

# Service note

## Preventive maintenance for ACS 2000 AC drives

ABB recommends its preventive maintenance services to help control and cut operating costs associated with the ACS 2000 Medium Voltage drive.



On-site preventive maintenance is designed around the ACS 2000 drive maintenance schedule and significantly reduces the risk of failure while increasing the lifetime of the drive. Regular preventive maintenance services contribute to higher reliability of the installed plant which in turn maintains high productivity and minimizes plant downtime.

### Preventive maintenance - the lifeblood of a drive

Drive preventive maintenance consists of annual drive inspections and component replacements according to the product specific maintenance schedule. A maintenance schedule provides a systematic and functional means of maintaining a specific drive type. The maintenance schedule is based on ABB's extensive experience and know-how of manufacturing and maintaining electric drives. Specifications of component suppliers, as well as environmental and operational conditions of the drive are also carefully observed and considered.

Preventive maintenance is carried out during planned production shutdowns. It should be planned well in advance so that the required resources and service parts can be reserved. ABB will ensure that the appropriate components are inspected or replaced based on the specific drive maintenance schedule and will also perform on-site testing and measurements as required.

Advantage	Benefit
Use of genuine service parts	Increased reliability leading to a longer component lifetime
Timely part replacement in accordance with the drive maintenance schedule	Increased reliability leading to reduced drive and plant operational lifetime costs
Maintenance schedules help long term maintenance budget planning	Schedules help define whether to continue maintenance or to upgrade, retrofit, or replace a drive
Updating to the latest software version	Ensures optimum drive performance

## All labor and service parts included

The preventive maintenance service includes labor, if not agreed otherwise, and the service parts to perform the work according to the maintenance schedule.

Included are inspections of the:

- electric drive and its environmental conditions
- connections
- ribbon and fiber optic cables
- fan and cooling system
- emergency stop circuit
- circuit to prevent unexpected startup
- fault logger
- parameters

Tests include:

- functional testing of the drive under normal conditions
- basic measurements with supply voltage

In addition, the following can be purchased as options:

- ESD protected cleaning of the drive
- drive spare part inventory

A detailed service report, including recommendations for future actions, is provided once the maintenance work is completed and the inspection data fully analyzed.

	Years from start-up																				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Cooling</b>																					
➤ Air filters <sup>1</sup>	I	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
➤ Cooling fan (continuous operation) <sup>2</sup>	I	I	P	I	R	I	P	I	R	I	P	I	R	I	P	I	R	I	P	I	
➤ Redundant cooling fans <sup>2</sup>	I	I	P	I	P	I	P	I	R	I	P	I	P	I	P	I	R	I	P	I	
<b>Aging</b>																					
➤ DC Capacitors <sup>3</sup>	I	I	I	I	I	I	I	I	P	I	P	I	P	I	P	I	P	I	P	I	
➤ AC Capacitors <sup>4</sup>	I	I	I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	I	I	
➤ Printed Circuit Boards	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-	-	-	
➤ UPS Batteries (external to the drive)	I	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I			
<b>Connections &amp; Surroundings</b>																					
➤ Fiber optic cables <sup>5</sup>	-	-	-	-	-	-	P	-	P	-	P	-	P	-	P	-	P	-	P	-	
➤ Cable connections, bolted connections	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
➤ Dustiness, corrosion and temperature	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
<b>Fuses</b>																					
➤ Line-side fuses	I	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	I	R	I	I	
<b>Measurements and tests</b>																					
➤ Measurements with auxiliary voltage	I	I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	
➤ Insulation test	-	-	-	-	P	-	-	-	P	-	-	-	P	-	-	-	P	-	-	-	
➤ Safety circuits	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
<b>Improvements and spare parts</b>																					
➤ Software, hardware upgrades <sup>6</sup>	I	-	I	-	I	-	I	-	I	-	P	-	I	-	I	-	I	-	I	-	
➤ Spare parts	I	-	I	-	P	-	I	-	P	-	I	-	P	-	I	-	P	-	I	-	

Legend	
Replacement of component	R
Inspection (visual inspection, correction, and replacement if needed)	I
Performance of on-site work (commissioning, tests, measurements, etc.)	P
No action	-

Note! Recommended service intervals and component replacements are based on the ambient conditions specified by ABB.

1. The air filters can be replaced or cleaned. The action should be made based on the actual condition of the filter.
2. It is recommended to replace the device after four years of operation.
3. The expected lifetime of DC capacitors (self-healing) depends mainly on the ambient conditions. The recommended intervals are based on operation with rated current and maximum permitted temperature. A capacitor should be replaced when regularly taken measurements show a significant deviation from the rated capacitance.
4. AC capacitors (not self-healing) are used in input and output filters. Unlike DC capacitors, AC capacitors do not show signs of reduced capacitance over the lifetime. Measurements of the capacitance also do not allow predicting the lifetime, which depends mainly on the ambient conditions.
5. The expected lifetime of the optical fibers depends mainly on the ambient conditions. The recommended intervals are based on operation with rated current and maximum permitted temperature. An optical fiber should be replaced when regularly taken measurements show significant deterioration of the fiber.
6. Improvements based on further development, software modifications, and so on. When printed circuit boards must be replaced, an upgrade of the control system should be considered as well.

Please refer to the service instructions and product manuals for more information.

For more information please contact:

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