



Application Guide

Topic: Drive Tuning for Mannesmann Demag Brake Motors

Drive Product: PowerFlex 700S

Introduction An Application Guide provides generic information on features and functions of drive products and their implementation. Application Guides are not specific to any one application, but generically discuss application techniques and/or functions as part of an application.

User Information Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.ab.com/documents/gj>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this document are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Related Publications The following publications should be referenced and followed when operating, configuring, or commissioning this drive product. These publications may be found on the automation book store at www.theautomationbookstore.com ;

Publication Title	Pub Number
PowerFlex 700S User Manual	20D-UM001B-EN-P
PowerFlex 700S Reference Manual	PFlex-RM002A-EN-E
PowerFlex 700S Firmware Release Notes	20D-RN004A-EN-P
PowerFlex 700S Quick Start	20D-QS001A-EN-P

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Precautions

Class 1 LED Product



ATTENTION: Hazard of permanent eye damage exists when using optical transmission equipment. This product emits intense light and invisible radiation. Do not look into module ports or fiber optic cable connectors.

General Precautions



ATTENTION: This drive contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference Allen Bradley publication 8000-4.5.2, "Guarding Against Electrostatic Damage" or any other applicable ESD protection handbook.



ATTENTION: An incorrectly applied or installed drive can result in component damage or a reduction in product life. Wiring or application errors such as under sizing the motor, incorrect or inadequate AC supply, or excessive surrounding air temperatures may result in malfunction of the system.



ATTENTION: Only qualified personnel familiar with the PowerFlex 700S AC Drive and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.



ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before performing any work on the drive. Measure the DC bus voltage at the +DC & -DC terminals of the Power Terminal Block (refer to Chapter 1 in the PowerFlex 700S User Manual for location). The voltage must be zero.



ATTENTION: Risk of injury or equipment damage exists. DPI or SCANport host products must not be directly connected together via 1202 cables. Unpredictable behavior can result if two or more devices are connected in this manner.



ATTENTION: Risk of injury or equipment damage exists. Parameters 365 [Encdr0 Loss Cnfg] - 394 [VoltFdbkLossCnfg] let you determine the action of the drive in response to operating anomalies. Precautions should be taken to ensure that the settings of these parameters do not create hazards of injury or equipment damage.



ATTENTION: Risk of injury or equipment damage exists. Parameters 383 [SL CommLoss Data] - 392 [NetLoss DPI Cnfg] let you determine the action of the drive if communications are disrupted. You can set these parameters so the drive continues to run. Precautions should be taken to ensure the settings of these parameters do not create hazards of injury or equipment damage.

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Motor Information

The Demag Brake Motor combines a motor with a spring-loaded brake in a single package and operates on a sliding rotor principle. The motor design utilizes a conical air gap between a tapered rotor and stator. The drive must supply enough flux current to the motor to produce sufficient axial magnetic force to overcome the brake spring and release the brake.

Drive Setup Procedure

1. It is best to reset the drive to defaults prior to configuring the drive for this type of motor.
2. Enter the motor data as with any standard induction motor.
3. Set [Motor CtrlMode] P485 to a value of 4, Test Mode.
4. Set [Test Current Ref] P431 equal to 30%.
5. Set [Test Freq Ref] P432 equal to 0 %.
6. Increase the motor current [Test Current Ref] P431 until the brake disengages, "Pull-In". Record the values in [Vds Fdbk Filt] P441 and [Test Current Ref] P431
7. Decrease the value in [Test Current Ref] P431 until the brake re-engages, "Drop-Out". Record the values in [Vds Fdbk Filt] P441 and [Test Current Ref] P431.
8. Return P431, P432, and P485 back to default values:
P431 = 50%
P432 = 10%
P485 = 0.
9. Set [Flux Current] greater than or equal to the brake disengage current recorded in P431 of step 6.
Note: For the following motor, a value of 60% was entered into P488.

Frame 90 B4
Serial # 71428094
3 PH, 60Hz, 3.2 HP, YY/Y230/460 VAC
12.2/6.1 Amp, PF0.69, 1690 RPM, 40C ambient, TEFC

Spare Allen-Bradley Parts