FANUC

Drive Systems

Product Overview

Superior reliability,
easy availability, and
optimized energy efficiency

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100% FANUC

No. 1 in the world

FANUC is the leading global manufacturer of factory automation, with 70 years of experience in the development of computer numerical control equipment.

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Widest range – highest reliability

FANUC offers the widest range of drive systems on the market: servo and spindle motors of all sizes in optimized packages with perfectly matched amplifiers. That's our strength. You can always count on finding the ideal system to deliver outstanding performance and meet your exact requirements.

All FANUC motors and amplifiers are developed, manufactured, and quality tested in-house at FANUC Japan. This leads to superior reliability, easy availability, straightforward installation and maintenance, and optimized energy efficiency. Plus, we fully stock a wide range of motors right here in the US.

That's how we increase your productivity.

Your benefits:

- perfect matching packages for highest productivity
- easy installation by plug & play technology
- highest reliability through 100% FANUC quality
- outstanding performance
- easy maintenance
- optimized energy efficiency

Up to
32,000,000
pulses per revolution

70
years
of experience

Servo motors

αi-D series

Servo motors with excellent acceleration performance – for use in high-speed and high-precision machining.

- high feed smoothness
- two versions available: F – ferrite magnet, S – strong motor (neodymium magnets)
- wide torque output range 0.2-500 Nm
- maximum speed up to 8000 rpm
- high resolution αi series encoder (32,000,000/rev)
- protection class IP67

αi-D series																				
Torque [Nm]	0.16	0.32	0.4	0.65	1	1.6	2	4	8	12	18	22	30	40	50	60	90	200	300	500
Flange [mm]	40		60				90		130			174					200	265		
Brake option [Nm]	0.32		0.65		1.2(S), 3(F)	1.6	3	3(S), 8(F)	8	12(S), 35(F)	12	35			70	70(S), 100(F)	100	150		
αiS-D 200V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
αiF-D 200V					•		•	•	•	•		•	•	•		•				
αiS-D (HV) 400V				•	•	•	•	•		•	•		•	•	•	•	•	•		
αiF-D (HV) 400V								•	•	•		•	•	•		•				

3 shaft shapes available: straight shaft, straight shaft with key way, taper shaft

Linear motors

LiS-B series

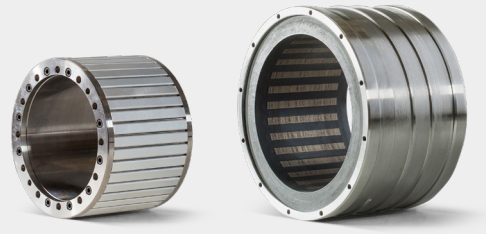
Direct linear force transmission with easy mechanical structure.

- high speed (4 m/s) and high acceleration (30G) through high rigidity
- long stroke and high force with multi-head configuration
- large continuous force (WC) 120 – 7750 N by water cooling
- max. force 300 – 21,000 N
- high precision – applying linear scales with high resolution
- maintenance-free mechanism

	LiS300 S1 (HV)-B	LiS600 S1 (HV)-B	LiS600 S2 (HV)-B	LiS900 S1 (HV)-B	LiS1200 S2 (HV)-B	LiS1800 S2 (HV)-B	LiS3000 M2 (HV)-B	LiS4500 M2 (HV)-B	LiS4500 M3 (HV)-B	LiS6000 M2 (HV)-B	LiS7000 M3 (HV)-B	LiS7500 M2 (HV)-B	LiS9000 M2 (HV)-B	LiS9000 M3 (HV)-B	LiS11000 M2 (HV)-B	LiS11000 M3 (HV)-B	LiS14000 M3 (HV)-B	LiS16000 M3 (HV)-B	LiS21000 L4 (HV)-B
Maximum force [N]	300	600		900	1200	1800	3000	4500		6000	6750	7500	9000		10500	11250	13500	15750	21000
Slider length [mm]	80	140	80	200	140	200	295	415	305	535	425	655	775	545	895	665	545	895	665
Slider width [mm]	60	60	100	60	100	100	150	150	200	150	200	150	150	200	150	200	200	200	340
LiS 200V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
LiS 400V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

DD motors

DiS-B series built-in servo motors



The ideal solution for tables, turrets and the high precision rotary axis of 5-axis machines.

