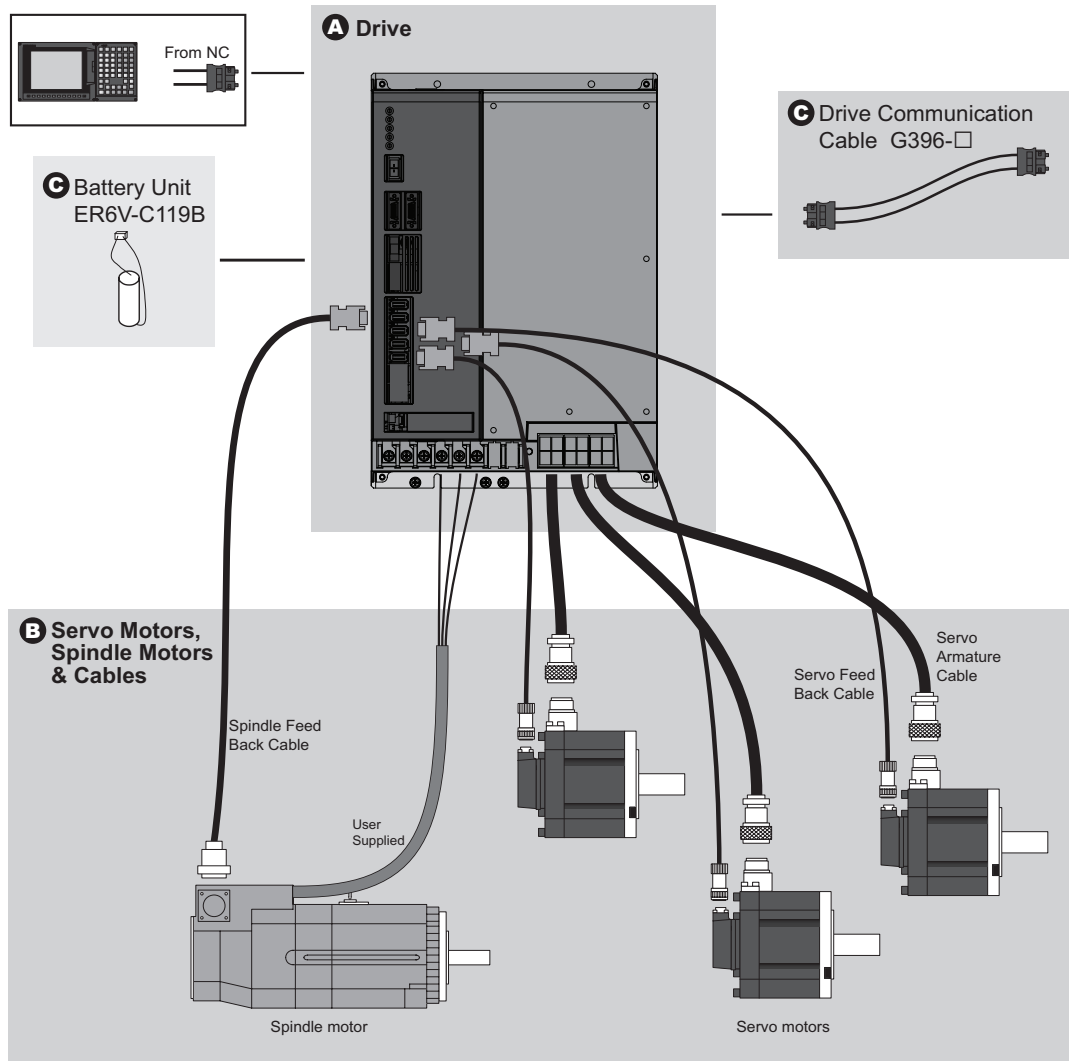


MDS-DM2 Drive System Selections

Digital AC servo and spindle drive system built into one package. The drive system can have up to 3 servos and 1 spindle. This will reduce cabinet space and size while giving you the same characteristics of our MDS-D Series drives.

