

# Servomotors

## Geared servomotors for SINAMICS S120

### 1FK7 motors with SP+ planetary gearbox

#### Selection and ordering data

Motor Type	Planetary gearbox single-stage		Available gear ratio $i =$				Motor speed, max. S3-60 % $n_{G1}$ ( $n_1$ ) rpm	Output torque, max. S3-60 % $M_{G2}$ ( $T_{2B}$ ) Nm (lb <sub>r</sub> -ft)	Radial output shaft loading, max. <sup>1)</sup> $F_r$ ( $F_{2Rmax}$ ) N (lb <sub>r</sub> )	Axial output shaft loading, max. <sup>1)</sup> $F_a$ ( $F_{2Amax}$ ) N (lb <sub>r</sub> )	
	Type	Torsional backlash arcmin	Gearbox weight, approx. kg (lb)	4	5	7					10
1FK7022	SP 060S-MF1	≤ 4	1.9 (4.2)	✓	✓	✓	✓	6000	40 (295) (32 for $i = 10$ )	2700 (607)	2400 (540)
1FK7032				✓	✓	✓	✓				
1FK7033				✓	✓	✓	✓				
1FK7034				✓	✓	✓	✓				
1FK7040	SP 075S-MF1	≤ 4	3.9 (8.6)	✓	✓	✓	✓	6000	110 (81.1) (90 for $i = 10$ )	4000 (899)	3350 (753)
1FK7042				✓	✓	✓	✓				
1FK7043				✓	✓	✓	✓				
1FK7044				✓	✓	✓	✓				
1FK7060	SP 100S-MF1	≤ 3	7.7 (17.0)	✓	✓	✓	✓	4500	300 (221) (225 for $i = 10$ )	6300 (1416)	5650 (1270)
1FK7061				✓	✓	✓	✓				
1FK7062				✓	✓	✓	✓				
1FK7063				✓	✓	✓	✓				
1FK7064				✓	✓	✓	✓				
1FK7080	SP 140S-MF1	≤ 3	17.2 (37.9)	✓	✓	✓	✓	4000	600 (442) (480 for $i = 10$ )	9450 (2124)	9870 (2219)
1FK7081				✓	✓	✓	✓				
1FK7083				✓	✓	✓	✓				
1FK7084				✓	✓	✓	✓				
1FK7085				✓	✓	✓	✓				
1FK7086				✓	✓	✓	✓				
1FK7100	SP 180S-MF1	≤ 3	34 (75.0)	✓	✓	✓	✓	3500	1100 (810) (880 for $i = 10$ )	14700 (3305)	14150 (3181)
1FK7101				✓	✓	✓	✓				
1FK7103				✓	✓	✓	✓				
1FK7105				✓	✓	✓	–				
1FK7105	SP 210S-MF1	≤ 3	56 (123)	–	–	–	✓	2500	2500 (1844) (2400 for $i = 7$ 1900 for $i = 10$ )	21000 (4721)	30000 (6744)
<b>Gear shaft</b>				<b>Order code</b>							
With fitted key				J02	J03	J05	J09				
Without fitted key				J22	J23	J25	J29				

#### Preconditions:

With the following motor versions, SP+ planetary gearboxes can be mounted:

- Plain motor shaft extension, shaft and flange accuracy tolerance N, without/with holding brake
- IP65 degree of protection and anthracite paint finish

SP+ planetary gearboxes can therefore only be ordered with these 1FK7 motors:

1FK7...-3B.71-1.G1  
1FK7...-3B.71-1.H1  
1FK7...-A..1-1.G5  
1FK7...-A..1-1.H5

When ordering a motor with gearbox, **-Z** should be added to the order number.

#### Example:

1FK7042 motor without holding brake with single-stage SP+ planetary gearbox with  $i = 7$  and gear shaft without fitted key.  
1FK7042-5AF71-1AG5-**Z**  
**J25**

✓ Possible

– Not possible

<sup>1)</sup> In reference to the output shaft center.

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### 1FK7 motors with SP+ planetary gearbox