- large torque by strong neodymium magnets
- maximum torque 35-10,000 Nm, continuous torque 15-4500 Nm
- high speed models up to 2000 rpm
- low ripple – optimum magnetic circuit design
- maintenance-free direct drive

	DiS15-B	DiS60-B		DiS80-B		DiS120-230-B		DiS180-B		DiS250-B		DiS300-B		DiS400-B	DiS600-B		DiS600-385-B	
Maximum torque [Nm]	50	150		200		275		400		550		600		800	1200		1200	
Continuous torque [Nm]	17	60 - 65		60 - 80		120		155 - 180		250		270 - 280		380	550 - 620		600	
Diameter [mm]	140	180		230		230		230		230		310		230	310		385	
Height [mm]	70	90		80		100		120		140		100		190	150		130	
Speed [min^{-1}]	2000	600 1500 3000	600HV 1200HV 3000HV	400 1000 3000	400HV 800HV	600	600HV 1200HV	800 1000 3000	400HV 3000HV	300	300HV	300 1500	300HV	400HV	100 600 1500	300HV	300	300HV
200V	•	•		•		•		•		•		•			•		•	
400V			•		•		•		•		•		•	•		•		•

	DiS900-B	DiS1000-385-B		DiS1000-B		DiS1300-385-B	DiS1500-385-B		DiS1500-B	DiS2000-485-B		DiS2000-B		DiS3000-B		DiS5000-B
Maximum torque [Nm]	1800	1800		1900		2250	2500		2800	4000		4000		5600		10000
Continuous torque [Nm]	825	920		830 - 1000		1210	1340		1400	2200		2100 - 2200		3200 - 3300		4500 - 4770
Diameter [mm]	310	385		455		385	385		565	485		565		565		795
Height [mm]	190	160		130		195	210		130	210		160		210		180
Speed [min^{-1}]	200	150	150HV	150 200	150HV 400HV	300HV	300	300HV	100	150	150HV	200	200HV 500HV	100	100HV 500HV	50HV 500HV
200V	•	•		•			•		•	•		•		•		
400V			•		•	•		•			•		•		•	•

Spindle motors

αil-D series

Powerful motors for high acceleration with high mechanical precision and low vibration (V3) – suited to spindles of high performance and large size machines.

- wide range of constant power up to high speed by winding switching
- power range 0.55-150 kW
- large torque at low speed available
- special versions with hollow shaft for center-through-coolant or liquid cooled motors available
- protection class IP40, with oil seal IP54, IP65 as option for some models

αil-D series																			
Power [kW]	0.55	1.5	2.2	3.7	5.5	7.5	9	11	15	18.5	22	26	30	37	45	60	75	100	150
αil-D (200V) Standard model	•	•	•	•	•	•		•	•	•	•	•	•	•	•				
Max. speed [rpm]	10000 15000	12000 15000	12000 20000 24000	12000 20000	12000 15000	12000 15000		10000 12000 15000	8000 12000	8000 12000	8000 12000	8000 12000	7000	7000	5000				
αil-D (400V) Standard model	•	•	•	•	•	•		•	•	•		•	•	•	•	•	•	•	•
Max. speed [rpm]	10000	12000	12000 20000	12000 20000	12000	12000		10000 12000	8000 12000	8000 12000		8000 12000	7000	7000	5000	5000	5000	5000	5000
αilP-D (200V) Wide constant power range				•	•	•	•	•	•	•	•								
Max. speed [rpm]				10000	8000	8000	8000	8000	8000	6000	5000 6000								
αilP-D (400V) Wide constant power range							•		•	•	•								
Max. speed [rpm]							8000		8000	8000	5000 6000								
αilT-D (200V) Coolant through			•	•	•	•		•	•	•		•							
Max. speed [rpm]			20000 24000	12000 20000	12000 15000	12000 15000		10000 12000 15000	8000 12000	12000 15000		12000							
αilT-D (400V) Coolant through			•	•	•	•		•	•	•		•							
Max. speed [rpm]			20000	20000	12000 15000	12000		10000 12000 15000	12000	12000 15000		12000							
αilL-D (200V) Coolant through										•	•		•						
Max. speed [rpm]										20000	15000		15000						
αilL-D (400V) Coolant through										•	•		•						
Max. speed [rpm]										20000	15000		15000						

Asynchronous built-in spindle motors

B*i*l series

Compact built-in motors for high-speed and high-performance machines with best adaption in mechanical machine design.

