

.Description of machine zero return command (DRVZ)

Please refer to Chapter 13 (The NC positioning control of FBs-PLC) of Manual II for detailed information about FUN140 instruction; here we only focus the subject on the new command DRVZ for machine zero return application.

The DRVZ command supports three modes of operation for different application requirement; conjoining the FUN141 motion parameter's setting of machine zero return related, it can be listed as below:

	DRVZ MD0	DRVZ MD1	DRVZ MD2
Parameter 6 (Creep speed)	Must be	Must be	Must be
Parameter 9-1 (Return direction)	Must be	Must be	Must be
Parameter 15-0 (DOG input)	Must be	Must be	Must be
Parameter 15-1 (Limit input)	Optional	Optional	Optional
Parameter 15-2 (PG0 input)	No need	No need	Must be
Parameter 15-3 (CLR output)	Optional	Optional	Optional
Parameter 16 (Zero point address)	Must be	Must be	Must be
Parameter 17 (No. of PG0 signal)	No need	No need	Must be

The FUN140 instruction can't be executed for machine zero return while encountering the following situations with the error indications:

Error indication	Error code
R4060 (Ps 0)	42 : DRVZ can't follow DRVC
R4061 (Ps 1)	50 : Illegal operation mod of DRVZ
R4062 (Ps 2)	51 : Illegal DOG input
R4063 (Ps 3)	52 : Illegal PG0 input
	53 : Illegal CLR output

. Example program 1 for DRVZ

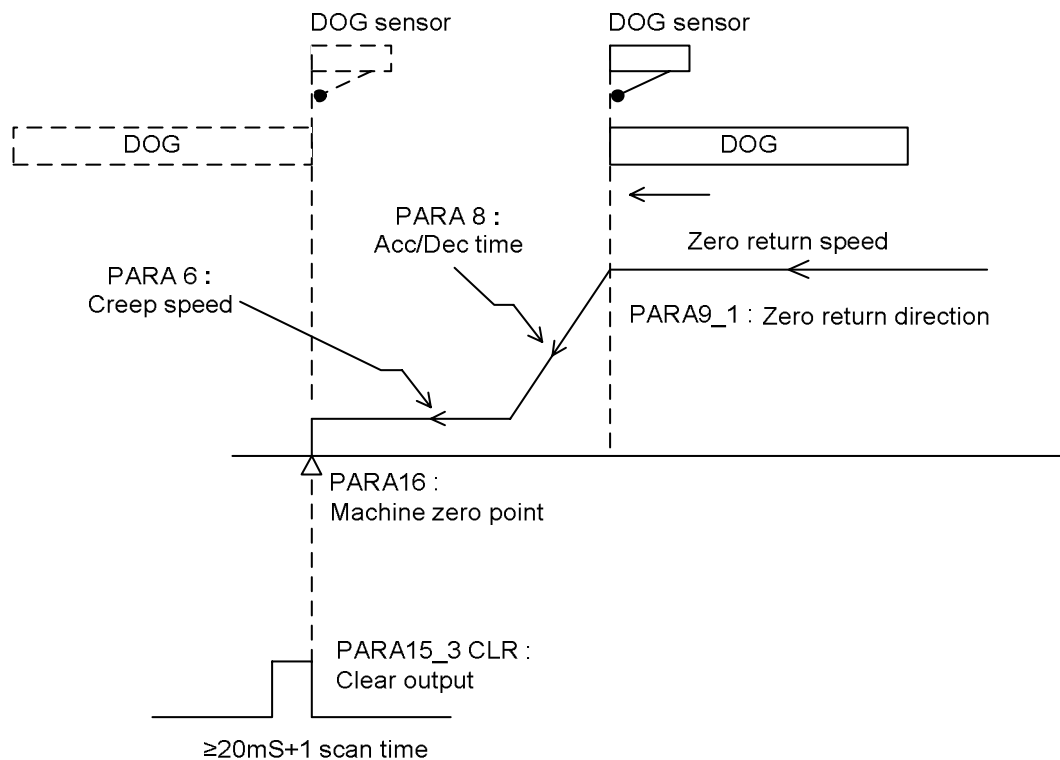
```
SPD    R1000
DRVZ   MD0
MEND
```

. Example program 2 for DRVZ

```
SPD    R1000
DRVZ   MD1
WAIT   M0 GOTO NEXT
```