General System Diagram for MDS-DM2 Configuration



Multi-Hybrid Drives

MDS-DM Drives

Description	Model	Stocked Item	Notes
Servo/Spindle Drive 100A+80A+80A	MDS-DM2-SPV2-10080	-	2 axis + spindle
Servo/Spindle Drive 160A+80A+80A	MDS-DM2-SPV2-16080	-	2 axis + spindle
Servo/Spindle Drive 200A+80A+80A	MDS-DM2-SPV2-20080	-	2 axis + spindle
Servo/Spindle Drive 100A+80A+80A+80A	MDS-DM2-SPV3-10080	-	3 axis + spindle
Servo/Spindle Drive 160A+80A+80A+80A	MDS-DM2-SPV3-16080	S	3 axis + spindle
Servo/Spindle Drive 100A+80A+80A+80A	MDS-DM2-SPV3-20080	-	3 axis + spindle

Line Reactor

Description	Model	Stocked Item	Notes
18.5KW Line reactor	D-AL-18.5K	S	Must have with each Drive Unit

Servo Motors, Spindle Motors and Cables

HF Series Servo Motors

MDS-DM_	Unit Width	Unit Nominal Maximum Current	Axis	Compatible Motor Type							
				54	104	154	224	204	223	303	302
				Stall Torque (N•m)							
				2.9	5.9	9.0	12.0	13.7	12.0	22.5	20.0
SPV3-10080	260mm	80+80+80A	LMS	•	•	•	•	•	•	•	•
SPV3-16080		80+80+80A	LMS	•	•	•	•	•	•	•	•
SPV3-20080		80+80+80A	LMS	•	•	•	•	•	•	•	•
SPV2-10080		80+80A	LM	•	•	•	•	•	•	•	•
SPV2-16080		80+80A	LM	•	•	•	•	•	•	•	•
SPV2-20080		80+80A	LM	•	•	•	•	•	•	•	•

Note: Indicates the compatible motor for each servo drive unit.

HF Series Specifications

Servomotor Type		Compatible Motor Type										
ABS Specifications: HF_ -A51 / HF_ -A48		HF54	HF104	HF154	HF224	HF204	HF354	HF223	HF303	HF453	HF302	
Compatible Drive Unit Type	MDS-DM2-SPV3-	xxx80	xxx80	xxx80 200120	xxx80 200120	xxx80 200120	200120	xxx80	xxx80 200120	200120	xxx80	
	MDS-DM2-SPHV3-	xxx80	xxx80	xxx80	xxx80	xxx80	-	xxx80	xxx80	-	xxx80	
	MDS-DM2-SPV2-	xxx80	xxx80	xxx80	xxx80	xxx80	-	xxx80	xxx80	-	xxx80	
Continuous Characteristics	Rated Output (kW)	0.5	1.0	1.5	2.2	2.0	3.5	2.2	3.0	4.5	3.0	
	Rated Current (A)	1.8	3.6	5.8	8.5	6.8	13.8	9.0	10.7	13.4	10.9	
	Rated Torque (N•m)	1.6	3.2	4.8	7.0	6.4	11.1	10.5	14.3	14.3	14.3	
	Stall Current (A)	3.2	6.6	11.0	14.5	14.6	28.0	10.2	15.8	34.0	10.9	
	Stall Torque (N•m)	2.9	5.9	9.0	12.0	13.7	22.5	12.0	22.5	37.2	20.0	
Power Facility Capacity (kVA)		1.1	2.0	2.8	4.1	3.7	6.4	4.1	5.5	8.1	5.5	
Rated Rotation Speed (r/min)		3000					3000		2000		3000	2000
Maximum Rotation Speed (r/min)		4000					4000		3000		3500	2000
Maximum Current (A)		16.8	29.0	52.0	57.0	57.0	79.6	29.0	48.0	79.6	29.0	
Maximum Torque (N•m)		13.0	23.3	42.0	46.5	47.0	75.0	32.0	64.0	90.0	50.0	
Power Rate at Continuous Rated Torque (kW/s)		4.1	8.4	12.7	20.7	10.6	16.5	46.5	27.3	18.3	27.3	
Motor Inertia (kg•cm ²)		6.1	11.9	17.8	23.7	38.3	75.0	23.7	75.0	112.0	75.0	
Motor Inertia With Brake (kg•cm ²)		8.3	14.1	20.0	25.9	48.0	84.7	25.9	84.7	121.7	84.7	
Maximum Motor Shaft Conversion Load Inertia Ratio		High-speed, high-accuracy machine: 3 times or less of motor inertia; General machine tool (interpolation axis): 5 times or less of motor inertia; General machine (non-interpolation axis): 7 times or less of motor inertia										
Motor Side Detector		Resolution per motor revolution: A51: 1,000,000 pulse/rev, A48: 260,000 pulse/rev										
Degree Of Protection		IP67 (The shaft-through portion is excluded.)										
Environment	Ambient Temperature	Operation: 0 to 40°C (with no freezing), Storage: -15°C to 70°C (with no freezing)										
	Ambient Humidity	Operation: 80%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation)										
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust										
	Altitude	Operation: 1000 meters or less above sea level, Storage: 10000 meters or less above sea level										
Vibration		X, Y: 24.5m/s ² (2.5G)				X: 24.5m/s ² (2.5G) Y: 29.4m/s ² (3G)		X, Y: 24.5m/s ² (2.5G)		X:24.5m/s ² (2.5G) Y:29.4m/s ² (3G)		
Flange Size [mm]		130 SQ.	130 SQ.	130 SQ.	130 SQ.	176 SQ.	176 SQ.	130 SQ.	176 SQ.	176 SQ.	176 SQ.	
Total Length (Excluding Shaft) (mm) (*3)		118.5	140.5	162.5	184.5	143.5	183.5	184.5	183.5	223.5	183.5	
Flange Fitting Diameter (mm)		ø110	ø110	ø 110	ø110	ø114.3	ø114.3	ø 110	ø 114.3	ø 114.3	ø 114.3	
Shaft Diameter (mm)		ø24	ø24	ø 24	ø24	ø35	ø35	ø 24	ø 35	ø 35	ø 35	
Weight Without / With Brake (kg)		4.8/6.8	6.5/8.5	8.3/10.3	10.0/12.0	12.0/18.0	19.0/25.0	10.0/12.0	19.0/25.0	26.0/32.0	19.0/25.0	
Heat-Resistant Class		155 (F)										