- large torque at low speed – high power at high speed
- power range 0.75-50kW
- larger torque and higher power achieved by efficient heat radiation of stator resin mold (option) or copper-bar rotor (some models)
- maximum speed up to 70,000 rpm

Standard 200V	B*i*150S /30000	B*i*150M /25000	B*i*150L /25000	B*i*150L /30000	B*i*180S /20000	B*i*180S /20000	B*i*180S /30000	B*i*180M /15000	B*i*180M /15000	B*i*1100SS /12000	B*i*180M /30000	B*i*180L /8000	B*i*100S /12500	B*i*112S /15000	B*i*112M /15000	B*i*112L /15000	B*i*112LL /15000	B*i*132L /14000	B*i*160M /13000	B*i*160L /13000
Stator outer Diameter [mm]	88				120					156	120		156	180				210	240	
Rotor inner Diameter [mm]	34.8				41					58	41		58	74				84	101	
Continuous power [kW]	0.75	1	1.5	5.5	1.5	2.2	7.5	1.5	2.2	3.7	11	1.1	2.2	15	18.5	18.5	22	22	22	26
Length [mm]	71	100	154		135			195		152	205	245	202	219	272	330	394	360	321	406
Speed [min^{-1}]	25000	20000	25000	30000	20000		30000	15000		12000	30000	8000	12500	15000				14000	13000	

Standard 200V	B*i*116LL/13000	B*i*170S/6000	B*i*170M/6000	B*i*180M/10000	B*i*180L/10000	B*i*180LL/10000	B*i*200S/6000	B*i*200M/6000	B*i*200L/6000	B*i*250S/6000	B*i*250M/3000
Stator outer Diameter [mm]	240			292			300			370	
Rotor inner Diameter [mm]	101	110		124			146			168	
Continuous power [kW]	26	11	22	26	30	37	15	15	15	22	37
Length [mm]	461	265	335	363	455	515	302	322	394	395	522
Speed [min^{-1}]	13000	6000		10000			5000	6000		4000	3000

High speed 200V	B*i*40S/70000	B*i*60SS/50000	B*i*60S/50000	B*i*100S/20000	B*i*100S/30000	B*i*112SS/20000	B*i*112S/20000	B*i*112S/20000	B*i*112M/20000	B*i*112L/20000	B*i*160M/20000	B*i*160L/20000	B*i*160LL/20000
Stator outer Diameter [mm]	88	110		156		159		180			240		
Rotor inner Diameter [mm]	28	37		70		74		74			101.4		
Continuous power [kW]	0.55	3.7	5.5	11	15	2.2	11	15	18.5	18.5	18.5	25	30
Length [mm]	71	106	145	202	202	155	200	219	272	330	321	406	461
Speed [min^{-1}]	70000	50000		20000	30000	20000							

Standard moulded (TYPE M) 200V	Bil50S /30000 TYPE M	Bil50M /25000 TYPE M	Bil50L /30000 TYPE M	Bil80M /15000 TYPE M	Bil80M /30000 TYPE M	Bil100SS /12000 TYPE M	Bil100S /12500 TYPE M	Bil112S /15000 TYPE M	Bil112M /15000 TYPE M	Bil112L /15000 TYPE M	Bil112LL /15000 TYPE M	Bil160M /13000 TYPE M	Bil160L /13000 TYPE M	Bil160LL /13000 TYPE M	Bil170S /8000 TYPE M	Bil170M /8000 TYPE M	Bil180M /10000 TYPE M	Bil180L /10000 TYPE M	Bil180LL /10000 TYPE M	Bil200S /6000 TYPE M	Bil200M /6000 TYPE M	Bil200L /6000 TYPE M
Stator outer Diameter [mm]	107			138		167	180	200				267					332			340		
Rotor inner Diameter [mm]	34.8			52	41	70	58	74				101			110		124			146		
Continuous power [kW]	1.1	1.2	3	2.2	15	5.5	3.7	15	18.5	18.5	22	26	30	30	22	22	26	30	37	22	22	15
Length [mm]	86	113	165	210	210	159	227	237	299	350	414	342	421	494	288	358	385	475	535	317	337	415
Speed [min^{-1}]	30000	20000	30000	15000	30000	12000	12500	15000				13000			8000	6000	10000			6000		

High speed moulded (TYPE M) 200V	Bil60S/50000 TYPE M	Bil100S/30000 TYPE M	Bil112SS/20000 TYPE M	Bil112S/20000 TYPE M	Bil112M/20000 TYPE M	Bil112L/20000 TYPE M
Stator outer Diameter [mm]	129	180			200	
Rotor inner Diameter [mm]	37	70	74		74	
Continuous power [kW]	7.5	18.5	3.7	11	18.5	
Length [mm]	158	227	170	215	299	350
Speed [min^{-1}]	50000	30000	20000			

