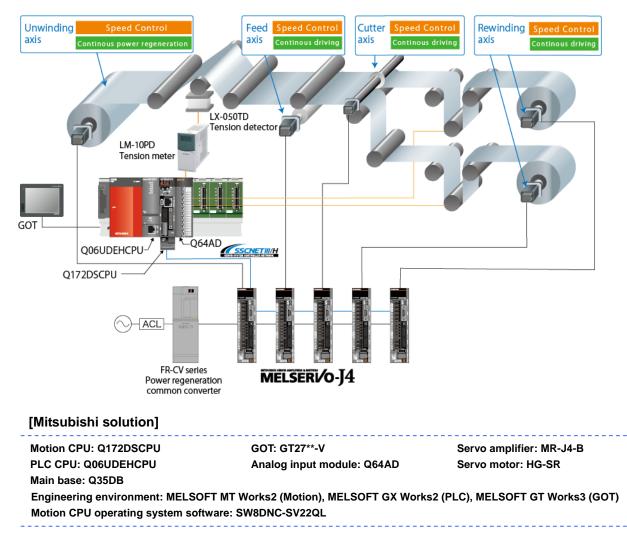
Film Slitting Machine

[System Configuration]



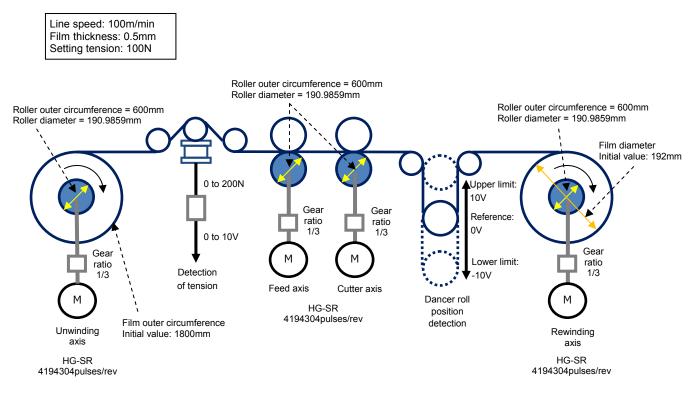
[Operation description]

In a system comprising an unwinding axis, feed axis, cutter axis, and rewinding axis, a material such as film is unwound, slit by cutter, and rewound.

[Control points]

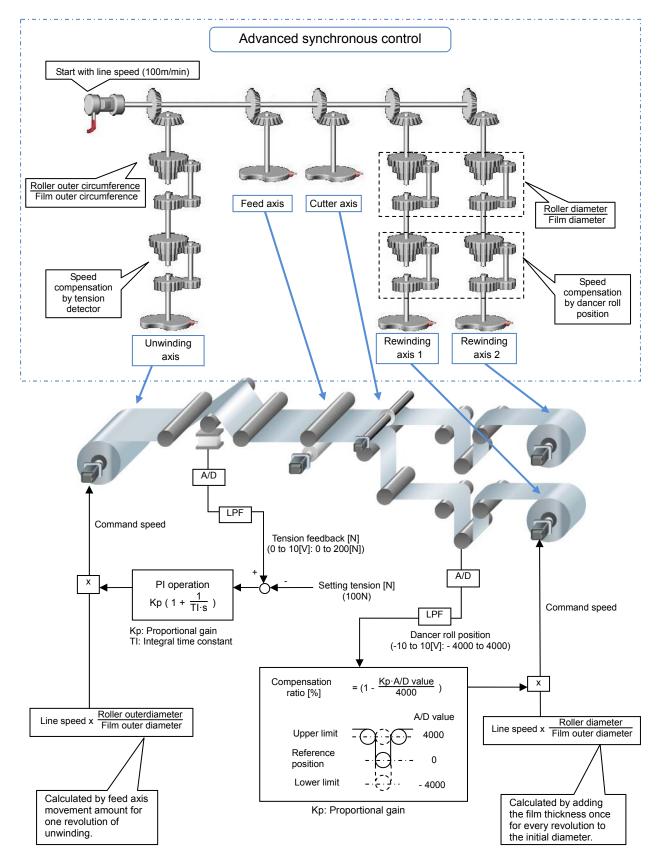
- Point1: The unwinding axis outputs a speed command depending on the film outer circumference. The film is unwound at a constant tension by correcting the speed command value so that the feedback value from the tension detector equals the intended tension.
- Point2: The rewinding axis outputs a speed command depending on the film diameter. The film is rewound at a constant tension by correcting the speed command value so that the dancer roll stays in a fixed position.
- Point3: Speed control is executed using advanced synchronous control to synchronize the entire line.
- Point4: Energy saving is promoted by utilizing the regenerative energy on the unwinding axis as power running energy for the rewinding axis using the common converter.