Notes:

- The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.
- Use the HF motor in combination with the MDS-DM2 Series drive unit compatible with the 200VAC input.
- The total length will be 3.5mm longer when using an A51 detector.
- Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

Servomotor Specifications

Description	Model Number	Stocked Item	Notes
Servomotor 2.9NM Stall, 4krpm 1Mppr	HF54S-A51	S	
Servomotor 2.9NM Stall, 4krpm 260Kppr	HF54S-A48	S	
Servomotor with Brake 2.9NM Stall, 4krpm 1Mppr	HF54BS-A51	S	
Servomotor with Brake 2.9NM Stall, 4krpm 260Kppr	HF54BS-A48	S	
Servomotor 5.9NM Stall, 4krpm 1Mppr	HF104S-A51	S	
Servomotor 5.9NM Stall, 4krpm 260Kppr	HF104S-A48	S	
Servomotor with Brake 5.9NM Stall, 4krpm 1Mppr	HF104BS-A51	S	
Servomotor with Brake 5.9NM Stall, 4krpm 260Kppr	HF104BS-A48	S	
Servomotor 9.0 NM Stall, 4krpm 1Mppr	HF154S-A51	S	
Servomotor 9.0 NM Stall, 4krpm 260Kppr	HF154S-A48	S	
Servomotor with Brake 9.0 NM Stall, 4krpm 1Mppr	HF154BS-A51	S	
Servomotor with Brake 9.0 NM Stall, 4krpm 260Kppr	HF154BS-A48	S	
Servomotor 12.0 NM Stall, 4krpm 1Mppr	HF224S-A51	-	
Servomotor 12.0 NM Stall, 4krpm 260Kppr	HF224S-A48	-	
Servomotor with Brake 12.0 NM Stall, 4krpm 1Mppr	HF224BS-A51	-	
Servomotor with Brake 12.0 NM Stall, 4krpm 260Kppr	HF224BS-A48	-	
Servomotor 13.7 NM Stall, 4krpm 1Mppr	HF204S-A51	S	
Servomotor 13.7NM Stall, 4krpm 260Kppr	HF204S-A48	S	
Servomotor with Brake 13.7 NM Stall, 4krpm 1Mppr	HF204BS-A51	S	
Servomotor with Brake 13.7 NM Stall, 4krpm 260Kppr	HF204BS-A48	S	
Servomotor 12.0 NM Stall, 3krpm 1Mppr	HF223S-A51	-	
Servomotor 12.0NM Stall, 3krpm 260Kppr	HF223S-A48	-	
Servomotor with Brake 12.0 NM Stall, 3krpm 1Mppr	HF223BS-A51	-	
Servomotor with Brake 12.0 NM Stall, 3krpm 260Kppr	HF223BS-A48	-	
Servomotor 22.5 NM Stall, 3krpm 1Mppr	HF303S-A51	-	
Servomotor 22.5NM Stall, 3krpm 260Kppr	HF303S-A48	-	
Servomotor with Brake 22.5 NM Stall, 3krpm 1Mppr	HF303BS-A51	-	
Servomotor with Brake 22.5 NM Stall, 3krpm 260Kppr	HF303BS-A48	-	
Servomotor 20 NM Stall, 2krpm 1Mppr	HF302S-A51	-	
Servomotor 22.5NM Stall, 2krpm 260Kppr	HF302S-A48	-	
Servomotor with Brake 22.5 NM Stall, 2krpm 1Mppr	HF302BS-A51	-	
Servomotor with Brake 22.5 NM Stall, 2krpm 260Kppr	HF302BS-A48	-	

