2.4.2 FEEDRATE (F FUNCTION)

With five digits following an address character F, tool feedrates per minute (mm/min) are programmed.

The programmable range of feedrates is as follows.

Table 2.14

		Format	Feedrate (Feed/min) range
Metric output	Metric input	F40	F1.- F8100. mm/min
	Inch input	F31	F0.1 - F313.0 in./min
Inch output	Metric input	F50	F1.- F20574. mm/min
	Inch input	F31	F0.1 - 810.0 in./min

The maximum feedrate is subject to the performance of the servo system and the machine system. When the maximum feedrate set by the servo or machine system is below the maximum programmable feedrate given above, the former is set by a parameter (#6228), and whenever feedrates above the set maximum limit are commanded, the feedrate is clamped at the set maximum value.

F commands for linear and circular interpolations involving motions in simultaneously controlled two axial directions specify feedrates in the direction tangential to the motion path.

EXAMPLE G91 (incremental)

G01 X4000 Y3000 F500 ;

With this command,

$$F = 500 = \sqrt{300^2 + 400^2}$$

(mm/min) X component
              Y component
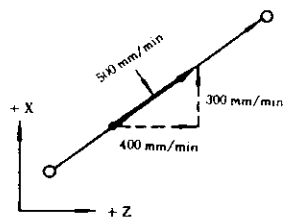

Fig. 2.2

G03 X···· Y···· I···· F200 ;

With this command,

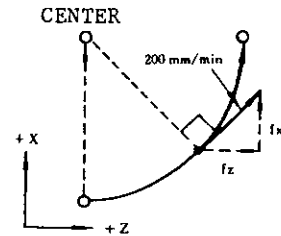$$F = 200 = \sqrt{fX^2 + FY^2}$$

(mm/min)

Fig. 2.3

F commands for linear interpolations involving motions in simultaneously controlled three axial directions specify feedrates also in the direction tangential to the motion path.

EXAMPLE

With G01 X··· Y··· Z··· F400 ;

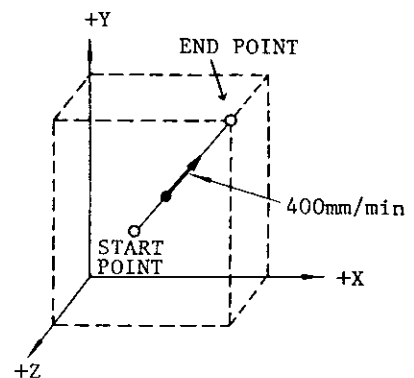$$F = 400 = \sqrt{fX^2 + fY^2 + fZ^2}$$

(mm/min)

Fig. 2.4

F commands for linear interpolations involving motions in simultaneously controlled four axial directions specify feedrates also in the direction tangential to the motion path.

$$F \text{ (mm/min)} = \sqrt{fX^2 + fY^2 + fZ^2 + f\alpha^2}$$