[Typical Machinery Configuration]



- (Note): Controls for preparation before operation start are not included in this sample program. Add following controls depend on the actual system.
 - Initial film feed operation
 - Initial film outer circumference/diameter measurement
 - Initial tension adjustment and initial dancer roll position adjustment

[Control block diagram]



[GOT Sample Screen]

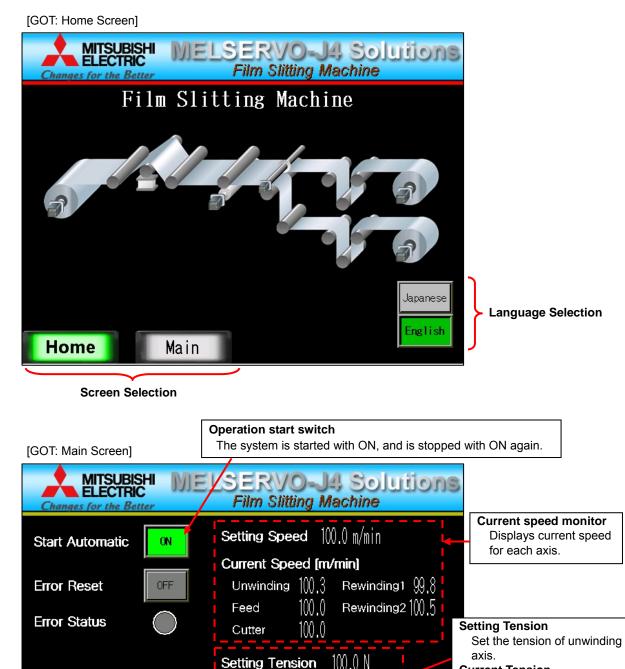
JOG

JOG

Speed

Home

10.0 m/min



(Note): Sample screen as default are set for English environment. When using Japanese environment, it's possible to switch to Japanese for GOT monitoring data in GT Designer 3 Language change the preview column from [2] to [1].

Current Tension 100.0 ||

10.0 m/min

10.0 m/min

Rolle

Main

Rolle

Current Tension

detector.

10.0 m/min

winding

winding: FWD

JOG operation switch

FWD

winding

REV

Perform JOG operation forward or reverse rotation for each axis.

Display the value of tension

[Parameter Setting]

(1) System Setting

Main Base : 5 Slots	Motion Slot Setting	
Intelligent Function Module (Analog Input)	Motion Module Servo External Signal Module C Q172DLX Sync. ENC Input Module C Q172DEX MAN-PLS Input Module C Q173DPX	PLC Module I/O Module C I/O Module Interrupt Input Module C QI60 Intelligent Function Module C General C Analog Input C Analog Output Detail Setting
First I/O No.		OK Cancel
0000 ÷		
Switch 1 (Input Range) Switch 2 (Input Range Analog Input Range		
CH1: 0 to 10V CH5: 0 to 10V	CH1: Detection of tension (0	
CH2: -10 to 10V CH3: -10 to 10V CH3: -10 to 10V CH3: -10 to 10V CH3: -10 to 10V		-10 to 10[V]/Upper limit to lower limit)
CH3: 10 to 10V		-10 to 10[V]/Upper limit to lower limit)
-Switch 3		
Setting Item None		
-Switch 4		
	ration Mode Iormal (A/D Conversion)	
	Offset Gain Setting	
Switch 5		
	Axis 1: Unwindin	
	Axis 2: Feed axis Axis 3: Cutter ax	
BAT	Axis 4: Rewindir	ig axis 1
SSCNET III - LINE 1 : SSCNET III/H	Axis 5: Rewindir	ig axis 2
-300 -300 -300 -30		-200
1 2 3 4 d01 d02 d03 d04	5 d05 d06 d07	408
أم قم قم قم		
d09 d10 d11 d12	d13 d14 d15	d16

(2) Servo data setting

Electronic gear setting

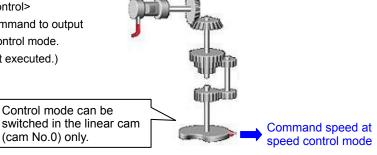
Movement amount per revolution: 200[mm] (Roller outer circumference: 600[mm], Gear ratio: 1/3)