Servo Feedback Cables

Description	Model Number	Stocked Item	Notes
Servomotor Encoder Cable for A48	CNV2E-8P-2.0M	S	IP65, High Flex + Shield
Servomotor Encoder Cable for A48	CNV2E-8P-5.0M	S	IP65, High Flex + Shield
Servomotor Encoder Cable for A48	CNV2E-8P-10.0M	S	IP65, High Flex + Shield
Servomotor Encoder Cable for A51	CNV2E-6P-2.0M	S	IP65, High Flex + Shield
Servomotor Encoder Cable for A51	CNV2E-6P-5.0M	S	IP65, High Flex + Shield
Servomotor Encoder Cable for A51	CNV2E-6P-10.0M	S	IP65, High Flex + Shield

Servo Armature Cables

Description	Model Number	Stocked Item	Notes
Servo Armature Cable HF54-154	MR-J3P2-2M	S	IP65 Standard Flex, No Shielding
Servo Armature Cable HF54-154	MR-J3P2-5M	S	IP65 Standard Flex, No Shielding
Servo Armature Cable HF54-154	MR-J3P2-10M	S	IP65 Standard Flex, No Shielding
Servo Armature Cable HF204-302	MR-J3P5-2M	S	IP65 Standard Flex, No Shielding
Servo Armature Cable HF204-302	MR-J3P5-5M	S	IP65 Standard Flex, No Shielding
Servo Armature Cable HF204-302	MR-J3P5-10M	S	IP65 Standard Flex, No Shielding

Servo Brake Cables

Description	Model Number	Stocked Item	Notes
Servomotor Brake 2M	MR-J3BK-2M	S	Add 1 CNU20S(AWG14) for each cable
Servomotor Brake 5M	MR-J3BK-5M	S	Add 1 CNU20S(AWG14) for each cable
Servomotor Brake 10M	MR-J3BK-10M	S	Add 1 CNU20S(AWG14) for each cable

Servomotor Connectors

Description	Model Number	Stocked Item	Notes
Power Connector for CN22	1-178128-2	S	1 Needed for 24V power
Contacts for CN22	1-175218-5	S	2 needed per connector
Armature Cable Connector	1-917807-2	S	2 or 3 connectors per drive needed
Contacts for Armature Cable Connector	316041-2	S	4 per connector needed
Brake Connector	CNU20S(AWG14)	S	1 per brake motor
Power Supply Connector	CNU23S	S	Add for every drive