#### Selection and ordering data

Motor Type	Planetary gearbox two-stage			Available gear ratio $i =$					Motor speed, max. S3-60 % $n_{G1}$ ( $n_1$ ) rpm	Output torque, max. S3-60 % $M_{G2}$ ( $T_{2B}$ ) Nm (lb <sub>r</sub> -ft)	Radial output shaft loading, max. <sup>1)</sup> $F_r$ ( $F_{2Rmax}$ ) N (lb <sub>f</sub> )	Axial output shaft loading, max. <sup>1)</sup> $F_a$ ( $F_{2Amax}$ ) N (lb <sub>f</sub> )
	Type	Torsional backlash arcmin	Gearbox weight, approx. kg (lb)	16	20	28	40	50				
1FK7022	SP 060S-MF2	≤ 6	2 (4.41)	✓	✓	✓	-	-	6000	40 (29.5)	2700 (607)	2400 (540)
1FK7032				✓	✓	-	-	-				
1FK7033				✓	✓	-	-	-				
1FK7022	SP 075S-MF2	≤ 6	3.6 (7.9)	-	-	-	✓	✓	6000	110 (81.1)	4000 (899)	3350 (753)
1FK7032				-	-	✓	✓	✓				
1FK7033				-	-	✓	✓	✓				
1FK7034				✓	✓	✓	-	-				
1FK7040				✓	✓	✓	-	-				
1FK7042				✓	✓	-	-	-				
1FK7043				✓	-	-	-	-				
1FK7034	SP 100S-MF2	≤ 5	7.9 (17.4)	-	-	-	✓	✓	4500	300 (221)	6300 (1416)	2400 (540)
1FK7040				-	-	✓	✓					
1FK7042				-	-	✓	✓					
1FK7043				-	✓	✓	✓					
1FK7044				✓	✓	✓	✓					
1FK7060				✓	✓	✓	-	-				
1FK7061				✓	✓	-	-	-				
1FK7062				✓	✓	-	-	-				
1FK7044	SP 140S-MF2	≤ 5	17 (37.5)	-	-	-	-	✓	4000	600 (442)	9450 (2124)	9870 (2219)
1FK7060				-	-	-	✓	✓				
1FK7061				-	-	✓	✓	✓				
1FK7062				-	-	✓	✓	-				
1FK7063				✓	✓	✓	-	-				
1FK7064				✓	✓	✓	-	-				
1FK7080				✓	✓	✓	✓	-				
1FK7081				✓	✓	✓	-	-				
1FK7083				✓	✓	-	-	-				
1FK7084	✓	-	-	-	-							
<b>Gear shaft</b>				<b>Order code</b>								
With fitted key				J12	J13	J15	J16	J17				
Without fitted key				J32	J33	J35	J36	J37				

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 1FK7...-3B.71-1.H1  
 1FK7...-A..1-1.G5  
 1FK7...-A..1-1.H5

When ordering a motor with gearbox, **-Z** should be added to the order number.

#### Example:

1FK7042 motor without holding brake  
 with single-stage SP+ planetary gearbox  
 with  $i = 7$  and gear shaft without fitted key.  
**1FK7042-5AF71-1AG5-Z**  
**J25**

✓ Possible

- Not possible

<sup>1)</sup> Referred to the center of the output shaft at 100 rpm.

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#### Selection and ordering data

Motor Type	Planetary gearbox two-stage			Available gear ratio $i =$					Motor speed, max. S3-60 % $n_{G1}$ ( $n_1$ ) rpm	Output torque, max. S3-60 % $M_{G2}$ ( $T_{2B}$ ) Nm (lb <sub>r</sub> -ft)	Radial output shaft loading, max. <sup>1)</sup> $F_r$ ( $F_{2Rmax}$ ) N (lb <sub>f</sub> )	Axial output shaft loading, max. <sup>1)</sup> $F_a$ ( $F_{2Amax}$ ) N (lb <sub>f</sub> )		
	Type	Torsional backlash arcmin	Gearbox weight, approx. kg (lb)	16	20	28	40	50						
1FK7062	SP 180S-MF2	≤ 5	36.4 (80.3)	-	-	-	-	✓	4000	1100 (811)	14700 (3305)	14150 (3181)		
1FK7063				-	-	-	✓	✓						
1FK7064				-	-	-	✓	✓						
1FK7080				-	-	-	-	-					✓	✓
1FK7081				-	-	-	-	-					✓	✓
1FK7083				-	-	-	-	✓					-	-
1FK7084				-	✓	✓	-	-					-	-
1FK7085				✓	✓	-	-	-					-	-
1FK7086				✓	✓	-	-	-					-	-
1FK7100				✓	✓	✓	-	-					-	-
1FK7101	✓	✓	-	-	-	-	-							
1FK7103	✓	-	-	-	-	-	-							
1FK7083	SP 210S-MF2	≤ 6	55 (121)	-	-	-	✓	✓	3500	2400 (1770) (2500 for $i = 20$ )	21000 (4721)	30000 (6744)		
1FK7084				-	-	-	✓	✓						
1FK7085				-	-	✓	✓	-					-	
1FK7086				-	-	✓	-	-					-	
1FK7100				-	-	-	✓	✓					-	-
1FK7101				-	-	✓	-	-					-	-
1FK7103				-	✓	-	-	-					-	-
1FK7105				✓	✓	-	-	-					-	-
1FK7101	SP 240S-MF2	≤ 6	80.6 (178)	-	-	-	✓	✓	3500	4500 (3319) (4000 for $i = 40$ 4300 for $i = 50$ )	30000 (6744)	33000 (7419)		
1FK7103				-	-	✓	✓	-					-	
1FK7105				-	-	✓	-	-					-	-
<b>Gear shaft</b>				<b>Order code</b>										
With fitted key				J12	J13	J15	J16	J17						
Without fitted key				J32	J33	J35	J36	J37						

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1FK7...-A..1-1.G5  
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1FK7042-5AF71-1AG5-**Z**  
**J25**

✓ Possible

- Not possible

<sup>1)</sup> In reference to the output shaft center.