Item	Axis1[Unwinding]	Axis2[Feed]	Axis3 Cutter]	Axis4[Rewinding1]	Axis5[Rewinding2]
Fixed Parameter	Set the fixed parame	eters for each axis an	d their data is fixed b	ased on the mechanic	cal system, etc.
Unit Setting	0:mm	0:mm	0:mm	0:mm	0:mm
Number of Pulses/Rev.	4194304[PLS]	4194304[PLS]	4194304[PLS]	4194304[PLS]	4194304[PLS]
Travel Value/Rev.	200000.0[µm]	200000.0[µm]	200000.0[µm]	200000.0[µm]	200000.0[µm]
Backlash Compensation	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]
Upper Stroke Limit	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]
Lower Stroke Limit	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]
Command In-position	10.0[µm]	10.0[µm]	10.0[µm]	10.0[µm]	10.0[µm]
Sp. Ctrl. 10x Mult. for Deg.	-	-	-	-	-
Home Position Return Data	Set the data to exec	ute the home positio	n <mark>return</mark> .		
OPR Direction	0:Reverse Direction	0:Reverse Direction	0:Reverse Direction	0:Reverse Direction	0:Reverse Direction
OPR Method	2:Data Set Type 1	2:Data Set Type 1	2:Data Set Type 1	2:Data Set Type 1	2:Data Set Type 1
Home Position Address	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]	0.0[µm]
Operation for OPR Incompletion	0:Execute Servo Program	0:Execute Servo Program	0:Execute Servo Program	0:Execute Servo Program	0:Execute Servo Program
JOG Operation Data	and a second service of the second second second	ute the JOG operatio			
JOG Speed Limit Value	600000.00[mm/min]	600000.00[mm/min]	600000.00[mm/min]	600000.00[mm/min]	600000.00[mm/min]
Parameter Block Setting	1	1	. 1	. 1	
Speed-Torque Control Data	Set the data only wh	en the speed-torque	control is executed.		
Control Mode Switching Request Device	М1	M2	М3	M4	М5
Control Mode Setting Device	D 1000(1)	D1010(1)	D1020(1)	D1030(1)	D1040(1)
Speed Limit Value in Speed-Torque Control	600000.00[mm/min]	600000.00[mm/min]	600000.00[mm/min]	600000.00[mm/min]	600000.00[mm/min]
Torque Limit Value in Speed-Torque Control	300.0[%]	300.0[%]	300.0[%]	300.0[%]	300.0[%]
Speed Command Device	D1002(2)	D1012(2)	D1022(2)	D1032(2)	D1042(2)
Command Speed Acceleration Time	1000[ms]	1000[ms]	1000[ms]	1000[ms]	1000[ms]
Command Speed Deceleration Time	1000[ms]	1000[ms]	1000[ms]	1000[ms]	1000[ms]
Torque Command Device	D1004(1)	D1014(1)	D1024(1)	D1034(1)	D1044(1)
Command Torque Time Constant (Positive Direc	1000[ms]	1000[ms]	1000[ms]	1000[ms]	1000[ms]
Command Torque Time Constant (Negative Dire	1000[ms]	1000[ms]	1000[ms]	1000[ms]	1000[ms]
Speed Initial Value Selection at Control Mo	0:Command Speed	0:Command Speed	0:Command Speed	0:Command Speed	0:Command Speed
Torque Initial Value Selection at Control Mo	0:Command Torque	0:Command Torque	0:Command Torque	0:Command Torque	0:Command Torque
Invalid Selection during Zero Speed at Control	0:Switching Condition at Switching Control	0:Switching Condition at Switching Control	0:Switching Condition at Switching Control	0:Switching Condition at Switching Control	0:Switching Condition at Switching Control

Control mode switching setting

Set the control data for position/speed/torque/continuous operation to torque control mode. For this sample program, the mode is switched to speed mode on all axes at synchronous operation.

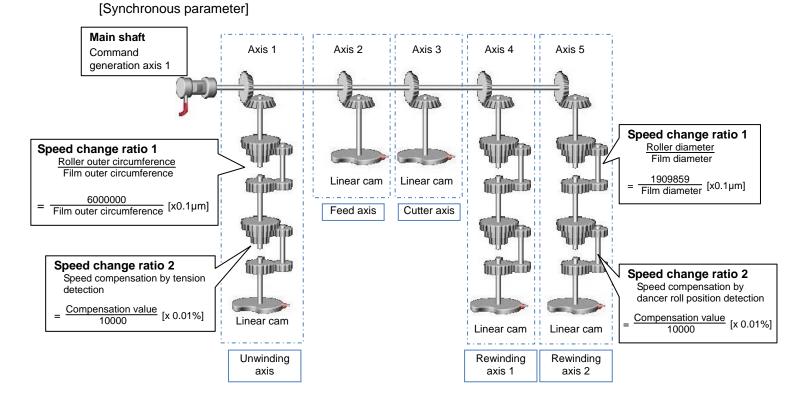
<Speed control using advanced synchronous control> In advanced synchronous control, the speed command to output axis is equal to the speed command in speed control mode. (Speed control by speed command device is not executed.)