Zero return (DRVZ) operation in detailed diagram description

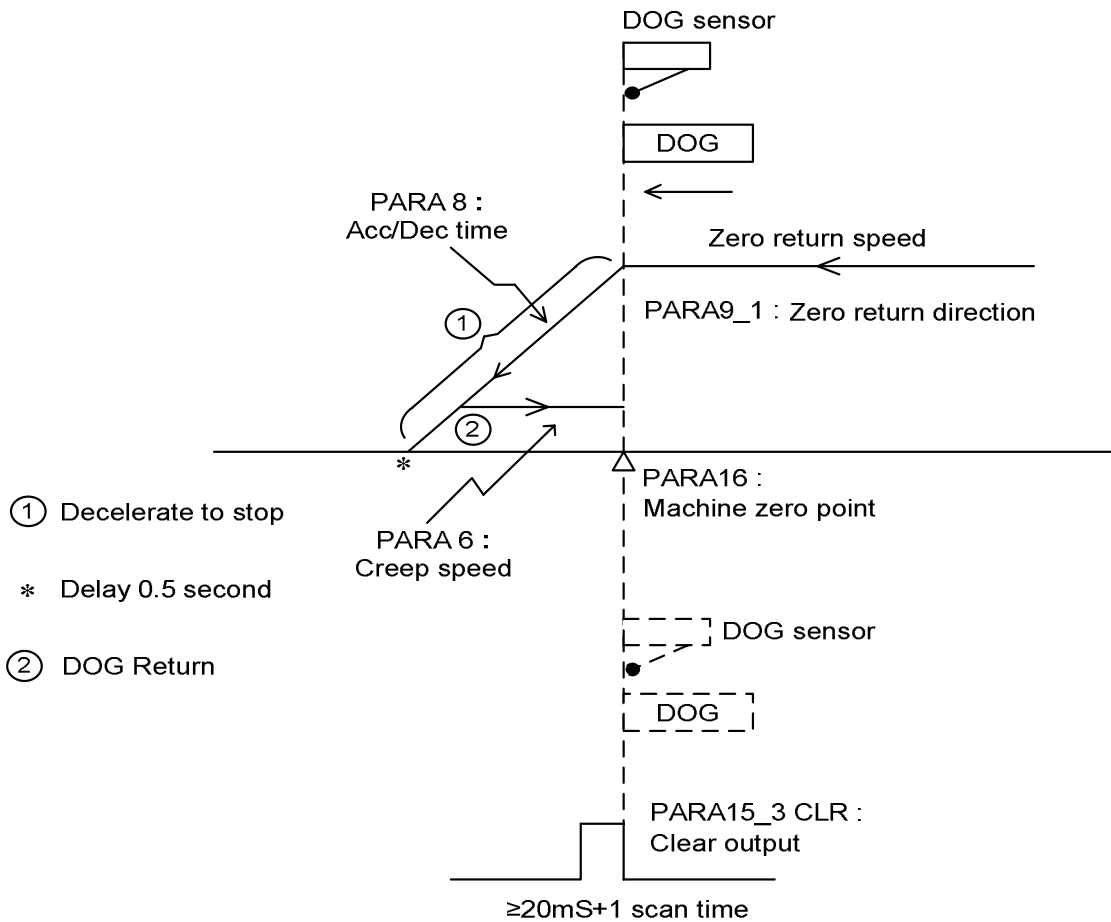
Mode 0



Description:

1. Zero return starts behind the DOG sensor (Parameter 15_0)
 - a. Moving forward to zero direction in Zero Return Speed
 - b. Changing the moving speed by Creep Speed (Parameter 6) while sensing the dog sensor (Edge detection and interrupt processing)
 - c. Keeping forward until leaving the dog sensor (Edge detection and interrupt processing), it is the zero home position
 - d. If it doesn't configure the CLR output (Parameter 15_3) for servo driver, the zero return process has been finished at step c
 - e. If it has been configured the CLR output (Parameter 15_3) for servo driver, the zero return process will be finished after the CLR output with more than 20 mS duration
2. Zero return starts at or in front of the DOG sensor (Parameter 15_0) + Stroke limit sensor (Parameter 15_1)
 - a. Moving forward to zero direction in zero return speed, there will stop moving while sensing the limit sensor
 - b. Moving backward in zero return speed and after leaving the dog sensor, it will drive the zero return procedures same as mentioned above 1.

