated current and DC side voltage of inverter reaches DC350V (AC200~AC240 series) or DC650V (AC380~460 series) when decelerating. The output frequency of inverter never increases or the inverter stops to prevent trip causing by overcurrent and overvoltage. It restores the decelerating function after under the protection level.
- └22=3 : It has the functions in C22=1 and C22=2 when accelerating and decelerating. It has the function of automatic speed search and tracking. It shows that the inverter will automatically tune the output frequency according the load variation status to prevent the trip of motor.

1. Stall prevention when accelerating

2. Stall prevention when operating



C23 Automatic torque compensation energy setting



C23 : The C23 function setting is of the voltage vector mode. It has the function of automatic torque compensation energy that increases the torque compensation capability. It is valid only when **C20**. Refer to **C02=0** on P.33~P.34 for descriptions.

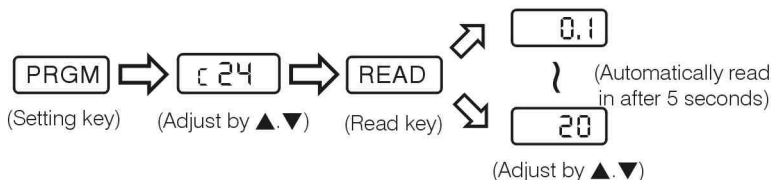
C23=1 : The compensation energy is small.

C23=17 : The compensation energy is largest.

* Refer to **C02=0** on P.33~P.34 for descriptions.

9 PARAMETER SETTING METHOD

Ⓒ24 150% overcurrent trip time setting



Ⓒ24 : The operation is normal that the operating current of the inverter achieves the 100% rated current. It must limit the operation time to prevent the burn out of motor when the operating current of the inverter is more than the 150% rated current. The monitor displays OL1, OL2 or OL3 when the inverter current is more than the 150% rated current and the integral accumulated time reaches.

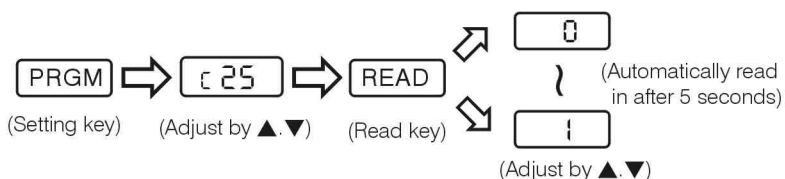
OL1: Overload when accelerating.

OL2: Overload of constant speed.

OL3: Overload when decelerating.

OL (overload): The range of time setting is 0.1~20 seconds and the initial value in factory is 10 seconds.

Ⓒ25 Recovery setting value at exportation factory



Ⓒ25 : Choose Ⓒ25=1 to recovery the initial setting value in factory.

The Ⓒ25 value restores to 0 and all other interior parameters restore to the initial setting value in factory after action.



(1) Suggestion to process the function setting after recording the old parameter values. Otherwise, the old parameter values will be clear after restoring the initial setting value in factory.

(2) Process the function setting by professional personnel to prevent wrong operation.