(3) Synchronous control parameter

[Command generation axis parameters]

Item	Axis 1
Command Generation Axis	
Valid Setting	1:Valid
Unit Setting	0:mm
Upper Stroke Limit	0.0 µm
Lower Stroke Limit	0.0 µm
Command In-position Range	10.0 µm
Sp. Ctrl. 10x Mult. for Deg.	-
Length per Cycle	600000.0 µm
JOG Speed Limit Value	600000.00 mm/min
JOG Operation Parameter Block Setting	1
Acceleration/deceleration Time Change Parameter	Set acceleration/dec



▲ Cautions

- When diverting the sample program to the actual system, be sure to verify that there are no problems with control in the system.
- Add interlock conditions in the target system where considered necessary.

[Sample program configuration]

File name	Description	Model	Engineering environment
Vol9_Converting_Motion_b.mtw	Motion control program Motion parameter	Q172DSCPU	MELSOFT MT Works2
Vol9_Converting_GOT_b.GTX	GOT monitoring data	GT27**-V (640x480)	MELSOFT GT Works3

[Devices used in this program]

Q172DSCPU dedicated devices

Device		Device	
No.	Content	No.	Content
M2001	Axis 1 start accept flag	M9810	Command generation axis 1 start accept flag
M2002	Axis 2 start accept flag	M10880	Axis 1 synchronous control
M2003	Axis 3 start accept flag	M10881	Axis 2 synchronous control
M2004	Axis 4 start accept flag	M10882	Axis 3 synchronous control
M2005	Axis 5 start accept flag	M10883	Axis 4 synchronous control
M2042	All axis servo ON	M10884	Axis 5 synchronous control
M2407	Axis 1 error detection	M10960	Command generation axis 1 stop
M2408	Axis 1 servo error detection	M12000	Axis 1 synchronous control start
M2410	Axis 1 home position return completion	M12001	Axis 2 synchronous control start
M2415	Axis 1 servo READY	M12002	Axis 3 synchronous control start
M2427	Axis 2 error detection	M12003	Axis 4 synchronous control start
M2428	Axis 2 servo error detection	M12004	Axis 5 synchronous control start
M2430	Axis 2 home position return completion	D2	
M2435	Axis 2 servo READY	D3	Axis 1 actual current value
M2447	Axis 3 error detection	D22	Avia 2 actual current value
M2448	Axis 3 servo error detection	D23	Axis 2 actual current value
M2450	Axis 3 home position return completion	D62	Avia 4 actual ourrent value
M2455	Axis 3 servo READY	D63	Axis 4 actual current value
M2467	Axis 4 error detection	D82	Avia E actual ourrent value
M2468	Axis 4 servo error detection	D83	Axis 5 actual current value
M2470	Axis 4 home position return completion	D640	Axis 1 IOC speed setting
M2475	Axis 4 servo READY	D641	Axis 1 JOG speed setting
M2487	Axis 5 error detection	D642	Axis 2 JOG speed setting
M2488	Axis 5 servo error detection	D643	Axis 2 JOG speed setting
M2490	Axis 5 home position return completion	D644	Axis 3 JOG speed setting
M2495	Axis 5 servo READY	D645	Axis 5 500 speed setting
M3202	Axis 1 forward JOG start	D646	Axis 4 JOG speed setting
M3203	Axis 1 reverse JOG start	D647	
M3207	Axis 1 error reset	D648	Axis 5 JOG speed setting
M3208	Axis 1 servo error reset	D649	
M3222	Axis 2 forward JOG start	D15050	Axis 1 speed change gear ratio 1 denominator
M3223	Axis 2 reverse JOG start	D15051	
M3227	Axis 2 error reset	D15054	Axis 2 speed change gear ratio 2 numerator
M3228	Axis 2 servo error reset	D15055	
M3242	Axis 3 forward JOG start	D15498	Axis 4 speed change gear ratio 1 numerator
M3243	Axis 3 reverse JOG start	D15499	
M3247	Axis 3 error reset	D15500	Axis 4 speed change gear ratio 1 denominator
M3248	Axis 3 servo error reset	D15501	
M3262	Axis 4 forward JOG start	D15504	Axis 4 speed change gear ratio 2 numerator
M3263	Axis 4 reverse JOG start	D15505	
M3267	Axis 4 error reset	D15506	Axis 4 speed change gear ratio 2 denominator
M3268	Axis 4 servo error reset	D15507	
M3282	Axis 5 forward JOG start	D15648	Axis 5 speed change gear ratio 1 numerator
M3283	Axis 5 reverse JOG start	D15649	
M3287	Axis 5 error reset	D15650	Axis 5 speed change gear ratio 1 denominator
M3288	Axis 5 servo error reset	D15651	
		D15654	Axis 5 speed change gear ratio 2 numerator
		D15655	
		D15656	Axis 5 speed change gear ratio 2 denominator
		D15657	