Standard 400V	Bil80S /20000	Bil100S /12500	Bil112S /15000	Bil112M /15000	Bil112L /15000	Bil112LL /15000	Bil160M /13000	Bil160L /13000	Bil160LL /13000	Bil170S /8000	Bil170M /8000	Bil200S /6000	Bil200M /6000	Bil200L /6000	Bil250S /4000	Bil250M /6000
Stator outer Diameter [mm]	120	156	180				240					300			370	
Rotor inner Diameter [mm]	41	58	74				101			110		146			168	
Continuous power [kW]	2.2	3.7	15	15	18.5	25	25	25	25	15	26	22	25	15	22	37
Length [mm]	135	202	219	272	330	394	321	406	461	265	335	302	322	394	395	522
Speed [min^{-1}]	20000	12500	15000				13000			6000					4000	6000

High speed 400V	Bil100S/20000	Bil112SS/20000	Bil112S/20000	Bil112M/20000	Bil112L/20000	Bil112L/25000	Bil160LL/20000
Stator outer Diameter [mm]	156	159		180			240
Rotor inner Diameter [mm]	70	74		74			101.4
Continuous power [kW]	11	7.5	18.5	22		25	50
Length [mm]	202	155	200	272	330	330	461
Speed [min^{-1}]	20000	20000		20000		25000	20000

Ask your local FANUC partner for dedicated customized motor/amplifier combinations.

Synchronous built-in spindle motors

BiS series

Compact built-in motors with high torque for tough material (e.g. titanium) and heavy cutting processes.

- large torque at low speed – strong neodymium magnet rotor structure
- power output 11 – 80 kW
- low ripple – optimum magnetic circuit design
- larger torque and high power achieved by efficient heat radiation of stator resin mould
- suitable for lathe and gear cutting machines
- maximum speed – 33,000 rpm

Standard 200V	BiS100L2/10000	BiS132L2/3000	BiS132L3/2500	BiS160L4/1400	BiS200L4/750
Frame [mm]	100	132		160	200
Stator outer Diameter [mm]	160	205		250	350
Rotor inner Diameter [mm]	60	92		120	170
Continuous Power [kW]	7.5	11	12	16	14
Stator length [mm]	170	200	250	310	324
Speed [min^{-1}]	6000 10000	3000	2500	1400	750

Standard 400V	BiS90L3/33000	BiS132L2/7000	BiS132L3/7000	BiS160L4/6000	BiS160L6/4500	BiS200L4/3000	BiS200L6/3000
Frame [mm]	90	132		160		200	
Stator outer Diameter [mm]	135	205		250		350	
Rotor inner Diameter [mm]	70	92		120		170	
Continuous Power [kW]	80	24	25	33	25	31	30
Stator length [mm]	170	200	250	310	410	324	424
Speed [min^{-1}]	33000	7000		6000	4500	3000	

Amplifiers and power supply modules

αi-D series

The energy efficient solution with power source regeneration and low loss power devices.

- modular structure with αiPS-D (power supply), αiSP-D (spindle amplifier), and αiSV-D (servo amplifier)
- compact amplifier unit for 1 spindle & 3 axes
- built-in Leakage Detection function
- Safe Torque Off function in servo and spindle amplifier
- quick maintenance by circuit board and fan replacement without disassembly
- 75/100kW spindle amplifier (400V) with high efficient SIC (silicon carbide) power circuit available
- high voltage protection modules for voltage protection of spindle and servo amplifier
- integrated brake circuit

Width [mm]	αi-D amplifier (200V)					
	Power supply αiPS-D [kW]	Spindle amplifier αiSP-D [kW]	Servo amplifier αiSV-D			Servo/Spindle amplifier αiSVP-D
			1 axis [A]	2 axes [A]	3 axes [A]	3 axes [A] / 1 spindle [kW]
60	3 11	2.2 7.5	4 20 40 80 160	4/4 4/20 20/20 20/40 40/40 40/80 80/80	4/4/4 20/20/20 20/20/40 40/40/40	20/20/20-2.2 40/40/40-2.2
90	20	11 18	360S	80/160 160/160	80/80/80	20/20/20-7.5 40/40/40-11
120	30 40	26 37	360			
240	60	45 60				

Width [mm]	αi-D amplifier (400V)					
	Power supply αiPS HV-D [kW]	Spindle amplifier αiSP HV-D [kW]	Servo amplifier αiSV HV-D			Servo/Spindle amplifier αiSVP HV-D
			1 axis [A]	2 axes [A]	3 axes [A]	3 axes [A] / 1 spindle [kW]
60	11	7.5	10 20 40 80	10/10 10/20 20/20 20/40 40/40	10/10/10 10/10/20 20/20/20	
90	20	11 18	180S	40/80 80/80	40/40/40	10/10/10-7.5 20/20/20-11
120	30 60	26 37 45 60	180			
240	75 100 125	75 100	360 540			

Amplifiers and power supply modules

αi-D series

The cost efficient solution with integrated power supply.