Spindle Motor Specifications

Spindle Motor Type	SJ-V5.5-01ZT	SJ-V7.5-01ZT	SJ-V7.5-03ZT	SJ-V11-01ZT	SJ-V11-13ZT	SJ-V15-01ZT	SJ-V15-09ZT	
Compatible Drive Unit Type	MDS-DM2-SPV2/SPV3-	10080	10080	16080	16080	20080	20080	-
	MDS-DM2-SPHV3-	-	-	-	-	-	-	20080
Output Capacity	Continuous Rating (kW)	3.7	5.5	5.5	7.5	7.5	11	11
	Short Time Rating (kW) 30 Minute Rating	5.5	7.5	7.5	11	11	15	15
Power Facility Capacity (kVA)	9.9	13.4	13.4	19.6	19.6	26.7	26.7	
Base Rotation Speed (r/min)	1500	1500	1500	1500	1500	1500	1500	
Maximum Rotation Speed (r/min)	12000	12000	12000	8000	8000	8000	8000	
Frame No.	D90	A112	A112	B112	B112	A160	A160	
Continuous Rated Torque (N•m)	23.6	35	35	47.7	47.7	70	70	
GD ² (kg•m ²)	0.059	0.098	0.098	0.12	0.12	0.23	0.23	
Inertia (kg•m ²)	0.0148	0.0245	0.0245	0.03	0.03	0.0575	0.0575	
Tolerable Radial Load (N)	980	980	980	1960	1960	2940	2940	
Cooling Fan	Input Voltage	Single-phase 200V	3-phase 200V	3-phase 200V	3-phase 200V	3-phase 200V	3-phase 200V	3-phase 200V
	Maximum Power Consumption	36W	40W	40W	40W	40W	63W	63W
Environment	Ambient Temperature	Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing)						
	Ambient Humidity	Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation)						
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust						
	Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level Transportation: 10000 meters or less above sea level						
Degree of Protection	IP44							
Flange Size (mm)	174 SQ.	204 SQ.	204 SQ.	204 SQ.	204 SQ.	250 SQ.	250 SQ.	
Total Length (Excluding Shaft) (mm)	425	440	440	490	490	469.5	469.5	
Flange Fitting Diameter (mm)	ø150	ø180	ø180	ø180	ø180	ø230	ø230	
Shaft Diameter (mm)	ø28	ø32	ø32	ø48	ø48	ø 48	ø48	
Weight (kg)	49	60	60	70	70	110	110	
Heat-Resistant Class	155 (F)							

Notes:

1. The tolerable radial load is the value calculated at the center of output shaft.
2. Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

SJ-V Series Spindle Motors

Spindle Motor Type		SJ-SD5.5/100-01	SJ-D5.5/120-01	SJ-D5.5/120-02	SJ-D7.5/100-01	SJ-D7.5/120-01	SJ-D11/80-01	SJ-D11/100-01
Compatible Drive Unit MDS-DM2-SPV2/SPV3-		10080	10080	10080 16080 20080	10080	10080	16080	16080
Output Capacity	Continuous Rating (kW)	3.7	3.7	3.7	5.5	5.5	7.5	7.5
	Short Time Rating (kW)	5.5 (30-minute rating)			7.5 (30-minute rating)		11 (30-minute rating)	
Power Facility Capacity (kVA)		9.9	9.9	9.9	13.4	13.4	19.6	19.6
Base Rotation Speed (r/min)		1500	1500	2800	1500	1500	1500	1500
Maximum Rotation Speed (r/min)		10000	12000	12000	10000	12000	8000	10000
Frame No.		D90	D90	B90	A112	A112	B112	B112
Continuous Rated Torque (N•m)		23.6	23.6	12.6	35.0	35.0	47.7	47.7
GD ² (kg•m ²)		0.053	0.053	0.030	0.094	0.094	0.122	0.122
Inertia (kg•m ²)		0.013	0.013	0.0074	0.023	0.023	0.031	0.031
Tolerable Radial Load (N)		1470	1470	980	1960	1960	1960	1960
Cooling Fan	Input Voltage	3-phase 200V						
	Maximum Power Consumption (W)	38	38	38	50	50	50	50
Environment	Ambient Temperature	Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing)						
	Ambient Humidity	Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation)						
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust						
	Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level Transportation: 10000 meters or less above sea level						
Degree of Protection		IP54 (The shaft-through portion is excluded)						
Flange Size (mm)		174 SQ.	174 SQ.	174 SQ.	204 SQ.	180 SQ.	204 SQ.	180 SQ.
Total Length (Excluding Shaft) (mm)		417	417	327	439	439	489	489
Flange Fitting Diameter (mm)		ø150	ø150	ø150	ø180	ø180	ø180	ø180
Shaft Diameter (mm)		ø28	ø28	ø28	ø32	ø32	ø48	ø48
Weight (kg)		39	39	26	53	53	64	64
Heat-Resistant Class		155 (F)						

Notes:

- The tolerable radial load is the value calculated at the center of output shaft.
- Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- For SJ-D5.5/120-02, output characteristics at acceleration/deceleration vary depending on the connected drive unit. Refer to "output characteristics" for details.