User devices

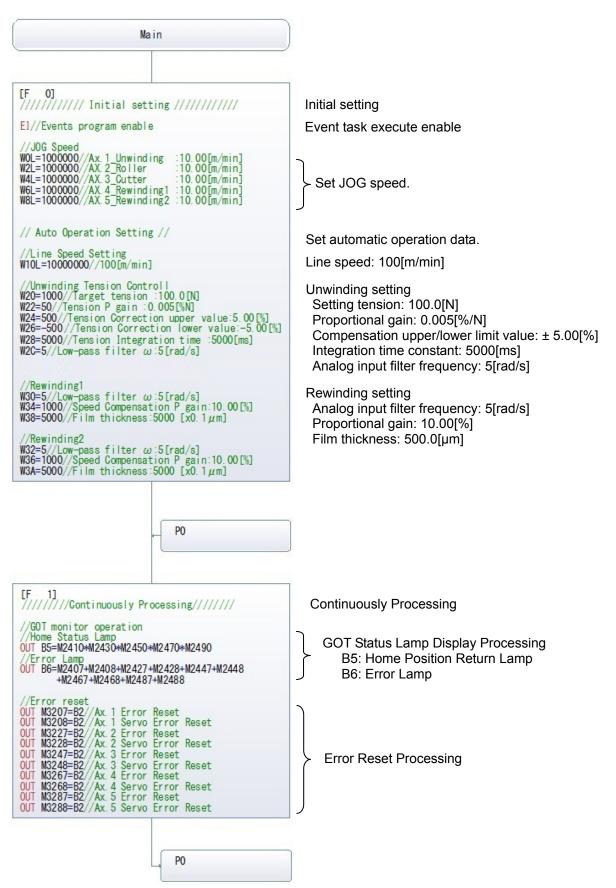
Device No.	Content	Device No.	Content
B0	Automatic operation start (GOT)	W30	Dancer roll 1 A/D value filter: [rad/s]
B1	Home position return (GOT)	W32	Dancer roll 2 A/D value filter: [rad/s]
B2	Error reset (GOT)	W34	Rewinding 1 speed compensation gain: x 0.01[%]
B5	Home position return complete lamp	W36	Rewinding 2 speed compensation gain: x 0.01[%]
B6	Error lamp (GOT)	W38	Rewinding 1 film thickness: x 0.1[µm]
B11	Unwinding axis JOG forward (GOT)	W3A	Rewinding 2 film thickness: x 0.1[µm]
B12	Unwinding axis JOG reverse (GOT)	D1000	Axis 1 control mode
B13	Feed axis JOG forward (GOT)	D1010	Axis 2 control mode
B14	Feed axis JOG reverse (GOT)	D1020	Axis 3 control mode
B15	Cutter axis JOG forward (GOT)	D1030	Axis 4 control mode
B16	Cutter axis JOG reverse (GOT)	D1040	Axis 5 control mode
B17	Rewinding axis 1 JOG forward (GOT)	D2000	Tension detection A/D value
B18	Rewinding axis 1 JOG reverse (GOT)	D2001	Tension detection A/D value conversion: x 0.1[N]
B19	Rewinding axis 2 JOG forward (GOT)	D2002	Tension deviation: x 0.1[N]
B1A	Rewinding axis 2 JOG reverse (GOT)	D2004	Tension compensation value: x 0.01[%]
M1	Axis 1 control mode switching request	D2006 to D2009	Tension deviation cumulative value
M2	Axis 2 control mode switching request	D2020 to D2023	Tension detection A/D filter output value
M3	Axis 3 control mode switching request	D2030	Dancer roll 1 A/D value
M4	Axis 4 control mode switching request	D2030	
M5	Axis 5 control mode switching request	D2031	Dancer roll 2 A/D value
W0	Unwinding axis JOG speed setting (GOT):	D2031	Dancer foil 2 A/D value
W1	x 0.01[mm/min]	D2040	
W2	Feed axis JOG speed setting (GOT):	to D2043	Dancer roll 1 A/D filter output value
W3	x 0.01[mm/min]	D2050	
W4	Cutter axis JOG speed setting (GOT):	to D2053	Dancer roll 2 A/D filter output value
W5	x 0.01[mm/min]		
W6	Rewinding axis JOG speed setting (GOT):		
W7	x 0.01[mm/min]		
W10 W11	Line speed setting: x 0.01[mm/min]		
W20	Tension setting: x 0.1[N]		
W22	Tension compensation gain: x 0.0001[%/N]		
W24	Tension compensation upper limit value: x 0.01[%]		
W26	Tension compensation lower limit value: x 0.01[%]		
W28	Tension compensation integration time: [ms]		
W2C	Tension detection A/D value filter: [rad/s]		