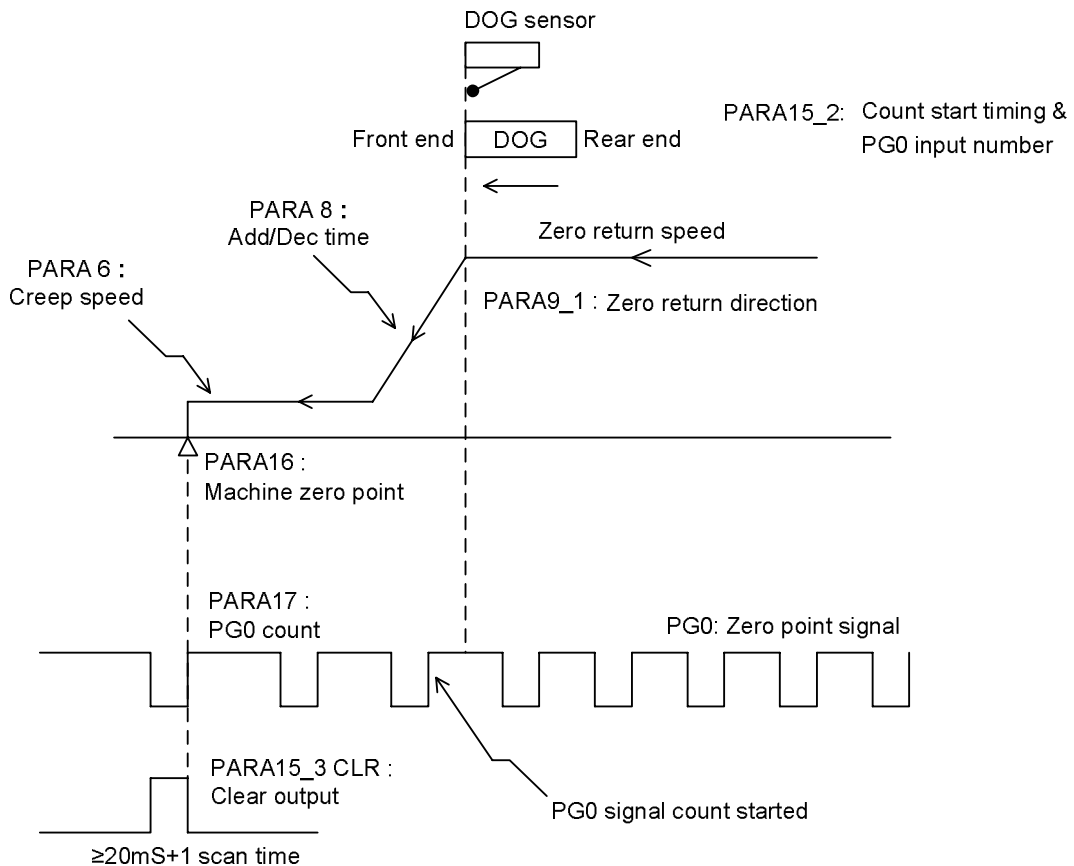
Mode 1



Description:

1. Zero return starts behind the DOG sensor (Parameter 15_0)
 - a. Moving forward to zero direction in Zero Return Speed
 - b. Auto slow down to stop movement while sensing the dog sensor (Edge detection and interrupt processing)
 - c. Delay 0.5 second, then moving backward until leaving the dog sensor (Edge detection and interrupt processing), it is the zero home position
 - d. If it doesn't configure the CLR output (Parameter 15_3) for servo driver, the zero return process has been finished at step c
 - e. If it has been configured the CLR output (Parameter 15_3) for servo driver, the zero return process will be finished after the CLR output with more than 20 mS duration
2. Zero return starts at or in front of the DOG sensor (Parameter 15_0) + Stroke limit sensor (Parameter 15_1)
 - a. Moving forward to zero direction in zero return speed, there will stop moving while sensing the limit sensor
 - b. Moving backward in zero return speed and after leaving the dog sensor, it will drive the zero return procedures same as mentioned above 1.

