

Operational Baseline and Handoff

FORM 3 OF 3 | POST-COMMISSIONING | BASELINE AND HANDOFF



Take the baseline after the system has run 24 to 48 hours under normal production, at the peak sustained operating condition, once temperatures have settled. Record individual phase, bearing, and axis readings, not averages alone. Future troubleshooting depends on them.

Part A is the Chapter 17 baseline. Part B is the Chapter 20 handoff. Part C carries the baseline into the month 3, 6, and 12 checks. Tape a copy inside the panel door, attach one to the CMMS asset record, and file one with Forms 1 and 2.

BASELINE IDENTIFICATION AND OPERATING CONDITION

Date and time of baseline		Drive tag / asset number	
Drive manufacturer, model, serial		Drive continuous current rating (A)	
Motor manufacturer and model		Motor HP / kW	
Motor FLA (A) and RPM		Driven equipment (pump, fan, conveyor)	
Operating speed at baseline (Hz)		Load / production mode	
Hours in normal production before baseline		Ambient at motor (°F)	
Humidity (if measured)		Recorded by	

PART A | OPERATIONAL BASELINE (CHAPTER 17)

A1 | Electrical

Measurement	T1 / T1 to T2	T2 / T2 to T3	T3 / T3 to T1	Average	Imbalance %
Output current (A)					
Output voltage (V)					

P F NA
☐ ☐ ☐

A1.1 DC bus, frequency, and power recorded.

DC bus should be about 1.35 times input line-to-line voltage (about 621 VDC on 460 V input). Commanded and actual frequency should be close in sensorless vector. (Ch. 17)

DC bus VDC Commanded Hz Actual Hz Output power kW / HP

P F NA
☐ ☐ ☐

A1.2 Current utilization against the drive rating.

Average output current divided by the drive continuous rating. A drive sized with ORCA-Size should run at 51 to 78 percent. Record it on the ORCA-Size worksheet and investigate a large gap from the prediction. (Ch. 3, Ch. 17)

Utilization % ORCA-Size predicted %

A2 | Thermal

Temperature rise above ambient, not the absolute reading, shows how hard the drive is working. A large DE to NDE bearing difference can point to misalignment or an early bearing problem.

Point	Reading (°F)	Point	Reading (°F)
Drive inverter (heatsink)		Motor surface (hottest point)	
Ambient at drive air intake		Motor DE bearing	
Drive rise above ambient		Motor NDE bearing	
Ambient at motor		DE to NDE difference	

A3 | Thermal Imaging Baseline

Label each image with date, time, ambient, motor speed, and load. The images are a reference; detailed analysis comes later by side-by-side comparison.

Area imaged	File name / location	Hottest spot (°F)	Notes
Drive panel interior (or IR window)			
Drive heatsink / heat exchanger			
Motor frame, drive end			
Motor frame, non-drive end			
Motor junction box and terminations			
Input power (disconnect, fuses, breaker)			

A4 | Vibration

Overall velocity in three axes at each motor bearing. ISO 10816 zones for small to medium machines: A below 0.07 in/s, B 0.07 to 0.18, C 0.18 to 0.45, D above 0.45. Retake future readings at the same speed and load.

Location	Horizontal (in/s)	Vertical (in/s)	Axial (in/s)	ISO zone
Motor drive-end bearing				☐ A ☐ B ☐ C ☐ D
Motor non-drive-end bearing				☐ A ☐ B ☐ C ☐ D
Driven equipment bearing 1				☐ A ☐ B ☐ C ☐ D
Driven equipment bearing 2				☐ A ☐ B ☐ C ☐ D

Full vibration spectrum captured (if the site has spectrum analysis).

File / location

A5 | Process Performance

Pump: flow, discharge, suction, and differential pressure. Fan: airflow and static pressure. Conveyor: belt speed and throughput. Mixer: speed and process indicator.

Process variable	Units	Design value	Baseline value

A6 | Drive Internal Diagnostics

☐ P ☐ F ☐ NA

A6.1 Drive diagnostics recorded.

The fault log should be empty or hold only commissioning faults already explained on Form 2. Resolve any unexplained fault before accepting the baseline. (Ch. 17)

Run hours h Motor thermal utilization % Software revision

Fault log: ☐ Empty ☐ Commissioning faults only, all explained ☐ Unexplained faults present

DC bus ripple (if available) Stable / excessive

A7 | Parameter File Backup

P ☐ F ☐ NA ☐

A7.1 Parameter backup made at baseline.

Store at least one digital copy (CMMS or network) and one local copy at the drive. (Ch. 17)

1. Drive internal memory or SD card
2. Uploaded with configuration software, file name
3. Copied to the HMI keypad module
4. Critical parameters printed or recorded by hand

Digital copy location

A8 | Second Operating Mode (if the process has one)

Speed (Hz)	Load / mode	Current T1	T2	T3	Inverter °F	Ambient °F

Baseline record stored in all three places.

- ☐ Inside the drive panel door
- ☐ Facility CMMS asset record
- ☐ Commissioning package with Forms 1 and 2

PART B | HANDOFF AND DOCUMENTATION (CHAPTER 20)

The handoff is not new paperwork. It is assembling what already exists and getting it to the people who will live with this drive, in the places they will look.