[Content of Motion SFC sample program]

Program configuration

	reeningaration			
No.	Program Name	Automatic Start	Execution Task	Operation Summary
0	Main	Yes	Normal	Main process
1	Motion Control	Yes	Normal	Motion control
2	Home Position	No	Normal	Home position return
3	JOG operation	No	Normal	JOG operation
4	Auto Operation	No	Normal	Automatic operation
5	Unwinding	No	Event (0.88ms)	Unwinding control
6	Rewinding	No	Event (0.88ms)	Rewinding control

(1) No.0 Main: Main Process Normal Task [Automatic Start] Sets initial data and continuously executes the process.



(2) No.1 Motion control: Motion Control Normal Task [Automatic Start] Via the switches on the GOT screen each Motion control task can be started.

Motion Control [F 8] SET M2042 //All axes servo ON	All axis servo ON request flag ON	
P0		[GOT] B0: Automatic operation start B11 to B16: JOG
//Servo ON status status check	All axis servo ON status check	
M2415+M2435+M2455+M2475+M2495	JOG operation start	Automatic operation start
[G 0] B1//Reset System	[G 1] //JOG Start B11+B12+B13+B14+B15+B16+B17+B18+B19+B1A	[G 2] BO//Auto Operation Start
Home Position	JOG Operation	Auto Operation
[G 3] ///Home Position Return Completion RST B1=B1 !B1	[G 7] ///JOG Completion NOP	[G 11] //Auto Operation Completion !BO
Home Position Return start	/ =	

(3) No.2 Home Position Return Normal Task

Executes the home position return servo program for each axis.

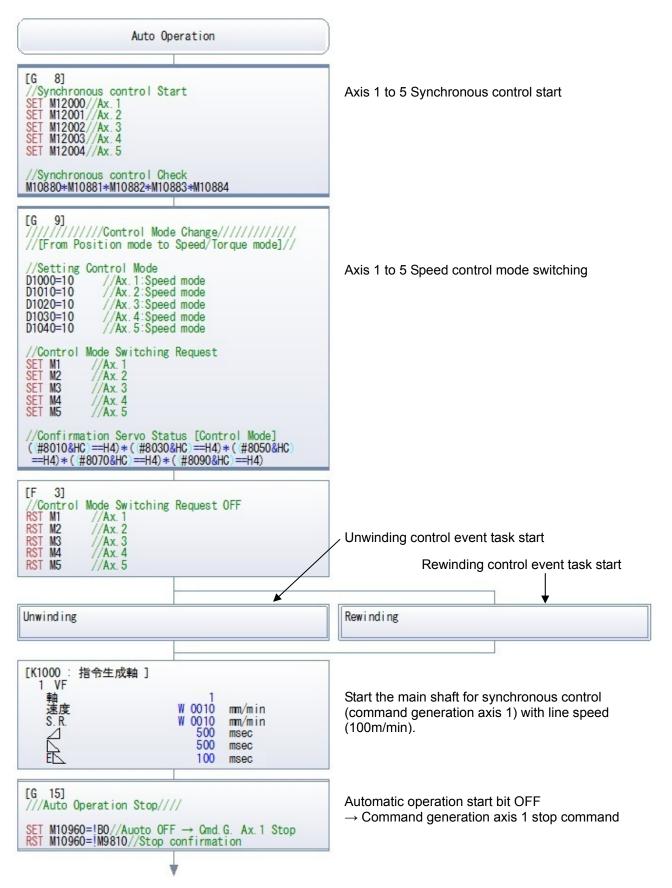
[K0 : Real Axis]	[K1 : Real Axis]	[K 2 : Real Axis]	[K 4 : Real Axis]	[K5:Real Axis
1 ZERO				
Axis 1	Axis 2	Axis 3	Axis 4	Axis 5
[G 6]				
///Completion////	///Completion////	///Completion////	///Completion////	///Completion////
NOP	NOP	NOP	NOP	NOP

(4) No.3 JOG Operation Normal Task Executes the JOG operation for each axis.