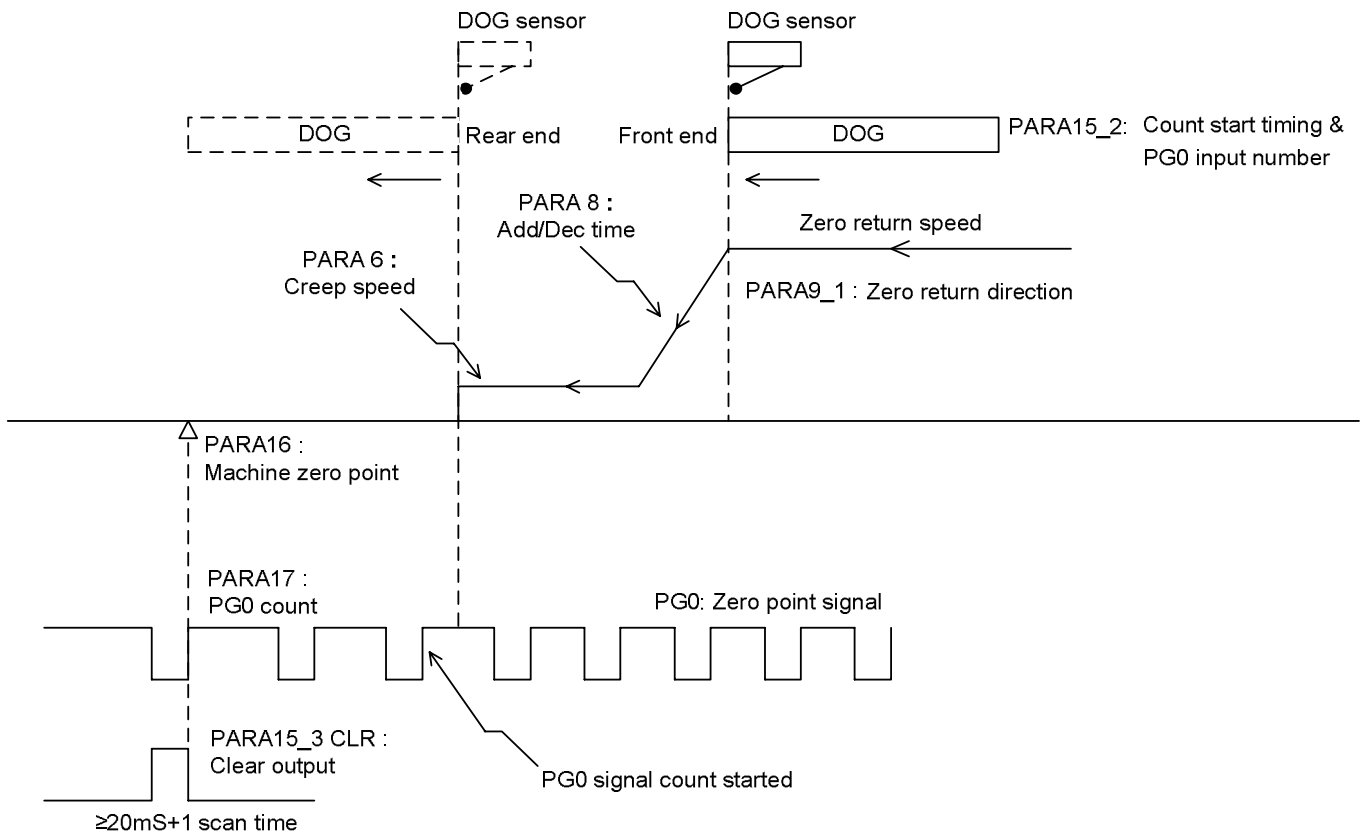
Mode 2 (Front edge counting)



Description:

1. Zero return starts behind the DOG sensor (Parameter 15_0)
 - a. Moving forward to zero direction in Zero Return Speed
 - b. Changing the moving speed by Creep Speed (Parameter 6) while sensing the dog sensor (Edge detection and interrupt processing), and start counting (Edge detection and interrupt processing) the PG0 signal (Parameter 15_2)
 - c. While the counting value of PG0 signal is equal to the preset value (Parameter 17), it is the zero home position
 - d. If it doesn't configure the CLR output (Parameter 15_3) for servo driver, the zero return process has been finished at step c
 - e. If it has been configured the CLR output (Parameter 15_3) for servo driver, the zero return process will be finished after the CLR output with more than 20 mS duration
 2. Zero return starts at or in front of the DOG sensor (Parameter 15_0) + Stroke limit sensor (Parameter 15_1)
 - a. Moving forward to zero direction in zero return speed, there will stop moving while sensing the limit sensor
 - b. Moving backward in zero return speed and after leaving the dog sensor, it will drive the zero return procedures same as mentioned above 1.
- ※ Working at this mode, it should be noticed to adjust the correct position of dog sensor to incorporate with PG0 signal to avoid one count PG0 error for zero return processing

Mode 2 (Rear edge counting)



Description:

1. Zero return starts behind the DOG sensor (Parameter 15_0)
 - a. Moving forward to zero direction in Zero Return Speed
 - b. Changing the moving speed by Creep Speed (Parameter 6) while sensing the dog sensor (Edge detection and interrupt processing); keeping forward and start counting (Edge detection and interrupt processing) the PG0 signal (Parameter 15_2) while leaving the dog sensor
 - c. While the counting value of PG0 signal is equal to the preset value (Parameter 17), it is the zero home position
 - d. If it doesn't configure the CLR output (Parameter 15_3) for servo driver, the zero return process has been finished at step c
 - e. If it has been configured the CLR output (Parameter 15_3) for servo driver, the zero return process will be finished after the CLR output with more than 20 mS duration
2. Zero return starts at or in front of the DOG sensor (Parameter 15_0) + Stroke limit sensor (Parameter 15_1)
 - a. Moving forward to zero direction in zero return speed, there will stop moving while sensing the limit sensor
 - b. Moving backward in zero return speed and after leaving the dog sensor, it will drive the zero return procedures same as mentioned above 1.

※ Working at this mode, it should be noticed to adjust the correct position of dog sensor to incorporate with PG0 signal to avoid one count PG0 error for zero return processing

Zero return starts at or in front of the DOG sensor