B1 | Handoff Package

#	Category	Contents	Delivered	Stored at
1	Commissioning record	Form 1 checklist, Form 2 power-up, load test, and safety verification	☐	
2	Operational baseline	Part A of this form, thermal images, vibration data, parameter backup file	☐	
3	Annotated parameter list	Every non-default parameter with what it was changed to and why	☐	
4	Installation reference	Cable type, lead length, mitigation devices, environmental data, circuit protection	☐	
5	As-built wiring diagrams	Updated drawings where installed wiring differs from the design set	☐	
6	Manufacturer documentation	Product manual, quick-start guide, warranty registration acknowledgment	☐	

B2 | Parameter Annotations

P ☐ F ☐ NA ☐

B2.1 Annotation written for every non-default parameter.

A setting that looks wrong without its reason gets changed by the next technician. Example: motor voltage at 230 V on a 480 V drive because the motor is on its 230 V tap. (Ch. 20)

- ☐ Motor data entries, especially any that differ from the apparent nameplate
- ☐ Control mode and the reason for the choice
- ☐ Acceleration and deceleration ramps, if far from default
- ☐ Carrier frequency, if changed from default
- ☐ PID parameters, if active, and any Chapter 19 tuning changes
- ☐ Application parameters: braking resistor, sleep, min and max speed

B3 | Security Configuration

☐ P ☐ F ☐ NA

B3.1 Drive security settings documented.

Passcode kept in a sealed envelope or secure digital location, never on the panel door or in an unlocked binder. A lost passcode can turn a 30-minute call into a control board swap. (Ch. 20)

Security features enabled: None Button lockout Passcode Keypad removed Checksum Network

Passcode storage location

Authorized contact for passcode

Unlock procedure for authorized service written down

B4 | Installation-Specific Reference

VFD cable (manufacturer, model, size)

Lead length drive to motor (ft)

Motor-side mitigation (ring, bearings, shield)

Drive-side mitigation (reactor, dV/dt, sine, EMI)

Environment (location, temp, dust, altitude)

Circuit protection (type and size)

Surge protection installed

As-built drawing numbers

B5 | Warranty Registration

☐ P ☐ F ☐ NA

B5.1 Warranty registration submitted within the manufacturer's window.

ABB Certified Start-Up requires the complete form within 10 days of start-up. Submit as soon as load test readings exist; do not wait for the handoff meeting. (Ch. 20)

Program

Start-up date

Date submitted

Confirmation / reference no.

B6 | Training the Operations Team

Topic (about 30 minutes each)	Delivered by	Date	Attendees
How to read the baseline record			
How to respond to common faults (Chapter 18 card)			
How to perform routine maintenance (3, 6, 12 month tasks)			
When to call for help (escalation criteria)			

☐ P ☐ F ☐ NA

B6.1 Escalation criteria given to the maintenance team.

A fault that recurs more than twice after correction, a baseline change over 20 percent not explained by load or ambient, any ground fault, any component failure, or any time the team is unsure. (Ch. 20)

Who to call (name, phone)

B7 | Tools Left Behind

Tool	Where it lives	In place
Fault reference card (laminated)	Panel door	☐
Baseline record	Panel door and CMMS	☐
Parameter backup file	CMMS, USB in panel, facility network	☐
Annotated parameter list	Documentation binder and CMMS	☐
First-year maintenance schedule	CMMS as scheduled work orders	☐

B8 | Handoff Acknowledgment

Not a legal document. A record that the documentation was received, the training was given, and the operations team accepts responsibility for the drive.

Role	Printed name	Signature	Date
Commissioning engineer			
Plant engineer / maintenance manager			
Lead maintenance technician			
Operations supervisor			

PART C | FIRST-YEAR FOLLOW-UP (CHAPTER 20)

Enter each milestone as a scheduled CMMS work order before the commissioning engineer leaves. About three hours of effort across the year.

Milestone	Tasks	Due	CMMS WO #	Done	Initials
Month 3	Retorque input, output, and ground connections. Inspect and clean the air filter (check at month 1 in dusty sites). Compare key baseline readings.				
Month 6	Check cooling fan operation and bearing noise. Thermal images compared to baseline. Repeat vibration readings.				
Month 12	Repeat all baseline categories. Compare parameters to the annotated list. Record DC bus ripple as the capacitor reference. Confirm spare fan, filters, and fuses on hand.				

Compare at the same speed, load, and similar ambient. Investigate more than 10 percent change in current or more than 9 °F change in temperature rise. Baseline values copy across from Part A automatically in Acrobat and most desktop readers.

Parameter	Baseline	Month 3	Month 6	Month 12	Action needed
Average output current (A)					
Drive inverter temperature (°F)					
Ambient at drive intake (°F)					
Drive rise above ambient (°F)					
DC bus voltage (VDC)					
Motor DE bearing temperature (°F)					
Motor NDE bearing temperature (°F)					
Motor DE vibration, horizontal (in/s)					
Motor NDE vibration, horizontal (in/s)					
DC bus ripple (if available)					

Notes and follow-up findings