JOG Operation	
<pre>[FS 2] /////////JOG Operation/////// //Ax.1_Unwinding D640L=W0L //Ax.1 JOG speed OUT M3202=B11//Ax.1 JOG forward OUT M3203=B12//Ax.1 JOG reverse //Ax.2_Roller D642L=W2L //Ax.2 JOG speed OUT M3223=B14//Ax.2 JOG forward OUT M3223=B14//Ax.2 JOG reverse //Ax.3_Cutter D644L=W4L //Ax.3_JOG speed OUT M3243=B16//Ax.3_JOG forward OUT M3243=B16//Ax.3_JOG reverse //Ax.4_Rewinding1 D646L=W6L //Ax.4_JOG speed OUT M3263=B18//Ax.4_JOG forward OUT M3263=B18//Ax.4_JOG reverse //Ax.5_Rewinding2 D648L=W6L //Ax.5_JOG speed OUT M3283=B1A//Ax.5_JOG reverse</pre>	When GOT JOG switch is ON, the corresponding JOG command bit turns ON. [GOT] W0L: Unwinding axis JOG speed setting W2L: Feed axis JOG speed setting W4L: Cutter axis JOG speed setting W6L: Rewinding axis JOG speed setting B11: Unwinding axis JOG forward B12: Unwinding axis JOG forward B13: Feed axis JOG forward B14: Feed axis JOG forward B15: Cutter axis JOG forward B16: Cutter axis JOG forward B17: Rewinding axis 1 JOG forward B18: Rewinding axis 2 JOG forward B14: Rewinding axis 2 JOG forward B14: Rewinding axis 2 JOG reverse
[G 4] ///JOG Complete !M2001*!M2002*!M2003*!M2004*!M2005	
END	

(5) No.4 Auto Operation: Automatic Operation Normal Task

Change to speed control mode in synchronous control to start the unwinding or rewinding task, and then start the command generation axis (main shaft for synchronization).



*	
[G 13] //////////Control Mode Change////////////////////////////////////	
//Setting Control Mode D1000=0 //Ax.1:Position mode D1010=0 //Ax.2:Position mode D1020=0 //Ax.3:Position mode D1030=0 //Ax.4:Position mode D1040=0 //Ax.5:Position mode	Axis 1 to 5 Position control mode switching
//Control Mode Switching Request SET M1 //Ax.1 SET M2 //Ax.2 SET M3 //Ax.3 SET M4 //Ax.4 SET M5 //Ax.5	
//Confirmation Servo Status [Control Mode] (#8010&HC)==H0)*(#8030&HC)==H0)*(#8050&HC) ==H0)*(#8070&HC)==H0)*(#8090&HC)==H0)	
[F 6] //Control Mode Switching Request OFF RST M1 //Ax.1 RST M2 //Ax.2 RST M3 //Ax.3 RST M4 //Ax.4 RST M5 //Ax.5	
[G 14] //Synchronous_control_OFF RST_M12000//Ax.1 RST_M12001//Ax.2 RST_M12002//Ax.3 RST_M12003//Ax.4 RST_M12004//Ax.5	Axis 1 to 5 Synchronous control stop
//Synchronous_control_OFF_Check !M10880+!M10881+!M10882+!M10883+!M10884	
END	

(6) No.5 Unwinding Control Event Task (0.88ms) Executes the speed control by tension detector on the unwinding axis.

Unwinding)
<pre>[F 4] ////Initial Data Set//// D2006F=0//Tension dev. integration D2010L=D2L//Unwinding Previous value D2012L=D22L//Roller Previous value D15050L=18000000//Initial circumference setting [G 10] /// Unwinding Tension Control // /// Unwinding Tension Control // //// F/B Tension detection value // /// FROM D2000, H0, K11, K1//A/D Ch. 1 value Read D2020F=W2C/(2.0×3.14)×(0.88/1000.0)×(D2000-D2020F)+D2020F//Filter calc. D2001=SHORT(RND(D2020F/2.0))//A/D Tension Conversion[x0.1N] //D2000:A/D value (A/D:0 to 200.0[N] / 0 to 10[V] / 0 to 4000)</pre>	Setting for unwinding control start - Deviation cumulative value clear for PI operation - Previous value initial setting for film outer circumference operation - Set initial value for film outer circumference Input for feedback tension - Tension detector A/D value reading low page filter operation
<pre>//D2000:A/D Value (A/D:0 to 20.0[N] / 0 to 10[V] / 0 to 4000/ //D2020F:A/D Low-pass filter value //W2C:Low-pass filter ω(Default:5[rad/s]) // //// Tension PI calculation // // D2002=D2001-W20//Tension deviation [x0.1N] D2004=SHORT(RND((0.001*W22)*(D2006F+D2002)))//Correction value [x0.01%] IF D2004=SW24//Upper limit over D2004=W24//Upper value IEND</pre>	 Low-pass filter operation A/D value → Tension[N] conversion
<pre>IF D2004<w26 limit="" lower="" over<br="">D2004=W26//Lower value IENO IF (W26<=D2004)*(D2004<=W24)//Limit check 0K D2006F=D2006F+D2002*(0.88/W28)//Tension accumulated deviation D15054L=10000+D2004////Ax.1 Speed change gear1:Numerator IENO //D2002:Tension deviation[x0.1N] //D2004:Speed Correction value[x0.01%] //D2006F:Tension accumulated deviation //W20:Target tension (Default 500: 100.0[N]) //W22:Tension P gain (Default 500: 0.005[%/N]) //W24:Tension Correction upper (Default 500: 5.00[%]) //W24:Tension Correction lower (Default 500: 5.00[%]) //W28:Tension Integration time (Default 5000: 5000[ms])</w26></pre>	 Operation for speed compensation value Tension deviation operation Speed compensation value operation (PI operation) Compensation value upper/lower limit check Deviation cumulative value operation Operation result → Speed gear ratio numerator conversion
<pre>/////// Roll dia. calculation ////////////////////////////////////</pre>	 Film outer circumference operation Feed axis movement amount detection for unwinding axis per revolution. Film outer circumference value → Change gear ratio denominator Current value memory for unwinding/rewinding axis. (previous value)
END)