Spindle Motor Type		SJ-DJ5.5/100-01	SJ-DJ5.5/120-01	SJ-DJ5.5/120-02	SJ-DJ7.5/100-01	SJ-DJ11/100-01	SJ-DJ15/80-01	
Compatible Drive Unit MDS-DM2-SPV2/SPV3-		10080	10080	10080	10080	16080	20080	
Output Capacity	Continuous Rating (kW)	3.7	3.7	3.7	5.5	7.5	11	
	Short Time Rating (kW)	5.5 (25%ED rating)			7.5 (15-minute rating)	11 (15-minute rating)	15 (15-minute rating) 15%ED rating	
Power Facility Capacity (kVA)		9.9	9.9	9.9	13.4	19.6	26.7	
Base Rotation Speed (r/min)	Continuous Rating	2000	2000	2000	2000	2000	2000	
	Short Time Rating	1500	1500	1500	1500	1500	1500	
Maximum Rotation Speed (r/min)		10000	12000	12000	10000	10000	8000	
Frame No.		B90	B90	B90	D90	A112	B112	
Continuous Rated Torque (N•m)		17.7	17.7	17.7	26.3	35.8	52.5	
GD ² (kg•m ²)		0.030	0.030	0.030	0.053	0.094	0.122	
Motor Inertia (kg•m ²)		0.0074	0.0074	0.0074	0.013	0.023	0.031	
Tolerable Radial Load (N)		980	980	980	1470	1960	1960	
Cooling Fan	Input Voltage	3-phase 200V						
	Maximum Power Consumption	38W	38W	38W	38W	50W	50W	
Environment	Ambient Temperature	Operation: 0 to 40°C (with no freezing), Storage: -20°C to 65°C (with no freezing)						
	Ambient Humidity	Operation: 90%RH or less (with no dew condensation), Storage: 90%RH or less (with no dew condensation)						
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust						
	Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 10000 meters or less above sea level						
Degree of Protection		IP54 (The shaft-through portion is excluded.)						
Flange Size (mm)		174 SQ.	174 SQ.	174 SQ.	174 SQ.	204 SQ.	204 SQ.	
Total Length (Excluding Shaft) (mm)		327	327	327	417	439	489	
Flange Fitting Diameter (mm)		ø150	ø150	ø150	ø150	ø180	ø180	
Shaft Diameter (mm)		ø28	ø28	ø28	ø28	ø32	ø48	
Weight (kg)		26	26	26	39	53	64	
Heat-Resistant Class		155 (F)						

Notes:

- The tolerable radial load is the value calculated at the center of output shaft.
- Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

Spindle Feedback Cables

Description	Model Number	Stocked Item	Notes
Spindle Feedback Cable	CNP2E-1-10.0M	S	
Spindle Feedback Cable	CNP2E-1-15.0M	S	
Spindle Feedback Cable	CNP2E-1-20.0M	S	

External Spindle Encoders

Description	Model Number	Stocked Item	Notes
6000rpm External Spindle Encoder	OSE1024-3-15-68	-	
8000rpm External Spindle Encoder	OSE1024-3-15-68-8	S	

External Spindle Encoder Cables

Description	Model Number	Stocked Item	Notes
Spindle Encoder Feedback Cable	CNP3EZ-3P-10.0M	S	
Spindle Encoder Feedback Cable	CNP3EZ-3P-15.0M	-	
Spindle Encoder Feedback Cable	CNP3EZ-3P-20.0M	-	

Options and Drive System Interconnection

Battery Unit

Description	Model Number	Stocked Item	Notes
Battery for Absolute Positioning	ER6V-C119B	S	1 per Drive Unit

Drive System Interconnection

Description	Model Number	Stocked Item	Notes
Drive Communications Cable	G380-10.0M	S	10M
Drive Communications Cable	G380-20.0M	S	20M
Drive Communications Cable	G396-0.3M	S	0.3M
Drive Communications Cable	G396-0.5M	S	0.5M
Drive Communications Cable	G396-1.0M	S	1.0M
Drive Communications Cable	G396-5.0M	S	5.0M