- servo amplifier for up to 2 axes
- compact amplifier unit for 1 spindle & up to 3 axes
- low loss power devices
- safe torque off function
- quick maintenance by circuit board and fan replacement without disassembly
- servo amplifier suitable for auxiliary axes
- αiPSVSP-D especially for economical small/medium size compact lathe or milling machines

Width [mm]	αi-D amplifier (200V)			
	Servo amplifier αiPSV-D		Compact Servo/Spindle amplifier αiPSVSP-D	
	1 axis [A]	2 axes [A]	2 axes [A] / 1 spindle [kW]	3 axes [A] / 1 spindle [kW]
60	4 20 40 80	20/20 40/40		
180			20/20-7.5 20/20-11 40/40-18 80/80-18	20/20/40-7.5 20/20/40-11 40/40/40-11 40/40/40-18 40/40/80-18 80/80/80-18
240			80/80-26	80/80/80-26 80/80/160-26

Width [mm]	αi-D amplifier (400V)			
	Servo amplifier αiPSV HV-D		Compact Servo/Spindle amplifier αiPSVSP HV-D	
	1 axis [A]	2 axes [A]	2 axes [A] / 1 spindle [kW]	3 axes [A] / 1 spindle [kW]
60	10 20 40	10/10 20/20		
180			10/10-11 40/40-18	20/20/20-11 20/20/40-18 40/40/40-18
240			40/40-26	40/40/40-26 40/40/80-26

Extra equipment

Power Failure Backup Modules (PFBM)

In case of main power shutdown:

- Power supply module quickly recognizes the power drop.
- With PFB-24 module, the CNC and drives can be supplied with 24Vdc control power from DC-link.
- Power Failure Backup Modules (PFB-C + capacitors) buffer energy to supply control power and provide sufficient energy for a safe retraction of servo axes, preventing damage to tools and work pieces.
- By using additional resistor modules (PFB-R) the servo and spindle motors can be stopped quickly, avoiding free-run.

Energy Charge Module (ECM)

Suitable for large machines equipped with large servo motors, e.g. press machines that generate power peaks during acceleration and deceleration. Energy Charge Module reduces this peak of electrical power consumption and minimizes the voltage fluctuation of electrical facilities. Energy released during deceleration can be stored in capacitor modules and used for acceleration. This ensures the electric power consumption can be balanced effectively.

Accessories

Separate Detector Unit (SDU)
- To connect scales or rotary encoders with FANUC serial or analog interface

Position coders
- αiBZ
- αiCZ
- α Position Coders

High resolution interface circuits

Rechargeable battery unit
- Buffering absolute axes position in Power OFF status and CNC data

Filter modules necessary to fulfill EMC–requirements
- AC line filters/AC reactors
- noises filters

Switching and protection devices detecting overcurrent and overvoltage
- magnetic contactors
- circuit breakers
- lightning surge absorbers

Connection material
- connectors
- short bars
- transformers
- 24V power supplies

Our strength: Service and Support

From initial build to full operation, FANUC delivers comprehensive application support and personalized customer service. Our highly skilled and dedicated team partners with leading machine tool builders to bring the world's best equipment to market. Additionally, operators can enhance machine performance through specialized FANUC Service packages.

FANUC Repair

Benefit from worry-free repair services by FANUC experts while you can concentrate on your business. Get reliable repairs for amplifiers – including more than 30 year old models – motors, CNC, PCB, and laser power supply.

Extend the lifetime of your equipment.

Wherever you need us: we are there

With the largest global network of local subsidiaries across all continents, we are always there to meet your needs when you need us. Fast and efficient – 24/7. You will always have a local contact.

FANUC Academy

Upskill your workforce and boost productivity with FANUC training courses. Certified FANUC instructors can enhance your employees' skills either at our training facilities or directly at your site, using standard training modules or customized training packages.

Let's optimize your productivity.