(7) No.6 Rewinding Control Event Task (0.88ms) Executes the speed control by the dancer roll on the rewinding axis.

Rewinding	
[F 5] ////Initial Data Set//// D2032L=D62L//Rewinding1 Previous value D2034L=D82L//Rewinding2 Previous value	Setting for rewinding control start - Previous value initial setting
//Rewinding Film Roll initial dia. D15500L=1920000//Rewinding 1 :192.0000[mm] D15650L=1920000//Rewinding 2 :192.0000[mm]	 for film outer diameter operation. Initial value setting for film outer diameter
[G 12] ////////////////////////////////////	
FROM D2030.H0.K12.K2//A/D Ch.2.3 value Read D2040F=W30/(2.0*3.14)*(0.88/1000.0)*(D2030-D2040F)+D2040F//D.Roll 1 Filter calc. D2050F=W32/(2.0*3.14)*(0.88/1000.0)*(D2031-D2050F)+D2050F//D.Roll 2 Filter calc. ////Dancer roll 1 (Rewinding 1)/// ////Dancer roll 1 (Rewinding 1)/// ///D2030:Dancer roll 4/D value //D2040F:A/D Low-pass filter value //D2050F:A/D Low-pass filter value //W30:Low-pass filter (o (Default:5[rad/s]))	Input for dancer roll position - Dancer roll A/D value reading - Low-pass filter operation
////////////// Rewinding Speed Compensation ////////////////////////////////////	
<pre>//Max. Compensation value:±10% (±11000/10000) //Rewinding 1 D15504L=LONG (RND (10000. 0-W34* (D2040F/4000. 0))) //Åx.4 Speed change gear2:Numerator D15506L=10000 //Åx.4 Speed change gear2:Denominator //Rewinding 2 D15654L=LONG (RND (10000. 0-W36* (D2050F/4000. 0))) //Åx.5 Speed change gear2:Numerator D15656L=10000 //Åx.5 Speed change gear2:Denominator //W34:Rewinding1 Speed Compensation P gain (Default:10.00[%])</pre>	Operation for speed compensation value - Compensated value: Proportional gain× A/D value/4000 10000 - Compensated value → Speed gear ratio numerator.
//W36:Rewinding2 Speed Compensation P gain (Default:10.00[%]) //W36:Rewinding2 Speed Compensation P gain (Default:10.00[%]) ////////////////////////////////////	
<pre>IF (060L-02032L)>=6000000//roll one revolution D15498L=1909859 //Ax.4 Speed change gearl:Numerator (Rewinding rollerφ) D15500L=015500L+W38*2//Ax.4 Speed change gearl:Denominator (Film Roll dia.) D2032L=D62L//Rewinding Previous value IENO //Rewinding 2 IF (080L-02034L)>=6000000//roll one revolution D15648L=1909859 //Ax.5 Speed change gearl:Numerator (Rewinding rollerφ)</pre>	 Film outer diameter operation Film outer diameter for rewinding axis per revolution, Current film diameter + "Film thickness x 2" Set film diameter to speed change gear ratio denominator. Store current value for rewinding axis.
D15650L=D15650L+WK3A*2 //Ax.5 Speed change gear1:Denominator (Film Roll dia.) D2034L=D62L//Rewinding Previous value IENO //Rewinding 1 //Rewinding 2 //D2034L: Previous value [x0.1 µm] //D15498L:Ax.4 Speed change gear1:Numerator //D156648L:Ax.5 Speed change gear1:Numerator //D1550UL:Ax.4 Speed change gear1:Denominator //D1560UL:Ax.5 Speed change gear1:Denominator //W38:Film thickness [x0.1 µm] //W3A:Film thickness [x0.1 µm]	
//////////////////////////////////////	
!B0//Auto OFF	
END	